

The Effectiveness of Facility Management and Safety (FMS) Training in Improving Staff Knowledge at Clinic X in Makassar City, Indonesia



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ABSTRACT: Health care facilities including clinics are required to provide a safe and comfortable environment for patients, staff, and visitors. In addition, facility and safety governance is one of the assessment standards in clinic accreditation, so it is important that all staff have good knowledge of Facility Management and Safety (FMS). This study aims to determine the effectiveness of FMS training in improving staff knowledge at Clinic X Makassar City. This type of research is quantitative using pre-experimental design type one group pre-test post-test method. The sample size was 58 respondents using total sampling. Data analysis with Wilcoxon Test. The data collection instrument used a questionnaire which had previously been tested for validity using Pearson Product Moment and reliability test with Cronbach Alpha and data normality test. The results showed knowledge in the pre-test with a good category of 29.3%, moderat 39.7%, and poor 31%. Post-test scores were 93.1% good, 1.7% moderat, and 5.2% poor. Wilcoxon test showed the effect of FMS training on improving staff's knowledge ($p = 0.000$). FMS training is effective in improving staff knowledge at Clinic X therefore training similar topics needs to be scheduled periodically.

KEYWORDS: Facility; Safety; Training

I. INTRODUCTION

Healthcare facilities have their own uniqueness that is different from other facilities. They provide complex multidisciplinary services. Each country's approach to its healthcare system varies depending on its level of development and cultural structure (Lavy et al, 2023). Healthcare facilities play an important role in providing essential health services to the community. These facilities must not only provide high-quality services but also ensure the safety and well-being of patients, staff, and visitors (York et al, 2015). Effective facility management and safety practices are essential to maintaining a safe and functional healthcare environment. A clinic is a health care facility that organises individual health services that provide basic and/or specialised medical services (Ministry of Health, 2014). Clinics are characterized by the provision of comprehensive and integrated health services at a single location, delivered by a team of professionally trained experts in their respective fields. The quality of healthcare services is directly associated with the accreditation status of health centers, which is contingent upon meeting specific requirements pertaining to buildings, infrastructure, equipment, and the creation of a safe environment for all stakeholders, including those with physical limitations (Farihah et al., 2024). Facility management is a multifaceted field that integrates diverse processes to maintain and enhance the agreed-upon services, which support and bolster the effectiveness of an organization's core operations (Lie et al., 2020). Facility management encompasses a variety of activities, such as maintenance, space utilization, security, and environmental health and safety measures.

Clinic accreditation standards require each clinic to provide safe, functional and supportive facilities for patients, families, staff and visitors. Clinics must also provide medical equipment in accordance with statutory requirements. Efforts to improve safety and facilities through facility risk management include safety and security, hazardous and toxic materials and hazardous waste, disaster management, fire protection systems, medical equipment, utility systems, and domestic waste and waste management (Ministry of Health, 2022). One study emphasizes the importance of healthcare workers having adequate knowledge of proper disposal methods for healthcare waste (Olaifa et al., 2018). Another study in Tanzania indicates that a lack of training in healthcare waste management poses risks, and continuous training is crucial for enhancing knowledge among healthcare staff

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(Kuchibanda & Mayo, 2015). Accreditation by organizations like the Joint Commission International can significantly enhance a clinic's awareness and capacity to improve the quality of healthcare (Hwang et al., 2021). Human resources (HR) are the main asset for an organisation and need to be nurtured and become the main focus, so the success of an organisation based on workforce management plays an important role. HR must be able to contribute as much as possible to achieve organisational goals. The focus on human resource management is to motivate officers to make improvements that will enhance their performance at work. If this continues, staffs will be able to perform at their best (Fitriani et al., 2022). Enhancing staff performance can be achieved through training interventions. Effective training programs are essential in equipping healthcare personnel with the requisite knowledge and skills to maintain a safe and efficient work environment. By providing appropriate training and development opportunities, healthcare services can bolster the capabilities of professionals, enabling them to function more effectively (Hashim et al., 2018)

One of the clinic's accreditation standards requires facility and safety management, so Makassar City Clinic X conducted Facility Management Safety (FMS) training for all staff. This is the responsibility of everyone in the clinic, not just the FMS team. Research at Pesantren II Public Health Centre Kediri showed that there was an increase in staff knowledge after FMS socialisation and management of hazardous and toxic waste (Farihah et al., 2024). Meanwhile, research at Sultan Agung Islamic Hospital Semarang shows that the socialisation has not been effective because the staff's knowledge of risk management is still low so that the implementation of risk management still has many obstacles, one of which is the aspect of human resources (Yulianingtyas et al., 2016).

One of the obstacles to the fulfilment of FMS standards based on the National Standard for Hospital Accreditation First Edition is the aspect of human resources which includes the limited number of human resources, lack of knowledge about Occupational Health and Safety (OHS) which results in low awareness in its implementation (Lie et al., 2020). An evaluation of the implementation of facility management and safety at Mutiara Sukma Mental Hospital in West Nusa Tenggara shows that there is a need for improvement in the implementation and socialisation of programmes such as the Hospital Disaster Plan, Contractor Safety Management, and fire protection systems, in addition, improving human resource capacity, managerial commitment, Occupational Health and Safety structures, and clarity of funding sources are still an obstacle (Haryandi et al., 2024). FMS training is the first training related to facility and environmental safety conducted for all staff at Clinic X, so researchers are interested in examining the effectiveness of facility management and safety training on staff knowledge at Clinic X Makassar City.

II. METHOD

The type of research is quantitative using a pre-experimental design type one group pre-test post-test method. This design involves measuring the knowledge of a group of subjects before and after an intervention. In this case, FMS training to determine the training's impact. This research was conducted at Clinic X Makassar City, Indonesia in March 2025 with a sample of health and non-health staffs consisting of physiotherapists, occupational therapists, speech therapists, nurses, midwives, health analysts, public health workers, sanitarian and other non-health workers. The sample selection technique used Total Sampling. The inclusion criteria for the sample were respondents who filled out the pre-test and post-test questionnaires and attended the training in full, while the exclusion criteria were respondents who did not fill out the pre-test and/or post-test questionnaires completely and did not attend the training until completion. The sample selection technique used Total Sampling with a total of 58 respondents. The total number of training participants was 62 people, but 58 people met the inclusion criteria.

Measurements were taken before the Facility Management and Safety training (Pre-test) and after the training (Post-test). Data was collected using a questionnaire on Google Form, which was accessed by scanning a QR code or using a link. The questionnaire consisted of 10 questions regarding the material presented during the FMS training, including fire safety, hazardous materials and waste management, and emergency preparedness, with the correct answer worth 1 and the wrong answer worth 0, so the total score ranged from 0-10. The validity of the questionnaire was tested with Pearson Product Moment. If $r_{count} > r_{table}$ or $sig < 0.05$ then the statement is valid. The reliability test of the questionnaire was tested using Cronbach's Alpha. If the value of Cronbach's Alpha > 0.6 , then the questionnaire is reliable.

Data analysis using IBM SPSS Version 27. The data analysis used in this research is descriptive statistical analysis and inferential statistical analysis. Descriptive statistical analysis is used to describe or summarise the data obtained, while inferential statistical analysis is used to draw conclusions or generalisations from the sample to the population (Bradley University, 2020). Univariate analysis to determine the frequency distribution and percentage of each variable. Bivariate analysis using the Wilcoxon Signed Rank Test. A normality test was conducted using the Kolmogorov Smirnov test which showed the data was not normally distributed with $asympt sig < 0.05$. Because the data distribution was not normally distributed, inferential statistical analysis used the Wilcoxon test at the 95% level of significance to compare the knowledge of respondents before and after the FMS training.

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III. RESULT AND DISCUSSION

A. Result

Table 1. Frequency Distribution of Respondent Characteristics at Clinic X in 2025

Characteristics	Frequency	%
Age		
21 – 25	11	19
26 – 30	30	51.7
31 – 35	13	22.4
36 – 40	1	1.7
41 – 45	2	3.4
46 – 50	0	0
≥ 51	1	1.7
Gender		
Male	27	46.6
Female	31	53.4

Table 1 shows that the majority of respondents were aged 26-30 years, 30 respondents, while the group with the least was the 46 – 50 year age group with 0 respondents. Based on gender, the majority were female 31 respondents (53.4%)

Table 2. Normality Test Results of Knowledge Data on Facility Management and Safety for Staffs at Clinic X in 2025

Knowledge	Kolmogorov Smirnov Test		Interpretations
	Statistic	Sig	
Pre-test	0.129	0.018	Not normally distributed
Post-test	0.360	<0.001	Not normally distributed

Table 2 shows that the significance value based on the Kolmogorov Smirnov test shows that the pre-test value is 0.018 and the post-test value is <0.001. Both are < 0.05, so it can be concluded that the pre-test and post-test data are not normally distributed, so the test used to determine the difference in knowledge before and after the training is the Wilcoxon test.

Table 3. Knowledge Categories of Respondents about Facility Management and Safety at Clinic X in 2025

Categories	Pre-test		Post-test	
	n	%	n	%
Good	17	29.3	54	93.1
Moderate	23	39.7	1	1.7
Poor	18	31	3	5.2

Table 3 shows there was an increase in the good knowledge category after the training, with 93.1%. A drastic decrease in the moderate knowledge category indicates that most of the officers who were previously in this category have shifted to the good category after the training. A significant decrease in the poor knowledge category indicates that the training successfully reduced the number of officers with inadequate knowledge.

Table 4. Comparison of Staffs' Knowledge Before and After Facility Management and Safety Training at Clinic X in 2025 using Wilcoxon Test Analysis

Knowledge	n	Min-Max	Mean ± SD	P-Value
Pre-test	58	0-100	51.55 ± 24.55	<0.001
Post-test	58	20-100	92.07 ± 18.04	

Table 4 shows a difference in staff knowledge before and after the Facility Management and Safety Training, with a p-value of <0.001, which is less than 0.05. Additionally, the average score increased from 51.55 on the pre-test to 92.07 on the post-

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test. Based on these results, the Facility Management and Safety Training was effective in improving the knowledge of staff at Clinic X in Makassar City.

B. Discussion

Maintaining the safety and well-being of patients and staff in healthcare facilities necessitates a comprehensive approach to managing the infrastructure and facilities of these institutions (Halawa et al., 2020). Comprehensive safety and security measures, encompassing infection control, hazard communication, and emergency preparedness, are essential for mitigating risks and cultivating a secure environment for the delivery of healthcare services (Rajuskar & Warule, 2020). Effective facility management and safety practices are essential for healthcare operations, fostering a secure and efficient environment for patients, staff, and visitors (Haryandi et al., 2024). The training on Facility Management and Safety utilized traditional instructional methods, such as group discussions covering the management of facility safety and security, handling of hazardous materials and waste, fire safety protocols, emergency and disaster preparedness, medical equipment management, utility system oversight, and FMS education. The community service activities focused on implementing FMS commenced with conducting various analyses to determine the appropriate approach. One key aspect of this implementation was the dissemination of FMS information to all employees at the healthcare facility (Farihah et al., 2024).

The study findings demonstrate an enhanced understanding of the Facility Management and Safety program among the respondents at Clinic X. Participants were able to recognize the key components of FMS, which encompass safety and security, hazardous materials and waste management, disaster response, fire protection systems, medical equipment, utility systems, waste and domestic waste management, as well as staff education and training. Prior research conducted at Deli Medan General Hospital has identified a lack of preparedness among the training team as one of the obstacles in meeting FMS standards (Lie et al., 2020). The implementation of Facility Management and Safety standards in hospitals, as per the Hospital Accreditation Standards, reveals that only 32% of the assessment elements were fully met, while 39% were partially met, and a concerning 67% were not met. Notably, staff education was identified as an assessment element that was not adequately addressed. This is primarily due to the absence of a structured FMS training program and the lack of educational initiatives to introduce the FMS program to the hospital staff (Berliana et al., 2019). Establishing staff familiarity with FMS standards represents a crucial first step in implementing the program within healthcare settings.

Safety briefing is a routine but vital communication platform in various workplaces, especially those with high-risk work, where employees meet to discuss potential risks and preventive measures before starting work. The concept of safety briefings aligns with building a strong safety culture, where open communication and awareness of risks are encouraged (Lammerding, 2016), and employees are equipped with the necessary knowledge and skills to perform their duties safely (Handayani et al., 2014). The study found that participants demonstrated an increase in their understanding of safety briefings, with the average score rising from 7.59 on the pre-test to 9.3 on the post-test. The safety briefings should cover essential information, such as the locations of rooms, elevators, emergency stairs, emergency equipment, evacuation routes, assembly points, brief guidance on emergency response procedures, and relevant regulations. The importance of understanding evacuation routes in a building cannot be overstated, as having this knowledge enables a quick and efficient escape during emergencies such as fires, earthquakes, or other hazardous situations, reducing confusion and panic (Rådestad et al., 2023).

Emergency codes in healthcare facilities are standardized to ensure quick and effective responses from trained medical staff. These codes are a core component of the National Incident Management System (D, 2021). The results of this study indicate that the participants demonstrated a substantial improvement in their knowledge of emergency codes at Clinic X, with the average score increasing from the pre-assessment to the post-assessment. Emergency codes, such as Code Blue for cardiac arrest and Code Red for fire, are crucial for healthcare staff to communicate effectively and respond in a coordinated manner to critical situations. These findings emphasize that familiarity with emergency codes is vital for patient safety, as it enables healthcare professionals to respond appropriately and efficiently to various emergencies (Purnomo et al., 2020).

The findings of this research indicate an improvement in staff knowledge regarding Facility Management and Safety following the training intervention at Clinic X. A comparative study of hospital facility management practices in the United States and Kuwait revealed that US hospitals exhibit stronger preparedness efforts through staff training, qualifications, and certification programs. The US hospital facility management teams tend to be larger, with 35 members compared to their Kuwaiti counterparts. Additionally, the staff in Kuwait are more likely to possess an electrical engineering background, while the US teams demonstrate a more diverse range of expertise. Additionally, the staff in Kuwait are more likely to possess an electrical engineering background, while the US teams demonstrate a more diverse range of expertise (Alsajari, 2024). Furthermore, a study conducted in Saudi Arabia revealed that adherence to the Facility Management and Safety standards established by the Central Board for

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Accreditation of Healthcare Institutions significantly influences the quality of healthcare services. The key factors with a substantial impact were identified as Security, Fire Safety, Hazardous Materials Management, and Medical Equipment oversight (Salami & Bhatti, 2022).

The data indicates the most significant improvement in knowledge occurred in the domain of fire prevention and emergency response. Existing research from Malaysia has highlighted deficiencies in healthcare facilities, such as suboptimal implementation of safety protocols, insufficient water resources, inadequate facility upkeep, and ineffective communication systems, as contributing factors to fire management challenges. Conversely, the implementation of comprehensive fire prevention and management strategies has been demonstrated to effectively mitigate fire-related incidents within healthcare settings (Salim et al., 2023). According to the clinic accreditation standards, the fire protection system entails the deployment of portable fire extinguishers, the clear demarcation of evacuation routes, and the establishment of designated emergency exits. Furthermore, the enforcement of no-smoking policies can also contribute to mitigating the risk of fire incidents (Ministry of Health, 2022)

IV. CONCLUSIONS

The research results and discussion indicate that the Facility Management and Safety Training for healthcare and non-healthcare personnel at Clinic X effectively improved staff knowledge. This is evident from the increase in average pre-test to post-test scores, and the statistical test showing a significant difference in knowledge before and after the training. This increased knowledge is expected to contribute to enhanced safety and security in the workplace, as well as support the achievement of the zero-accident target. To maintain these improvements, regular training should be scheduled.

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