DOKUZ EYLÜL UNIVERSITY

GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES

INVESTIGATION OF AWARENESS ON WASTE MANAGEMENT IN HOSPITALS

by

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June, 2024

İZMİR

INVESTIGATION OF AWARENESS ON WASTE MANAGEMENT IN HOSPITALS

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by

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İZMİR

M.S. THESIS EXAMINATION RESULT FORM

We have read the thesis entitled **"INVESTIGATION OF AWARENESS ON WASTE MANAGEMENT IN HOSPITALS"** completed by **GAMZE KUMAŞ** under supervision of **PROF. DR. NURDAN BÜYÜKKAMACI** and we certify that in our opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Science.

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INVESTIGATION OF AWARENESS ON WASTE MANAGEMENT IN HOSPITALS

ABSTRACT

Hospitals are the most important institutions of the health sector, providing health services to the sick and injured with outpatient or inpatient diagnosis, treatment and care services. While hospitals provide this health service, they create waste that has a high potential to carry infectious/diseases and cause serious damage to nature. In case of extraordinary conditions such as pandemics, the importance of healthcare facility waste increases globally. Therefore, proper management of hospital waste is a very important issue for human health. Healthcare workers are at the center of the medical waste management system. Healthcare professionals and mobile population (patients, their relatives and medical students) are the two main groups at risk regarding medical waste.

In this study, a separate survey was applied to the hospital staff and the mobile population in the hospital, on a voluntary basis. With this method, it was tried to determine the medical waste knowledge of the participants who were surveyed and how they reflected this knowledge in their behavior. The data obtained as a result of applying the survey forms to the healthcare professionals working in Çiğli Training and Research Hospital and the mobile population in the hospital were analyzed through the Social Sciences Statistical Package (SPSS) 22 package program. The findings obtained as a result of the SPSS program were evaluated, taking into account the waste management evaluations of healthcare professionals who answered the open-ended questions in the survey, and the issues to be considered in medical waste management were evaluated.

Keywords: Hospital, medical waste, survey, waste management

HASTANELERDE ATIK YÖNETİMİ FARKINDALIĞININ ARAŞTIRILMASI

ÖZ

Hastaneler, hasta ve yaralılara ayakta veya yatarak teşhis, tedavi ve bakım hizmetleri ile sağlık hizmeti sunan sağlık sektörünün en önemli kurumlarıdır. Hastaneler bu sağlık hizmetini verirken bulaşıcı/hastalık taşıma ve doğaya çok ciddi zararlar verme potansiyeli yüksek olan atıklar oluşmasına neden olmaktadır. Pandemi gibi olağandışı koşulların yaşanması durumunda küresel anlamda sağlık kuruluşu atıklarının önemi daha da artmaktadır. Bu nedenle hastane atıklarının doğru yönetilmeleri insan sağlığı açısından çok önemli bir husustur. Sağlık çalışanları tıbbi atık yönetim sisteminin merkezindedir. Tıbbi atıklar ile ilgili sağlık çalışanları ve gezici nüfus (hastalar, yakınları ve tıp öğrencilerini) risk altında bulunan iki önemli ana gruptur.

Bu çalışmada gönüllülük esasına dayanan hastane personeli ve hastanedeki hareketli popülasyona ayrı ayrı anket çalışması uygulanmıştır. Bu yöntemle anket uygulanan katılımcıların tıbbi atık bilgisi ve bu bilgilerini davranışlarına nasıl yansıttıkları tespit edilmeye çalışılmıştır. Çiğli Eğitim ve Araştırma Hastanesinde görev yapan sağlık çalışanlarına ve hastanedeki gezici nüfusa anket formlarının uygulanması sonucunda elde edilen veriler, Sosyal Bilimler İstatistik Paketi (SPSS) 22 paket programı aracılığıyla analiz edilmiştir. SPSS programı sonucunda elde edilen bulgular, anketteki açık uçlu sorulara cevap veren sağlık çalışanlarının atık yönetimi değerlendirmeleri de göz önünde bulundurularak, tıbbi atık yönetiminde dikkat edilmesi gereken hususlar değerlendirilmiştir.

Anahtar kelimeler: Hastane, tıbbi atık, anket, atık yönetimi

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ABBREVIATIONS

WHO	: World Health Organization
TAKY	: Tıbbi Atıkların Kontrolü Yönetmeliği
N	: Number of samples in the sample/group
P	: Significance level
f	: Frequency

CHAPTER ONE
INTRODUCTION

1.1 Introduction

A wide variety of waste is produced as a result of the activities carried out in hospitals. Research shows that 80% of the waste from hospitals is harmless waste, 15% of the remaining waste consists of infected waste, 1% consists of cutting and piercing materials, and the remaining consists of radioactive and pharmacological waste, especially chemical waste (Ertaş and Güden, 2019).

Since medical wastes are wastes with a high risk of being infectious or carrying diseases, it is very important to manage them correctly. In our country, the management of these wastes must be carried out within the scope of the Medical Waste Control Regulation published in the Official Gazette dated 25.01.2017 and numbered 29959, within the principles regarding the separate collection, transportation, temporary storage and disposal of medical waste in health institutions.

The size and characteristics of the hospital greatly affects the amount and characteristics of waste produced and the waste management practices followed. In addition, extraordinary conditions such as the pandemic period significantly affect the amount and characteristics of waste and its management (Parida et al., 2022).

Within the scope of this thesis, it is aimed to evaluate the knowledge of healthcare professionals and patients working in a hospital operating in Izmir about waste management and their awareness of reflecting this knowledge on behavior. Thus, people's awareness was determined and the factors affecting their awareness were evaluated.

CHAPTER TWO
HOSPITAL WASTES

2.1 Types of Wastes

Hospitals are the most basic and important institutions in the health sector that provide health services by providing outpatient or inpatient diagnosis, treatment and care services to the sick and injured.

While hospitals provide health services, they also create various wastes by nature. The amount and diversity of these wastes is constantly increasing due to scientific and technical developments. All waste generated in healthcare facilities is called hospital waste. These wastes produced in hospitals appear as elements that have the potential to cause serious harm to patients, patient relatives, employees and the environment (İncesu, 2017).

There are a wide variety of wastes as the output of hospital activities (Ertaş, 2019). It is possible to classify the wastes resulting from healthcare institutions into four main groups: domestic waste, medical waste, hazardous waste and radioactive waste (MCWR, 2017). The classification of these wastes generated as a result of health activities is given in Figure 2.1 (MWCR, 2017).

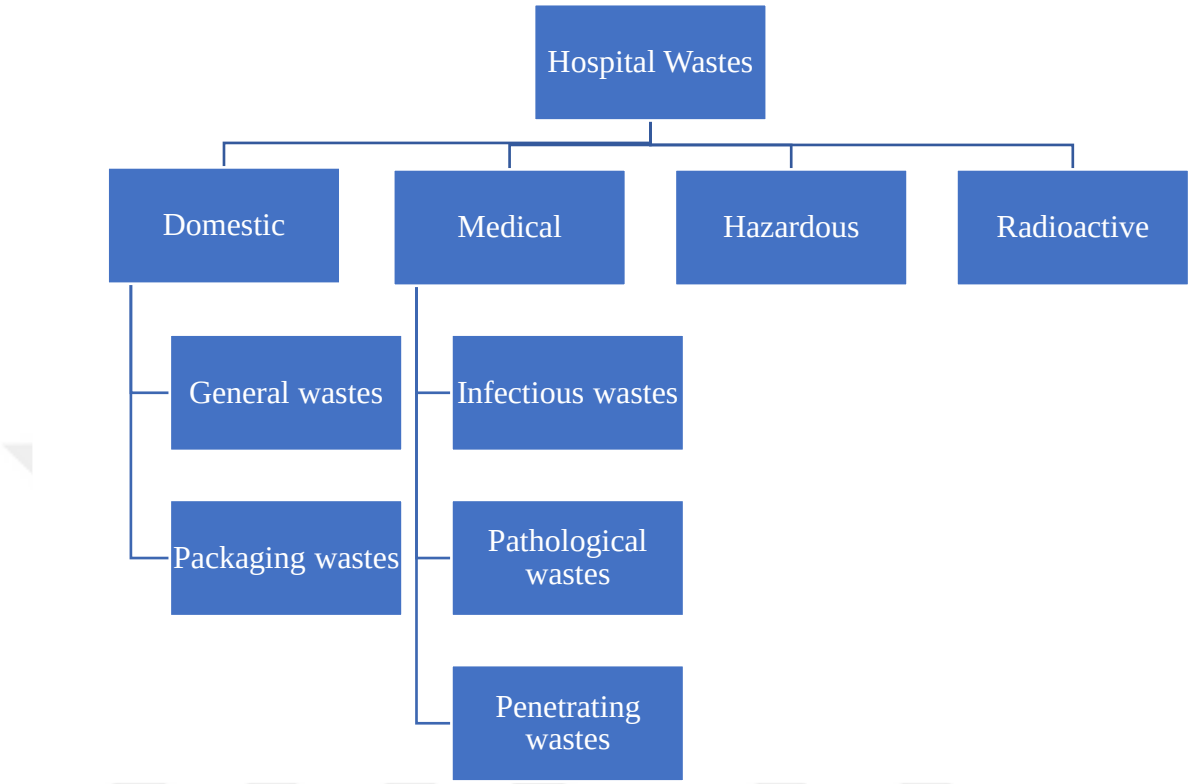


Figure 2.1 Classification of Hospital Wastes

2.1.1 Domestic Wastes

Recyclable/recoverable wastes generated throughout the health service, especially in all units, cafeterias and offices where the health service is provided, are domestic wastes. They are also called packaging waste. Paper, cardboard, plastic, glass and metal wastes are examples of such wastes.

Between 75% and 90% of the waste produced by health-care providers is comparable to domestic waste and usually called “non-hazardous” or “general health-care waste” (WHO, 2014). Although domestic waste includes uncontaminated waste, it is not included in household waste in case of contamination with hazardous/medical waste. Packaging wastes, which are collected separately from other wastes in health institutions, are given to the collection system of the municipality.

2.1.2 Hazardous Wastes

Hazardous waste in healthcare institutions is generated as a result of processes such as lighting systems, technical units, data processing, cafeteria activities, pharmacy and treatment.

Waste printing toners and fluorescent lamps from technical units, waste vegetable oils from the cafeteria, waste batteries and electrical/electronic waste from all units are considered hazardous waste.

2.1.3 Radioactive Wastes

Radioactive waste is waste containing nuclear and radioactive substances that contain activity concentrations above the liberalization limits and are not intended to be used again, and structures, systems, components and materials that are contaminated with radioactive substances or have become radioactive (Radioactive Waste Management Regulation, 2013). Radioactive waste is processed in accordance with the Turkish Atomic Energy Authority legislation.

2.1.4 Medical Wastes

Although medical waste generated during the provision of healthcare services is less in quantity than other wastes, it is in a more risky group. Medical waste constitutes a significant portion of hospital waste in terms of its impact. It is known that medical waste, which has a high risk of carrying diseases, contains bacteria, viruses, parasites and fungi (Ertaş, 2019).

Medical waste, which has a high risk of being contagious or carrying disease, is of great importance among hospital wastes, as it can cause consequences that can lead to death in case of contamination. Therefore, proper management of medical waste is a very important issue.

Practices regarding medical waste in our country are regulated by the "Medical Waste Control Regulation" (MWCR) published in the Official Gazette dated 25.01.2017 and numbered 29959. The principles regarding the separate collection, transportation, temporary storage and disposal of medical waste must be carried out within the scope of this regulation. According to the Medical Waste Regulation; the total amount of infectious wastes, pathological wastes and penetrating wastes can be defined as medical wastes. Wastes generated in medical units such as inpatient floors, operating rooms, laboratories, polyclinics and emergency services in healthcare institutions generally appear as infected, pathological and penetrating wastes.

Infected Wastes: Wastes that require special handling and disposal to prevent the spread of infectious agents are considered infected wastes. Microbiological laboratory waste, cultures and stocks, infectious body fluids, air filters containing bacteria and viruses are among the sources of infected waste (MWCR, 2017).

Pathological Wastes: Anatomical waste tissues, organs and body parts, surgery, autopsy, etc. body fluids released during medical intervention, body parts originating from places such as operating rooms, morgue, autopsy, forensic medicine, organic parts, placenta, severed limbs, etc. (human pathological wastes) are among the pathological wastes.

Penetrating Wastes: Wastes that may cause stinging, punctures, abrasions and injuries in healthcare institutions are penetrating wastes. Examples of penetrating wastes include syringes and all other medical intervention needles, lancets, capillary tubes, scalpels, knives, serum set needles, surgical suture needles, biopsy needles, intrakets, broken glass, ampoules, slide coverslips, broken glass tubes and petri dishes.

2.2 Main Groups at Risk in Medical Waste Management

Hospitals are institutions where people from all segments of society receive service without any discrimination regarding age, gender, ethnicity or religion. For this reason, hospitals consist of environments with more than normal number of patients and staff. This crowd produces waste and the amount of waste produced is constantly increasing due to scientific and technical developments. The waste produced poses a great risk for both employees and patients (Akbolat, 2011).

Hospitals, which are of great importance in the generation of medical waste, cause excessive production of medical waste due to the lack of training or insensitivity of healthcare professionals. Processing, collecting, transporting and storing medical waste without due care poses a significant risk to human health (Ertaş, 2019).

All individuals exposed to medical waste are potentially at risk. These individuals at risk include those within or outside healthcare facilities that produce medical waste, those who transport these wastes, and those who are exposed to these wastes as a result of careless management. Doctors, nurses, allied health personnel, patients receiving treatment and care in health institutions or at home, patient visitors of health institutions, and those working in support units of health institutions such as laundry, waste collection and transportation are among those exposed to medical waste (Ministry of Environment, Urbanization and Climate Change, 2013).

There are two main groups at risk as a result of improper and poorly managed medical waste management practices in hospitals. These two main groups are health workers and mobile populations in hospitals, including patients, relatives and medical students.

2.2.1 Health Workers

Healthcare institutions are the environments with the highest amount of medical waste generation. Health institutions are the working environments of health workers. Healthcare workers such as doctors, nurses/midwives, health technicians/technicians, health officers, cleaning personnel, security service personnel, support service personnel who perform/play a role in performing healthcare duties has a relationship/contact with the patient in need of treatment throughout their working time.

The group most affected by improper or poorly managed waste management practices are healthcare workers. In fact, the group at the center of the waste management system is also healthcare workers.

Healthcare professionals must have the knowledge they need about wastes and should reflect this knowledge in their behavior. If they do not reflect their knowledge about medical wastes in their behavior, it will be they or their colleagues who will be affected by the negative consequences that may occur.

2.2.2 Mobile Population in Hospitals

Hospitals, by their nature, are healthcare units where service providers and healthcare consumers (patients) are in constant contact (Aslan, 2017).

For this reason, after healthcare professionals, the most important group that may be affected by the negative conditions that may occur as a result of the deficiency/disruption in waste management in healthcare providers are patients, who are healthcare consumers.

Relatives of patients who accompany the patients in the healthcare facility are at least as much risk as the patients regarding medical wastes. Even if they are not constantly in the hospital environment, medical students/intern doctors who are in the hospital for

training purposes on certain days are among the group that will be affected by the negative conditions in waste management.

2.3 Medical Waste Statistics

2.3.1 Amounts of Medical Wastes by Years

Every year, waste producers declare their hazardous and non-hazardous waste through the waste declaration system of the Integrated Information System / Waste management application of the Ministry of Environment and Urbanization. In line with these waste declarations made by waste producers to the waste declaration system, the 2021 Waste Statistics Bulletin was published by the Ministry of Environment, Urbanization and Climate Change on 25.12.2023. The amount of medical waste generated in Turkey by years is given in the Table 2.1 (Waste Statistics Bulletin, 2021).

Table 2.1. The Amount of Medical Waste 2017-2021

Year	The amount of medical waste (tonnes)
2017	98,729
2018	107,400
2019	109,478
2020	125,566
2021	135,869

While the amount of medical waste generated in Turkey was 98,729 tons in 2017, it reached 135,869 tons in 2021. This means that there has been an increase of approximately 38% in five years. The amount of medical waste generated has continuously increased from 2017 to 2021 (Waste Statistics Bulletin, 2021).

2.3.2 Provinces with the Highest Amount Medical Waste

In 2021, the Ministry of Environment, Urbanization and Climate Change published Medical Waste Statistical Bulletin including medical waste data for 2021, according to the declarations made by medical waste producers. By examining the medical waste data in the Medical Waste Statistics Bulletin, the top 5 provinces with the highest amount of medical waste on a provincial basis in 2021 are shown in Table 2.2.

Table 2.2. Provinces with the Highest Amount of Medical Waste in 2021

Province	The amount of medical waste (tonnes)
İstanbul	33,100
Ankara	11,063
İzmir	8,475
Bursa	4,783
Antalya	4,188
Total	61,609

In 2021, 135,869 tons of medical waste were collected from healthcare institutions across Türkiye. Approximately 45% of the 135,869 tonnes of medical waste collected was generated in healthcare institutions in 5 metropolitan cities. Of this amount of medical waste, 33,100 tons was collected in Istanbul, 11,063 tons in Ankara, 8,475 tons in Izmir, and 38.7% of the total medical waste was collected in health institutions in three metropolitan cities. Izmir province ranks 3rd in terms of the amount of medical waste generated in healthcare institutions in Turkey.

In addition, in the 2021 Waste Statistics Bulletin of the Ministry of Environment, Urbanization and Climate Change, the distribution of special waste (waste oil, waste vegetable oil, waste batteries and accumulators, waste electrical and electronic equipment) and medical waste by years. Special waste and medical waste data for 2021, created according to the declarations made by medical waste producers in 2021, are given in Figure 2.2.

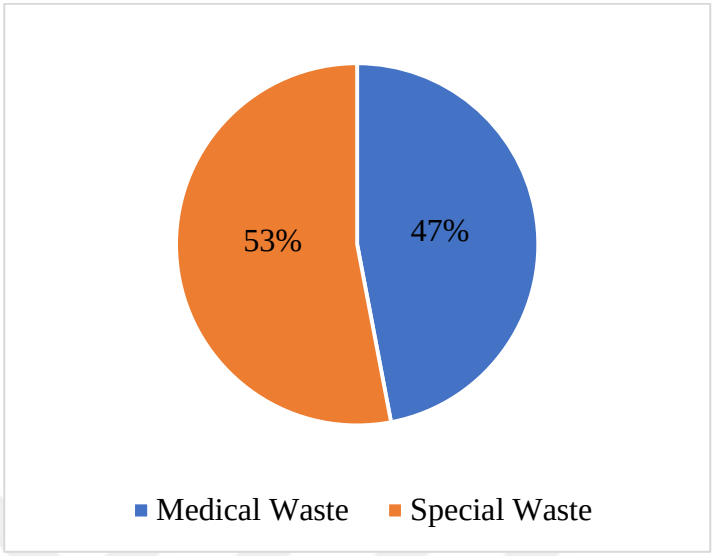


Figure 2.2 Comparison of Special Waste and Medical Waste in 2021

While the total distribution of waste oil, waste vegetable oil, waste batteries and accumulators, and waste electrical and electronic equipment, which are considered as special waste, is 53%, medical waste alone constitutes 47%. In other words, among these wastes that have a high risk of harming the environment and humans and require special treatment for disposal, the most generated waste is "medical waste".

2.3.3 Medical Waste Cost

According to the Medical Waste Control Regulation, medical waste collection, transportation, sterilization and disposal fees for healthcare institutions are determined every year by the Local Environmental Board of the province where medical waste is generated.

The medical waste collection, transportation, sterilization and disposal fee applied by the Local Environmental Board of Izmir province for 2023 has been determined as 10.70 TL/kg + VAT. In 2023, this fee determined due to the increases in the costs of medical

waste collection, transportation, sterilization and disposal fees was re-evaluated and it has been updated as 13.30 TL/kg + VAT(Local Environmental Board Decisions, 2023).

CHAPTER THREE
LITERATURE REVIEW ON WASTE MANAGEMENT AWARENESS IN HOSPITALS

Medical waste management is one of the most important issues studied, especially after epidemics. During the epidemic period, medical waste generation increased due to the increase in the number of patients and the increased use of protective equipment such as masks and gloves for precautionary purposes. Mismanagement of materials such as masks and gloves that come into contact with the patient after use causes the spread of diseases. To date, many studies have been conducted on medical waste management in different countries from different perspectives.

Studies have shown that the size of the hospital and features of the hospital greatly affects the amount of waste produced, its characteristics and the waste management practices applied. In addition, extraordinary conditions such as the pandemic period also significantly affect the amount, characteristics and production of waste (Parida et al., 2022). To protect against viral infection; the use of materials such as masks and gloves causes negative effects such as increasing the amount of medical waste (Özen et al., 2022).

The research conducted by Çelik et al. (2022) made a multi-criteria evaluation of the current medical waste management process implemented in hospitals in Erzurum. This case study on hospitals in Turkey aims to determine the hospital that carries out medical waste management most effectively in Erzurum. In this research, factors affecting medical waste management are collected under 3 headings: organizational criteria, waste-related criteria, and non-organizational criteria. The most important criterion in the research is organization criteria, and it has been concluded that qualified personnel have first priority in the sub-criteria underlying the organization criteria.

Apart from classical waste management practices, Bamakan et al. (2022), has conducted research on digital technologies, such as Blockchain technology for the management of hospital waste. Jiang et al. (2023), in research on the challenges and opportunities of applying blockchain in waste management, provided information on how to create digitalized waste management.

Söylemez (2018) examined digital applications for solid waste management in world cities such as Los Angeles and Toronto within the framework of the concept of smart cities. In his study, the author mentions that smart city systems, which can solve the environmental problems of city residents and municipalities with lower costs and less urban pollution, will become widespread.

Windfeld et al. (2015) stated that the lack of a guide to clearly define which waste is infectious in medical waste is a factor that increases the waste volume. In the study, in order to have an effective waste management in healthcare facilities; it concluded that improvements should be made, including better training of healthcare workers and standardization of waste containers used within the facility.

Cheng et al. (2009) studied the role of factors such as medical facility type, total number of beds, bed occupancy, number of infectious disease beds, and number of daily outpatients in medical waste production in 150 healthcare institutions in Taiwan. The researcher sent a survey to health institutions by mail, and field visits were made after the survey. The study also concluded that the amount of waste production varies in healthcare institutions at different levels.

Following the publication of the "Medical Waste Control Regulation" published in the Official Gazette in January 2017; surveys were conducted the knowledge levels about medical waste of hospital employees on a sample group of 120 employees at Merzifon State Hospital by Demet Cansaran (2017) and on a sample group of 170 employees at Urla State Hospital by Haki Gökhan Şahin (2017). In these studies, it was

stated that the regulation introduced by the Regulation would benefit healthcare professionals.

Bolat et al., (2019) conducted a survey with 215 healthcare professionals in order to evaluate the knowledge, attitudes and perceptions of healthcare professionals working at Adana City Training and Research Hospital regarding medical waste. They concluded that all sector employees should cooperate in order to eliminate the deficiencies in waste management and reduce occupational safety accidents.

A study aimed to measure the knowledge level of medical waste managers in 18 health institutions in Sakarya Province about medical waste. In this study, it is suggested to establish an automation system that can access medical waste information on demand, in order to eliminate the lack of control and to ensure the active functioning of the reward system (Örgev, 2016).

A study wanted to identify waste management problems in hospitals using the analytical process method. In this study, the problems in hospital waste management are classified as infrastructure, human factors and management. For the research data, they interviewed 10 experts working at Antalya training and research hospital. According to the results of the research; It has been determined that the lack of personnel working in waste management is of the highest importance, and the criterion of least importance is the lack of personal protective equipment (Esen et al., 2021).

Olgun et al. (2021) studied based on literature information and they aimed to raise awareness on medical wastes to operating room nurses in their study. İt is recommended in medical waste management, that nurses should dispose of wastes in line with the guidelines prepared by their institutions or international guidelines, correct use of personal protective equipment.

CHAPTER FOUR
MATERIAL AND METHODS

4.1 Study Site

This research was carried out at Bakırçay University Çiğli Training and Research Hospital, which operates in Izmir and has a bed capacity of 500 or more. Bakırçay University Çiğli Training and Research Hospital, which has the role of a Group-A institution, is the largest hospital in the northwestern region of Izmir.

There are 112 polyclinic rooms, 106 intensive care beds, 26 neonatal intensive care, 414 clinic beds, 153 single rooms, 111 double rooms, 18 operating rooms, angiography unit, endoscopy and bronchoscopy units, CVS (Cardio Vascular Surgery) and physical therapy and rehabilitation centers, laparoscopic surgery, palliative care service, dialysis unit with a capacity of 17 devices, peritoneal dialysis, sleep laboratory, and CBRN (Chemical Biological Radiation and Nuclear hazardous materials) units. 2001 people are actively working.

Two main groups were considered in the study:

- The first group includes doctors, nurses, health officers/technicians/technicians, security services, technical service personnel, cleaning services employees, healthcare professionals of Çiğli Training and Research Hospital serving in the administration department.
- The second group includes mobile population of Çiğli Training and Research Hospital. Patients, patient relatives and medical students who were in the hospital between the dates of the survey application were considered as mobile population.

4.2 Data Collection

A survey created by reviewing the relevant literature was used as a data collection tool in the research. Within the scope of the research, separate survey forms were prepared for hospital staff and the mobile population in the hospital (patients, relatives and medical students). The survey application, which is the basis of the research data, was carried out between April 2023 and October 2023. 525 people working in the study area and 314 people from the mobile population constituted the study group.

Survey forms were physically distributed to healthcare professionals actively working in different positions in different units at the research hospital. The survey forms filled out by healthcare workers at their convenience, in order to avoid their workload and disruption of healthcare services, were later received. A survey was applied to the mobile population in the hospital (patients, patient relatives and medical students) by face-to-face survey method. Volunteerism was taken as a basis in the survey conducted to both hospital healthcare professionals and the hospital's mobile population.

The surveys used in this study include questions that can evaluate individuals' knowledge about medical waste according to their demographic characteristics and the reflection of this knowledge on behavior and awareness. Questionnaire forms are given in Appendix.

The first 6 questions of the survey form used for healthcare workers are; It includes demographic data such as gender, marital status, age, education level, position and years of seniority. The other 20 questions asked to healthcare workers enable us to obtain data about measuring the knowledge level of healthcare workers about medical waste, determining their sensitivity about waste, and applying their knowledge.

There are 13 questions in the survey form used for the mobile population in the hospital. The first question of the mobile population survey form; It determines the

position such as patient, patient relative or medical student. The other four questions of the survey form are demographic questions such as gender, marital status, age, and education level. The other eight questions determine the knowledge and behavior of the mobile population regarding medical waste.

4.3 Data Analysis

The data obtained as a result of applying survey forms to healthcare professionals working in the Training and Research Hospital and the mobile population were analyzed through the Statistical Package for the Social Sciences (SPSS) 22 package program. The findings obtained as a result of the SPSS program were interpreted.

CHAPTER FIVE
RESULTS AND DISCUSSION

5.1 Hospital Staff

5.1.1 Survey Results

A frequency analysis was performed according to the demographic characteristics of the healthcare professionals participating in the research in the healthcare institution, such as gender, marital status, age, education level, profession and length of service. The frequency and percentage distribution of this frequency analysis is shown in the Table 5.1.

When the gender distribution of the 525 healthcare professionals participating in the survey is evaluated, it is seen that 69.3 percent are women and 30.7 percent are men. According to the distribution of the marital status of the participants, 66.7% are married and 33.3% are single. 7.4% of the survey participants are between the ages of 18-25, 32% are between the ages of 26-35, 35.2% are between the ages of 36-45, and 25.3% are aged 46 and over.

Considering the educational status of the participating individuals, 1.5% had primary education, 14.7% were high school graduates, 23.0% were associate degree graduates, 46.9% were undergraduate graduates, 10.5% had master's degree, and 3.4% had master's degree with a doctoral qualification. When the professions of the participants are examined, 16.2% were administrative personnel, 8.8% were doctors, 34.7% were nurses/midwives, 20.4% were health technicians, and 20.0% were support services personnel. When the years of experience of the participants are evaluated, 18.9% of the participants had 1-5 years of experience, 24.0% had 6-10 years of experience, 20.6% had 11-15 years of experience, 13.5% had 16-20 years of experience, and 23.0% had 21 years or more of seniority.

Table 5.1 Demographic features

	Frequency (f)	Percent (%)
Gender		
Female	364	69.3
Male	161	30.7
Marital Status		
Married	350	66.7
Single	175	33.3
Age		
18-25	39	7.4
26-35	168	32
36-45	185	35.2
46 or over	133	25.3
Level of Education		
Primary education	8	1.5
High school	77	14.7
Associate degree	121	23
Bachelor's degree	246	46.9
M.Sc.	55	10.5
Ph.D.	18	3.4
Professions		
Administrative staff	85	16.2
Doctor	46	8.8
Nurse/Midwife	182	34.7
Health technician	107	20.4
Support service staff	105	20.0
Length of Service		
1-5 year	99	18.9
6-10 year	126	24
11-15 year	108	20.6
16-20 year	71	13.5
21 or over	121	23.0

In the demographic analysis, the options with the most participants in each group are shown graphically in Figure 5.1.

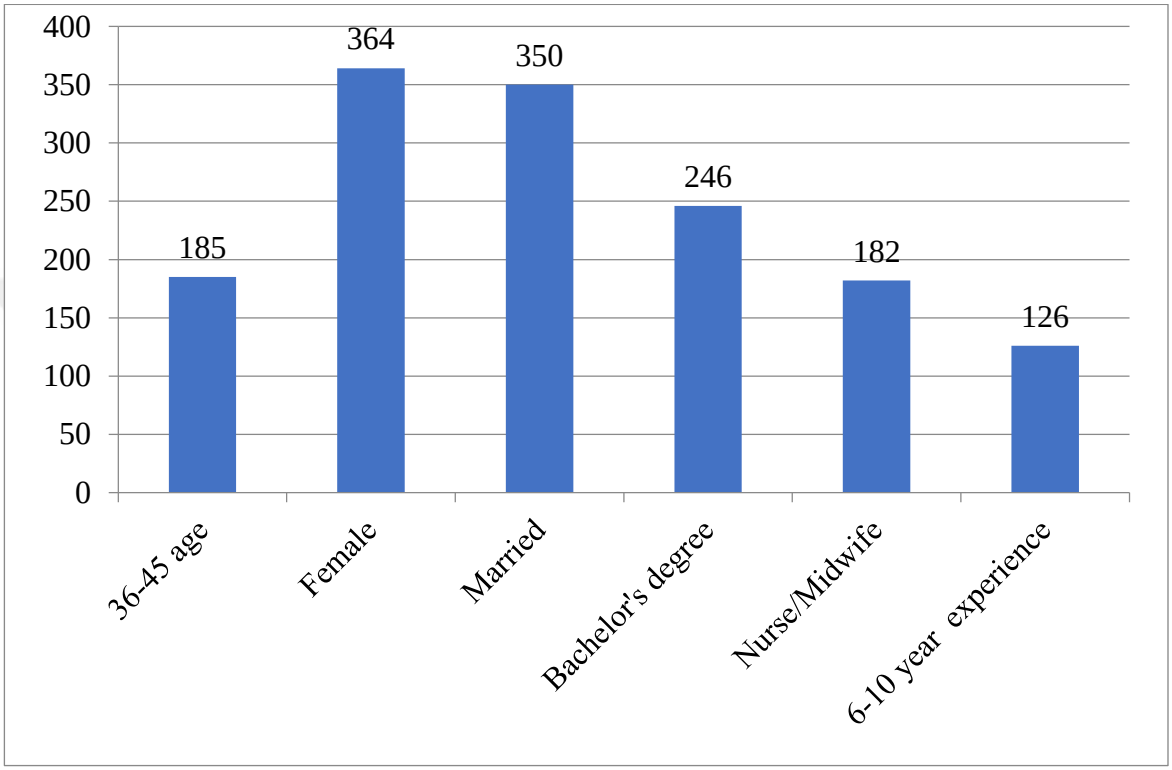


Figure 5.1 The option with the maximum participation in each group

The analysis of the answers to the first five questions (Waste-1) in the employee survey form given in the Appendix is given in Table 5.2.

79.8% of the participants answered ‘yes’ and 20.2% of the participants answered ‘no’ responses to the question of "Have you received any previous training on medical waste management?". It is seen that most of the employees have received training on this subject, but this is not enough, all personnel must have knowledge about medical waste management. In the study conducted by Şarlak Konya et al. in a university hospital, 74.3% of the participating healthcare workers, 80.5% of the healthcare workers in the

study of Terzi et al., and 69.6% of the healthcare workers in the study of Akbolat et al. were found to have received training.

Table 5.2 Participants responses about hospital waste-1

	Frequency (f)	**Percent (%)**
Receiving training on medical waste management		
Yes	419	79.8
No	106	20.2
Conducting internal audit on waste management		
Yes	308	58.7
No	65	12.4
I don’t know	152	29.0
Disposing of waste in appropriate bins		
Yes	510	97.1
No	15	2.9
Disposing of waste in appropriate bins under intense working conditions		
Yes	471	89.7
No	52	9.9
All waste from possible and certain COVID patients is medical waste		
Yes	463	88.2
No	29	5.5
I don’t know	33	6.3

58.7% of the participants answered yes, 12.4% of the participants answered no, and 29.0% of the participants answered I do not know, to the question of “Is regular internal audit provided within the scope of efficiency assessments on waste management?”. It is well known that the hospital provides regular internal audits of waste management as part of efficiency assessments at regular intervals. 58.7% of the participants who answered “yes” to this question got this question correct. The need to raise awareness of other participants on the subject has emerged.

While 97.1% of the healthcare workers who participated in the research at the hospital stated that they were careful when throwing the waste they created into appropriate waste bins, 2.9% of the participants stated that they did not pay attention when throwing the waste into the waste bins.

To the question of “Do you take care to dispose of the waste in the right waste bins, even if there are intense working conditions?”, 89.7% of the participants said “yes” and 9.9% of the participants said “no”. Two of the participants did not answer this question.

To the question of “Are it medical waste that all waste of possible and certain COVID 19 patients?”, it was determined that 88.2% of the participants answered "yes", 5.5% of the participants answered "no", and 6.3% of the participants answered "I do not know". 88.2% of the participants, who said that the waste of possible and definite COVID 19 patients is medical waste, answered this question correctly.

The analysis of the answers to the questions between 6 and 10 (Waste-2) in the employee survey form given in the Appendix is given in Table 5.3.

When asked about the color of the bag in which the packaging waste generated in the healthcare institution should be disposed of, 11.6% of the participants said “black”, 1.7% said “red”, and 5.1% said “yellow”. 80.6% of the hospital healthcare workers who participated in the research answered the question correctly by saying “blue” is the color

of the bag in which the packaging waste generated in the healthcare institution should be disposed of.

Table 5.3 Participants responses about hospital waste-2

	Frequency (f)	Percent (%)
Which color bags are used for packaging waste?		
Blue	423	80.6
Black	61	11.6
Red	9	1.7
Yellow	27	5.1
Which of the following is packaging waste?		
Glass	9	1.7
Paper/Cardboard	131	25.0
Plastic	113	21.5
All of	269	51.2
Which of the following is hazardous waste?		
Waste vegetable oil	8	1.5
Waste battery	115	21.9
Pressure vessels	15	2.9
All of	380	72.4
Which color bags are used for medical waste?		
Blue	13	2.5
Black	7	1.3
Red	498	94.6
Yellow	6	1.1
Which of the following is medical waste emblem?		
Medical waste emblem	487	92.8
Radiation emblem	17	3.2
Danger of death emblem	17	3.2
Lightning emblem	2	0.4

When asked “which of the glass, paper/cardboard and plastic wastes are packaging waste?”, 1.7% of the participants answered glass, 25.0% answered paper, and 21.5% answered plastic. 51.2% of the participants answered this question correctly by saying "all of" (glass, paper/cardboard and plastic).

When asked “which of the waste vegetable oil, waste battery, pressure vessels are hazardous waste?”, 1.5% of the participants answered waste vegetable oil, 21.9% answered waste battery, and 2.9% answered pressure vessels. 72.4% of the participants answered this question correctly by saying "all of" (waste vegetable oil, waste battery, pressure vessels).

To the question about which color bags the medical waste should be thrown into, 2.5% of the participants answered blue, 1.3% of the participants answered black, 1.1% of the participants answered yellow, while 94.6% of the participants answered the question correctly by saying that it should be thrown into red bags.

In the question asking about the medical waste emblem, 3.2% of the participants chose the radiation emblem, 3.2% of the participants chose the danger of death emblem, and 0.4% of the participants chose the lightning bolt emblem. The majority of the participants, 92.4%, got the question correct by choosing the medical waste emblem.

The analysis of the answers to the questions between 11 and 17 (Waste-3) in the employee survey form given in the Appendix is given in Table 5.4.

Table 5.4 Participants responses about hospital waste-3

	Frequency (f)	Percent(%)
An expression that fully covers the concept of medical waste		
All wastes from medical fields	148	28.2
Infectious, pathological and penetrating waste	282	53.7
Hazardous waste from medical fields	68	13.0
All wastes that come into contact with healthcare personnel	20	3.8
Injector tips must be capped		
Yes	194	37.0
No	301	57.3
I don't know	30	5.7
Maximum filling rate of medical waste bags		
¼	15	2.9
¾	425	81.0
½	66	12.6
All of	11	2.1
Temporary storage areas for hospital waste		
Yes	442	84.2
No	13	2.5
I don't know	70	13.3
Identifying information on waste bags		
Yes	444	84.6
No	30	5.7
I don't know	51	9.7
Incorrect statement		
One personnel carries all the waste	409	77.9
Cleaning personnel carry the packaging wastes	56	10.7
Medical waste officers carry medical wastes	35	6.7
Hazardous waste officers carry hazardous wastes	17	3.2
Mask and gloves wastes throw into the medical waste bucket		
Yes	470	89.5
No	55	10.5

To the question of the exact definition of the concept of medical waste, 28.2% of the participants answered all wastes from medical fields, 13.0% of the participants answered hazardous wastes from medical fields, 3.8% of the participants answered all wastes that come into contact with healthcare personnel, 1.3% of participants didn't answer this question. It means that, 45% of participants gave incorrect responses. 53.7% of the participants answered the question correctly by answering the question as infectious, pathological and penetrating waste. It was determined that more than half of the participants fully knew the definition of "medical waste".

To the statement of "After the use of the injector, the nozzles must be closed while throwing them into the waste box", 37.0% of the participants answered the statement incorrectly by saying "yes" and 57.3% of the participants answered correctly by saying "no". 5.7% of the participants stated that they did not know the answer.

To the question "the maximum filling rate of medical waste bags", 2.9% of the participants answered ¼ of medical waste bags, 12.6% of the participants answered ½ of medical waste bags, and 2.1% of the participants answered the question all of medical waste bags and they answered the question incorrectly. It was determined that the 81.0% of participants who answered ¾ to this question answered correctly.

84.2% of the participants answered "yes" and 2.5% of the participants answered "no" to the question about the existence of temporary storage areas used for waste in the hospital. 13.3% of the participants stated that they did not know the answer to the question. 84.2% of the participants who answered yes to this question answered the question correctly.

84.6% of the participants said that there was identifying information on the waste bags, and 5.7% said that there was no identifying information on the waste bags. 9.7% of the participants have no information about this issue.

The answers to the question of “Which statement is incorrect?” are shown in Table 5.4. 10.7% of the participants answered the statement 'collecting of packaging waste is done by cleaning personnel' incorrectly, 6.7% of the participants responded incorrectly to the statement 'medical wastes are transported by medical waste officers', and 3.2% of the participants responded incorrectly to the statement 'hazardous wastes are transported'. He said that the statement 'by hazardous waste officers' is wrong. However, all three of these statements are correct statements. 77.9% of the participants said that the statement 'packaging, medical, hazardous wastes are handled by a single personnel' is incorrect. 77.9% of the participants knew the correct answer.

89.5% of the healthcare professionals participating in the research said that they threw the masks and gloves they used in the hospital environment into the medical waste bucket. 10.5% of the participants said that they did not throw the masks and gloves they used in the hospital environment into the medical waste bucket.

The analysis of the participants' answers to two questions investigating their experiences and opinions on waste management is given in Table 5.5.

Table 5.5 Participants responses about hospital waste-4

	Frequency (f)	**Percent (%)**
You ever had a problem with medical waste		
Yes	35	6.7
No	488	93.0
Deficiency in waste management		
Yes	86	16.4
No	322	61.3
I don’t know	117	22.3

According to the Table 5.5, 6.7% of the participants stated that they had a problem with medical waste, and 93.0% of the participants stated that they did not have a problem with medical waste. While 16.4% of the participants think that there is a deficiency in waste management, 61.3% of the participants think that there is no deficiency in waste management. 22.3% of the participants declared that they have no idea about this issue.

Participants who had problems with medical waste were asked to describe the problem they experienced. Answers given by the participants who said they had problems with medical waste:

- Personnel working in the services can sometimes come to the administration and handle documents without taking off the gloves they use while on duty.
- Personnel collecting medical waste enter the units with their waste collection gloves and holding the door handles used by all personnel.
- I came across penetrating tools among the medical waste.
- Our employees had mistakenly thrown the needle tip into the medical waste bag, not into the penetrating waste bag.
- When I lifted the medical waste bag to help, the syringe needle stuck in my leg.
- The used syringe thrown into the sterile material got stuck in my hand

Among the participants who think there is a deficiency in waste management, the aspects they think are missing are:

- Necessary care is not taken to dispose of waste in the correct waste bins.
- I think not everyone follows the medical waste procedure.
- It's disturbing to see everything in the paper waste bin used by civil servants
- Employees at the clinic do not attach importance to the separation of waste. Garbage is always thrown into the wrong bins.
- Only nurses comply with the waste issue. Doctor and the company staff are incompatible in this regard.

The question of "Has there been a change in the functioning of waste management due to COVID 19? If yes, what is it?" was asked to the participants as an open-ended question in the survey study. Information compiled from the answers given by participating healthcare professionals regarding changes in waste management during the COVID 19 epidemic is presented below:

- There is a huge increase in the amount of medical waste generated in hospitals and the following reasons are shown among the reasons for this increase in the amount of medical waste:
  - all waste generated in COVID services is disposed of as medical waste
  - the amount of glove and mask use increased
  - all packaging waste and glass waste generated in services, is disposed of medical waste
- Since the waste generated is too much, the personnel collecting the waste cannot keep up with the waste collection
- Due to the lack of awareness of the people coming to the hospital during the pandemic period, masks were collected from the streets and mask waste was everywhere
- The number of red waste bags in which medical waste is placed has been increased
- The number of disinfectants was increased and placed in various areas of the hospital
- Double bags are used for medical waste
- While there was no medical waste bin on the administrative floor before the pandemic, medical waste bins were placed on the administrative floor for wastes such as masks, gloves, etc.
- Employees are more careful and attentive about medical waste and there is an increase in medical waste awareness
- Respiratory and contact isolation is provided
- Appropriate waste management procedure is implemented
- Information about waste is provided more frequently

- Different areas have been created within the scope of COVID 19 and extra precautions have been taken to prevent contamination
- Even the garbage in the services has started to be collected by personnel carrying medical waste
- The increase in the amount of medical waste causes an increase in costs, stated

5.1.2 Statistical Evaluation

Comparing the evaluations of the medical waste awareness level according to their professions, it is seen that the evaluations of the participating healthcare professionals regarding the medical waste awareness show statistically significant differences according to their duties in the ANOVA test analysis. Since the significant (Sig.) value is < 0.05, the professions variable has an effect on other variables. In the study conducted by Tiryaki in 2017, it was found that the knowledge of healthcare professionals differed significantly according to their duties, and in Boz's study in 2021, it was found that healthcare personnel found waste management evaluations more positive than other healthcare professionals. In the study conducted by Akbolat et al. based on healthcare professionals, significant differences were found in five statements based on professional groups.

In order to examine the distribution of the answers given by the participating healthcare professionals according to their professions, Crosstabs analysis was applied to all questions, especially the questions that showed more significant differences. When the tables in section 5.1.3 of the research are examined, it is seen that the rate of nurses/midwives giving correct answers to questions regarding medical waste and practice is higher, although not for hospital waste in general. The distribution of correct answer rates of employees in other professional fields regarding the fields they use more in practice varies, and the comparison of the distribution of participants' answers based on professions is clearly shown in tables in this section part of the research.

5.1.3. Comparison of the Distribution of Participants' Answers Based on Professions

According to participants' professions, distribution of the responses which is provided by participants to question of "Which statement fully covers the concept of medical waste?" is given in Table 5.6. The exact definition of the concept of medical waste is infectious, pathological and penetrating waste of the 518 healthcare professionals who answered this question, 282 answered the question correctly. 117 of the 178 nurses/midwifes who answered the question answered correctly, and the rate of correctly answering the question among nurses/midwifes was 65.7%. The 45 doctors who answered the question knew 29 questions, and the rate of correctly answering the question among doctors was 64.4%, 68 of the 107 health technicians who answered the question answered the question correctly, and the rate of answering the question correctly among the health technicians was 63.6%.

Table 5.6. Distribution of answers according to participants' job titles-1

	(Q11) Which statement fully covers the concept of medical waste?									
	a		b		c		d		Total	
Professions	n	%	n	%	n	%	n	%	n	%
Administrative staff	26	30.6	43	50.6	16	18.8	0	0	85	100
Doctor	10	22.2	29	64.4	4	8.9	2	4.4	45	100
Nurse/Midwife	46	25.8	117	65.7	13	7.3	2	1.1	178	100
Health technician	19	17.8	68	63.6	19	17.8	1	0.9	107	100
Support service staff	47	45.6	25	24.3	16	15.5	15	14.6	103	100
Total	148	28.6	282	54.4	68	13.1	20	3.9	518	100

a: all waste from medical fields

b: infectious, pathological and penetrating waste

c: hazardous waste medical waste

d: all wastes that come into contact with healthcare personnel

The rates of correctly answering the question among each job title are given in the Figure 5.2. It is seen that, among the participants who answered the question correctly, the group with the highest knowledge rate is nurses/midwifes with 65.70%. Following nurses/midwives, doctors (64.4%) and health technicians (63.6%) have a high rate of correct answers. The group with the lowest rate of answering the question correctly is support services personnel with 24.3%.

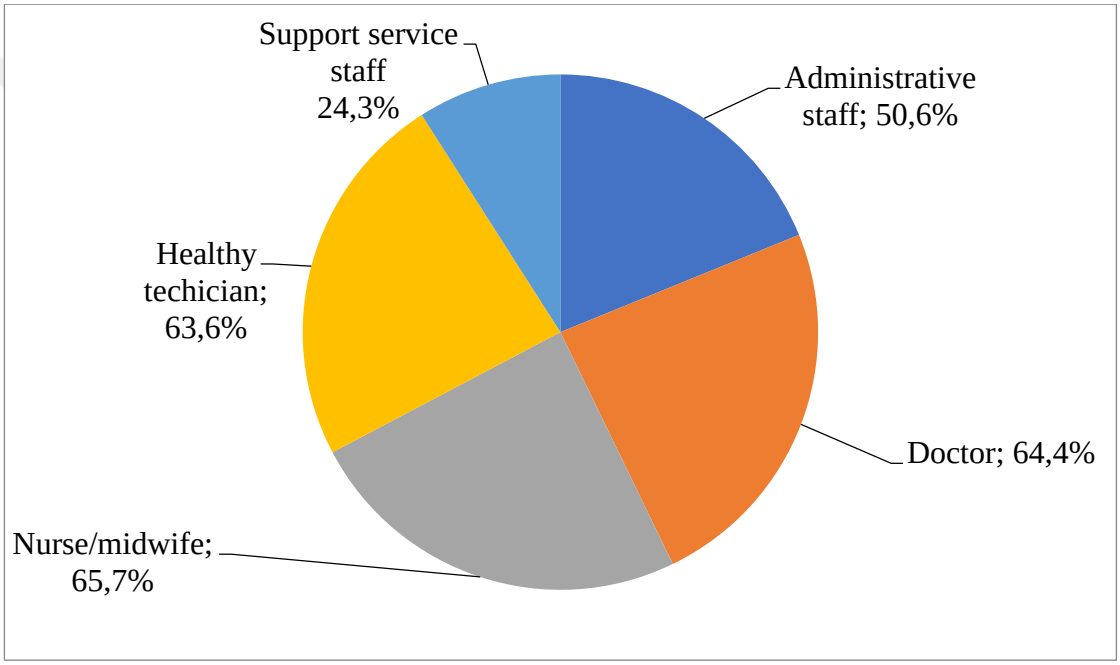


Figure 5.2 Rates of correctly answering the question “Which statement fully covers the concept of medical waste?" depending on the job title

According to participants’ professions, distribution of the responses which is provided by participants to expressions of “After the use of the injector, the nozzles must be closed while throwing them into the waste box” is given in Table 5.7. The correct answer is “No attempt should be made to close the tips after using the injector, while throwing them into the waste box”. Of the 525 healthcare professionals who participated

in the survey, 301 answered this question correctly. The rates of correct answering to the question among each job title are given in the Figure 5.3.

Among the participants who answered correctly, the group with the highest correct answer rate is nurse/midwife with 83.5%. After nurses/midwifes, the group with the highest rate of knowing this question is health technicians with 67.3. Only 20 of 105 support service staff answered this question correctly (19%). After support service staff, the lowest response rate is administrative staff with 35.3%. The behavior of healthcare workers in this regard is an important issue that requires attention in terms of employee health and may cause work accidents. In a study conducted by Kurttekin et al., it was determined that 23.9% of work accidents with cutting and piercing tools occurred as a result of incorrect application when closing the syringe needle cap. There are regulations on dirty cutting tools published in Germany in 2007 and in Canada in 2008.

Table 5.7. Distribution of answers according to participants' job titles-2

	(Q12) After the use of the injector, the nozzles must be closed while throwing them into the waste box.							
	Yes		No		I don't know		Total	
Professions	n	%	n		n	%	n	%
Administrative staff	44	51.8	30	35.3	11	12.9	85	100
Doctor	14	30.4	27	58.7	5	10.9	46	100
Nurse/Midwife	28	15.4	152	83.5	2	1.1	182	100
Health technician	34	31.8	72	67.3	1	0.9	107	100
Support service staff	74	70.5	20	19.0	11	10.5	105	100
Total	194	37.0	301	57.3	30	5.7	525	100

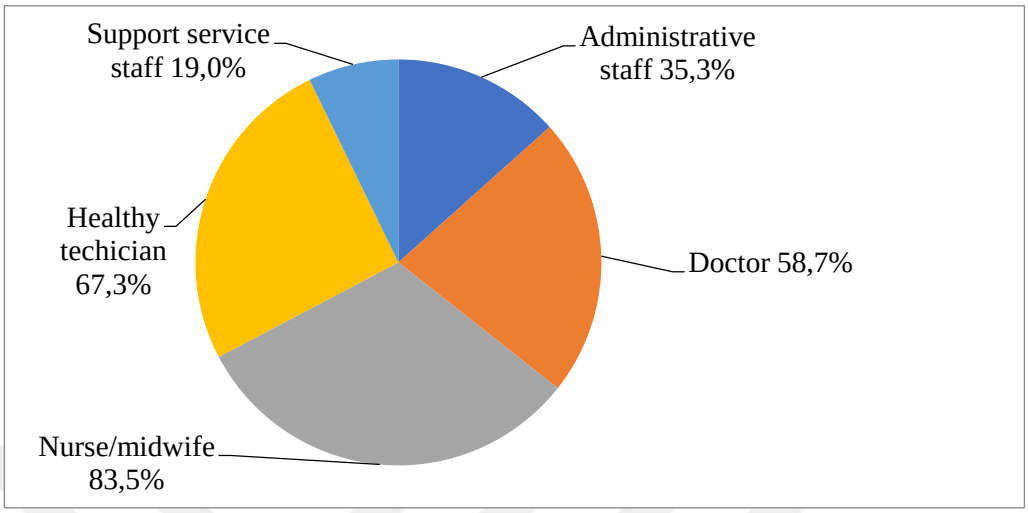


Figure 5.3 Rates of correct answers to the question about capping the nozzles when throwing the syringe into the waste bin after use

According to participants' professions, distribution of the responses which is provided by participants to question of "What should be the maximum filling rate of medical waste bags?' is given in Table 5.8. According to the Medical Waste Control Regulation, the maximum filling rate of medical waste bags should be ¾. The percentage of correct answers to this question among each job title is shown in Figure 5.4. The group that gave the most correct answers to this question with a rate of 91.2% was nurses/midwifes. Following this group, health technicians with a rate of 90.7% and doctors with a rate of 82.2% in answering this question correctly. It is an expected result that nurses/midwives, doctors and health technicians working in areas that cause medical waste generation have the highest correct answer rate. Support service staff had the lowest correct answer rate, with a correct answer rate of 66.7%. The reason why the lowest response rate has exceeded fifty percent is that cleaning personnel who collect waste are also included in this group.

Table 5.8. Distribution of answers according to participants' job titles-3

	(Q13) Maximum Filling Rate of Medical Waste Bags									
	¼		¾		½		All		Total	
Professions	n	%	n		n	%	n	%	n	%
Administrative staff	5	6.1	58	70.7	19	23.2	0	0	82	100
Doctor	0	0	37	82.2	6	13.3	2	4.4	45	100
Nurse/Midwife	0	0	165	91.2	12	6.6	4	2.2	181	100
Health technician	2	1.9	97	90.7	5	4.7	3	2.8	107	100
Support service staff	8	7.8	68	66.7	24	23.5	2	2.0	102	100
Total	15	2.9	425	82.2	66	12.8	11	2.1	517	100

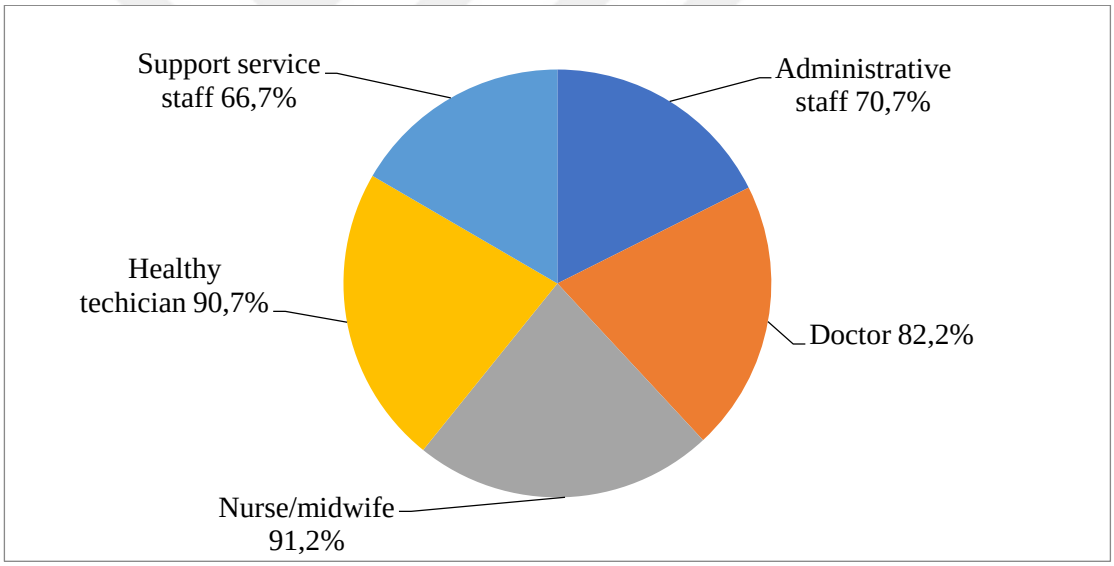


Figure 5.4 Rate of correctly knowing the maximum filling rate of medical waste bags based on professions

The distribution of the answers given by the participants to the questions according to the professions title and the correct answer rates of the answers given by the participants for each professions title were calculated using Crosstabs. The results of the analysis are shown in the Table 5.9. When the answers given by the participants to the questions in the table are examined, the percentages of different professions knowing the same question gave similar results in percentage terms.

Table 5.9. Distribution of participants' answers to questions by professions

	Q1:Receiving training on medical waste management					
	Yes		No		Total	Percent
Professions	n	%	n	%	n	%
Administrative staff	61	71.8	24	28.2	85	100.0
Doctor	41	89.1	5	10.9	46	100.0
Nurse/Midwife	160	87.9	22	12.1	182	100.0
Health technician	89	83.2	37	16.8	107	100.0
Support service staff	68	64.8	106	35.2	105	100.0
	Q2:Conducting internal audit on waste management					
	Yes		No		I don't know		Total	Percent
Professions	n	%	n	%	n	%	n	%
Administrative staff	51	60.0	7	8.2	27	31.8	85	100.0
Doctor	20	43.5	3	6.5	23	50.2	46	100.0
Nurse/Midwife	128	70.3	24	13.2	30	16.5	182	100.0
Health technician	55	51.4	19	17.8	33	30.8	107	100.0
Support service staff	54	51.4	12	11.4	39	37.1	105	100.0
	Q3:Disposing of the waste in the appropriate bins					
	Yes		No		Total	
	Percent					
Professions	n	%	n	%	n	%
Administrative staff	81	95.3	4	4.7	85	100.0
Doctor	45	97.8	1	2.2	46	100.0
Nurse/Midwife	180	98.9	2	1.1	182	100.0
Health technician	102	95.3	5	4.7	107	100.0
Support service staff	510	97.1	3	2.9	105	100.0
	Q4:Disposing of waste in appropriate bins under intense working conditions					
	Yes		No		Total	Percent
Professions	n	%	n	%	n	%
Administrative staff	77	91.7	7	8.3	84	100.0
Doctor	42	91.3	4	8.7	46	100.0
Nurse/Midwife	166	91.2	16	8.8	182	100.0
Health technician	90	84.1	17	15.9	107	100.0
Support service staff	96	92.3	8	7.7	104	100.0

Table 5.9. Distribution of participants' answers to questions by professions (continue)

	Q5: All waste from possible/certain COVID patients is medical waste							
	Yes		No		I don't know		Total	Percent
Professions	n	%	n	%	n	%	n	%
Administrative staff	66	77.6	8	9.4	11	12.9	85	100.0
Doctor	39	84.8	1	2.2	6	13.0	46	100.0
Nurse/Midwife	173	95.1	5	2.7	4	2.2	182	100.0
Health technician	95	88.8	8	7.5	4	3.7	107	100.0
Support service staff	90	85.7	7	6.7	8	7.6	105	100.0

	Q6: Which color bags are used for packaging waste?									
	Blue		Black		Red		Yellow		Total	Percent
Professions	n	%	n	%	n	%	n	%	n	%
Administrative staff	63	76.8	4	4.9	3	3.7	12	14.6	85	100.0
Doctor	41	89.1	4	8.7	0	0	1	2.2	46	100.0
Nurse/Midwife	147	80.8	32	17.6	0	0	3	1.6	182	100.0
Health technician	87	81.3	11	10.3	3	2.8	6	5.6	107	100.0
Support service staff	85	82.5	10	9.7	3	2.9	5	4.9	105	100.0

	Q7: Which of the following is packaging waste?									
	Glass		Paper		Plastic		All of		Total	Percent
Professions	n	%	n	%	n	%	n	%	n	%
Administrative staff	1	1.2	12	14.1	27	31.8	45	52.9	85	100.0
Doctor	1	2.2	13	28.3	10	21.7	22	47.8	46	100.0
Nurse/Midwife	1	0.6	51	28.2	52	28.7	77	42.5	181	100.0
Health technician	3	2.8	24	22.4	14	13.1	66	61.7	107	100.0
Support service staff	3	2.9	31	30.1	10	9.7	59	57.3	103	100.0

	Q8: Which of the following is hazardous waste?									
	Waste vegatable oil		Waste batteries		Pressure vessels		All of		Total	Percent
Professions	n	%	n	%	n	%	n	%	n	%
Administrative staff	0	0.0	26	31.3	2	2.4	55	66.3	83	100.0
Doctor	1	2.2	9	19.6	1	2.2	35	76.1	46	100.0
Nurse/Midwife	2	1.1	35	19.2	9	4.9	136	74.7	182	100.0
Health technician	2	1.9	27	25.7	1	1	75	71.4	105	100.0
Support service staff	3	2.9	18	22.2	2	2	79	77.5	102	100.0

Table 5.9. Distribution of participants' answers to questions by professions (continue)

	Q9: Which color bags are used for medical waste?									
	Blue		Black		Red		Yellow		Total	Percent
Professions	n	%	n	%	n	%	n	%	n	%
Administrative staff	1	1.2	2	2.4	81	95.3	1	1.2	85	100.0
Doctor	0	0	0	0	43	95.6	2	4.4	45	100.0
Nurse/Midwife	0	0	1	0.5	181	99.5	0	01	82	100.0
Health technician	5	4.7	3	2.8	98	91.6	1	0.9	107	100.0
Support service staff	7	6.7	1	1.0	95	90.5	2	1.9	105	100.0

	Q10: Which of the following is medical waste emblem?									
	Medical waste		Radiation		Danger of death		Lightning		Total	Percent
Professions	n	%	n	%	n	%	n	%	n	%
Administrative staff	81	95.3	1	1.2	3	3.5	0	0	85	100.0
Doctor	42	91.3	2	4.3	2	4.3	0	0	46	100.0
Nurse/Midwife	168	93.3	8	4.4	4	2.2	0	0	180	100.0
Health technician	98	91.6	3	2.8	4	3.7	2	1.9	107	100.0
Support service staff	98	93.3	3	2.9	4	3.8	0	0	105	100.0

	Q14: Temporary storage areas for hospital waste							
	Yes		No		I don’t know		Total	Percent
Professions	n	%	n	%	n	%	n	%
Administrative staff	73	85.9	2	2.4	10	11.8	85	100.0
Doctor	35	76.1	2	4.3	9	19.6	46	100.0
Nurse/Midwife	164	90.1	0	0	18	9.9	182	100.0
Health technician	77	72.0	7	6.5	23	21.5	107	100.0
Support service staff	93	88.6	2	1.9	10	9.5	105	100.0

	Q15: Identifying information on waste bags							
	Yes		No		I don’t know		Total	Percent
Professions	n	%	n	%	n	%	n	%
Administrative staff	70	82.4	1	1.2	14	16.5	85	100.0
Doctor	41	89.1	1	2.2	4	8.7	46	100.0
Nurse/Midwife	159	87.4	12	6.6	11	6.0	182	100.0
Health technician	86	80.4	10	9.3	11	10.3	107	100.0
Support service staff	88	83.8	6	5.7	11	10.5	105	100.0

Table 5.9. Distribution of participants' answers to questions by professions (continue)

	Q16: Incorrect statement									
	One personnel carries all the waste		Cleaning personnel carry the packaging wastes		Medical waste officers carry medical waste		Hazardous waste officer carry hazardous waste		Total	Percent
Professions	n	%	n	%	n	%	n	%	n	%
Administrative staff	1	1.2	2	2.4	81	95.3	1	1.2	85	100.0
Doctor	0	0	0	0	43	95.6	2	4.4	45	100.0
Nurse/Midwife	0	0	1	0.5	181	99.5	0	0	182	100.0
Health technician	5	4.7	3	2.8	98	91.6	1	0.9	107	100.0
Support service staff	7	6.7	1	1.0	95	90.5	2	1.9	105	100.0

	Q17: Mask/gloves wastes throw into the medical waste bucket					
	Yes		No		Total	Percent
Professions	n	%	n	%	n	%
Administrative staff	76	89.4	9	10.6	85	100.0
Doctor	37	80.4	9	19.6	46	100.0
Nurse/Midwife	167	91.8	15	8.2	182	100.0
Health technician	100	93.5	7	6.5	107	100.0
Support service staff	90	85.7	15	14.3	105	100.0

	Q18: You ever had a problem with medical waste					
	Yes		No		Total	Percent
Professions	n	%	n	%	n	%
Administrative staff	1	1.2	84	98.8	85	100.0
Doctor	3	6.5	43	93.5	46	100.0
Nurse/Midwife	17	9.4	163	90.6	180	100.0
Health technician	10	9.3	97	90.7	107	100.0
Support service staff	4	3.8	101	96.2	105	100.0

	Q19: Deficiency in waste management							
	Yes		No		I don't know		Total	Percent
Professions	n	%	n	%	n	%	n	%
Administrative staff	4	4.7	49	57.6	32	37.6	85	100.0
Doctor	4	8.7	27	58.7	15	32.6	46	100.0
Nurse/Midwife	46	25.3	111	61.0	25	13.7	182	100.0
Health technician	20	18.7	63	58.9	24	22.4	107	100.0
Support service staff	12	11.4	72	68.6	21	20.0	105	100.0

5.2 Mobile Group

5.2.1 Survey Results

The classification of the mobile group in the healthcare institution participating in the research, showing the reason for being in the hospital, is shown in the Table 5.10. The number and distribution of the mobile group varies greatly on a daily and even instantaneous basis. During the period when the research was conducted, 47.1% as patients, 34.1% as patient relatives, and 18.8% as medical students of the mobile population was in the hospital.

Table 5.10 Classification of the mobile group

	Frequency (f)	**Percent (%)**
The Reason for Being in The Hospital		
Patient	148	47.1
Patient relative	107	34.1
Medical Student	59	18.8

A frequency analysis was performed according to the demographic characteristics of the mobile group participating in the research in the healthcare institution, such as gender, marital status, age, level of education. The frequency and percentage distribution of this frequency analysis is shown in the Table 5.11.

Table 5.11 Demographic features

	Frequency (f)	Percent (%)
Gender		
Female	180	57.3
Male	134	42.7
Marital Status		
Married	183	58.3
Single	131	41.7
Age		
18-25	85	27.1
26-35	61	19.4
36-45	69	22.0
46 or over	99	31.5
Level of Education		
Student	33	10.5
Primary Education	83	26.4
High School	88	28.0
University	110	35.0

Of the 314 mobile groups that participated in the survey, 57.3% were women and 42.7% were men. Distribution of participants according to marital status: 58.3% are married and 41.7% are single. Of the survey participants, 27.1% are between the ages of 18-25, 19.4% are between the ages of 26-35, 22.0% are between the ages of 36-45, and 31.5% are aged 46 and over. 10.5% of the participants are students, 26.4% are primary school graduates, 28.0% are high school graduates, and 35.0% are university graduates.

In the demographic analysis, the options with the most participants in each group are shown graphically in Figure 5.5. The reason for the high rate of university graduates is that the participation rate of medical students working as intern doctors in the hospital is %18.8.

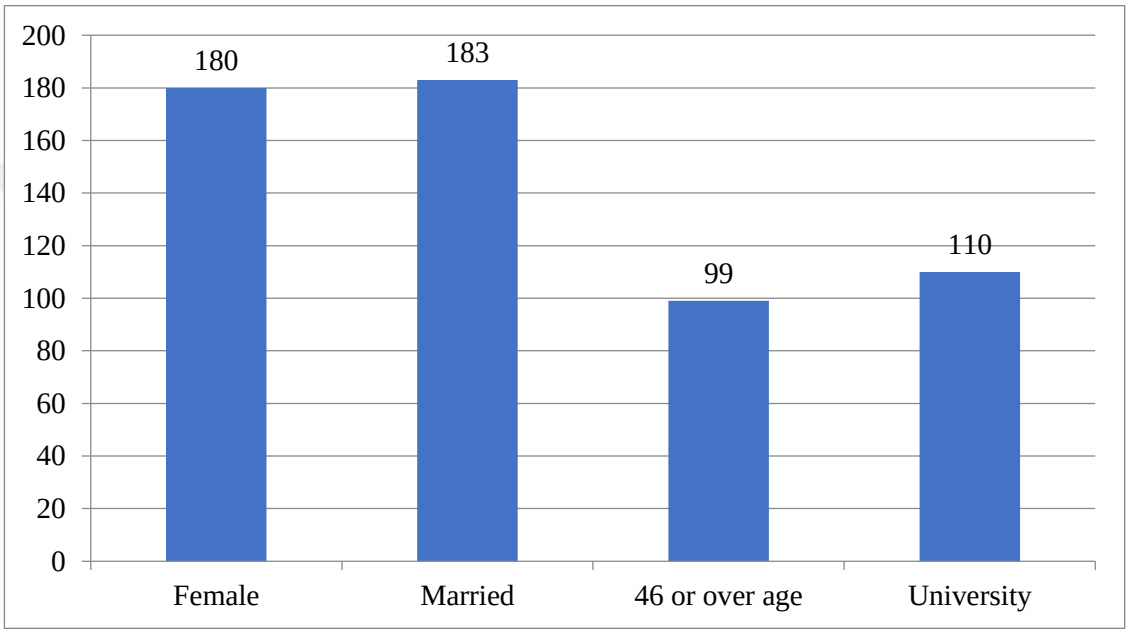


Figure 5.5 The option with the maximum participation in each group

The distribution of answers to the questions in the mobile group survey given in the APPENDIX is given in Tables 5.12-5.14.

Table 5.12 Mobile group's information on hospital waste

	Frequency (f)	Percent (%)
Are there my public service advertisements you watch about medical wastes?		
Yes	96	30.6
No	127	40.4
I can't remember	91	29.0
Do you think you know about medical wastes?		
Yes	145	46.2
No	169	53.8
Are the mask and gloves you use in the hospital medical waste?		
Yes	203	64.6
No	68	21.7
I don' t know	43	13.7
Which color bags are used for packaging waste?		
Blue	213	68.5
Black	59	18.8
Red	28	8.9
Yellow	12	3.8

To the question of "Are there any public service advertisements you watch about medical wastes?", 30.6% of the participants answered yes, 40.4% said no and 29.0% said they did not remember. 46.2% of the mobile population surveyed think that they have knowledge about medical waste.

To the question about whether the masks and gloves used in the hospital are medical waste, 64.6% of the participants answered "yes", 21.7% answered "no" and 13.7% answered "I don't know".

When asked about the color of the bag in which the packaging waste should be disposed of, 18.8% of the participants said black, 8.9% said red, and 3.8% said yellow.

68.5% of the mobile group who participated in the research answered the question correctly by saying blue is the color of the bag in which the packaging waste should be disposed of. Not one person answered this question. She noted under the question, “I am not aware of it at all, but it becomes obvious when they are all together”.

Table 5.13 Mobile group's behaviors on hospital waste

	Frequency (f)	**Percent (%)**
What do you do the mask after you use that in the hospital		
I throw it in the nearest trash can	202	64.3
After a few days in the bag, I throw it in the trash	16	5.1
I keep it until I throw it in the medical waste bin	96	30.6
What do you do when you finish pressing the cotton on the injection site?		
I throw it in the nearest trash can	186	59.2
I’m looking for a medical waste bin	115	36.6
I don’t care where I throw it	13	4.1

The rate of answers saying that they would throw the masks into the nearest trash bin after using them in the hospital is 64.3%, and this practice is wrong. 30.6% of the participants responded correctly, by selecting, "I keep it until I throw it in the medical waste bin". Only 5.1% of the participants answered the incorrect option, “After a few days in the bag, I throw it in the trash”. The remaining participants stated that they did not care where they threw it.

57.3% of the participants answered “yes” to the question of whether they were informed about the regulations regarding masks and gloves used during the COVID 19 epidemic. These participants were asked how they learned this information. 28.3% of the participants stated that they got information from television, 19.4% from the internet, and 4.5% from their friends.

Table 5.14 Mobile group's pandemic information

	Frequency (f)	Percent (%)
Information about the regulations regarding mask and glove in the COVID 19 epidemic		
Yes	180	57.3
No	134	42.7
How did you learn this information		
From the television	89	28.3
From the internet	61	19.4
From my friends/ the people around me	14	4.5

5.2.2 Statistical Evaluation

The answers given by the mobile group in the health institution participating in the research according to their location in the hospital were calculated using Cross Tabulation and results are shown in the Table 5.15. In addition, the correct answers given by the participants in the same group to the same question were compared as a percentage between the groups, depending on their presence in the hospital.

36.5% of patient participants, 26.2% of patient relatives, and 23.7% of medical student participants said that they watched an advertisement about medical waste. 40.5% of patient participants, 44.9% of patient relatives and 23.7% of medical students think they are knowledgeable about medical waste.

The rate of participants correctly knowing that the gloves and masks they used in the hospital were medical waste was 91.5% of medical students, 56.1% of patients, and 61.7% of patient relatives. The proportion of participants who would display the correct behavior by saying "I will throw the masks and gloves they use in the hospital into the medical waste bin" was determined to be 27.0% in patients, 26.2% in patients' relatives, and 47.5% in medical students.

The proportion of participants who would display the correct behavior by saying students.'When you finish pressing the cotton on the injection site,' 'I'm looking for a medical waste bin' was 33.1% among patients, 33.6% among patients' relatives, and 50.8% among medical

The rate of correctly knowing the color of the packaging waste bin was determined as 64.9% among patients, 70.1% among patients' relatives, and 74.6% among medical students. The rate of patients, patient relatives and medical students correctly knowing about packaging waste is slightly low, and it was expected that this rate would be higher, especially for medical students.

Table 5.15 The relationship between the answers according to the participants' positions in the hospital

	Q1: Are there any public service advertisements you watch about medical wastes?							
	Yes		No		I don't know		Total	Percent
Position in the hospital	n	%	n	%	n	%	n	%
Patient	54	36.5	57	38.5	37	25.0	148	100.0
Patient relative	28	26.2	49	45.8	30	28.0	107	100.0
Medical student	14	23.7	21	35.6	24	40.7	59	100.0
Total	96	30.6	127	40.4	4	29.0	314	100.0
	Q2: Do you think you know about medical wastes?							
	Yes		No				Total	Percent
Position in the hospital	n	%	n	%			n	%
Patient	60	40.5	88	59.5			148	100.0
Patient relative	48	44.9	59	55.1			107	100.0
Medical student	37	62.7	22	37.3			59	100.0
Total	145	46.2	169	53.8			314	100.0

Table 5.15 The relationship between the answers according to the participants' positions in the hospital (continue)

	Q3:Are the mask and gloves you use in the hospital medical waste?							
	Yes		No		I don't know		Total	Percent
Position in the hospital	n	%	n	%	n	%	n	%
Patient	83	56.1	42	28.4	23	15.5	148	100.0
Patient relative	66	61.7	25	23.4	16	15.0	107	100.0
Medical student	54	91.5	1	1.7	4	6.8	59	100.0
Total	203	64.6	68	21.7	43	13.7	314	100.0
	Q4: What do you do the masks after you use that in the hospital?							
	trash bin		after few days trash bin		medical waste bin		Total	Percent
Position in the hospital	n	%	n	%	n	%	n	%
Patient	95	64.2	13	8.8	40	27.0	148	100.0
Patient relative	77	72.0	2	1.9	28	26.2	107	100.0
Medical student	30	50.8	1	1.7	28	47.5	59	100.0
Total	202	64.3	16	5.1	96	30.6	314	100.0
	Q5: What do you do when you finish pressing the cotton on the injection site?							
	trash bin		medical waste bin		I don’t care		Total	Percent
Position in the hospital	n	%	n	%	n	%	n	%
Patient	92	62.2	49	33.1	7	4.7	148	100.0
Patient relative	70	65.4	36	33.6	1	0.9	107	100.0
Medical student	24	40.7	30	50.8	5	8.5	59	100.0
Total	186	59.2	115	36.6	13	4.1	314	100.0
	Q6: Do you have any information about the regulations regarding mask and glove waste in the COVID 19 epidemic?							
	Yes		No				Total	Percent
Position in the hospital	n	%	n	%			n	%
Patient	91	61.5	57	38.5			148	100.0
Patient relative	60	56.1	47	43.9			107	100.0
Medical student	29	49.2	30	50.8			59	100.0
Total	182	57.3	134	42.7			314	100.0

Table 5.15 The relationship between the answers according to the participants' positions in the hospital (continue)

	Q8: Which color bags are used for packaging waste?									
	Blue		Black		Red		Yellow		Total	Percent
Position in the hospital	n	%	n	%	n	%	n	%	n	%
Patient	96	64.9	37	25.0	14	9.5	1	0.7	148	100.0
Patient relative	75	70.1	18	16.8	9	8.4	5	4.7	107	100.0
Medical student	44	74.6	4	6.8	5	8.5	6	10.2	59	100.0
Total	215	68.5	59	18.8	28	8.9	12	3.8	314	100.0

Table 5.16 shows how the mobile population, who knows that the masks and gloves they use in the hospital are medical waste, reflects this knowledge in their behavior.

There are 64.6% (203 participants) of the mobile population who know that the masks and gloves they use in the hospital are medical waste. Among the participants who know this question, only 43.8% say they would throw the masks and gloves they use into the medical waste bin. In other words, the rate of participants who throw masks/gloves into the medical waste bin even though they know they are medical is quite low.

Table 5.16 Behaviors of mobile group who say masks/gloves are medical waste

	Do not throw it in the medical waste bin		**throwing in medical waste bin**		**Total**	**Percent**
Participants who said that masks/gloves used in hospitals are medical waste	n	%	n	%	n	%
	114	56.2	89	43.8	203	100.0

CHAPTER SIX
CONCLUSIONS

- In this study, the rate of participating healthcare workers who said they had received medical waste training before was 79.8%. The rate of healthcare worker participants who have previously received medical waste training to answer the questions correctly is higher than those who have not received medical waste training. In general, although training alone is not sufficient to increase the knowledge level of healthcare professionals about medical waste and their sensitivity during practice, positive interaction between colleagues can be ensured by staff who are knowledgeable and sensitive about the application as a positive role model for other healthcare professionals. Practice can be strengthened by collegial interaction and the presence of positive role models.

- The rate of participating healthcare professionals who say that they are careful when disposing of the waste they create under normal conditions into appropriate waste bins is 97.1%. The rate of participants who say that they are careful to dispose of their waste in appropriate waste bins when intense working conditions occur is 89.7%. That is, if participating healthcare workers were under intense working conditions, the rate of disposing of waste into the appropriate waste bin decreased by 7.4%.

- In general, the vast majority of healthcare worker participants correctly answered the colors of packaging waste and medical waste bags.

- Participants' awareness, sensitivity, knowledge about medical waste, and the reflection of this knowledge in behavior vary a statistically significantly with the participants' professions.

- In the collection of medical waste; "Red plastic bags marked “ATTENTION! MEDICAL WASTE” are used. For wastes with sharp and penetrating properties, separate from other medical wastes "Boxes or containers made of plastic or laminated cardboard with the same properties, marked "CAUTION! SHARP MEDICAL WASTE!" should be used. Healthcare professionals should pay attention to this detail and take utmost care to store cutting and piercing tools in separate buckets from medical waste.

- In the survey study, it was observed that the rate of nurses answering the survey questions correctly was higher than other healthcare professionals. In addition, nurses are more likely than other healthcare professionals to have information that healthcare professionals frequently use in practice, such as the maximum filling rate of medical waste bags and not capping syringe tips after use. This is a positive situation in terms of waste management, considering that medical waste and syringes in the sharps group are generally generated by nurses in the hospital.

- In this study, 57.3% of healthcare workers said that they did not cover their mouths after using a syringe. 58.7% of doctors, 83.5% of nurses/midwives, and 67.3% of health technicians who said "The syringes should not be covered when throwing them into the waste bin" answered correctly. The behavior of healthcare workers in this regard is an important issue that requires attention in terms of employee health and may cause work accidents. Trying to cover the syringe tips they use may be due to employees' lack of knowledge and hasty behavior. There are regulations regarding dirty cutting tools published in Germany in 2007 and in Canada in 2008. It may become easier to control this situation with legal regulations to be issued on this subject.

- Ignoring details in medical waste management is likely to cause occupational accidents. This statement also coincides with the negative experiences of health professionals on this issue.

- While the rate of medical faculty students knowing that masks and gloves used in hospitals are medical waste was 91.5%, this rate remained low for patients (56.1%) and patient relatives (61.7%). The public can be more informed about medical waste through public service announcements.

- In the mobile population, there are 64.6% participants who know that the masks/gloves they use in the hospital are medical waste. Only 43.8% of the participants who knew that masks/gloves were medical waste said that they threw the masks/gloves they used into the medical waste bin. Based on these statements, although they know that the masks/gloves in the hospital are medical waste, half of these participants do not reflect this knowledge in their behavior. It is noteworthy that medical students, who are among the mobile population, similarly know the information but do not reflect it in behavior. It is noteworthy that medical students, who are among the mobile population, similarly know the information but do not reflect it in behavior. It is important for them to be sensitive about putting the knowledge they have into practice. It is important for them to be sensitive about putting the knowledge they have into practice.

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APPENDIX

HASTANELERDEKİ ATIK YÖNETİMİ FARKINDALIĞININ ARAŞTIRILMASI ANKETİ

INVESTIGATION OF AWARENESS ON WASTE MANAGEMENT IN HOSPITALS QUESTIONNAIRE

Cinsiyetiniz (Gender):

 Kadın(Female) Erkek(Male)

Medeni Durumunuz(Marital status):

 Evli (Married) Bekar (Single)

Yaşınız(Age):

 18-25 26-35 36-45 46 ve üzeri (46 or over)

Eğitim Durumunuz (Level of Education):

 İlköğretim (Primary Education)

 Lise (High School)

 Önlisans(Associate degree)

 Lisans(Bachelor's degree)

 Yüksek Lisans (M. Sc)

 Doktora(Ph. D.)

Göreviniz(Professions):

 İdari personel (administrative staff)

 Doktor (Doctor)

 Hemşire/ebe (Nurse/Midwife)

 Sağlık teknikeri/ teknisyeni (Healty Technician)

 Destek hizmetleri personeli (support service staff)

Kıdem Yılı: (length of service):

 1-5 yıl (1-5 year) 6-10 yıl(6-10 year) 11-15 yıl(11-15year) 16-20 yıl(16-20year) 21+(21over)

1- **Tıbbi atık yönetimine ilişkin daha önce bir eğitim aldınız mı?** (Have you received any previous training on medical waste management?)

□ Evet (Yes)
□ Hayır (No)

2- **Atık yönetiminde verimlilik değerlendirmeleri dahilinde düzenli içsel denetim sağlanıyor mu?** (Is regular internal audit provided within the scope of efficiency assesments on waste management?

□ Evet (Yes)
□ Hayır (No)
□ Bilmiyorum (I don't know)

3- **Atıkları uygun atık kutulara atmaya dikkat ediyor musunuz?** (Do you take care to dispose of the waste in the appropriate waste bins?)

□ Evet (Yes)
□ Hayır (No)

4- **Yoğun çalışma koşulları oluşsa bile atıkları doğru atık kutularına atmaya dikkat ediyor musunuz?** (Do you take care to dispose of the waste in the right waste bins, even if there are intense working conditions?)

□ Evet (Yes)
□ Hayır (No)

5- **Olası ve kesin Covid 19 hastalarının tüm atıkları tıbbi atık mıdır?** (Are it medical waste that all waste of possible and certain Covid 19 patients?)

□ Evet (Yes)
□ Hayır (No)
□ Bilmiyorum (I don't know)

6- **Ambalaj atıkları hangi renk torbalara atılır?** (Which color bags are used for packaging waste?)

□ Mavi(Blue) □ Siyah(Black) □ Kırmızı(Red) □ Sarı(Yellow)

7- **Aşağıdakilerden hangisi ambalaj atığıdır**? (Which of the following is packaging waste?)

□ Cam(Glass) □ Kağıt/Karton(Paper/Cardboard) □ Plastik(Plastic) □ Hepsi (All of)

8- **Aşağıdakilerden hangisi tehlikeli atıktır?** (Which of the following is hazardous waste?)

□ Bitkisel atık yağlar (waste vegetable oil) □ Atık piller (waste batteries)
□ Basınçlı kaplar(pressure vessels) □ Hepsi (All of)

9- **Tıbbi atıklar hangi renk torbalara atılmalıdır? (**Which color bags are used for medical waste?**)**

□ Mavi(Blue) □ Siyah(Black) □ Kırmızı(Red) □ Sarı(Yellow)

10- **Tıbbi atık amblemi aşağıdakilerden hangisidir?** (Which of the following is medical waste emblem?)

□ □ □ □






11- **Aşağıdakilerden hangisi tıbbi atık kavramını tam anlamıyla karşılamaktadır**? (Which of the following fully covers the concept of the medical waste?)

□ Tıbbi alanlardan çıkan tüm atıklar (All waste from medical fields)
□ Enfeksiyöz, patolojik ve kesici delici atıklar (İnfectious, pathological and penetrating waste)
□ Tıbbi alanlardan çıkan tehlikeli atıklar (Hazardous waste from medical fields)
□Sağlık personeline temas eden tüm atıklar (All wastes that come into contact with healthcare personnel)

12- **Enjektör kullanımı sonrasında, enjektör uçları atık kutusuna atılırken uçları kapatılmalıdır.** (After the use of the injector, the nozzles must be closed while throwing them into the waste box.)

□ Evet (Yes)
□ Hayır (No)
□ Bilmiyorum

13- Tıbbi atık torbalarının maksimum dolum oranı ne olmalıdır? (What should be the maximum filling rate of medical waste bags?)

□ ¼ □ ¾ □½ □ tamamı(all)

14- Hastanede, atıklar için geçici depolama alanları mevcut mudur? (Are there temporary storage areas for hospital waste?)

□ Evet (Yes)
□ Hayır (No)
□ Bilmiyorum (I don't know)

15- Atık poşetlerinin üzerinde tanımlayıcı bilgiler yer alıyor mu? (Is there any identifying information on the waste bags?)

□ Evet (Yes)
□ Hayır (No)
□ Bilmiyorum (I don't know)

16- Sizce aşağıdaki ifadelerden hangisi <u>yanlıştır?</u> (Which of the following statements do you think is incorrect?)

□Ambalaj, tıbbi ve tehlikeli atıklar tek bir personel tarafından taşınır. (Packaging, medical, hazardous wastes are handled by a single personnel.)

□ Ambalaj atıklarının toplanması, temizlik personelleri tarafından yapılır. (Collecting of packaging waste is done by cleaning personnel.)

□ Tıbbi atıklar, tıbbi atık görevlileri tarafından taşınır. (Medical wastes are transported by medical waste officers.)

□ Tehlikeli atıklar, tehlikeli atık görevlileri tarafından taşınır.(Hazardous wastes are tranported by hazardous waste officers.)

17- Hastane ortamında kullandığınız maske ve eldiven atıklarınızı tıbbi atık kovasına mı atıyorsunuz? (Do you throw your mask and glove wastes that you use in the hospital into the medical waste bucket?)

□ Evet (Yes)
□ Hayır (No)

18- Tıbbi atıklarla ilgili yaşadığınız bir sorun oldu mu? Varsa anlatır mısınız? (Have you ever had a problem with medical waste? Can you tell me if there is?)

- Evet (Yes)
- Hayır (No)

19- Atık yönetimi konusunda bir eksiklik olduğunu düşünüyor musunuz? Cevabınız evetse eksik olduğunu düşündüğünüz tarafı anlatır mısınız? (Do you think there is deficiency in waste management? If your answer is yes, can you tell us the part that you think is missing?)

- Evet (Yes)
- Hayır (No)
- Bilmiyorum(I don't know)

20- Covid 19 sebebiyle atık işleyişinde bir değişiklik yaşandı mı? Varsa nedir? (Has there been a change in waste treatment due to Covıd 19?If yes , what is it?)

HASTANELERDEKİ ATIK YÖNETİMİ FARKINDALIĞININ ARAŞTIRILMASI ANKETİ

INVESTIGATION OF AWARENESS ON WASTE MANAGEMENT IN HOSPITALS QUESTIONNAIRE FOR MOBİLE POPULATİON

Hastanede bulunma sebebiniz nedir? (What is your reason for being in the hospital?)

 Hasta olarak (as a patient)

 Hasta yakını olarak (as a patient relative)

 Tıp öğrencisi olarak (as a medical student)

Cinsiyetiniz (Gender):

 Kadın(Female) Erkek(Male)

Medeni Durumunuz(Marital status):

 Evli (Married) Bekar (Single)

Yaşınız(Age):

 18-25 26-35 36-45 46 ve üzeri (46 or over)

Eğitim Durumunuz (Level of Education):

Öğrenci (Student)

 İlköğretim (Primary Education)

 Lise (High School)

 Üniversite (University)

1- **Tıbbi atıklarla ilgili izlediğiniz herhangi bir kamu spotu var mıdır**? (Are there any public service advertisements you watch about medical wastes?)

□ Evet (Yes)
□ Hayır (No)
□ Hatırlamıyorum (I can't remember)

2- **Tıbbi atıklar hakkında bilgi sahibi olduğunuzu düşünüyor musunuz?** (Do you think you know about medical wastes?)

□ Evet(Yes)
□ Hayır(No)

3- **Hastane içerisinde kullandığınız maske ve eldivenler tıbbi atık mıdır?** (Are the mask and gloves you use in the hospital medical waste?)

□ Evet (Yes)
□ Hayır(No)
□ Bilmiyorum(I don't know)

4- **Hastanede kullandığınız maskeleri, işiniz bittikten sonra ne yapıyorsunuz?** (What do you do the masks after you use that in the hospital?)

□ En yakın çöp kutularına atarım.(I throw it in the nearest trash can.)

□ Birkaç gün poşette beklettikten sonra çöp kutusuna atarım.(After a few days in the bag, I throw it in the trash.)

□ Tıbbi atık kutusuna atana kadar güvenli bir yerde muhafaza ederim. (I keep it in a safe place until I throw it in the medical waste bin.)

5- **Hastanede gittiğinizde sağlık personelinin iğne vurulan yere bastırmanız için size verdiği pamuğu işi bittikten sonra ne yapıyorsunuz?** (When you go to the hospital, what do you do after you are done with the cotton, the cotton that the health personnel gives you to press on the injection site?)

□ En yakın çöp kutusuna atarım.(I throw it in the nearest trash can.)

□ Tıbbi atık kutusu ararım.(I'm looking for a medical waste bin.)

□ Nereye attığıma dikkat etmiyorum.(I don't care where I throw it.

6- **Covid 19 salgınında maske ve eldiven atıkları ile ilgili yapılan düzenlemeler hakkında bilginiz var mı?** (Do you have any information about the regulations regarding mask and glove waste in the Covid 19 epidemic?)

□ Evet (Yes)
□ Hayır(No)

7- **6. Soruya cevabının evetse bu bilgileri nasıl öğrendiniz?** (If your answer to the 6th question is yes, how did you learn this information?)

□ Televizyondan (from the television)
□ İnternetten (from the internet)
□ Arkadaşlarımdan/ çevremden (from my friends/the people around me)

8- **Ambalaj atıkları hangi renk torbalara atılır?** (Which color bags are used for packaging waste?)

□ Mavi(Blue) □ Siyah(Black) □ Kırmızı(Red) □ Sarı(Yellow)