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Translation and cross-cultural adaptation of the Noise Exposure Questionnaire (NEQ) to Brazilian Portuguese

Tradução e adaptação transcultural do Noise Exposure Questionnaire (NEQ) para o português brasileiro

Keywords

Translation
Hearing
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Noise
Questionnaires

Descritores

Tradução
Audição
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Ruído
Questionários

ABSTRACT

Objective: To translate and cross-culturally adapt the Noise Exposure Questionnaire (NEQ) and 1-Minute Noise Screen (NEQ-S) instruments to Brazilian Portuguese. **Methods:** Procedures widely known in health research were used in the translation and cross-cultural adaptation process, comprising the following steps: initial translation, synthesis of translations, back-translation, expert committee, pretest, and content and layout validation. Altogether, 60 workers participated in the pretest by answering the questionnaires and then evaluating them in terms of understandability, layout, clarity, and writing. Reliability was verified with Cohen's kappa test, and the internal consistency was analyzed with Cronbach's alpha coefficient. **Results:** The translated and adapted versions of NEQ and NEQ-S were similar in terms of general and referential meanings. However, some modifications and adaptations were made to adapt them to the Brazilian reality. The kappa test indicated moderate agreement and Cronbach's alpha coefficient, substantial internal consistency. **Conclusion:** The translation and cross-cultural adaptation were carried out according to the methodology recommended in the national and international literature, performing the necessary equivalences to maintain the face and content validity with the original instrument. The availability of NEQ and NEQ-S in Brazilian Portuguese opens new fields of research to quantify yearly noise exposure more in-depth.

RESUMO

Objetivo: Traduzir e realizar a adaptação transcultural dos instrumentos Noise Exposure Questionnaire (NEQ) e 1-Minute Noise Screen (NEQ-S) para a versão em português brasileiro. **Método:** O processo de tradução e adaptação transcultural seguiu procedimentos amplamente utilizados em pesquisas da área da saúde, compostos pelas seguintes etapas: tradução inicial, síntese das traduções, retrotradução, comitê de especialistas, pré-teste, e validação do conteúdo e aparência. Na etapa de pré-teste, participaram 60 trabalhadores, que responderam aos questionários e, posteriormente, os avaliaram quanto ao: entendimento, aparência, clareza e escrita. Para a verificação da confiabilidade, foi utilizado o teste kappa de Cohen e para a análise da consistência interna foi aplicado o coeficiente alfa de Cronbach. **Resultados:** As versões traduzidas e adaptadas dos questionários NEQ e NEQ-S mostraram-se semelhantes em relação ao significado geral e referencial. Entretanto, algumas modificações e adaptações foram realizadas, para adequação à realidade brasileira. O teste kappa indicou concordância moderada e o coeficiente alfa de Cronbach, consistência interna substancial. **Conclusão:** A tradução e a adaptação transcultural foram realizadas de acordo com a metodologia preconizada na literatura nacional e internacional, incluindo-se as equivalências necessárias para a manutenção da validade de face e conteúdo com o instrumento original. A disponibilização dos questionários NEQ e NEQ-S na versão da língua portuguesa brasileira abre novos campos de pesquisa para aprofundamento da quantificação de exposição anual ao ruído.

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INTRODUCTION

Studies increasingly address the knowledge about noise-related hearing loss, probably due to important research results involving guinea pigs⁽¹⁾, demonstrating noise-induced cochlear synaptopathy⁽²⁾. In guinea pig studies, noise-exposure variables can be carefully controlled (frequency, intensity level, and exposure time), ensuring precise estimates of the association between noise exposure and hearing loss⁽³⁾. In human studies, dosimetry is the recommended technique in prospective assessments of these variables. However, retrospective estimates depend predominantly on self-reports of cumulative noise exposure, in which questionnaires are the indicated instruments to obtain such information^(2,3).

Approximately 27.7 million people aged 20 to 69 years in the United States are estimated to live with noise-induced hearing loss (NIHL)⁽⁴⁾. Moreover, NIHL is still the second most self-reported occupational disease, despite the regulations and interventions at the workplaces^(5,6).

The high prevalence of NIHL has been associated with increased industrialization, difficulties developing and implementing adequate public policies and preventive measures against noise, and difficulties related to information systems and data collection to generate consistent and comparable indicators⁽⁷⁾.

Hence, given the limited evidence on NIHL prevention and control and the high NIHL rates worldwide, further studies must be developed in this area, including the development of instruments to estimate occupational and non-occupational noise exposure, as gaps still exist. These include the unstandardized procedures to collect self-reported information, estimate the auditory risk (defining non-occupational risk factors), and establish validated instruments (accessing instruments or instructions for their use)⁽²⁾.

Standardizing instruments in the self-report process can minimize the effects of the subjective perception of risk – as there are different notions of the risk to which workers are exposed even when they have identical functions in common settings. These notions are based on practical knowledge, deductions, conversations with workmates, and information provided by the company^(2,8,9).

In this perspective, the task-based Noise Exposure Questionnaire (NEQ) was developed in detail to quantify people's history of exposure to occupational and non-occupational noise. Also, the 1-Minute Noise Screen (NEQ-S) was developed to identify individuals at greater risk of developing NIHL⁽¹⁰⁾.

Thus, given the scarcity of such tools in Brazil, the objective of this research was to translate and cross-culturally adapt NEQ and NEQ-S to Brazilian Portuguese.

METHODS

This study was approved by the institution's Ethics Committee (no. 858/08), and the use of NEQ to this end was authorized by one of its authors.

Description of the instrument

The original NEQ has 10 questions that estimate people's yearly noise exposure. Their answer options vary – “Never; Every few months; Monthly; Weekly; Daily”; “8 or more; 4 hours up to 8 hours; 1 hour up to 4 hours; Less than 1 hour” (referring to various noise-exposure situations), as well as “Never; Sometimes; Always” (regarding the use of personal protective equipment). There is also the screening instrument, NEQ-S, which can be used to estimate people's risk of developing NIHL. It has three questions with the following answer options: “Never; Every few months; Monthly; Weekly; Daily”, whose scores are respectively 0 to 4. Screening scores equal to or higher than 5 indicate a greater risk of developing NIHL.

Procedures

The participants who agreed to participate in the research signed an informed consent form.

The study was conducted between March 2020 and December 2020. The translation and cross-cultural adaptation process followed procedures widely used in the health literature^(11,12).

The translation and cross-cultural adaptation of the instrument were conducted in the following stages: initial translation, synthesis of translations, back-translation, expert committee, pretest, and content and layout validation. These stages are described below^(11,12) (Figure 1):

- Translation and synthesis of the translations: two independent translations were made by two different translators fluent in English – one of them was an audiologist experienced in translation, and the other did not have specific knowledge in the area. Thus, versions T1 and T2 were created. These translations were then synthesized in a consensus meeting between the two authors and four audiologists' researchers in the area. On this occasion, necessary reformulations were made, and the synthesized version of the initial translations was developed, which was named T12.
- Back-translation: T12 was back-translated from Portuguese into English by another two independent bilingual translators, who did not know the original instrument. Each back-translator produced a new version, named BT1 and BT2. This stage aimed to evaluate whether the content of the synthesized version was similar to that of the original instrument.
- Expert committee: the objective of this meeting was to produce the preliminary final version of the instrument to be used in the pretest. The translated versions were analyzed for semantic equivalence (vocabulary and grammar between the two languages, analyzing the reference meaning – denotation – and general meaning – connotation), idiomatic equivalence (proposing substitutes to idioms that are difficult to translate), experiential equivalence (proposing substitutes to experiences unparalleled in the country), and linguistic or conceptual equivalence (for words with different meanings in different cultures) with the original English questionnaires.

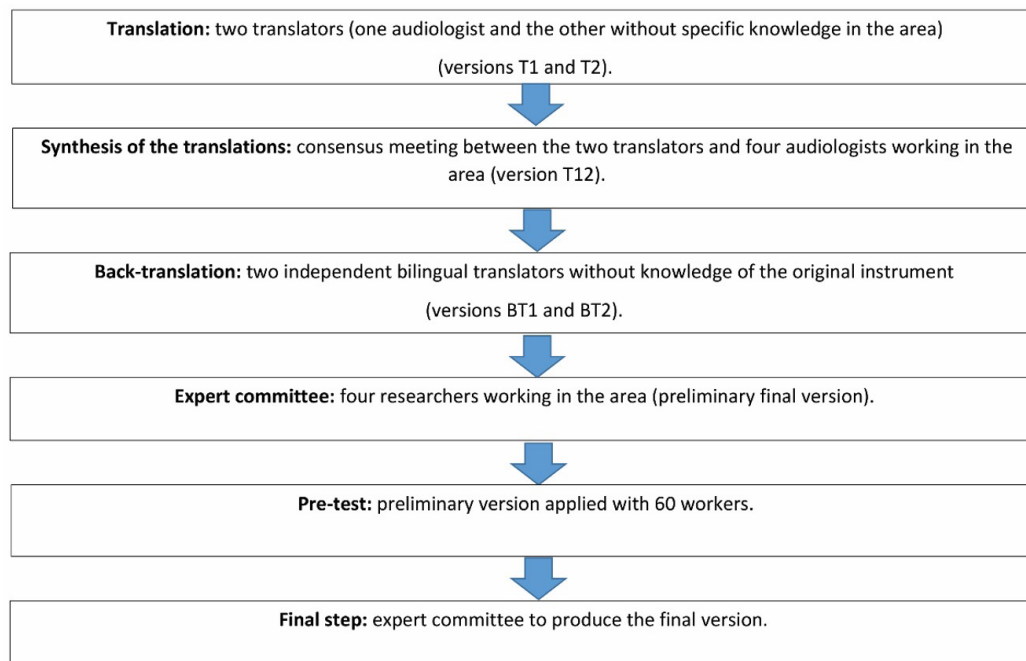


Figure 1. Flowchart – stages in the translation and cross-cultural adaptation of the Noise Exposure Questionnaire

- Pretest: The preliminary final versions were used in a pretest with a group of workers to verify whether the questions were clear and easy to answer and identify possible comprehension problems in the questionnaires.
- Final stage: After applying the pretest, all reports made throughout the process were submitted to the expert committee along with the preliminary translated version to verify whether the recommended stages had been followed and whether the reports reflected the process. Based on pretest results, small necessary final adjustments to the questionnaires were proposed.

To ensure that the pretest stage was adequate, the instrument was applied to a sample of individuals with similar characteristics to those for whom it had been designed⁽¹¹⁾. The sample inclusion criteria were as follows: individuals older than 18 years; of both sexes; actively working at the university where the study was conducted; able to read and write; not having neurological, cognitive, and/or psychiatric disorders that might keep them from understanding the questions; having been submitted to audiometry at the institution's audiology service within the previous year. The exclusion criteria were as follows: having any limiting factor that kept them from reading and filling out the questionnaires; having a conductive hearing loss.

Altogether, 62 workers participated in this stage. They worked in various areas (administration, kitchen, maintenance, metalworking, woodworking, general services, construction, and engineering) at the institution (public university) where the study was conducted, as recommended by the methodological reference used⁽¹¹⁾. Two participants were excluded for not

presenting the audiological examination in the stipulated time. Hence, the final sample had 60 participants.

Workers were contacted and invited to participate in the research. After agreeing and signing an informed consent form, participants answered the full questionnaires (including NEQ and NEQ-S). Then, they evaluated the questionnaires regarding comprehension, layout, clarity, and writing. They were also encouraged to suggest improvements when they found them appropriate.

Statistical analysis

Reliability was verified with Cohen's kappa test, and the internal consistency was analyzed with Cronbach's alpha coefficient. Alpha (or kappa) values lower than 0.21 indicate weak; from 0.21 to 0.40, fair; from 0.41 to 0.60, moderate; from 0.61 to 0.80, substantial; and higher than 0.80, almost perfect internal consistency (or agreement)⁽¹³⁾.

RESULTS

Sample characterization

The 60 participants had a mean age of 44 years (SD = 12; Min: 22; Max: 65); 70% were males. Regarding educational attainment, most of them (47%) had a bachelor's degree, followed by 43% with a high school degree; 10% of the participants had completed middle school.

As for the main characteristics of noise exposure, 52% were exposed to occupation noise and 48%, to non-occupational noise. In the audiometry, 68% of the assessed workers had normal hearing thresholds (up to 25 dB HL) in the left ear and 63%, in the right ear (Table 1).

Table 1. Sample characterization regarding noise exposure, hearing protection device use, and audiometry certificate

Variable	Exposure	N	Percentage
Occupational noise	No	29	48%
	Yes	31	52%
HPD	No	43	72%
	Yes	17	28%
Non-occupational noise	No	19	32%
	Yes	41	48%
RE audiometry			
Normal hearing*		38	63%
Hearing loss		22	37%
LE audiometry			
Normal hearing*		41	68%
Hearing loss		19	32%

*Hearing thresholds lower than or equal to 25 dB (HL) at all frequencies assessed in accordance with Regulation no. 19⁽³⁰⁾

Caption: HPD = Hearing protection device use; RE = Right ear; LE = Left ear

Questionnaires

In general, the translated and back-translated NEQ and NEQ-S versions were similar regarding the general and reference meanings. Nonetheless, some changes (word and sentence adaptations, exclusions, and insertions) were made because some questions did not reflect Brazilian reality. Divergences were solved by consensus in the expert committee to make the questionnaires easier for the study population to understand.

The changes made were related to native language situations, colloquialisms, verbal phrases, and more than one possible translation.

The original versions, synthesis of the translations, synthesis of back-translations, and preliminary version (after expert committee analysis) are presented in Charts 1 and 2.

When translations were synthesized, it was decided to merge questions 10 and 11 into one (question 10), adjusting it to the Brazilian situation. These questions in the original NEQ use seasons of the year as a reference, addressing climatic conditions of the place of origin of the questionnaire and the local “summer job” tradition (Chart 1).

There was also a change in question 1 in NEQ-S, which dealt with firearm use – which in general is not part of the Brazilian culture. This question was completely changed, merging three other questions present in Appendix A of the reference article⁽¹⁰⁾ (Chart 2).

Moreover, the term “earplug” was adjusted to “hearing protection device”, according to our reality. Also, an explanatory glossary was added in parentheses: “earplugs or earmuffs” (Chart 1).

After the back-translation stage, the back-translated versions were compared with the original ones, highlighting differences such as verb tenses, conditional rules, false cognates, and synonyms.

Then, in the expert committee analysis, these differences were reviewed, making the necessary adaptation of specific words (Charts 1 and 2).

In question 3 in NEQ, the word “religious” was included because such events use amplified sound and are commonly attended by Brazilians. In question 4, the words “buggy/kart” were included in the category of quadricycles because they are the most used names for them. In question 9, the term “sound speaker” was used instead of “music speaker” because they can be used for ends other than music, such as radio news and podcasts.

In the pretest, participants had no difficulties understanding and answering the questions in either questionnaire. This was true to both closed-ended and open-ended questions – i.e., 7 and 10, which asked them to describe the instrument they played (when applicable) or the services carried out in noisy environments.

After the pretest, the content and layout of the questionnaires were submitted for validation. In this stage, the reports with the comments of the target population and the observations of the researcher who accompanied the application of the instruments were presented to the expert committee. Some sentences and specific words needed small changes; they were adapted with experiential/semantic equivalence while maintaining them as close as possible to the original version. The final versions are presented in Appendices A and B.

Intra-subject NEQ reliability was tested by assessing two questions on noisy work (Question 10 in NEQ and Question 2 in NEQ-S). The kappa agreement test between these combined data was 0.550 ($p < 0.001$), indicating moderate agreement.

The internal consistency was analyzed with Cronbach’s alpha coefficient, whose result was 0.711, indicating substantial internal consistency.

Chart 1. Questions in the Noise Exposure Questionnaire or *Questi n rio de Exposi o ao Ru do* in the translation and cross-cultural adaptation process

QUESTIONS - NEQ	ORIGINAL VERSION IN ENGLISH	SUMMARY OF TRANSLATIONS INTO BRAZILIAN PORTUGUESE	SUMMARY OF BACK TRANSLATIONS INTO ENGLISH	COMMITTEE OF EXPERTS: EQUIVALENCE SEMANTIC, IDIOMATIC, EXPERIENCE AND LINGUISTIC - PRELIMINARY VERSION
INSTRUCTIONS	<p>Please answer the following questions about yourself, your hearing, and any noise you may have been around during the past year. Write an answer in the blank [] or check [x] the best answer to each question.</p> <p>Please answer these questions about any loud sounds. DURING THE PAST YEAR (12 months):</p>	<p>Por favor, responda as quest�es a seguir sobre si mesmo, sobre sua audi�o, e sobre qualquer ru�do a que tenha sido exposto ao longo do �ltimo ano. Escreva sua resposta na lacuna [] ou assinale [x] a melhor resposta em cada quest�o.</p> <p>Por favor, responda estas perguntas referentes a qualquer som intenso.</p> <p>DURANTE O �LTIMO ANO (12 meses):</p> <p>Sem ser em trabalho assalariado, com que freq�ncia voc� usou ferramentas el�tricas, serras el�tricas, ou outras ferramentas de oficina?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se voc� usou ferramentas el�tricas, por quanto tempo, em m�dia, voc� as usou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se voc� usou ferramentas el�tricas, com que freq�ncia voc� usou protetor auditivo (tamp�o de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> �s vezes <input type="checkbox"/> Sempre</p>	<p>Please answer the following questions about yourself, about your hearing, and about any noise that you have been exposed over the past year. Write your answer on [] or tick [] the best answer for each question.</p> <p>Please answer these questions about any loud sounds. DURING THE PAST YEAR (12 months):</p> <p>Outside of a paid job, how often did you use power tools, saws electrical, or other tools?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you used power tools, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you used power tools, how often did you wear earplugs or earmuffs during this activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Por favor, responda as quest�es a seguir sobre si mesmo, sobre sua audi�o, e sobre qualquer ru�do a que tenha sido exposto ao longo do �ltimo ano. Escreva sua resposta na lacuna [] ou assinale [x] a melhor resposta em cada quest�o.</p> <p>Por favor, responda estas perguntas referentes a qualquer som intenso.</p> <p>DURANTE O �LTIMO ANO (12 meses):</p> <p>Sem ser em trabalho assalariado, com que freq�ncia voc� usou ferramentas el�tricas, serras el�tricas, ou outras ferramentas de oficina?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se voc� usou ferramentas el�tricas, por quanto tempo, em m�dia, voc� as usou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se voc� usou ferramentas el�tricas, com que freq�ncia voc� usou protetor auditivo (tamp�o de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> �s vezes <input type="checkbox"/> Sempre</p>
1	<p>Outside of a paid job, how often did you use power tools, chainsaws, or other shop tools?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you used power tools, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you used power tools, how often did you wear earplugs or earmuffs during this activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p> <p>Outside of a paid job, how often did you drive heavy equipment or use loud machinery (such as tractors, trucks, or farming or lawn equipment like mowers/leaf blowers)?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you drove/used loud machinery, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you drove/used machinery, how often did you wear earplugs or earmuffs during this activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Por favor, responda as quest�es a seguir sobre si mesmo, sobre sua audi�o, e sobre qualquer ru�do a que tenha sido exposto ao longo do �ltimo ano. Escreva sua resposta na lacuna [] ou assinale [x] a melhor resposta em cada quest�o.</p> <p>Por favor, responda estas perguntas referentes a qualquer som intenso.</p> <p>DURANTE O �LTIMO ANO (12 meses):</p> <p>Sem ser em trabalho assalariado, com que freq�ncia voc� usou ferramentas el�tricas, serras el�tricas, ou outras ferramentas de oficina?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se voc� usou ferramentas el�tricas, por quanto tempo, em m�dia, voc� as usou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se voc� usou ferramentas el�tricas, com que freq�ncia voc� usou protetor auditivo (tamp�o de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> �s vezes <input type="checkbox"/> Sempre</p> <p>Sem ser em trabalho assalariado, com que freq�ncia voc� dirigiu ve�culos pesados ou operou maquin�rios ruidosos (tais como trator, caminh�o, maquin�rio de fazenda ou de quintal como cortador de grama ou soprador / aspirador de folhas)?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se voc� dirigiu/operou maquin�rio ruidoso, por quanto tempo, em m�dia, voc� o usou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se voc� dirigiu/operou maquin�rio ruidoso, com que freq�ncia voc� usou protetor auditivo (tamp�o de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> �s vezes <input type="checkbox"/> Sempre</p>	<p>Outside of a paid job, how often did you use power tools, saws electrical, or other tools?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you used power tools, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you used power tools, how often did you wear earplugs or earmuffs during this activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p> <p>Outside of a paid job, how often did you drive heavy vehicles or operated noisy machinery (such as tractor, truck, farm or yard machinery such as lawn mower or leaf blower/ vacuum cleaner)?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you have drove/operated noisy machinery, how long, on average, have you used it each time?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 to 8 hours <input type="checkbox"/> 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you drove/operated noisy machinery, how often did you use hearing protection equipment (earplugs or earmuffs) during the activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Por favor, responda as quest�es a seguir sobre si mesmo, sobre sua audi�o, e sobre qualquer ru�do a que tenha sido exposto ao longo do �ltimo ano. Escreva sua resposta na lacuna [] ou assinale [x] a melhor resposta em cada quest�o.</p> <p>Por favor, responda estas perguntas referentes a qualquer som intenso.</p> <p>DURANTE O �LTIMO ANO (12 meses):</p> <p>Sem ser em trabalho assalariado, com que freq�ncia voc� usou ferramentas el�tricas, serras el�tricas, ou outras ferramentas de oficina?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se voc� usou ferramentas el�tricas, por quanto tempo, em m�dia, voc� as usou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se voc� usou ferramentas el�tricas, com que freq�ncia voc� usou protetor auditivo (tamp�o de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> �s vezes <input type="checkbox"/> Sempre</p> <p>Sem ser em trabalho assalariado, com que freq�ncia voc� dirigiu ve�culos pesados ou operou maquin�rios ruidosos (tais como trator, caminh�o, maquin�rio de fazenda ou de quintal como cortador de grama ou soprador / aspirador de folhas)?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se voc� dirigiu/operou maquin�rio ruidoso, por quanto tempo, em m�dia, voc� o usou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se voc� dirigiu/operou maquin�rio ruidoso, com que freq�ncia voc� usou protetor auditivo (tamp�o de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> �s vezes <input type="checkbox"/> Sempre</p>
2				

Chart 1. Continued...

QUESTIONS - NEQ	ORIGINAL VERSION IN ENGLISH	SUMMARY OF TRANSLATIONS INTO BRAZILIAN PORTUGUESE	SUMMARY OF BACK TRANSLATIONS INTO ENGLISH	COMMITTEE OF EXPERTS: EQUIVALENCE SEMANTIC, IDIOMATIC, EXPERIENCE AND LINGUISTIC - PRELIMINARY VERSION
3	<p>How often did you attend car/truck races, commercial/high school sporting events, music concerts/dances or any other events with amplified public announcement (PA)/music systems?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you attended these events, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you attended these events, how often did you wear earplugs or earmuffs during this activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Com que frequência você foi a corridas de carros/caminhões, eventos esportivos comerciais/escolares, concertos/shows de música/festas ou quaisquer outros eventos com sistema de som amplificado usado para fazer anúncios ou tocar músicas?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você esteve em tais eventos, quanto tempo, em média, cada um durou?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você esteve em tais eventos, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p>	<p>How often did you attend to car/truck races, commercial/school/religious sporting events, concerts/parties or any other events with an amplified sound system used to advertise or to play music?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you have been at such events, how long, on average, did each last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 to 8 hours <input type="checkbox"/> 1 to 4 hours <input type="checkbox"/> Less than 1hour</p> <p>If you have been to such events, how often did you wear hearing protection equipment (earplugs or earmuffs) during the activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Com que frequência você foi a corridas de carro/caminhões, eventos esportivos comerciais/escolares/religiosos, concertos/shows de música/festas ou quaisquer outros eventos com sistema de som amplificado usado para fazer anúncios ou tocar músicas?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você esteve em tais eventos, quanto tempo, em média, cada um durou?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você esteve em tais eventos, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p>
4	<p>How often did you ride/operate motorized vehicles such as motorcycles, jet skis, speed boats, snowmobiles, or four-wheelers?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you rode motorized vehicles, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you rode motorized vehicles, how often did you wear earplugs or earmuffs during this activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Com que frequência você dirigiu/operou veículos motorizados, tais como motocicletas, jet-skis, lanchas ou quadriciclos?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você dirigiu veículos motorizados, por quanto tempo, em média, você o usou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você dirigiu veículos motorizados, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p>	<p>How often did you drive/operate motorized vehicles, such as motorcycles, jet skis, speed boats or quads?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you have driven motor vehicles, how long, on average, have you used it each time?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 to 8 hours <input type="checkbox"/> 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you have driven motorized vehicles, how often have you used hearing protection equipment (earplugs or earmuffs) during activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Com que frequência você dirigiu/operou veículos motorizados, tais como motocicletas, jet-skis, lanchas ou quadriciclos/buggy/Kart?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você dirigiu veículos motorizados, por quanto tempo, em média, você o usou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você dirigiu veículos motorizados, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p>
5	<p>How often did you ride in or pilot small aircraft/private airplanes?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you flew airplanes, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you flew airplanes, how often did you wear earplugs or earmuffs during this activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Com que frequência você voou em, ou pilotou, uma aeronave de pequeno porte/avião particular?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você voou em aeronaves, quanto tempo, em média, durou cada voo?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você voou em aeronaves, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p>	<p>How often did you ride in or pilot small aircraft/private airplanes?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you flew airplanes, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you flew airplanes, how often did you wear earplugs or earmuffs during this activity?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Com que frequência você voou em, ou pilotou, uma aeronave de pequeno porte/avião particular?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você voou em aeronaves, quanto tempo, em média, durou cada voo?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você voou em aeronaves, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) durante a atividade?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p>

Chart 1. Continued...

QUESTIONS - NEQ	ORIGINAL VERSION IN ENGLISH	SUMMARY OF TRANSLATIONS INTO BRAZILIAN PORTUGUESE	SUMMARY OF BACK TRANSLATIONS INTO ENGLISH	COMMITTEE OF EXPERTS: EQUIVALENCE SEMANTIC, IDIOMATIC, EXPERIENCE AND LINGUISTIC - PRELIMINARY VERSION
6	<p>How often were you around or did you shoot firearms such as rifles, pistols, shotguns, etc.?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you were around/shot firearms, on average, how many shots did you fire each time/session?</p> <p>_____ shotgun/rifle shots per session _____ pistol shots per session</p> <p>If you were around/shot firearms, how often did you wear earplugs or earmuffs while shooting?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Com que frequência você esteve próximo a, ou disparou, armas de fogo tais como rifles, pistolas, espingardas etc.?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você esteve próximo a/disparou armas de fogo, quanto disparos, em média, você fez ou presenciou a cada vez?</p> <p>_____ tiros de espingarda/rifle por vez. _____ tiros de pistola por vez.</p> <p>Se você esteve próximo a/disparou armas de fogo, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) durante os disparos?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p> <p>Com que frequência você tocou um instrumento musical?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você tocou, por favor, nos conte qual instrumento: _____</p> <p>Se você tocou um instrumento musical, por quanto tempo, em média, você o tocou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você tocou um instrumento musical, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) enquanto tocava?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p> <p>Com que frequência você ouviu música, programas de rádio etc., usando fones de ouvido ou headset individuais?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você ouviu em fones de ouvido, por quanto tempo, em média, você ouviu cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p>	<p>How often have you been close to, or shoot firearms such as rifles, pistols, shotguns, etc.?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you were close to/ shoot firearms, how many shots, on average, did you fire each time?</p> <p>_____ shotgun/rifle shots at a time. _____ pistol shots at a time.</p> <p>If you were close to/shot firearms, how often did you wear earplugs or earmuffs during the shooting?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p> <p>How often did you play a musical instrument?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you played, please tell us which instrument: _____</p> <p>If you played a musical instrument how long, on average, did you play it each time?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 to 8 hours <input type="checkbox"/> 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you played a musical instrument, how often did you wear earplugs or earmuffs while playing?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p> <p>How often did you listen to music, radio programs, etc., wearing earphones or headsets?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you listened through earphones, how long, on average, did you use each time?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 to 8 hours <input type="checkbox"/> 1 to 4 hours <input type="checkbox"/> Less than 1hour</p>	<p>Com que frequência você esteve próximo a, ou atirou, armas de fogo tais como rifles, pistolas, espingardas etc.?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você esteve próximo a/disparou armas de fogo, quanto disparos, em média, você fez ou presenciou a cada vez?</p> <p>_____ tiros de espingarda/rifle por vez. _____ tiros de pistola por vez.</p> <p>Se você esteve próximo a/disparou armas de fogo, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) durante os disparos?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p> <p>Com que frequência você tocou um instrumento musical?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você tocou, por favor, nos conte qual instrumento: _____</p> <p>Se você tocou um instrumento musical, por quanto tempo, em média, você o tocou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você tocou um instrumento musical, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) enquanto tocava?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p> <p>Com que frequência você ouviu música, programas de rádio etc., usando fones de ouvido ou headset individuais?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você ouviu em fones de ouvido, por quanto tempo, em média, você ouviu cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p>
7	<p>How often did you play a musical instrument?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you played, please tell us what musical instrument: _____</p> <p>If you played a musical instrument, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you played a musical instrument, how often did you wear earplugs or earmuffs while playing?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p> <p>How often did you listen to music, radio programs, etc. using personal headsets or earphones?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you listened through earphones, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p>	<p>Com que frequência você tocou um instrumento musical?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você tocou, por favor, nos conte qual instrumento: _____</p> <p>Se você tocou um instrumento musical, por quanto tempo, em média, você o tocou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você tocou um instrumento musical, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) enquanto tocava?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p> <p>Com que frequência você ouviu música, programas de rádio etc., usando fones de ouvido ou headset individuais?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você ouviu em fones de ouvido, por quanto tempo, em média, você ouviu cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p>	<p>How often did you play a musical instrument?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you played, please tell us which instrument: _____</p> <p>If you played a musical instrument how long, on average, did you play it each time?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 to 8 hours <input type="checkbox"/> 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you played a musical instrument, how often did you wear earplugs or earmuffs while playing?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p> <p>How often did you listen to music, radio programs, etc., wearing earphones or headsets?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you listened through earphones, how long, on average, did you use each time?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 to 8 hours <input type="checkbox"/> 1 to 4 hours <input type="checkbox"/> Less than 1hour</p>	<p>Com que frequência você tocou um instrumento musical?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você tocou, por favor, nos conte qual instrumento: _____</p> <p>Se você tocou um instrumento musical, por quanto tempo, em média, você o tocou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p> <p>Se você tocou um instrumento musical, com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) enquanto tocava?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p> <p>Com que frequência você ouviu música, programas de rádio etc., usando fones de ouvido ou headset individuais?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você ouviu em fones de ouvido, por quanto tempo, em média, você ouviu cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p>
8	<p>How often did you play a musical instrument?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you played, please tell us what musical instrument: _____</p> <p>If you played a musical instrument, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p>	<p>Com que frequência você tocou um instrumento musical?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você tocou, por favor, nos conte qual instrumento: _____</p> <p>Se você tocou um instrumento musical, por quanto tempo, em média, você o tocou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p>	<p>How often did you play a musical instrument?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you played, please tell us which instrument: _____</p> <p>If you played a musical instrument how long, on average, did you play it each time?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 to 8 hours <input type="checkbox"/> 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p>	<p>Com que frequência você tocou um instrumento musical?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você tocou, por favor, nos conte qual instrumento: _____</p> <p>Se você tocou um instrumento musical, por quanto tempo, em média, você o tocou cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p>

Chart 1. Continued...

QUESTIONS - NEQ	ORIGINAL VERSION IN ENGLISH	SUMMARY OF TRANSLATIONS INTO BRAZILIAN PORTUGUESE	SUMMARY OF BACK TRANSLATIONS INTO ENGLISH	COMMITTEE OF EXPERTS: EQUIVALENCE SEMANTIC, IDIOMATIC, EXPERIENCE AND LINGUISTIC - PRELIMINARY VERSION
9	<p>Other than music concerts and headset use (already covered in questions 3 and 8), how often did you listen to music, radio programs, etc. from audio speakers in a car or at home?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you listened via speakers, on average, how many hours did each time/session last?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p>	<p>Além de shows de música e uso de headsets (já abordados nas questões 3 e 8), com que frequência você ouviu música, programas de rádio etc. em caixas de som no carro ou em casa?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você ouviu em caixas de som, por quanto tempo, em média, você ouviu cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p>	<p>In addition to music concerts and the use of headsets (already covered in questions 3 and 8), how often did you listen to music, radio programs, etc. from audio speakers in the car or at home?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you listened via speakers, on average, how many hours did you listen each time?</p> <p><input type="checkbox"/> 8 hours or more <input type="checkbox"/> 4 hours up to 8 hours <input type="checkbox"/> 1 hour up to 4 hours <input type="checkbox"/> Less than 1 hour</p>	<p>Além de shows de música e uso de headsets (já abordados nas questões 3 e 8), com que frequência você ouviu música, programas de rádio etc. em caixas de som no carro ou em casa?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p> <p>Se você ouviu em caixas de som, por quanto tempo, em média, você ouviu cada vez?</p> <p><input type="checkbox"/> 8 horas ou mais <input type="checkbox"/> De 4 a 8 horas <input type="checkbox"/> De 1 a 4 horas <input type="checkbox"/> Menos de 1 hora</p>
10	<p>Now think back to this past summer. Over the summer months, did you work a noisy paid job, such as in construction, farming, a factory, lawn service, carwash, or other indoor or outdoor job working around loud equipment or machinery? By noisy job, we mean sounds so loud that you had to shout or speak in a raised voice to be heard at arm's length.</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No (if no, skip to # 11)</p> <p>If yes, please describe the noisy job(s): _____</p> <p>If you worked a noisy job, please estimate the number of hours you worked in a typical week: _____</p> <p>_____ average hours worked per typical week during the school year</p> <p>If you worked a noisy job during the school year, did your employer give you earplugs or earmuffs to wear at work?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>How often did you wear earplugs or earmuffs when around loud noise at this noisy job?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Ao longo do último ano, você trabalhou em algum serviço formal ou informal ruidoso, como em construção, fábrica, fazenda, jardinagem, lava-rápido, ou outro serviço em ambiente interno ou externo, próximo a equipamentos ou maquinário ruidosos? O que queremos dizer com serviço (ambiente) ruidoso é que o som seria tão intenso que você teria que gritar ou falar em um tom elevado para que lhe escutassem à distância de um metro.</p> <p><input type="checkbox"/> Sim <input type="checkbox"/> Não</p> <p>Se sim, por favor descreva o serviço (ambiente) ruidoso: _____</p> <p>Se você trabalhou em um serviço (ambiente) ruidoso, por favor dê uma estimativa do número de horas que você trabalhou numa semana normal: _____</p> <p>_____ horas trabalhadas por semana normal neste serviço.</p> <p>Se você trabalhou em um serviço ruidoso, o seu empregador lhe forneceu protetor auditivo (tampão de ouvido ou abafador) para usar no trabalho? <input type="checkbox"/> Sim <input type="checkbox"/> Não</p> <p>Com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) quando estava próximo a ruídos intensos nesse serviço?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p>	<p>Over the past year, did you work one or more noisy paid jobs, such as construction, farming, factory, gardening, car wash, or other service indoors or outdoors close to noisy equipment or machinery? What we mean by a noisy (ambient) service is that the sound would be so loud that you would have to shout or speak in a high tone to be heard over a meter away.</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, please describe the noisy service (environment): _____</p> <p>If you worked in a noisy (environment) service, please give an estimate of the number of hours you worked in a typical week: _____</p> <p>_____ hours worked per week normal in this service</p> <p>If you worked in a noisy job, have your employer provided you with earplugs or earmuffs to be used at work?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>How often did you use earplugs or earmuffs when you were close to loud noises in this service?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>	<p>Ao longo do último ano, você trabalhou em algum serviço formal ou informal ruidoso, como em construção, fábrica, jardinagem, lava-rápido, ou outro serviço em ambiente interno ou externo, próximo a equipamentos ou maquinário ruidosos? O que queremos dizer com serviço (ambiente) ruidoso é que o som seria tão intenso que você teria que gritar ou falar em um tom elevado para que lhe escutassem à distância de um metro.</p> <p><input type="checkbox"/> Sim <input type="checkbox"/> Não</p> <p>Se sim, por favor descreva o serviço (ambiente) ruidoso: _____</p> <p>Se você trabalhou em um serviço (ambiente) ruidoso, por favor dê uma estimativa do número de horas que você trabalhou numa semana normal: _____</p> <p>_____ horas trabalhadas por semana normal neste serviço.</p> <p>Se você trabalhou em um serviço ruidoso, o seu empregador lhe forneceu protetor auditivo (tampão de ouvido ou abafador) para usar no trabalho? <input type="checkbox"/> Sim <input type="checkbox"/> Não</p> <p>Com que frequência você usou protetor auditivo (tampão de ouvido ou abafador) quando estava próximo a ruídos intensos nesse serviço?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> Às vezes <input type="checkbox"/> Sempre</p>

Chart 1. Continued...

QUESTIONS - NEQ	ORIGINAL VERSION IN ENGLISH	SUMMARY OF TRANSLATIONS INTO BRAZILIAN PORTUGUESE	SUMMARY OF BACK TRANSLATIONS INTO ENGLISH	COMMITTEE OF EXPERTS: EQUIVALENCE SEMANTIC, IDIOMATIC, EXPERIENCE AND LINGUISTIC - PRELIMINARY VERSION
11	<p>Other than during the summer, over the past year, did you work one or more noisy paid jobs, such as in construction, farming, a factory, lawn service, carwash, or other indoor or outdoor job working around loud equipment or machinery? By noisy job, we mean sounds so loud that you had to shout or speak in a raised voice to be heard at arm's length.</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No (if no, you're done with the survey)</p> <p>If yes, please describe the noisy job(s): _____</p> <p>If you worked a noisy job, please estimate the number of hours you worked in a typical week: _____ average hours worked per typical week during the school year</p> <p>If you worked a noisy job during the school year, did your employer give you earplugs or earmuffs to wear at work? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>How often did you wear earplugs or earmuffs when around loud noise at this noisy job? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>			

Chart 2. Questions in the 1-Minute Noise Screen or *Triagem de Exposição ao Ruído de 1-Minuto* in the translation and cross-cultural adaptation process

QUESTIONS – NEQ-S	ORIGINAL VERSION IN ENGLISH	SUMMARY OF TRANSLATIONS INTO BRAZILIAN PORTUGUESE	SUMMARY OF BACK TRANSLATIONS INTO ENGLISH	COMMITTEE OF EXPERTS: EQUIVALENCE
Instructions				
1	<p>DURING THE PAST YEAR (12 months)</p> <p>How often were you around or did you shoot firearms such as rifles, pistols, shotguns, etc.?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p>	<p>DURANTE O ÚLTIMO ANO (12 meses):</p> <p>Com que frequência você esteve próximo a, ou disparou, armas de fogo tais como rifles, pistolas, espingarda etc.?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p>	<p>DURING THE PAST YEAR (12 months)</p> <p>How often have you been close to, or shoot firearms such as rifles, pistols, shotguns, etc.?</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p>	<p>DURANTE O ÚLTIMO ANO (12 meses):</p> <p>Com que frequência você esteve exposto a sons intensos que fizeram você sentir zumbido, ouvidos tampados, dores ou incômodo nos ouvidos?</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p>
2	<p>How often were you exposed to loud sounds while working on a paid job? By loud sounds, we mean sounds so loud that you had to shout or speak in a raised voice to be heard at arm's length.</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p>	<p>Com que frequência você esteve exposto a sons altos enquanto trabalhava em um emprego assalariado? O que queremos dizer com som alto é que você teria que gritar ou falar em um tom elevado para que lhe escutassem à distância de um metro.</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p>	<p>How often have you been exposed to loud sounds while working on a wage employment? What we mean by loud sound is that you would have to scream or speak in a high tone so that they can hear you at a distance of one meter.</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p>	<p>Com que frequência você esteve exposto a sons intensos enquanto trabalhava em um emprego assalariado? O que queremos dizer com som intenso é que você teria que gritar ou falar em um tom elevado para que lhe escutassem à distância de um metro.</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p>
3	<p>How often were you exposed to any other types of loud sounds, such as power tools, lawn equipment, or loud music? By loud sounds, we mean sounds so loud that you had to shout or speak in a raised voice to be heard at arm's length.</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p>	<p>Com que frequência você esteve exposto a quaisquer outros tipos de som alto tais como ferramentas elétricas, máquinas de cortar grama, ou música alta? O que queremos dizer com som alto é que você teria que gritar ou falar em um tom elevado para que lhe escutassem à distância de um metro.</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p>	<p>How often have you been exposed to any other types of loud sounds such as power tools, lawn mowers, or loud music? What we want to say with a loud sound is that you would have to shout or scream in a high tone so that listened to you at a distance of one meter.</p> <p><input type="checkbox"/> Never <input type="checkbox"/> Every few months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p>	<p>Com que frequência você esteve exposto a quaisquer outros tipos de sons intensos tais como ferramentas elétricas, máquinas de cortar grama ou música alta? O que queremos dizer com som intenso é que você teria que gritar ou falar em um tom elevado para que lhe escutassem à distância de um metro.</p> <p><input type="checkbox"/> Nunca <input type="checkbox"/> A cada 2 ou 3 meses <input type="checkbox"/> Mensalmente <input type="checkbox"/> Semanalmente <input type="checkbox"/> Diariamente</p>

DISCUSSION

Foreign instruments have been increasingly translated and cross-culturally adapted in the last years, enabling their use in other cultures. Hence, their data are ensured to express what they were meant to measure, making it possible to compare such data between different cultures that use standardized instruments. Moreover, they save the time and money spent on producing new instruments^(14,15).

There are currently various translation and cross-cultural adaptation strategies, in which all stages must be given due importance to minimize errors and losses regarding the original characteristics of the instruments – which may occur in such a process^(14,16). Although there is no gold-standard model of translation and cross-cultural adaptation, four essential stages (translation, back-translation, expert committee review, and pretest) are recommended to ensure the validity and reliability of the original instrument⁽¹⁷⁾.

According to the methodological reference⁽¹¹⁾, which is widely used both nationally and internationally⁽¹⁴⁾, all the abovementioned stages were followed. They aimed at semantic, idiomatic, experiential, and conceptual equivalence between the original text and its translation, trying to solve the difficulties caused by multiple meanings and grammar issues that arose in the process and might have kept the target population from understanding the instrument.

Special care was taken when choosing translators and expert committee members, including professionals with expertise in Audiology and Occupational Health. The sample, in its turn, included different age groups and levels of educational attainment, either exposed or not to occupational noise, thus verifying whether the items were understandable – as well as the applicability of the instrument to a diversified sample, larger than commonly used in the literature^(11,15,16,18-21). Nevertheless, despite all the care taken in sample selection, there may have been some influence from selection bias, which is inherent to any research with a convenience sample.

After applying the pretest, some changes were made to NEQ and NEQ-S questions regarding punctuation, context, and the literal translation process. Two important changes were necessary, namely: merging questions 10 and 11 into one in NEQ (question 10) and replacing items in question 1 in NEQ-S with some of those in the appendix of the original instrument. These changes were made to ensure the compatibility of the questions with the Brazilian reality, making them easier for the target population to understand. It must be pointed out that the expert committee proposed merging questions 10 and 11 of the original instrument to adapt them to the Brazilian reality (climate and tradition), as summer jobs are not usual in our culture. Likewise, question 1 in NEQ-S had to be changed because this screening is meant to indicate the risk for NIHL based on the score of three questions. Since hunting and using firearms are not usual for most Brazilians, the expert committee decided to use another three questions taken from an additional instrument developed by the authors⁽¹⁰⁾, which investigate symptoms (tinnitus, “full” ear feeling, earaches, or discomfort) that may be present after exposure to intense noise.

The need to change questions or statements from original instruments is reported by researchers in the area, who emphasize that cultural differences may require such changes, especially when they involve specific conditions, as previously mentioned⁽²²⁾ and observed in the present study.

NEQ and NEQ-S are relatively new instruments, published in 2017⁽¹⁰⁾. Therefore, no other studies on their translation and cross-cultural adaptation to other languages and countries were found, preventing comparison with other versions.

Regarding the intra-subject reliability of the instrument, the original study⁽¹⁰⁾ used the same methodology, comparing two repeated questions on the same topic (noisy work). Their results were similar to ours ($\kappa = 0.590$ – moderate agreement).

Cronbach’s alpha coefficient was 0.711, indicating substantial internal consistency in this instrument analysis. This is a reliability measure that reflects how questionnaire items are mutually related. It is important and desirable that this value be between 0.70 and 0.95⁽²³⁾, as the one verified in this study.

Even though other instruments quantify yearly noise exposure⁽²⁴⁾, NEQ uses simple task-based questions. Hence, it can be used to estimate people’s yearly exposure to either occupational or non-occupational noise. It also has the screening version (NEQ-S), which quickly and easily identifies individuals at risk of NIHL.

Some studies have been using NEQ to characterize participants’ doses of noise exposure – e.g., Grinn et al.⁽²⁵⁾, Spankovich et al.⁽²⁶⁾, Bernard et al.⁽²⁷⁾, Athirah and Shahida⁽²⁸⁾, Powell⁽²⁹⁾. They used this instrument to calculate cumulated yearly doses of noise based on self-reported activities.

Hence, standardizing new instruments and making them available are important strategies to develop science and have them used by health professionals, with an impact on clinical practice. They may also be useful as screening instruments to identify harmful day-to-day noises, helping better plan interventions, especially in the occupational area^(10,16,19,20).

In the next stage of our study, the translated and adapted instrument will be applied in order to determine NEQ diagnostic values (sensitivity, specificity, and accuracy), comparing it with the gold-standard examination (audiometry) to identify NIHL.

CONCLUSION

The translation and cross-cultural adaptation were made according to the methodology indicated in the national and international literature. They followed the stages of translation, back-translation, expert committee, and pretest, including the equivalences necessary to maintain the face and content validity of the original instrument. Making NEQ and NEQ-S available in Brazilian Portuguese opens new fields of research to address yearly noise exposure quantification more in-depth.

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Author contributions

AGS was responsible for the study design, data analysis, manuscript writing and final review; LCO, CHR, RRM were responsible for data collection, manuscript writing and final review; CGM and KMP were responsible for data analysis, manuscript writing and final review.

**APPENDIX A. FINAL VERSION: NOISE EXPOSURE QUESTIONNAIRE – NEQ (JOHNSON ET AL. (10))
TRANSLATED AND ADAPTED TO BRAZILIAN PORTUGUESE.)**

Noise Exposure Questionnaire - NEQ

Please answer the following questions about yourself, your hearing, and any noise you may have been around during the past year. Write an answer in the blank [_____] or check [x] the best answer to each question.

Please answer these questions about any loud sounds. DURING THE PAST YEAR (12 months):	
1	<p>Other than in your paid work (considering housework), how often have you used electrical tools, chainsaws, or other noisy working tools? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you used electrical tools, for how long, on average, did you use them each time? <input type="checkbox"/> For 8 or more hours <input type="checkbox"/> For 4 to 8 hours <input type="checkbox"/> For 1 to 4 horas <input type="checkbox"/> Less than 1 hour</p> <p>If you used electrical tools, how often did you use hearing protection devices (earplugs or earmuffs) during the activity? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>
2	<p>Other than in your paid work (considering housework), how often have you driven heavy vehicles or operated noisy machines (e.g., tractors, trucks, farm or yard machines quintal, such as lawn mowers, leaf blowers, and blower vacs)? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you drove/operated noisy machines, for how long, on average, did you do it each time? <input type="checkbox"/> 8 or more hours <input type="checkbox"/> For 4 to 8 hours <input type="checkbox"/> For 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you drove/operated noisy machines, how often did you use hearing protection devices (earplugs or earmuffs) during the activity? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>
3	<p>How often have you gone to car or truck races, sports, commercial, school, or religious events, music concerts or shows, parties, or any other events with loudspeakers used to make announcements or play music? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you went to such events, how long did each one last on average? <input type="checkbox"/> 8 or more hours <input type="checkbox"/> For 4 to 8 hours <input type="checkbox"/> For 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you went to such events, how often did you use hearing protection devices (earplugs or earmuffs) during the activity? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>
4	<p>Please, continue answering the following questions regarding any intense sound. OVER THE LAST YEAR (12 months):</p> <p>Other than cars, how often did you drive or operated motor vehicles, such as motorcycles, jet-skis, speedboats, all-terrain vehicles, buggies, or karts? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you drove motor vehicles, for how long, on average, did you drive them each time? <input type="checkbox"/> 8 or more hours <input type="checkbox"/> For 4 to 8 hours <input type="checkbox"/> For 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you drove motor vehicles, how often did you use hearing protection devices (earplugs or earmuffs) during the activity? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>
5	<p>How often did you fly in or pilot a small or private airplane? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you flew in one of these airplanes, how long did each flight last on average? <input type="checkbox"/> 8 or more hours <input type="checkbox"/> For 4 to 8 hours <input type="checkbox"/> For 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you flew in one of these airplanes, how often did you use hearing protection devices (earplugs or earmuffs) during the activity? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>
6	<p>How often did you fire or were near firearms, such as rifles, pistols, shotguns, etc.? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you fired or were near firearms, how many shots, on average, did you give or witness each time? _____ shotguns/rifle shots each time. _____ pistol shots each time.</p> <p>If you fired or were near firearms, how often did you use hearing protection devices (earplugs or earmuffs) during the activity? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>
7	<p>How often did you play a musical instrument? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you played an instrument, please, tell us which one it was: _____</p> <p>If you played a musical instrument, for how long did you play it on average? <input type="checkbox"/> 8 or more hours <input type="checkbox"/> For 4 to 8 hours <input type="checkbox"/> For 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p> <p>If you played a musical instrument, how often did you use hearing protection devices (earplugs or earmuffs) while you play it? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>

Please answer the following questions about yourself, your hearing, and any noise you may have been around during the past year. Write an answer in the blank [_____] or check [x] the best answer to each question.

	<p>Please, continue answering the following questions regarding any intense sound. OVER THE LAST YEAR (12 months):</p>
8	<p>How often did you listen to music, radio programs, etc., wearing earphones? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>If you wore earphones, for how long, on average, did you use them each time? <input type="checkbox"/> 8 or more hours <input type="checkbox"/> For 4 to 8 hours <input type="checkbox"/> For 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p>
9	<p>Apart from music concerts and wearing earphones (already approached in questions 3 and 8), how often did you listen to music, radio programs, etc. on loudspeakers in the car or at home? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily</p> <p>For how long, on average, did you listen to it each time? <input type="checkbox"/> 8 or more hours <input type="checkbox"/> For 4 to 8 hours <input type="checkbox"/> For 1 to 4 hours <input type="checkbox"/> Less than 1 hour</p>
10	<p>Over the last year, did you work in any noisy formal or informal job, such as construction, factory, gardening, carwash, or other indoor or outdoor work near noisy equipment or machines? By intense sound in the noisy work setting, we mean it was so intense that you would need to shout or speak loudly for someone to hear you one meter away. <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If so, please describe the noisy work (setting): _____</p> <p>If you worked in a noisy work (setting), please estimate the number of hours you worked in a normal week: _____ hours worked in a normal week in this job.</p> <p>If you worked in a noisy job (setting), did your employer provide you with hearing protection (earplugs or earmuffs) to wear at work? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>How often did you wear hearing protection (earplugs or earmuffs) when you were near intense noises at work? <input type="checkbox"/> Never <input type="checkbox"/> Sometimes <input type="checkbox"/> Always</p>

APPENDIX B. FINAL VERSION: 1-MINUTE NOISE SCREEN (JOHNSON ET AL.⁽¹⁰⁾) TRANSLATED AND ADAPTED TO BRAZILIAN PORTUGUESE.)

1-Minute Noise Screening

OVER THE LAST YEAR (12 months):	
1	How often were you exposed to intense sounds that made you have tinnitus, clogged ears, or pain or discomfort in your ears? By intense sound, we mean you would have to shout or speak loudly for someone to hear you one meter away. <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily
2	How often were you exposed to intense sounds while working in paid work? By intense sound, we mean you would have to shout or speak loudly for someone to hear you one meter away. <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily
3	Other than in your paid work , how often were you exposed to any other type of intense sound, such as electric tools, loud music, or lawn mowers? By intense sound, we mean you would have to shout or speak loudly for someone to hear you one meter away. <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily
Noise exposure score: _____	

How to Calculate Your 1-Minute Noise Screening Score

First, ascribe the scores below to your answers to each question:

	Never	Every 2 or 3 months	Monthly	Weekly	Daily
Question 1.	0	1	2	3	4
Question 2.	0	1	2	3	4
Question 3.	0	1	2	3	4

Then, sum the three individual scores to obtain the total noise exposure score. Write down the total score in the box in the lower right corner of your card.

Read, in the back of this sheet, the explanation of your noise exposure score, as well as suggestions on how to manage the risk of developing noise-induced hearing loss.

Example:

1-Minute Noise Screening	
Name: <u>Example</u>	Date: <u>July 1, 2022</u>
OVER THE LAST YEAR (12 months):	
1.	How often were you exposed to intense sounds that made you have tinnitus, clogged ears, or pain or discomfort in your ears? <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily Score: 0 1 2✓ 3 4
2.	How often were you exposed to intense sounds while working in paid work? By intense sound, we mean you would have to shout or speak loudly for someone to hear you one meter away. <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily Score: 0 1 2 3 4
3.	How often were you exposed to any other type of intense sounds, such as electric tools, loud music, or lawn mowers? By intense sound, we mean you would have to shout or speak loudly for someone to hear you one meter away. <input type="checkbox"/> Never <input type="checkbox"/> Every 2 or 3 months <input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Weekly <input type="checkbox"/> Daily Score: 0 1 2✓ 3 4
Noise exposure score: 6	

1-Minute Noise Screening: Recommendations

If your noise score is in this range:	Your risk is:	Explanation
0 to 4	Lower risk	<p>Based on your experience with noise over the last year, your risk of developing noise-induced hearing loss is relatively low – as long as you continue to interact with such noise levels in the future. However, if your exposure increases, your risk of developing hearing loss will also increase.</p> <p>Each person’s tolerance to noise is different, and their susceptibility can hardly be foreseen. Even so, it is important to remember that the risk increases as the sound gets more intense and you spend more time exposed to it and more often. See the hints below to learn how to manage the risk of developing noise-induced hearing loss.</p> <p>Special observation to those who used firearms: If you use firearms, you are at a high risk of hearing loss, even if you use them every 2 or 3 months and your score is low in the 1-Minute Noise Screening. See the hints below to learn what you can do to manage this risk.</p>
5 or more	Higher risk	<p>Based on your experience with noise over the last year, you are at risk of developing noise-induced hearing loss if you continue to interact with such or higher noise levels in the future.</p> <p>Each person’s tolerance to noise is different, and their susceptibility can hardly be foreseen. Even so, it is important to remember that the risk increases as the sound gets more intense and you spend more time exposed to it and more often. See the hints below to learn how to manage the risk of developing noise-induced hearing loss.</p>

What You Can Do to Manage the Risk:

- **Avoid intense noises whenever possible:** It may seem redundant to say it, but avoiding intense noises is the first step to preserving your hearing for your whole life. Remember, if you need to shout for someone to hear you one or two meters away, the background noise is probably at a dangerous level. Look for quieter products when shopping for noisy tools or equipment, such as leaf blowers, blower vacs, or lawn mowers. Also, turn down the volume when you are using electronic devices, such as mobiles and music players.
- **Wear hearing protection whenever you are near loud noises:** When you cannot avoid intense noises, wear well-fitted hearing protection (earplugs or earmuffs), even in occasional circumstances. Hearing protection can be purchased in various drug, convenience, hardware, and sports stores. Make sure you are well-trained to wear and care for your hearing protection devices and replace them when necessary. The adequate and consistent use of hearing protection can minimize your risk, especially if you use firearms. In this case, exposure to a single shot may be enough to damage your hearing if you are not wearing hearing protection.
- **Have your hearing regularly tested:** Keep an eye on your hearing! Have it tested routinely – once a year if you are in the higher-risk group listed above or if you increase your exposure to noise. Follow up on your hearing test results and ask your audiologist to compare your annual tests with the most recent ones to verify any significant changes that may pose a concern.
- **Take care of your ears:** Go see a doctor if you notice problems such as sudden hearing changes, pain, ear fullness, or tinnitus.