



OCCUPATIONAL RISKS AND WORK ACCIDENTS: PERCEPTIONS OF GARBAGE COLLECTORS

RISCOS OCUPACIONAIS E ACIDENTES DE TRABALHO: PERCEPÇÕES DOS COLETORES DE LIXO

RIESGOS OCUPACIONALES Y ACCIDENTES DE TRABAJO: PERCEPCIONES DE LOS RECOLECTORES DE BASURA

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ABSTRACT

Objective: to identify the perception of garbage collectors on occupational risks and accidents to which they are exposed during the work process. **Method:** a descriptive study, of qualitative approach, with 17 garbage collectors who work in a third-party company of the municipality of Jataí-GO, Brazil. For the production of data, authors used semi-structured interviews conducted individually with audio recording. For data analysis, they have used the content analysis technique, which resulted in two analytical categories and five subcategories. **Results:** occupational hazards and work accidents mentioned by participants are related to the subcategories: traffic; work in the truck; sharp materials; live or dead animals found in the garbage and use of Personal Protective Equipment (PPE). **Conclusion:** inappropriate behaviors and attitudes of the population in relation to the household waste packaging were portrayed as one of the main factors that favor the occurrence of accidents among garbage collectors. **Descriptors:** Solid Waste; Occupational Risks; Work Accidents.

RESUMO

Objetivo: identificar a percepção dos coletores de lixo sobre os riscos ocupacionais e acidentes a que estão expostos durante o processo de trabalho. **Método:** estudo descritivo, de abordagem qualitativa, com participantes 17 coletores de lixo que atuam em uma empresa terceirizada do município de Jataí, Sudoeste goiano. Para a produção de dados, utilizou-se a entrevista semiestruturada, realizada individualmente, com gravação de áudio. Para a análise dos dados, utilizou-se a técnica de análise de conteúdo, o que resultou em duas categorias analíticas e cinco subcategorias. **Resultados:** os riscos ocupacionais e os acidentes de trabalho mencionados pelos participantes estão relacionados às subcategorias: trânsito; trabalho no caminhão; materiais perfurocortantes; animais vivos ou mortos encontrados no lixo e uso de Equipamentos de Proteção Individual (EPI). **Conclusão:** atitudes e comportamentos inadequados da população em relação ao acondicionamento do lixo doméstico foram retratados como um dos principais fatores que favorecem a ocorrência de acidentes entre os coletores de lixo. **Descritores:** Resíduos Sólidos; Riscos Ocupacionais; Acidentes de Trabalho.

RESUMEN

Objetivo: identificar la percepción de los recolectores de basura sobre los riesgos ocupacionales y accidentes a que están expuestos durante el proceso de trabajo. **Método:** estudio descriptivo, de enfoque cualitativo, con participantes 17 recolectores de basura que actúan en una empresa externalizado del municipio de Jataí, Sudoeste goiano. Para la producción de datos, se utilizó la entrevista semi-estructurada, realizada individualmente, con grabación de audio. Para el análisis de los datos, se utilizó la técnica de análisis de contenido, lo que resultó en dos categorías analíticas y cinco subcategorías. **Resultados:** los riesgos ocupacionales y los accidentes de trabajo mencionados por los participantes están relacionados a las subcategorías: tránsito; trabajo en el camión; materiales perfuro-cortantes; animales vivos o muertos encontrados en la basura y uso de Equipamientos de Protección Individual (EPI). **Conclusión:** actitudes y comportamientos inadecuados de la población en relación al acondicionamiento de la basura doméstica fueron retratados como uno de los principales factores que favorecen la ocurrencia de accidentes entre los recolectores de basura. **Descriptores:** Residuos Sólidos; Riesgos Ocupacionales; Accidentes de Trabajo.

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INTRODUCTION

Garbage or solid and semi-solid waste is a name used for the final result of industrial, household, hospital, commercial, agricultural, service activities and sweeping.¹ The rising generation of this waste has been inversely proportional to the available resources for packaging, processing and disposing, given that there has been an undisciplined consumption in society, resulting in uncontrolled increase of waste production.²

The waste produced from the population consumption should be properly discarded, as its stay in the human environment may interfere both with the well-being and with the health of individuals. Although it is not a primary source of contamination, the waste can significantly contribute to the onset of some diseases, since it helps with the development of ecological factors involved in its transmission chain.³ For example, in Marseille, France, the emergence of leptospirosis has become a public health problem, because it was associated with a combination of heavy rains and strikes by garbage collectors, when the garbage was left on the streets and thus contributed to the expansion of the rat population.⁴

In this perspective, the work of garbage collectors becomes relevant in solving problems related to the indiscriminate consumption and the growing use of various disposable products and industrial foods.⁵ Direct contact with solid waste influences the health of these workers, who are mainly responsible for the collection, transport and storage thereof.⁶ In this sense, it is worth mentioning also the need for greater appreciation in relation to the management and to the final disposal of waste, considering that it may have direct relationships with the health-disease process and sustainable development.

Environmental risks inherent in the garbage collection process relate to physical risks resulting from exposure to light, noise and varied temperatures; to chemicals, as a result of contact with pollution gases⁷ as carbon monoxide or the polycyclic aromatic hydrocarbons, which are gases emitted by vehicles⁸ or originating from waste, bioaerosols, and toxic materials⁹ and from environment dust; to biological risks, by the presence of viruses, fungi, bacteria and others, found in such waste⁷; and to ergonomic risks, represented by the weight they carry, in addition to the inadequate physical displacement.

In this context, it is allowed to say that these workers are subject to all kinds of risks mentioned above, and the main exposure factors are related to the handling of sharps and to the absence of Personal Protective Equipment (PPE).⁷

The working conditions and the environment influence the development of risks.¹⁰ The main sharps responsible for accidents in this professional category include glass, skewers, cans, plant thorns, nails and syringe needles, which are responsible for causing injuries that become gateways to pathogens present in the waste, thus promoting contact with biohazardous agents during the execution of work activities.¹¹

It is noteworthy that such injuries can be caused by direct contact of the bags with the lower and upper limbs, by the low protection that gloves usually offer to workers¹¹ or even by the disuse of PPE, since it is essential to point out that in many moments of their working process, the garbage collectors do not use the PPE recommended for the type of activity they perform.

It is believed that the exposure of these workers to such injuries can lead to the onset of numerous diseases, including hepatitis B and AIDS; however, there is still a scarcity of scientific studies that prove the causality of these conditions in individuals involved in garbage collection.¹²

A German study on garbage collectors in several countries has shown that these workers have higher frequency of diarrhea, viral hepatitis, as well as significantly higher incidence of obstructive and restrictive respiratory diseases, increased potential for TB transmission, high levels of lead in blood and suffer skin diseases, jaundice, and bites from dogs and rats. It was also identified high risk for musculoskeletal disorders, besides back, elbow and wrist pain due to handling heavy loads. Moreover, the repetition of similar movements of hands and arms cause joint problems, headaches and nausea.¹⁰

Accident risks can also be triggered by a lack of attention during the work process, the excessive load of activities, the failure to comply with safety standards, the lack of maintenance of the equipment used, the deficiency of training provided to collectors, and causalities, for example, bites or scratches from domestic animals.¹

Considering the major risks related to occupational health of garbage collectors, it is essential that, before the occurrence of any accident in the exercise of their activities, individuals working in accordance with the

consolidation of labor laws regimen (CLT) immediately seek medical attention and communicate the work accident. If necessary, they should be referred to the Social Security System by the physician or their legal representatives¹³. However, those who have another type of employment relationship should also be instructed to seek health care, on the event of accidents and / or illnesses.

In this scenario, this study aims to identify the perception of garbage collectors on occupational hazards and accidents to which they are exposed during the work process.

METHOD

This article was drawn from the graduation work << The use of personal protective equipment by garbage collectors >>, submitted to the Nursing Department of the Federal University of Goiás / UFG, Jataí-GO, Brazil, 2013.

It is a descriptive study, of qualitative approach.¹⁴⁻¹⁶ The population consisted of 21 garbage collectors who work in a third-party company of Jataí city, in Goiás Southwest, which provides services to the City Hall. Inclusion criteria were: working directly with garbage collection, being aged between 18 and 60 years, of both sexes, accepting to participate in the study, signing the Informed Consent Form and attending the company during the period of data collection. According to those criteria, the number of participants consisted of 17 workers.

The technique used for data collection was the semi-structured interview, which was divided into two stages. The first contained the identification of participants and their sociodemographic categorization. The second was composed of two guiding questions, which are: "Talk about your work / routine as garbage collector" and "In relation to Personal Protective Equipment, talk about the use, the knowledge and the importance of it".

The interviews were previously scheduled with the study participants and had the consent of the company manager. First, when making the reception of subjects in a private room, made available by the company in its central office, authors presented the Informed Consent Form in two copies, which was signed by the participant after reading and clarification. The interview was conducted individually, lasting on average 40 minutes using the audio recording system. The data collection period was in October 2013.

The interviews were transcribed verbatim and analyzed employing the content analysis technique, thematic modality proposed by

Bardin, following the steps of pre-analysis, material exploration, processing and interpretation of results.¹⁷

The anonymity of participants was ensured with the use of aliases (C1, C2, C3...) for referencing in the study. It is worth mentioning that participants' speeches were fully transcribed (presented language errors), and required some spelling corrections, but without changing their meaning.

The research project was approved by the Ethics Research Committee of the Federal University of Goiás, Protocol 420 693/2013, taking into account the ethical aspects of research involving human beings, according to Resolution No. 466, of December 12, 2012.¹⁸

RESULTS AND DISCUSSION

The garbage collectors interviewed were exclusively male (100%), aged between 18 and 24 years (41.18%), single (52.94%) and brown (70.59%). In a study conducted with collectors in Patrocínio - MG, Brazil, it was shown that 45.5% of the subjects were aged between 31 and 40 years³ In Dourados - MS and Fortaleza - CE, garbage collectors were aged between 18 and 31 years.^{11,19} In Japan, a study with these workers found ages between 24 and 60 years; subjects worked from 8 a.m. to 4 p.m. and had one hour of interval to rest.⁸ In Taiwan, the studied garbage collectors were aged 40 years or older (75.8%) and were male (52.7%).⁹

In this study, the majority (35.30%) have low levels of education, only referring to incomplete primary education. Similar results were found in other studies, in which garbage collectors had low educational level.^{7,19} In Taiwan, workers had education level of high school or higher (23.2%) and eight years or more of time of employment (59.4%).⁹ The study conducted in Japan has no data on workers' education.⁸

Another relevant fact evidenced in this study is that only 35.3% of respondents were born in the city of Jataí; the other 64.7% came from various Brazilian regions, particularly the Northeast. This fact differs from a study of street sweepers from Fortaleza - CE, in which all workers were born in the study site.¹⁹

At the end of the process of collection and interpretation of data, two categories emerged, which were named "Collectors' perception on occupational hazards" and "The occurrence of accidents". Since they are closely linked, researchers decided to discuss them together.

◆ Occupational hazards and work accidents

Occupational hazards and work accidents mentioned by participants are related to the sub-categories: traffic; work in the truck; sharp materials; live or dead animals found in the garbage and the use of PPE.

In this scenario, the professional who works constantly in contact with waste is subject to various accidents.²⁰ Thus, it stands out that 82.4% of respondents reported having experienced some kind of accident during household waste collection.

◆ **As for the subcategory of traffic**, the risk to which these workers are exposed during their work process is evident, since there is a heavy flow of vehicles, associated in many moments with the imprudence of drivers, which require greater attention from workers in crossing the streets. Such circumstances may be described in the words that follow:

[...] there are many drivers who are educated and who wait, but there are others who do not want, they do not care.
(C14)

[...] when you get down the truck you have to pay attention [...] to see who is in front, who comes from behind, [...], otherwise, when you jump, if you do not look, there may be a motorcycle, a car, and hit you.
(C17)

A study conducted in Rio de Janeiro with household garbage collectors demonstrated facts coming towards those found in this study, showing that collectors need to be very attentive while working on the streets, as it is common to see drivers who do not wait them cross the street and there are those that slow down, but then accelerate, making the workers abruptly stop, laying back the trunk to avoid accidents.²¹ Thus, the heavy traffic of vehicles, coupled with the irresponsibility of drivers, increases the chances of accidents as trampling and collisions.^{20,22} Trampling situations were found in Porto Alegre - RS, where, since the garbage collection schedules coincide with intense traffic, the number of trampling has increased and 6.67% of the workers had already been run over.²³

A worsening factor for the risk of running over for these workers corresponds to the lack of adequacy of uniforms, that is, clothes that are visible, and durable and non-slip shoes.¹² A similar situation was also found in Ribeirão Preto - SP among researched municipal garbage collectors.²⁴

As for the subcategory of work in the truck, it was considered risky for eight of respondents who mentioned the risk for falls,

fractures and press of any member, as noted in the speeches:

[...] maybe [a collector] is operating the compactor, and the other keeps with the leg inside, laid there. We need to be careful [...] because if the compactor catches, it breaks his leg, right. [...] often, the person runs to go up there, but if there is no training, the driver may break down, and the person falls directly within the compactor [...]. (C6)

[...] when the truck goes too much fast, the person falls, it is a risk [...]. (C8)

It can be seen in the statements of the subjects that one of the main risks for truck falls is related to the fact that these perform the activities quickly, running, in order to keep up with the speed imposed by the truck driver, as illustrated in the speeches of C6 and C8.

A study of street sweepers, seeking to understand the reflections of outsourcing the work done by them, found that the risk of the work in the truck also happens by the presence of uneven asphalt and cobblestone paving in some cities, which hinder workers' movement, such as: running, jumping off the truck and keeping balance in the step or support of the truck.²⁵

In this study, 29.4% of respondents mentioned the occurrence of accidents in the truck, and 5.9% reported the accident of a co-worker. These accidents were linked to the lack of street signs, lack of attention from truck drivers or even of the subjects themselves, as seen in the speeches:

Oh, it was falling a heavy rain, right! And the water inundated the street, there was a speed bump, he did not see and passed with high speed, then, at that time, everyone fell in the ground [...] I stuck my leg in the step over there, my leg was pressed [...].
(C1)

[...] I know fellows who were injured in a truck, I have been hurt too, [...] signaling is terrible there, then there was a speed bump, right, and the driver did not see [...]. The truck went too hard on the speed bump, then the truck flew upwards and the workers were not expecting this was going to happen, right, then, one of them fell down, the other fell in the place in which we put the waste and another fell in the ground. (C12)

The high occurrence of accidents due to work in the truck, especially the falls and the pressing of the lower limbs that garbage collectors may suffer, accidentally, by the trash compactor located at the rear of the vehicle, have also been evidenced by other studies, thus signaling the need for attention to the health of these workers.^{20,22,25}

As for the subcategory of sharp materials, the garbage collectors mentioned the danger and accidents they have suffered in handling sharp objects, which are disposed improperly in the household waste. The types of objects found in the trash improperly are portrayed in the statements of the subjects:

[...] Broken glass, skewer that people put into the plastic bag and we are at risk of being hurt. (C2)

There is always broken glass, broken bottle [...]. (C8)

[...] people put in the middle of things, you know, we handle it [...] we found these days a bag full of syringes, like this, with the needles all very sharp [...]. (C16)

It was found in the study that 70.6% of subjects had experienced some kind of work accidents related to sharp materials during the process of garbage collection. It is noted that such events take place in various ways:

I have already cut my hand already with broken glass [...] but it was not a very deep cut, it was superficial [...]. (C1)

So we were working, you know, I caught a bag, there was some glass, [...] and I cut my finger, but it was little cut. (C4)

I, for example, have already got six stitches in the arm due to broken glass, do you understand?! [...] Many times, I have hurt my hands with barbecue skewer. (C14)

I have been hurt once with the needle [...]. (C16)

It is evident in the speeches of the subjects C1 and C4 the ignorance of the risks to which they were exposed to be injured with these objects. Collectors minimize the risk of disease derived from accidental contamination by emphasizing the cuts as unimportant. This can significantly influence the lack of notification and appropriate records, as recommended in labor laws. A study emphasizes that accidents related to handling of sharps and overload the musculoskeletal function and the spine are the most common problems among garbage collectors, bringing many pathological impairment.²²

Therefore, it is essential to consider the garbage collectors in discussions about accidents and the reporting systems of occupational accidents with exposure to biological material, including the protocols and flowcharts for the care of the injured worker.²⁶

The improper disposal of waste materials, in concurrently with the rapid movement in the course of the professional activity, influences actively in causation of the accident.¹¹⁻¹² In Ribeirão Preto - SP, the main

cause of accidents was improper packaging of waste.²⁴

However, as observed in other studies, one of the factors that bothers the most the garbage collectors is the lack of public awareness of the dangers of disposing sharps. The lack of knowledge of the population on this causes the improper disposal, making the work of garbage collectors is represented as an activity that offers greater risk of accidents.^{1,22}

In addition, garbage bags discarded by the population may contain excess weight, which impairs the performance of collectors in relation to the effort exerted and to the way of collecting the bags so there is no dispersion of garbage on the streets, which can result in risk to the physical integrity of individuals.²⁵

In the perception of study participants, the population should have more knowledge about the dangers that sharp waste offers and make separate packaging of the trash, thinking about the protection of this group of workers, according to reports:

[...] I think that trash, the dangerous things, should be placed in a box, right, sealed. And they do not do it, put there with no care, this is why we many times get hurt. (C6)

[...] it had to be on a paper box and with a name warning, "beware! broken glass", there are some who do it. (C14)

[...] it has to be separated, you can put in a plastic bottle, in a box, we are aware [...]. (C16)

In this challenging context, one way to minimize the likelihood of accidents with hazardous material is the selective collection, which corresponds to an alternative based on the separation of recyclables (glass, needles, cans, wood) from the rest, which decreases the contact of workers with these materials.²⁷

As for the subcategory of live or dead animals and found in the garbage, among others, it is constant in the daily practice of garbage collectors, as reports of the subjects:

[...] maybe a car runs over a dog! So, it messes around in the street, you have to pick it up and throw inside the truck [...]. (C6)

Those trash larvae! When we take off, it keeps bubbling up; that is too dangerous! (C9)

[...] old cell phone, battery. (C13)

[...] there are people who put tank water for us to throw away [...] when we press, it bursts and comes to our face, you know?! (C14)

Despite being forbidden to collect other materials that are not ordinary waste, these workers collect, in addition to household

waste, old furniture, old tires, pruning debris from gardens and yards, bags of debris, among various other materials that appear every day.²⁰ Likewise, a great variety of chemicals are found in the population disposal, such as batteries, oils and lubricants, solvents, paints, cleaning products, etc..¹²

This study found that the routine work of garbage collectors is full of dangers. Besides being subject to accidents arising from occupational hazards, they also need to dodge the risk of being attacked by stray animals, as portrayed in two statements:

Once the following happened to us: [...] when he was collecting, their dog came out and bit the guy [...], I have already been bitten by dog, also, so it is very dangerous [...]. (C10)

Many times, I have climbed up the truck with a pit bull running to get me and the owner would not help me [...]. (C14)

Injuries caused by dogs expose subjects to contact with the RNA virus, of the *Rhabdoviridae* family, the causative agent of Rabies. Besides, the lesion may be a gateway to other pathogens such as, for example, *Clostridium tetani*, which causes tetanus. These diseases may lead to death due to their severity, being an important biological risk.¹¹ In addition, there is the issue and the concern with preventing these workers through immunization and care when they have already been exposed to pathogens.

In this sense, it was found in a study of patients with tetanus admitted to an Intensive Care Unit of São Paulo that 81.8% were male and that tetanus was associated with professional activity in 54.5% of cases. Of these, all sought medical care and none received appropriate treatment, which could have prevented the disease.²⁸

The garbage collector work is associated with self-reported musculoskeletal pain, which involves, presumably, repeated movements involved in garbage collection.⁹ Gastrointestinal, respiratory infections and skin diseases, as well as musculoskeletal problems and sharps injuries, are commonly found among garbage workers around the globe.¹⁰

As for the subcategory related to the use of Personal Protective Equipment, the survey revealed that only 5.9% of the garbage collectors mentioned the importance of using the PPE and signaled that were using PPE at the time of accident.

We were getting it (it was inside box). The box started to open, broken glass started to fall in our clothes, we got cut! But they were not deep cuts, it only scratched us,

thanks to the equipment, we do got more cut [...]. (C9)

The research findings agree with studies showing the need to emphasize the importance of using PPE for professional activities. However, it is worth pointing out that the use of PPE does not preclude the occurrence of accidents, but minimizes their risks and severity.¹²

In Ribeirão Preto-SP, the lower limbs of the investigated garbage collectors suffered the majority of injuries, and the most common medical diagnoses were: injuries, cut-contused lesions and excoriations.²⁴

This study found that 82.4% also reported having had some kind of accident related to work. Of these, 78.6% reported the need to obtain a leave from the service and submit a certificate to the company to justify the absence from the work, according to reports:

Oh! I was! I spent some days [on leave] while my foot got better, then, when it was good, I went back to work again. (C3)

Our obligation! When we hurt, suffer an accident, we have to bring a medical certificate [...] if we bring a certificate, there is no reason for fear. But if we do not bring, there will be a problem. (C6)

The only way is to ask for a leave for the company, right?! And get a certificate. (C13)

The issue of high rates of absence due to occupational accidents has also been observed in other studies. In a study conducted in Rio de Janeiro with household garbage collectors, it was found that, of 67 (100%) accidents reported, 39 (58.2%) resulted in the worker's absence; and, of the total number of accidents, 26 (66.7%) generated absences for up to 15 days, mainly due to accidents related to bad packaging of waste. Also in that study, of the six accidents involving work in the truck, five (83.3%) took the collector away from work for more than 15 days.²² In Ribeirão Preto-SP, the coefficients of frequency and severity in relation to accidents at work of garbage collectors were estimated, and it was noticed that, in one year, there had been 103 accidents among 81 employees of a private company, and the frequency coefficient was 527 and the severity coefficient was 6,722 per million hours-man of work.²⁴

It is observed in the speeches of the subjects of this study that the company complies with the labor laws, accepting the medical certificates presented. Unlike that found in the literature, where garbage collectors reported that the company's management did not accept the medical certificate to justify absence from work.²⁵

FINAL REMARKS

This study revealed that the garbage collectors, in exercising their occupation, are exposed to environmental hazards caused by physical, biological and ergonomic agents and risk of accidents, which can cause damage to health and impair the physical integrity of this group of workers.

The reality found is relevant and troubling, as occupational hazards and accidents related to the work environment are often minimized by the workers themselves, which sets up a public health problem. Given this context, there is the need to create an occupational health service, so that the garbage collectors can be periodically monitored and counseled about the protective measures and prevention of injuries and diseases.

Therefore, it is crucial to highlight the responsibility of the companies where these professionals work, in examining the working conditions, the occurrence and types of accidents and from this evaluation, outline measures to prevent the injuries and diseases, as well as the need to promote a safer work environment for the garbage collectors. In this perspective, it is recommended that these workers receive continuing education and that companies offer and require the proper use of Personal Protective Equipment. For this purpose, it is suggested that companies seek partnership of health professionals of the Unified Health System (SUS) and of the universities.

Finally, the present research shows that one of the major challenges to reduce occupational hazards comes from the collaboration of the population. It is well known that the inadequate behavior and attitudes of population towards the household waste packaging are one of the main factors that favor the occurrence of accidents among garbage collectors. Thus, it is essential to devise strategies to raise awareness as to the correct way to store and dispose of waste, in order to preserve health at the individual and collective ambit. However, it is essential to stress the importance of support from municipal managers so that there is adequate support for the realization of selective collection throughout the municipal territory.

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