

The importance of waste from healthcare services for teachers, students and graduates of the healthcare sector

A importância dos resíduos de serviços de saúde para docentes, discentes e egressos da área da saúde

Residuos de servicios de salud: comprensiones profesores, estudiantes y graduados en salud



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ABSTRACT

This study aimed to explore the perception healthcare sector teachers, students and graduates from two institutions of higher learning in Rio Grande do Sul, on the generation of waste from healthcare services. It used a qualitative research approach, performed with 13 teachers, 18 students and 12 healthcare professionals, who were collected through a focus group. The main results showed there is a perception toward the importance of proper segregation and disposal of Healthcare Service Waste, also there is a lack of concern for the reduction of these wastes. Therefore, the issue requires a broader understanding of the environment, with a view of planetary sustainability, exposing needs to provide the healthcare professionals with knowledge and awareness of the importance of handling these types of waste.

Descriptors: Medical waste. Education, higher. Environment. Public awareness.

RESUMO

O presente estudo objetivou conhecer a percepção dos docentes, discentes e egressos da área da saúde de duas instituições de ensino superior do Rio Grande do Sul acerca da geração dos resíduos de serviços de saúde. Pesquisa qualitativa, realizada com 13 docentes, 18 discentes e 12 egressos de cursos da área da saúde, coletados por meio do grupo focal. Os principais resultados evidenciaram que há uma percepção voltada para a importância da segregação e destino final dos Resíduos de Serviços de Saúde e a ausência de preocupação para redução na produção desses resíduos. A temática requer, portanto, uma compreensão ampliada acerca das questões ambientais com vistas à sustentabilidade planetária, revelando-se necessária a formação de profissionais de saúde qualificados e sensibilizados para a importância do manejo adequado destes resíduos.

Descritores: Resíduos de serviços de saúde. Educação superior. Meio ambiente. Conscientização pública.

RESUMEN

Este estudio tuvo como objetivo conocer la percepción de los docentes, estudiantes y egresados de la salud de las dos instituciones de educación superior en Rio Grande do Sul acerca de la generación de residuos procedentes de los servicios de salud. Investigación cualitativa con 13 profesores, 18 estudiantes y 12 graduados cursos en el área de la salud, recogidos a través de grupos de enfoque. Los principales resultados mostraron que existe una percepción de la importancia de una adecuada separación y eliminación de residuos de servicios de salud y falta de interés por reducción de la producción de estos residuos. Por lo tanto, la cuestión requiere un conocimiento más amplio sobre las cuestiones ambientales con miras a la sostenibilidad del planeta, revelando necesario formar a profesionales de la salud calificados con conocimiento y conciencia de la importancia del manejo de estos residuos.

Descriptores: Residuos sanitarios. Educación superior. Ambiente. Sensibilización pública.

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■ INTRODUCTION

Waste, when not properly treated, is detrimental to the environment and, consequently, human beings⁽¹⁾. Among the various types of waste, the Healthcare Waste (HCW), which includes all waste generated by establishments that provide healthcare, such as hospitals, medical and dental clinics, clinical analysis laboratories and collection posts, veterinary clinics, medical clinics, pharmacies and drug stores⁽²⁻³⁾.

Statistical data indicates that, in Brazil, approximately 200 thousand tons of urban waste is generated per day. Of this volume, it is estimated that the generation of HCW represents 1% to 3% of this, 10 to 25% of which requires special care⁽³⁻⁴⁾. The National Study on Basic Sanitation (Pesquisa Nacional sobre Saneamento Básico), performed in 2008, found that, of 2,269 municipalities investigations, 1,856 municipalities did not treat their HCW and the majority of Brazilian municipalities (61%) dispose of their waste in landfills⁽⁵⁾.

In a healthcare institution, even if there is a high production of common waste, when hazardous waste (infectious, chemical and radioactive material and sharps) is mixed with common waste, all the waste becomes potentially hazardous and this implies that it will go to an unsuitable destination⁽⁶⁾, which presents a problem for human and environmental health.

Studies have revealed the lack of scientific works that approach the theme of HCW and its interfaces with social and environmental health, as well as show little debate in the academic area and in the practices of healthcare professionals. The studies highlight the need to train healthcare professionals on correct waste management, since many professionals do not know what waste is, nor do they give importance to correctly handling waste in healthcare practices. They recognize that there is negligence regarding the procedures done, which create an environmental impact, and the repercussions for society^(1,7-9).

It is necessary to expand the investigation of the environmental effects on human health, due to the improper management of waste, to determine the proper disposal of this type of waste⁽¹⁰⁾. In the formal educational spaces, especially graduate courses in the healthcare sector, it is fundamental to provide debates and reflections regarding environmental and ecological issues, making it so that future healthcare professionals think globally and act locally⁽¹¹⁾.

The environmental issue is becoming a determining factor of the health-illness process. Therefore, it is important to consider the environmental dimension with regards to the actions performed in healthcare services, allowing

for/encouraging strategic actions focused on (re)thinking about healthcare practices and its consequent implications for environmental sustainability⁽¹²⁾.

Therefore, the question is: what is the perception of teachers, students and graduates of the healthcare sector from two institutions of higher learning in RS regarding the generation of waste from healthcare services?

Thus, the objective of the study was to understand the perception of the teachers, students and graduates of the healthcare sector from two institutions of higher learning in RS regarding the generation of waste from healthcare services.

■ METHODOLOGY

This is an excerpt from the exploratory-descriptive dissertation, with a qualitative approach, titled "Healthcare services waste: perception of teachers, graduates and students of the healthcare sector from two institutions of higher learning in RS (Resíduos de serviços de saúde: percepção de docentes, egressos e discentes da área da saúde de duas instituições de ensino superior do RS)"⁽¹³⁾.

The study was done with 13 teachers, 18 students and 12 graduates from healthcare courses from two Institutions of Higher Learning (IHL) from the state of Rio Grande do Sul, totaling 43 participants. The participants represented Physical Therapy, Nursing, Nutrition, Biomedicine, Biological Sciences, Occupational Therapy, Dentistry, Pharmacy and Physical Education courses.

Disclosure of the project and invitations to the participants was done through the two IHL, which issued an invitation, via email, to all the teachers, students and graduates of courses in the healthcare sector from both of the institutions. All the subjects that were present at the previously scheduled time and place participated in the study.

For the data collection, done in June and July of 2012, the focus group technique was used. This technique was chosen for its dynamic nature, since it offers moments of interaction, reflection and discussions focused on a fact, practice, product or service⁽¹⁴⁾, according to the objective of this study. The principal researcher worked as coordinator (moderator) and a nurse acted as an observer.

Six meetings were held, one with the teachers, one with the students and one with the graduates at each of the institutions. Participants included students at different points in their courses of study (from the first to the tenth semester), teachers with at least one year of teaching experience and graduates who had completed their studies within the last three years and who were already working in activities related to their profession. The meetings were

guided by questions related to perception of HCW. The maximum time was 1 hour and 30 minutes in each meeting. The participants' statements were recorded and, subsequently, transcribed, in their entirety. Any notes recorded by the observer while the groups were being held were also analyzed.

Ethical considerations were respected and the participants signed an Informed Consent Statement (ICS). To maintain secrecy of the statements and identities of the participants, the teacher research subjects were identified as Do, the students as Di, and the graduates as E, and all of them were accompanied by a number according to the transcription order of the statements. The results were analyzed using a Thematic Content Analysis⁽¹⁵⁾, with the transcription of the testimonies of those interviewed, codification of the content and an interpretation of their perceptions.

The study was approved by the Research Ethics Committee of the Centro Universitário UNIVATES, in Lajeado, under No. 16660.

■ RESULTS AND DISCUSSION

The data organized and analyzed resulted in two thematic units, which are: **Waste from Healthcare Services: attributed meanings and Waste from Healthcare Services: where is it produced?**

Waste from Healthcare Services: attributed meanings

The meanings attributed by the students about HCW approached the existence of a range of waste produced within healthcare services, and which require distinct destinations. They pointed out the possibility that contaminated waste causes harm to society.

I understand that there is a difference between some types of waste within a hospital or clinical environment. I have information that this trash must go to a different final destination, for example, a syringe – the packaging goes in one bag and the needle goes in a box, in the “descarpac.” The waste from healthcare is important because it can be contaminated and harm people, and it must be correctly disposed of. (Di 12)

Healthcare waste is important because it can be contaminated and cause harm to people, and it must be correctly disposed of [...] are types of waste that need to go to a specific destination. (Di5)

It is special waste that needs to go to a distinct destination, organization at the destination. (Di 16)

One of the students also presented a simplistic perception regarding the relationship between the waste and human health, stating:

When it isn't waste, it's good, it can be used. After it has already been used for healthcare, it is no longer useful, it is no longer good for health, it is bad, because it becomes trash. (Di4)

For the teachers, the HCW is material that results from procedures that require a suitable destination for its disposal. These materials may be reused, transformed or correctly disposed of. They say that it is possible to manage waste in a way that is ecologically correct and present various practical examples of how to handle waste appropriately.

The waste from products that have already been used includes various types of waste and they need a specific destination. (Do7)

All the material that we handle must be sent to its correct place [...] Actually, everything can be reused, the trash itself, the medication, if you send it to the right place it can become fertilizer. (Do3)

Waste is one that that you can sometimes reuse, readapt. (Do5)

The graduates' perception of HCW is taken from a wider process, since it involves all the waste produced within a healthcare institution:

Actually, it includes all the waste produced by an institution. When you connect waste and a healthcare institution, the first thing that comes to mind is infectious material, but the truth is it includes the entire productive process. (E3)

It ranges from the trash produced in the cafeteria, the paper that is thrown away, plastic bags from the burgers to the organic matter itself, yerba mate tea is infectious. (E6)

Waste from healthcare services, for me, could be a syringe, hard material, needles and other materials, as well as substances for which the subject or individual is receiving care. (E9)

We can see an accurate perception from the teachers and graduates about HCW, through which they realize

that these types of waste go beyond infectious. The RDC ANVISA No. 306/04 and CONAMA Resolution No. 358/05 classify waste according to risk group. Group A – Biological of Infectious Waste (cotton, gloves...); Group B – Chemical Waste (expired or contaminated medications, X-Ray fasteners...); Group C – Radioactive Waste (materials that result from human activities with radionuclides); Group D – Common Waste (recyclable and non-recyclable); Group E – Sharp Waste (needles, glass bottles...). These groups require specific forms of management throughout all stages of handling, from generation until final disposal⁽²⁾.

The teachers and graduates also showed concern for the proper segregation of HCW. The importance of correct segregation and destination of all HCW deserves special attention, since the improper disposal of waste leads to huge environmental impasses, putting natural resources at risk, as well as the quality of life of current and future generations^(2,9,16).

Whereas the students pointed out the diversity of waste produced from healthcare services and commented that the different types of HCW require distinctive destinations, attributing greater importance to the contaminated waste, since they consider that contaminants can cause harm to society. There are different pathogenic microorganisms present in the HCW with the capacity for environmental persistence. Some of them include *Mycobacterium tuberculosis*, *Staphylococcus aureus*, *Escherichia coli*, *Pseudomonas aeruginosa*, hepatitis A and B. The main illnesses that arise from the presence of microorganisms in the make up of HCW are gastrointestinal, respiratory, ocular and genital infections, HIV/aids, septicemia, bacteremia, candidiasis, and hepatitis A, B and C⁽¹⁷⁾.

In addition to the concern about contaminated HCW, there is the possibility that other waste might also cause consequences for general health. Organic waste, for example, when inappropriately disposed of, may become a pollutant for land, water and air. Improper disposal destinations of this waste triggers a favorable environment for the development and proliferation of pathogenic organisms.

The students also showed a perception regarding HCW with the absence of values, that they simply become trash. This type of thinking does not lead to sustainable practices, since sustainability requires a change of relationship with the system of nature, system of life and the system of Earth. The first change starts with another vision of reality, the Earth is alive and human beings make up a conscious and intelligent portion of it, a portion which is outside and on top of it, but, participating in the network of relationships that involve all beings, for better and for worse. If a human being pollutes the air, it ends up affecting all other living beings and making them sick as well⁽¹⁸⁾.

This is what occurs, in reality, with HCW, since, when disposed of erroneously, it will have repercussions for all beings that belong to the planet. It is essential that healthcare professionals have the outlook that there is a mutual connection between the environment and waste production.

For these reasons, the effective management of HCW represents a dimension that is relevant to healthcare services, seeking to minimize the production of waste and provide the waste that is produced, with a secure and efficient path for disposal, seeking to protect workers, preserve public health, natural resources and the environment⁽²⁾.

There is also the concern that the issue of HCW should be an integral part of professional training for the healthcare sector, including themes, such as environmental risk, the environment and HCW management in the process of academic training⁽¹⁾. Therefore it is necessary that each professional is able to reflect and perceive himself or herself as a social actor, taking ownership of the awareness that improper handling of HCW may cause repercussions to the social, economic and environmental order.

Waste from Healthcare Services: where is it produced?

In the views of the teachers, the context of HCW production requires an extended look by healthcare professionals, since it is not limited to just the hospital and Basic Healthcare Unit institutions.

This issue is very expansive, it is not restricted just to the issue of hospitals, clinics, which involve human beings, but also veterinary hospitals, biomedicine laboratories, chemistry labs, and dental laboratories are all involved in this issue of chemical products. This waste is not only from hospitals and basic healthcare units. People who work in healthcare are fixated just on this area of healthcare, on the hospital. (Do2)

With regard to the locations, you cannot stay focused just on the hospital, you have to think about the other locations as well. (Do12)

If we think about it, we also produce this waste at home. (Do8)

The teachers emphasize the importance that the healthcare professional perceives HCW systematically, in the sense that they should concern themselves with the waste that results from healthcare procedures realized in

different settings, such as home environments. They need a specific location to be able to correctly dispose of waste.

The students pointed out that HCW is produced at healthcare institutions, such as hospital, Basic Healthcare Units and clinics. They also indicate that this waste is produced in a home environment.

This waste is found within a hospital, as well as health clinics and pharmacies. (Di12)

I worked at an esthetic clinic that had a box for sharps, into which syringes and scalpels were deposited. In a separate box, bloody cotton and gloves, contaminated trash, was deposited. (Di1)

I worry about the people that give medication at home and dispose of it incorrectly. (Di 5)

The above testimonies mention a concern about the destination for waste that results from medication used in a home setting, saying that, often, this disposal is done inappropriately.

For graduates of healthcare courses, the production of HCW includes a more expansive context. These professionals, together, indicate various locations that produce this waste, including: teaching institutions, hospital, basic healthcare units, pharmacies, private clinics, *pet shops*, esthetic clinics, doctors' offices, alternative acupuncture clinics, outpatient clinics, nursing homes, shelters, dental clinics, physical therapy clinics and in the home.

At the basic healthcare units, outpatient clinics, nursing homes, dental clinics, physical therapists. (E5)

If you think about the center of the city, there are various places that produce these types of waste [...] (E1)

It is from anything that deals with life, not just dealing with people, but also dealing with animals generates waste. (E3)

I have seen that healthcare waste is produced in Hospitals, even here, in an educational institution. (E11)

At home, patients use insulin, which produces waste. (E8)

Graduates realize the diversity of locations where this waste is produced, not being limited to hospital institutions. The teachers have a vision that is similar to the graduates, whereas the students believe that the HCW produc-

tion context is limited to the hospital environment, Basic Healthcare Units, clinics and homes. From this perception, it is possible to see an anthropocentric outlook, by the students, since they do not show concern for locations that involve care for other living beings, such as veterinary clinics, *pet shops*, and animal laboratories.

When indicating the locations where HCW is produced, we perceived that both the teachers and the graduates presented a wider outlook regarding the context of its production, since they did not limit production to the traditional healthcare locations. This finding is in line with the one recommended by RDC ANVISA No. 306/04 and CONAMA Resolution No. 358/2005, which define HCW generators as all services related to human or animal healthcare, including home care services⁽²⁾.

HCW is directly or indirectly linked to human or animal health, whether to prevention, diagnostics, treatment, rehabilitation or research, since these create a wide variety of waste with different physical, chemical and biological characteristics that require, among other instruments, a specific classification⁽¹⁹⁾.

Based on the above, we argue that healthcare professionals have a commitment to actively participate in the legal principles proposed by the generation of waste in healthcare, seeking the systemic integration between healthcare and the environment as an important factor in environmental education. The social and environmental health phenomenon means much more than a linear process, but rather involves a systemic process, one that is circular and interdependent.

The health factor is intrinsically related to care, which requires a wider perception, as a process that goes beyond an attitude or action by human beings, as it is in all situations and actions, representing an attitude of occupation, concern, accountability and emotional involvement with others. Knowing how to care relates to the ethical sentiment of the human being toward the environment that he or she is a part of⁽¹⁸⁾.

It is the commitment of all individuals, as citizens, to feel responsible for protecting the environment from degradation, in order to decrease the complications that arise for future generations. It is therefore up to healthcare professionals to consider the importance of ecological care, in its breadth and complexity and, constantly, seek greater benefits to acting consciously and responsibly, aiming to preserve the environment and value environmental determinants, while providing healthcare to the population⁽²⁰⁾.

Care for HCW represents one of the attributions of healthcare professionals. In order to effectively manage this waste, it is necessary to not only organize and create a

system for the generating sources, but also, fundamentally, awake the human and collective awareness of professionals that work in these environments⁽¹⁶⁾.

The environmental impacts caused by the poor management of HCW may reach large proportions, from contamination and elevated indices of hospital infections to the generation of epidemics caused by ground water contamination⁽⁷⁾. The management of HCW must be treated in a broad and interdisciplinary manner, seeking to reflect the critical, ecological and committed position of professionals, including social ethics and eco-environmental responsibility⁽⁹⁾.

Due to the complexity of the process of production and handling of HCW, one IHL occupies an important space in building general and specific knowledge, in this case, about the issues related to environmental care. When remembering that an IHL is also a producer of HCW, the proper management of this waste serves as an example and motivation so that future healthcare professionals, who graduate from there, also take responsibility for the proper handling of waste generated from their activities, reflecting the benefits to society and to the environment.

■ CONCLUSION

The participants, overall, attribute meanings to HCW, paying special attention to the importance of proper segregation and final destination, especially with contaminated waste, since they consider that it can cause damage to society. In relation to the locations where HCW is produced, the teachers and graduates presented a broader outlook regarding the context of production of this waste, since it is not limited to just hospitals and Basic Healthcare Units. For the students, the context of production is limited to traditional healthcare environments.

The analysis showed a gap concerning the reduction of HCW, as well as a concern for the damaging consequences of the other waste, in addition to infectious. With regards to the context of HCW production, we found a weakness in the academic training of the students, since those that participated in the study were academics at various points in their courses of study, and the perception was limited to their practical and social environment. Whereas, as the teachers and graduates pointed out, production goes well beyond these locations.

Given the results of the study, the question is: in what way is this knowledge being taught in IHL? What approaches are being used? In what way does this teaching and learning process reflect the importance of adopting sustainable practices in the healthcare field training set-

ting? We recommend that these questions are investigated through further research.

We concluded that, both in the academic field and in the scope of healthcare services, it is necessary to strengthen the involvement and participation of all the subjects in the construction and implementation of policies for suitable management of HCW. We must contextualize them in the different interconnected spheres and not just has a mechanized and necessary practice in the daily routine of IHL and healthcare services.

The theme requires a broader comprehension regarding the environmental questions, seeking planetary sustainability, revealing the need for training qualified healthcare professionals, with knowledge and make them aware of the importance of handling this waste. We recommend an investment in research and outreach projects that address the topic of HCW in the different healthcare sector courses, in order to contribute, committedly, to environmental sustainability.

One of the limits of the study is that fact that it was performed with teachers, students and graduates from only two IHL, therefore we cannot generalize the results found. We suggest that further studies are done, which see to look deeper into the results of this study, in order to better understand the subject.

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