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THE KNOWLEDGE OF THE HEALTH PROFESSIONAL AND THE ROLE OF THE MANAGER FOR THE BETTER MANAGEMENT OF HCR

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ABSTRACT
HSW is an enormous risk when inadequately managed, as it becomes a means of spreading diseases and environmental contamination. The study aimed to monitor the level of knowledge of health professionals regarding the management of Health Service Waste (HCW) and the participation of managers in the sector. Data collection was conducted using a structured questionnaire. The sample consisted of 53 health professionals. As reported by professionals, HSR management is a subject that is rarely addressed in the workplace. It is also observed that a significant portion of the professionals (46.8%) are not familiar with waste management standards, indicating a gap in knowledge. It is up to the manager to train for correct compliance with the legislation and prioritization of the non-generation of waste. This study contributes with guidelines for this.

Keywords: Health Management. Health Services. Waste from Health Services. Legislation.

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INTRODUCTION

The National Solid Waste Policy (PNRS) states that solid waste is all discarded materials, substances, objects or goods from human activities in society. Waste can be classified according to its origin: hospital, industrial, domestic, civil construction, commercial, agricultural, service, sweeping waste, among others (ABNT, 2004).

Among these, HSW stands out, which, although they represent a portion of about 3% of the amount of waste generated in the country, constitute a huge risk when inadequately managed, as they become a means of spreading diseases and environmental contamination (Figueiredo *et al* 2020).

All waste generated during human or animal health care activities, including home care services, is considered to be RSS. In particular, those of health products laboratories, morgues, funeral homes, forensic medicine services, drugstores and pharmacies including compounding pharmacies, teaching and research establishments in the area of health, control of zoonoses, services such as acupuncture, piercing and tattooing, beauty and aesthetic salons, among others (RDC/ANVISA N. 222/2018). In this way, HCW can be classified into different categories, such as Group A - infectious biological waste; Group B - chemicals; Group C - radioactive; Group D - common waste; Group E sharps; Each with specific characteristics and risks (RDC/ANVISA N. 222/2018 and CONAMA Resolution No. 358/2005).

According to Menezes and Maia (2022), waste management comprises a set of management procedures, planned based on normative and technical bases, which aim to reduce waste production and provide the correct destination. Therefore, HSW management involves several steps that include waste segregation, packaging, temporary storage, collection and transportation, external storage, external collection, treatment (when necessary), and final disposal (RDC/ANVISA N. 222/2018).

According to CONAMA Resolution No. 358/2005 in Art. 3, it is the responsibility of RSS generators to correctly manage RSS, from generation to final disposal, whether public or private, philanthropic, civil or military, including teaching and research institutions (RDC/ANVISA N. 222/2018). Thus, the manager of the generating health service is responsible for managing this waste (Neres *et al* , 2014).

In health, HSW management aims to protect health professionals, preserve public health and the environment. HSW poses nuanced risks to staff, patients, and the community at large. The risks faced by employees are associated with occupational

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accidents, while for patients, the risks of hospital infection are related to routine practices that involve basic hospital infection control measures (Mendes, 2005).

Therefore, the health area, being potentially polluting the environment and generating waste, can pose risks to public health if HCW is disposed of inappropriately. It is important to highlight that the possibility of contamination of the environment, patients, employees and society by HSW can be considered minimal if the basic measures of proper waste management and control are correctly applied.

Therefore, it is very important that professionals who work in the health area have correct knowledge about HSW and are prepared for the proper management of this waste, in order to follow biosafety conditions, cooperating with the prevention of occupational accidents and the environment. All professionals who work in a health service, such as doctors, nurses, nursing technicians, dentists and sanitizers, must know the practices and steps of a waste management plan, which are: segregation, symbols, color patterns arranged in trash cans, location of waste storage, transportation and final destination.

For this reason, it is essential to involve these professionals from the preparation of the Health Services Waste Management Plan (PGRSS) to its implementation, resulting in more lasting knowledge (Genário, 2023).

The PGRSS must contain the best practices in waste management, as well as source reduction, reuse, recycling and proper treatment. Therefore, it is up to the manager to raise awareness about the importance of environmental sustainability and the adoption of environmentally responsible measures, thus, health workers should be encouraged to participate in training and updating programs, where they can acquire knowledge about new technologies, regulations and recommended practices in HSW management.

Thus, it can be noted that the academic studies found on the subject show that there is a significant gap in the knowledge of health professionals in relation to the management of HCW. Therefore, this can lead to errors in waste management, causing risks to the health of professionals, patients, society, and the environment when handled and disposed of improperly.

Therefore, this study aimed to identify the level of knowledge of health professionals regarding the management of HCW and the role of health sector managers in complying with the National Solid Waste Policy. To this end, a comprehensive survey was conducted involving professionals from different health institutions and specialties.

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METHODOLOGY

The research is descriptive in nature. According to Lakatos and Marconi (2017), the descriptive study addresses an action, describes an event, records and analyzes observational data (apud Bataglin et al, 2012). Thus, descriptive research is that which aims exclusively to describe variables. In this type of study, the researcher collects data from observations, interviews, questionnaires or other data collection instruments. In this way, it seeks to describe characteristics, behaviors, opinions, prevalence of a certain disease, a biochemical, physical, physiological response or relationships between variables, without establishing cause and effect relationships.

TARGET AUDIENCE

The target audience of this study was health workers with technical or higher education, working in the public and/or private network. These workers were selected by free consent, in which they were invited through social networks, and those who agreed to participate in the study selected, after reading the Free Consent Form (TLC), the alternative of "accepting" to participate in the study, which is attached. The professionals were not identified, and their identity was preserved. The sample consists of 53 health professionals, who answered the questionnaire in August and September 2023. The interviewees were named from A1 to A53 following the chronological order of the instrument's answers.

APPROACH TO PROFESSIONALS' KNOWLEDGE ABOUT RSS MANAGEMENT

Data collection was conducted through structured questionnaires, created in the *google forms* application, with twenty-three questions in total. The questionnaire was made available to professionals *online*, through messaging applications (Whatsapp and Messenger), through a link sent to each professional. The questionnaire addressed a variety of issues related to waste management. In the first nine, a survey of sociodemographic data was made, and in the remaining fourteen questions, the management of HCW was addressed, focusing on the fundamental concepts for waste management, main characteristics of HCW, classification, final destination, among others. It was based on the relevant legislation, namely the National Solid Waste Policy (Law 12. 305/2010) and RDC-ANVISA n.222/2018, which addressed the Guidelines for good practices in the management of HSW.

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MANAGER'S PARTICIPATION FOR THE PROPER MANAGEMENT OF RSS

The manager plays a fundamental role in waste management, it is his responsibility to ensure that all the steps provided for in the management of HSW are carried out efficiently and safely, in accordance with the rules and regulations provided for by law. Therefore, the manager must have knowledge about the technical, regulatory and safety aspects related to management.

It is up to the manager to develop internal plans, policies and procedures that address the proper management of HSW. From the results of the professionals' knowledge about the management of HCW, it is possible to infer fundamental points to be considered by managers in the optimization of the local waste management process in public and/or private establishments. Based on the needs for improvements in the training of health professionals (addressed in the previous item), a prioritization table was developed for actions planned by managers aimed at these professionals, considering that they are fundamental agents for optimizing the management of HCW (Vanccin et al, 2023).

Thus, the manager's role in the management of HCW is essential to ensure the safety of health professionals, patients, the environment and society. Because through efficient management, it is possible to minimize health risks, avoid environmental contamination, and comply with legal obligations.

DATA TABULATION AND STATISTICAL ANALYSIS

After collecting the completed questionnaires, we tabulated and analyzed the data that were exported and analyzed on the Microsoft EXCEL platform (Microsoft Office 2020 software), which allowed the organization and analysis of the data efficiently. Because it is a tool that offers resources for performing calculations, graphs and tables, thus facilitating the interpretation of the results obtained during the research.

RESULTS

The results obtained are organized according to the socioeconomic characteristics of the participants, in order to know the profile of this professional. The second stage presents the knowledge of these professionals regarding the management of HCW, and finally, based on the information obtained previously, the optimization of HCW management in health facilities was developed based on the role of the health manager in this process.

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SOCIOECONOMIC CHARACTERISTICS OF HEALTH PROFESSIONALS

Regarding the profile of the participating professionals, Table 2 presents the characteristics of the participants in terms of gender, age group and education, in which it is observed that 77.4% of the participants are female.

Table 2. Sociodemographic characterization of professionals

VARIABLES		
Sex	N	%
Female	41	77,4%
Male	12	22,6%
Age group		
18 to 28	21	39,6%
29 to 39	17	32,1%
40 to 49	10	18,9%
50 to 60+	21	9,4%
Schooling		
Fundamental	1	1,9%
Medium	6	11,3%
Technician	17	32,1%
Superior	15	28,3%
Graduate	14	24,4%

Source: Authors, 2023

The predominantly female profile of health professionals has been reported in other studies, such as de Silva et al (2021), who studied the underreporting of accidents with biological material by health professionals. A total of 47 professionals participated in the study, 87% of whom were female. Consequently, the massive participation of women in the health area generates a profile for the management of HCW to be considered by managers in the formatting of training and updating of these professionals.

The predominant age group among health professionals was 18 to 28 years, representing 39.6% of the sample. This corroborates Patrício's (2021) identification that the health sector has a significant willingness to have younger professionals, as detailed in Table 2. Next, 32.1% of the participants were between 29 and 39 years old, while 18.9%

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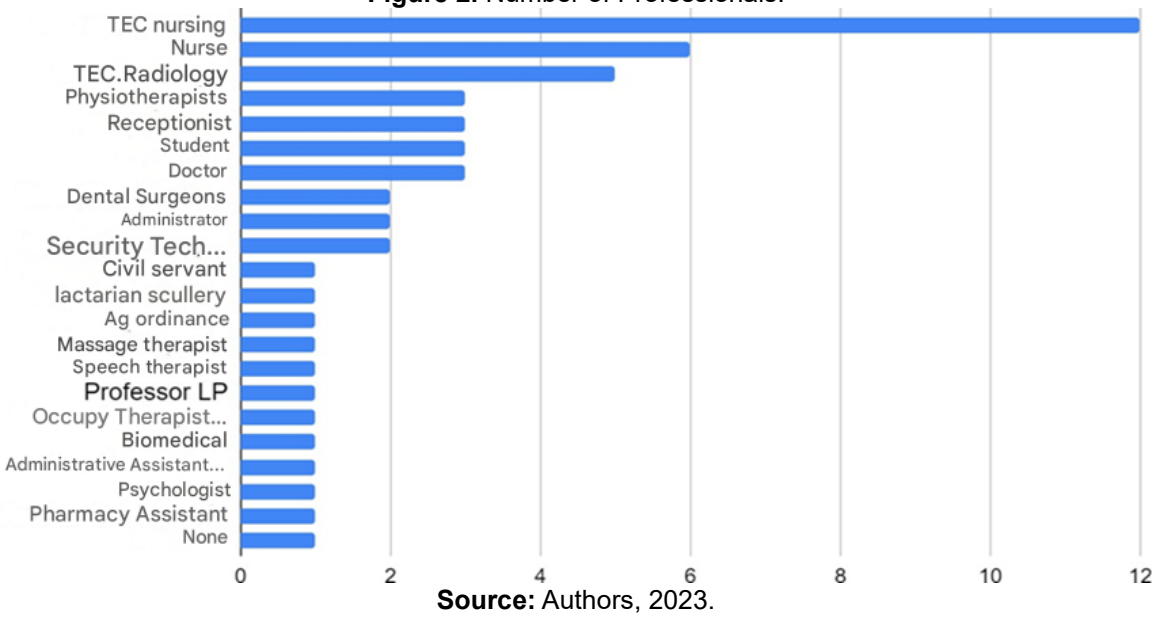
were in the 40 to 49 age group. The lowest representation was among professionals aged 50 to 60 years, totaling only 9.4% of the answers obtained. Regarding the level of education, 32.1% were technical technicians, predominantly nursing technicians, as shown in Figure 2. This is in line with the finding of Patrício (2021), in which 88.4% of the working professionals were nursing technicians. In addition, 28.3% had higher education, 24.4% had a postgraduate degree, 11.3% had a high school education and 1.9% had only elementary education.

Regarding the training/performance of the professionals surveyed, most are nursing technicians (12) followed by nurses (6), this being the largest professional category in the health area, with approximately 3.5 million workers, of which about 50% work in nursing (Federal Nursing Council, 2015). Radiology technicians (5), physiotherapists (3), receptionists and physicians (3), dental surgeons, administrators and occupational safety technicians (2), among others, with less representation in the sample, also participated.

Figure 2. Number of Professionals.



Source: Authors, 2023.

Of the workers who participated in the survey, 73.6% are active in the labor market, while 26.4% are not working in the labor market. Most of the interviewees work in sectors such as urgency and emergency (16.4%), adult ICU (10.9%), outpatient clinic and medical clinic (9.1%), among others, with lower representation in the sample. This distribution demonstrates the significant predominance of professionals working in urgency and emergency and adult ICUs. Regarding the length of experience, 60.8% of those surveyed have been in the market for 1 to 5 years, followed by 15.7% for 6 to 10 years, 9.8% for 11

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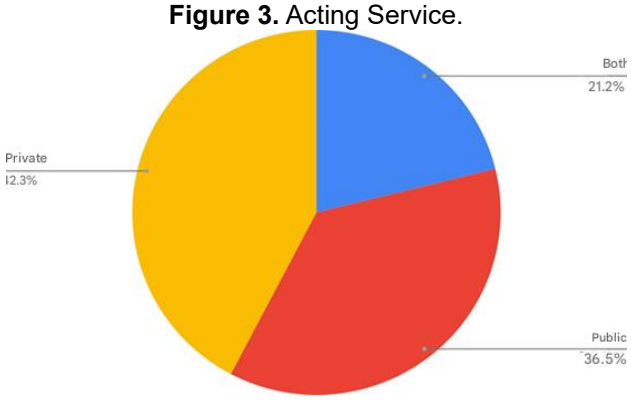
to 15 years, 5.9% for 16 to 20 years, 2% for 21 to 25 years and 5.9% for more than 26 years. These data reinforce the average of six years of experience in the service, as identified by Anjos et al (2007). Figure 3 shows the nature of the service in which the participating professionals work, between the public and private sectors.

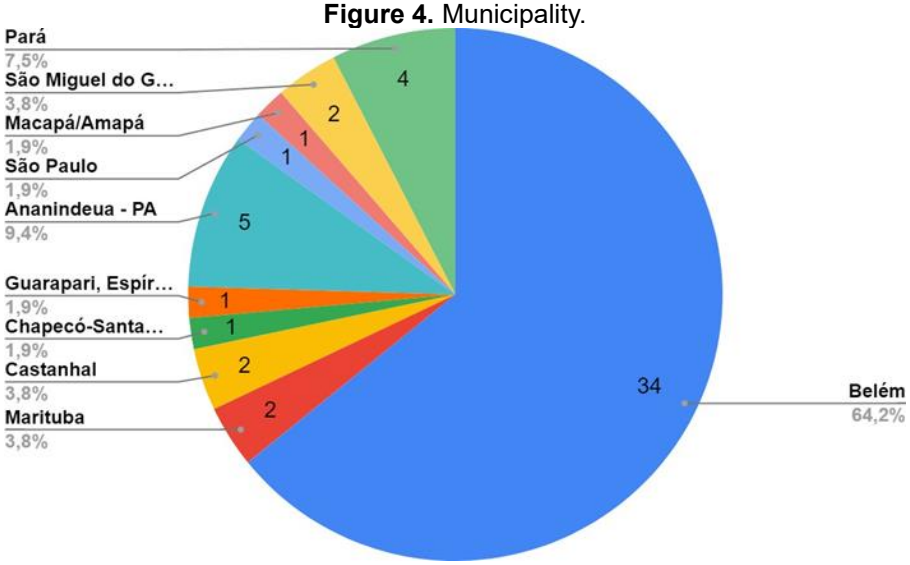
Figure 3. Acting Service.



Source: Authors, 2023.

In terms of the labor market, the analysis revealed a diversified distribution of professionals in the public and private sectors. About 42.3% work in the private sector, while 36.5% are in the public sector and 21.2% of the professionals work in both services. It is important to note that the data showed that most of the interviewees are professionals who work in nursing, and according to the Federal Nursing Council (COFEN), 59.3% of the nursing teams are in the public sector; 31.8% in the private sector; 14.6% in philanthropic care. Of the professionals who participated in the survey (Figure 4), 64.2% are from Belém, 9.4% from Ananindeua and 7.5% answered only that they are from the state of Pará.

Figure 4. Municipality.



Source: Authors, 2023.

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After addressing the sociodemographic characteristics, the workers were asked about the management of HCW, which is presented below.

PROFESSIONALS' KNOWLEDGE OF RSS MANAGEMENT

This topic aims to identify the level of knowledge that health professionals have about HCW management. In view of this, the professionals were asked about the definition of HSW, in a subjective question, according to the attached questionnaire. The answers of the interviewees varied considerably, highlighting the answer of 5 interviewees:

- A1: "It is waste that is part of hospital waste, classified by its risk group".
- A13: "All the "waste" that a hospital institution discards, whether it is infectious or not".
- A14: "Medical waste".
- A24: "It is the waste, that is, the garbage that is generated from routine care, both in hospitals and ICUs, that can be infectious".
- A32: "It is waste from handling in health service places, which needs a specific disposal".

The answers offer a diversified view on the definition of HSW, in which some professionals still use the term "garbage" as a synonym for "waste". According to Law 10.306/2010 and also as cited by De Mattos Gaugard et al (2023) it is no longer considered a technical term in waste management, since garbage is everything that is unused, for which people want to get rid of it.

In view of this, we selected the answers of 5 other interviewees who defined HCW according to the definition of the Brazilian legislation already mentioned for the theme:

- A09: "It is waste produced in establishments such as hospitals, clinics, pharmacies, among others".
- A20: "In short, it is all material that was used in health units, generating waste or tailings".
- A30: "It is all material used during patient care, according to its potential for contamination".
- A41: "It is all that waste resulting from activities carried out in health establishments, such as hospitals, clinics, offices, etc..."
- A46: "It is all solid waste produced with health services, whether biological, radioactive or chemical".

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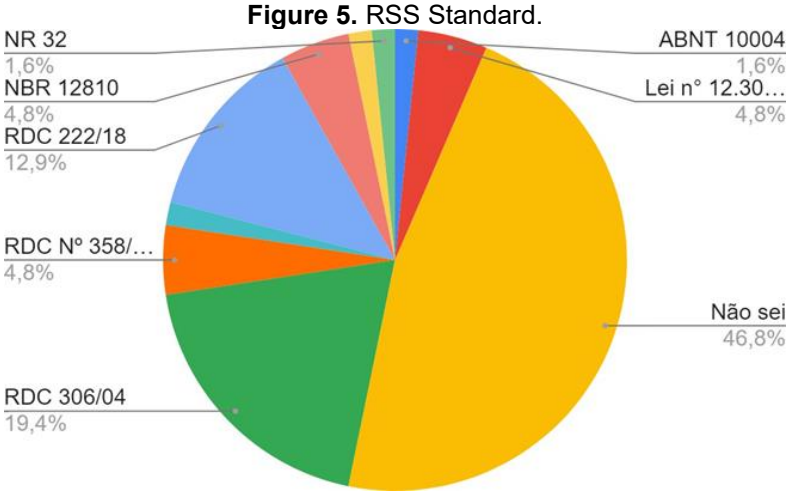
The workers were also asked about where they heard about the HCW, and the answers were: during their professional training (50.9%), through specific disciplines (17%), means of communication (7.5%), own initiative (3.8%) and obtained information by indication of the superior/during work (1.9%). According to the professionals' answers, it can be observed that they have little contact with this theme in the work environment. Figure 5 shows the participants' response to the norm used for the adequate management of HCW.

Figure 5. RSS Standard.



Source: Authors, 2023.

Figure 5 shows that a significant portion of the professionals (46.8%) are not familiar with waste management standards, indicating a gap in knowledge. Of those that cited some standard, ANVISA's RDC 306/2004 was the most mentioned (19.4%), followed by RDC/ANVISA N. 222/2018 (12.9%), (4.8%) cited Law No. 12,305/2010 and (1.6%) other technical standards. In view of this, it is known that RDC 306/2004 was replaced by RDC 222/2018, that is, there is a demonstration of the outdatedness of this portion of professionals, which when added to that portion that declares not to be familiar with the current legislation represents 63.9% of the participating professionals who are not trained to comply with the legislation. Law No. 12,305/2010, Anvisa Resolution No. 222/2018 and CONAMA Resolution No. 358/2005 are the main legal norms related to the management of Health Service Waste (HSW). Knowledge of these standards is crucial for effective implementation and participation of professionals, ensuring best practices in waste management and minimizing the risk of accidents, protecting the health of everyone involved.

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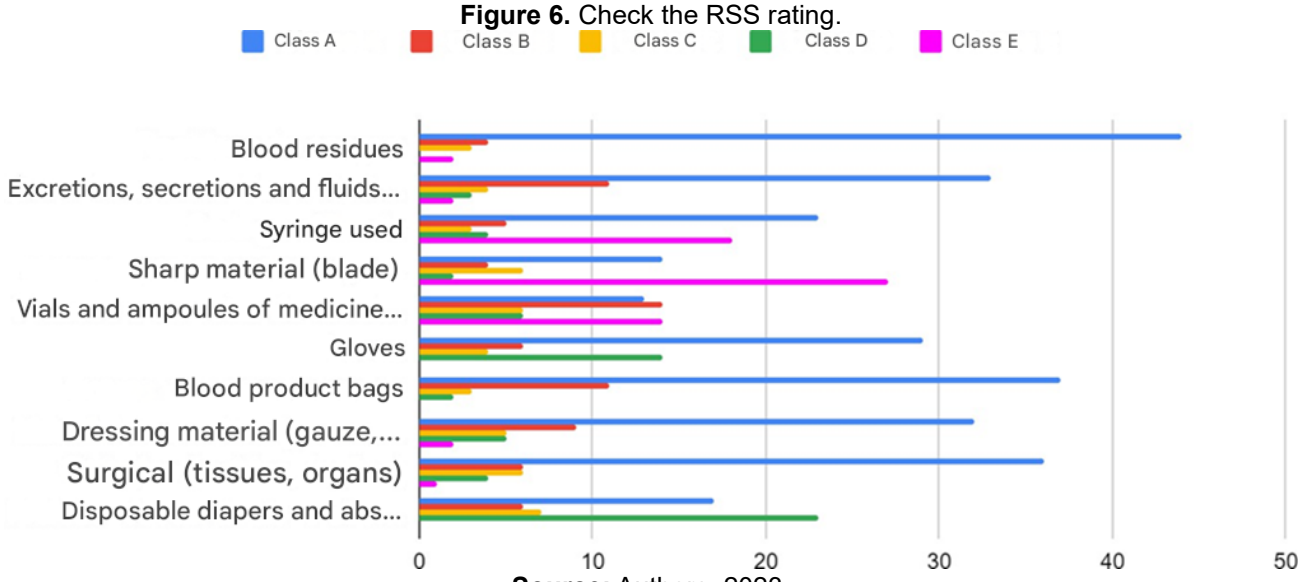
However, when questioned about the classification of HCW, 42.3% knew all Classes A, B, C, D and E, demonstrating a considerable understanding of the categories. 23.1% were not aware of how waste is classified, while a smaller portion, 11.5%, was only aware of Class A. 5.8% know classes A, D and E. While 3.8% mentioned classes A, B and D, 1.9% mentioned the classes as follows: A - infectious, B - chemical, C - civil construction, D - common/recyclable, E-perforation.

Although many professionals (42.3%) declared that they knew the classes of waste, the study listed some waste and asked the participants to perform the classification, shown in Figure 6.

Figure 6. Check the RSS rating.



Source: Authors, 2023.

This practical application (Figure 6) showed important insecurity in this classification, in which, for example, secretion/excretion residues are classified as group A, B, C, D, and E residues by the participants.

It is understood that the transportation of hospital waste is a crucial activity to ensure that waste is handled, transported and disposed of properly, following the rules and regulations. In view of this, the professionals were asked about how HCW are transported out of the hospital, there was a variability of answers, highlighting the answers of 6 interviewees:

- A3: "The companies that transport hospital waste collect all the material, and separate them properly and take them to appropriate places, for their final destination";

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- A7: "Internal transport (depending on the location of the company) to the landfill";
- A11: "Class D is disposed of in a normal way, but the others such as Class A, B, C and E are collected for disposal in a not so regular way and by specific companies due to the probability of environmental contamination";
- A40: "The infected person in a trash can lined with a milky bag, common garbage in the black bag and biological garbage in the orange bag";
- A42: "In properly identified plastic packaging";
- A43: "In a medical waste container".

The answers showed that the knowledge of these professionals is still very superficial in relation to the phases of the PGRSS, and therefore it is worth emphasizing the importance of the knowledge of these professionals so that the stages are properly fulfilled. According to ANVISA (2004, apud Oliveira, 2018, p.32) the plan to be prepared must be compatible with the rules regarding the collection, transportation and final disposal of waste generated in health services, established by the responsible local agencies and by some steps described in resolution No. 306/04. In view of this, the professionals were also asked about the destination of the HCW after use, some informed that they should go to landfills, or should be incinerated, that they should separate them, and send the selective collection, others answered that the HCW should be sent to specialized companies, among other answers, and 7 professionals did not know how to answer.

In addition to properly managing HCW, it is very important for professionals to use Personal Protective Equipment (PPE) as a form of prevention, which PPE was used during their hospital activities (Figure 7).

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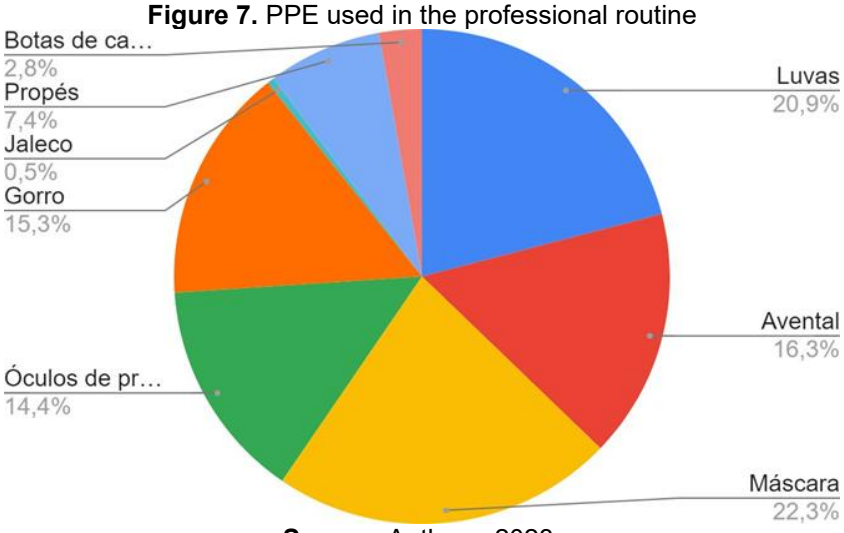
Figure 7. PPE used in the professional routine



Source: Authors, 2023.

The data presented in Figure 7 show a variety of PPE used by professionals, with 22.3% mentioned as masks; 20.9% use Gloves; 16.3% Apron; 15.3% beanie; 14.4% Goggles; 7.4% Propés; 2.8% Long boots; 0.5% the Lab Coat (Figure 7). All PPE used during the activities of these professionals are cited in different scales. Since, the professionals participating in the research are spread across several sectors and some PPE are indispensable in some specific sectors. The importance of PPE as a biosafety measure for workers is highlighted, being the main safety barrier against direct contact with waste, reducing the risk of contamination during hospital activities (Mendes, 2005).

The workers were also asked if they thought that the correct disposal of HCW is an expensive service, six professionals answered no and did not justify the answer, five professionals answered yes and also did not justify the answer, and only three did not know how to answer, in Table 3 it is possible to observe the justifications given by some of the professionals who answered the question.

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Table 3. Correct Disposal of RSS

Yes	No
Yes, because it is a more attentive job and runs the risk of infection or injury, the companies providing the service should charge a higher than normal amount, because they need to invest in a better quality for the worker.	No, the incorrect disposal of HSW can cause great damage to everyone's health and safety.
Yes. It needs technology and planning.	No, this is all care and prioritization with both the employee and the environment.
It is expensive, yes, because it is by weight and constant materials.	It depends on the type of service that must be performed.
Yes, because it requires special care.	No, since the value of the service is according to the weight of the RSS.
Yes, but if there is a logistics analysis, we can lower expenses.	No, because you learn biosafety in the academy and this is the basics that the health professional should know.
Yes, because many materials must be collected by specific services.	
Yes, because they are not common waste, as a need for greater care.	
Yes, but I understand that there is a high cost to maintain the transport, destination and maintenance of the appropriate places for disposal and also for the care of the biosafety of the professionals who work with this service.	
Yes, because with each passing day hospital waste increases a lot.	
Yes, by handling materials that can pose a health risk.	
Yes, it requires investment in planning, monitoring, and execution.	

Source: Authors, 2023.

Therefore, it is essential that health professionals know and become familiar with the correct steps of HCW management. They are responsible for specific responsibilities, such as correct classification, segregation according to the categories established for each waste.

GUIDELINES FOR HEALTH MANAGERS IN MANAGEMENT OPTIMIZATION OF RSS

HCW are extremely relevant in hospital management, requiring special attention from the responsible managers. According to Law No. 12,305/2010 in its Article 9, in the

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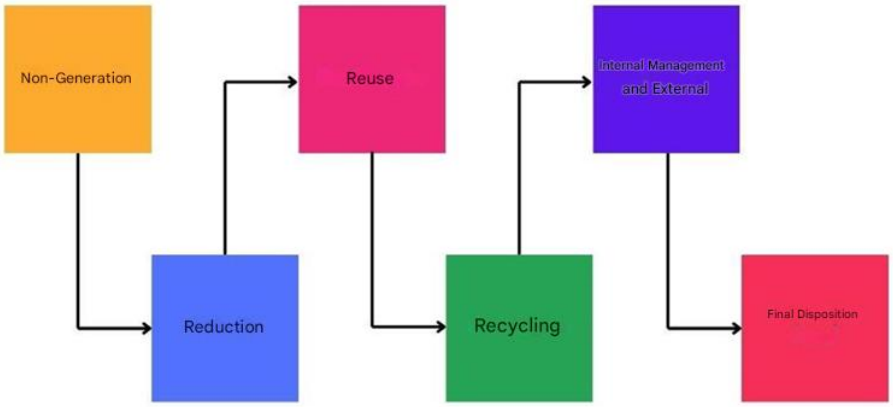
management and management of solid waste, the following order of priority must be observed:

Figure 8. Steps of RSS management



Source: Authors, 2023.

Thus, according to the participation of professionals in the research, deficiencies are observed in the main stages of waste management (Table 4), which ends up harming the proper management of waste. In addition, they do not show that they consider this prioritization in the non-generation of waste. Based on the data obtained, this study suggests some guidelines to be considered by health service managers in order to optimize HSW management. It should be noted that there is a legal obligation to be fulfilled here, in addition to a social responsibility towards employees and the environment. Table 4 presents the proposed improvements.

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Table 4. Steps of RSS management

RSS MANAGEMENT STEPS	MAIN SHORTCOMINGS	SUGGESTION FOR IMPROVEMENTS
NON-GENERATION: TRAINING AND AWARENESS	The absence of educational actions on HCW in the work environment was identified, because when professionals were asked where they had heard about HCW, only (1.9%) reported that it was on the recommendation of their superiors or during work. The absence of an approach to this theme also influenced the lack of knowledge in the definition of HCW and the current standards and legislation on the part of professionals. The lack of approach to this theme by health services influences all stages of HCW management, contributing to inadequate management.	Promote training and awareness for professionals: 1° Reduction of waste generation at source. 2° Offer training courses, educational lectures for professionals, which address what HSW are, regulatory standards and current legislation. 3° Develop continuous environmental and health education programs for professionals every 6 months.
INTERNAL MANAGEMENT: SEGREGATION (CLASSIFICATION AND DISPOSAL) OF HCR	It is noted that some professionals had difficulties in classifying certain waste, this ends up influencing the container where the waste will be disposed of. Such as secretion/excretion residues. It should be noted that it is at this stage that the professional must separate and classify the waste according to the established standards, this ensures that the waste is identified and disposed of in the appropriate container, preventing accidents during handling.	1° Promote lectures, awareness campaigns to ensure adherence to proper waste management practices. 2° Prepare manuals, guides with clear and simple information on the correct segregation, classification and disposal of waste, which contain examples of the materials most used in the daily lives of professionals. 3° Evaluation of waste management, through indicators to ensure adherence to proper waste management practices.
INTERNAL AND EXTERNAL HANDLING: TRANSPORT	Some professionals demonstrated that they did not know the transportation of waste and others only know a part of this process. The inadequate transportation of waste can cause several problems for workers, the population and the environment. Inadequate transportation can cause the occurrence of occupational accidents involving health professionals, public cleaners and waste pickers and the spread of diseases to the general population, by direct or indirect contact through vectors.	1° Train professionals to carry out the correct transport, based on the laws and regulations that govern this process. 2° Encourage professionals to use all the PPE necessary for protection during this process.

Source: Authors, 2023.

According to RDC 222/2018 in its chapter V, Art. 91 of Occupational Safety, provides that the health service must maintain a continuing education program for all professionals involved in the stages of waste management, even those who work temporarily.

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In view of this, the following permanent education actions provided for in the RDC and that cover absences identified during the research with professionals stand out, namely:

1) System adopted for the management of RSS;

2) Practice of segregation of HCW;

3) Environmental, cleaning and health surveillance regulations related to HSW;

4) Definition, type, classification and risk in the management of HCW.

In training and qualification actions, the manager must approve the organization and schedule of training sessions or courses according to the availability of professionals, with the objective of educating and raising awareness about the best practices for waste management. Offering a channel for feedback from professionals, which encourages active participation in the implementation of these improvement actions.

The monitoring and evaluation of educational actions and the proper management of waste, through indicators that allow the supervision and monitoring of the progress of the implemented actions, with the realization of evaluations to verify the effectiveness of the proposed solutions.

DISCUSSION

The first stage of the study sought to know these professionals regarding their socioeconomic characteristics, creating a professional profile of them, and looking for probable relationships between this profile and the answers acquired in the second stage, referring to the knowledge demonstrated by the interviewees regarding the nature and management of HCW.

In this context, an important relationship for the achievement of the study's objective is that these professionals are, in an important proportion (approximately 30%) working in the urgency, emergency and ICU. According to Da Silva et al (2020), during their research, the processes in the urgent and emergency sector have a high demand for critical or semi-critical patients, which generates constant pressure due to the possibility of overcrowding and scarcity of human resources. Relating this profile, it is essential that it be considered by the manager, since there is an important tendency for this professional not to have the ideal management of HCW as a priority, especially in the segregation stage, due to the high demand in the work environment. Another factor is the difficulty of this professional in

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participating in training, which should be discussed with the management center of the projects and resolved in a participatory way (HUPFFER et al, 2021).

To monitor the knowledge of the participating professionals regarding HCW, the National Solid Waste Policy (PNRS) should be used, which defines solid waste as any material, substance, object or discarded good resulting from human activities in society. HSW is any waste produced by hospitals, clinics, offices or other health services, considered as hospital waste (RDC/ANVISA N. 306/2004). Thus, they must be classified and destined for a specific collection, also considering RDC/ANVISA N. 222/2018. Of the interviewees, only 5 workers knew how to correctly define the HCW.

The study also revealed that these workers have, according to their statements, that the theme of HSW was basically addressed at the time of their academic training, regardless of the level of training, and did not mention the work environment as a place of knowledge of the theme. The lack of information can be a contributing factor to problems related to the proper management of HCW, as suggested by Negreiros et al (2019), the holding of lectures and mini-courses in health institutions can be crucial to improve the training of professionals and reduce work accidents, in addition to ensuring the proper management of waste.

An important reflection of this incipient continuous training on the subject was presented in figure 6, in which they were called upon to classify some HCW, and demonstrated a lot of diversity in the classification. According to Da Silveiras Siqueira et al (2023), the main purpose of the classification of waste by generators is to enable the proper management of waste (inside and outside the unit), ensuring the safety of workers and the preservation of health and the environment.

It is also noteworthy that waste must be segregated at the place of generation, before disposal in the appropriate container, as indicated by Mendes (2005). Thus, it is essential to invest in training programs to ensure that professionals not only understand the classes of waste, but are also able to apply this knowledge in practice, ensuring proper segregation from generation to final disposal (Celho, 2017). Such procedures should be part of the PGRSS to be widely disseminated to professionals working in health services (RDC/ANVISA N. 222/2018).

The highlight of this study is undoubtedly the need for continuous training, in which the statement by Trigueiro et al (2014) is also highlighted, which emphasizes that professionals live in a constant learning process and that the time of work is a relevant

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element for the category. Professionals with more time in the work tend to have considerable knowledge about the health-disease processes, however, if they do not participate in periodic training, they tend to neglect the HSW management process, either due to self-confidence or due to outdated regulatory standards (NEGREIROS et al, 2019).

In view of the recognition of the main strengths and weaknesses of the knowledge of the interviewed professionals, the study proposes some guidelines capable of contributing to health service managers (public or private), since inadequate waste management not only entails additional costs for hospital institutions, but also increases the risks of accidents among professionals who work in these environments and environmental contamination (ANDRÉ et al, 2016).

Table 4 guided the aforementioned guidelines, in which it is highlighted that, in this context, the manager responsible for the health service must lead the elaboration of a detailed plan to implement the improvement actions, with the definition of goals and responsibilities for each sector, with deadlines established for each action. Still aiming to assist such elaboration, Figure 9 presents the steps to be followed, capable of assisting the planning process, and it is important to safeguard the specificities of each service location.

Figure 9. Adequate Management of HSW

Source: Regional Council of Veterinary Medicine of São Paulo - Adapted by the Authors (2023).

In addition to the indications already mentioned, it is noteworthy that Neres et al (2014) also cites the responsibility of the hospital manager in certifying the regularity of

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outsourced companies before environmental agencies and health surveillance, in addition to monitoring the validity of contracts in the area. In addition, it must also monitor maintenance periods of pest control services at the site.

For adequate waste management, it is also necessary to map the generation of waste by generating source, because through mapping it is possible to evaluate the sources of waste, what is the best way to dispose of the waste generated and what are the alternatives for reducing waste generation. Mapping is an important step in the management, organization and reduction of costs in the production process, because in addition to reducing costs, it helps to reduce the risk of accidents and reduce and control environmental impacts.

CONCLUSIONS

The proper management of HCW plays a fundamental role in the safety of professionals, patients and in the conservation of the environment, directly contributing to avoiding occupational accidents and protecting health professionals from exposure to infectious agents and hazardous substances during the handling and disposal of this waste. Inadequate management can result in serious health risks for all professionals involved. In view of this, it is important that all professionals who deal directly or indirectly with waste have a minimum knowledge of the steps that cover proper waste management. From the analysis of the participants of this research, it was identified that the professionals have a preliminary understanding of certain stages of management, such as the classification of HCW. However, gaps in the segregation and disposal of waste are identified. Segregation is one of the fundamental steps for the correct management of waste, because if the waste is not segregated correctly in the place where it is being generated, there is a risk of cross-contamination, due to the mixture of different types of MSW, which can make it difficult or even impossible to treat properly. Through the correct segregation of waste, it is possible to reduce the risk to workers and minimize exposure to infectious agents and hazardous chemical substances present in HSW. This not only protects health professionals, workers involved in collection and disposal, but also avoids environmental contamination, by ensuring the safe and proper disposal of each type of waste.

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As reported by the professionals, the knowledge they have about waste management was obtained at some point in their professional training, through the media or their own initiative. Being a subject little addressed in the work environment, demonstrating the lack of educational actions on the subject, it is the minimum incentive of the health service manager. Therefore, the study demonstrated the importance of managers encouraging and supporting the correct management of waste, through the promotion of continuing education actions, training to fill the gaps present in the knowledge of professionals in the proper management of waste. It should be noted that in case of negligence in the proper management of waste, the institution responsible for the generation may be fined by the competent authorities, its activities may be suspended and the manager responsible for the health service may be fined or even imprisoned. Therefore, the PGRSS is necessary, because through it it is possible to carry out waste management and disposal actions, following the appropriate management standards required by environmental and health surveillance agencies.

It is also important to regularly evaluate the knowledge of professionals to ensure that all the steps provided for in waste management occur properly, as provided for in the legislation.

This study provided an overview of the knowledge of health professionals in relation to waste management, highlighting some barriers found, as the research was applied to a small sample and may not fully cover the variety of knowledge existing among health professionals.

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