

## Placement of Trash Bins in The Interior of The Hospital Emergency Department to Increase Comfort, Effectiveness, and Work Efficiency

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### Abstract

*Hospital waste management will reduce the risk of disease for patients and paramedics. In addition, the comfort of the hospital service room (IGD) is an important element that does not only affect the image of the hospital. For this reason, it is necessary to optimize waste management in hospital services, especially in the auction room, such as the emergency room. The aim is to place the trash in the interior of the hospital emergency department to increase comfort, effectiveness, and work efficiency. The method used in conducting systematic review uses a scrum based on the PRISMA (Preferred Reporting Item for Systematic Review and Meta-Analysis) protocol which includes identification, screening, eligibility and included. From the 5 articles analyzed, it was found that health services in the ER are a very important element in dealing with patients who are in an emergency, it is necessary to maintain the ER environmental conditions so that they are not polluted by medical waste because psychologically it can affect patients, and display a good image for the hospital. the. A sense of comfort (comfort) in the waiting room can be achieved through the placement of trash cans in the interior according to their use. Factors that need to be considered such as garbage storage, color, labels, and lighting have a psychological influence to support the creation of a sense of comfort for patients and paramedics in order to increase work efficiency and effectiveness.*

**Keywords:** *Waste management; hospital; emergency room; convenience; paramedics; work effectiveness and efficiency;*

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## **Introduction**

Emergency Installation/Emergency Installation (IGD) is a service provided for the needs of patients in an emergency condition and must be immediately taken to the hospital. While the goal of the ER is to achieve optimal health services for patients so as to prevent the risk of death due to infection by exposure to unorganized waste. With the handling of hospital waste, especially in the emergency room that is not optimal, it can pose a risk of death to patients, especially patients who are seriously injured.

The World Health Organization (WHO, 2000) defines hospitals as a source of waste generation in the diagnosis, treatment, or immunization of humans or animals, in related research, or in biological testing, including but not limited to: soiled or bloodstained bandages, plates culture and other glassware (Farzadkia et al., 2009). Globally, approximately 5.2 million people (including 4 million children) die each year from waste-related diseases. This is related to the increase in the use of single-use medical products that contribute greatly to the amount of medical waste generated in hospitals, especially from the emergency room (Syed et al., 2012).

Waste generated from hospitals consists of 80% general domestic waste, 15% pathological and infectious waste, 1% sharp objects, 3% chemical and pharmaceutical waste, and less than 1% special waste which includes radioactive, cytotoxic, pressurized, broken thermometer and used battery (Al-Khatib et al., 2009). According to WHO (1999) Between 75% and 90% of the waste generated by healthcare providers is non-risk or “general” healthcare waste, comparable to domestic waste. It mostly comes from the administrative and housekeeping functions of health care companies and may also include waste generated during the maintenance of health care settings. The remaining 10–25% of health-care waste is considered hazardous and can cause various health risks (Pruss & Townend, 1999).

Hospital waste poses a variety of health and safety problems for patients and health care workers as well as for people outside the hospital area. Safe and effective hospital waste management is not only a legal requirement but also a social responsibility requirement. To keep the environment clean and healthy, hospital waste must be collected, sorted, stored, transported, treated and disposed of scientifically (Farzadkia et al., 2009). This problem, of course, affects the comfort of health workers in working so that services for patients are hampered, and ultimately the quality of service is not good.

Another aspect that also needs attention in order to improve the efficiency and effectiveness of services in hospitals is adequate facilities and infrastructure, one of which is related to the layout of the trash can in the emergency room. Therefore, it is necessary to have waste management in the ER in accordance with applicable standards, so strategic steps for handling waste are alternative disposal according to the type of waste so that the waste produced is easily managed from the source of the waste to the final disposal site (Azeem et al., 2018).

Efforts to improve quality health services are an effective measure of satisfaction for maximum patient care. To meet the needs and desires of patients so that they can obtain satisfaction, it can ultimately increase trust in hospitals through excellent service. Through excellent service, hospitals are expected to generate competitive advantage with quality, efficient, and innovative services (Ekinici & Esato lu, n.d.). These changes in hospitals are seen as service delivery styles, organizational characteristics, health service portfolios, building adaptation and sensitivity to the environment.

Clean and healthy environmental conditions in the ER will improve the performance of health care workers regarding work results, work speed, work behavior carried out in accordance with patient expectations and timeliness in completing work (Chua et al., 2016). With work standards, health workers can measure how far the services they have provided. This will enable health workers to provide more targeted services.

One of the hazardous wastes is solid medical waste, such as infectious waste, pathological waste, sharp object waste, pharmaceutical waste, cytotoxic waste, chemical waste, radioactive waste, pressurized container waste, and waste with high heavy metal content<sup>8</sup>. The hospital environment as one of the public health service facilities is a gathering place for sick and healthy people so that it can become a place for disease transmission and allows environmental pollution and health problems (Ugbor & Kalu, n.d.).

Hospital activities produce various kinds of waste in the form of liquid, solid and gas. This has the consistency of the need for hospital waste management as part of environmental health management activities that aim not only to protect paramedics and patients but also to protect the people who live around the hospital. The hazard comes from environmental pollution originating from hospital waste (Ali et al., 2015).

To reduce environmental pollution, special handling of hazardous hospital waste is required. In particular, officers involved in handling medical waste must be provided with appropriate PPE (personal protective equipment) in handling such waste. Personal protective equipment such as handcuffs, masks, work clothes, shoes and helmets. But sometimes the PPE is ignored by workers in managing waste (Townend & Vallini, 2008). It is necessary to use PPE because hospital waste is considered a link in the chain of transmission of infectious diseases (very dangerous waste), waste can become a place for disease organisms to accumulate and become a nest for insects and rats. In addition, hospital waste also contains various toxic chemicals and sharp objects that can cause health problems and injury (Jaafari et al., 2015). Management of medical and non-medical solid waste in hospitals is very necessary for the comfort and cleanliness of hospitals, because they can break the chain of spread of infectious diseases, especially nosocomial infections.

Hospital waste management is very important because of its infectious and hazardous nature which can cause unwanted effects on human health and the environment. Government regulations and increasing public awareness regarding the issue of health care waste have forced health care units to adopt appropriate strategies to manage the waste generated mainly from the ER (Muduli & Barve, 2012). Good waste management does not only include sharp medical waste but includes hospital waste as a whole.

Seeing that the potential threat of hospital waste is very large, it is important to have hospital waste management. Management benefits Hospital waste management plays an important role in preventing outbreaks of infectious diseases and protecting the community from the transmission of diseases such as Reduction of medical costs due to reduced cases of infection, clean and healthy environment in hospitals, low incidence of public and occupational health hazards, low impact on the ecological system, prevention of epidemic potential, lower incidence of public health and occupational hazards, improvement of public health and a cleaner environment, improvement of the image of the establishment of health services and improvement of quality of life (Hirani et al., 2014).

Hospitals provide protection for patient safety, the community and the hospital environment are very important which not only affects the image of the hospital, but also for patients (Muduli & Barve, 2012). An uncomfortable emergency room does not help relieve patient suffering even though the time spent in the waiting room tends to be the most

compared to other rooms or places. Psychologically comfortable ER room can affect patients, and show a good image for the hospital.

## **Method**

### **1. Search strategy**

The method used in conducting systematic review uses a scrum based on the PRISMA (Preferred Reporting Items for Systematic Review and Meta Analysis) protocol which includes identification, screening, eligibility and inclusion. PRISMA provides as many as 66 reference sources (2011-2021) in writing a systematic review with the keywords trash bin, hospital emergency room interior, comfort, effectiveness and work efficiency. This systematic review is limited to research in the form of articles. The articles used are research articles that have been reviewed and published in English-language journals. In managing articles obtained from online databases such as Google, Google Scholar, PubMed, Emerald Insight, DOAJ as well as several references from WHO (World Health Organization).

### **2. Keywords**

Journal search uses keywords and Boolean operators (AND, OR NOT or AND NOT) which are used to expand or specify the search, making it easier to determine which journal to use. The keywords used in the journal search were trash cans, hospital emergency room interiors, comfort, work effectiveness, and efficiency.

### **3. Inclusion and Exclusion**

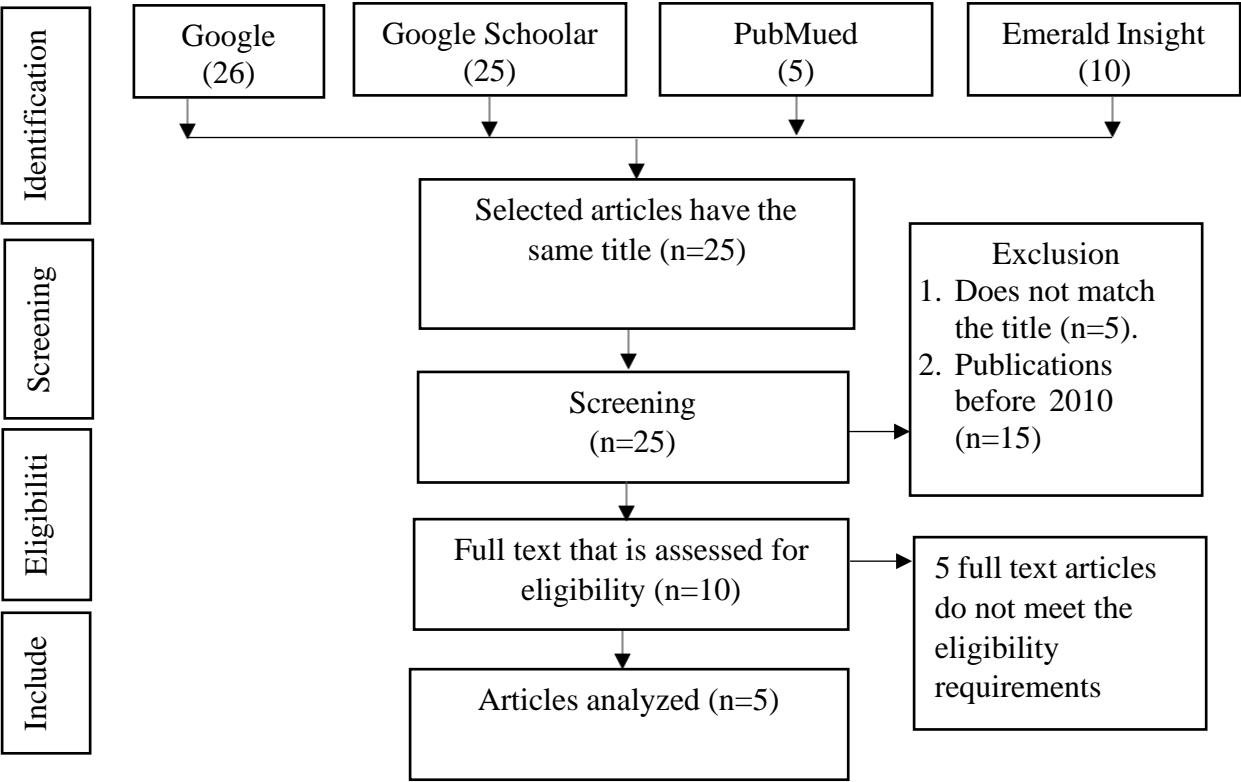
The inclusion criteria in this search include: Articles can be downloaded in full text, have peer reviews, the article content is relevant to the topic of this article's review, in English, and published in 2011-2021. As for the inclusion criteria, namely: the article does not meet the components of a good article (consisting of Abstract, Introduction, Methods, Results, Discussions, Implications, and References), the article is a review and the content of the article is not relevant to the topic.

### **4. Study selection and quality assessment**

Based on the results of a literature search through Google, Google, Scholar, Emerald Insight, PubMed, DOAJ, according to these keywords. After the articles were collected and screened, as many as 66 articles were executed because they were published in 2011 and below. Assessment of the feasibility of journals according to the title amounted to 25 journals. Then the journals were selected based on 4 eligibility criteria (inclusion and exclusion) obtained 15 journals. Furthermore, there are 5 articles that are eligible for further analysis according to the formulation of the problem and objectives which are then reviewed.

### **5. Article Selection**

The protocol and evaluation of the Systematic Review will use the PRISMA checklist to determine the selection of studies that have been found and adapted to the objectives of Systematic Review.



**Table 1.3** PRISMA Framework

**6. Synthesis of data**

Systematic Review was synthesized using a narrative method by grouping, similar extracted data according to the measured results to answer the objectives. The data that has been collected is then looked for similarities and differences and then discussed to draw conclusions.

**7. Data analysis**

At this stage, the data is analyzed and the results will answer the purpose of writing a systematic review, namely a non-medical waste management system in health care facilities from 2011-2021.

**Results**

The search results shown in table 1.4 are grouped by journal type to make it easier to see the type of data or journal type obtained through the search process, as follows:

Table 1.4. Search result		
No.	Journal Name	Publication Year
1.	Indian Journal of Medical Microbiology	2017
2.	Environmental Engineering and Management Journal	2013
3.	Science Journal of Public Health	2015
4.	International Journal for Quality Research	2016
5.	International Journal of Healt and Technology	2017
6.	International Journal of Politics and Good Governance	2019
7.	Public Health and Preventive Medicine	2015
8.	Elsevier	2016

9.	Waste Management & Research	2016
10.	Benchmarking: An International Journal	2019
11.	Iran Journal Public Health	2015
12.	International Journal of Waste Management and Technology	2014
13.	International Journal of Enviromental Research and Public Health	2020
14.	European Review for Medical and Pharmacological Sciences	2016
15.	Health Science Journal	2013

Based on the results of the search for articles that were collected from several databases mentioned above and screened based on inclusion and exclusion criteria, 5 articles were analyzed further. Of the 5 articles analyzed, it explains that hospital waste is classified as hazardous, one of which is solid medical waste consisting of infectious waste, pathological waste, sharp object waste, pharmaceutical waste, cytotoxic waste, chemical waste, radioactive waste, pressurized container waste, and waste. with high heavy metal content. The hospital environment as one of the public health service facilities is a gathering place for sick and healthy people so that it can become a place for disease transmission and allows environmental pollution and health problems including health impacts such as being stabbed with sharp objects, hepatitis, and even HIV.

From the 5 articles analyzed, it was also found that waste treatment is basically an effort to reduce the volume, concentration, or danger of waste, after the production process or activity, through physical, chemical, or biological processes. In the implementation of waste management, the first effort that must be done is preventive efforts, namely reducing the volume of hazardous waste released into the environment which includes efforts to manage waste at its source, as well as efforts to utilize waste. 5 articles were analyzed as in table 1.4.

**Table 1.4.** Article Analysis

No.	Article name
1.	Waste management in hospital emergency units, 2013.
2.	Current Hospital Waste Management Practices in Pakistan: Case Study and Curative Measures, 2015.
3.	Assessment of Health Care Waste Segregation Practice and Associated Factors of Health Care Workers in Gondar University Hospital, North West Ethiopia, 2013.
4.	Health Care Waste Management in Uganda -A Case Study of Soroti Regional Referral Hospital, 2014.
5.	Health care waste management practices among healthcare workers in healthcare facilities of Gondar town, Northwest Ethiopia, 2013.

The placement of trash bins in the interior of the hospital emergency department aims to protect the public, especially patients and paramedics from the dangers of environmental pollution originating from hospital waste.

**Discussion**

The Emergency Room is one part of the hospital that provides initial treatment for patients who are sick or injured and who can threaten their survival. The emergency room as a place for overcoming medical actions must be designed to optimize medical service activities. The main criteria for designing the ER are the ease of access and circulation from the outside to the inside of the interior. So, hospital environmental management is very helpful in creating policies that preserve, protect, and monitor so that environmental

pollution does not occur due to waste (garbage) generated from the emergency room (Longe & Williams, 2006).

The benefits of placing a trash can in the interior of a hospital emergency department are to help visitors to health facilities reduce the feeling of discomfort when they are placed in a waiting position and also that paramedics feel comfortable in providing health services effectively and efficiently. According to Sanwal A, et al. (2015) hospitals must have good hygiene and keep their premises clean (interior). The atmosphere is generally healthy and periodic mopping works. The emergency room has a high standard of cleanliness and a sterilization system so that it does not pose a risk to the community (patients) (Capoor & Bhowmik, 2017). Therefore, hospital waste management (ER) is very important, so the placement of trash bins in the interior of the ER is based on the type of waste as shown in Figure 1.5 below:



**Figure 1.5** Trash Can

Types of Waste Containers and Labels in hospitals, both private and government-owned, must meet the following requirements:

1. Made of strong material, light enough, rust-resistant, leak-proof, anti-damage, water-resistant and has a smooth surface on the inside.
2. It's not easy to open so unauthorized people can't open it.
3. Medical waste containers must meet the requirements with the use of containers and labels as shown above.



**Figure 1.6** Storage and Transport

Storage and transportation of hospital waste, in general, must meet the following requirements:

1. Stored in a place that has the condition that it is made of strong material, light enough, rust-resistant, water-resistant, and has a smooth surface on the inside.

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2. In a strategic place or location, evenly distributed in size according to the frequency of collection with color-coded bags that have been determined separately.
3. Placed in a dry or easy to dry place, the floor does not seep and washing facilities are provided.
4. Safe from irresponsible people, from animals, and free from insect and rodent infections.
5. Affordable by garbage collection vehicles

According to Avier M. et al (2014) Hospitals should be considered a unique place compared to a 'normal' home environment because it can pose a potential risk of infection due to waste generated from health service activities in hospitals. For this reason, it is necessary to have good waste management or according to health standards (Mesfin et al., 2014). Waste management can endanger care staff, employees who handle healthcare waste, patients and their families, and local residents. In addition, improper treatment or disposal of waste can cause environmental pollution. Improper disposal of medical waste can cause damage to humans by sharp instruments, diseases transmitted to humans by infectious agents, and contamination of the environment by toxic and hazardous chemicals (Muhwezi et al., 2014).

Today many countries are designing strict management systems for the safe handling and disposal of hospital waste to minimize risks. In developed countries, technologies such as autoclaving and incineration are used for the treatment and final disposal of medical waste. medical waste has not received adequate attention (Patwary et al., 2011), Lack of awareness that psychologically comfortable waiting rooms can affect patients, and display a good image for the hospital.

### **Conclusion**

Efforts to handle hospital waste, user factors need to be considered as a benchmark in designing the interior of the waiting room at the hospital (IGD). A sense of comfort in the waiting room can be achieved through an appropriate interior arrangement for its users. Factors that need to be considered such as garbage storage, color, labels, and lighting provide psychological influences that support the creation of a sense of comfort for patients and paramedics.



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