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Promotion Strategy for OHS Management of Chemical Hazard Factors in Hospitals: Literature Review

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ABSTRACT

Introduction: OHS or Occupational Safety and Health in hospitals is one of the activities carried out to maintain and protect human resources so that they can protect themselves and patients. Apart from that, human resources in the hospital sector are not only aimed at doctors, but also at patient companions, patients, employees, staff and all components involved in the hospital.

Objective: Analyze OHS promotion management strategies regarding chemical hazard factors in hospitals.

Method: The method used in the research uses a qualitative type. The approach used is a descriptive literature review.

Result: There are various types of chemical hazards found in hospitals, for example found in laundry services where the ingredients contain quite high risks and dangers. For example, clax allegro has been proven to have corrosive and carcinogenic properties. Harmfull has the property of causing eye damage and burns. Anios has flammable vapor properties, sensitizer, and so on.

Conclusion: One of the factors that needs to be considered in the management strategy is related to the management of medical waste which is related to chemical factors. The remaining chemicals used in hospitals or what is called waste must first go through several processes, for example sorting, storing, transporting and managing according to the characteristics of the chemicals found in the hospital. The management carried out has the aim of minimizing the dangers posed by the chemicals used in the hospital

Keywords: Danger; OHS; Chemistry; Management

INTRODUCTION

Health promotion is a process that seeks individuals and communities to improve their ability to control factors that affect health so as to improve their health status (1). In creating a successful health promotion program, it can be followed by the development of increasingly advanced technology followed by the development of globalization (2). The technology that is developing in society, especially in Indonesia, is increasingly advanced with the development of social media (3). Social media is one of the media used in interacting with one another (4). The role of social media in a technology-based scope has a considerable impact on informing sharing (5). According to the literature study conducted, it explains that there is considerable potential in sharing information by utilizing social media (6). Some examples of social media applied by the community include Facebook, Twitter, Instagram, WhatsApp, and several other websites (7).

The problem is that some people only visit health institutions when they are sick. In Indonesia itself, the development of disease is also balanced with the rate of population growth. The low level of public awareness of the importance of health is still very minimal (8). Although some counseling materials, books, and announcements have been widely distributed regarding several matters related to health. In addition, the delivery of hoax material also often occurs, so that some people are sometimes consumed by the wrong source of information. Based on this, a policy is needed to manage information and filter the information received (9).

OHS or Occupational Safety and Health in hospitals is one of the activities carried out to maintain and protect human resources so that they can protect themselves and patients. In addition, HR itself in the hospital field is not only aimed at doctors, but also at patient companions, patients, employees, staff, and all components involved in the hospital (10). Hazards in hospitals can be caused by hospital waste, electrical hazards, mechanical hazards, psychosocial factors, chemical factors, and biology. Hazards can occur to employees, visitors, and patients. Based on this, K3 is needed as much as possible so that all individuals in the hospital minimize, reduce, and prevent work-related accidents. One of the service standards owned by the hospital is OHS which must be fulfilled (11).

There are various chemical hazards found in hospitals, for example, found in laundry services where the materials contain quite high risks and dangers. For example, Clax Allegro is proven to have corrosive and carcinogenic properties. Harmfull has properties that can cause eye damage and burns. Anios has flammable vapor properties, sensitizers, and so on. Based on this, it is necessary to apply K3 as well as possible (12). The hospital is one of the agencies engaged in the health sector, but has a high risk for visitors, patients, and employees if K3 implementation is not carried out properly. One of the risks in hospitals is caused by chemical factors which generally come from several chemical compounds. Based on this, regular checks are needed regarding the performance or standardization of OHS applied in the hospital. Supervision is also carried out in every risky work area (13).

Based on the explanation above, the author took the title "Promotion Strategy for OHS Management of Chemical Hazard Factors in Hospitals". The purpose of this study is to analyze the promotion strategy related to OSH management of chemical hazard factors in hospitals.

METHOD

The method used in the research uses a qualitative type. The approach used is descriptive literature review. This type of qualitative research is one of the activities carried out by analyzing relevant research sources to find the novelty of the research by using or describing in the form of sentences or a series of words (14). Data collection activities are carried out related to literature review from several sources, such as Google database, Researchgate, and Google Scholar. The use of keywords used is "Promotion Strategy for K3 Management of Chemical Hazard Factors in Hospitals". The following is a prism diagram that describes the acquisition of data for further analysis, namely:

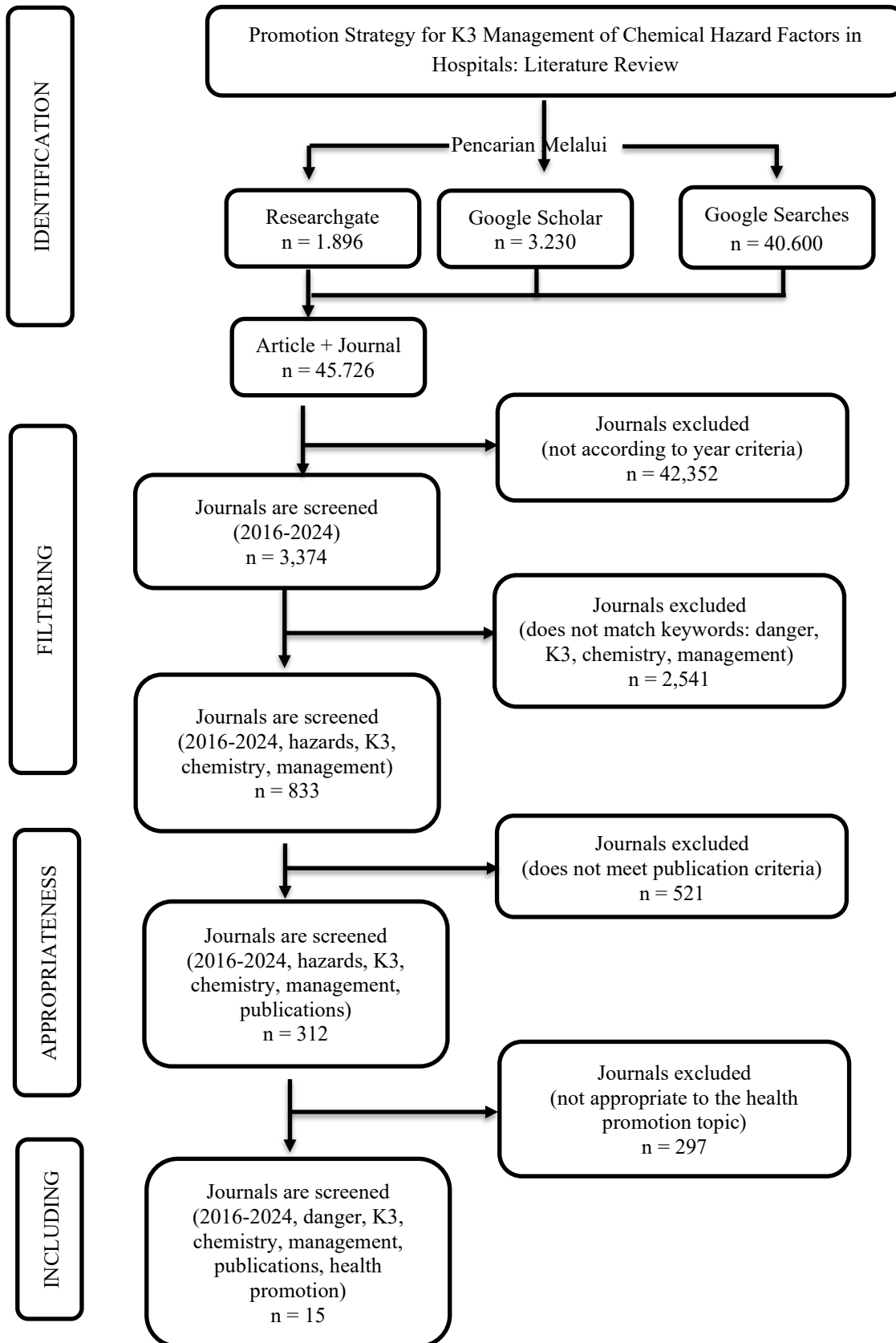


Figure 1. PRISMA Flowchart (15)

. Furthermore, after the data is obtained, then proceed to the data analysis stage. Figure 2 below describes the data analysis techniques carried out.

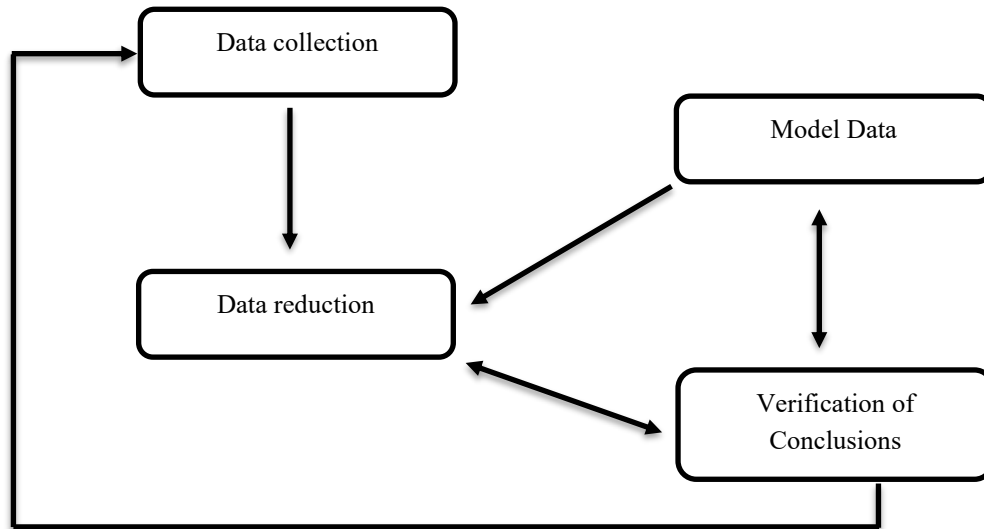


Figure 2. Data Analysis Technique
 Sumber: Miles & Huberman (1992) dalam Diyati & Muhyadi (2019) (16)

RESULTS

The following are the results of research conducted through a qualitative descriptive analysis-based literature review, namely:

Table 1. Analysis Results

No.	Title	Author	Source	Objective	Analysis Result
1.	“Risk Analysis of Occupational Safety and Health (K3) in Medical Waste Management at Hasanah Muhammadiyah Mojokerto Islamic Hospital during the COVID-19 Pandemic”	Wijaya, dkk., 2021	Journal of Muslim Community Health	Has the aim of providing analysis results related to the management of medical waste as one of the hazardous chemicals found in hospitals with regard to K3.	One of the factors that need to be considered in the management strategy is related to medical waste management which has a connection with chemical factors. The remaining chemicals used in the hospital or what is called waste must go through several processes first, such as sorting, collecting, transporting, and managing according to the characteristics of the chemicals contained in the hospital. The management carried out has the aim of minimizing the hazards posed by the chemicals used in the hospital.
2.	“The Important Role of OHS Promotion in Hospital”	Zahra, 2020.	Jurnal Kesehatan	Aims to provide analysis results related to the importance of OSH promotion carried out in hospitals.	Workers in hospitals, such as doctors, nurses, and so on must pay close attention to the dangers and potential of chemicals used or direct interaction with chemicals. Examples of chemicals used are medical gases, preservatives, cytotoxics, disinfectants, and others. The existence of health promotion has the role of providing knowledge freely to several hospitals and other health agencies.
3.	“Implementation of Occupational Safety and Health (OHS) in Several Indonesian Hospitals”	Lubis, 2020.	Jurnal Kesehatan	Aims to provide analysis results related to the importance of knowledge about OHS that has been	K3 or Occupational Safety and Health in hospitals is one of the activities carried out to maintain and protect human resources so that they can protect themselves and patients. In addition, human resources themselves

				implemented in several hospitals, especially in Indonesia.	in the hospital field are not only aimed at doctors, but also at patient companions, patients, employees, staff, and all components involved in the hospital. The governing regulation related to OHS management in hospitals is the Decree of the Minister of Health No. 432 of 2007.
4.	“Analysis of Hospital Management Commitment to Occupational Safety and Health (K3) at Prima Medika Pematang Hospital”	Ivana, dkk., 2019	Jurnal Kesehatan Masyarakat (JKM)	Aims to provide analysis results related to OHS factors influenced by hospital management. The case study was conducted at Prima Medika Pematang Hospital.	Hazards in hospitals can be caused by hospital waste, electrical hazards, mechanical hazards, psychosocial factors, chemical and biological factors. Hazards can occur to employees, visitors, and patients. Based on this, K3 is needed as much as possible so that all individuals in the hospital minimize, reduce, and prevent work-related accidents. One of the service standards owned by the hospital is OHS which must be fulfilled
5.	“An Overview of the Implementation of Hospital Occupational Safety and Health Management Standards at the Haji Makassar Regional General Hospital”	Ibrahim, dkk., 2017.	Public Health Science Journal	Aims to provide analysis results related to the OHS system implemented in one of the hospitals. Case study at Hajj Hospital Makassar.	Every hospital that has been established in Indonesia must know and implement an OHS system that is in accordance with standardization. One of the hospitals in Indonesia, namely RSUD Haji Makassar, is in a good category in implementing OHS so as to minimize chemical hazards. The indicators of OHS include the implementation of emergency response programs, management of toxic and hazardous materials, implementation of OHS services, and establishing health policies.
6.	“Analysis of Potential Hazards and Risk Assessment of Occupational Safety and Health of Radiographer Profession at Pelita Anugerah Mranggen Demak Hospital”	Afrianto, 2017.	Journal of Chemical Information and Modeling	Aims to provide analysis results related to the potential hazards that can be caused in K3. Case study at Pelita Anugerah Hospital Mranggen Demak.	The results of the study according to Afrianto (2017) explain that there are various kinds of risks and potential hazards arising from work errors carried out in several agencies, such as hospitals. Overall, the chemical hazards prevented from Pelita Anugerah Mranggen Demak Hospital have not been fully carried out optimally. Based on this, further evaluation needs to be carried out so that the chemical hazards contained in the hospital can be minimized.
7.	“Chemical Hazards and Risks in Laundry Work at ABC Hospital in Balikpapan City”	Rusba & Wolo, 2023.	Jurnal Pendidikan Fisika.	Aims to provide analysis result on chemical hazard factors in hospital at laundry service in ABC Hospital Balikpapan.	There are various chemical hazards found in hospitals, for example, found in laundry services where the materials contain quite high risks and dangers. For example, Clax Allegro is proven to have corrosive and carcinogenic properties. Harmfull has properties that can cause eye damage and burns. Anios has flammable vapor properties, sensitizers, and so on. Based on this, it is necessary to implement K3 as well as possible.
8.	“Evaluation of Hazardous and Toxic Waste	Pertiwi, dkk., 2017.	Jurnal Kesehatan Masyarakat	Aims to provide analysis results related to OHS	The results of the study explained that waste generated from chemicals can cause poisoning for patients, patients'

	Management at Roemani Muhammadiyah Semarang Hospital”			management of chemical hazard factors found in hospitals. Case study at Roemani Muhammadiyah Hospital.	families, health workers, and so on. Based on this, K3 management is needed in dealing with chemicals. For example, by implementing SOPs or standardization that has been adjusted to government regulations, and so on. Chemical waste must also be managed by paying attention to its characteristics or types, so that the safety of all individuals will be well maintained.
9.	“Education on the Recognition of Signs, Prevention and Treatment of Skin Cancer as a Result of Sun Exposure and the Use of Cosmetics with Hazardous Chemicals at the Skin Clinic of the Academic Hospital of Mataram University”	Wedayani, dkk., 2022.	Jurnal Pengabdian Magister Pendidikan IPA.	Aims to provide analysis results related to the presence of cosmetics with hazardous chemicals found in the Academic Hospital of Mataram University.	Hospitals are not only for patients with health problems. However, it is also intended for those who want to consult, for example related to the use of chemical substances in cosmetics. The University of Mataram Academic Hospital provides services related to education on the use of cosmetics, where the use of cosmetics must pay attention to various ingredients or materials used. Because, if individuals are not careful in analyzing the ingredients used, it can cause skin cancer which is characterized by the uncontrolled growth of several skin cells.
10.	“Analysis of the Implementation of the Hospital Occupational Health and Safety Program (K3RS) at Level II Robert Wolter Mongisidi Hospital, Manado City”	Maringka, dkk., 2019.	Jurnal KESMAS	Has the aim of explaining related to providing analysis results related to K3 management of chemical hazard factors found in hospitals and explaining the importance of K3.	The hospital is one of the agencies engaged in the health sector, but has a high risk for visitors, patients, and employees if K3 implementation is not carried out properly. One of the risks in hospitals is caused by chemical factors which generally come from several chemical compounds. Based on this, regular checks are needed regarding the performance or standardization of OHS applied in the hospital. Supervision is also carried out in every risky work area.
11.	“Chemical Hazard Risk Control Efforts at the Sharps Medical Waste Management Unit in Hospital”	Ningrum & Tualeka, 2018.	Journal of Public Health Research and Community Health Development	Aims to provide analysis results related to the importance of OSH promotion carried out in hospitals.	The management of medical waste must certainly get special treatment compared to ordinary waste. This is because medical waste generally has several impacts that can affect the health of individuals. K3 management on the use of chemicals should be labeled as hazardous chemicals, so that users have further knowledge related to how to use chemicals and minimize the risk of accidents from the use of chemicals.
12.	“Occupational Safety and Health (K3) Risk Analysis of B3 Medical Waste Management at Mayjend Hm Ryacudu Hospital, Kotabumi Selatan District, North	Setiawan, 2021.	Skripsi Poltekkes Tanjungarang.	Aims to provide analysis results related to the management of chemicals sourced from B3 medical waste through K3 management implemented in hospitals.	For workers and patients, it can be caused in hospitals, for example, infection with several types of diseases. In addition, the use and management of hazardous chemicals also triggers the health of technicians, nurses, doctors, and others. OHS management needs to be carried out and conveyed to a number of human resources in the hospital. Work safety is an important factor in the world of work, because if

	Lampung Regency”				this factor is not managed properly, the results will be bad, and vice versa.
13.	“Factors Associated with the Implementation of OHS Implementation in Health Workers at RSIA Permata Sarana Husada Period February 2015”	Ernawati & Nurlel-wati, 2017.	Jurnal Akademi Keperawatan Husada Karya Jaya.	Aims to explain the application of R3 which has a relationship with chemical hazard factors found in one hospital.	In service industries such as hospitals, there are various forms of hazards such as toxic chemical hazards, ergonomics, extreme temperatures, radiation exposure, etc. Based on this, hospital management needs to know about the importance of OHS management implemented in hospitals. OHS management can act in the field of increasing professionalism, increasing knowledge in the use of chemical hazardous materials, and others.
14.	“The Role of Social Media in Health Promotion Efforts: A Literature Review”	Leonita & Jalinus, 2018.	Jurnal Inovasi Vokasional Dan Teknologi	It aims to find out the efforts of the health promotion program carried out by utilizing social media as one of the technologies.	Promkes (health promotion) is one of the efforts to improve health status through several factors applied by each component of society or individuals themselves. Some kinds of social media that can be used in health promotion efforts include Second Life, Twitter, MySpace, Facebook, YouTube, and so on. In addition, platforms used in health promotion include Blogs, Image Sharing, and Mobile Technology. The literature study conducted explained that carrying out health promotion has great potential to be widespread. This is because many people nowadays use social media. However, through the literature review it is also known that there are weaknesses in using social media, such as being very easy to receive hoax news, so it is very important for users to filter information first.
15.	“Identification of Potential Hazards Causing Work Accidents in the Pharmacy Installation of Hospitals in Karawang”	Hilmi & Ratnasari, 2020.	Health Science Growth (HSG) Journal	Aims to analyzing potential hazards, especially those caused by chemical factors that cause work accidents in hospitals.	There are various chemical hazards identified in hospitals, such as explosions due to medical gases, inhalation of dry syrup, exposure to cytotoxic drugs, exposure to chemical spills, inhalation of mercury, inhalation of ethylene oxide, formalin, and halothane gas. In addition, exposure from chemicals is also likely to occur to employees where the storage process is not in accordance with the storage area. So that indirectly employees have the possibility or potential to be exposed to chemicals.

DISCUSSION

One of the factors that need to be considered in the management strategy is related to medical waste management which has a connection with chemical factors. The remaining chemicals used in the hospital or what is called waste must go through several processes first, such as sorting, collecting, transporting, and managing according to the characteristics of the chemicals contained in the hospital. The management carried out has the aim of minimizing the hazards posed by the chemicals used in the hospital (17). Workers in hospitals, such as doctors, nurses, and so on must pay close attention to the dangers and potential of chemicals used or direct interaction with chemicals. Examples of chemicals used are medical gases, preservatives, cytotoxics, disinfectants, and others. The existence of health promotion has the role of providing knowledge freely to several hospitals and other health agencies (18).

OHS or Occupational Safety and Health in hospitals is one of the activities carried out to maintain and protect human resources so that they can protect themselves and patients. In addition, HR itself in the hospital field is not only aimed at doctors, but also at patient companions, patients, employees, staff, and all components involved in the hospital. The regulations governing OHS management in hospitals are Decree of the Minister of Health No. 432 of 2007 (10). Hazards in hospitals can be caused by hospital waste, electrical hazards, mechanical hazards, psychosocial factors, chemical factors, and biological factors. Hazards can occur to employees, visitors, and patients. Based on this, K3 is needed as much as possible so that all individuals in the hospital minimize, reduce, and prevent work-related accidents. One of the service standards owned by the hospital is OHS which must be fulfilled (11).

Every hospital that has been established in Indonesia must know and implement an OHS system that is in accordance with standardization. One of the hospitals in Indonesia, namely RSUD Haji Makassar, is in a good category in implementing OHS so as to minimize chemical hazards. The indicators of OHS include the implementation of emergency response programs, management of toxic and hazardous materials, implementation of OHS services, and establishing health policies (19). The results of a study by Afrianto (2017) explained that there are various kinds of risks and potential hazards arising from work errors carried out in several agencies, such as hospitals. Overall, the chemical hazards prevented from Pelita Anugrah Mranggen Demak Hospital have not been fully maximized. Based on this, further evaluation needs to be carried out so that the chemical hazards contained in the hospital can be minimized (20).

There are various chemical hazards found in hospitals, for example, found in laundry services where the materials contain quite high risks and dangers. For example, Clax Allegro is proven to have corrosive and carcinogenic properties. Harmfull has properties that can cause eye damage and burns. Anios has flammable vapor properties, sensitizers, and so on. Based on this, it is necessary to apply K3 as well as possible (12). The results of the study explained that waste generated from chemicals can cause poisoning for patients, patients' families, health workers, and so on. Based on this, K3 management is needed in dealing with chemicals. For example, by implementing SOPs or standardization that has been adjusted to government regulations, and so on. Chemical waste must also be managed by paying attention to its characteristics or types, so that the safety of all individuals will be well maintained (21).

Hospitals are not only for patients with health problems. However, it is also intended for those who want to consult, for example related to the use of chemical substances in cosmetics. The University of Mataram Academic Hospital provides services related to education on the use of cosmetics, where the use of cosmetics must pay attention to various ingredients or materials used. Because, if individuals are not careful in analyzing the ingredients used, it can cause skin cancer which is characterized by the uncontrolled growth of several skin cells (22).

The hospital is one of the agencies engaged in the health sector, but has a high risk for visitors, patients, and employees if K3 implementation is not carried out properly. One of the risks in hospitals is caused by chemical factors which generally come from several chemical compounds. Based on this, regular checks are needed regarding the performance or standardization of OHS applied in the hospital. Supervision is also carried out in every risky work area (13). The management of medical waste must certainly get special treatment compared to ordinary waste. Because, medical waste generally has several impacts that can affect the health of individuals. OHS management on the use of chemicals should be labeled as hazardous chemicals, so that users have further knowledge related to how to use chemicals and minimize the risk of accidents from the use of chemicals (23).

For workers and patients, it can be caused in hospitals, for example, infection with several types of diseases. In addition, the use and management of hazardous chemicals also triggers the health of technicians, nurses, doctors, and others. OHS management needs to be carried out and conveyed to a number of human resources in the hospital. Occupational safety is an important factor in the world of work, because if this factor is not managed properly, the results will be bad, and vice versa (24). In the service industry such as hospitals, there are various forms of hazards such as toxic chemical hazards, ergonomics, extreme temperatures, radiation exposure, etc. Based on this, hospital management is required to ensure the safety of workers. Based on this, hospital management needs to know about the importance of OHS management implemented in hospitals. OHS management can act in the field of increasing professionalism, increasing knowledge in the use of chemical hazardous materials, and others (25).

Promkes (health promotion) is one of the efforts to improve health status through several factors applied by each component of society or individuals themselves. Some kinds of social media that can be used in health promotion efforts include Second Life, Twitter, MySpace, Facebook, YouTube, and so on. In addition, platforms used in health promotion include Blogs, Image Sharing, and Mobile Technology. The literature study conducted explained that carrying out health promotion has great potential to be widespread. This is because many people nowadays use social media. However, through the literature review, it is also known that there are weaknesses in using social media, such as being very easy to receive hoax news, so it is very important for users to filter information first. (26). There are various chemical hazards identified in hospitals, such as explosions due to medical gases, inhalation of dry syrup, exposure to cytotoxic drugs, chemical spills, inhalation of mercury, inhalation of ethylene

oxide, formalin, and halothane gas. In addition, exposure from chemicals is also likely to occur to employees where the storage process is not in accordance with the storage area. So that indirectly employees have the possibility or potential to be exposed to chemicals (27).

CONCLUSION

The conclusion based on the explanation above is that one of the factors that need to be considered in the management strategy is related to medical waste management which has a connection with chemical factors. The remaining chemicals used in the hospital or what is called waste must go through several processes first, such as sorting, collecting, transporting, and managing according to the characteristics of the chemicals contained in the hospital. The management carried out has the aim of minimizing the hazards caused by the chemicals used in the hospital. There are various kinds of chemical hazards found in hospitals, for example found in laundry services where the material contains quite high risk and danger. For example, clax allegro which is proven to have corrosive and carcinogenic properties. Harmfull has properties that can cause eye damage and burns. Anios has flammable vapor properties, sensitizers, and so on. Based on this, it is necessary to implement OHS as well as possible.

SUGGESTION

Suggestions are addressed to the author to add some quantitative data to support the novelty of the research results, because this research has limitations based only on descriptive qualitative studies. It is also recommended for hospital health workers, staff, patients, and hospital visitors to pay attention to chemical hazard factors found in hospitals through the implementation of OHS management strategies found in hospitals.

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