Implementation Analysis of Hospital Occupational Safety and Health (K3RS) Program using the PDCA (Plan-Do-Check-Act) Method at RSUD Al-Ihsan, West Java

Kamalia Adnin *, **Ai Susi Susanti**

Departement of Hospital Administration, Faculty of Health, Politeknik Piksi Ganesha, Indonesia

*Email (corresponding author): piksi.kamaliaadnin.21305060@gmail.com

Abstract

Occupational accidents in the hospital environment are very complex and high-risk. So the K3RS program must be implemented to protect the safety and health of staff, patients, and visitors. This study aims to analyze the Implementation of the Hospital Occupational Safety and Health Program (K3RS) using the PDCA (Plan-Do-Check-Action) method at Al-Ihsan Hospital, West Java. The technique used is descriptive research with a qualitative approach. The research informants were selected using purposive sampling, involving individuals with authority and relevant knowledge regarding OHSRS at Al-Ihsan Hospital West Java. The informants came from various positions, including the Head of Hospital Occupational Safety and Health Installation, the Head of the Disaster Prevention and Control Unit, and the Head of the Occupational Safety and Health Unit. Through the PDCA method, the OHSRS program is evaluated and improved on an ongoing basis, from planning preventive measures, implementing safety measures, and examining effectiveness, to corrective action and improvement. The results showed that the implementation of PDCA in the OHSRS program had a significant positive impact on fire prevention and suppression efforts, as well as improving the safety of staff, patients, and visitors. This study also presents suggestions for further optimization of the PDCA program to improve the management of all risks in the hospital environment.

Keywords: K3RS, PDCA, occupational accident, risk management, Al-Ihsan Hospital West Java

1. Introduction

Safe and quality health services in hospitals are the main expectations for the community, patients, health workers, managers, owners, and regulators. Hospitals are health facilities that provide comprehensive individual health services, including promotive, preventive, curative, rehabilitative, and palliative services, by providing inpatient, outpatient, and emergency services (Law Number 17 of 2023) (1) .

Based on the Decree of the Minister of Health Number: 1087 / MENKES / SK / VIII / 2010 to improve health care facilities, hospitals must integrate K3 efforts. Occupational safety and health is an effort to protect workers in carrying out their duties safely, healthily, and comfortably. The program is also designed to identify, prevent, and reduce the risk of work-related accidents and diseases in the hospital environment. Occupational Health and Safety (OHS) in hospitals is not only related to the health sector, but also includes labor, environment, and education, each of which has its own regulations. OHS also includes public services where these public services have four regulatory instruments, namely juridical / legal instruments, institutional instruments, financial instruments, and human resource instruments (2)

Therefore, the implementation of occupational safety and health can increase public confidence in the quality of services provided. To achieve this goal, various strategic steps have been taken. One of them is the implementation of the Occupational Safety and Health program in hospitals.

The Hospital Occupational Safety and Health (K3RS) implementation program covers various aspects, one of which is fire prevention. Fire prevention in hospitals includes the

provision of fire extinguishers, staff training, evacuation procedures, and periodic risk assessments (3)

Law number 36 of 2009 on health, in Article 165, emphasizes the obligation of workplace managers to carry out various health efforts such as prevention, improvement, treatment, and recovery for the workforce, with the aim of improving hospital quality. One approach to controlling this quality is through the implementation of the PDCA (Plan-Do-Check-Act) cycle (4)

The PDCA cycle is an effective intervention to achieve continuous improvement in an organization. In addition to its simple cycle, another advantage of PDCA is to investigate problems, analyze their causes, and make changes to improve medical quality in various fields (5). Therefore, hospitals must implement occupational health and safety (OHS) efforts in an integrated and comprehensive manner to reduce the risk of occupational diseases and accidents. Workplace management should include prevention, improvement, treatment, and recovery efforts for the workforce, with the aim of improving the quality of hospital services through the application of the PDCA (Plan-Do-Check-Action) cycle (6)

To maintain work safety in the environment of AL-IHSAN WEST JA WA Hospital and prevent fires and other risks, the K3RS Committee/K3RS Team has been formed in accordance with PMK 66 of 2016. This committee has the task of regulating resource needs and hospital workload, both playing a role in the implementation of occupational health and safety, and can provide policy recommendations to hospital leaders with the aim of improving service quality, one of which is in accordance with the MFK 6 standard program (7).

Based on the facts and problems that exist, researchers are interested in conducting research on the Analysis of the Implementation of the Occupational Safety and Health Program (K3RS) by applying the PDCA (Plan-Do-Check-Act) method. This method is expected to facilitate understanding of how the process of planning, implementing, monitoring, evaluating K3RS, as well as follow-up steps from the results of the evaluation carried out.

2. Methods

This research is included in the type of descriptive research with a qualitative approach. Descriptive research aims to obtain a detailed description of an event, individual behavior, or certain conditions in a specific location. To obtain comprehensive and in-depth research data, efforts were made through in-depth interviews and observations. The method used to select informants is purposive sampling, where research informants consist of individuals who have authority and relevant knowledge regarding the analysis of the implementation of the hospital occupational safety and health program (K3RS) using the PDCA (Plan-Do-Check-Action) method at Al-Ihsan Hospital, West Java. Sourced from various positions, including the person in charge of K3RS such as the Head of Hospital Occupational Safety and Health Installation, Head of Disaster Prevention and Control Unit, and Head of Occupational Safety and Health Unit. It aims to analyze the effectiveness of OHSRS program implementation at Al-Ihsan Hospital by using PDCA method, and can identify areas of improvement and provide recommendations for the improvement of OHSRS program in the future.

3. Results and Discussion

RSUD Al Ihsan is a class B Education Hospital owned by the West Java Provincial Government established on December 28, 1998 located on Jl. Ki Astramanggala Baleendah Kab. Bandung. With a total of 617 beds, 36 specialist polyclinics, and 29 executive polyclinics, we always provide excellent service for all patients. RSUD Al Ihsan has been fully accredited with 5 stars by KARS and also received the WBK (Corruption Free Region) predicate and is heading towards WBBM (Clean Bureaucratic Region Serving).

As part of our commitment to provide the best and safest healthcare services, RSUD Al Ihsan also implements the Hospital Occupational Safety and Health (K3RS) program. The K3RS program aims to create a safe and healthy working environment for all medical and non-medical staff, as well as ensuring patient safety. The implementation of the K3RS program at

Al-Ihsan Hospital uses the PDCA (Plan-Do-Check-Action) method, which is a systematic approach to continuous improvement.

Table 1. Informant characteristics

No.	Position	Gender	Age	Length of Service	Educational Background
1	KA. Hospital Occupational Safety and Health Installation	Female	56 th	19 th	S.Ked
2	KA. Disaster Prevention and Control Unit	Female	30 th	6 th	S.KM (K3)
3	KA. Occupational Safety and Health Unit	Male	27 th	3 bl	S.KM

In June 2024, researchers conducted a series of interviews at Al-Ihsan Hospital located in West Java. With the main purpose of the researcher being able to explore information in depth and describe one of the processes of Hospital Occupational Safety and Health Program Implementation (K3RS). In this effort, the hospital applies the PDCA (Plan-Do-Check-Act) method, a systematic approach designed to improve and ensure the sustainability of the OHSRS program at Al-Ihsan Hospital. This study aims to understand how the steps of planning, implementation, checking, and corrective action are carried out at the hospital, as well as to identify factors that influence the effectiveness of the OHSRS program implementation.

3.1. Planning Process of OHS Implementation Using PDCA Method at Al-Ihsan Hospital in Fire Prevention and Countermeasure Efforts

Based on the results of interviews conducted with the informants above, they said that hospitals must always be aware of the risk of fire, because fire is a threat that always exists in the health care and service environment. Therefore, every hospital needs to ensure that everyone in it is safe and secure in the event of a fire, including from smoke hazards. Fire protection also includes handling non-fire emergencies, such as toxic gas leaks that require evacuation.(8). These emergency situations require well-thought-out contingency plans and clear evacuation procedures to ensure the safety of all hospital occupants.

Hospitals must also conduct ongoing assessments to meet safety and fire protection regulations, so as to effectively identify, analyze and control risks to minimize them. This assessment includes regular checks on fire alarm systems, fire extinguishers, as well as periodic training for hospital staff and residents on fire safety procedures. Fire safety risk assessment (FSRA) is one of the important efforts to assess fire safety risks. FSRA assists hospitals in identifying potential sources of fire, assessing the likelihood and impact of fire, and planning appropriate prevention and response measures (9). By doing so, hospitals can create a safer environment for patients, staff, and visitors, and ensure optimal preparedness for fire-related emergencies.

The PDCA cycle is a tried and trusted framework for improving existing processes with an emphasis on continuous improvement. This cycle helps organizations to continuously identify and implement changes that can improve the efficiency and effectiveness of hospital operations. (10). Therefore, the hospital makes an organized OHS (Occupational Safety and Health) implementation plan with the aim of ensuring the safety and health of workers in the hospital. One of the OHS implementation planning programs is conducting fire prevention and suppression using the PDCA (Plan-Do-Check-Act) method.

3.2. Steps to Improve OHS in the Work Environment for Fire Prevention and Countermeasures Using the PDCA Method at Al-Ihsan Hospital

3.2.1 Plan

Planning is an activity to analyze the program that will be planned by the K3 Installation at Al-Ihsan Hospital. This is in accordance with PMK 66 of 2016 which applies 8 Occupational Health and Safety (OHS) risk management standards including Safety, Security, Health Services, Control, Fire Prevention, Management of Medical Equipment, Utilities, and Disasters and B3. Of the 8 OHS risk management standards, researchers focused on the Fire Control and Prevention program. Therefore, the informant said that planning in fire prevention and control is a very important initial stage. This stage involves identifying fire risks, developing prevention plans, and implementing measures to reduce fire risks. This includes planning for extinguishing equipment, means of protection, and fire training.

Examples of Planning *(Plan)* in conducting Fire Prevention and Countermeasures are contained in important documents that detail in accordance with the Minister of Health Regulation No.66 of 2016 concerning Hospital Occupational Safety and Health in article 16. (3) with all the steps that will be taken to ensure the safety and readiness of Al-Ihsan Hospital in dealing with potential fires. The plan includes various essential components:

1. Code Red Team Establishment Program: This plan includes structured procedures for the establishment and operationalization of a "Code Red" team, aimed at responding quickly and effectively to fire emergencies. This includes the identification of team members, the duties and responsibilities of each member, and clear lines of communication and coordination.
2. Monitoring of Fire Extinguishing Equipment (APAR): This plan includes schedules and procedures for routine monitoring of fire extinguishers throughout RSUD Al-Ihsan facilities, including maintenance and testing of fire extinguishers so that they are always ready for use in emergency situations.
3. Hydrant Checks: This plan includes a regular inspection schedule for hydrants throughout the RSUD Al-Ihsan area, including water pressure testing and necessary maintenance to ensure hydrants are functioning optimally.
4. Means of Protection: This plan includes strategies for the installation, maintenance, and testing of protection systems such as fire alarms, sprinklers, smoke sensors, heat detectors, and other protection systems. It includes a schedule for regular inspections and repair or replacement of components as needed to keep the system reliable.
5. Provision of Evacuation Signs and Exits: This planning includes the strategic location and installation of clear evacuation signs and the planning of safe and easily accessible evacuation routes in a fire emergency situation.
6. Storage of Hazardous and Toxic Materials (B3): This plan covers policies and procedures for the safe storage and management of hazardous materials at RSUD Al-Ihsan, in accordance with applicable regulations to reduce the risk of fire that may be caused by these materials.
7. Tenant Control: This plan details the policies and measures to control the activities of tenants within the building of RSUD Al-Ihsan, thereby minimizing the potential for fire from their activities.
8. Fire Training: This plan includes a structured training curriculum and schedule for fire training for all staff at RSUD Al-Ihsan. This training includes evacuation procedures, use of fire extinguishers, and communication in emergency situations.

Based on the comprehensive planning above, RSUD Al-Ihsan can ensure that they are ready and able to deal with any fire emergency with coordinated and effective measures, so as to protect the safety and security of staff, patients, and facility assets properly. (11).

3.2.2. Do

Doing with fire management involves the practical implementation of the steps planned in the planning document including:

1. Implementation of Code Red Team Establishment: The first step is to activate the "Code Red" team in accordance with established procedures. This involves training of team members, designation of roles and responsibilities of each member, and their readiness to respond to a fire emergency situation.
2. Monitoring of Fire Extinguishers: This step involves implementing a regular schedule to monitor the condition and readiness of fire extinguishers throughout the facility. This includes pressure testing, visual inspections, and routine maintenance to ensure extinguishers are ready for use in an emergency.
3. Hydrant Checking: This implementation involves regular testing of hydrants in all areas of RSUD Al-Ihsan, including water pressure tests and necessary maintenance to ensure hydrants function optimally in a fire situation.
4. Means of Protection: This step covers the installation, testing, and maintenance of protection systems such as fire alarms, sprinklers, smoke sensors, heat detectors, and other protection systems. It involves regular testing of system functions and replacement of necessary components.
5. Provision of Evacuation Signs and Exit Paths: This implementation involves installing clear and easily visible evacuation signs, as well as ensuring evacuation routes are available and easily accessible to all residents and visitors of RSUD Al-Ihsan.
6. Storage of Hazardous and Toxic Materials (B3): This implementation covers safe storage arrangements for hazardous materials in accordance with applicable regulations. Measures include placement, inventory management, and access control to hazardous materials to minimize the risk of fire.
7. Tenant Control: This step involves implementing policies and procedures to control the activities of tenants in the building. The aim is to ensure their compliance with fire codes and risk mitigation measures.
8. Fire Training: This implementation involves organizing regular fire training for all staff at RSUD Al-Ihsan. This training includes emergency actions, use of fire extinguishers, evacuation procedures, and coordination with firefighters.

With the deep learning gained during the planning phase, the implementation phase can truly reflect what the team considers a significant improvement to the current state. There is an opportunity to continue learning, make adjustments, and then implement greater improvements through the check and action phase. (12)

3.2.3. Check

Supervision (Check) with fire management efforts is an important process that is carried out regularly to ensure that all steps that have been planned and implemented are in accordance with established standards. This includes:

1. Establishment of a Code Red Team: The monitoring process involves evaluating the readiness and responsiveness of the Code Red team. This involves checking that all team members are properly trained, code red board schedules are filled in a structured manner, and understand their respective roles in fire suppression.
2. Monitoring of Fire Extinguishers: This monitoring process involves regular checks of all fire extinguishers throughout the facility. This includes checking the pressure, physical condition, expiration date, and reliability of extinguishers to ensure they are ready for use when needed.
3. Hydrant Checking: Supervision is carried out on hydrants in all areas of RSUD Al-Ihsan, including periodic water pressure testing, checking the physical condition of hydrants, as well as replacing or repairing as needed to maintain hydrant function in optimal condition.

4. Means of Protection: This process covers the monitoring of all fire protection systems such as fire alarms, sprinklers, smoke sensors, heat detectors, and other protection systems. Oversight includes regular system function testing and repair or replacement of faulty components.
5. Provision of Evacuation Signs and Exit Paths: Supervision includes inspection of all evacuation signs and evacuation routes at Al-Ihsan Hospital. This involves checking the availability of signs, the clearly legible condition of the signs, as well as the smoothness of the evacuation routes in emergency situations.
6. Storage of Hazardous and Toxic Substances (B3): This involves inspecting hazardous materials storage facilities to ensure that all materials are stored safely and in accordance with applicable regulations. It also includes audits of hazardous waste management and reporting procedures.
7. Tenant Control: This process involves evaluating tenants' compliance with established fire codes. Monitoring is conducted to ensure that tenants comply with safety procedures and reduce potential fire risks from their activities.
8. Fire Training: Monitoring includes an evaluation of the effectiveness of the fire training organized for staff at RSUD Al-Ihsan. This includes an assessment of staff knowledge and skills in dealing with fire emergencies as well as identification of areas that require improvement or enhancement.

In this monitoring stage, the results of the improvements made in the previous stage are analyzed in depth. This analysis aims to assess the effectiveness of the improvements that have been implemented in overcoming existing problems, as well as identify other areas that may require more attention to improve quality and efficiency. (13) RSUD Al-Ihsan can thus ensure that their fire prevention and suppression system operates effectively and efficiently, and is able to respond quickly in a fire emergency situation.

3.2.4. Action

Action in fire management is an important stage that involves evaluating and implementing continuous improvements to all aspects of OHS that have been planned and executed at RSUD Al-Ihsan. The following is a detailed breakdown of the Action process:

1. Code Red Team Establishment Program Evaluation: This action involves evaluating the Code Red team's performance in drills and responses to simulated fires. The results of the evaluation are used to identify areas of improvement, such as additional drills or changes in procedures to improve team readiness.
2. Fire Extinguisher Monitoring Repair: This action involves the repair or replacement of fire extinguishers based on the results of monitoring the condition and readiness of the equipment. This includes immediate repair or replacement of fire extinguishers that are not functioning properly so that they are ready for use when needed.
3. Hydrant Supervision Adjustment: This action involves repairs or adjustments to hydrants based on the results of routine testing and evaluation. This includes repair of water pressure or replacement of damaged hydrant components to ensure optimal function during a fire emergency.
4. Implementation of Means of Protection Recommendations: This action involves implementing repairs or replacements to fire protection systems such as alarms, sprinklers, smoke sensors and heat detectors based on monitoring results. These repairs aim to improve the reliability of the protection system in detecting and responding to fires.
5. Improvement of Exit (Evacuation) Signs and Pathways: This action involves the improvement of evacuation signs and evacuation routes based on monitoring and evaluation results. It includes the renewal or replacement of damaged signs, as well as the improvement of signs and instructions needed to ensure effective navigation in emergency situations.

6. Improvement of Hazardous and Toxic Substances Storage System: This action involves the implementation of improvements based on the results of surveillance of the hazardous materials storage system. For example, improvements to storage infrastructure or revision of management procedures to ensure compliance with higher safety standards.

7. Implementation of Tenant Control Recommendations: This action involves implementing recommendations to improve controls over tenant activities that may affect fire risk. This may include contractual improvements or additional education to tenants on fire safety.

8. Fire Training Program Improvement: This action involves improving the fire training curriculum and methods based on an evaluation of the effectiveness of the training conducted. This may include adding content, adjusting teaching techniques, or increasing the frequency of training to improve staff knowledge and skills in responding to fire emergencies.

Through the implementation of these structured and sustainable measures, Al-Ihsan Hospital can ensure that all aspects of their fire prevention and suppression are operating effectively and efficiently, as well as being able to respond quickly in emergency situations that may occur. Therefore, with fire planning, it is possible to identify factors that can cause fires, as well as take precautions to prevent them from happening.(14). So through good planning, the risk of fire can be overcome as early as possible, so that safety and security can be maintained properly. (15).

3.3. Management, Monitoring and Reporting of Fire Prevention and Countermeasure Incidents After Implementing the PDCA Method and Evaluation Results at Al-Ihsan Hospital, West Java

After implementing the PDCA (Plan, Do, Check, Act) method in managing monitoring and reporting related to fire planning and suppression incidents, RSUD Al-Ihsan West Java continued a series of evaluation steps to ensure successful implementation and improve the fire management system on an ongoing basis. The following are some of the steps taken by RSUD Al-Ihsan West Java after the implementation of the PDCA method:

1. Implementation Evaluation: This evaluation involves examining the extent to which each stage (planning, implementation, inspection and action) has been carried out in accordance with the set objectives. The goal is to ensure that all planned steps are going well. (16).

2. Results Analysis: This outcome analysis includes the results of the fire incident records that occurred after the implementation of the improvement measures, which aims to assess the positive impact of the changes that have been made and see the extent of the improvements that have been achieved.

3. Identification of Improvements: After analyzing the results, areas for improvement in fire management are identified. The hospital evaluates the potential for further improvements to prevent future fire incidents, including technical, procedural, and training aspects.

4. Follow-up: The follow-up involves implementing additional changes or improvements based on the evaluation results. With the aim of improving the effectiveness of the fire management system, ensuring a quick and appropriate response in the event of a fire, and minimizing the risk of fire in the hospital.

Therefore, after conducting evaluation and continuous improvement in the form of implementing the PDCA method at Al-Ihsan Hospital in West Java, it can be ensured that the fire management system is always effective, responsive to change, and able to reduce the risk of fire incidents. These measures also help to create a safer environment for patients, staff and visitors to the hospital.

3.4. Barriers to the Implementation of Fire Prevention and Suppression

Barriers that often arise in the implementation of fire planning and management at Al-Ihsan Hospital include several factors.

1. There is a lack of awareness and deep understanding of the importance of preparation and rapid response in the face of a fire emergency. Many individuals do not fully understand how crucial this preparedness is for the safety of all parties involved.
2. Adequate resource allocation is often a constraint. Trained human resources and a sufficient budget are essential for effective fire planning. However, hospitals sometimes face difficulties in providing both, which impacts their ability to respond efficiently to emergencies.
3. Adequate training and simulation for hospital officers and staff is often lacking. Without proper training, their ability to handle fire emergencies is limited, resulting in a suboptimal response to fire incidents.

By identifying these barriers, it is hoped that RSUD Al-Ihsan can improve the effectiveness of its fire planning and response. Steps that could be taken include increasing awareness and understanding of the importance of emergency preparedness, ensuring adequate resources are allocated, and providing regular training and simulations for all staff. This will help create a safer and more responsive environment to the threat of fire.

3.5. Suggestions for Implementing Fire Prevention and Countermeasures

To overcome the obstacles that exist in the implementation of fire planning and management at Al-Ihsan Hospital, here are some suggestions that can be applied:

1. Raising Awareness and Understanding:
   In order to increase awareness and understanding of the implementation of fire planning and management in hospitals, regular educational campaigns and regular socialization to all hospital staff should be organized to raise awareness about the importance of preparation and rapid response in dealing with fire emergencies.
2. Ensure Resource Allocation:
   In Ensuring Adequate Resource Allocation for the implementation of fire planning and management, the hospital should be able to allocate sufficient budget for all needs, recruit competent personnel and cooperate with external agencies or authorities such as the fire department.
3. Enhanced Training and Simulation:
   In an effort to prevent and control fires, hospitals should conduct regular fire training and simulations, evaluate and provide feedback for continuous improvement.

By implementing the above suggestions, it is hoped that Al-Ihsan Hospital West Java can improve the effectiveness of fire planning and suppression, thereby creating a safer and more responsive environment to the threat of fire.

3.6. Positive and Negative Impacts of PDCA Method Implementation in Fire Prevention and Countermeasure Efforts at Al-Ihsan Hospital, West Java

After the implementation of the PDCA method in fire prevention and suppression efforts at the RSUD, some of the positive and negative impacts that may be felt or observed are as follows:

Positive Impact:

1. Can reduce the number of fire incidents that occur in hospitals. With continuous evaluation and adjustment, the risk of fire can be significantly reduced.(17).
2. Employees became more aware of the importance of safety and fire prevention after the implementation of the PDCA method. Continuous education and involvement in the evaluation process improved their understanding of safety procedures.(18).
3. Improved efficiency and effectiveness in fire management with the PDCA method. A more structured process focused on continuous improvement helps in creating a more resilient and responsive system.(19).

4. Can respond to fire incidents more quickly and effectively so that standardized procedures can reduce damage and potential harm.

Negative Impact: The implementation of the PDCA method can require considerable initial investment, especially if it involves changes to infrastructure and equipment. These costs can be a financial burden for hospitals in the early stages.

Although there are negative impacts that may arise, the positive impacts resulting from the implementation of the PDCA method in fire prevention and suppression in RSUD are usually much more significant. This method can drastically improve the occupational safety and health of employees and reduce the risk of fire incidents in hospitals. Good implementation and continuous process improvement will help create a safer and more responsive work environment to fire threats.

Conclusion

Analysis of the implementation of the Hospital Occupational Safety and Health (K3RS) program at Al-Ihsan Hospital in West Java using the PDCA (Plan-Do-Check-Action) method in preventing and overcoming fires has carried out continuous evaluation and improvement of safety procedures, starting from planning preventive measures, implementing safety measures, checking effectiveness, to corrective action and improvement.

In addition, this approach not only improves the hospital's preparedness in dealing with potential fires but also ensures the safety of staff, patients and visitors. The results of the analysis show that the implementation of PDCA in the OHSRS program has a significant positive impact on fire prevention and suppression efforts in hospitals, as well as optimizing overall risk management in the hospital environment.

Conflicts of Interest
The authors declare no conflict of interest.

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