



Implementation of Hospital Occupational Health and Safety Standards at General Hospitals in Kendari City

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Abstract

A hospital is a health service facility with various activities with many potential dangers for hospital human resources and patients or patient companions. Potential hazards in the hospital can be in the form of occupational diseases and infectious diseases. There are also other potential hazards that affect the situation and conditions in the hospital. The specific objective of this research is to see the implementation of the Occupational Health and Safety standards, implemented in 3 (three) General Hospitals in Kendari City, Southeast Sulawesi. This research uses qualitative research methods with an observational approach and in-depth interviews. This research took place in 3 (three) General Hospitals in Kendari City, namely: Hospital A, Hospital B, and Hospital C. The informants in this study are those related to the K3 standard policies implementation in hospitals. The results showed that there are several hospitals that have not carried out all the stages of equipped facilities and infrastructure related to risk management aspects, efforts to manage hazardous and toxic materials (B3) from occupational safety and health aspects, to prevent and control fire as well as efforts to prepare for the face. Emergency or Disaster Conditions. It shows that the K3RS standards implementation in several hospitals has not been implemented optimally. It is recommended for the hospital to continue to refer to the rules governing the K3RS implementation. It includes the lack of infrastructure and facilities. Like always, briefings for all officers before working and evaluation at the end of each working hour.

Introduction

Health services are one determinant of health status. Good health services will ensure good health for the community as well. The development of hospitals as health care facilities in Indonesia has recently been very rapid, both in terms of the number and utilization of medical technology. A hospital as a health service institution for the community is a workplace that has a high risk to the safety and health of the hospital's human resources, patients, patient companions, visitors, and hospital environment. In the framework of managing and controlling risk in a hospital, it is necessary to organize occupational safety and health to create a hospital that is healthy, safe, secure, and comfortable. Occupational

safety and health is an effort to provide safety guarantees and improve the health status of workers by preventing Occupational Accidents (KAK) and Occupational Diseases (PAK) through efforts to control hazards in the workplace, health promotion, treatment, and rehabilitation (Menkes, 2016).

Occupational health deals with all aspects of health and safety in the workplace and focus on the primary prevention of hazards. Health has been defined as "A state of complete physical, mental, and socio well-being and not merely the absence of disease or infirmity". Occupational health is a multidisciplinary field of health care concerned with enabling an individual to undertake their occupation in the way that causes the least harm to their health

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(Mazhila and Jothi, 2019). Workplace hazards can be seen as part of workplace challenges that must be identified and a solution must be proffered to promote safety and safe systems of work in an organization, all employers are required to carry out the symmetric and critical assessment of the risks in the work place, and the precautions put in place to protect people from harm. The occupational risk assessment should ensure that significant risks are identified and addressed (Fasoranti and Joseph, 2015). The Indonesian government has issued various written regulations regarding management efforts of occupational safety and health to ensure the safety of workers. One of them is Permenkes RI No. 66/2016 on Occupational Safety and Health Article 3 paragraph 1 states that "Every hospital is obliged to hold K3 in the hospital. The implementation of K3 as referred to in paragraph (1) includes: establishing and developing SMK3 in hospitals and implementing K3 standards in hospitals (Menkes, 2016).

In Lebanon, Fifty-six percent of participating private hospitals were accredited. Accredited hospitals reported statistically better OHS performance than non-accredited hospitals based on the standards outlined in the accreditation manual. However, there was an inconsistent performance on numerous OHS indicators among participating hospitals (Habib et al., 2016). The Occupational safety and health programs cannot run alone without a proper company management system. Work-related accidents, can be caused by various activities in the hospital. The Occupational Safety and Health Administration (OSHA) report in 2013 showed that the incidence of work accidents in hospitals was two times greater than in other industries. Data from the Occupational Safety and Health Administration (OSHA) in 2013, the causes of injury to health workers include fatigue due to movement related to patient handling (48%), sprains or falls (25%), contact with dangerous equipment (13%), acts of violence from patients (9%), exposure to hazardous substances (4%), and other causes (1%) (OSHA, 2013).

The specific purpose of this research is to see the implementation of the Occupational Safety and Health (K3) standard carried out

in 3 (three) General Hospitals in Kendari City, Southeast Sulawesi. This research is very important to be funded, given the importance of implementing K3 in hospitals. Therefore, taking into account the many potential dangers for both the Human Resources in the hospital and the patient or patient companion, which can be in the form of occupational Diseases, accidents (explosions, fires, accidents related to electrical installations, and other sources of injury), radiation, hazardous chemicals, anesthetic gases, psychosocial and ergonomic disorders, and so on, researchers feel the need to conduct research related to the implementation of K3 in hospitals.

Method

This study used a qualitative research method with an observational approach and in-depth interviews. Data is obtained from the research informants. The qualitative research intends to describe the implementation of K3 standards in the General Hospital in Kendari City. The variables in this study are Occupational Safety and Health (K3) standards in hospitals, including hospital K3 risk management, B3 management from the K3 aspect, fire prevention and control, and emergency/disaster preparedness. This research took place in 3 (three) General Hospitals in Kendari City, namely: RS A, RS B, and RS C. The population in this study were all General Hospitals in Kendari City in Southeast Sulawesi. The sample of this study was 3 (three) General Hospitals in Kendari City, consisting of RS A, RS B, and RS C.

The informants in this study are those related to the K3 standard policies implementation in hospitals. The selection of informants refers to the principle of suitability and adequacy by finding informants who know what information to study, making it easier for researchers to understand the object under study. The primary informants are two people in each hospital, namely the Head of the K3 Organizing Work Unit and the implementing staff directly involved in monitoring the implementation process of K3 standards in the hospital, who were selected by purposive sampling.

Result and Discussion

In general, all hospitals have implemented K3RS risk management. K3RS risk management includes the preparation of a facility/environment/work process risk management program, potential hazards identification, risk analysis, risk evaluation, risk control, communication, consultation, monitoring, and review. The interview results show that RS B has carried out all the stages. Meanwhile, RS A and RS C have not carried out one stage, the work environment measurement. Regarding the preparation of a facility/environment/work process risk management program that discusses the management of safety and health risks through the K3RS preparation manual, all hospitals have carried out and documented the program in the manual data form. Program preparation is carried out on average once a year. The hospital also has carried out the identification of potential hazards. When asked about its implementation, all hospital informants stated that the hospital had carried out the potential hazards identification. As for the one who runs it is the unit that is responsible for K3RS. The following is an excerpt from an interview with one of the informants at RS C:

“There is an identification. After we compile the program, then every year we identify it from the existing reports. Conducted in the form of surveillance. From this surveillance, we then determine the potential risk ”.

Related to periodic inspections and monitoring of safety and industrial hygiene aspects, all hospitals also have implemented them, but the periodization varies. The following is an excerpt from an interview with one of the informants at RS C:

“For monitoring we do it every day. Then it is evaluated, and there is a monthly report ”.

As for RS A and RS B, are held once every six months.

The health examination also varies per hospital. RS B and RS C are scheduled once a year, and when there are new employees, in this case, carry out a Medical Check Up. The following is an excerpt from an interview with one of the informants at RS B:

“Often done, once a year”.

One of the informants at RS C conveyed the same information, along with the excerpt:

“Yes, there is a health check. Scheduled every year ”.

Different information was conveyed by one of the informants at RS A, along with the excerpt:

“Rarely. Only if there are complaints, or if the employee is sick. Routine checks not available. It will be implemented after the Covid-19 ”.

As for the measurement in the work environment area, only RS A did not do this because the tools were not available. The following are excerpts from the interview:

“Measurement of the work environment was not carried out because there were no tools”

Hospital is a service industry that is labor-intensive, expert-intensive, capital-intensive, and technology-intensive, so the risk of occupational diseases (PAK) and occupational accidents (KAK) is very high. Therefore OSH efforts are a must. Occupational safety and health are among the aspects of labor protection by applying technology to control all aspects that have the potential to endanger workers. Control is aimed at sources that have the potential to cause occupational disease, accident prevention, and alignment of work equipment both machines and the characteristics of the people who carry out the work. By applying occupational safety and health control technology, it is hoped that workers will achieve high physical endurance, work power, and health.

The physical conditions of the workplace environment in which workers carry out their daily activities contain many dangers, directly or indirectly to workers. These hazards can be classified as vibration, chemical, radiation, lighting, and noise hazards (Redjeki, 2016). To manage risk, hazards must first be identified, and then the risk should be evaluated and determined whether to be tolerated or not. The earlier in the life cycle that effective risk analysis is performed, the more cost-effective the future safe operation of the process or activity is likely to be. The risk understanding developed from these studies forms the basis for establishing most of the other process safety management activities undertaken by the facility. An incorrect perception of risk, at any point, could lead to either inefficient use of limited resources or unknowing acceptance of risks exceeding the true tolerance of the company or the community (Purohit et al., 2018).

The concept of risk management in the hospital had its beginning in the 1970s in the USA, following court decisions established the corporate liability of the hospital for the quality of care and held medical staff liable for the quality of care. The formal program of risk management is a necessity in all health care facilities in the USA and a prerequisite for accreditation of hospitals. Progressive hospitals in developing countries with western trained physicians are initiating the process of risk management as a safeguard against becoming defendants in major medico-legal lawsuits by making risk management an integral component of hospital management (Singh and Ghatala, 2012).

K3RS risk management aims to minimize safety and health risks in the hospital so that it does not harm on the safety and health of hospital human resources, patients, patient companions, and visitors. K3RS risk management must be carried out in a comprehensive manner, which includes: preparation/determination of the context of the activities to be, risk management, identification of potential hazards, risk analysis, risk evaluation, risk control, communication and consultation, and monitoring and review (Menkes, 2016).

In general, all the hospitals studied had implemented K3RS risk management. Moreover, the hospital has implemented accreditation. Where it is known that the implementation of K3RS is one of the parameters in the hospital accreditation assessment. Although, several phase that have not been carried out optimally in several hospitals. The same thing happened at a hospital in Depok. The statistical results of this study showed that not all of the emergency department, operating room, and ICU nurses implemented OSH well (only 43.8%). Based on the interviews, Hospital X planned OSH work procedures and activities, but shortcomings remained in the OSH practice, one of which was in the use of personal protective equipment (Mutifasari et al., 2018).

Risk management must be taken seriously because it can have fatal consequences for both the patient, the patient's family, hospital staff, and even health workers at the hospital concerned. Risk management has become an integral part of hospital accreditation in most hospitals in

Southeast Sulawesi. Chemical, ergonomic, psychological, physical (electrical shock, fire and explosion, fall and slip, and radiation), and biological hazard risk assessment confirmed an unacceptable condition of hazard risk that needed changes in shortly. Risk management's role in the qualitative development of care services and provision of a safe environment for the personnel and patients is undeniable. In addition, it is vital to program education and supervision measures for risk management in hospitals (Saranjam et al., 2020).

After identifying all the risks, a likelihood and risk impact level is measured. Risk measurement is carried out after considering existing risk controls. After it is measured, the level of likelihood and impact, a priority order of risk is arranged from the highest to the lowest. When it is not in can be accepted/ tolerated category must be treated immediately. Risks that can not be accepted/ tolerated immediately formulate an action plan to minimize the possible impact of the risk and the personnel responsible for implementing the action plan. Each identified risk is monitored, and the changes are communicated/ reported to interested parties in each unit of the hospital concerned.

Risk management is also related to safety climate. A study in Taiwan explains this. Regarding total effects on the preventive action and safety satisfaction results, safety climate ranked first and directly, or indirectly, influenced safety satisfaction by preventive action. It showed the importance and relevance of safety climate. In other studies, safety climate was also an antecedent variable of crucial indicators of other safety performance factors such as occupational injuries. Therefore, management must not passively wait for an occupational injury to realize the importance of safety climate. Managers must constantly modify and improve the safety climate and encourage and reward safe behaviors and preventive actions. Moreover, they should avoid punishment and criticism of unsafe behavior; only in this way can proactive behavior occur to reduce occupational injuries and increase safety satisfaction. For medical institutions, relevant institutional safety reporting mechanisms and protocols should be resorted to when a patient safety

incident occurs. Subsequently, improvement strategies should be proposed, and managers should adopt a positive and proactive attitude toward discussing occupational safety concerns and incidents (Huang et al., 2019).

Most hospitals have managed Hazardous and Toxic Materials (B3), but a small proportion has not applied or prepared some elements. The form of B3 material management includes the identification and inventory of B3 materials, preparing and having a Material Safety Data Sheet, preparing B3 material safety facilities, making Guidelines and SOPs for safe B3 material management, and carrying out emergency handling of B3 materials.

In general, all stages have been carried out by all hospitals. However, there are several things, such as safety facilities for Hazardous and Toxic Materials (B3), are still lacking in some hospitals. All Hospitals carry out the Identification and Inventory of Hazardous and Toxic Materials (B3). The results of this identification are then made into a monthly report. All Hospitals also prepare and have Material Safety Data Sheets on the materials and tools used in each work unit. As for the availability of safety facilities for Hazardous and Toxic Materials (B3), some hospitals have not completed yet. For example, RS C does not yet have a body wash. While RS A does not yet have eyewash (eye washer). Related to Guidelines and Standard Operational Procedures for the safe Management of Hazardous and Toxic Materials (B3), all hospitals have made SOP. The following is an excerpt from an interview with one of the informants at RS B:

"There is an SOP, documented and printed".

Related to training and simulation of hazardous and toxic (B3) spills, all hospitals have been applying it. It's just that RS A has just implemented it before the accreditation. The following is an excerpt from an interview with one of the informants at RS A:

"Later, before the implementation of the accreditation, there will be training and simulations. However, the implementation is planned for once a year".

Generally, training and simulation of hazardous and toxic (B3) spills is held once a year. As implemented by 2 (two) other hospitals.

The following is an excerpt from an

interview with one of the informants at RS B:

"Yes, it is carried out once a year".

One of the informants at RS C conveyed the following information:

"Implemented. We usually give training to the cleaners, as well as for new officers. Mandatory training to all officers.

As for the reporting and investigation (inventory) mechanism for spills and exposure to hazardous and toxic materials (B3), all hospitals apply monthly reporting. So every finding is documented in the form of a report. Management of Hazardous and Toxic Materials (B3) from the aspect of occupational safety and health aims to protect hospital human resources, patients, patient companions, visitors, and the hospital environment from exposure and waste of hazardous and toxic materials (B3). Safety facilities for Hazardous and Toxic Materials (B3) at least include: Hazardous and Toxic Materials (B3) cupboards, body wash, eye wash (eye washer), Personal Protective Equipment (PPE), signs and symbols of Hazardous and Toxic Materials (B3) and a spill kit (Menkes, 2016).

In general, all stages have been carried out by all hospitals. However, several things, such as safety facilities for Hazardous and Toxic Materials (B3), are still lacking in some hospitals. All Hospitals also carry out the Identification and Inventory of Hazardous and Toxic Materials (B3). The results of this identification are then made into a monthly report. Identifying potential hazards from a work activity is the core of all accident prevention activities. However, hazards identification is not an exact science but is a subjective activity in which the size of the identified hazard will differ from person to person, depending on each other's experiences, attitudes in dealing with risks/hazards, familiarity with the process concerned and so on (Redjeki, 2016).

Whatever hazard findings are obtained during monitoring or inspection, the findings should be recorded and reported. Then follow up in the form of improvements. Evaluation is also needed to know the extent to which efforts to improve are successful or are not. If it is successful, it needs to be maintained and developed. If not, then it needs better and maximum repairs. Hazard identification

is needed to find which operations have a potential hazard, wherein a risk assessment is carried out. Risk assessment is a way companies use to properly manage the risks faced by their workers and ensure that their health and safety are not exposed to risks while working. Potential hazards in hospitals caused by biological factors (viruses, bacteria, and fungi); chemical factors (antiseptics, anesthetic gases, etc.); ergonomic factors (wrong way of working, etc.); physical factors (temperature, light, noise, electricity, vibration, radiation, etc.); Psychosocial factors (rotating work, relationships among workers/superiors, etc.) can result in illness and accidents due to work.

Occupational Diseases in hospitals are generally related to biological factors (pathogens that come mainly from patients); chemical factors (exposure in small continuous doses such as antiseptics to the skin, anesthetic gases to the liver); ergonomic factors (wrong way to sit, wrong way to lift the patient); physical factors (heat on the skin, high stress in the reproductive system, radiation to the blood cell production system); psychological factors (tension in the operating room, admission of emergency patients, mental illness wards, etc (Redjeki, 2016). Most hospitals have implemented fire prevention and control efforts, but a small proportion has not done so. Fire prevention and control efforts consist of identification and mapping of fire and explosion risk areas, reduction of fire and explosion hazards, fire control, and fire simulations.

In general, all stages have been carried out by all hospitals. However, some things such as fire control tools are still lacking in some hospitals. For example, Smoke and Fire Detection and Smoke Control are not owned by all hospitals. Fire alarm systems and automatic sprinklers are only available at RS C. Manual water spray (Hydrant) is only available at RS C. It's just that the tool doesn't work. The following is an excerpt from an interview with one of the informants at RS C:

“The hydrant is there but not functioning”.

Regarding the safe meeting point, all hospitals have them in the front and back yard of the hospital. When the fire point is in front of the hospital building, a safe gathering point is in the backyard. The opposite applies, if the

fire point is at the back of the building, then the safe gathering point is in the front yard of the hospital. Related to the formation of a fire fighting team, all hospitals have formed a fire fighting team. A fire fighting team is formed from each work unit or room with a scheduled time.

Fire prevention and control aim to ensure hospital human resources, patients, patient companions, visitors, and hospital assets are safe from the dangers of fire, smoke, and other hazards. Fire control is carried out with the minimum fulfillment, including light fire extinguishers, smoke and fire detection, fire alarm systems, automatic sprinklers, emergency doors, evacuation routes, emergency stairs, smoke controllers, safe collection points, and manual water sprayers. (hydrant), the formation of a fire fighting team and training and outreach (Menkes, 2016). Most hospitals have implemented fire prevention and control efforts in the hospital. A small proportion has not done it, and several infrastructure facilities have not been fulfilled.

The availability of fire-fighting facilities and infrastructure in hospitals regulated in such a manner should be a reference for every hospital. However, it was realized that some of the infrastructures were expensive, so the Hospital only provided a few standard tools. The most important thing is that fire control efforts are pursued as early as possible. Coordination with related parties such as the Damkar (Fire Department) must also be strengthened so that if a hotspot occurs, the Damkar can immediately attend to assist. Regardless of whether the hospital can control or extinguish the fire itself, with the presence of the Damkar, it is presumably able to evaluate what happened. It is also a hazard finding that must be recorded, even if it has been addressed.

Findings indicated that to improve the level of fire risk in high-rise hospitals, required measures, especially in the area of fire extinguishment and containment, including buildings design for automatic sprinkler systems and standardization of fire controls (Rahman and Salem, 2018). A study found that though Ponorogo Regional Hospital had obtained complete accreditation, there are still units (rooms) with a high fire risk (18.5%). It

can be caused by hazard potential does not properly managed. Like, fire protection system does not comply with the standard. The patient is the vulnerable group that should obtain more attention, particularly during fire emergencies (Phuspa et al., 2019).

Zhang (2018) said that improper chemical management is the cause of many explosions and fire incidents. Clear, accurate, monitoring, and comprehensive evaluation of risk assessment in the Material Safety Data Sheet (MSDS) can reduce the potential of fire incidents caused by chemical substances (Phuspa et al., 2019). A similar case occurred in Malaysia Government Hospital. The result of observation, reviewing the documents, and interviews with authorities, hospital management, and maintenance contractors to achieve this purpose. It was found that the hospitals encountered problems in fire safety management. Like documentation problems, combustible materials, lack of installation of fire measures or outdated fire safety technology, locked doors due to the security reasons, lack of training of hospital staff, and blocking of fire safety systems (Ong and Suleiman, 2015).

An investigation focuses on minor data significant to fire accidents in hospitals globally. A survey over mishaps in hospitals fires till the present scenario was done through rereading the internet, articles, newspapers, investigation, and other reports. In the history of fire building, heterogeneous fire incidents were perceived. A detailed study on fire incidents of 13 hospital buildings was used here. All the incident cases were constructed on some norms to be designated (Shastri et al., 2018). Considering all the 13 incidents, administrations of these hospitals took similar erroneous actions in fire safety management. A total of eight mistakes were excerpted by reviewing these fire accidents. The mistakes include the following: 1) Absence of mechanized fire fighting systems, 2) Non-compliance of law enforcement, 3) Myopic planning, 4) Maintenance and management of fire fighting appliances, 5) Incompetency of hospital staff regarding safety issues, 6) Combustible materials used and stored in the building, 7) Poor accident management methodology, 8) Legal and administrative bottlenecks regarding

security and safety systems, 9) Insufficient or non-availability of mechanical aids for patients during an emergency evacuation, and 10) Inability of patients to evacuate the building (Shastri et al., 2018).

The successful use of any fire equipment type depends upon the elements such as equipment, maintenance, and training. An occupier must ensure its employees are trained for and understand the requirements during a fire incident. It was observed that lack of knowledge in the fire area and inadequate training in emergency drills delay the fire-fighting operations. Probably adequate fire safety training and periodic emergency drills can make the emergency response more effective (Kulkarni et al., 2016). While planning the layout, care should be taken to design the building, like the sufficient open space around it, to minimize fire spread possibilities from or to neighboring structures. Also, there should be enough space for movement and parking of fire fighting vehicles, ambulances, etc on the premises. The design & construction of every building structure should incorporate features of prevention of fire & fire loss: Considering the type & density of occupancy, lobbies, staircases, aisles, etc should be sufficiently wide to ensure easy movement of traffic at all times and at the same time to permit easy and orderly evacuation during emergencies (Mankar, 2019).

Most hospitals have made emergency or disaster preparedness efforts. Only one hospital has not carried out one stage, namely RS B has not carried out an emergency or disaster risk mapping. These preparedness efforts include identification and risk mapping of emergencies or disasters, risk assessment of disaster vulnerability, control of emergency or disaster conditions, and simulations of emergency or disaster conditions. All Hospitals have carried out risk identification for emergencies or disasters. All of them are documented in the form of a report. Hospitals also carry out simulations of emergency or disaster conditions. The following is an excerpt from an interview with one of the informants at RS B:

“Conducted every year. We also make videos, so every time we have a meeting we show the video”.

As for RS C explained that the simulation

implementation was coupled with the fire simulation. The following are excerpts from the interview:

“The simulation is still carried out in a package with fire training. Employees are included with a shift system, for example 100 people per day”.

Meanwhile, one of the informants at RS A said that before the new accreditation, simulations were carried out, along with fire control training. The following is an excerpt from the interview:

“The simulation is carried out before accreditation”

Most of the hospitals studied had made emergency or disaster preparedness efforts. However, there are still those who have not carried out one stage, namely mapping the risk of an emergency or disaster. Whereas with mapping, it will be easier for us to identify and anticipate events in an emergency or disaster. Another case is in Tehran. Generally, preparation against the crisis in Tehran's selected hospitals is in at a weak and very weak level. The degrees declare a high rate of measures established in all of the studied hospitals about implementing accreditation standards and crisis management measures in Tehran's selected hospitals. These results suggest that the accreditation standards for crisis management implementation in the current situation, does not help employee increase their preparation for a crisis. For proper management of emergencies, systematic planning of crisis management is recommended, the necessary coordination within and outside the organization during crises, reinforcement with good organization and provide proper training and periodic exercises and changes in accreditation inspections, moving towards operating action not just on paper and to collect documents on the current style in hospitals (Zarei, 2016).

Critical facilities, such as hospital, play a crucial role in the socio-economic and psychological recovery of the population after a disaster. Hospitals are considered vital due to their role in saving lives in the affected community and must be able to withstand hazards and remain functioning during and after a disaster. This article assesses earthquake preparedness of hospitals in eight Japanese cities

using a questionnaire survey. The questionnaire consists of six parameters and 21 indicators from the “four pillars of hospital preparedness” including structural, nonstructural, functional, and human resources. The results show that the majority of the respondent hospitals fulfill the functional preparedness, which is helpful during the emergency period of a disaster, while the other three pillars-structural, nonstructural, and human resources need to be strengthened (Mulyasari et al., 2013).

Hospitals as health service providers to the community are needed. Even in disaster conditions, the hospital is the only place expected to be able to save disaster victims. Therefore, the hospital must carry out all preparedness procedures in the face of the worst conditions of an emergency or disaster. Things that must be considered to prepare the hospital for these conditions include logistics, planning, human resources, triage, communication, command and control, structural and nonstructural preparedness, training, evacuation, recovery after a disaster, coordination, transportation, surge capacity, and safety. The results from 15 publications are presented. Fifteen articles fulfilled the criteria of relevance and considered at least 1 of the 14 predetermined themes. None of the evaluated checklists and tools included all dimensions required for an appropriate hospital preparedness evaluation. The results of the current systematic review could be used as a basis for designing an evaluation tool for hospital disaster preparedness (Mulyasari et al., 2013). Other studies also suggested moderate levels of knowledge and performance and good attitudes associated with preparedness in disasters in the Iranian nurses. These parameters can be therefore improved to desirable levels, and the overall preparedness for coping with disasters boosted in nurses by training nurses and performing hospital drills (Yousefi et al., 2019).

Conclusion

In K3RS risk management, RS B has carried out all stages. Meanwhile, RS A and RS C have not carried out one stage, namely the work environment measurement. With regard to the Management of Hazardous and Toxic Materials (B3) from the Aspect of Occupational Safety and Health, all stages have been carried out.

However, several things, such as safety facilities for Hazardous and Toxic Materials (B3), are still lacking in some hospitals. With regard to Fire Prevention and Control, all stages have also been carried out by all Hospitals. However, some things, such as fire control tools, are still lacking in some hospitals. For example, Smoke and Fire Detection and Smoke Control are not owned by all hospitals. Fire alarm systems and automatic sprinklers are only available at RS C. As for Emergency or Disaster Preparedness, only one hospital has not carried out the risk mapping stage for an emergency or disaster, namely RS B. It is recommended to still refer to the rules governing the implementation of K3RS. It includes the lack of facilities and infrastructure, and always carrying out briefings for all officers before working and evaluating at the end of each working hour.

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