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Work complexity of urban cleaning professionals in the city of São Luís de Montes Belos, Goiás, Brazil: Street job conditions and variability

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Abstract

The world faces a major problem with waste accumulation. Improper disposal increases disease spread and soil contamination, poses risks to the general population and, more seriously, to collectors, who work directly with solid waste. This transversal and qualitative approach aimed to investigate the aspects of urban cleaning professionals' work complexity in the city of São Luís de Montes Belos, Goiás, Brazil, in the year 2017, with emphasis on street job conditions and variability. An Informed Consent Form was applied, and structured interviews were conducted with open and closed questions to analyze the perception of risks in the work process. In view of obtained results, often called "garis", solid waste cleaning professionals do not receive due importance for the function complexity they perform. Furthermore, collectors lack socio-educational measures, addressing safety at work to avoid damage to their own health through continuing education, bringing improvement in professional quality and their own well-being. Finally, it is necessary to make the population aware of the service importance provided by urban solid waste cleaning professionals, while they exercise this attribution with dignity and must be respected by their significant importance in the urban environment.

Keywords: Work complexity, urban cleaning professionals, São Luís de Montes Belos, Goiás, Brazil

Introduction

Waste becomes unresolved, since most do not know what to do in the final disposal, producing an exacerbated amount of materials that are irregularly discarded (Abdel-Shafy & Mansour, 2018) ^[1]. A solid waste can cover several hazards that endanger public health and the environment (Gonçalves *et al.* 2018) ^[2]. After decades of discoveries and evolution, garbage has become a worldwide problem, especially due to excessive accumulation and incorrect disposal, which threatens the social well-being of all (Janik-Karpinska *et al.* 2023) ^[3].

Garbage collection represents the very sanitation of the city, and professionals who carry out this work are, most of the time, devalued and ignored regarding this important attribution (Zolnikov *et al.* 2021) ^[4]. In Brazil, public cleaning professionals work under few conditions, without perception in their work environment and almost no social repercussions (Zolnikov *et al.* 2018) ^[5]. The health risks of urban cleaning professionals are diverse, pointing mainly to chemical, biological (contact with various microorganisms that come from solid waste) and physical exposures; in the same way through the noises that are daily exposed, which can even lead to hearing loss, in addition to exposure to UV rays and CO₂ released by automobile transport (Mlotshwa *et al.* 2022) ^[6].

It is noteworthy that the responsibility for protecting the environment, combating pollution and providing basic sanitation to all Brazilian citizens is provided for in the Federal Constitution, which establishes municipalities to legislate on matters of local interest and the organization of public services (Senado Federal, 2023) ^[7]. In the state of Goiás, urban cleaning services are the responsibility of municipal administrations. Unfortunately, most of these are unaware of environmental variables correlated with urban solid waste, which are essential to efficiently and effectively manage the sector (Santos & Silva, 2009) ^[8].

The municipality of São Luís de Montes is located in the midwest region of Goiás, specifically at latitude 16° 31'30"S, longitude 50° 22'20"W, with an altitude of 579 meters and an area of 829.620 km² (IBGE, 2023) [9]. The city depends on 28 public cleaning professionals, most of which lack medical and social care. These facts, associated with the collective health problem of the Montebelense population, the insufficient attention of the public authorities and academic society, and possible risks to workers' health, motivated this approach. Based on these considerations, the present work aimed to investigate the aspects of urban cleaning professionals' work complexity in the city of São Luís de Montes Belos, Goiás, Brazil, in the year 2017 with emphasis on street job conditions and variability.

Material and Methods

Ethics

The study was approved by the Institutional Research Ethics Committee of the University Center Brasília de Goiás, report: 014/2017. Researchers conducted the study in strict compliance with the approved protocol and ethical aspects, as well as guaranteed participants were not exposed to any embarrassment.

Study site and sampling

This was a transversal and qualitative study carried out from May 2017 to July 2018. Urban cleaning professionals effectively postulated in the city of São Luís de Montes Belos, Goiás, Brazil were first informed about the work purpose and then invited to participate and sign an Informed Consent Form (ICF). After consent, structured interviews were conducted with open and closed questions and the preservation of volunteers' identity was ensured, in order to analyze the perception of risks in the work process.

Sampling consisted of 26 participants who agreed to participate in the survey, out of a total of 28 effectively publicized to provide services in the city. Data were collected in previously scheduled interviews, during working hours and according to the availability of each participant. Each volunteer was invited to answer questions that characterized their life habits, working hours (function, sector of activity), health conditions and possible occupational risks.

The methodology in question sought to assess the conditions and variability in the work process of the reported cases, and

to correlate them with the general health situation of urban cleaning professionals.

Data analysis

As to statistical treatment, results were expressed as absolute and relative frequencies. To effect statistical tests, Windows version of the GraphPad Prism 5.01 software was applied. And, for statistical analysis, one- or two-way ANOVA followed by Bonferroni post-tests, with *P* values <0.05 were used.

Results and Discussion

Table 1 describes the sociodemographic information of the urban cleaning professionals effectively postulated in the city of São Luís de Montes Belos, Goiás, Brazil. Data show that 65.38% were male, 34.62% female, with age range variations of 48.2 years (28 to 63 years-old). The height ranged from 1.50 to 1.81 meter; as for ethnicity, yellow (3.84%), white (26.92%), black (19.24%) and brown (50%) races were observed. Collectors marital status was: 23.1% single, 53.84% married, 11.53% divorced and 11.53% widowed. As for the consumption of alcoholic beverages, 3.85% were users, while 96.15% answered they did not consume alcohol; regarding smoking, only 7.7% were smokers, 96.15% were non-smokers. 34.6% of collectors used to have 1 to 2 meals a day; 57.7% used to have 3 to 4 meals, and 7.7 used to have 5 or more meals. The monthly income was based on an average salary (BRL) of R\$ 1,602.94 ranging from R\$ 1,100.00 to R\$ 2,342.00. The duties at work were: 23.1% sweep collectors and 76.9% carry out sweeping. The average number of years worked was 34.6% for those laboring from 1 to 10 years and 30.8% for those who worked from 11 to 20 years.

About 61.54% of the urban cleaning professionals used medication, and 7.7% were allergic to some drug. In relation to health screening, 61.54% attended medical consultations and 30.77 had undergone some laboratory test in the last 6 months; 11.54% attended a medical consultation and 34.62% underwent some examination between the last 7 to 12 months; 7.69% had medical consultations and 11.54% had laboratory tests between 13 and 24 months of the research; and 19.23% attended a medical consultation and 23.07% underwent laboratory tests more than 2 years ago (Table 1).

Table 1: Sociodemographic data and habits of the public cleaning professionals, São Luís de Montes Belos, Goiás, Brazil 2017. Values expressed as absolute and relative frequencies. **P*<0.0001 all groups. One-way ANOVA and Bonferroni post-tests.

Characteristics*	<i>n</i> = 26	
	<i>n</i>	%
<i>Sex</i>		
Male	17	65.38
Female	9	34.62
Average age (years)	48.2 (range 28-63)	
Average body mass (kilogram)	67.4 (range 45-102)	
Average height (meter)	1.58 (range 1.50-1.81)	
<i>Ethnicity</i>		
Yellow	1	3.84
White	7	26.92
Black	5	19.24
Brown	13	50
Marital status		
Single	6	23.1
Married	14	53.84
Divorced	3	11.53

Widowed	3	11.53
Tobacco		
Yes	2	7.7
No	24	92.3
Consumption of alcoholic beverages		
Yes	1	3.85
No	25	96.15
Daily meals		
1 to 2	9	34.6
3 to 4	15	57.7
5 or more	2	7.7
Monthly income (BRL)	1,602.94 (range 1,100.00-2,342.00)	
Duties at work		
Sweep collectors	6	23.1
Sweeping	20	76.9
Working Time (years)		
0-1	9	34.6
2-10	9	34.6
11-20	8	30.8
Medication use		
Yes	16	61.54
No	10	38.46
Allergies		
Yes	2	7.7
No	24	92.3
Date of last medical visit (Months)		
0-6	16	61.54
7-12	3	11.54
13-24	2	7.69
More than 24	5	19.23
Date of last laboratory test (Months)		
0-6	8	30.77
7-12	9	34.62
13-24	3	11.54
More than 24	6	23.07

The weekly workload was 40 hours, 6 hours per day, starting at 5:00 am and ending at 11:00 am. This daily work schedule was established by cleaning professionals themselves, with the aim of reducing sun exposure, gases released by cars and harsh weather. It is important to point out that given the extensive routine, "lack of time" and working hours, the effectiveness of the reported pharmacological treatments can be changed, especially for continuous use medications (Archangelidi *et al.* 2018) [10].

The daily use of Personal Protective Equipment (PPE) varied among cleaning professionals, in which it was observed that approximately 60% of them used 4 PPE (uniform, gloves, boots, cap), while 39% used 1 to 3 (uniform, gloves, cap); and only 1% of cleaning professionals did not have PPE. The use of these "personal protection equipment" is of paramount importance, as in the management of solid waste it is common for accidents to occur with sharp materials, such as glass, cans, plants with thorns, nails and even syringes (Uhunamure *et al.* 2021) [11]. Such materials can cause injuries and harm professionals' health.

Regarding the use of medication chronically (for years), 7,68% of workers have been using antihypertensive medication for 10 years or more and about 19,2% used antihypertensive drugs for less time; 19,23% used painkillers; 3,84% used antilipemics; 3,84% used antidepressants; 3,84% used antiulcerative drugs; 3,84%, antibiotics; 3,84%, vasodilator; 3,84%, antacids; 3,84%, anxiolytics; and 27% did not use any medication (Table 2). It is important to point that for those urban cleaning

professionals that used medication sporadically (for days, months or "sometimes") the risk for the occurrence of drug-related problems due to self-medication was present (Jandira *et al.* 2022) [12].

Table 2: Use of medication by public cleaning professionals in the city of São Luís de Montes Belos, Goiás, Brazil, 2017. Values expressed as absolute and relative frequencies. * $P < 0.0001$ all groups. One-way ANOVA and Bonferroni post-tests.

Medication use				
Drug class	Negative		Positive*	
	n	%	n	%
Antacids	25	96.16	1	3.84
Antibiotics	25	96.16	1	3.84
Antidepressants	25	96.16	1	3.84
Antihypertensives	19	73.08	7	26.92
Antilipemics	25	96.16	1	3.84
Antiulceratives	25	96.16	1	3.84
Anxiolytics	25	96.16	1	3.84
Painkillers	21	80.77	5	19.23
Vasodilators	25	96.16	1	3.84

* $p < 0.001$

In respect of reported problems possibly associated with occupational activity by urban cleaning professionals in the city of São Luís de Montes Belos, Goiás, Brazil, backache was the most common (23.07%). The second most cited was myalgias (11.53%), followed by headache (7.69%), sinusitis (3.84%), esophagitis (3.84%), gastritis (3.84%), abdominal pain (3.84%), hepatic steatosis (3.84%), poor blood circulation (3.84%), thrombocytopenia (3.84%) and skin

cancer (3.84%). Inquisitively, 27% of cleaning professionals did not narrate issues (Table 3). The backache is one of the greatest human afflictions, and, in addition, the lumbar spine provides support for the entire upper body and transmits the weight of this area to the pelvis and lower limbs (Bonini-Rocha *et al.* 2021) [13]. According to Barreto Moreira Couto *et al.* (2019) [14], the backache is as old as humanity itself and is intertwined with our condition as human beings. Myalgias, on the other hand, are directly linked to the musculature, such as trauma and tension, due to excessive effort or overload beyond the individual's usual capacity (Müller *et al.* 2022) [15]. Other causes can be, for example, a bad position during work or due to mental stress (Gallagher & Heberger, 2013) [16]. Therefore, backache and myalgia are linked to those works that require strength, repetitive movements, lifting loads, leaning the trunk and kneeling postures that can cause dislocations, sprains, muscle strains and reduce the quality of work, as practiced by the urban cleaning professionals.

Table 3: Reported occupational problems by public cleaning professionals and possibly associated with occupational activity in the city of São Luís de Montes Belos, Goiás, Brazil, 2017. Values expressed as absolute and relative frequencies. * $P < 0.0001$ all groups. One-way ANOVA and Bonferroni post-tests.

Reported occupational problems	n = 26			
	Negative		Positive*	
	n	%	n	%
Abdominal pain	25	96.16	1	3.84
Backache	20	76.93	6	23.07
Esophagitis	25	96.16	1	3.84
Gastritis	25	96.16	1	3.84
Headache	24	92.31	2	7.69
Hepatic steatosis	25	96.16	1	3.84
Myalgias	23	88.47	3	11.53
Poor blood circulation	25	96.16	1	3.84
Sinusitis	25	96.16	1	3.84
Skin cancer	25	96.16	1	3.84
Thrombocytopenia	25	96.16	1	3.84

* $P < 0.001$

Headaches are responsible for most medical consultations in Brazilian health units and are often associated with socioeconomic impacts, loss of productivity at work and consequent decrease in quality of life (Almeida *et al.* 2009) [17]. These pains are usually from simple conditions and can arise due to disorders of the temporomandibular joints, infections of the airways, etc. However, it is necessary to investigate signs matter for the non-development of secondary problems (Velasco Garrido *et al.* 2015) [18]. The therapy depends on the type of headache and is based on pharmacological or non-pharmacological measures, depending on the intensity of the crisis or indication of prophylaxis (de Araújo & Sato, 2018) [19]. In the volunteers of this research, possibly, the headaches reported may be related to work practice and exposure to ultraviolet rays. Noting that one of the collectors reported the occurrence of skin cancer. Other related health problems, such as sinusitis, esophagitis, gastritis, abdominal pain, hepatic steatosis, poor blood circulation and thrombocytopenia may be allied to harsh weather, poor diet and the irregular schedules that workers are exposed to every day.

Moreover, in view of the reports collected among the urban cleaning professionals in the city of São Luís de Montes

Belos, Goiás, Brazil, specific and social complaints were postulated regarding:

- 1) Lack of recognition by society: which leads workers to extreme exclusion and thus a devaluation of their own working class;
- 2) Lack of medical assistance: due to the great physical exertion, the repetitive postures to which they are subjected during work activities end up causing daily pain in the upper and lower limbs;
- 3) Lack of water supply: which can lead to cases of dehydration due to sun exposure and physical exertion;
- 4) Lack of a career plan: to encourage and ensure better financial compensation;
- 5) Lack of sunscreen: due to exposure to high-risk UV rays that can cause from skin spots to neoplasms;
- 6) "So much work. Too few people": the city is constantly developing, with more streets, more houses, more people and consequently more solid waste. According to them, "There are not enough workers to clean all the waste generated, causing the collector to exceed their working hours, often not being able to complete the required and jeopardizing their own health".

Urban growth has been an environmental problem (Zolnikov *et al.* 2021) [4], solid waste generated is not properly disposed of, which can endanger collectors' health. Cleaning professionals who do not use PPE are more likely to have an accident or even develop a pathology since garbage disposal is done indiscriminately by a large part of the population (Zolnikov *et al.* 2018) [5]. The quality of life of these workers should be a constant concern, as they play a fundamental role in society, cleaning up "the dirt" without due appreciation. (Lissah *et al.* 2022) [20] state that dealing with garbage represents a full set of problems for workers' health and environmental conditions. However, despite this finding, the reality of the work and life of cleaning professional's remains very difficult; which leads to the belief that such subjects are "invisible" to the public and society in general.

Conclusion

In view of the obtained results, it was observed that solid waste cleaning professionals in the city of São Luís de Montes Belos, Goiás, Brazil, do not receive due importance for the function complexity they perform. Often called "garis", these cleaning professionals perform the fundamental function of keeping the city clean, in addition to the work of preventing the accumulation of waste with possible exhalation of fetid odors and the proliferation of disease-causing vectors.

It could also be observed that collectors lack socio-educational measures, addressing safety at work to avoid damage to their own health through continuing education, bringing improvement in professional quality and their own well-being.

Finally, it is necessary to make the population aware of the service importance provided by urban solid waste cleaning professionals, while they exercise this attribution with dignity and must be respected by virtue of their great importance in the urban environment.

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Declaration of interest statement

Authors report no conflicts of interest.

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