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Perceptions of college education health students about noise inside and outside the clinic school

Percepções de estudantes de ensino superior em saúde sobre ruído dentro e fora da clínica escola

Percepciones de estudiantes de salud de educación superior sobre el ruido dentro y fuera de la clínica escolar

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Abstract

Introduction: Noise pollution is a public health problem and is considered the second biggest cause of pollution in the modern world. Buildings that compromise acoustic comfort can be observed in the academic environment, which may have negative impacts on students and users. **Objective:** to analyze students' understanding of noise and its impacts and its presence in a clinic school. **Methods:** Cross-sectional and exploratory research, carried out through the application of an online questionnaire with university students from a federal educational institution. The content analysis of the responses was carried out using descriptive analysis, statistical analysis, categorization and word cloud. **Results:** 83 questionnaires were answered by students. The words "noise, nuisance, unpleasant sound" were used to define noise and "hearing loss, stress, deconcentration, headache, tinnitus and irritability" for the consequences of exposure to noise. 38.6% believe that the clinic school is not noisy, 36.1% did not

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LFC: study conception, methodology, data collection, drafting the article.
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know how to inform and 25.3% said that the place was noisy, this noise justified by: acoustics of the clinic's infrastructure, number of people circulating in the space and geographic location. **Conclusion:** Although most students are aware of the negative health effects of exposure to noise, it was observed that they experience risk situations inside and outside the university context, reinforcing the need for actions to promote hearing health and prevent injuries.

Keywords: Noise; Noise Effects; Students, Health Occupations; Comprehension.

Resumo

Introdução: a poluição sonora é um problema de saúde pública e é considerada a segunda maior causa de poluição no mundo moderno. Observa-se no ambiente acadêmico edificações que comprometem o conforto acústico, podendo apresentar impactos negativos para os estudantes e para outros frequentadores. **Objetivo:** analisar o entendimento de estudantes universitários sobre o ruído, seus impactos e a sua presença em uma clínica-escola. Métodos: pesquisa transversal e exploratória realizada por meio da aplicação de um questionário on-line com estudantes de uma instituição de ensino superior federal. A análise do conteúdo das respostas foi feita por meio de análise descritiva, análise estatística, categorização e nuvem de palavras. **Resultados**: obteve-se 83 questionários respondidos pelos estudantes. Os termos "barulho", "incômodo" e "som desagradável" foram utilizados para definir ruído, e "perda auditiva", "estresse", "desconcentração", "dor de cabeça", "zumbido" e "irritabilidade" para caracterizar as consequências à exposição ao ruído. Entre os discentes, 38,6% acreditam que a clínica-escola não é ruidosa, 36,1% não souberam informar e 25,3% referiram que o local era ruidoso por motivos relacionados à acústica da infraestrutura, quantidade de pessoas circulando no espaço e localização geográfica. **Conclusão:** apesar de a maior parte dos estudantes estarem cientes sobre os efeitos negativos à saúde da exposição ao ruído, verificou-se que eles vivenciam situações de risco dentro e fora do contexto universitário, reforçando a necessidade de ações de promoção à saúde auditiva e prevenção de agravos.

Palavras-chave: Ruído; Efeitos do Ruído; Estudantes de Ciências da Saúde; Compreensão.

Resumen

Introducción: La poluición sonora es un problema de salud pública y considerada la segunda causa de poluición en el mundo moderno. En el ambiente académico se pueden observar edificaciones que comprometen el confort acústico, lo que puede tener impactos negativos en los estudiantes y usuarios. **Objetivo:** analizar la comprensión de los estudiantes sobre el ruido y sus impactos y su presencia en una clínica escolar. **Métodos:** Investigación transversal y exploratoria, realizada mediante la aplicación de un cuestionario en línea con estudiantes universitarios de una institución educativa federal. El análisis de contenido de las respuestas se realizó mediante análisis descriptivo, análisis estadístico, categorización y nube de palabras. **Resultados:** 83 cuestionarios fueron respondidos por los estudiantes. Se utilizaron las palabras "ruido, molestia, sonido desagradable" para definir el ruido y "pérdida de audición, estrés, falta de concentración, dolor de cabeza, tinnitus e irritabilidad" para las consecuencias de la exposición al ruido. 38,6% creen que la clínica escuela no es ruidosa, 36,1% no supieron informar y 25,3% refirieron que el sitio era ruidoso, ruido éste justificado por: acústica de la infraestructura de la clínica, cantidad de personas que circulan en el espacio y ubicación geográfica. **Conclusión:** Aunque la mayoría de los estudiantes son conscientes de los efectos negativos para la salud de la exposición al ruido, se observó que experimentan situaciones de riesgo dentro y fuera del contexto universitario, lo que refuerza la necesidad de acciones para promover la salud auditiva y prevenir agravios.

Palabras clave: Ruido; Efectos del Ruido; Estudiantes del Área de la Salud; Comprensión.

Introduction

Noise pollution is a public health problem, being considered the second largest cause of pollution in the modern world, as well as one of the forms of pollution that most affects the population[1]. In contemporary society, noise is present in various environments and is generated by numerous factors, ranging from transportation, construction and industrial activities to those caused by human behavior itself[2].

In 2022, the World Health Organization (WHO) chose "To hear throughout your life, listen carefully" as the slogan for World Hearing Day. The slogan highlights the need to take care of our hearing in light of current living conditions, which are characterized by various negative impacts and damages caused by excessive noise exposure[3].

Noise is one of the leading causes of hearing loss. Although exposure to it can impair the hearing of people of any age, research shows that young people are increasingly at risk. In fact, the WHO estimates that 1.1 billion young people – aged 12 to 35 years – are at risk of developing hearing loss due to noise exposure[4]. In addition to the damage directly caused to auditory cells, it can also be responsible for causing tinnitus[5], that is, an auditory sensation without an external sound stimulus that can be experienced and lived by the individual as an unpleasant experience, possibly impacting quality of life[6].

It is known that a noisy environment can, in addition to possible impacts on the auditory health of individuals, lead to other consequences for general health: increased stress levels; irritability; emotional instability; headaches; anxiety; insomnia; fatigue; difficulty concentrating; intestinal disturbances; and cardiovascular impacts[7]. WHO associates the equivalent continuous sound level (Leq) with the physical consequences in people, finding that levels up to 50 dB(A) can cause disturbance, but with easy adaptation by the human body. However, starting at 55 dB(A), it can trigger mild stress[8]. In environments with levels reaching 70 dB(A), the wear is greater, with risks of cardiovascular and even cerebral damage[8]. Finally, in cases around 100 dB(A), auditory acuity may be compromised[8].

In Brazil, regulated by the Brazilian Association of Technical Standards (ABNT), Brazilian Standard (NBR) 10152[9] primarily aims to establish noise levels compatible with acoustic comfort in various environments. The defined limits for hospitals—apartment areas, wards, nurseries, and surgical centers—are 35 to 45 dB, and for schools—classrooms and laboratories—are 40 to 50 dB. According to the NBR, the lower value of the range indicates the sound level for acoustic comfort in the location; the upper value represents the acceptable sound intensity for that environment; and any value above the indicated limit is defined as acoustic discomfort, not necessarily representing a health risk.

Therefore, within a clinic school (CS), a place of care and health education, noise should be a point of attention. Studies in hospitals and health clinics demonstrate that the sound pressure levels in these spaces are constantly above the recommended levels and come from different sources[10]. Noise control in these locations should be considered one of the priorities for improving their environment[11] and ensuring that the university setting is not considered unhealthy[12].

Awareness must begin with the formation of the individual as a thinking being, enabling the development of responsible actions based on lived experiences in the community and individual reflection[13]. However, other institutional issues directly or indirectly interfere with what is offered as educational content. An example of this can be observed in buildings whose structures compromise acoustic insulation, one of the topics that motivated this study.

Thus, the objective of this research was to analyze undergraduate students' understanding of noise and its impacts, as well as the presence of noise in a clinic school of a federal public university.

Method

Study Design and Ethical Aspects

This was an exploratory, cross-sectional, prospective study with a quantitative and qualitative approach. It was approved by the Research Ethics Committee of a federal public university under number 5.211.709.

Sample Constitution and Inclusion Criteria

The sample consisted of students from the undergraduate courses in Physiotherapy, Speech-Language Pathology, Nutrition and Occupational

Therapy who attended the university's clinic school. They gave their consent after reading the Informed Consent Form. The study included any students who were regularly enrolled in the aforementioned courses, over 18 years old, and engaged in academic activities at the clinic school.

Procedures

The research was conducted through the self-completion of a questionnaire produced by the researchers in an online format, linked via the institutional email of the study subjects. The questionnaire was developed in response to the students' own demands during discussions in their professional development internships. After recognizing the need to address this topic, the responsible researchers created the questionnaire. It is not a validated instrument and the questions were created with the aim of understanding the students' responses for future improvements, adjustments, and solutions, both in their lives and in the spaces they frequent. The questionnaire, subdivided into two parts, consisted of open and closed questions: sociodemographic profile—composed of seven questions (Figure 1)—and perceptions of noise—with ten questions (Figure 2).

Individual Profile – Part 1	
Q1	Student ID number:
Q2	Birth date:
Q3	Gender (please select one): - Female - Male - Transgender - Non-binary - Genderqueer - Other - Prefer not to say
Q4	What course are you currently enrolled in?
Q5	Which semester are you in?
Q6	What types of extracurricular activities do you usually participate in? (You may select more than one) - Cultural activities - Sports activities - Religious activities - Political activities - Other: _____
Q7	If you are employed, describe what you do and your work environment. If not, please proceed to the next section.

Caption: Q = question; N.º = number

Figure 1. Questionnaire - part 1

Perceptions of Noise – Part 2	
We ask that you answer without consulting any external sources. Here, we would like to understand your existing knowledge about noise.	
Q1	What do you understand by the term 'noise'?
Q2	Do you think you and people around you are concerned about noise? (please select one) - Yes - No - Not sure
Q3	From a general health perspective, can a noisy environment cause any harm? If so, describe the possible consequences.
Q4	Have you ever experienced any discomfort related to noise? If so, describe the situation and the discomfort caused.
Q5	Do you believe that the CS – Clinic School is a noisy environment? (please select one) - Yes - No - Not sure
Q6	Justify your answer to the previous question (Q5).
Q7	If you consider the CS a noisy environment, have you thought about strategies to improve this situation? - Yes - No - I do not consider it a noisy environment
Q8	If you answered 'yes' to the previous question, describe the strategies you have thought of to reduce the noise in the CS.
Q9	Do you frequent (at least once a week) any environment that you consider noisy? If so, what are they and why do you consider them noisy? If not, simply respond 'no.'
Q10	Comments and suggestions

Caption: Q = question; CS = Clinic School

Figure 2. Questionnaire - part 2

In a previous investigation by the same research group of this study and as part of the Professional Performance Internship for students at the same university, noise measurements were taken in four marked locations within the CS with the highest circulation and occupancy of people: two points in the corridors, one point in the internship supervision room and one point at the reception. Noise measurement was conducted over four weeks by students who had been previously trained. Measurements were taken on three days of the week at 3:00 PM. The instruments used included: a sound level meter (Instrutherm brand, model DEC-460), two smartphones with different operating systems (iOS and Android) and a tablet (Android system). In all cases, the same measurement application, called Sound Meter, was used. The measurement locations were selected by the researchers themselves, as they were areas with the highest congregation of people and potential noise production[14]. For this research, the results used in the discussion section were those obtained by the sound level meter.

Data analysis

The quantitative data analysis was carried out by organizing spreadsheets in Microsoft Office Excel version 2016 and using the Jamovi software (Version 2.2). Statistical analysis was performed using SPSS Statistics software, version 28.0 (IBM Corp., Armonk, NY, USA). The significance level adopted was 5% ($p \leq 0.05$). The Kruskal-Wallis H test was used. This non-parametric test was chosen due to the ordinal qualitative nature of the variable related to the student's course period.

For the responses to the open-ended questions, content analysis was conducted as proposed by Bardin[15]: pre-analysis of the data, material exploration, treatment of the obtained results, and interpretation. During the pre-analysis stage, the responsible researchers held discussions and conducted floating readings of the data, organizing and preparing the materials. In the material exploration phase, the responses were coded into recording units according to the theme within the context unit and were subsequently categorized

to create semantic categories. Data treatment and interpretation constituted the final stage of content analysis. The results were inferred through the elements involved in the research—questionnaire structuring; questionnaire dissemination; study participants; researchers' subjectivities; and the responses themselves.

The use of content analysis for interpreting the open-ended questions of the questionnaire was chosen with the intention of forming codes and categories that were repeated in the responses, aiming to understand what was most recurrent for the students. After this content analysis process, the categories were used to create Word Clouds (WC). The free online application Wordclouds was used to create the WCs. WC is a graphical-visual data representation approach that shows the frequency of words in the text. The more a word appears, the more prominently it is represented. Words appear in various font sizes and different colors, indicating what is more and less relevant in the context[16]. This resource adds clarity and transparency in communicating ideas, revealing interesting patterns[17]. The WCs presented in the results section stem from a content analysis of the open-ended responses.

Results

To facilitate a better understanding of the results, they will be presented in two parts, in accordance with the structure of the questionnaire (Figure 1 and Figure 2).

Part 1: Individual Profile

A total of 83 questionnaires were completed, with respondents having an average age of 23 years, with a minimum age of 18 and a maximum age of 50. Regarding gender, 75.9% (62) of the sample identified as female, 21.7% (18) as male and 2.4% (2) preferred not to declare their gender.

Among the undergraduate courses involved, 4 students were from Physiotherapy, 4 from Nutrition, 5 from Occupational Therapy and 70 (84.3%) were from Speech-Language Pathology. The Speech-Language Pathology students, who made up the largest proportion of the sample, were from all nine periods of the course. The highest percentage of responses came from 7th-period students (21.7%; 18), followed by 5th-period students (18.1%; 15), and 8th-period students (15.7%; 13).

In terms of extracurricular activities, 24 individuals reported participating in religious activities, 18 in cultural activities, 7 in sports activities, 1 in political activities, and 4 reported not engaging in any extracurricular activities. Of the total sample, 64 students reported not working, while 19 reported performing various jobs, mainly in remote work settings.

Part 2: Perceptions of "Noise"

Figure 3 presents the WC resulting from the analysis of the students' responses regarding the definition of noise.

Caption: The words that appear more prominently are those that occurred more frequently; the less visible words are those that occurred less frequently.

Figure 3. Word cloud about the definition of the term 'noise' in students' understanding

Among the respondents, 47% (39) reported that neither they nor those around them are concerned about exposure to noise. Next, 39% (32) said they are concerned about this issue, while 15% (12) did not know how to respond. Based on the students' understanding, the possible consequences of exposure to noise, according to the sample, are shown in the WC below (Figure 4).

Caption: The words that appear more prominently are those that occurred more frequently; the less visible words are those that occurred less frequently.

Figure 4. Word cloud about the harms that noise can cause according to students' perception

In the sample universe, 71 individuals (85.6%) reported having experienced some type of discomfort due to this kind of exposure. The noisy situations that caused discomfort and the perceived sensations are shown in Figure 5. The types of sensations that this situation generated are shown in Figure 6.

Caption: The words that appear more prominently are those that occurred more frequently; the less visible words are those that occurred less frequently.

Figure 5. Noisy situations experienced by students

Caption: The words that appear more prominently are those that occurred more frequently; the less visible words are those that occurred less frequently.

Figure 6. Word cloud about the sensations experienced by students in noisy situations

Students reported frequenting the following noisy environments – at least once a week: means of transportation (18.10%); traffic (14.50%); church (14.50%); commercial establishments (7.20%); their own residence (7.20%); gym (6%); university (6%); health centers (3.60%); workplace (3.60%); bars and restaurants (2.40%); and indoor environments (1.20%). It should be noted that participants could refer to more than one environment.

Regarding the understanding of noise within the CS, it was observed that, of the total sample, 38.6% (32) believe it is not noisy; 36.1% (30) were unable to provide information – either they had not had the opportunity to attend or had been there only for a short period; and 25.3% (21) indicated that the location was noisy. Table 1 presents the distribution of the study sample according to perception of the noise in the CS and the course period.

Table 1. Comparison of students from different undergraduate semesters with different perceptions of noise in the clinic-school in 2022

Variable	Category	Perceptions of noise						Total		p
		No		Yes		Not sure				
		n	%	n	%	n	%	n	%	
Semester of the course	1	0	0,00	0	0,00	2	6,67	2	2,41	< 0,001*
	2	1	3,13	0	0,00	4	13,33	5	6,02	
	3	1	3,13	0	0,00	6	20,00	7	8,43	
	4	0	0,00	0	0,00	5	16,67	5	6,02	
	5	9	28,13	2	9,52	4	13,33	15	18,07	
	6	7	21,88	1	4,76	1	3,33	9	10,84	
	7	8	25,00	5	23,81	5	16,67	18	21,69	
	8	4	12,50	6	28,57	3	10,00	13	15,66	
	9	2	6,25	6	28,57	0	0,00	8	9,64	
	10	0	0,00	1	4,76	0	0,00	1	1,20	

H Test Kruskal-Wallis.
Caption 1: *: Statistically significant value at the 5% level ($p \leq 0.05$).

The analysis of the data revealed a statistically significant difference between groups with different perceptions of the noise in the CS regarding the course period. Post hoc analysis, conducted using the Dunn test with Bonferroni correction for multiple comparisons, showed that the group that perceived the CS as a noisy environment had a more advanced course period compared to the

group that did not perceive the CE as noisy ($p = 0.010$, $r = 0.402$) and compared to the group that did not know how to respond ($p < 0.001$, $r = 0.754$).

The association between the perception of noise in the CS and the course period was analyzed considering only "Yes" and "No" responses—excluding individuals who answered "I don't know"—using the Mann-Whitney U test. This non-parametric test was chosen due to the ordinal qualitative nature of the variable related to the period ($p < 0.001$). The effect size was measured using the r coefficient (0.477). The results indicate a statistically significant difference between groups, with those who consider the CS noisy having a higher occurrence of more advanced course periods compared to those who do not consider it noisy.

Individuals who believed the clinic was noisy justified the possibility of noise for three main reasons: the acoustics of the infrastructure (45.2%); the number of people circulating in the space (35.5%); and the geographical location (19.3%). These same students suggested strategies to minimize noise, which were grouped into two main categories: restructuring the physical space of the clinic school and/or raising awareness among its users—professionals, patients and others.

Discussion

The majority of the participants in the investigation were young adults, which corroborates the Higher Education Map released by the Sindicato das Mantenedoras de Ensino Superior (SEMESP) in 2021, indicating that the highest percentage of enrollments in Higher Education Institutions (HEI) are between 19 and 24 years old[18]. Although the study was disseminated throughout the clinic school and among the four courses that are part of the space, the students from Speech-Language Pathology were the most sensitized, likely due to their proximity to the subject. It is worth noting that it is a predominantly female course, which may explain the higher percentage of individuals of this gender in the sample. Additionally, the data shows that over 50% of HEI students are female[18].

The statements highlighted by the frequency of WC regarding the understanding of noise revealed terms that referred to very unpleasant sensory definitions, such as 'noise,' 'discomfort,' 'unpleasant sound,' and 'sound pollution.' It is understood that, although these terms relate to noise, the precise definition of the concept is weak. According to the definition, '[...] noise is an aperiodic acoustic signal, originating from the superposition of several vibration movements with different frequencies that have no relationship with each other'[19]. The concept of noise, on the other hand, involves individual singularities and the perception of the individual regarding that sound, meaning it depends on personal judgment. It is reiterated that, during health training, these distinctions should be addressed in order to expand students' knowledge and awareness of the correct terminologies and definitions of the concepts.

Both the consequences of noise exposure and the sensations it can provoke were primarily represented by terms such as 'headache,' 'distraction,' 'irritability,' 'stress,' and 'tinnitus.' These representations corroborate other studies that suggest the most prevalent effects perceived by participants as a result of noise exposure were stress and irritability[13,20]. Despite these results and nearly the entire sample reporting having experienced some discomfort caused by noise, a considerable percentage stated that they are not concerned about everyday exposure to it.

When asked to report experiences of noisy situations, the study participants highlighted responses such as 'traffic,' 'public transportation,' and 'church.' Especially regarding traffic, the data are consistent with the results of a study conducted in a municipality in the state of Paraná, which showed that noise from vehicle traffic was the main source of discomfort for the studied population[21]. Another study confirmed that the primary source of urban noise, both from a temporal and spatial perspective, is traffic[22].

Additionally, these data provided insights into the habits of students. Firstly, spending a considerable amount of time in traffic and public transportation, often under physically uncomfortable conditions, is a routine commonly experienced by Brazilian university students. For example, these individuals may go through one or more of the following situations: long hours and lengthy commutes standing on a bus, which may be at full capacity or not; traffic jams; concerns about pending tasks that need to be completed upon arrival, such as preparing meals for themselves and others; finishing coursework; studying for an exam; performing other household tasks; caring for a family member; among others. It is noteworthy that this

type of exposure was characterized by Berglund et al. as a factor of psychosocial stress[23], which is highly relevant for discussing this issue and for developing pertinent public policies.

Regarding the understanding of noise in the clinic school, the minority (25.3%) who considered it a noisy place attributed the problem to the acoustics of the infrastructure, the number of people circulating in the space, and the geographical location—factors that, in fact, motivated the production of this work. Despite this, noise measurements taken in the same CS show an average of 57.77 dB(A), which is higher than the levels recommended by the WHO[8] for health and education environments[9]. The minimum noise level measured with the Instrutherm sound level meter, model DEC-460, found in the CE was 52.60 dB(A) and the maximum was 83.8 dB(A)[14].

To minimize the potential impacts caused, the strategies suggested by participants relate to the physical restructuring of the clinic school space and/or raising awareness among its users. Other studies also highlight the importance of raising awareness as a measure to address exposure to noise, agreeing with this research[14,20,24,25], and emphasize the need for structural changes in the physical space[26,27].

As shown in Table 1, the focus was to understand the association between noise perception and the course period. Students in more advanced stages of their degree showed more consistent responses regarding whether they considered the CS a noisy environment or not. Notably, a significant number of students seemed unable to discern this aspect. Due to the Pedagogical Program of the Higher Education Institution's courses, early periods consist of basic and theoretical subjects whose classes take place in a different physical space, so beginners do not need to attend the CS as frequently as more advanced students. It was observed that these students had not yet taken courses and/or internships in this space and therefore had not established a regular attendance pattern to assess the noise and sound pollution present. Furthermore, it can be assumed that students in the early stages may not have a well-defined concept of noise and sound pollution, and as they advance in their degree, they consolidate this knowledge and are better able to understand it in the environments they frequent.

Although including students from early periods in this analysis reveals information about the lack of noise perception—through 'I don't know' responses—it is important to understand these data to emphasize the need for awareness and health education about sound pollution, noise, and its impacts from the early stages of the degree so that students can recognize it when in noisy environments. Additionally, the subsequent analysis with data from individuals who only responded 'Yes' or 'No,' excluding 'I don't know,' showed that the results remained consistent— the longer the course period, the stronger the association with noise perception.

It is important to note that some students began attending the CS during the pandemic, when in-person activities were suspended and/or resuming. Thus, it is assumed that the number of students who reported that the location is not noisy was justified by this fact. However, the intersection of this data with the majority's statement that they are not concerned about the noise and believe that those around them are also unconcerned is a reality that needs to be discussed among all those who frequent this and other academic health training environments.

One hypothesis for these results is that noise is so present in the daily lives of urban societies that individuals become accustomed to it and partly ignore it. Authors have also reported that, in certain situations, the circumstances generated by high modernity and the choice of its lifestyle are often not a choice but an imposition[28]. Research has inferred that, in addition to what was previously mentioned, people are aware of the presence of noise and its negative impacts but sometimes do not take action to minimize its causes and effects[29].

Perhaps for these reasons, it is partly difficult to control noise in certain environments like clinical settings, as despite the discomfort, we have the ability to gradually habituate to some noises, especially when we are focused on other tasks that require high levels of cortical activity—although noise generally disrupts cognitive activities.

According to the data collected and the analyses conducted, there is a need for intervention regarding environmental education on sound pollution and the impacts and consequences of high noise exposure. The speech-language pathologist is one of the professionals competent to address this issue and it should be part of the practice and knowledge area of speech-language pathology students during their training.

Health education should provide support for transforming professional practices to enable interventions that meet the needs of the population and the context in which the professional is situated. It is understood that, although the students participating in this research are aware of the negative effects of noise exposure, many continue to experience risk situations both within and outside the university context, including in the teaching-learning environment of a clinic school. By understanding these perceptions, measures should be adopted to promote awareness and a directed approach among students and those who frequent the CS, aiming to transform it and other locations into healthy environments. To achieve this, it is necessary to implement strategies to address and modify the situations of sound pollution to which individuals are constantly exposed.

It is known that a limitation of this study is the difficulty in asserting the real understanding of students, especially from other courses beyond Speech-Language Pathology, due to the low participation rate. However, it is emphasized that the information already collected should be expanded for further discussion within the academic scope. Changing individual behavior is desirable, as this process involves behavioral construction and transformation[30].

Thus, it is understood that the instrument used, being an unvalidated questionnaire, reflects the reality of students in a specific locality and time-space. Additionally, the fact that the sample is composed of students from all periods of the courses suggests a trend that those in more advanced periods report the CS as noisier than students in earlier periods, as veterans frequent the space more. This can be considered a bias, given that the inclusion criteria opted to include all students, regardless of the period.

Conclusion

It was possible to ascertain that university students believe that noise refers to 'noise,' 'discomfort,' and 'unpleasant sound,' and that exposure to it can lead to hearing loss, stress, distraction, headache, tinnitus, irritability, among other previously described consequences. Although they are aware of the harmful effects of sound pollution and noise exposure, it was observed that students constantly experience risk situations both within and outside the university context.

Regarding the clinic school, 38.6% of them believe it is not a noisy environment, 36.1% were unsure, and 25.3% reported that the place was noisy. The reported noise was attributed to the acoustics of the clinic's infrastructure, the number of people circulating in the space, and the geographical location.

It is concluded, therefore, that there is a need to adopt awareness and intervention measures regarding the negative impacts that exposure to noise and sound pollution can have on university students and the general population."

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