



Biological risk related to health care waste management in home care*

Risco biológico relacionado ao manejo de resíduos de serviços de saúde na atenção domiciliar

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Objective: to describe the biological risk related to health care waste management in home care. **Methods:** this is a descriptive cross-sectional study that observed 231 home visits. The visits were made by 15 nursing professionals from a municipal home care service. **Results:** health care waste was generated during the home visits, being 49.5% of group A, 35.0% of group D and 15.5% of group E. Nonconformities were observed in the packaging of Group A and E waste. Group E waste was disposed of in rigid containers in 83.9% of the visits, but in 37.5%, it was disposed of in rigid containers suitable for this purpose. **Conclusion:** during home visits, group A, D and E health care waste was generated. The disposal and handling of group A and D waste showed that there was no packaging in appropriate plastic bags; in group E, the waste was discarded into a rigid container. **Descriptors:** Home Nursing; Medical Waste; Nursing, Team; Waste Management; Containment of Biohazards.

Objetivo: descrever o risco biológico relacionado ao manejo de resíduos de serviços de saúde na atenção domiciliar. **Métodos:** estudo transversal descritivo que observou 231 visitas domiciliares. As visitas foram realizadas por 15 profissionais de enfermagem de um serviço municipal de atenção domiciliar. **Resultados:** durante as visitas domiciliares foram gerados Resíduos de Serviços de Saúde, sendo 49,5% do grupo A, 35,0% do D e 15,5% do E. Foram observadas não conformidades no acondicionamento dos Resíduos do Grupo A e E. Os resíduos do grupo E foram descartados em recipientes rígidos em 83,9% das visitas, porém em 37,5% das visitas foram descartados em recipientes rígidos próprios para essa finalidade. **Conclusão:** durante as visitas domiciliares foram gerados resíduos de serviços de saúde, do grupo A, D e E. No descarte e manejo do grupo A e D, observou-se que não foram acondicionados em sacos plásticos apropriados; no grupo E, foram descartados em recipiente rígido.

Descritores: Assistência Domiciliar; Resíduos de Serviços de Saúde; Equipe de Enfermagem; Gerenciamento de Resíduos; Contenção de Riscos Biológicos.

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Introduction

Home Care has been available in the Unified Health System since 1993. It is a health care model offered at the client's home and characterized by a set of actions for health promotion, treatment, disease prevention and rehabilitation. This modality of care in the Brazilian public health system is recent, but has a great potential for implementation and expansion⁽¹⁾.

According to the Home Care manual, this type of care is based on principles such as reduction of the risk of infection, reduction of hospitalizations and consequent enhancement of the use of resources, and reduction of the demand in urgency and emergency services. One of the central axes is "dehospitalization", which decreases clinical complications and nosocomial infections, especially among elderly clients, who are currently the largest public of the Home Care Service⁽²⁾.

Because it is a growing health care modality, little is known about the management of health care waste in this setting. The handling of this waste can bring direct risks to professionals, especially when they handle sharps in a place that was not prepared for this purpose and that are brought to the home by users or health professionals themselves.

A study conducted in the United States pointed out that the home care scenario offers additional risk factors for occupational accidents. Despite the availability of needle safety devices, the user often does not opt for these devices due to reuse, especially in the case of patients who have diabetes mellitus. Furthermore, when professionals use the patient's own device, they discard them into containers available at home and without recapping needles⁽³⁾, not following the recommendations of standard precautions⁽⁴⁾.

It is recommended that good health care waste management practices be adopted in all health care services, including in the home care modality. It is important that health care waste generated during home care be collected and packaged by the professionals and sent to their final destination in an environmen-

tally correct way. Waste can be transported in the vehicle used by the professionals, and to this end, the established norms must be followed, being collection in rigid, duly identified and sealed containers, so as to avoid leakage⁽⁵⁾.

Health Care Waste is classified into Group A (presence of biological agents), Group B (chemicals), Group C (radioactive waste), Group D (common waste), and Group E (sharps)⁽⁵⁾.

Most studies on Solid Health Care Waste and actions adopted by professionals have been conducted within hospital institutions⁽⁶⁻⁷⁾. From this perspective, a study that sought to verify the knowledge of nursing professionals about health care waste management in inpatient units found that these professionals had little knowledge about the Health Care Waste Management Program⁽⁸⁾.

Regarding home care, the results were not different, the management of health care waste generated in the home setting also revealed inadequate situations related not only to the difficulties inherent to the management of this waste, but also to the peculiarities of the care in this context⁽³⁾.

Thus, in view of the above, the present study aimed to describe the biological risk related to health care waste management in home care.

Methods

This is a descriptive study with a quantitative approach. This research was developed with home care nursing teams of the home care service of the Municipal Health Secretariat of Ribeirão Preto during home visits. Only the care provided by the nursing team was observed. We opted for direct and non-participatory observation to minimize the possible recall bias if direct interviews were used. Thus, the researcher went, on a daily basis, to the place where the teams would meet to go to the homes. Each day the researcher joined a different team. Data collection took place from August 2016 to January 2017.

The city of Ribeirão Preto has three Multipro-

fessional Home Care Teams that conduct visits simultaneously and daily in the mornings and afternoons. The sample size was determined by convenience, in view of the variable number of daily visits, the time to accomplish the study (six months), and the difficulty to evaluate the three Multiprofessional Home Care Teams. Thus, the total sample consisted of 231 home visits by 15 nursing professionals (11 nursing assistants, one nursing technician and three nurses) who worked in the home care service. The number of nursing professionals corresponds to the total number of professionals who made up the nursing team during the data collection period. Every day the three teams left the unit separately to conduct visits and each team was followed in the daily visits during two months, so that all teams were observed during the study period. Data were collected by a single researcher. As the study involved direct observations, the professionals were consulted about their consent, and those who agreed to participate in the study signed the Informed Consent Form.

The researcher would come to the Home Care service every day and follow the visits made by the teams. It is noteworthy that nursing professionals were assigned to participate in all visits. Although other health professionals and students participated in the visits, only the activities of nursing professionals were observed. Information was collected through direct and non-participatory observation of home visits by the main researcher of this investigation.

To obtain the data, we used a structured observation script previously submitted to seven experts on the subject (pretest), who were asked to analyze the appearance and content. After the suggestions were accepted, the instrument was considered adequate to reach the proposed objectives. The instrument made it possible to verify the following information: identification of the visit (from 1 to 231); procedures carried out during the visit; type of waste generated (waste groups according to collegiate board resolution nº 222/2018); waste type specification; packaging; and conduct adopted by nursing professionals to discard

the health care waste produced in the home setting.

Data were entered by the researchers of this study, through double-typing in Excel spreadsheets and, after correcting possible inconsistencies and typing errors, they were exported to the Statistical Package for the Social Sciences version 21, to calculate the descriptive statistics; data were presented in absolute and relative frequencies.

This study was approved by the Research Ethics Committee of the Nursing School of Ribeirão, according to the Certificate of Presentation for Ethical Appraisal nº 58309916,5,00005393, and the research was conducted according to the required ethical standards, Opinion nº 201/2016.

Results

During the data collection period, 231 home visits were observed, where three nurses, one technician and 11 nursing assistants participated in the home care service. During the home visits, health care waste was generated. The waste was in 320 cases (49.5%) from group A, 226 (35.0%) from group D, and 100 (15.5%) from group E, as shown in Table 1. The data show that the inputs used in dressings and sharps were the main items of the generated waste.

Regarding the disposal of group A and D health care waste, it was observed that no proper plastic bags for packaging were used in any of the visits, and the waste was not collected to the health unit responsible for the visit.

During the 231 home visits observed, sharps (needles and or scalpel blades, group E) were used in 56 visits; in 47 (83.9%) of these visits, the sharps were discarded in a rigid container, and in 53 (94.6%), the disposer was taken to the unit. Universal collectors (feces and urine) were used in 26 (46.4%) visits, and collectors for small sharps in 21 (37.5%). It is noteworthy that in 6 (10.7%) visits the professionals wrapped the material in the glove they were wearing, removed it from the hand, and placed it inside the box with new needles and syringes (Table 2).

Table 1 – Distribution of waste generated during home visits observed in the Home Care Service according to classification into groups

Variables	n (%)
Group A	320 (49.5)
Gloves	156 (48.7)
Gauze	98 (30.6)
Serum bottle	16 (7.0)
Serum device	16 (5.0)
Probes (STC, BIC, and NC)	9 (4.0)
Dextro tape	6 (1.9)
Group D	226 (35.0)
Adhesive tape	98 (43.4)
Dressing wrappers*	98 (43.4)
Cotton	44 (13.8)
Diaper	5 (2.2)
Group E	100 (15.5)
Hollow needle	15 (15.0)
Intravenous Infusion Device	29 (29.0)
Syringe	44 (44.0)
Lancet	6 (6.0)
Scalpel blade	6 (6.0)
Total weight of waste	646 (100.0)

*Dressing packages; STC: Short-term Catheter; BIC: Bladder Indwelling Catheter; NC: Nasoenteral Catheter

Table 2 – Distribution of the actions adopted by health professionals in the disposal of group E health care waste (scalpel needles and/or blades) (n=56)

Variables	n (%)
Discarded in rigid container	
Yes	47 (83.9)
No	9 (16.1)
Transported the container to the unit	
Yes	53 (94.6)
No	3 (5.4)
Container type	
Universal collector (urine and feces)	26 (46.4)
Sharps collector	21 (37.5)
Other*	6 (10.7)
Household waste	3 (5.4)

*Wrapped it with the glove and placed it inside the box with needles and syringes

Discussion

A limitation of the study is the possibility of professionals changing their behavior due to the presence of a researcher making direct observations of the practice in the home of the patient, and also their awareness of being observed, because they were previously approached and clarified about the purpose of the study. However, as this contact became more frequent, they performed the activities more naturally.

Despite presenting some limitations, the study allowed the identification of the management of health care waste generated during home visits. The findings may support the proposition of educational measures to stimulate the correct management of health care waste in home setting, reducing the exposure of health professionals working at this level of attention.

Health care waste management is the responsibility of the generating units, no matter whether the waste was generated in the households. Thus, the service has the duty to collect the waste. However, when the waste is generated by the user and/or caregiver, its destination is not the responsibility of the units⁽⁵⁾.

Type A, D and E waste was generated during home visits. The most frequent type of waste generated were sharps and materials from dressings, in line with another research⁽⁹⁾.

A study that evaluated waste management during home care identified that health care waste generated on the client's property is stored at home, in plastic bags or general waste containers, pointing out that this waste remains in the home for approximately one week⁽⁹⁾; thus, the waste was not discarded within milky white plastic bags as recommended by the Ministry of Health⁽⁵⁾. In data corroborated by the present research, the risk to nursing professionals, who are the focus of the study, becomes evident. However, we cannot rule out the risks to selective waste collection professionals and to residents of the household.

Health care waste from groups A and D was packed together in 100.0% of the times, increasing the volume considered infective. According to the relevant

legislation, these waste types should be separated. Group A waste should be packed in resistant, milky white bags, identified with the sign of infectious substance and the inscription: Infectious waste. In the case of group D waste, which was discarded in common waste, there is no need to sent the waste to the unit, it can rather be disposed of in the household waste⁽⁵⁾.

A research that used data collected through records in the electronic protocol of the Occupational Accident Prevention Network found that nursing professionals who had accidents with sharps (35.7%) were performing intravenous puncture. Another cause of accidents was the disposal of sharps (21.4%)⁽¹⁰⁾. Some authors have pointed out that professionals often make adjustments in the moment of discarding sharps⁽¹¹⁻¹²⁾ and that inappropriate disposal of this waste group has appeared as a frequent cause of occupational accidents by the nursing staff⁽¹²⁻¹³⁾. It was found in the present study that even though the container was considered rigid, it was not appropriate for this purpose. This, in turn, increased the risks for nursing professionals who handled the waste more than once, increasing the situations of occupational risk in home care. A study conducted in the context of an operating room pointed to a stricter control of disposal of sharps⁽¹⁴⁾, finding that such rigor for the disposal of sharps during home care is also necessary.

A study that aimed to understand the social representations of primary care nursing professionals about biosafety and analyze how they articulate with the quality of care showed that nursing professionals recognize the risk of accidents with biological material as inherent in the nursing practice, emphasizing that they feel more vulnerable when providing home care⁽¹⁵⁾. Another study also conducted with home care professionals showed that they reported accidents in the practice of disposal of sharps⁽¹⁶⁾.

Waste from poorly managed health services is a source of infection for patients and health professionals; on the other hand, when there is adequate packaging of this waste, the risk becomes minimal⁽¹⁷⁻¹⁸⁾.

Training and awareness of proper waste management remain low in institutions⁽¹⁹⁾. Many studies have shown the need to increase these practices to reduce risks in hospital institutions⁽¹⁷⁻¹⁹⁾. There is a need to analyze also other levels of attention such as home care⁽¹⁶⁾.

Every service that generates health care waste is responsible for the elaboration, implantation, implementation and monitoring of the Health Care Waste Management Plan⁽⁵⁾. Home care generates this kind of waste and it was found that nursing professionals adopted inappropriate behaviors in the disposal and management of waste and sharps, in agreement with other study⁽¹²⁻¹³⁾. Thus, further research at this level of attention is needed for greater adequacy of the work, as well as continuing education for home care professionals, as the work process differs in various aspects from that developed in hospital institutions.

Conclusion

During the home visits, the health care waste of the group A, group D and group E was generated. Regarding the disposal and management of group A and D waste, it was observed that no appropriate packaging in plastic bags was used in any of the visits, and the waste was not collected and taken to the health facility responsible for the visit. In group E, the sharps were discarded in a rigid container and most of the times the disposer was taken to the unit. In some of the visits, universal collectors (feces and urine) were used, and in others, collectors for small sharps were used.

Collaborations

Cordeiro JFC, Silva MFI, Oliveira AC and Canini SRMS contributed to the conception and design of the study, analysis and interpretation of data, writing of the article, relevant critical review of intellectual content and final approval of the version to be published.

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