https://doi.org/10.23925/2176-2724.2022v34i2e54773

The impact of the measures by the reference centers in worker's health on the compulsory notification nihl data in the Brazilian Federal District: a qualitative study

Impacto das ações do centro de referência em saúde do trabalhador nos dados de notificação compulsória de pair no Distrito Federal: um estudo qualitativo

Impacto de las acciones del centro de referencia de salud del trabajador en los datos de notificación obligatoria de pair en el Distrito Federal: un estudio cualitativo

Rayane da Silva Santiago Lima[*]
Giovanna de Sabóia Bastos[**]
Kelly Cristianne Barbalho Moreira[**]
Vanessa de Oliveira Martins-Reis[*]

Abstract

Introduction: Noise-Induced Hearing Loss (NIHL) is a hearing impairment that affects workers exposed to loud noises and is one of the conditions that must be reported to the Brazilian Disease Reporting Information System (SINAN). **Objective:** To analyze the impact of the measures developed by the Reference Centers in Workers' Health (CEREST-DF) in relation to NIHL notifications in the Brazilian

*Universidade de Brasília (UnB), Faculdade de Ceilândia (FCE), Curso de Fonoaudiologia. Brasília, DF, Brazil.
**Secretaria do Estado de Saúde GDF/CEREST-DF, Brasília, DF, Brazil.

Authors' contributions:
RSSL: was responsible for the data collection and tabulation, data analysis, and manuscript writing.
GSB: was responsible for the study outline and overall supervision of the stages of study conduction, data analysis, review of Scientific writing, and research advisor.
KCBM: was responsible for the data collection and tabulation, data analysis, and manuscript review.
VOMR: was responsible for the study outline and overall supervision of the stages of study conduction, data analysis, review of Scientific writing, and research advisor.

Correspondence email address: Giovanna de Sabóia Bastos - giovannasaboiabastos@gmail.com
Received: 29/06/2021
Accepted: 19/04/2022

Federal District. **Methods:** A longitudinal, retrospective study was carried out based on the analysis of secondary data of NIHL notifications from SINAN-DF. Since its implementation. CEREST-DF reports were collected on the measures developed and analysis of CEREST documents looking for measures that were carried out with NIHL and the effect they caused. **Results:** Utilizing educational measures such as projects, lectures, active search, among others CEREST carries out health education, and to target audiences, there was a noticeable increase in notifications in the same periods of these measures being carried out with employees and employers. In addition, a speech therapist was hired by the CEREST team what also helped to increase these numbers, since speech therapists are professionals involved in the health of hearing. **Conclusion:** This study made it possible to see that the measures carried out by CEREST are reflected in the number of NIHL notifications in SINAN which helped to reduce under-reporting.

Keywords: Occupational health; Hearing Loss, Noise-Induced; Surveillance of the Workers Health; Health Information Systems; Occupational Accidents Registry; Disease Notification

Resumo

Introdução: A Perda Auditiva Induzida por Ruído (PAIR) é um agravo que acomete os trabalhadores expostos a ruídos e está entre os agravos que devem ser notificados no Sistema de Informação de Agravos de Notificação (SINAN). **Objetivo:** Analisar o impacto das ações desenvolvidas pelo Centro de Referência em Saúde do Trabalhador (CEREST-DF) em relação às notificações de PAIR no Distrito Federal. **Métodos:** Foi realizado um estudo longitudinal, retrospectivo com base na análise de dados secundários de notificações de PAIR do SINAN-DF, desde sua implementação; foram levantados relatórios dos CEREST-DF sobre as ações desenvolvidas; e análise de documentos dos CEREST procurando pelas ações que foram realizadas sobre PAIR e o impacto que causaram. **Resultados**: utilizando ações, como: projetos, palestras, busca-ativa, entre outros, o CEREST realiza a prática da educação em saúde, e, com o conhecimento fornecido ao público-alvo, é perceptível o aumento de notificações nos mesmos períodos de realização das ações com os trabalhadores e empregadores. Além disso, a contratação de fonoaudiólogo para a equipe do CEREST também eleva estes números, pois é o profissional envolvido na saúde auditiva de modo geral. **Conclusão:** A partir deste estudo foi possível observar que as ações do CEREST se refletem no número de notificações de PAIR no SINAN, reduzindo a subnotificação.

Palavras-chave: Saúde do Trabalhador; Perda Auditiva Provocada por Ruído; Vigilância em Saúde do Trabalhador; Sistemas de Informação em Saúde; Notificação de Acidentes de Trabalho; Notificação de Doenças

Resumen

Introducción: La Pérdida Auditiva Inducida por Ruido (PAIR) es un problema que afecta a los trabajadores expuestos al ruido y se encuentra entre los problemas que deben ser reportados en el Sistema de Informação de Agravos de Notificação (SINAN; Sistema de Información Sanitaria Notificable).**Objetivo:**Analizar si las acciones desarrolladas por el Centro de Referência em Saúde do Trabalhador do Distrito Federal (CEREST-DF; Centro de Referencia de Salud Ocupacional) reflejan en el número de notificaciones de PAIR en el DF. **Métodos:**Se realizó un estudio longitudinal, retrospectivo, basado en el análisis de datos secundarios de notificaciones de PAIR del SINAN-DF, desde su implementación; Se recopilaron informes de CEREST-DF sobre las acciones desarrolladas; y análisis de documentos de CEREST buscando las acciones que se tomaron sobre PAIR y el impacto que causaron. **Resultados**: Utilizando acciones como: proyectos, conferencias, búsqueda activa, entre otras, CEREST realiza la práctica de educación en salud, y, con el conocimiento proporcionado al público objetivo, se nota el incremento de notificaciones en los mismos períodos de acciones con trabajadores y empleadores. Además, la contratación de un (a) logopeda para el equipo de CEREST también eleva estos números, ya que éste (ésta) es el (la) profesional relacionado (a) con la salud auditiva en general. **Conclusión:** A partir de este estudio se pudo observar que las acciones de CEREST se reflejan en el número de notificaciones de PAIR en SINAN, reduciendo el subregistro.

Palabras clave: Salud Laboral; Pérdida Auditiva Provocada por Ruido; Vigilancia de la Salud del Trabajador; Sistemas de Información en Salud; Notificación de Accidentes del Trabajo; Notificación de Enfermedades

Introduction

Noise-Induced Hearing Loss (NIHL) is defined as an irreversible cochlear pathology caused by systematic exposure to noise. When hearing loss is caused by occupational noise, it is subject to notification, in addition to being reported to Social Security, through the Communication of Accident at Work. NIHL is one of the most common work related disorders in the world[1], with a prevalence of 42% among adults aged between 16 to 79 years of age[2]. Prevention is the best way to deal with NIHL, and a safe and healthy work environment is essential for workers. Preventative measures include monitoring occupational noise, reducing exposure to noise in the work place and early detection of hearing damage[3].

Despite the high reporting prevalence of NIHL, reporting is still not significant in Brazil. Based on a survey carried out in the city of Betim (Minas Gerais), the main cases of compulsory notification related to work were serious conditions such as RSI/WRMD and accident with bio-hazardous material, whilst NIHL came in 6th in a ranking of 62 records (2 .6%) between 2007 and 2011[4].

A compulsory notification can be defined as an official communication to the health authorities about the occurrence of a certain health problem, condition, or a related disease, and can be performed by any healthcare professional[4], through the Brazilian Disease Reporting Information System (SINAN) which was created in the 90s. Notification of diseases and conditions can be made that are included in the national list of notifiable diseases. From the notification data we can see which types of comorbidities affect which regions, in addition to tracing an epidemiological profile necessary for the creation of an appropriate intervention according to the requirements.

The Reference Centers in Workers' Health (CEREST) were created by Ordinance number 1679, of September 20th, 2002, by the National Health Council which is a strategic component of the National Network for Comprehensive Workers' Health Care (RENAST) which is responsible for institutional, technical and pedagogical support in occupational health in the area in which it covers (Resolution nº 603, of November 8th 2018 of the National Council of Health). The CERESTs are located throughout the country and are responsible for articulating (intra and intersectorally) measures aimed at all aspects of worker health, through technical support and support to SUS (Unified Health System) with the task of providing adequate care[5]. Consequently, it carries out prevention and surveillance of workers health, with the goal of improving the quality of life and working conditions, in addition to tracing the epidemiological profile of workers by healthcare regions[6].

Every four years goals are established for Workers' Health following the National Health Plan (PNS). The CERESTs follow the goals and indicators established by the PNS and by the Pluriannual Plan (PPA) to define the main interventions that range from health inspections and investigations of work accidents, individual and collective guidance to workers to improve the number of compulsory notifications of workplace accidents and injuries and workers' health, among other aspects. The implementation of CERESTs measures resulted in improving general knowledge about NIHL for both employers and employees so they could be better equipped to identify any potential cases and to take preventative measures and consequently make notification. Because of health education the number of notifications may increase, reflecting the number of individuals with work-related injuries. Such information may contribute more precisely to the planning of public health measures that focus on the exposure to excessive noise to reduce the causes.

The study by Galdino *et al.*[7] showed the importance of CEREST regarding the production of information related to workers' health, revealing that the strategies carried out result in an increase in the number of notifications.

To verify whether CEREST's measures are affecting the monitoring of workers' health, it is essential that studies are carried out that seek to periodically analyze the profile of notifications of health problems available at SINAN, however, no publications on the subject were found. This study aimed to analyze the profile of NIHL notifications in the Federal District (Brazil), seeking to ascertain whether the measures developed by CEREST are reflected in the number and profile of these notifications.

Methods

This is a longitudinal, retrospective study based on the analysis of secondary data from

SINAN-DF NIHL notifications, as well as on the survey of technical reports and documents from CEREST-DF with information on the measures developed within the area of NIHL.

A survey of data on compulsory NIHL notification was carried out in SINAN between 2008 and 2018, in relation to notification frequency by year, age group, sex, education, occupation, situation in the labor market and predominant type of noise in the workplace.

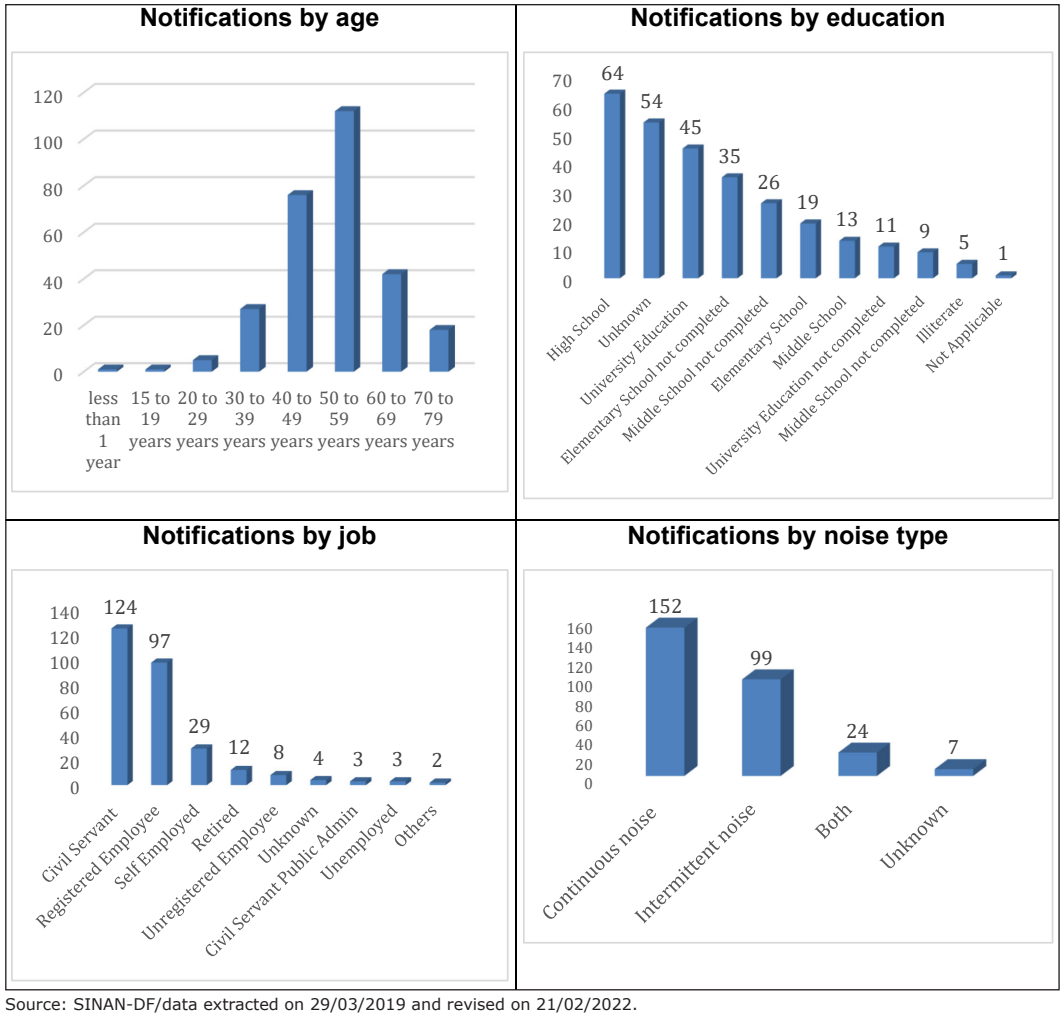
CEREST produces activity reports according to measures developed based on indicators established by managing bodies such as the Federal District Health Department and the Ministry of Health. These activities are based on health promotion and prevention with a focus on procedures such as the surveillance of workers' health (VSST), sanitary inspection of worker's health and educational activity of worker's health. The NIHL project focused more specifically on VSST measures and educational measures, whose activities are detailed in the CEREST-DF Procedures Manual.

These activities constitute reports containing information about date, time, persons responsible for the activity, description of the action and number of participants involved. This study evaluated the reports produced, based on available information, to characterize the NIHL measures that were carried out in the period. The data was analyzed by the authors to compare the periods in which measures were carried out with the number of notifications per year.

Results

Profile of NIHL notifications made in the Federal District

282 notifications were made to SINAN between 2008 and 2018. Figure 1 shows the distribution of NIHL notifications in the Federal District area comparing age group, schooling, labor market situation and type of noise. Most workers with NIHL notified in the period were aged between 50 and 59 years of age (112 cases, 39%), with a complete high school education (64 cases, 22%). 82% were male and with employment records, 124 of which were public servants (43%). It is possible to see an error when filling in the system, as there was a notification in an age group less than 1 year old.



Source: SINAN-DF/data extracted on 29/03/2019 and revised on 21/02/2022.

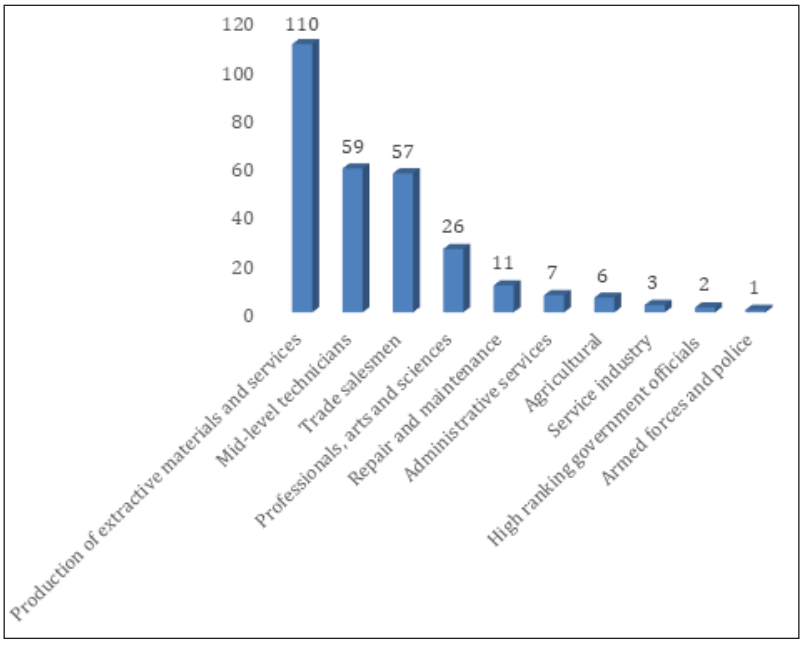
Figure 1. Nihl notifications by age, education, job and noise type, SINAN DF 2008 to 2018

Figure 1 shows the predominant type of noise to which workers were exposed to, with continuous noise (152, 53%), followed by intermittent (99, 35%).

86 different occupations were found among the employees whose NIHL complaint had been notified, and because of this we chose to utilize a classification used by SINAN to categorize groups of occupations from CEREST by the Brazilian Classification of Occupations (CBO) (Figure 2). It can be seen that the group of occupations in which cases of hearing damage were most prominent were those of workers in the extractive sector and services, followed by the group of mid-level technicians, and finally that of service workers and commercial salespeople.

The classification contained groups of workers in the production of extractive materials and services and, healthcare professionals were also included, such as dental surgeons. In the group of mid-level technicians public health inspectors and oral hygiene technicians were included, and service workers and trade salespeople, including road transport service inspectors (freight), urban bus drivers, truck drivers (of both regional and international routes), and van drivers or drivers of similar vehicles. There was a significant number of NIHL notifications by bricklayer who were included as both mid-level technicians and as maintenance and repair workers.

We can see how the figures change from one occupation to another. Health workers, specifically those working in dental clinics and with traffic workers, were the ones who had the largest number of notifications.



Source: SINAN-DF/data extracted on 29/03/2019 and revised on 21/02/2022.

Figure 2. Nihl notification by occupation SINAN, DF, 2008 to 2018

Measures developed by CEREST-DF

Figure 3 presents a flowchart of the measures developed by CEREST-DF from 2008 to 2018.

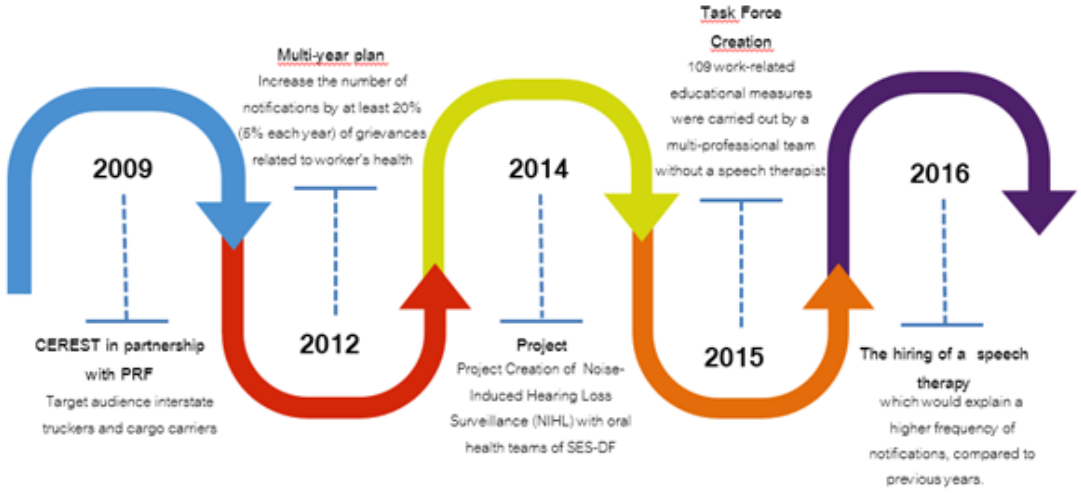


Figure 3. Flowchart of measures developed by CEREST DF

Several measures were identified for the prevention of work-related injuries with the participation of CEREST/DF, and these measures were carried out in order to achieve the indicators of the Ministry of Health for worker health surveillance. Such measures were designed according to the target audience and aimed to provide health education to both employees and employers. For example, activities were carried out in the Southern Workshop Sector of Brasilia for situational diagnosis to organize, clarify and make workers aware of safety, health and working conditions mainly in regard to the handling of machinery and equipment.

Another project carried out from 2009 to 2017 in conjunction with the Federal Highway Police (PRF) and SEST/SENAT targeted truck drivers and cargo transporters. In addition, there was a partnership with the University of Brasília (UnB) to collect epidemiological data, identifying the profile of health and work-related accidents in the Federal District (personal report provided by CEREST-DF).

The CEREST/DF team carried out a project called "Surveillance of Noise-Induced Hearing Loss (NIHL) in association with the oral health teams of SES/DF", based on the Brazilian National Worker's Health Policy – PNSTT (ordinance No. 1823, of August 23, 2012)[8] with the objective of investigating and identifying problems related to hearing loss. This project started to investigate NIHL in May of 2014 based on the demands of dentists from the Planaltina health region in Brasilia. Individual and collective measures were carried out, inspection of the work environments and intervention when recommended. 226 professionals in the field of dentistry were evaluated between 2014 and 2017 and they reported that, in addition to the noise of the equipment, they were also exposed to chemicals and vibrations, which increased the chances of hearing damage or loss, in addition to causing insomnia, headaches and anxiety. About 21% of the individuals studied already had NIHL, 20% had hearing loss which was not occupational related, and 59% had normal hearing (project report provided by CEREST-DF).

From 2015, CEREST/DF planned its measures in the form of projects based on the diseases of compulsory notification established by the Ministry of Health9, such as exogenous intoxication, mental disorders, occupational dermatoses, work-related cancer and NIHL among others. The workforce that carried out these projects were composed of multidisciplinary teams, including doctors, nurses, dentists, physiotherapists, psychologists, administrators, administrative technicians, nursing technicians, public policy analysts and drivers. It is worth noting that as yet speech therapists have not been included in the CEREST/DF team.

During this period worker health education involved more than 4,000 rural workers, industrial and commercial worker and civil construction workers, according to the demand of each product activity. Through the implementation of these projects, there was a significant increase in the number of notifications in all diseases when compared to previous years, pointing out the relevance of a multidisciplinary team for the effectiveness of the measures carried out.

It is worth mentioning that due to the need to meet the targets for notification of occupational health problems provided by the CEREST/DF multi-annual plan (PPA), the team carried out 109 educational activities in subsequent years and assisted more than 4,000 workers from different areas, including those exposed to noise. In addition, a speech therapist was included in the team in 2016, which contributed to an increase in NIHL notifications compared to previous years.

Figure 4 shows the distribution of NIHL notifications by year and the numbers of notifications were low until 2014, however there was an increase in 2015 which has remained constant when compared to previous years. Such facts can be explained by the implementation of the multi-annual plan (PPA), which required reaching a target of a 20% increase in the number of notifications in the four-year period.

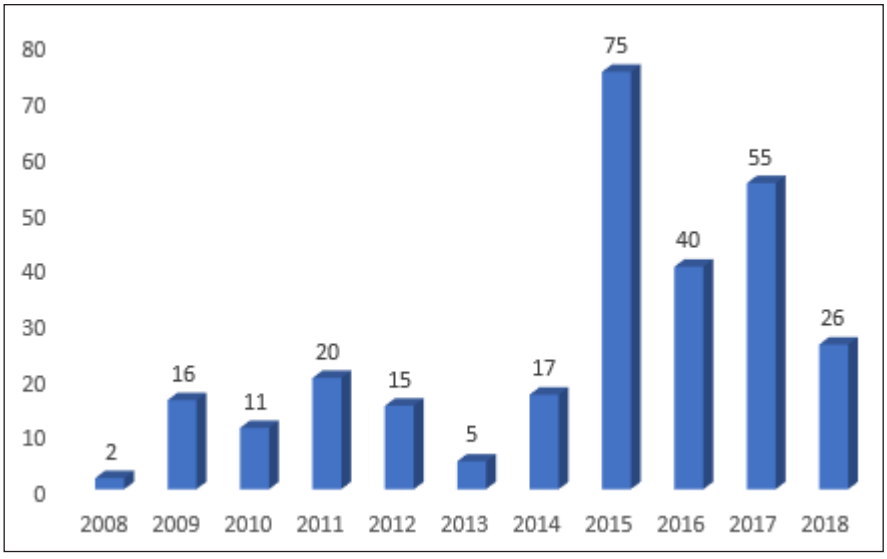


Figura 4. Distribuição das notificações de PAIR, SINAN, DF, 2008 a 2018

Discussion

The objective of this study was to analyze the impact of the measures developed by the Reference Centers in Workers' Health (CEREST-DF) in relation to NIHL notifications in the Federal District. After collecting the data, we were able to verify that CEREST/DF developed several measures related to NIHL, with some scores being reached periodically and other punctual periods considered with the following classes, freight and transport, dentists, workshop machine and instrument operators, rural workers and commercial workers connected with civil construction. This coincides with the most prominent areas of notifications, such as owners of large vehicles among others.

Because this is a retrospective study by document analysis, there are limitations in the generalization of the results. There was no standardization in the recording of measures in terms of objectives, target audience, audience reached, and results achieved which limited data analysis. However, despite the limitations found, it is evident that, after CEREST's measures targeted at diseases, including NIHL showed an increase in the number of notifications.

Measures targeted at workers' health, such as lectures, projects, active search, and permanent education contribute to an increase in notification10. This fact can be seen when we compare the years in which there were no measures aimed at health promotion related to NIHL and where numbers recorded were low. As from 2015 the number of notifications were higher, which can probably be explained by the fact that there was a requirement to meet the multi-annual goals which resulted in better educational measures, surveillance and interventions that were carried out in the workplace at the same time. In addition to the above, the average number of notifications remained the same from 2016 onwards, a fact that can be explained by the inclusion of a speech therapist on the team.

Despite the increase in the number of notifications, the prevalence of NIHL in the analyzed period was very low when compared to existing figures with a 42% prevalence rate worldwide[2]. The Federal District area had a population of 1,939,045 between 15 and 79 years old, according to a 2010 CENSUS. For the numbers of notifications to be reliable, work teams must be up to date on how to identify and intervene in inadequate working conditions[10]. Practices aimed at health teams are considered important, considering that promoting education about workers' health contributes to professionals being able to take work into account in the health-disease process, fewer referrals being made to CEREST, coordination between primary care professionals and CEREST and, consequently, referrals following standardized protocols[11,12].

Measures must be effectively incorporated into the RAS (Healthcare Network), mainly in Primary Health Care and Secondary Health Care, so that every single professional feel responsible for the notifications. If we continue to depend on CERESTs, we will always have under reporting, since the CERESTs teams are small and have several other functions besides the notification process.

Any healthcare professional can make a compulsory notification. A survey carried out by Pedroso and Gonçalves[13], evaluated the perception of primary health care professionals in regard to notification of noise-induced hearing loss in Curitiba (Brazil). Nurses, speech therapists and physicians participated in the study. Of the 48 professionals interviewed, 27 (56.2%) responded that they felt confident to identify work-related health problems, but only 21 (43.7%) felt confident enough to be able to identify NIHL. Of those who felt able to identify NIHL, 11 were speech therapists and 5 physicians. Although the majority of respondents reported knowing the signs and symptoms of NIHL, notifications did not occur frequently and did not perceive worker health as an institutionalized program in Brazil.

Bochner *et al.*[14] state that training and raising awareness among professionals is necessary to improve the quality of data obtained, generating indicators that demonstrate reality. Forms with blank fields, contradictory information, duplicate records, or other irregularities reveal the need for a systematic evaluation of this information collected and entered into the system before it is transferred[15]. The amount of information ignored in questions with more than one gap may indicate only the marking of one option and ignoring the others. As for the other questions, it may mean there is a lack of knowledge about the most appropriate answer in relation to the current situation of the worker, or even poorly completed notifications by the responsible healthcare professional.

The participation of speech therapists in the CEREST teams is essential because NIHL is one of the most common work-related disorders in the world[1] and, more recently, work related vocal disorders as well[16]. There are still no speech therapists in all of the CERESTs distributed throughout Brazil, even though the number has grown significantly over time. Measures aimed at voice and hearing were reported by three out of four CERESTs who had a speech therapist, which demonstrates the effectiveness of having speech therapists as a fundamental part of the team to identify NIHL and possible voice disorders related to the work place[14].

Times when measures were adopted and aimed at workers' health reflected in greater numbers of notifications, which demonstrates the importance of these measures. Measures must be tailored to the needs of the region in which the companies are located, or even according to the number of places considered as a potential health risk where workers may be exposed to high noise levels.

Profile of NIHL notifications made in the DF area

The profile of workers with NIHL notifications were predominantly males aged between 50 and 59 years of age with employment records and complete secondary school education who were constantly exposed to continuous noise.

Being exposed to high levels of noise for many years can lead to hearing impairment or loss, this factor together with increased ageing increase the probability. According to the National Committee on Noise and Hearing Conservation, NIHL reaches the maximum level at the frequencies of 3, 4 and 6 kHz after about 10 to 15 years of stable noise exposure[13], which would explain the higher number of notifications in people aged from 50 years to 59 years of age and from 40 to 49 years of age.

There are 3 different types of noise, continuous, intermittent and impact noise (duration less than 1 second). The tolerance limits according to legislation are the same for continuous and intermittent noise, that is what will determine the probability of a person having NIHL is the time length of daily exposure in work years.

Presbycusis (age-related hearing loss) can be increased by genetic and environmental factors such as exposure to noise for example, and there is a similarity in the audiometric curve both in NIHL and in presbycusis, which makes it difficult to differentiate one from the other[17]. This may explain the lower number of NIHL notifications in elderly people. Additionally, the older population is no longer in the job market and probably did not participate in the measures developed by CEREST. During the differential diagnosis, hearing deficits are usually age-related, and noise exposure in elderly people previously employed in noisy environments is not investigated, so it is difficult to relate the causal factors of hearing loss in the

elderly population due to the variety of factors that are associated with age[17]. This reveals the need for healthcare professionals to investigate work history and its relationship with the health-disease process of the individuals.

As a person ages, the risk of hearing loss increases considerably. People aged 35 have a 10% probability of hearing loss, while people aged 65 have a 55% probability and risk naturally increases with age. If the same people were exposed to 100 dB for 10 years, this percentage would rise to 94.5% and 99.5%, respectively, so there is a greater risk of hearing loss when we are exposed to high levels of noise[18]. Noise exposure, whether occupational or as a form of leisure, is the main cause of an acquired hearing disorder that perhaps could be avoided. One way to reduce the chances of occupational hearing loss is to use personal protective equipment correctly and with the help of the employer[19].

According to the Monthly Bulletin of Employment and Unemployment Research - PED up to 2018, there were more men in employment in the Federal District DF (52%), with the majority between 25 and 39 years of age[20]. When we look at the professional areas of women they are still mostly involved in public administration, defense, social security, education, health, social services, catering, housing, and other activities related to arts and recreation and domestic services. This fact may justify the higher prevalence of NIHL among men, since female workers are less prevalent in civil construction and transport and logistics[21].

Personal protective equipment (PPE) is used to reduce the risk of accidents at work, reducing the chances of illnesses in the work environment. Studies reveal that noise should be considered a risk factor for hearing loss, and when levels are above those that are regulated by law, PPE should be used for hearing protection[19,22,23]. However, educational intervention focused only on the use of ear protectors and is insufficient, requiring more comprehensive and participatory educational measures that are associated with environmental control measures[24].

A study by Tinoco *et al.*[19] revealed that the greater the perception of health risk from exposure to noise, the greater the adherence to the use of protection, also showing that protection has to be used correctly to be effective. Even when there is a perceived risk in a noisy environment, workers are exposed to unhealthy conditions in their workplace still do not properly recognize the need to use individual equipment, which reflects a deficiency that requires measures to reduce this noise[19]. Such measures can be carried out through the surveillance of the work environments, being carried out continuously because work and the processes involved are constantly changing. All healthcare professionals should be prepared to advise workers in their routine consultations to improve the surveillance measures carried out by the CERESTs.

The most frequent occupations were dental surgeons and healthcare professionals, drivers, and bricklayers. It is worth mentioning that all of the measures were carried out punctually. The predominance of the number of notifications in this study may not reflect the current scenario, even if it is known fact that workers in the work environment of the afore mentioned professions are systematically exposed to noise. In other words, due to carrying out measures with workers selected by CEREST/DF, these occupations had greater notification rates, since not all labor sectors have been covered. This applies to the most common employment relationship, as CEREST/DF measures are mostly aimed at public sector positions included in Federal District Government. CEREST becomes important for providing education and inspections in the labor areas, but it cannot be solely responsible for carrying out notifications, given that they can be carried out by any and all healthcare professionals.

The subject of worker health is still not widely covered during the training of healthcare professionals and has often been neglected, including work related speech-language disorders that are not picked up on such as NIHL. There should be greater awareness, especially in the training of professionals so that they are prepared to analyze the health of the individual as a whole, which includes occupational health, and notification is the responsibility of everyone.

Conclusion

The majority of notifications were of workers aged between 50 and 59 years old, male with a complete high school education and employment records. There were several occupations, among those found, where there are no groupings of those that work in similar environments, dentists, healthcare professionals, drivers and bricklayers who had the most notifications. When there was a grouping, the workers linked to the health area maintained a

higher numbers of notifications. During a 10 year period 282 NIHL notifications were made in the DF area, most of these notifications were made in 2015, the year in which CEREST/DF developed its projects aimed at worker health.

It is evident that the performance of the measures aimed at workers hearing health carried out by CEREST/DF increases the number of notifications. This can be explained by the fact that CEREST/DF carries out health education in the workplace which helps to increases knowledge about NIHL, work-related hearing loss, as well as the possibility and importance of the notification process. This demonstrates the importance of workers being aware of work-related diseases for the planning of public policies.

The importance of the notification process should be utilized in both the workplace and by healthcare professionals alike and not be solely restricted to CEREST but extended to all the areas of health. The data acquired from the notifications is extremely important in helping to reduce the incidence of injuries and diseases. When we have an epidemiological profile of each region, policies and programs can be developed and be put in place to target reduction methods to issues that are harmful to workers' health.

References

1. Lie A, Skogstad M, Johannessen HA, Tynes T, Mehlum IS, Nordby KC, et al. Occupational noise exposure and hearing: a systematic review. Int Arch Occup Environ Health 2016; 89: 351–72. https://doi.org/10.1007/s00420-015-1083-5.

2. Feder K, Michaud D, McNamee J, Fitzpatrick E, Davies H, Leroux T. Prevalence of Hazardous Occupational Noise Exposure, Hearing Loss, and Hearing Protection Usage Among a Representative Sample of Working Canadians. J Occup Environ Med 2017; 59: 92–113. https://doi.org/10.1097/JOM.0000000000000920.

3. Chen KH, Su S Bin, Chen KT. An overview of occupational noise-induced hearing loss among workers: epidemiology, pathogenesis, and preventive measures. Environ Health Prev Med 2020; 25. https://doi.org/10.1186/s12199-020-00906-0.

4. Alvares JK, Pinheiro TMM, De FáTima Santos A, Oliveira GL. Avaliação da completitude das notificações compulsórias relacionadas ao trabalho registradas por município polo industrial no brasil, 2007 – 2011. Rev Bras Epidemiol 2015; 18: 123–36. https://doi.org/10.1590/1980-5497201500010010.

5. Dias EC, Silva TL e. Contribuições da Atenção Primária em Saúde para a implementação da Política Nacional de Saúde e Segurança no Trabalho (PNSST). Rev Bras Saúde Ocup 2013; 38: 31–43.

6. Molina AC;, Lima MAF, De; Fressatti WL;, Neto CAP;, Junior ALC;, Lima SAM, et al. Notificações de acidentes de trabalho em Cerest de Botucatu-SP Notifications of work accidents in Cerest of Botucatu-SP. vol. 5. 2016.

7. Galdino A, Santana VS, Ferrite S. Os Centros de Referência em Saúde do Trabalhador e a notificação de acidentes de trabalho no Brasil. Cad Saude Publica 2012; 28: 145–59. https://doi.org/10.1590/S0102-311X2012000100015.

8. Brasil. Ministério da Saúde. Portaria nº 1.823, de 23 de agosto de 2012. Institui a Política Nacional de Saúde do Trabalhador e da Trabalhadora. Diário Oficial da República Federativa do Brasil, Brasília, DF, nº 245, 24 ago. 2012.

9. Brasil. Ministério da Saúde. Portaria nº 104, de 25 de janeiro de 2011. Define a relação de doenças, agravos e eventos em saúde pública de notificação compulsória em todo território nacional. Brasília, DF.

10. Pintor EA da S, Garbin ADC. Notificações de violência relacionadas ao trabalho e vigilância em saúde do trabalhador: rompendo a invisibilidade. Rev Bras Saúde Ocup 2019; 44. https://doi.org/10.1590/2317-6369000006918.

11. Lazarino M da SA, Silva TL e, Dias EC. Apoio matricial como estratégia para o fortalecimento da saúde do trabalhador na atenção básica. Rev Bras Saúde Ocup 2019; 44. https://doi.org/10.1590/2317-6369000009318.

12. Garbin ADC, Pintor EA da S. Estratégias de intra e intersetorialidade para transversalizar a saúde do trabalhador em todos os níveis de atenção à saúde. Rev Bras Saúde Ocup 2019; 44. https://doi.org/10.1590/2317-6369000030118.

13. Pedroso HC, Gonçalves CG de O. Primary care health professionals' perception and knowledge on notification of noise-induced hearing loss in Curitiba - Paraná. CODAS 2016; 28: 575–82. https://doi.org/10.1590/2317-1782/20162015264.

14. Bochner R, Cristina M, Guimarães S, Lins De Santana RA, Machado C. Qualidade da informação: a importância do dado primário, o princípio de tudo. Universidade de Brasília; Associação Nacional de Pesquisa e Pós-Graduação em Ciência da Informação; 2011.

15. Brasil M da S. Perda auditiva induzida por ruído (PAIR). Brasília: Editora do Ministério da Saúde; 2006.

16. Brasil M da S. Distúrbio de Voz Relacionado ao Trabalho (DVRT). Brasília: Ministério da Saúde; 2018.

17. Melo JJ, Meneses CL, De Moraes Marchiori LL. Prevalência de zumbido, em idosos com e sem história de exposição ao ruído ocupacional. Int Arch Otorhinolaryngol 2012; 16: 222–5. https://doi.org/10.7162/S1809-97772012000200011.

18. Lima FGA. Perícia e assistência técnica em audiologia. In: Boéchat EM, L MP de, M CC, Frizzo ACF, Scharlach RC, Anastasio ART, editors. Tratado Audiol., São Paulo: Santos; 2011, p. 235–42.

19. Tinoco HC, Alves Lima GB, Sant'Anna AP, Simões Gomes CF, dos Santos JAN. Risk perception in the use of personal protective equipment against noise-induced hearing loss. Gest e Prod 2019;26. https://doi.org/10.1590/0104-530X1611-19.

20. CODEPLAN. Anuário estatístico do Distrito Federal, Brasília, 2018.

21. Cotrim LR, Teixeira MO, Proni MW. Desigualdade de gênero no mercado de trabalho formal no Brasil. Textos Para Discussão 2020; 383: 29.

22. Sonego MT, Santos Filha VAV dos, Moraes AB de. Equipamento de proteção individual auricular: avaliação da efetividade em trabalhadores expostos a ruído. Rev CEFAC 2016; 18: 667–76. https://doi.org/10.1590/1982-0216201618317115.

23. Usmani MK, Mumtaz N, Saqulain G. Hearing protective devices and its role in Noise induced hearing loss: An interventional study. J Pak Med Assoc 2020; 70: 519–22. https://doi.org/10.5455/JPMA.4768.

24. Gonçalves CG de O, Fontoura FP. Intervenções educativas voltadas à prevenção de perda auditiva no trabalho: uma revisão integrativa. Rev Bras Saúde Ocup 2018; 43. https://doi.org/10.1590/2317-6369000032417.