

Original articles

Noise and quality of life in the perspective of gas station workers

O ruído e a qualidade de vida na perspectiva de trabalhadores de postos de combustíveis

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ABSTRACT

Purpose: to evaluate the understanding of noise and the perception about quality of life of gas station workers.

Methods: this is an exploratory study with a sample of 32 employees, of both sexes from three gas stations of a country town in the state of Rio Grande do Sul. Data were collected during the activities allusive to the International Noise Awareness Day, in April 2015, by a questionnaire on noise and hearing health and by the World Health Organization Quality of Life (WHOQOL-Bref).

Results: most workers reported not having a hearing loss, discomfort or pain when subjected to noise. However, they believe that exposure to noise can lead to hearing loss as well as tinnitus and dizziness. The working environment was indicated as noisy, but the workers do not perceive noise producers and do not adopt preventive measures. Concerning the quality of life, the lowest score was for the environmental domain, in both sexes and age equal and less than 30 years.

Conclusion: the study allowed to understand that the majority of workers does not have significant knowledge about the need for protective measures against noise; also showed that the environmental domain was the most compromised in the perception of employees on quality of life.

Keywords: Occupational Noise; Working Environment; Quality of Life

RESUMO

Objetivo: avaliar a compreensão sobre o ruído e a percepção sobre a qualidade de vida de trabalhadores de postos de combustíveis.

Métodos: trata-se de um estudo exploratório, com amostra de 32 trabalhadores, de ambos os sexos, de três postos de combustíveis de um município do interior do Rio Grande do Sul. A coleta foi realizada durante as atividades alusivas ao Dia Internacional de Conscientização sobre o Ruído, em abril de 2015, por um questionário sobre ruído e saúde auditiva e pelo *World Health Organization Quality of Life (WHOQOL-Bref)*.

Resultados: a maioria dos trabalhadores relatou não apresentar perda auditiva, incômodo ou dor quando submetida a ruídos. No entanto, acreditam que a exposição ao ruído pode levar ao comprometimento auditivo, assim como ao zumbido e à tontura. O ambiente de trabalho foi indicado como ruidoso, porém os trabalhadores não se percebem produtores de ruído e não adotam medidas preventivas. Quanto à qualidade de vida, o menor score foi relativo ao domínio ambiental, em ambos os sexos e na faixa etária igual e inferior a 30 anos.

Conclusão: o estudo permitiu compreender que a maioria dos trabalhadores ainda não possui conhecimento suficientemente significativo sobre a necessidade de medidas de proteção contra o ruído; também evidenciou que o domínio ambiental foi o mais comprometido na percepção dos trabalhadores sobre qualidade de vida.

Descritores: Ruído Ocupacional; Ambiente de Trabalho; Qualidade de Vida

INTRODUCTION

The concern about issues related to quality of life, arising from human and biological sciences, stands out in appreciating parameters broader than symptoms control, decrease of mortality and increase of expectation of life¹. It is necessary to consider the perception of individuals in relation to their position in life, the cultural context, the plan/system of values in which they live and in relation to their purpose, expectations and concerns².

It is possible to affirm that, nowadays, work occupies a considerable part in people's lives, influencing directly and significantly the quality of life of workers. Therefore, the management of this quality primarily depends on the maximization of human potential; the physical space should be a place in which the worker has maximum comfort and can measure the balance between working and personal lives³.

The Ottawa Charter⁴ announces changes in lifestyles, work and leisure; affirms the direct influence of such factors on the health of people and, besides, that the social organization of work should contribute to the formation of a healthier society.

From the perspective of healthy living, there is, in Brazil, the National Policy for Health Promotion whose objective is to promote quality of life and reduce vulnerability and health risks related to social determinants and conditionings, such as: the style of living, working and housing, environmental, educational, cultural and leisure conditions, and the access to essential goods and services⁵. In the same sense, the National Policy for Security and Health at Work has as its foundation the promotion of workers' health and the improvement of their quality of life, seeking to prevent the risk of accidents and damage to their health arising from their relationship with work or occurring in the course of this, aiming to eliminate or reduce risks in labor environments⁶.

Among the many occupational risks that workers, in various activities, may be exposed, we highlight noise⁷, defined as a sound or group of sounds with intensity that may result in illnesses or negative interference in communication process⁸.

Research on quality of life, based on the perception of the individuals themselves, are necessary for the planning of actions aimed at health promotion and risk prevention. The *World Health Organization Quality of Life (WHOQOL-Bref)* fulfills that purpose; it is a simple application tool that includes positive and negative aspects sufficient to assess the multidimensionality of

quality of life⁹. This theme is still sporadically treated in organizational universe. However, the concern about quality of working life and worker satisfaction appears as an aspect of paramount importance to the development of organizations that are focused on productivity and the labor market³.

It is known that gas stations are highly competitive organizations and a differential between them is the maintenance of the staff, which, on the other hand, can be achieved by means of specific health promotion actions such as the campaign on the International Noise Awareness Day - INAD/Brazil, since this professional category is exposed to several factors that can affect their health, especially the hearing system.

The noise from traffic and gas stations work equipment constitute real risks to hearing, which justifies the need and importance of protective and risk and health prevention actions for this category^{7,10}.

In this context, this study aimed to assess the understanding of gas station workers about noise and hearing care, as well as their perceptions about quality of life.

METHODS

This research was conducted by undergraduate and graduate students in speech therapy from a public university in the state of Rio Grande do Sul. It was developed after approval by the Research Ethics Committee of the Federal University of Santa Maria, number 996.670, in 04/14/2015, according to the Resolution No. 466/12 of the National Health Council, referring to research on human beings.

This study is constituted by a descriptive and cross-sectional nature with qualitative and quantitative analysis; it describes and interprets data from 32 gas stations workers on the understanding about noise, hearing health and perception of quality of life. The sample was constituted by convenience.

Data collection occurred during the allusive activities of the International Noise Awareness Day about - INAD/Brazil, celebrated between April 27th and May 1st 2015, at gas stations, in a municipality in the central region of Rio Grande do Sul.

As inclusion criteria, workers' age should be equal or more than 18 years, they were both male and female and needed to be at work at the time of the activities. The collection was started after they signed the Term Informed Consent.

Participants responded to two data collection instruments: a questionnaire (Figure 1), created by

the researchers, about noise and hearing care, and a protocol on quality of life (WHOQOL-Bref).

The questionnaire (Figure 1) is semi-structured, prepared for the very specific purpose of INAD/Brazil 2015 - Traffic Noise: a villain that no one pays attention (available at the end of this article); has 22 questions (four open and 18 closed) aimed at identifying workers understanding and awareness of the noise and its hearing effects (tinnitus, hearing loss, discomfort to loud sounds, ear fullness) and extra hearing effects (disorder of the circulatory, respiratory, gastrointestinal, neurological and psychological systems) on their health, as well as questions related to personal (name,

age and sex) and occupational (function and time in the job) characteristics.

The WHOQOL-BREF³ protocol investigates the perception of quality of life; It consists of 26 questions based on four areas - physical, psychological, social and environmental. The score of each domain occurs by means of Likert type scale (1, 2, 3, 4 and 5), and the highest values are related to a better quality of life, except for questions 3 (physical pain), 4 (treatment) and 26 (negative feelings) with reversal score. This instrument is concerned with the perceptions on quality of life of the last two weeks, involving evaluation, capacity and frequency.

QUESTIONNAIRE	
NAME: _____	AGE: _____
PROFESSION: _____	HOW LONG? _____ SEX: () M () F
Can you hear well?	() YES () NO
If you can't, in which ear?	() Right () Left () Both
Have you ever heard about tinnitus?	() YES () NO
Do you what is tinnitus?	() YES () NO
Do you have tinnitus?	() YES () NO () High or () Low?
In which ear?	() Right () Left () Both / () Always () Sometimes
Have you ever heard about dizziness?	() YES () NO
Do you what is dizziness?	() YES () NO
Do you have dizziness?	() YES () NO Do you feel () spinning or () dizzy?
Can the exposure to noise cause hearing loss?	() YES () NO
What else exposure to noise can cause?	_____
Does traffic noise cause hearing loss?	() YES () NO
Does traffic noise cause tinnitus?	() YES () NO
Does traffic noise cause dizziness?	() YES () NO
Are you exposed in your daily life to any noise?	() YES () NO WHICH? _____
Are you sensitive to noise?	() YES () NO
Do you feel ear pain due to high volumes?	() YES () NO
Do you listen to music using headphones?	() YES () NO () Low () Medium () High
Do you consider your home a noisy place?	() YES () NO
Do you consider your school environment a noisy place?	() YES () NO
Do you make noise in your daily life?	() YES () NO WHICH? _____
What do you do to protect your hearing?	_____

Figure 1. Questionnaire

The responses from the WHOQOL-Bref were related to personal characteristics (age and gender), occupational data (function and time of activity) and awareness about noise and hearing health of participating workers.

For organization of the database, we used the computer program "Excel" version 2013. Data were analyzed using Statistica 9.1 software, by a descriptive analysis.

RESULTS

We interviewed 32 employees from three gas stations, 10 (31.2%) were female and 22 (68.8%) were male. The average age was 32.31 years, the youngest was 18 and the elder, 66 years. Women average age was 38.2 years and men, 29.68.

Workers had different occupations: 16 (50.3%) were gas station attendants, four (12.5%) cashiers, three (9.3%) car washers, two (6.2%) oil changer employee and seven (21.7%) were categorized as "other" - general coordinator, office assistant, secretary, human resources analyst, telephonist, administrative assistant, general attendant, lubricator employee and taxi radio operator.

The overall average working time, in the same occupation, was three years, being the shortest two months and the longest 21 years. The gas station attendant function has been highlighted with the lowest working time, since seven (43.75%) of the 16 individuals were in the job less than one year.

Regarding hearing conditions (Table 1), workers indicated hearing loss in only one ear (the left); tinnitus in only one ear (unmarked side). Concerning the type of buzz, two (33.33%) reported high-pitched, three (50%) low-pitched and one did not report the type. In relation to the dizziness, vertigo was mentioned by two participants (40%) and imbalance by three (60%).

When asked about what they knew about tinnitus, 30 (98.9%) said they have heard about, and concerning dizziness, 32 (100%) have answered the same.

29 workers (90.6%) referred exposure to noise, which would be derived from traffic (horn noise,

engines, cars exhaust without maintenance) and work equipment (fuel dispensers and car washing and tire inflation machines, telephone, radio); however, the majority, 22 (68.7%), have reported no discomfort nor pain on exposure to noise at work - 28 (87.5%).

About the relationship between auditory conditions and exposure to traffic noise, 24 (75%) indicated that these may be related to hearing loss and 25 (78.1%) to tinnitus. Regarding dizziness, this relationship was not so evident: 17 (53.2%) indicated that the traffic noise causes dizziness and 15 (46.8%) did not.

Most workers, 30 (93.7%), ranked the domestic environment as not noisy; in contrast, the workplace was reported by 23 (71.8%) as noisy. Nevertheless, most workers 24 (75%) denies generate noise in their daily lives, and only eight (25%) perceive themselves as noise producers.

Regarding hearing protection, the majority, 20 (62.5%), answered not taking any action about it and were aware that exposure to noise causes hearing loss. The same number of workers also showed other factors associated with noise: the emergence of stress, headache, difficulty in communication, imbalance and behavior change.

In relation to the use of headphones, 27 (84.3%) said they did not use it, while five (15.6%) did; among headphone users, four (12.5%) answered they used with middle intensity and one (3.1%) high intensity.

Concerning the interpretation of the perception of quality of life, there was an overall average of 70.3, being 78.6 the average of the physical domain, 70.8 of the psychological, 75.1 and 57.8 of the social and the environmental domains.

The lowest perceptions of quality of life were associated with the function of gas station attendant, cashier and manager, as well as with the age group equal or less than 30 years old (Table 2).

Data were analyzed using the *Software Statistica* 9.1, by a descriptive and frequency analysis.

Table 1. Auditory deficit, tinnitus and dizziness

	Yes	No	No Answer
Auditory Deficit	2 (6,2%)	30 (93,8%)	-
Tinnitus	6 (18,7%)	26 (81,3%)	-
Dizziness	15,6%)	25 (78,1%)	2 (40%)

Table 2. Sociodemographic distribution and quality of life for gas stations workers (n – 32)

Function	Age	Sex	PHD (%)	PSD(%)	SD (%)	ED (%)	QOL (%)
G	20	2	82.1	75.0	75.0	71.9	76.0
G	31	2	64.3	75.0	66.7	56.3	65.6
G	22	2	82.1	54.2	41.7	40.6	54.7
G	30	2	57.1	62.5	58.3	31.3	52.3
G	21	2	82.1	91.7	91.7	65.6	82.8
O	44	2	60.7	75.0	91.7	84.4	77.9
G	31	1	92.9	83.3	100.0	62.5	84.7
C	30	2	71.4	8.3	75.0	12.5	41.8
G	44	2	78.6	75.0	83.3	78.1	78.8
G	30	1	67.9	70.8	83.3	53.1	68.8
G	23	2	64.3	66.7	33.3	50.0	53.6
CW	48	2	89,3	66,7	91,7	53,1	75,2
G	22	2	82,1	54,2	58,3	37,5	58
G	28	2	82,1	66,7	50	40,6	59,9
G	37	2	67,9	70,8	83,3	53,1	68,8
CW	20	2	100	91,7	75	68,8	83,9
M	28	1	64,3	54,2	41,7	28,1	47,1
AN	25	1	67,9	75	66,7	71,9	70,3
OA	66	1	92,9	66,7	66,7	62,5	72,2
PX	31	2	67,9	70,8	83,3	59,4	70,3
T	47	1	71,4	62,5	83,3	62,5	69,9
C	40	2	78,6	70,8	83,3	43,8	69,1
O	39	2	78,6	70,8	75	62,5	71,7
CW	33	2	75	70,8	66,7	59,4	68
G	24	1	82,1	95,8	75	43,8	74,2
G	22	2	89,3	83,3	75	62,5	77,5
G	39	1	82,1	83,3	91,7	65,6	80,7
G	49	1	89,3	79,2	66,7	65,6	75,2
C	18	2	57,1	70,8	66,7	56,3	62,7
AA	43	1	64,3	83,3	91,7	50	72,3
GA	26	2	78,6	75	66,7	62,5	70,7
C	24	2	71,4	75	75	37,5	64,7

Legend: GA (general attendant), AA (administrative assistant), M (manager), OA (office assistant), AN (human resource anayst), C (cashier), G (gas station attendant), CW (car washer employee), PX (PX operator), T (telephonist), O (oil change employee), 1 (female), 2 (male), PHD (physical domain), PSD (psychological domain), SD (social domain), ED (environmental domain), QOL (quality of life).

Data were analyzed using the *Software Statistica* 9.1, by a descriptive and frequency analysis.

DISCUSSION

This study revealed the prevalence of male workers, with 30 years of average age, in the gas station attendant function and with average of three years of working time. It is known there is a male primacy in some work activities, such as gas stations workers, truck drivers and other workers exposed to benzene; such occupations have more obvious risks than others¹⁰. The predominance of males in the gas station attendant function was also found in another study¹¹, as well as employee turnover in this job is associated with exposure to many occupational risks and unattractive salaries.

Considering some situations observed in the gas stations environment, beyond chemical risk, we highlight exposure to noise, especially those arising from traffic and work equipment. Scholars indicate that workers, according to their work environment, are exposed to stress from the noise with higher or lower intensity, which makes it more or less susceptible to this physical agent¹². Occupational stress becomes chronic as the exposure to work stressors is prolonged¹³.

Therefore, understanding the exposure to combined hazards (physical and chemical), which can cause hearing loss⁷, is crucial in prevention actions, as those that produced the results of this study, namely - sensitization and immediate feedback on health conditions and risks and on the quality of life of the workers involved.

We concluded in this study that workers have no complaints about hearing loss, tinnitus and/or dizziness, and have no discomfort or pain to noise exposure. However, a study with a similar population found out that workers, even not realizing hearing problems, when subjected to audiometry showed cochlear and central alterations¹⁴. Therefore, we emphasize the need to maintain collective educational and preventive measures (so-called administrative measures) as well as individual actions, in this case, through periodic examinations (audiometry) and Personal Protective Equipment (PPE), as hearing protectors.

Concerning traffic noise, it is remarkable workers' understanding that this factor leads to hearing loss and contributes to the emergence of tinnitus. However, almost half of the individuals do not relate noise to the emergence of dizziness. This fact indicates the need to instruct workers about the relation between noise and dizziness, since it is known that early identification of changes in body balance (related to noise) can prevent the aggravation and possible interferences in daily life

activities and interpersonal relationships resulting from exposure to occupational noise¹⁵.

We evidenced that most workers believe they do not make noise; only a small portion understands that labor activity involves noise production. Therefore, the individual perception of the work environment needs to be discussed; workers need to recognize that the risk exists and there are people more or less tolerant to this physical agent. Tolerance is a factor that minimizes the discomfort, but does not protect the employee from the consequences of the exposure to which they are submitted¹⁶.

Most individuals reported not using any hearing protection measure. There is a study evidencing that many workers exposed to toxic hazards such as fuel vapors, noise and other chemicals present in the gas stations do not use the indicated PPE and other preventive measures, for example, those of collective protection¹⁷.

We emphasize that Brazilian legislation recommends hearing protection as extremely important, especially in noisy environments and chemical hazards. By the way, a dynamic and continuous multiprofessional, interdisciplinary and intersectoral intervention is recommended, focused on sensitization/awareness of workers in order to make them co-responsible for their own health⁶. As well as identifying risk factors, actions on the environment and on work processes are necessary in view of the quality of life of workers exposed to occupational risks.

Concerning the perception of quality of life, we observed that workers, in this study, had a lower score in the environmental domain; this is related to safety in daily life, climate, noise, pollution, money enough to meet the needs of each individual, access to information, health services and transportation, leisure opportunities and satisfaction with the place where they live. It should be noted that, to a large extent, the aspects that compose the environmental domain depend on assistance from government agencies (infrastructure, access to labor and employment, health etc.) and, therefore, cannot be controlled directly and exclusively by individuals¹⁸.

The lowest perceptions of quality of life were associated with the function of gas station attendant, cashier and manager, as well as group age equal or less than 30 years old. Such work activities require workers' physical and cognitive skills, but mainly social and relationship skills with a varied public.

Scholars who researched quality of life affirm the interference in different areas and aspects of quality of life may be associated with different working areas and activities¹⁹. These, as well as environmental factors, significantly influence the individual's performance in terms of productivity and quality, because they act directly on their psychological state, changing their behavior¹².

We should note that in this study it was possible, as well as in another study¹⁹, understand the existing interrelationships between working activity and quality of life; besides, we could identify the need for constant sensitization to expand knowledge about health (in this case, hearing care), in order to minimize damage and vulnerabilities in and out the working routine.

We recognized that the sample was small, so we suggest further studies with this theme in order to contribute to the expansion of health care concerning workers exposed to chemical and physical hazards. One can resort to advanced technologies for the diagnosis of diseases, but the importance of continuing education in health is emphasized, seeking workers' responsibility for their own health, as well as employer's regarding the employees' health. Therefore, we aim to the understanding of involved individuals on the need for a biopsychosocial approach, which is based on the uniqueness of each one, favoring the implementation and practice of health promotion.

CONCLUSION

This study helped to understand that the participating gas stations workers need also to experience more sensitizing and health promotion actions related to hearing care.

The application of WHOQOL evidenced that the environmental domain is the most harmed in the perception of quality of life of most individuals. The lowest percentages of perception of quality of life, in general, have been associated with gas station attendant, cashier and manager functions.

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