REVISTA CEFAC
SPEECH, LANGUAGE, HEARING SCIENCES AND EDUCATION JOURNAL
Rev. CEFAC. 2022;24(4):e4722 https://doi.org/10.1590/1982-0216/20222444722

Original articles

Audiologists' knowledge of and adherence to biosafety measures

Patrícia Brollo Duarte[1]
https://orcid.org/0000-0002-3613-5375

Aline Domingues Chaves Aita[2]
https://orcid.org/0000-0003-2943-602X

[1] Faculdade Nossa Senhora de Fátima, Caxias do Sul, Rio Grande do Sul, Brasil.
[2] Faculdade Nossa Senhora de Fátima, Curso de Fonoaudiologia, Caxias do Sul, Rio Grande do Sul, Brasil.

This study is a senior project in the Speech-Language-Hearing Sciences undergraduate program at Faculdade Nossa Senhora de Fátima, Caxias do Sul – Rio Grande do Sul – Brazil.

Conflict of interests: Nonexistent

Received on: August 22, 2022
Accepted on: October 31, 2022

Corresponding address:
Patrícia Brollo Duarte
Rua Independência, n° 252
CEP: 95250-000 - Antônio Prado,
Rio Grande do Sul, Brasil
E-mail: patriciaduarte123@hotmail.com

ABSTRACT

Purpose: to identify biosafety measures taken by audiologists and their perception of the risks to which they are exposed.

Methods: the sample comprised 63 speech-language-hearing therapists who work with clinical and occupational audiology in the state of Rio Grande do Sul, Brazil. The research was conducted online between April and May 2022 via Google Forms®, collecting data with the Audiology Biosafety Questionnaire proposed by Rocha et al. (2015).

Results: most professionals reported taking the following measures: washing hands before patient visits (86%), washing hands in-between patient visits (81%), using hand sanitizers (87.5%), wearing white coats that covered their clothes (87%) and keeping them buttoned up (79%), keeping nails clean and trimmed (97%), disinfecting and separating used equipment (94%), and organizing the environment (97%). However, 41% of interviewees left the workplace wearing personal protective equipment, and only 22% and 14%, respectively, wore gloves when performing otoscopy and auditory examinations.

Conclusion: research results show that most of the interviewed speech-language-hearing therapists who work in audiology know and practice the biosafety measures indicated in the existing norms.

Descriptors: Audiology; Occupational Exposure; Personal Protective Equipment; Speech, Language and Hearing Sciences; Occupational Risks

INTRODUCTION

According to Federal Law no. 8,080[1], health surveillance is the set of measures taken to eliminate, diminish, or prevent risks to health and intervene with health problems resulting from the environment, the production and circulation of goods, and health services. It includes the control of consumption goods (encompassing all stages and processes from production to consumption) and services directly or indirectly related to health.

In Brazil, Regulatory Norm no. 32 presents the basic guidelines for occupational health safety in healthcare establishments[2]. All healthcare settings pose risks of contamination, therefore, activities conducted in these places determine their contamination risk classification[3,4]. Preventive and control measures must be effective to prevent or minimize the risks of transmitting microorganisms during any health procedure[5,6].

Biosafety is an essential functional process in health services, comprising a set of measures taken to prevent, control, protect from, or eliminate risks inherent to research, production, teaching, technological development, and service activities that might interfere with or compromise the environment or people's quality of life and health[7].

Health professionals are responsible for health prevention and promotion, but they are not always aware of the importance of correct biosafety practices[8,9]. Hence, the occupational risks health professionals are exposed to must be addressed as early as the undergraduate programs, providing contact with study environments with potential risks – e.g., anatomy laboratories, hospitals, health centers, and outpatient centers[10].

In this regard, some authors have pointed out:

> Given their diverse and multiple interactions (patients, diseases, health and administration professionals, visitors, and the environment itself), hospitals pose risks of disease transmission. Speech-language-hearing therapy can subject both patients and professionals to such risks because of the exposure to various microorganisms, due to contact with the oral, nasal, and auditory mucosa, saliva, and blood[11].

Direct and indirect are two forms of infection:

> Infections transmit microorganisms in two ways: directly and indirectly. Direct transmission occurs especially (but not exclusively) between health professionals and patients – for instance, from exposure to blood, body fluids, and airways. Indirect transmission involves vectors (small animals, such as ants), objects (contaminated instruments), and even the air[12].

Thus, the following standard preventive measures have been stipulated: health professional immunization, hand sanitation, personal protective equipment (PPE) use, adequate management of health service residues, and surface and equipment processing[13].

In clinical practice, speech-language-hearing (SLH) therapists must effectively follow biosafety measures to minimize the risks to patients, themselves, and the team, as direct contact with possibly infected patients and/or settings poses a potential risk of disseminating microorganisms[8].

During procedures inherent to their clinical practice, audiologists use and reuse equipment such as specula, probes, and earphones in many patients. These procedures may pose a risk of contamination and transmission of various diseases, including COVID-19, to both patients and SLH therapists – characterizing a high occupational risk to them. Hence, regardless of proven or suspected diseases, audiologists must take preventive measures[5,14-16].

In audiological clinical practice, SLH therapists are constantly exposed to the risks of disease contamination. Asymptomatic infected patients can often go unnoticed, possibly causing mass contamination, especially in places where due biosafety measures are not taken[3]. Thus, the concept of biosafety in this paper refers to infection control measures taken by audiologists.

Particularly due to the health crisis caused by the worldwide SARS-CoV-2 pandemic, this project is important to assess the main biosafety measures taken by SLH therapists who work with audiology.

This study aimed at identifying the biosafety practices adopted by audiologists and their perception of the risks to which they are exposed.

METHODS

This quantitative cross-sectional research had been previously approved by the Research Ethics Committee of *Faculdade Fátima*, Brazil, under number 5.290.532 on March 14, 2022.

Professionals who met the following inclusion criteria participated in this study: SLH therapists working in clinical and occupational audiology in the state of Rio

Grande do Sul, Brazil, who accepted to participate in the research by signing an informed consent form.

Data were collected between April and May 2022 by administering the online Audiology Biosafety Questionnaire (Figure 1)[8] in Google Forms®.

The questionnaire had 27 multiple-choice questions on audiology biosafety, divided into the following items: hand sanitation; PPE and health professionals; equipment organization and sanitation; and environment organization and sanitation. SLH therapists should check "Yes" for measures they took in their activities; "No" for those they did not take; "Sometimes" for those occasionally taken; or "Not applicable" for biosafety measures not specifically related to their practice.

For descriptive analysis, data were grouped, ordered, and transferred to an Excel® spreadsheet. The study also made frequency distribution of the categorical variables and analyzed the measures of central tendency and dispersion of continuous variables. Data were previously verified; inconsistent and excluded data were properly treated.

AUDIOLOGY BIOSAFETY QUESTIONNAIRE

Name: (optional field) _____
Sex: _____ Age: _____
Time since graduation: _____
Do you have any specialization: ( ) Yes ( ) No ( ) Completed ( ) Ongoing. In what area? _____

Hand sanitation

1. Do hand-hygiene sinks have paper towels, liquid soap, and trash bins whose lids are opened with the feet or elbows?
( ) yes ( ) no

2. Do you remove your rings, bracelets, and watch before washing your hands?
( ) yes ( ) no

3. Do you wash your hands before attending to each patient?
( ) yes ( ) no ( ) sometimes

4. Do you wash your hands in-between patient visits?
( ) yes ( ) no ( ) sometimes

5. Do you use hand sanitizer?
( ) yes ( ) no ( ) sometimes

Personal protective equipment and health professionals

6. Do you wear gloves when performing an otoscopy?
( ) yes ( ) no ( ) sometimes

7. Do you wear gloves when performing auditory examinations (acoustic immittance, pure-tone audiometry)?
( ) yes ( ) no ( ) sometimes

8. Do you wear a white coat when attending to patients?
( ) yes ( ) no ( ) sometimes

9. Does your white coat cover your clothing (high collar and long sleeves)?
( ) yes ( ) no

10. Do you keep your white coat always buttoned up?
( ) yes ( ) no

11. Do you keep your hair tied back when attending to patients?
( ) yes ( ) no ( ) not applicable

12. Do you keep your nails clean and trimmed?
( ) yes ( ) no

13. Have you been instructed on how to use personal protective equipment?
( ) yes ( ) no
14. Do you take with you the personal protective equipment used at work when you leave the workplace (e.g., white coat)?
( ) yes ( ) no ( ) sometimes
Equipment organization and sanitation
15. Are earphones and vibrators used in audiometric examinations cleaned or disinfected in-between patient visits?
( ) yes ( ) no
16. Do you have the equipment (plugs, earphones) used with patients disinfected?
( ) yes ( ) no
17. Is equipment (plugs, specula) used in patient visits stored in an adequate place, separate from other materials?
( ) yes ( ) no
18. After it is cleaned, is equipment (plugs, specula) stored in containers with lids and identified with its name and disinfection date?
( ) yes ( ) no
19. Is the sound booth covered with washable, easily sanitized insulation material?
( ) yes ( ) no
Environment organization and sanitation
20. Do you smoke in the workplace?
( ) yes ( ) no
21. Do you wear adornments such as earrings, bracelets, or necklaces in the workplace?
( ) yes ( ) no
22. Do you handle contact lenses in the workplace?
( ) yes ( ) no
23. Do you eat and drink in the workplace?
( ) yes ( ) no
24. Does the professional keep the environment (office, waiting room) organized?
( ) yes ( ) no
25. Is there any appropriate place to store food and personal belongings?
( ) yes ( ) no
26. Are there instructions on how to use equipment in the clinic?
( ) yes ( ) no
27. Are the walls, floors, and ceiling covered with material that can be washed and disinfected?
( ) yes ( ) no

Figure 1. Audiology Biosafety Questionnaire[7]

RESULTS

The sample study comprised 63 female adult SLH therapists, aged 23 to 61 years, with a median of 37.3 years (SD ± 9.7 years). Interviewees had been working in the profession for a mean of 12.9 years (a minimum of 1 month and a maximum of 31 years [SD ± 9.6 years]). The sample's training and degrees are shown in Figure 2.

Workplace characteristics regarding biosafety norms are described in Table 1.

Table 2 presents the relationship between knowledge, self-care, and practices in relation to their knowledge of biosafety norms.

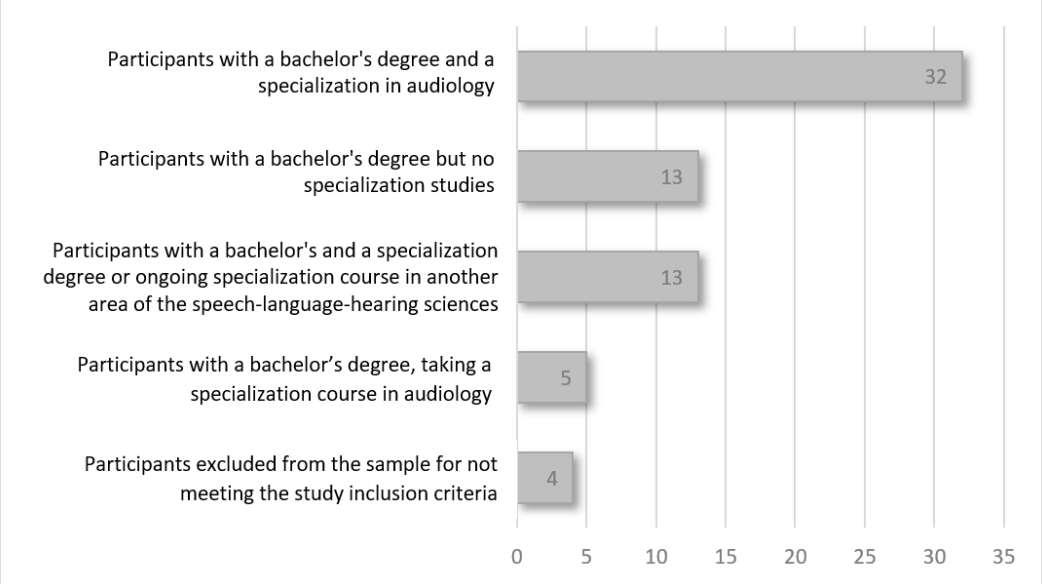

Figure 2. Sample distribution in absolute numbers regarding their training and degrees

Table 1. Sample distribution in absolute and relative values of workplace characteristics regarding biosafety norms

BIOSAFETY PRACTICES	Yes		No		Sometimes		Not applicable	
	N	%	N	%	N	%	N	%
Are there adequate sinks (ANVISA norms)?	58	92	5	8	-	-	-	-
Are earphones and vibrators sanitized in-between patient visits?	48	76	15	24	-	-	-	-
Do you have used equipment disinfected?	59	94	4	6	-	-	-	-
Do you separate used equipment from other pieces and store it in adequate places?	61	97	2	3	-	-	-	-
Is clean equipment adequately stored with its disinfection date?	27	43	36	57	-	-	-	-
Is the sound booth easily sanitized?	32	51	31	49	-	-	-	-
Can wall, floor, and ceiling coverings be washed and disinfected?	50	79	13	21	-	-	-	-
Are there work equipment use instructions?	43	68	20	32	-	-	-	-
Does the professional keep the environment organized?	61	97	2	3	-	-	-	-
Is there an appropriate place to store personal belongings and food?	57	90.5	6	9.5	-	-	-	-

Captions: N = number of professionals; % = percentage of professionals

Table 2. Sample distribution in absolute and relative values of personal care regarding biosafety norms

BIOSAFETY PRACTICES	Yes		No		Sometimes		Not applicable	
	N	%	N	%	N	%	N	%
Do you remove adornments before washing your hands?	36	57	27	43	-	-	-	-
Do you wash your hands before patient visits?	54	86	1	1.5	8	12.5	-	-
Do you wash your hands in-between patient visits?	51	81	1	1.5	11	17.5	-	-
Do you use hand sanitizer?	55	87.5	2	3	6	9.5	-	-
Do you wear gloves to perform otoscopy?	14	22	44	70	5	8	-	-
Do you wear gloves to perform auditory examinations?	9	14	51	81	3	5	-	-
Have you been instructed on PPE use?	47	75	16	25	-	-	-	-
Do you wear a white coat during patient visits?	59	94	2	3	2	3	-	-
Does your white coat cover your clothing?	55	87.5	8	12.5	-	-	-	-
Do you keep your white coat always buttoned up?	50	79	13	21	-	-	-	-
Do you take PPE with you when you leave work?	26	41	37	59	-	-	-	-
Do you keep your hair tied back during patient visits?	41	66	16	26	-	-	5	8
Do you keep your nails clean and trimmed?	61	97	2	3	-	-	-	-
Do you wear adornments (e.g., earrings and bracelets) in the workplace?	46	73	17	27	-	-	-	-
Do you smoke in the workplace?	-	-	63	100	-	-	-	-
Do you handle contact lenses in the workplace?	-	-	63	100	-	-	-	-
Do you eat and drink in the workplace?	22	34	41	66	-	-	-	-

Captions: N = number of professionals; % = percentage of professionals; PPE = personal protective equipment

DISCUSSION

According to pertaining information in the literature, which is described throughout the discussion, it can be stated that SLH therapists have many practice possibilities other than those strictly related to the workplace, as various materials and procedures are used. In other words, every professional must know the care they need to take for their and their patients' health safety[17].

Most articles found[8,10,18-20] indicate that professionals follow biosafety measures. However, some points should be addressed based on their answers in this and other studies.

Regarding workplace characteristics, when asked whether they had adequate sinks, most SLH therapists answered their workplaces had sinks that met recommendations by the National Health Surveillance Agency (ANVISA), with disposable paper towels, liquid soap, and trash bins whose lid was opened with the feet or elbows[21].

Audiological examinations are made with earphones, vibrators, electrodes, irrigation cannula, specula, and plugs that can be contaminated by contact with the patient's skin. Cerumen can also be an infectious substance[17,22]. Most professionals in this study reported that earphones and bone vibrators are sanitized after each patient visit. This result differs from those found in a similar study in audiologists, which demonstrated that most participating professionals reported not cleaning earphones and bone vibrators after every patient visit[8]. The findings in the present study may be related to increased care and standard preventive measures due to circumstances imposed by the SARS-CoV-2 health crisis.

Equipment used in audiological clinical practice must be sanitized and sterilized; if this is not possible, high-level disinfection must be used[3]. Before sanitizing the materials, they must be first cleaned, removing all dirt[23]. In these procedures, professionals must follow biosafety recommendations and techniques for SLH therapists[24]. RDC Resolution no. 15/2012 defines health product processing as the "set of measures taken to pre-clean, receive, clean, dry, assess the integrity and functioning, prepare, disinfect or sterilize, store, and distribute (health products) to consuming units"; hence, stages before sterilization, such as cleaning, must also be validated[25]. Most professionals in this study have their equipment disinfected and stored in appropriate separate places. However, only part of the sample stated that the equipment is properly stored with the disinfection date.

More than half the sample indicated that the sound booth insulation material is easily sanitized. This result

differs from those presented in a study published in 2015, in which most interviewees reported that the insulation material in the sound booths was not easily sanitized[8]. Norms indicate that such material must ensure high sound absorption while maintaining it routinely cleaned and disinfected[8].

Care must be taken with the environment in general, which must be always clean and sanitized to remove dirt and microorganisms that might be transmitted by direct contact or air-suspended dirt[26,27]. Most interviewees in this study reported working in places that meet these recommendations, as their walls, floors, and ceiling are covered with material that can be washed and disinfected. Moreover, almost all interviewees reported they keep their workplace always organized.

Most of the sample reported their workplace meets the norms regarding instructions and recommendations on the use of work equipment and the availability of a proper place to store personal belongings and food.

Adornments, however, are worn by most interviewees, whereas only a minority reported not wearing them. A little more than half the sample said they remove adornments before washing and sanitizing their hands, although the literature recommends removing them during patient visits due to accumulated microorganisms, which pose a risk of cross-contamination[28,29]. This study found that most interviewed professionals did not follow this recommendation.

Hand sanitation is one of the most important and basic standard preventive measures to avoid transmitting infections[21,30].

Hence, the following sanitation method has been determined:

> The water faucet should be preferably opened without directly using the hands (using the elbows, feet, or sensors, instead). Then, wash them from your fingers to the elbows with running water and liquid soap. Rub your hands for about 30 seconds. Rub palms together, then one palm against the back of the other hand; rub between the fingers; rub the thumbs; rub the middle and point of the fingers, the nails, and the wrists. Lastly, dry them with a disposable paper towel. In the following two conditions, 70% alcohol may be used: when dirt in these areas is not visible and between simple procedures, with no exposure at all to any organic matter. Alcohol use should follow the same procedure of washing hands with running water, except for the physical peculiarities of each product. Towels should not be used in simple washing because their characteristics can cause cross-infection[13].

Most interviewees reported they wash their hands before and in between patient visits. The hands can also be sanitized during visits, in front of patients, demonstrating the professional's care for them and the importance of this practice. However, the results of research in professionals in various areas of SLH therapy show that interviewees do not wash their hands during visits, while some reported they do not wash them in front of patients[18]. It is important to point out the importance of washing not only the hands but also the forearms – which, according to other studies, most interviewed professionals do not do at any moment[13,17,18]. Hand sanitizers can also be used as a complement after washing them or on occasion[24]. In this study, most participants used hand sanitizers, but it must be highlighted that the main hand sanitation method should be washing them with water and soap[8].

Only a small part of the sample reported wearing gloves during audiological examinations and otoscopies. Nevertheless, the literature indicates that gloves should always be worn when there is a possibility of contact with blood, saliva, mucosa, or contaminated surfaces and when equipment such as specula and plugs are handled. Non-sterile gloves are indicated for examinations and other non-critical procedures[3,31,32]. They must be changed immediately after each patient and must not be used to handle any other object not related to the treatment[24].

According to Regulatory Norm no. 32[2], personal protective measures are those used by workers to protect them from risks or threats to their safety and health in the workplace. In outpatient clinical practice, SLH therapists must use adequate PPE[3,33,34]. Most subjects in the sample reported wearing white coats that covered their clothes and were always buttoned up during visits, which corroborates recommendations in the literature[32]. However, part of the interviewees usually left the workplace wearing white coats. The literature recommends that such coats be preferably white (to make dirt more visible), for individual use, and worn only in the workplace. Also, after their use, they must be removed still in the workplace, placed inside out in a plastic bag, and taken to be cleaned or disposed of[2,24,28,30,35].

Most interviewed professionals reported taking biosafety measures involving their habits (e.g., tying back their hair and keeping nails trimmed and clean) –

which corroborates the literature that highlights that long hair should be tied back while in the workplace. This measure prevents the professional's hair from being contaminated with secretion, aerosol, and products and avoids accidents such as hair falling during visits[13,17].

None of the professionals in the study sample smoked or wore or handled contact lenses in the workplace, following recommendations established by Regulatory Norm no. 32[2]. On the other hand, some participants reported eating and drinking in the workplace – which, as well as storing food in inappropriate places, is prohibited by Regulatory Norm no. 32[2].

Only a little more than half of the SLH therapists in the sample had been adequately instructed on PPE use; this index is considered low in contrast with the norms. According to ANVISA Technical Note no. 4, all health professionals must be trained on the correct and safe PPE use[36]. SLH professionals must be trained on when, how, and which PPE they should use and be familiarized with the guidelines and procedures on how to adequately and safely dispose of, disinfect, wear, and remove them to avoid possible contaminations[5].

The above observations lead to questions on how effectively biosafety norms are being informed. Students must be efficiently taught these instructions to become professionals committed to keeping them. Thus, both clients and professionals will be duly protected and informed about these practices. Professionals must also be attentive to updates on biosafety norms, as new great challenges arise every day[28,37].

A study conducted between May and July 2010 in SLH therapists who worked in different areas of the SLH sciences concluded that most professionals were familiar with and practiced biosafety norms and personal protective measures. However, they did not habitually keep all recommendations – only 4% (n = 100) followed and practiced biosafety norms satisfactorily[18]. In another study, conducted in the municipalities of Belo Horizonte and Contagem, the authors verified that most biosafety practices were followed by SLH therapists working in audiology. However, the results pointed to the need for the professionals' greater adherence to biosafety measures[8].

A study conducted in a public general hospital of the Federal District of Brazil aimed to discuss the challenges of hospital infection prevention and control at the institutional level. It verified that all professionals directly assisting patients needed to adhere to PPE for their mutual protection, diminishing the occupational risks inherent to health settings[38]. The study also listed occupational risks posed to SLH professionals who work in Extended Family Health Care Centers and demonstrated that most professionals knew little about these occupational risks, making them even more vulnerable to work-related diseases[39].

The present study observed that most interviewed SLH therapists know and practice biosafety measures. The improved practice of such measures in comparison with similar studies is believed to be directly correlated with the care and attention imposed by the SARS-CoV-2 pandemic, as audiological procedures pose a risk of COVID-19 transmission. However, some professionals do not correctly and effectively incorporate these practices into their routine attention to patients. It is highly important to give biosafety instructions effectively and correctly to ensure the professionals' greater commitment and attention to their practice, resulting in protection for them and their patients[40].

This study will hopefully lead participating professionals and those who have access to it to reflect on the topic and improve their biosafety practices, which must be fully adopted and practiced.

Given the experience of one of the greatest health crises caused by the COVID-19 pandemic, biosafety issues stood out as an essential topic in the training of every health professional. Hence, they must be instructed on biosafety norms regardless of the area in which they work, to improve attention and provide greater health and safety to both the professionals and the population.

Further studies are needed to verify the effectiveness of the biosafety measures routinely taken by SLH therapists who work in audiology and other areas.

CONCLUSION

The results of this research indicate that most interviewed SLH therapists who work in audiology are familiar with and practice the biosafety measures indicated in the existing norms. However, the data also point to the need for further instructions and greater adherence to these norms, as some simple actions – for instance, wearing adornments during patient visits and not removing them to correctly wash the hands – are sometimes neglected or not effectively practiced.

REFERENCES

1. Brasil. Casa Civil. Lei nº 8.080, de 19 de setembro de 1990. Brasília, 1990.
2. Brasil. Ministério do Trabalho e Emprego. NR 32 – segurança e Saúde no trabalho em Serviços de Saúde. Brasília, 2005.
3. Brasil. Conselho Federal de Fonoaudiologia. Medidas de controle de infecção para Fonoaudiólogo: Manual de Biossegurança. 2ª Edição Revisada E Ampliada. Brasília, 2020.
4. Garcez GO, Tavares ER, Bernardes LLP, Dutra PVR, Valle OS, Álvares ACM. Use of PPE by primary care health professionals in a municipality of Goiás. REVISA. 2019;8(4):418-26.
5. Lima TRCM, Simões SM, Taguchi CK, Araújo BCL. Safe practice of audiologists during the SARS-CoV-2 pandemic in Brazil. Audiol Commun Research. 2020;25:e2369.
6. Speri MR, Araújo FCM, Pontes MP, Silva JF. Biosafety materials in audiological basic assessment: comparative study between the use of disposable earphone protector and the use of polyvinyl chloride (PVC). Distúrb Comum. 2017;29(2):292-301.
7. Teixeira P, Valle S. Biossegurança: uma abordagem multidisciplinar. 2. Ed. Rio de Janeiro: Fiocruz, 2012.
8. Rocha APF, Rezende BA, Lima FAF, Borges MGS, Oliveira RC, Santos JN. Biosecurity measures adopted by professionals working in audiology. Rev. CEFAC. 2015;17(Suppl 1):96-106.
9. Duarte EC, Vasconcelos KA. Biossegurança fonoaudiológica hospitalar. Revista Digital Acadêmica CREFONO 1. 2017; 3ª ed.
10. Neto JAC, Lima MG, Santos JLCT, Costa LA, Estevanin GM, Freire MR et al. Conhecimento e adesão às práticas de biossegurança entre estudantes da área da saúde. BJSCR. 2018;21(2):82-7.
11. Tipple AFV, Souza CP, Tanigute CC. Biossegurança em fonoaudiologia. In: Oliveira ST, organizadora. Fonoaudiologia hospitalar, São Paulo: Lovise, 2003.
12. Oliveira AC, Damasceno QS. Surfaces of the hospital environment as possible deposits of resistant bacteria: a review. Rev Esc Enferm USP. 2010;44(4):1112-7.
13. Brasil. Conselho Federal de Fonoaudiologia. Medidas de controle de infecção para Fonoaudiólogos - Manual de Biossegurança. 8º Colegiado. Brasília, 2007.
14. Pradhan D, Biswasroy P, Kumar Naik P, Ghosh G, Rath G. A review of current interventions for COVID-19 prevention. Arch Med Res. 2020;51(5):363-74.
15. Tipple AFV, Aguliari HT, Souza ACS, Pereira MS, Mendonça ACC, Siveira C. Equipamentos de proteção em centros de materiais e esterilização: Disponibilidade, uso e fatores intervenientes à adesão. Cienc Cuid Saúde. 2007;6(4):441-8.
16. Rezende KCAD, Tipple AFV, Siqueira KM, Alves SB, Salgado TA, Pereira MS. Higienização das mãos e uso de equipamentos de proteção pessoal. Cienc Cuid Saude. 2012;11(2):343-51.
17. Mancini PC, Teixeira LC, Resende LM, Gomes AM, Vicente LCC, Oliveira PM. Medidas de biossegurança em audiologia. Rev. CEFAC. 2008;10(4):603-10.
18. Albuquerque MA, Bernardo VRS, Silva LO, Nagib LC, Frota S. Biosafety in Speech, Language and Hearing Sciences. Rev. CEFAC. 2013;15(5):1088-97.
19. Santos JN, Fernandes CF, Gil MP, Eugênio ML, Mancini PC. Condutas de Biossegurança em ambulatório de Fonoaudiologia da Rede SUS. Distúrb. Comum. 2014;26(1):42-9.
20. Silva GS, Almeida AJ, Paula VS, Villar LM. Conhecimento e utilização de medidas de precaução-padrão por profissionais de saúde. Esc Anna Nery. 2012;16 (1):103-10.
21. Brasil. Agência Nacional de Vigilância Sanitária – ANVISA. Segurança do paciente – Higienização das mãos. Brasília, 2009.
22. Ahmad N, Etheridge C, Farrington M, Baguley DM. Prospective study of the microbiological flora of hearing aid moulds and the efficacy of current cleaning techniques. J Laryngol Otol. 2007;121(2):110-3.
23. Vasconcelos K, Almeida BPB, Barreto SS. COVID-19 prevention strategies during the return to activities in a speech therapy teaching clinic. CoDAS. 2021;33(6):1-7.
24. Canto G, Fernandes C. Biossegurança na clínica fonoaudiológica. Salvador, BA: Editora Mente Aberta, 2019.

25. Brasil. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. Resolução - RDC Nº 15, de 15 de março de 2012. Brasília, 2012.
26. Oppermann CM, Pires LC. Manual de biossegurança para serviços de saúde. Porto Alegre: PMPA/SMS/CGVS, 2003.
27. Rossi D, Devienne KF, Raddi MSG. Influência de fluídos biológicos na sobrevivência de staphylococcus aureus sobre diferentes superfícies secas. Rev. Ciênc Farm Básica Apl. 2008;29(2):209-12.
28. Bacha SMC, Gíglio VP, Rízpoli CFM, Brasil MLR. Biossegurança em Fonoaudiologia. Pulso Editorial; 2005.
29. Scheidt KLS, Carvalho M. Avaliação prática da lavagem das mãos pelos profissionais de saúde em atividades lúdico-educativas. Rev. Enfermagem UERJ. 2006;14(2) 221-5.
30. Panhotra BR, Saxena AK, Al-Mulhim AS. Contamination of patients' files in intensive care units: an indication of strict handwashing after entering case notes. Am J Infect Control. 2005;33(7):398-401.
31. Carvalho CMRS, Madeira MZA, Tapety FI, Alves ELM, Martins MCC, Brito JNPO. Aspectos de biossegurança relacionados ao uso do jaleco pelos profissionais de saúde: uma revisão de literatura. Texto Contexto Enferm. 2009;18(2):355-60.
32. Gonçales ES, Godoy SAL, Tripodi J, organizadores. Manual de biossegurança. 2. Ed. Bauru: Faculdade de Odontologia de Bauru, 2014.
33. Caixeta RB, Barbosa-Branco A. Acidente de trabalho, com material biológico, em profissionais de saúde de hospitais públicos do Distrito Federal, Brasil, 2002/2003. Cad. Saúde Pública. 2005;21(3):737-46.
34. Wang J, Liu F, Tan JBX, Harbarth S, Pittet D, Zingg W. Implementation of infection prevention and control in acute care hospitals in Mainland China - a systematic review. Antimicrob Resist Infect Control. 2019;8:32.
35. Souza ACS, Silva CF, Tipple AFV, Santos SLV, Neves HCC. O uso de equipamento de proteção individual entre graduandos de cursos da área da saúde e contribuição das instituições formadoras. Cienc Cuid Saúde. 2008;7(1):27-36.
36. Brasil. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. Nota Técnica GVIMS/GGTES/ ANVISA nº 04/2020. Brasília, 2020.
37. Andrade AC, Sanna MC. Ensino de biossegurança na graduação de enfermagem: uma revisão da literatura. Rev Bras Enferm. 2007;60(5):569-72.
38. Souza LP. Os desafios na prevenção e controle de infecção hospitalar a âmbito institucional: uma discussão a partir da análise do cenário de uma instituição de saúde brasileira. [monography]. Brasília (DF): Graduação em Saúde Coletiva da Faculdade de Ceilândia da Universidade de Brasília, 2014.
39. Braga BAC, Oliveira DA, Nóbrega AQC, Oliveira LF, Lucena BTL, Trigueiro JS. Riscos ocupacionais da prática fonoaudiológica na Atenção Básica. R bras ci Saúde. 2019;(Suplemento):41-52.
40. Santos JLG, Vieira M, Assuiti LFC, Gomes D, Meirelles BHS, Santos SMA. Risco e vulnerabilidade nas práticas dos profissionais de saúde. Rev Gaúcha Enferm. 2012;33(2):205-12.