

ORIGINAL RESEARCH

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Home medical care waste collection by caregivers in Turkey**Mehtap Omac Sonmez¹, Feyza Nazik², Senem Andi³**¹*Kahramanmaraş Faculty of Health Science, Department of Nursing, Kahramanmaraş, Turkey*²*Bingöl University, Faculty of Health Science, Department of Nursing, Bingöl, Turkey*³*Adana Numune Training and Research Hospital, Clinic of Oncology*

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Abstract

Domestic medical waste is a constant concern and growing problem in home medical care. This study was carried out to determine the applications for collection of medical wastes that result from the home medical care performed by the caregivers/patients. This study was descriptive type. There were 3301 registered patients in home care services. A minimum sample size of 345 patients was reached by systematic sampling within homecare patient registration forms. The data were given as frequency distribution and averages. The person who provides care for 89.3% of the patients was the relative of the family. Although 31% caregivers have trained on home medical care waste collection, only 22.3% of caregivers collected and separated home medical care wastes. Totally 84.1% of the caregivers did not collect the home medical care wastes and threw into the domestic waste bin. The home medical care wastes thrown into the domestic waste have a great danger not only for caregivers but also for domestic waste collectors, the environment and even street animals. The home medical care waste should be collected by municipalities and health care institutions are responsible for collection all home medical care waste and they should be controlled.

Keywords: Home care, medical waste, caregiver, Turkey**Introduction**

The World Health Organization has defined all wastes generated by health institutions, research institutes and laboratories and the wastes generated during home medical care (dialysis, insulin injections) as medical wastes [1]. One of the most important steps of medical care waste management is the collection of infected wastes separately from domestic. Although there is no specific regulation for home medical care wastes in Turkey, it is necessary to ensure that home medical care wastes (HMCW) are collected and disposed according to “medical waste control regulations” by home care personnel. In addition, home care personnel are responsible for educating and informing the homecare patients and their families [2]. The regulations on medical wastes and the control of medical wastes made in 1993 by the Turkey Ministry of Forestry and Environment for the first time were changed in June 2005. This regulation determined the principles for collection, transportation, temporary storage in the healthcare facilities, and removal of medical wastes [3]. In addition, this regulation was revised again in 2017. It is reported that all wastes should be transmitted to the medical waste collection centre operated by

municipalities in provinces within the framework of the medical waste regulation in Turkey and private contractors are hired for waste disposal in some cases [4]. The recently established home care services provide care for more patients with each passing day. When the home care team goes homes for treatment, the HMCW are collected by home care personnel but there is no explanatory data about how are collecting about HMCW (insulin, wound care, injection, colostomy, catheter care etc.) by the caregivers/patients. Therefore the purpose of this study was to investigate collection and disposal of separate HMCW by their caregivers/himself/herself.

Material and Methods**Medical Waste Collection and Home care services in Turkey**

All of the medical wastes are collected according to Medical Waste Control Regulation (last revising, 2017). Infectious and sharps, hazardous (radioactive) wastes are segregated from the main waste stream in all of hospital. All hospitals is used red color bag for infectious waste and yellow color containers for sharps. Medical waste collection personnel who wear appropriate uniforms of the hospitals and doctors, nurses, other health staff was trained about waste management. All medical wastes were stored in medical waste depot in hospital. Medical wastes are collected by municipal waste collection personnel from these hospital depots.

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Home Medical Care in Turkey; home care services started for the first time in 2005. In regulation about homecare services are included as medical treatment, rehabilitation, physiotherapy, psychological treatment at home. In Turkey, homecare units were classified as primary health services, oral/dental health services and hospitals. The patients needing the service were recorded from a single center (Home Care Services), and the patients were distributed to the units according to their needs.

Study Design and Participations

This is descriptive study. The homecare patients in the Kahramanmaraş (city of Mediterranean of Turkey), included the population of the study in January and June 2016. The number of homecare patients was 3301. The minimum sample size was calculated as 345. The minimum sample size was selected by systematic sampling from among 3301 registered home care patients. Kahramanmaraş is a big city with culture and industry in Turkey. The population of the city center is 558.664 [5].

The questionnaire developed by the researchers was used. The questionnaires included the socio-demographic characteristics of patients and their caregivers and the HMCW collected by caregivers. Researchers went to home of selected home care patients (n=345). The questionnaire was conducted face-to-face to the caregiver of homecare patients. The data were analyzed in the SPSS 22.0 program. The data were given as frequency distribution and averages.

Ethic Approval

The study protocol had been approved by the Ethical Committee of the Kahramanmaraş Sutcu Imam University (Ref. No.2015/109). The caregivers were informed about the research study. It was indicated to them that their personal data would be protected, and that they can withdraw their information at any time. Only voluntary participants were included in the study.

Results

The average age of the patients were 70.35 ± 0.8 years and 53.3% of the patients were female and 46.1% of them were disabled. Total 25% of the patients were fully dependent in their life activities while more than half of them were fully dependent in instrumental activities and 2.3% of patients have infectious disease (hepatitis b, c).

The caregiver for 89.3% of the patients is the first degree relative of the family. The variables about HMCW and daily treatment by caregivers are presented in table 1.

Only 31% of caregivers reported that they received medical waste management training and 24.9% of caregivers reported that they decomposed HMCW. Caregivers collected used infected materials, needles, ampoule, sharps dressing a wound materials, urine bag, infusion set, inhaler and oxygen mask (Table 1). On the other hand, the collection rate of infected materials with body fluids was big compared with that for other home medical care materials (Table 1).

The descriptive information regarding the collection of HMCW are presented in table 2.

While a small part of HMCW are transported by municipal vehicles or hospital waste collection centers, 84.1% of them are thrown into domestic wastes and HMCW burned at home by thirteen of caregivers. The daily amounts of wastes of 70.1% of the patients are 0.5 kg and below (Table 2).

Table 1. Description of variables about HMCW and daily treatment by caregivers (n=345)

Variables	Yes		No	
	n	%*	n	%*
Have been received medical waste management training?	107	31.0	238	69.0
Do you decompose the HMCW?	86	24.9	259	75.1
Do you use prevent equipment?	181	52.5	164	47.5
Home medical care treatment/ daily				
Intravenous (IV) injection treatment	9	2.6	336	97.4
Intramuscular (IM) injection treatment	39	11.0	306	89.0
Subcutaneous (SC) injection treatment	108	31.3	237	68.7
Inhaler treatment	77	22.3	268	77.7
Dress a wound	103	29.9	242	70.1
Categories of HMCW /daily				
Ampoule	125	36.2	220	63.8
Needles	137	39.7	208	60.3
Dressing a wound materials	108	31.3	237	68.7
Sharps	105	30.4	240	69.6
Urine bag	86	24.9	259	75.1
Infusion set	12	3.5	333	96.5
Infected materials with body fluids (salvia, mucus, seminal fluid, vaginal discharge)	231	67.0	114	33.0
Oxygen mask	28	8.1	317	91.9
Inhaler	73	21.2	272	78.8

*Row Percent

Table 2. Description variables of HMCW collections

How does collecting and decomposing HMCW by caregivers?	n	%
Decomposing with domestic waste	290	84.1
Giving to municipal waste collection vehicles	13	3.8
Giving to hospital waste collection center	29	8.4
Burning at home	13	3.8
HMCW mount kilogram (kg)/daily		
<0.5kg	242	70.1
1kg-1.9kg	50	14.5
2kg-2.9kg	40	11.6
>3kg	13	3.8
Total	345	100.0

Discussion

The study demonstrated management of HMCW collection by caregivers. The HMCW items such as needles, sharps, infected materials with body fluids were collected and thrown into domestic waste by more caregivers. Recently, medical care waste management became an important and widespread

public health problem. There are recommendations on medical waste management made by the World Health Organization and regulations are made in this regard in the countries [1]. In addition, the regulations regarding the management of HMCW collection by caregivers are inadequate. It is known that many diabetic patients in Turkey throw the pen-type self injection needles or a infected wound dressing materials into domestic wastes. In our study, although one-third of caregivers who received training on medical waste management, less than one third of them collected according to medical wastes guidance. This situation shows that the training provided is not sufficient. The special boxes are required for the collection of medical waste (needles, sharps, infected wound materials.etc.), but caregivers and patients thrown into domestic waste. At least one third of homecare patients have parenteral treatment performed by themselves or their caregivers. The needles, sharps and infected materials with body fluids are among the daily medical wastes. The infected and hazardous chemical wastes involved in domestic wastes pose a great danger for waste collectors, animals and environmental pollution [6]. There are studies indicating that municipal workers are wounded due to domestic medical wastes. For instance, Municipal workers in Japan are worried about needle stick accidents when collecting or transporting wastes [7]. Needle stick accidents have been reported 30.9% of 68 municipal governments in the metropolitan area [7].

Medical wastes are collected by special systems and teams in many countries [8-10]. In Turkey, as in other countries, the medical wastes that emerge when homecare treatment is performed by a nurse or doctor are collected by the homecare staff and transported to medical waste collection centers in hospitals. A study in the US about home medical care waste and HMC wastes infection control in the UK have recommended that sharp and infectious items be disposed of by doctors or nurses and infectious materials and needles should not be handled by nonmedical personnel [11]. In addition to this, the self-injection wastes are decomposed by patients in Japan and a system has been established to bring them to medical institutions [7].

In our study, HMCW was thrown into domestic waste by more caregivers. In Turkey, there is no established collection system for the collections of patients' own treatment wastes or the wastes of medical treatments performed by their caregivers. In addition thirteen people reported that they disposed the emerging wastes and burned them at home. A study in Gana, disposal practices indicate that the majority of unwanted medicines and sharps are discarded in household bins. In addition the blood soaked items (especially sanitary items) are burned in backyard [12]. In our study, 12.1% of caregivers reported that they took the wastes to municipal waste collection vehicles or hospital waste collection centers. Variable definitions of MW exist in other parts of the world too [13]. In literature, it is not often clear whether household type wastes (non-hazardous wastes) are also included in the medical wastes [14]. Lack of public awareness about the environmental dangers of medical waste such as expired drugs, self-type injection is another concern [15].

In our study, although the majority of HMCW rates are less than 0.5 kg per day, there are also patients from whom more than 3 kg of medical wastes are collected. When the number and quantity

of patients are considered, this poses a risk increasing with each passing day.

Conclusion

In conclusion, it is necessary to take measures for the collection of wastes resulting from the medical treatments performed by the patient himself/herself or by caregivers. Consequently some waste components such as HMCW and domestic waste are mixed together. To provide caregivers with training is not enough for the collection and disposal of wastes. The HMCW must be controlled strictly or a new collection systems for these waste materials must be recommended in home. Furthermore, a system for the collection of HMCW should be established by municipality, patients and caregivers should be asked to decompose wastes, then the wastes should be collected from homes by homecare staff.

Competing interests

The authors declare that they have no competing interest.

Financial Disclosure

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