

HEALTH PROFESSIONALS APPROACH TO THE HEARING LOSS PREVENTION PROGRAMME IN THE MANAUS INDUSTRIAL POLE

Abordagem dos profissionais de saúde frente ao programa de prevenção de perda auditiva no pólo industrial de Manaus

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ABSTRACT

Purpose: to assess how health professionals who work at companies in the Manaus Industrial Pole understand the Hearing Loss Prevention Program and apply its practices at work. **Methods:** semi-structured interviews with twenty occupational health physicians and twenty audiologists were conducted using a qualitative method. **Results:** following the content analysis method, the professionals were divided into three categories according to their understanding of the Hearing Loss Prevention Program: pragmatic view, disciplinary view and systemic view. These categories reflect their professional attitude and make clear the limitations and advances of companies regarding their workers' health, in particular their hearing health. **Conclusions:** this study shows that there is still a big gap between what is proposed and what is actually done. Based upon the collected data, it can be concluded that health professionals who work at companies in the Manaus Industrial Pole address relevant aspects of the programme, but they implement actions in a disconnected way, focusing on the minimum legal requirements and thereby limiting the efficiency of the program. The reasons for that are: a topic for further studies, aiming to gather all the social actors and clarify the context in several dimensions.

KEYWORDS: Occupational Health; Hearing Loss; Noise

■ INTRODUCTION

In work environments, particularly in the industry sector, there are many risk factors for workers' health, one of them being noise. Occupational noise exposure has been an object of study by researchers of several fields, as it is the most prevalent risk for workers worldwide¹. Its most known effect is Noise-Induced Hearing Loss (NIHL) or Hearing Loss Induced by High Sound Pressure Levels (HLIHSPL). Noise and HLIHSPL do not only cause changes to workers' hearing but also affect their communication ability and life quality².

Exposure to harmful sound pressure levels is an important health issue because, in addition to affecting hearing, it disturbs the rest, sleep and communication of human beings^{3,4}. Hearing loss is already one of the most common occupational diseases in industrialized countries. In Brazil, NIHL is also one of the main health problems among workers⁵. It is an insidious and cumulative disease which develops progressively over years of noise exposure at workplace⁶, and its effects can be irreversible^{7,8}. Because the first changes are imperceptible, when people realize they have hearing problems, they are already in a critical condition, both from a clinical and social perspective⁹. NIHL can be prevented and can lead to different sorts of harm, including making it difficult for people to enter the job market. In Brazil, despite the knowledge progress and a legislation on NIHL, there are still cases of affected workers¹⁰.

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Considering that a large number of workers have been exposed to occupational noise and that the effects resulting from NIHL can affect not only their life quality but also their work – both their production and social relationships with their peers –, the importance of individual and collective actions as part of prevention programs becomes clear. The Hearing Loss Prevention Program (HLPP) or Hearing Conservation Program (HCP) is one of such actions, having been proposed by health authorities and consisting of a set of measures to be developed by a multiprofessional team in order to minimize the risks and prevent the emergence or development of work-related hearing loss¹¹. The HLPP takes measures to reduce environmental risks by means of collective protection, monitors sound pressure levels, changes or replaces equipment that raises the noise level, provides proper protective equipment, makes workers aware of its use, and monitors their hearing in order to control and assess its efficiency. The activities proposed in the program should include the training of managers and workers on it, highlighting the role to be played by each of them in such an initiative¹². Nevertheless, a program requires a multisector management in order to achieve effective results, which means it depends upon the cooperation of health professionals, managers and especially workers, all of them being informed of and sensitized to the risks and effects of noise to health.

In Brazil, the Labour Laws (CLT) regulate the relations between employers and employees, as well as work conditions, whilst the Regulatory Norms (NR) define the parameters for applying the laws¹³. The HLPP is provided for by NR-9 – Environmental Risk Prevention Program – and by Attachment 1, Table II, NR-7 – Occupational Health Medical Control Program of the Department of Labour¹⁴.

Although NIHL has reached an almost endemic proportion in the industry sector, there are still few scientific studies on its natural history in Brazilian workers¹⁵. In the state of Amazonas, to the best of knowledge, there are no specific data on the actual presence of the HLPP or any systematic monitoring. Only data related to audiometry are reported, as part of a legal requirement of the Department of Labour. In view of that scenario, which demands more efficient actions, this study aimed to assess how health professionals who work for companies in the Manaus Industrial Pole understand the HLPP and apply its practices at work. In addition to that, and most importantly, the results obtained in this research are intended to generate knowledge that can help occupational health professionals and managers to reflect on how to stimulate more

effective measures to preserve and promote workers' health and support public health policies.

■ METHODS

This qualitative-based study sought to describe how health professionals understand the Hearing Loss Prevention Program and how they proceed having it regulating their work at companies in the Manaus Industrial Pole. In order to obtain that information, the professionals were individually interviewed in the period between August and September 2010 based upon a script of questions, as indicated for semi-structured interviews¹⁶.

The interviews were conducted with audiologists and occupational health physicians of both sexes who have been working at companies in the Manaus Industrial Pole for more than a year, which was a prerequisite. Then they were selected based upon accessibility or convenience¹⁷, i.e., they were identified and later contacted by phone or in person so that the study proposal could be presented to them and their availability and willing to participate and sign the Voluntary Informed Consent could be confirmed.

A total of forty health professionals (twenty audiologists and twenty occupational health physicians) who work at companies in the Manaus Industrial Pole took part in the research, twenty-seven (67.5%) being females and thirteen (32.5%) being males. They were between 26 and 66 years old, 72.5% being between 26 and 45 years old and the remaining 27.6% being between 46 and 66 years old. They worked for many companies at the same time, which means the amount of time they were present in each company was very short. Among them, 52.5% worked for one to ten companies; 35% worked for 11 to 30 companies; and, surprisingly, 12.5% said they worked for more than 30 companies. On the other hand, they had relatively little experience in the field of occupational medicine. Half of them (50%) said they had worked in the field for 1 to 5 years, 30% had 6 to 10 years of experience, and only 20% had more than 10 years of experience, 5% of which had worked in the field for more than 16 years.

Despite the fact that the interviews were conducted with two groups of professionals (audiologists and occupational health physicians), the analysis was carried out considering a single group, i.e., health professionals, as they are supposed to have the same understanding of the program and the same dedication to implementing actions towards workers' health promotion.

The method used in the analysis of the information collected in the interviews was content

analysis¹⁸, which consists of comprehending the latent meaning of the answers given by interviewees and establishing categories *a posteriori* to be discussed in the light of the theoretical references upon which the study is based.

This study followed the ethical procedures recommended by Resolution no. 196/96 of the National Health Council and its protocol was approved by the Ethical Research Committee of the Federal University of Amazonas (no. 0250.0.115.000-10).

■ RESULTS

The results presented herein are organized in three complementary sections related to: a) the professionals' knowledge of the HLPP; b) the actions taken by the professionals towards hearing loss prevention; c) the professionals' perception of the HLPP for workers' health.

Health professionals' knowledge of the HLPP

By using the content analysis method, it was possible to verify in the information provided by the participants that their understanding of the HLPP varies and is considerably distant from what the program actually proposes. The different sorts of understanding were named as follows: a) *pragmatic view*, corresponding to 45% of the professionals; b) *disciplinary view*, corresponding to 40% of the professionals; c) *systemic view*, corresponding to the remaining 15% of the professionals. Each group expresses a continuous evolution of its understanding of the HLPP.

Hearing loss prevention actions taken by health professionals

In order to investigate hearing loss prevention actions, it is necessary to observe the actions suggested by the HLPP, which are related to the work environment, hearing profile and health conditions of the workers, as well as to their education in the program.

Professionals' perception of the HLPP for workers' health

The professionals who take part in the HLPP should identify hearing risks and their effects on workers, intervening in the workplace. In order to carry out that continuous process of actions, they need to understand the importance of the program for workers' health not as a formality, but as a guidance of actions towards workers' care and citizenship.

■ DISCUSSION

The professionals understand the HLPP in different ways. The *pragmatic view* refers to the definition of the programme as only a set of technical procedures, hearing loss prevention actions being basically restricted to audiometric tests, as these two accounts indicate:

The program is done here, all the medical checkups on hiring, all the periodic checkups. Audiometry is performed to monitor the person's hearing loss, and, if we notice something, we refer the person to the otorhinolaryngologist to be examined.

The program is intended to warn and control the worker who is exposed to noise and has hearing loss. I control the number of employees from the audiometry on hiring and then every six months until the worker leaves the company. By doing so, I can detect any damage [to their hearing].

Many professionals believe that they are preventing hearing loss by proceeding thus, but their pragmatic view actually limits the efficiency of the program. It should be noted that an HLPP consists of eight distinguishable elements: training and education; involvement from the supervisor; noise measuring; engineering and administrative control; audiometric monitoring and record maintenance; referrals; ear protection equipment; and management issues¹⁹. One of the first tasks of an HLPP is the audiometric survey of all workers in risk areas.

The Brazilian legislation determines the use of audiological evaluations as a tool for detecting hearing loss²⁰, and nowadays the control of workers' hearing is performed using such evaluations²¹, with the aim of at least meeting the current legislation²².

The audiometric evaluation of workers is still the most efficient way to determine the success of an HCP²³. By comparing annual audiometric results, it is possible to detect changes or reinforcements in the interventions proposed by the program. Based upon the comparison of reference and sequential audiometric tests, the hearing behavior of workers during their permanence in the company and the efficiency of preventive measures adopted by the programme should be assessed.

Some authors state that the review of audiometric data, as an epidemiological surveillance tool, is necessary to confirm the efficiency of the HLPP²⁴.

There is no doubt that audiometric tests are essential in an HLPP to monitor workers' hearing.

At the same time, they are a form of control and assessment of the preventive measures taken by the company. However, it should be pointed out that, even though audiometric tests are important indicators of hearing health, they are useful only when directed towards preventive actions. Furthermore, all elements of an HLPP are essential to prevent hearing loss, which means hearing monitoring is only part of the program.

The second group of professionals, associated with a *disciplinary view*, focuses on audiometric techniques, ear protection equipment, training and education actions, as indicated by these accounts:

I believe the HCP is divided into several parts, stages, including audiometric tests. I believe there are lectures that provide guidance on prevention and also on protection, which is the use of PPEs.

The HCP is provided for by law, by NR-7, whose main purpose is to prevent hearing loss, or, in case there is already some sort of loss, to prevent its progress, when all measures must be taken – collective protection equipment, personal protection equipment – so that the condition of that employee doesn't get worse.

To train and motivate workers with respect to hearing conservation is the most important tool for the correct and most efficient use of ear protectors²³. Therefore, the success of an HLPP depends upon health education, making workers understand how their behavior and workplace influence both their health and the search for solutions towards their well-being. The aim of education actions at work is to make workers aware of the consequences that aggressive agents present in the workplace can pose to health, and the preventive measures that can be taken with collective participation¹¹.

Actions directed towards workers' hearing conservation should be part of an integrated work between the medical team (occupational health physicians and audiologists) and engineering and security. It was noticed that the *disciplinary view* limits the development of an effective program, because, although it approaches important elements of the HLPP, it provides neither an articulation of the actions nor an effective interaction of the professionals involved. Therefore, taking different measures is not enough to ensure the efficiency of the program.

The third group of professionals showed a *systemic view*, as they understand the program with all or most of the elements that form an HLPP,

such as the importance of audiological monitoring and individual and collective epidemiological surveillance, and especially the involvement from a participative multidisciplinary team and the workers themselves.

I think it is a multidisciplinary team, it is not just the occupational health physician, it is not just the audiologist, it is not just the engineer, not just the boss, I think it is a team, each one working on their competence, because otherwise we can't do it. Each one contributes with their own competence, because otherwise, no matter how nice the HCP seems to be, with a full schedule, if we do not have the commitment from everyone, we are not going to achieve anything.

The HCP needs to be planned by the whole team, both from SESMT and the administration, establish goals and actions, engage workers and sectors. It is necessary to have a risk map of those companies so that the noisy areas can be mapped and then set the prevention part as a strategy, including lectures, educational initiatives, monitoring of the workers, identification of the noisy areas. The HCP itself gives more attention to noise measuring, the evolutionary control and the management of all actions related to hearing loss.

This perspective is more complete and is in accordance with what is proposed by the National Committee for Noise and Hearing Conservation, which released in Brazil its *Boletim no. 6*, providing the basic guidelines of an HCP, with elementary recommendations for its formulation. The following stages are included into the guidelines: identification and assessment of risks to hearing; audiometric management; collective protection measures; individual protection measures; education and motivation; data management and assessment of the program.

The three categories or sorts of knowledge presented herein are ways of thinking and acting regarding the HLPP revealed by professionals who work at the Manaus Industrial Pole. Being a set of measures coordinated by a multiprofessional team, the program is a continuous and dynamic process of implementation of routines in companies. The professionals' repertoire of ideas on the HLPP has a direct effect on the implementation of such actions, which are fundamental for the development and, consequently, the efficiency of the program.

One of the actions of the HLPP is to learn about the risks present in the workplace. Once a noise is identified, it is associated with the other agents that pose risk to workers' health¹¹. By doing so, it becomes possible to suggest measures to eliminate and/or control those agents either collectively (e.g., intervention in the sound-emitting source) or individually (e.g., reduction of the worker exposure by means of administrative measures). Such actions were in fact reported by some professionals:

First we need to measure the noise to know what we are talking about, because we need to know what people we are dealing with in order to take them for training.

First, you have to know about the company risks, then you measure the noise, because, when you notice there is a noise within the company, you have to comply with the law. From that assessment, which at first is individual, you'll have a group view... to define the administrative measures.

An HLPP proposal cannot be made without identifying all the risk factors in the environment. It could be noticed that some professionals understand that action as an indispensable tool for the establishment of an HLPP, as its results will support decisions related to many sectors involved in the program.

Another essential action in an HLPP is the investigation of the general condition of workers' health to identify the impact the workplace has on them. The method prescribed by law for hearing change detection and monitoring is audiometry, and the guidelines and minimal parameters for assessing and monitoring the hearing of workers exposed to high sound pressure levels are described in Attachment 1, Table II, NR-7.

In short, the main requirements established by NR-7 concerning the types of audiometric tests and procedures are: reference and sequential audiological tests, including clinical and occupational anamnesis, otological examination, and audiometric examination, which analyses tone air-conduction thresholds from 500 Hz to 8000 Hz. In case any hearing change is detected, tone bone-conduction thresholds and speech recognition thresholds are assessed. Audiometric examination should be conducted after the inspection of the external acoustic meatus in an acoustic cabin and with acoustic rest superior to 14 hours. The procedures carried out in audiometric tests were reported by some professionals as follows:

First come the data, documents, everything that is mandatory, then I perform meatoscopy. In case there is impacted cerumen, I refer the person to the otorhinolaryngologist, and recommend air and bone-conduction audiometry with masking, if needed.

First a well-detailed anamnesis, with the current and past cases, [then] meatoscopy. I explain everything before they enter the cabin and carry out the test in all frequencies from 500 Hz to 8 KHz, including bone-conduction audiometry, if needed.

Others reported:

In occupational medicine, audiometry is faster. What matters for the company is whether the employee has hearing loss caused by noise or not. We perform an anamnesis, put him in the cabin and perform an occupational audiometry. If there is any hearing loss, we then check if there is impacted cerumen. After that, it depends: if the exam is performed on dismissal, the case history must be checked. I carry out audiometry from 500Hz to 8000 Hz; air and bone-conduction only if there is a change.

Air-conduction [audiometry] from 500Hz, bone-conduction [audiometry], only if there is a change. They never perform otoscopy, and anamnesis is rather simple. For that reason, I think the audiologist must be inside the company, because what actually happens is that they rarely come and, even having a lot to do, leave as fast as they can.

Those considerations seem to indicate that some health professionals who work at companies in the Manaus Industrial Pole just comply with the minimum legal requirements. It was also observed that none of the interviewed professionals performs or has any information that the responsible professional performs a speech test during the audiometric tests in the companies. Therefore, audiometry is perceived just as a legal requirement to be complied with, whereupon important information for guaranteeing the quality of the examination is not taken into account.

Management hearing, which includes determining workers' hearing profile and identifying the likely risks to their hearing, is the basis of an HLPP. It is responsible for the longitudinal monitoring of the hearing profile and is an epidemiological surveillance tool. Some studies report that one of

the most important collective stages of an HLPP is the analysis and development of an epidemiological overview, as it defines people's hearing situation and allows the implementation of preventive measures.

The following accounts are testimonies of neglecting, as most of the interviewed professionals said they do not write epidemiological reports. When asked about the importance of such reports, they said:

I think this could be a way to map it and know what is happening, how it is happening and what we can do to improve it. The epidemiological part, it is fundamental to monitor the patient.

It is important in order to have a general view of the health situation of workers, to see graphics, statistical data, to see if our work is making a contribution, providing some guidance, and to correct anything wrong.

Even among the professionals who claim to write epidemiological reports there is a consensus that the document is secondary or just a means of discussion between peers. Some of them do realize it is a tool with a wide range of possibilities, but they only write it because of their obligations with the companies.

That scenario indicates that many professionals do not follow the technical procedures necessary to guarantee workers' health; somehow they seem to be limited and pressed to address the legal requirements, even if such requirements are vague. That attitude makes clear the gap between the real interest for workers' health and the indices of performance and production of industries. Furthermore, it can be noted that the practice of those professionals and companies lacks information, as hearing loss prevention programs are also described in the Regulatory Norms of the Department of Labour, being as much a legal requirement as audiometric tests.

In Attachment I, Table II, NR-7, item 1.2 reports one of the objectives of Directive no. 19, from April 9, 1998: "To provide assistance for the adoption of programs intended to prevent hearing loss induced by high sound pressure levels and to preserve workers' hearing health". The same directive reports on preventive actions in item 6.1: "In the presence of the worker whose reference audiometric test matches item 4.1.2, or any sequential audiometric test matches items 4.2.1, 4.2.2 or 4.2.3, the physician in charge of the coordination of the Occupational Health Medical Control Program, or the person responsible for the medical examination

itself, shall: subitem c.: "Participate in the implementation, enhancing and control of programs intended to prevent the progress of the hearing loss of any worker with this condition and others exposed to that risk, considering the provisions of item 9.3.6 of NR-9".

Still in accordance with NR-9, every company must have an Environmental Risk Prevention Program. If sound pressure level is one of the risk agents identified by the program, the company should organize, under its own responsibility, a Hearing Conservation Program.

Educational actions are also fundamental in an HLPP, as shown by the literature. Workers need to be well-informed of the reasons and requirements of the program as a whole, since the success of the program depends to a large extent upon the education of workers. Here are two related accounts:

In that company we organize lectures in the first place, we have a very nice relationship with the workers...

I work on this training issue, on PPE regarding clarification and regarding monitoring, which is audiometry.

It becomes clear that some professionals are familiar with hearing loss prevention actions, but they are just concerned with addressing the minimum legal requirements, whereupon they implement actions in a disconnected way. That practice contributes to making such actions inefficient and shows that aspects related to hearing loss prevention are not addressed in their full extension, which means workers' health is far from being fully respected.

In what refers to the professionals' perception of the HLPP for workers' health, they are supposed to identify the risks to hearing and their effects on workers' health, intervening in the workplace. Some professionals showed the value of that tool by indicating improvements in the professional activity and security of workers with the implementation of the HLPP:

Its first logical goal is to preserve the worker's health, to have a documentation proving, in any instance, either an internal audit, a quality audit, or a labour claim, that everything is well-monitored, which protects the company, protects the worker, and you have it in your hand to show to anyone who wants to see it, to show that everything is being done.

That improvement is not just for the company, it is shared. I think we have a great responsibility because we have to comply with the law and achieve the result expected by the company, and we have to give the result to the employee.

Such improvements come from different perspectives, but they can be the starting point of an increasingly deep transformation of professional practice and a guarantee of workers' health rights, either by the professional's actions or the responsibility and sensitization of the company towards human being, the main point of its economy.

■ CONCLUSIONS

The present work aimed to assess how health professionals who work at companies in the Manaus Industrial Pole understand the Hearing Loss Prevention Program and apply its practices at work.

This study shows that there is still a great gap between what is recommended and what is actually done. Based upon the collected data, it can be concluded that health professionals who work at companies in the Manaus Industrial Pole are familiar with important elements of the aforementioned program and believe to be contributing to it, but their practice is limited to exogenous factors, i.e., it focuses on legal requirements to avoid or reduce labour claims, whereupon the actions related to the program are implemented in a disconnected way, making it inefficient. The reasons that lead professionals to proceed that way is a topic to be studied, as that information will reveal not only their views but also those of the companies where they work. Such social actors can provide more information and context to clarify this reality, which limits not just the worker's health but also their own satisfaction and dedication, as well as the indices of performance and production of the industry sector.

RESUMO

Objetivo: avaliar a abordagem dos profissionais que atuam na saúde do trabalhador em empresas do Pólo Industrial de Manaus no desempenho de práticas previstas no Programa de Prevenção de Perda Auditiva no trabalho. **Métodos:** a partir de uma abordagem qualitativa, aplicou-se uma entrevista semiestruturada com 20 médicos do trabalho e 20 fonoaudiólogos. **Resultados:** seguindo o método de análise de conteúdo foram identificadas três categorias num contínuo evolutivo que expressam o conhecimento dos profissionais sobre o Programa de Prevenção de Perda Auditiva: visão pragmática, visão disciplinar e visão sistêmica. Categorias estas que retratam a atuação profissional e evidenciam limitações e avanços de cuidado que as empresas têm em relação à saúde do trabalhador em particular, da audição. **Conclusões:** este estudo mostra que ainda há uma grande distância entre o que é proposto e o que se faz. Com base nos dados obtidos conclui-se que os profissionais de saúde, que atuam em empresas do Pólo Industrial de Manaus, abordam aspectos relevantes do PPPA, entretanto, implementam ações de maneira desarticulada, ainda centradas nas exigências legais mínimas, limitando assim, a implantação de um programa preventivo eficaz. Os motivos que retratam esse cenário indicam a necessidade de estudos mais aprofundados, de modo a inserir todos os atores sociais e assim evidenciar o contexto nas mais diversas dimensões.

DESCRITORES: Saúde do Trabalhador; Perda Auditiva; Ruído

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