

Assessing Knowledge, Attitude, and Practice of Healthcare Personnel Regarding Waste Management in Eradah Complex in Jeddah City

Mohammad Ali Almalki*, Mohammed Ghazi Alhazmi, Ibrahim Jaman Alotibe, Basem Ahmed Alsobhi, Mohammed Awadh Alsulami, Abdullah Alkharji and Mana Ahmed Alsaadi

Department of Nursing, Eradah and Mental Health Complex, Jeddah City, Saudi Arabia

*Corresponding Author: Mohammad Ali Almalki, Department of Nursing, Eradah and Mental Health Complex, Jeddah City, Saudi Arabia.

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Abstract

Introduction: Assessing knowledge, attitude, and practice of healthcare personnel regarding waste management is an important topic. Diagnostic procedures, surgical procedures, immunizations, research activities, and the production of biological materials all contribute to what is known as biomedical waste (BMW). All items that have come into contact with potentially infectious fluids, such as blood, urine, feces, or other bodily fluids, are included. Waste poses a significant infectious risk, especially in low-income countries. There is a problem with waste management awareness or concern in the Eradah Complex in Jeddah City.

Purpose of the Study: The purpose of the current study was to explain the risks of waste that are taken from hospitals and health centers and their impact on the health of people and the areas surrounding hospitals.

Method: A descriptive approach will be utilized for this investigation. The goal of this strategy is to compile data that can be utilized to define a group or phenomena in its entirety. They can use it to organize the timing, location, and methods of their studies. Medical staff at Eradah Complex in Jeddah City will be surveyed online to gather data on waste management practices there.

Results: The result showed the knowledge level was 58.3%, with mean 3.4, and the practice level was 78% with mean 0.78, there is a significant difference in the practice level due to specialty, but there is no significant difference due to age, nationality, gender, marital status, experience years, and workplace, and there is no significant difference in the knowledge level due to age, nationality, gender, marital status.

Keywords: Eradah Complex in Jeddah City; Waste Management; Practice of Healthcare Personnel

Introduction

Background

Everyone in hospitals or clinics is treated for injuries or health problems during their lives, and medical waste such as blood, syringes, gauze stained with blood or body fluids, and bandages are produced during the treatment process. Recently, the amount of medical waste generated in Saudi Arabia is continuously increasing, which has been analyzed due to the increase in the number of hospital users and their frequency of use due to the improvement in the income level and the increase in the elderly population [1].

About 56,000 hospitals, clinics, public health centers, testing and inspection institutions, medical facilities and hospitals generate 148,000 tons of medical waste annually, and the trend is increasing by 16% every year. There is a possibility that harmful bacteria or viruses may remain in the medical waste, and with the increase in the movement of people due to the development of transportation, the movement of infectious diseases increases and the speed of their spread increases, and safe handling is required. The Ministry of Environment is promoting the establishment of a management system at the level of developed countries such as the United States, Europe and Japan to manage safety in the entire process from the stage of medical waste generation to incineration. Depending on the nature of the medical waste and its hazardous characteristics, from the generation stage, it is placed in a container designated according to the type of medical waste, sealed, and stored in a designated storage facility [2].

It must be transported in a vehicle equipped with an airtight cooling facility, and during transportation, the cooling facility is always switched on to keep the temperature lower to prevent the risk of infection. When the medical waste is taken to an incineration company, it is incinerated within 5 days to prevent damage caused by long-term storage and incinerated in a designated incinerator. In addition, in some health centers and hospitals a computerized Radio Frequency Identification (RFID) system is in operation that can accommodate acquisition and delivery status from medical waste generation to transportation and processing in real time. When the medical waste is unloaded, a card containing information such as the type and weight of the medical waste is attached to the designated container, and the card is recognized and monitored through a computer network whenever it is transported or processed. Cases of management in developed countries should be investigated, problems of the Saudi system analyzed and improved, safety management should be established and the system assessed as having achieved its own results. It is noteworthy that the efforts made to implement the management system, such as not operating the cooling facilities, and so on [3].

Significance of the Study

Diagnostic procedures, surgical procedures, immunizations, research activities, and the production of biological materials all contribute to what is known as biomedical waste (BMW). All items that have come into contact with potentially infectious fluids, such as blood, urine, feces, or other bodily fluids, are included. Waste poses a significant infectious risk, especially in low income countries. There is a problem with waste management awareness or concern in the Eradah Complex in Jeddah City.

Aim of the Study

The aim of the current study is to Assess knowledge, attitude, and practice of healthcare personnel regarding waste management in Eradah Complex in Jeddah City.

Research Objectives:

1. To explain the risks of waste that are taken from hospitals and health centers and their impact on the health of people and the areas surrounding hospitals.
2. To identify importance of assessing knowledge, attitude of healthcare personnel regarding waste management in Eradah Complex in Jeddah City.
3. To evaluate the impact of waste management among health care workers in Eradah Complex in Jeddah City.

Literature Review

Medical institutions such as hospitals dispose of a wide range of waste, including scraps of paper, plastic, and sharps such as eye-glasses, needles, and gauze, which contain blood, body fluids, and organs. For this reason, if the workers do not acquire proper waste separation knowledge, not only will they worry about where to dispose of what, but it may also lead to accidents such as needle sticks and cuts. In addition, in recent years, the problem of exposure to anticancer drugs has been highlighted, and there is concern that exposure to

anticancer drugs may be possible due to improper waste disposal. This paper focuses on waste classification and treatment of infectious waste and anticancer drug waste from the point of view of occupational infection control.

Diagnostic procedures, surgical procedures, immunizations, research activities, and the manufacturing of biological materials all contribute to what is known as biomedical waste (BMW). All items that have come into contact with potentially infectious fluids, such as blood, urine, or other bodily fluids, are included. Waste poses a significant infectious risk, especially in low income countries. There is a problem with waste management knowledge or concern in the Eradah Complex in Jeddah City. Because of this, a research problem has been established. Biomedical waste results from a wide range of medical activities, including diagnosis, surgery, vaccination, laboratory study, and the production of biological products [4].

Also, there are some items that must be declared and disposed of as bulky waste. Of course, dressers, sofas, desks, pianos, and furniture are bulky waste, but suitcases, golf clubs, and blankets are also classified as bulky waste. Items such as bulky waste and fees for collection and transportation are determined by each local government's waste management ordinance and must be dealt with accordingly. A fine of up to 1 million KRW is imposed for illegal disposal of bulky waste. Proper management of medical waste is important to prevent secondary infection due to prolonged viral infection. "Medical waste" refers to the waste that may infect the human body generated by hospitals and testing institutes. It is sorted separately, stored in a dedicated container, collected and transported by a dedicated vehicle, and incinerated in a dedicated processing facility. The process from generation to processing is managed by an electronic information system using radio frequency identification. In the event of a quarantine due to an infectious disease such as COVID-19, it is classified as 'quarantine medical waste' and managed [5].

Methods

Research methodology

A descriptive approach will be utilized for this investigation. The goal of this strategy is to compile data that can be utilized to define a group or phenomena in its entirety [6]. They can use it to organize the timing, location, and methods of their studies. Medical staff at Eradah Complex in Jeddah City will be surveyed online to gather data on waste management practices there. Medical staff at Eradah Complex in Jeddah City will make up the bulk of the study's sample as it relates to the topic of waste management. As a result, all potential participants must be at the average level of the study. Research survey questions will be distributed electronically. Given the ongoing global fight against the COVID-19 pandemic and the limited time available, this technology is better suited and more cost effective. The Depression, Anxiety, and Stress Scale 21 will be used to structure the survey's questions (DASS-21). The sample population will consist of healthcare workers.

Study design: Descriptive research design.

Study duration: One year.

Sample of the study: Healthcare providers in Eradah Complex in Jeddah City.

Study setting: Eradah Complex in Jeddah City, Saudi Arabia.

Target population: Healthcare providers in Eradah Complex in Jeddah City.

Sample size: 125 Healthcare providers in Eradah Complex in Jeddah City.

Inclusion criteria: Healthcare providers in Eradah Complex in Jeddah City.

Exclusion criteria: Any other sample outside Eradah Complex.

Study variables:

- **Dependent variable:** Assessing knowledge, attitude, and practice of healthcare personnel.
- **Independent variable:** Impact on Eradah Complex in Jeddah City.

Statistical analysis

Independent samples t-tests and other appropriate statistical analyses will be used to examine the correlation between the different variables of interest.

Data collection/data source

Irada Complex in Jeddah will serve as the site for an assessment of healthcare workers' biomedical waste management knowledge, attitudes, and practices. Each member of the study community will receive an electronic letter with a link to the prepared questionnaire. Researchers will wait for two weeks to get completed questionnaires. However, in order to boost the response rate of the study, a reminder will be given to each responder at the end of the first week to remind them to complete out the questionnaire on time. The efficacy of the procedures for gathering the data will be evaluated in a preliminary pilot study.

Questionnaires/data Sheets from other authors (Copyrights or permission to use, or open access for academic and research purposes)

Free for the use of healthcare workers and researchers, the person collecting the data should ask the questions on this form.

Ethical considerations

Throughout the course of the research, several ethical concerns will need to be addressed and settled. Two of the most crucial considerations are the privacy of information and the protection of individual rights. All information provided by study participants should be treated confidentially, as specified by. Participants will receive a consent letter that describes how the data will be used and details the University's strict rules for protecting data.

Potential subjects in a study on such a sensitive topic would expect to be briefed on the study's goals and offered the opportunity to opt out if they are uncomfortable with them. Their involvement in the study is also expected to be fully optional. Therefore, all participants will understand that they are under no obligation to continue taking part in the study, and can withdraw at any moment. Additionally, they will be certain that their confidentiality will be maintained during the procedure. Our approach will be reviewed by the King Saud University Ethics Committee before any data is gathered [7].

Results and Discussions

Variables	Categories	N	%
Age group	From 20 - 25 years	18	14
	From 26 - 35 years	48	38
	From 36 - 45 years	41	33
	More than 45 years	18	14
Nationality	Saudi	103	82
	Non-Saudi	22	18
Gender	Male	89	71
	Female	36	29
Marital status	Single	37	30
	Married	81	65
	Other	7	6
Years of experience	From 1 - 5 years	16	13
	From 6 - 10 years	59	47
	More than 10 years	50	40
Specialty	Internal medicine	2	2
	Psychiatry	6	5
	Nursing	72	58
	Radiology	5	4
	Laboratory	5	4
	Others	35	28
Where do you work	Internal wards	29	23
	ER	32	26
	OPD	24	19
	Dental	2	2
	Others	38	30

Table 1: Demographic data (N = 125).

The results showed the participants were 125, most of them 38% aged from 26 - 35 years, 33% from 36 - 45 years, 14% from 20 - 25 years, and more than 45 years, 82% were Saudi, 18% Non-Saudi, 71% male, 29% female, 65% were married, 30% single, 6% other, 47% had experience years from 6 - 10 years, 40% more than 10 years, 13% from 1 - 5 years, the specialty 58% was nursing, 5% psychiatry, 4% radiology, and laboratory, 2% internal medicine, 28% others, 26% were working in ER, 23% in internal wards, 19% in OPD, 2% in dental, 38% others.

Variables	Items number	Mean	SD	Level
Knowledge	6	3.5	1.41	58.3%
Practices	4	0.78	0.278	78%

Table 2: The level of knowledge and practice.

The result showed the knowledge level was 58.3%, with mean 3.4, and the practice level was 78% with mean 0.78.

Variables	Categories	Practices	Knowledge
		Mean	Mean
Age group	From 20 - 25 years	0.71	3.39
	From 26 - 35 years	0.78	3.35
	From 36 - 45 years	0.84	3.71
	More than 45 years	0.74	3.44
	F	1.112	0.507
	P-value	0.347	0.678
Nationality	Saudi	0.78	3.54
	Non-Saudi	0.76	3.25
	T	0.348	0.958
	P-value	0.729	0.340
Gender	Male	0.79	3.49
	Female	0.76	3.47
	T	0.417	0.079
	P-value	0.687	0.937
Marital status	Single	0.73	3.41
	Married	0.81	3.56
	Other	0.68	3.14
	F	1.638	0.364
	P-value	0.199	0.695
Years of experience	From 1 - 5 years	0.91	3.75
	From 6 - 10 years	0.75	3.36
	More than 10 years	0.77	3.56
	F	1.994	0.599
	P-value	0.141	0.551
Specialty	Internal medicine	0.88	4.5
	Psychiatry	0.96	4.17
	Nursing	0.78	3.5
	Radiology	0.55	3
	Laboratory	0.5	2.2
	Others	0.81	3.54
	F	2.483	1.486
	P-value	0.035	0.199
Where do you work	Internal wards	0.73	3.24
	ER	0.79	3.53
	OPD	0.7	3.67
	Dental	0.63	3
	Others	0.87	3.55
	F	1.941	0.400
	P-value	1.08	0.808

Table 3: The difference in the knowledge and practice level according to demographic data.

The results showed there is a significant difference in the practice level due to specialty ($F= 2.483$, $p\text{-value} = 0.035$), but there is no significant difference due to age, nationality, gender, marital status, experience years, and work place, and there is no significant difference in the knowledge level due to age, nationality, gender, marital status, experience years, specialty, and work place.

r	p-value
0.315	0.000

Table 4: The correlation between practice level and knowledge level.

There is a significant positive moderate correlation between practice level and knowledge level ($r = 0.315$, $p\text{-value} < 0.001$).

The result showed the knowledge level was 58.3%, with mean 3.4, and the practice level was 78% with mean 0.78, there is a significant difference in the practice level due to specialty, but there is no significant difference due to age, nationality, gender, marital status, experience years, and work place, and there is no significant difference in the knowledge level due to age, nationality, gender, marital status, experience years, specialty, and work place, and there is a significant positive moderate correlation between practice level and knowledge level.

Discussion

While the amount of medical waste continues to increase due to the addition of viruses to an aging society, it is difficult to set up treatment facilities due to the opposition of the population, and the concern about medical waste disposal remains. Due to the nature of medical products, the use of disposable products is inevitable, so it is not realistic to reduce medical waste. In order to treat medical waste with limited facilities, it is necessary to prevent the random mixing of general waste and medical waste. For stressful reasons, there are cases where general waste is not classified as medical waste and treated as medical waste. Not only medical institutions, but patients, parents and visitors should all pay attention to the separate discharge of medical waste, which is the best way to deal with rapidly increasing medical waste and reduce unnecessary treatment costs [5].

Since the problem of medical waste is related to public health, it cannot be said that the Ministry of Health and Welfare is irrelevant. We need a plan to let the carrier lose, and if necessary, it is necessary to consider the public health center exercising some powers to manage and supervise the collection companies and transportation [3]. Study results proved that one of the aspects that has had to be rethought is that of waste. In a quarantine situation, with countries stopping most activities, it was necessary for the collection of waste to be determined as essential. A hypothetical significant accumulation of waste without being collected would undoubtedly increase the health risk, becoming a danger to the health of people and the environment. In addition, the recycling chain, necessary to reduce the volume of waste and to manufacture new products, would be interrupted [8-10].

Research Limitations

The current study investigates the knowledge, attitudes and practices of health care personnel regarding waste management in the Eradah complex in Jeddah. This study was conducted in 2022/2023 in the city of Jeddah. This study was limited to the process of evaluating the knowledge, attitudes and practices of a group of employees in the field of health care. Especially with regard to waste management because it has a negative impact on health care if it is not managed well.

Recommendations

- Personnel handling laundry and waste should receive infection prevention training.
- Staff handling laundry wear appropriate personal protective equipment, and perform hand hygiene after removing.

- Handle in accordance with relevant regulations (Laundry Management Regulations for Medical Institutions, Waste Control Law).
- The body fluids or excreta of patients shall be disposed of into the sewage system in accordance with the sewage disposal regulations. However, in the process of disposing of bodily fluids or feces, care must be taken not to pollute the environment or people.
- If it is impossible to put the food waste generated by the entire medical institution into a container designated for medical waste, which is disinfected and then incinerated (local government incinerator or industrial waste incinerator).

Conclusion

Hospital waste can cause pollution and diseases if not handled correctly. The infectious waste, especially acute tools, is a threat to those who may deal with. According to WHO estimates (WHO), the global disease burden because of vocational exposure among health workers is compatible with a large number of cases of hepatitis and 2.5% for HIV infection. Hospitals also produce chemical and pharmaceutical waste and radiology in small quantities requiring special treatment. On the other hand, hospitals also generate large quantities of common waste such as packaging, paper, food and so on the waste. A large hospital can produce up to tons of waste daily.

These materials end up in the air where they can be transported thousands of kilometers and pollute the environment on a global scale, or they end up as ash, which is generally disposed of without regard to the load of persistent toxic pollutants they contain.

If hospital waste is not incinerated, it may end up with common waste. Where this happens, cartons are in danger every day, especially in countries where some items in the waste, for example syringes, can be resold for illegal use. In the poorest countries, one of the difficulties in ensuring the proper management of hospital waste is the lack of funds.

Many of the donors who do essential work to enhance health care services provide hospital supplies and organize vaccination programs, but they do not anticipate measures to manage the waste generated in these institutions. The World Health Organization has officially asked all donors to take care to allocate enough budget to prevent people or the environment from suffering the consequences of the waste generated by these vital projects. Planning and managing processes and resources within the ecological environment is essential to minimize risks and facilitate management in the next phases. This includes the availability of cleaning items and equipment for waste segregation, transportation and temporary storage, to the implementation of waste management plans that include staff training, awareness campaigns, and planning and monitoring mechanisms, among others.

Bibliography

1. Ali M., *et al.* "Hospital waste management in developing countries: A mini review". *Waste Management and Research: The Journal of the International Solid Wastes and Public Cleansing Association, ISWA* 35.6 (2017): 581-592.
2. Al-Khatib IA., *et al.* "Medical waste management at three hospitals in Jenin district, Palestine". *Environmental Monitoring and Assessment* 192.1 (2019): 10.
3. Ilyas S., *et al.* "Disinfection technology and strategies for COVID-19 hospital and bio-medical waste management". *The Science of the Total Environment* 749 (2020): 141652.
4. Kumar J., *et al.* "Knowledge, attitude, and practices of healthcare workers regarding the use of face mask to limit the spread of the new coronavirus disease (COVID-19)". *Cureus* (2020).
5. Capoor MR and Bhowmik KT. "Current perspectives on biomedical waste management: Rules, conventions and treatment technologies". *Indian Journal of Medical Microbiology* 35.2 (2017): 157-164.

6. Miksza P and Elpus K. "Descriptive research design". Oxford Scholarship (2018).
7. Naufel KZ and Edwards VM. "Ethical considerations of social change research". *Ethical Considerations of Social Change Research* (2022).
8. Adu RO., *et al.* "Medical Waste-Sorting and Management Practices in Five Hospitals in Ghana". *Journal of Environmental and Public Health* (2020): 2934296.
9. Woromogo SH., *et al.* "Assessing knowledge, attitudes, and practices of healthcare workers regarding biomedical waste management at Biyem-Assi District Hospital, yaounde: A cross-sectional analytical study". *Advances in Public Health* (2020): 1-7.
10. Odonkor ST and Mahami T. "Healthcare waste management in Ghanaian hospitals: Associated public health and environmental challenges". *Waste Management and Research: The Journal of the International Solid Wastes and Public Cleansing Association, ISWA* 38.8 (2020): 831-839.

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