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GARBAGE COLLECTORS: ANALYSIS OF OCCUPATIONAL ACCIDENTS, MAIN RISK FACTORS AND ACCESS TO HEALTH

*Coletores de lixo: análise dos acidentes ocupacionais, principais fatores de riscos e o acesso à saúde**Recolectores de basura: análisis de accidentes de trabajo, principales factores de riesgo y acceso a la salud*Érika Layne Gomes Leal¹ Edilberto da Silva Lima² Ediney Rodrigues Leal³ Gerdane Celene Nunes Carvalho⁴ Mariluska Macedo Lobo de Deus Oliveira⁵ Laise Maria Formiga Moura Barroso⁶ 

RESUMO

OBJETIVO: avaliar os índices de acidentes ocupacionais dos garis, identificar os fatores de riscos relacionados aos acidentes de trabalho e avaliar a frequência e o motivo da procura do serviço público de saúde pelo gari. **Método:** trata-se de uma pesquisa descritiva, realizada no município de Picos/PI. A população e amostra foi representada por 51 coletores de lixo. Os dados foram coletados por meio de um formulário, no período de setembro a novembro de 2019 e foram digitados com a utilização de um *software*. **Resultados:** a maioria relatou ter sofrido pelo menos um tipo de acidente laboral e às principais causas foram a falta de atenção e o acondicionamento inadequado do lixo. Ademais, a maior parte dos garis só vai à Unidade Básica de Saúde quando estão doentes. **Conclusão:** diante do exposto, faz-se necessário a realização de atividades de promoção a saúde desses trabalhadores.

DESCRIPTORES: Saúde do trabalhador; Riscos ocupacionais; Acidentes de trabalho.

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ABSTRACT

OBJECTIVE: to evaluate the occupational accident rates of street sweepers, identify risk factors related to work accidents and assess the frequency and reason for the search for the public health service by the gari. **Method:** this is a descriptive research, carried out in the city of Picos/PI. The population and sample was represented by 51 garbage collectors. Data were collected through a form, from September to November 2019, and were entered using a software. **Results:** most reported having suffered at least one type of work accident and the main causes were lack of attention and inadequate packaging of garbage. Furthermore, most street sweepers only go to the Basic Health Unit when they are sick. **Conclusion:** given the above, it is necessary to carry out activities to promote the health of these workers.

DESCRIPTORS: Occupational health; Occupational risks; Work accidents.

RESUMEN

OBJETIVO: evaluar los índices de accidentalidad laboral de los barrenderos, identificar los factores de riesgo relacionados con los accidentes de trabajo y evaluar la frecuencia y motivo de búsqueda del servicio público de salud por parte de los gari. **Método:** se trata de una investigación descriptiva, realizada en la ciudad de Picos/PI. La población y muestra estuvo representada por 51 recolectores de basura. Los datos fueron recolectados a través de un formulario, de septiembre a noviembre de 2019, y fueron ingresados mediante un software. **Resultados:** la mayoría refirió haber sufrido al menos un tipo de accidente laboral y las principales causas fueron la falta de atención y el embalaje inadecuado de la basura. Además, la mayoría de los barrenderos solo acuden a la Unidad Básica de Salud cuando están enfermos. **Conclusión:** dado lo anterior, es necesario realizar actividades para promover la salud de estos trabajadores.

DESCRITORES: Salud ocupacional; Riesgos laborales; Accidentes de trabajo.

INTRODUÇÃO

Occupational risk is defined as the probability of a certain event happening that causes damage to health. Among the professions that entail a significant occupational risk, we can highlight the garbage collectors, who are the professionals responsible for collecting garbage in cities, developing a public service that is very important for the preservation of the environment and for people's health.¹

However, when performed inadequately, the work of garbage collection becomes a source of risk to the health and physical integrity of these workers, because, during the work day, which is considered exhausting, they are exposed to climate variations, excessive noise, smoke, dust, risk of musculoskeletal problems, which is the most prevalent problem among these professionals, as well as the risk of falls, being run over by a car, cuts, and perforations.²

It is known that all over the world, accidents and diseases originated at work persist, and with waste collectors it is no different. They are in direct contact with all types of risks, such as physical (noise, heat, cold, humidity, radiation), chemical (mineral dust, metal fumes, mist, gases, and vapors), biological (viruses, bacteria, protozoa, fungi, parasites), ergonomic (physical effort, manual lifting and carrying of weights, posture demands, excessive rhythms and repetitiveness),

and mechanical (falls, being run over, crushed by the garbage compactor, fractures).¹

In view of this, there is the possibility of acquiring several diseases and illnesses due to the unhealthy working conditions.³ In view of the above, it is clear that people need adequate working conditions for satisfaction and preservation of health in their work experience and it is of utmost importance to monitor their health conditions.

We know how important garbage collection and city cleaning are, but we ignore the operational difficulties, the working conditions, and the consequences of this work on the lives of the garbage collectors, who perform their activities most of the time in precarious safety conditions associated with the possibility of getting sick and having accidents.

Thus, this study is justified by the need for visibility and attention to the health of this working class, as well as the need for current studies on the working conditions in which they are inserted. This study becomes relevant because the results found can serve as a basis for reflection about the work of the garbage collectors and possible formulation of strategies and application of interventions that can contribute to the quality of life and work of these professionals.

Because it is an unhealthy activity, the domestic garbage collectors represent the group of choice for the research due

to their possible health care needs. It is believed that listening to their affections, anxieties, and needs is one of the ways to contribute to the construction of knowledge for the protection of health at work.

Given the above, this study aimed to evaluate the occupational accident rates of street sweepers, identify the risk factors related to occupational accidents, and evaluate the frequency and the reason for seeking public health services by the street sweeper.

METHOD

This is a descriptive research, where the primary objective is to describe the characteristics of a given population or phenomenon.⁴ The study was conducted in the Secretaria Municipal de Serviços Públicos, which is located in the urban area of the city of Picos/PI and has the purpose of performing all activities related to the maintenance of the city cleaning.

The study population was represented by the collectors of urban and domestic garbage, popularly known as *garis*. The sample was composed of 51 volunteers ($n=51$). Male garbage collectors were included in the research, since women do not perform the function of garbage collection, aged 18 years old or older, and that, obligatorily, perform the function of garbage collection. Garbage collectors who work only in weeding or sweeping the streets were excluded from the study. Moreover, we emphasize the voluntary agreement of the street sweeper to participate in the study by signing the Informed Consent Form (ICF).

Data were collected by means of a form with open and closed questions, in the period from September to November 2019. Before the forms were handed out, the research objectives were explained and the Informed Consent Form was handed out in two copies to be signed or fingerprinted, with one being held by the street sweeper and the other by the researcher. The participants were informed of the strictly scientific and legal nature of the research, as well as its contributions to the category. The forms were reviewed and inconsistencies were corrected before typing.

Later, they were typed with the Statistical Package for the Social Science (SPSS) software version 20.0. After tabulation, an exploratory analysis of the data was performed to describe the frequency distributions of the variables, using tables and graphs.

The statistical analysis used was descriptive, based on the percentages of the variable response categories. The data were explored using univariate and bivariate techniques. The discussion was based on the literature already produced on the subject.

As for the risks, the research offered minimal risks, which could be immediate or late, namely: embarrassment and information leakage. Although there was the possibility of damage, the researchers took the necessary measures to avoid them, such as: conducting the interviews in a reserved place and using codes through numbers (e.g. 0001, 0002, 0003, etc.) to identify the research participants.

As benefits, the study provided short and long term benefits for the garbage collectors. Guidance on work safety measures is an example of a short-term benefit. In the long term, the study will provide the garbage collectors with better working conditions, since the data exposed here will serve as a reference for the formulation of strategies and interventions.

The elaboration of the project, as well as its entire execution was guided by the ethical principles of the National Health Council Resolution (CNS) No. 466/2012. All ethical guidelines were followed, in which the first step was through the registration in the Platform Brazil, which was submitted to the Ethics and Research Committee (CEP) of the State University of Piauí (UESPI). The research was approved with the following number CAAE: 10104119.7.0000.5209 and the opinion number: 3.305.643, on May 06, 2019.

RESULTS

Fifty-one trash collectors were interviewed and the results were presented in tables and graphs, and from the analysis of these it was possible to characterize the study population. Table 1 presents the socioeconomic, racial and demographic profile of the garbage collectors, in which the male gender predominated with 51 (100%). The age of the interviewees ranged from 22 to 55 years, with a mean age of 36.53 years, and the most prevalent age group was 30 to 39 years with a total of 26 (51%). Regarding color, 24 (47.1%) declared themselves as brown and 18 (35.3%) as black. As for schooling, 37 (72.5%) have incomplete/complete elementary school education. Moreover, 38 (74.5%) are married or in a stable union, and 41 (80.4%) have children. Regarding the sum of the family income, 40 (78.4%) receive up to one minimum wage. As for the time they have been working, 20 (39.3%) have been collecting garbage for more than 10 years.

As for the garbage collectors' occupational accident rates, 31 (60.8%) reported having suffered at least one type of accident, as shown in Graph 1. Moreover, cuts are the most cited types of accidents, 18 (35.3%), followed by punctures, five (9.8%), and falls, four (7.8%), according to Graph 2.21 (41.2%), as shown in Graph 3.

Most of the garbage collector workers had no training to perform their function 38 (74.5%). In addition, they have

consequences such as body pain 18 (35.3%) and excessive fatigue 14 (27.5%) due to the workload, and most demonstrated not to have knowledge about the risks they are subject to 26 (51%), as shown in Table 2.

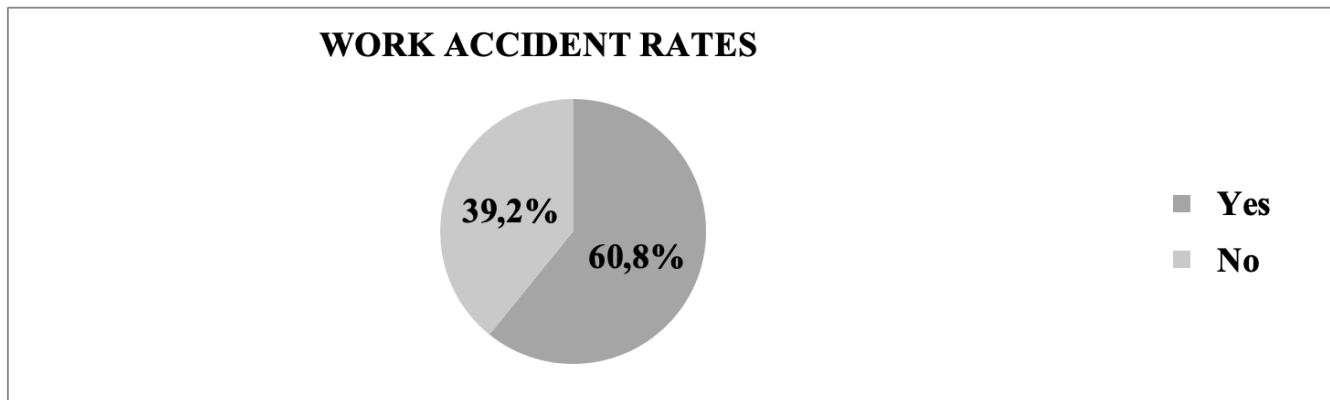
Regarding the frequency and the reason for seeking the public health service by the garbage collector workers, according to the

data in Table 2, most only seek the health service when they are sick, with a total of 23 (45.1%) and 32 (62.7%) respectively. Despite this, 30 (58.8%) said that their vaccinations were up to date. Moreover, 28 (54.9%) rated as good the services provided by the Family Health Strategy.

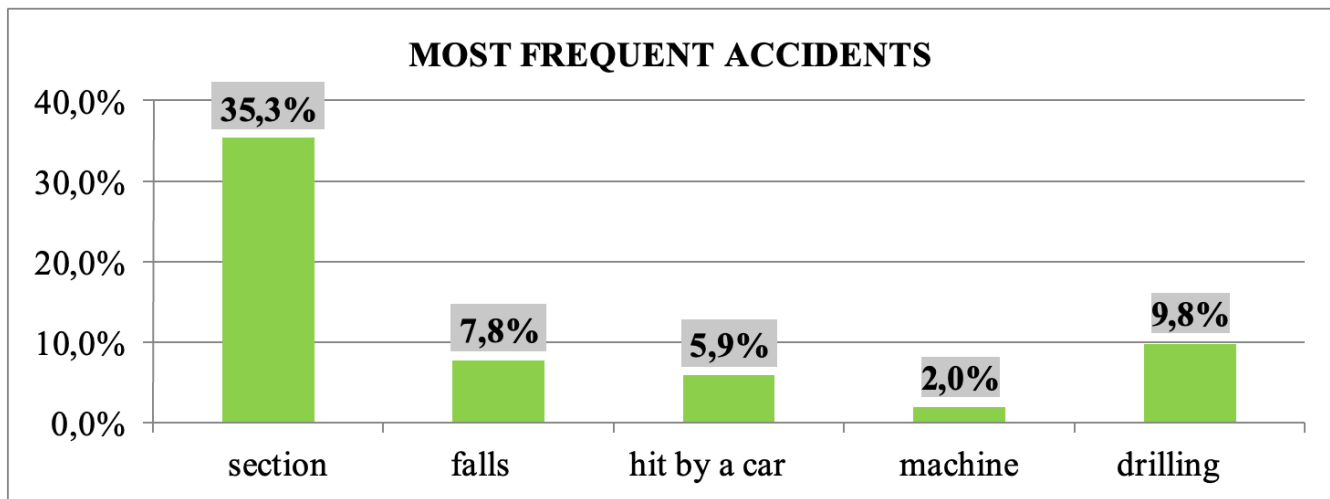
Table 1 - Absolute and relative distribution of the study population, according to socioeconomic, racial and demographic data (n= 51). Picos, PI, Brazil, 2019.

VARIABLES	n	%	Statistics
Gender			
Male	51	100	
Female	00	00,0	
Age Group			
22-29 years old	09	17,6	
30-39 years old	26	51,0	
40-49 years old	12	23,5	
50-55 years old	04	7,8	
Race/color			
White	08	15,7	
Brown	24	47,1	
Black	18	35,3	
Yellow	01	2,0	
Education			
Literate	05	9,8	
Elementary school incomplete/complete	37	72,5	
High school incomplete/complete	09	17,6	
Marital status			
Married/stable union	38	74,5	
Single	11	21,6	
Widower	01	2,0	
Divorced	01	2,0	
Children			
Yes	41	80,4	
No	10	19,6	
Sum of family income			
Up to 1 minimum wage	40	78,4	
>1 to 3 wages	10	19,6	
>3 wages	01	2,0	
Working Time			
1 month to 1 year	05	9,8	
>1 year to 5 years	10	19,6	
>5 years to 10 years	16	31,4	
>10 years old	20	39,3	

Source: author himself.

Graph 1 - Occupational accident rates of garbage collectors. Picos, PI, Brazil, 2019

Source: author himself.

Graph 2 - Most frequent types of accidents (n= 51). Picos, PI, Brazil, 2019.

Source: author himself.

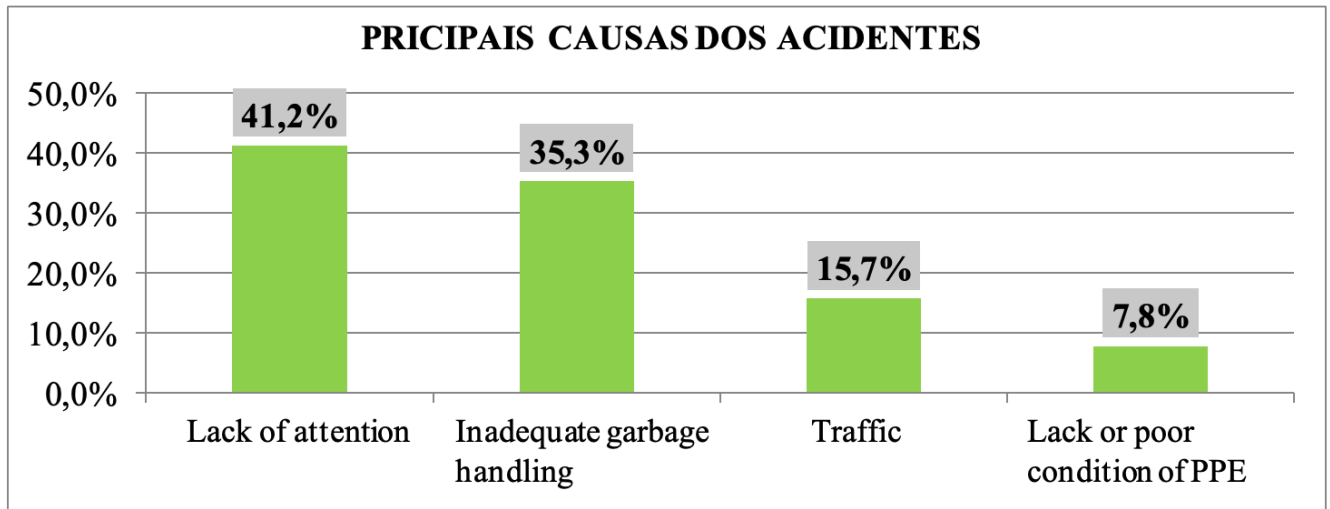
Graph 3 - Main causes of occupational accidents (n= 51). Picos, PI, Brazil, 2019

Table 2 - Risk factors related to occupational accidents and reason for seeking the public health service by the gari. Picos, PI, Brazil, 2020

VARIABLES	n	%
Consequence of the workload		
No consequence	18	
Body aches and pains	18	35,3
Tension and anxiety	01	35,3 3,0
Excessive fatigue	14	27,5
Uses PPE*		
Yes	43	84,3
No	08	15,7
PPE in good condition for use		
Yes	39	76,5
No	12	23,5
Received training to collect garbage		
Yes		25,4
No	13	74,5
	38	
Is aware of the risks it is subject to		
Has knowledge		3,9
Knows partially	2	45,1
No knowledge	23	51,0
	26	
Frequency of visits to BHU		
Once a month	07	13,7
Once every 6 months	10	19,6 9,8
Once a year	05	45,1
When I am sick	23	11,8
Never	06	
		21,6
Reasons that lead to the search for BHU		
Medical consultation (routine)	11	2,0
Dental consultation (routine)	01	3,9
Vaccination	02	62,7
When I am sick	32	9,8
I don't go to the health service	05	
Has an updated vaccination booklet		
Yes		
No	30	58,8
Don't know	12	23,5
	09	17,6
How do you evaluate the Family Health Strategy		
Bad	04	7,8
Regular	13	25,5
Good	28	54,9
Great	06	11,8

*Personal Protective Equipment *Basic Health Unit Source: Author.

DISCUSSION

As for socioeconomic, racial and demographic data, the present study showed that it is a population represented entirely by males and this result is in line with the literature, where several studies conducted with garbage collectors also point to the predominance of men in the profession.^{1,5} This fact can be justified by the intense physical strength that must be exerted during the workday of garbage collection.

Regarding the age range, it was observed that most of the interviewees are young adults. Other studies have shown similar results, with the ages ranging from 24 to 47 years and 30 to 41 years.⁵⁻⁶ The predominance of young adults may be related to the adequate physical conditioning required to perform the function of street sweeper.

With regard to color, most of the garbage collector workers declared themselves as brown and black. A survey carried out with 21 garbage collectors working for an outsourced company in the municipality of Jataí, in the southwest of Goiás state, showed that the majority (70.59%) of the professionals also reported being of brown color.⁷ Brown is a symbol of *mestizaje*, the result of crossing whites and blacks.⁸

As for schooling, most workers have only incomplete/complete elementary school education. Similar to this result, a study showed that most of the garbage collectors had incomplete elementary school as the highest level of education.² The permanence of the low level of education among these workers is justified by the need to start working at a very young age, added to the lack of incentive to continue their studies.

In analyzing the items marital status and existence of children, it was found that most of the garbage collector workers were married or in a stable union and that they had children. Regarding these data, a study carried out in Minas Gerais showed a similar result, for of the professionals interviewed (41.9%) lived in a stable union, followed by (27.9%) who were married, and (79.1%) informed that they had children.⁹

Regarding monthly income, a similar result was found in a study carried out with 15 garbage collectors employed by a company responsible for household waste collection in Fortaleza/CE, who reported receiving up to one minimum wage.¹⁰ In contrast to the results of this study, another research showed that (85%) of the garbage collector workers reported receiving between 1,000 and 3,000 reais.⁶

Taking into consideration the length of time working, most of the interviewees reported working for more than 10 years as a street sweeper. Another study, specifically a master's thesis carried out in Florianópolis/SC, verified that 60% of the interviewees had been working as street sweepers

for between 5 and 10 years.⁶ However, other studies show an average of 4 years of work time due to changes in municipal management.¹⁰⁻¹¹ The long years of experience as a street sweeper may be related to the lack of job opportunities and low educational level, as well as the lack of incentive to study and take professional courses.

Regarding the occupational accident rates of the street sweepers, most of the interviewees in this study reported having suffered at least one type of occupational accident. The results of this research can be compared to those found in another study carried out in Jataí/GO, where (82.4%) of the interviewees reported having suffered some type of accident while collecting household garbage.⁷ The high rates of accidents demonstrate the need for change and commitment from society, public institutions, and employers in order to maintain the health and safety of these workers.

When asked about the most frequent types of accidents, the most cited were cuts, followed by punctures and falls. A study carried out based on the reports of household garbage collectors who work for a company responsible for the collection of garbage in a city in the Northeast of Brazil showed that the most commonly felt and declared by the participants of the study were biological risks, followed by accidents involving sharp objects and being run over,¹ showing us that occupational accidents happen to all garbage collectors, but that each study points to a different reality.

Regarding the main causes of occupational accidents in this study, most of the garbage collectors cited lack of attention and inadequate garbage handling. A qualitative study showed, through the words of the workers, the importance of attention when performing the task of garbage collection; moreover, it showed that the lack of awareness of the population regarding the correct disposal of garbage is one of the factors that bothers the workers the most, interfering negatively in their work, increasing the risks and the difficulty of the work, because, many times, accidents happen due to negligence of those who segregate the waste in an inadequate manner.⁷

About the consequences of the workload, some interviewees in this study said they had no consequences, while others said they suffered from body aches and pains. A research carried out in Sergipe showed that all workers reported feeling a lot of pain due to the movements performed to perform the activity of garbage collection, such as going up and down the vehicle at a fast pace.¹¹

In addition, another research carried out with garbage collectors who work in the public service of a city in the interior of Paraíba/PB applied a diagram with the intention of raising the most painful body areas among the workers, finding that

most of the interviewees pointed out pains in the region of the back.⁵ With this, we can perceive that the body is, for the garbage collector workers, their main work instrument and their source of sustenance. However, the pains are present and are considered risk factors for occupational accidents.

We can also mention that the non-use of Personal Protective Equipment (PPE) is also a risk factor. According to NR6, the company has the obligation to provide its employees with the protection equipment indicated for the risk, free of charge and in adequate conditions for use. Furthermore, it is the employee's duty to use and maintain it, and to inform the employer in case of changes that make its use inappropriate.¹²

In the present study, most employees said they use PPE. However, some reported that the PPE was not in good condition for use. A similar result to that found in another study.¹¹ However, we can observe in the field evaluation that the non-compliance in the use of the equipment is evident, because the workers did not use PPE against noise, despite being in direct contact with the noise generator. Moreover, they did not wear gloves resistant to sharp materials, nor did they wear masks and goggles.

A similar result was observed in the literature, showing that the garbage collectors do not use all the PPE necessary for their protection.¹³ And in another study, the PPEs are given to the workers, but not all of them are used, with the justification that they hinder and disturb them when performing the work of garbage collection.³

Another risk factor that contributes to the occurrence of accidents at work is the lack of training of professionals; the garbage collectors interviewed in this research affirmed that they had not been trained to collect garbage. A result that ratifies other studies, because the literature shows that it is the garbage collectors themselves who pass on the knowledge of the work routine, demonstrating some customs and knowledge of their own.¹⁴

However, the research carried out in Itaporanga D'Ajuda/SE showed that all workers affirmed that they had attended annual training courses.¹¹ The routine of the street sweeper worker is to get on/off the truck and load/move garbage bags. Thus, proper training is of utmost importance to avoid accidents such as falls and muscle spasms, as well as serious injuries caused by the mechanical moving parts of the trucks.

Furthermore, it is essential that the garbage collectors are aware of the risks they are subject to so that they are more attentive and cautious when performing their tasks. The statistical data from this research shows that most of them are not aware or are only partially aware, and that only two workers have knowledge about the risks they are subject to when performing their work activities.

This result can be compared to those of another study, which showed that some workers treat the cuts as unimportant, due to their lack of knowledge about the risks of contamination.⁷ Nevertheless, another study showed that garbage collectors identified ergonomic, chemical, mechanical, and physical risks, as well as understand that the work of garbage collection exposes them to many risks of accidents.⁵

Regarding the search for public health services by the garbage collector workers, the present research showed that most of the garbage collectors only go to the Basic Health Units (BHU) when they are sick. In addition, although few of them mentioned seeking the service to get vaccinations, most stated that their vaccination booklet was up to date. When asked how they evaluate the Family Health Strategy in their neighborhood, the majority evaluated it as good and the smallest part as bad.

These results are in line with a study carried out in Rio Grande do Sul, confirming that the Unified Health System (SUS) is not yet prepared to solve questions about work-health-disease-environment. And, for the strengthening of the SUS, this reality needs to be changed.¹³

Therefore, men are the working mass more susceptible to serious accidents, especially when it comes to street sweepers, because they practice a highly unhealthy activity. Despite this, studies show that men, in general, seek health services for the promotion and prevention of diseases for various social, cultural, and labor-related reasons.¹⁵ Therefore, it is extremely important to involve the worker's health programs in companies and cooperatives in order to promote health through interdisciplinary work.¹³

CONCLUSION

This study found that most of the garbage collectors have already suffered some type of accident at work and the main risk factors that contributed to the occurrence of these accidents were the lack of knowledge of the garbage collectors, the inadequate use/non use of Personal Protective Equipment and the lack of training to develop the work of garbage collection.

Personal Protective Equipment and the lack of training to develop the work of garbage collection. Besides, it was verified that most of the garbage collectors only go to the Basic Health Unit when they are sick, and this involves several social, cultural, and labor reasons.

As a limitation, it was observed that there is little research collection in Brazil involving garbage collectors, making it difficult to carry out the discussion of the study. Furthermore,

as a contribution, this study made us reflect on the activities developed and the working conditions in which the garbage collectors are inserted, giving visibility to these workers and drawing attention to the health issues that need multiprofessional and inter multidisciplinary and intersectoral interventions.

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