

An Overview of the Health Risks and Safety in Nursing in Emergency Installations

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Abstract

Work Safety is a safety condition that is free from the risk of workplace accidents that covers workplace conditions, equipment, and workers. Nurses are medical workers that many have the potential physical hazards, ergonomics, biology, chemistry, psychosocial that can lead to illness or accidents. Risk management AS / NZS 4360/2004 are used to prevent the occurrence of adverse events (accidents or contracting the disease). Implementation of nursing activities on nurses in the ER RSU as research objects. This study aims to find the root causes of accidents by analyzing the human element, methods, machines, materials, costs and environmental (5M + 1E) using *Root Cause Analysis* (RCA). Research with 24 respondents have a semi-quantitative research with cross sectional study design. The results of hazard identification and risk by the method of *Job Safety Analysis* (JSA) acquired 33 risks that could threaten the safety of nurses. Conclusion: The human factor becomes dominant underlying cause, such as fatigue due to working shifts, lack of resources nurses, lack of adherence to standard operating procedures (SOP), and lack of awareness on the implementation of HSE nurses in the workplace. Safety risk control and commitment nurses make risk management program run HSE as a recommendation to minimize workplace accidents in the ER nurse.

Keywords: risk, work accidents, emergency room, nurse

1. Introduction

Hospital X Surabaya is type B hospitals that have Emergency Installations that provide health services in the general public. Emergency installation became the site of the first reference for patients to its emergency and non emergency. According to research Swansburg (1996), the nurse is the most health workers with the composition of the 60% of all health workers in hospitals and who did the longest contact with patients. Nurses can be exposed to various risks of injury and illness while working. The risk of danger in the hospital include the danger of biological, physical, chemical, ergonomics and psychosocial. Based on these reasons then this research aims to analyze the risk of workplace safety and health by using the element Man, Methods, Machines, Materials, Money, and, Environment (5 m + 1E) on the implementation of the activities of nursing in emergency installations (IGD) Hospital X Surabaya.

2. Method

This research has a semi quantitative research approach method with the kind of observational and research approach of cross sectional. This research was conducted at the Emergency's Hospital Installation X Surabaya, East Java. As for the time the research was conducted in December 2001 – January 2015. The population in this research totalled 24 nurses using the total population as *sampelnya* retrieval techniques. Data collection techniques using interview techniques with the help of questionnaires, observation with the help of a checklist, the camera and the study documentation. Identification of the implementation activities of nursing using the method of Job Safety Analysis (JSA). Analysis of the problems of using 5 m + 1E with the method of Root Cause Analysis (RCA).

3. Result

Based on the results of the identification made at Installation Emergencies RS X Surabaya on earn 33 implementation of nursing who have the risk of the safety and occupational health (HSE). The value of consequence (C), (E), exposure and likelihood (L) is obtained by taking the median value of the assessment of the whole of the respondents (n = 24), where the value of the risk derived from the multiplication value of consequence (C), (E), exposure and likelihood (L) for each implementation of nursing. The table 1 describes the results of the HSE risk assessment on a nurse IGD:

Table 1 The Results of Risk Assessment In Nursing Nurses Implementation HSE IGD Surabaya X Hospital 2014

Implementation Of Nursing	C	E	L	Risk Value	Risk Index
Measure patients' vital signs (temperature, pulse, breathing, and blood pressure)	3	10	1	30	Intemediet
Accepts patients with emergency Psychiatry	15	3	1	45	Intemediet
Accepts patients with decreased consciousness	15	6	3	270	High
Installing infuse	7	10	6	420	Very High
Removing the infuse	3	10	6	180	Substantially
Install a splint	7	6	3	126	Substantially
Giving insulin injections	7	6	3	126	Substantially
Treating wounds	7	6	6	252	High
Sew the wound	7	6	6	252	High
Material examination laboratories	7	10	6	420	Very High
Stop the bleeding (surgical or non surgical cases)	7	6	6	252	High
Give oxygen therapy by using a slang binasal	7	6	3	126	Substantially
Inhalation therapy gives	3	6	3	54	Intemediet
Preparing patients for examination and radiodiagnostik	3	6	1	18	Low
Prepare patients and tools for installation of gypsum on the bone	3	3	0.5	4.5	Low
Prepare the patient and the tool to remove foreign objects in the eye, ear, nose, throat, and urogenitalia tool	7	3	1	21	Intemediet
Prepare the patient and the tools to act intubasi	15	3	3	135	Substantially
Prepare the patient and the doctor's action tool to help Water Seal Drainage (WSD)	7	2	1	14	Low
Perform Electro Cardio Gram (ECG)	7	10	1	70	Substantially
Rinse the hull	7	3	3	63	Intemediet
Do heart lung resuscitation (CPR)	40	6	3	720	Very High
Caring/giving Burns	7	3	1	21	Intemediet
Handling a broken rib	15	3	1	45	Intemediet
Take the blood veins	7	10	3	210	High
Intravenous injection of action	7	6	6	252	High
Perform actions injection intra maskular	7	6	1	42	Intemediet
Mucus sucking action (suction)	15	3	1	45	Intemediet
Handling injuries of thoracic wall skewers	40	3	1	120	Substantially
Installation of the dower catheter	7	6	6	252	High
The release of dower catheter	3	3	1	9	Low
Install the pipe of the stomach (sonde)	7	6	3	126	Substantially
Preparation tools sewing sewing tools completeness checking before and after use.	3	10	1	30	Intemediet
Governance the patient died	3	3	1	9	Low

Based on the results of the risk assessment health and safety work on Table 1, note there are 3 very high risk, high risk, 7 8 risk substantial risk medium, 10, and 5 risk.

Evaluation of the risk is a follow-up risk assessment. This step is determining the priority risks HSE to know which risks need to get control of the short term or the risk is lowered to a level that can be tolerated by using the concept of the ALARP (As Low Us Reasonable Practicable). In accordance with the concept of ALARP then focus the priority in the preparation of risk is a risk with risk index value is very high (very high) and high (priority 1). Note that there are several similar incidents or descriptions of a type, then the researchers classified the risk of HSE using the code risk. Then the final results of the risk assessment of HSE in total for each implementation of nursing with the formula of Risk = C x E x L are then ranked based on the highest risk to the lowest risk. Risk prioritization results HSE can be seen in Table 2 as follows:

Table 2 Risk Priority Results HSE

Risk Code	The Hse Risk Description	The Total Of Risk Value	Rank
B	Body position/attitude of nurses work awkward might result in Low back pain (LBP)/musculoskeletal disorders (MSDs)	3102	1
E	Nurses exposed to chemical substances	2382	2
A	A nurse pricked by a needle or sharp objects cut throat	2076	3a
C	Nurse patient contracting the disease due to contact with wounds or fluid in the patient's body	2076	3b
F	Sterilization less good or wayward procedure by nurses	1692	4
D	Stung by electricity or fire	990	5

The results of Table 2 indicates that the risk of implementation of HSE on nursing nurse retrieved 5 (five) rank risks ranging from the highest risk to the lowest risk, i.e., nurses at risk of Low back pain (LBP)/musculoskeletal disorders (MSDs) resulting from the body's position/attitude of nurses work awkward, nurses exposed to chemical substances, a nurse pricked by a needle or sharp object, cut throat nurse patient contracting the disease due to contact with wounds or fluid in the patient's body , sterilization less good or wayward procedure by nurses, and stung by electricity or fire. Based on the concept of risk ALARP then focus only on the nurses at risk of LBP/MSDs/body position resulting from the working attitude of nurses who are socially inept, a nurse exposed to chemical substances, a nurse pricked by a needle or sharp object, cut throat and nurse the patient contracting the disease due to contact with wounds or fluid in the patient's body.

4. Discussion

Discussion of the roots of the problem of health and safety risks by using the method of Root Cause Analysis (RCA) is divided into two parts namely the root problems of technical and non-technical. The root of the technical issues related to the factor method, machinery or work stations, material, cost and the environment while the non-technical factors in question is related to the human factor. Here is the explanation.

4.1 Nurses at risk of LBP/MSDs

Nurse IGD has a fairly high activity. Speed and accuracy in administering health care to patients becoming top priorities of nurses, so often neglected aspect of ergonomics because nurses are more oriented on the safety and comfort of patients. Note the number of nurses for every shift arrows 4-5 nurses on duty, this may affect the attitude of the nurses and the work load of nurses be increased. It is also known from the results of observation and interview nurses IGD many do work with awkward position, manual handling, frequent bending (frequent bending) and rotate (twisting), as well as the movement pushing to the front.

From the research results obtained are the cause of the Foundation of technical factors are the working methods not in accordance with the SPO and non technical factors is the omission of a nurse and a nurse's workload overload patients. From both of these factors can occur due to a lack of knowledge of the nurse, nurse breached the SPO, less healthy physical condition due to shift work, job mobility is high due to overload of patients, as well as the fatigue of work due to the limited nursing Human Resources.

This agreed with Oman, (2008) that the knowledge, attitudes and skills of health workers is urgently needed so as not to IGD error in the handling of patients to be more optimal and directional. While according to Suratno (2005), explaining that the lack of understanding of the SPO can become a trigger for the occurrence of accidents. Related work shift according to Grandjean (2010), 50-60% of shift workers experienced sleep disturbances, declining physical health, psychological condition and erratic as a result of shift work. Work posture bent have risk 14 times more common LBP working posture compared to not bend. The results of research that States that 80 to 90% of LBP due to bend forward (fleksi) (Meily, 2014).

The discussion of the results of efforts in minimizing the risk of LBP nurse/MSDs then need to be provided with facilities such as nurse sitting height can be raised or lowered, so that nurses can adjust the height of the bed is aligned with the bottom of the elbow of the arm it when providing services with a duration of over two hours and repeatedly, as in the time of sewing wounds, intravenous injecting, and also installed a drip on the patient's dehydration. And do training or seminars related to the risk of LBP/MSDs.

4.2 Nurses Exposed To Chemical Substances

Nurses also faced the danger of exposure to chemical substances including chemical substances that can be inhaled, digested, or contact with the skin associated with the actions of the treatment of patients and the care of the environment. It is also known from the results of observation and interview nurses IGD some circumstances nurses at risk of being exposed to chemicals such as the use of latex gloves, the use of detergents or solven, as well as the granting of antineoplastik drugs and antibiotics. From the research results obtained are the cause of the basis only of non technical factors such as nursing negligence, lack of knowledge of nurses, and nurses were

not wearing Personal Protection Standard.

This can occur because the physical condition of nurses less healthy because of the work shift, the high mobility of nurses work, work exhaustion due to the limited Human Resources of nurses; new nurses and nurse less higiens; overload of patients to nurses in the wearing of the Personal standard is not appropriate to take action soon to treatment of patients and the lack of awareness of nurses related HSE. According to Polovisch, (2004) that the use of gloves and robe are recommended to protect nurses from contamination splashes when giving the drug and deal with the dirt of the patient. Therefore the use of the PPE effectively required and tailored to the level of risk exposure to these chemicals.

There has been a legal basis for the use of the APD, namely UU No. 1 1970, chapter IX, article 13 of the obligations when entering the workplace which reads "he who will enter the workplace, something required to obey all safety instructions work and wearing the self protection tools required". While the nurse's limited Human Resources related, not in accordance with the Permenkes 262/Menkes/Per/VII/1979, which States that the power needs of nurses in hospitals is a comparison of the number of beds in comparison with the number of nurses as follows: hospital-grade – B: 3 – 4 nurse: 2 beds.

The discussion of the results of controls that can be done to lower the risk of nurses exposed to chemical substances by creating a secure handling management exposure to hazardous chemical substances including drugs that are dangerous.

4.3 A Nurse Pricked By A Needle Or Sharp Objects Cut Throat

Nurse every day can be exposed to the danger of the impaled incision needle or sharp medical instruments. The result of the data documentation at IGD obtained on average for each shift receive ± 30 patients. It is also known from observations and interviews on nurse frequently performed actions that IGD, among others, inoculate, sewing and taking blood. The research results obtained from the basic cause of non technical factors as well as a nurse exposed to chemical substances, namely the lack of concentration of nurses and nurses don't wear Personal Protection Standard.

The basic cause of the human factor in accordance with the statement of the WHO (2002), i.e. There is some factor that raises the incidence of NSI, such as: labor is not appropriate/limited, lack of awareness of the dangers officers as well as the lack of information and training.

From the results of the discussion of control can be done to reduce the risk of a nurse pricked by a needle or sharp objects cut throat with commitments to apply the principle of universal precautions and socialization related how the handling of the NSI or injury due to the sharp objects cut throat as well as prevention.

4.4 A nurse Contracted the disease or infected Patients

Same is the case with the nurses pricked by a needle or sharp object, cut throat nurse also have the risk of contracting the disease of the patient due to contact with wounds or bodily fluids of a patient. The results of observation and interviews on nurse IGD where high mobility as well as demands for responsiveness, fast and precise in patient service, known at the time of receiving patients with bloody wounds conditions such as an accident or patients who overdose, nurses do not know the patient's disease history. See the things nurses to potentially contracting the disease or infected patients. The research results obtained from the basic cause of non technical factors i.e. nurse negligence, lack of knowledge of nurses, and nurses were not wearing Personal Protection Standard.

Same is the case with the nurses pricked by a needle or sharp objects cut throat which became the basic cause of the human factor in accordance with the statement of the WHO (2002), i.e. There is some factor that raises the incidence of NSI, such as: labor is not appropriate/limited, lack of awareness of the dangers officers as well as the lack of information and training. The discussion of the results of controls that can be done to minimise the risk of contracting the disease or infected nurse patients with commitments to apply the principle of universal precautions and handling way of socialization related pemayanan as well as prevention.

5. Conclusion

Based on the results and discussion, conclusions can be obtained as follows:

1. Based on the results of the identification of the hazards and risks through observation, review of documentation, and Job Safety Analysis (JSA) known health risks and safety nurses at IGD RS X Surabaya retrieved 33 risks which can threaten the safety of nurses.
2. Based on Root Cause Analysis (RCA) is obtained, the dominant is the basic cause of human factors, among others: the working shift work due to fatigue, a lack of human resources for nurses, lack of adherence to standard operating procedures (SPO), and the lack of awareness of nurses towards applicability of HSE in the workplace.
3. The relevant risk control Alternatives to made recommendations is to reduce the level of likelihood or

consequences (reduce likelihood or consequence) then the need for a commitment to risk management program run in HSE IGD, among other things: training, seminars, and additions or improvements to the infrastructure support to nurses in health care activities as well as the process of socialization of HSE culture in the neighborhood hospital.

Based on the conclusions obtained advice that can be given to the hospital and the respondents are:

1. The addition of facilities and infrastructure work related risks HSE
2. The addition of human resources for nurses to be more optimal in administering health care and reduce the level of nurse work fatigue due to excessive workload where the ratio of the number of nurses and patients are not comparable.
3. The existence of training or seminars related to risk management, as well as the socialization of HSE SPO and increased oversight of its implementation in an effort to reduce work accidents on nurses.
4. The giving of Reward and Punishment in an effort to repair the problem of the lack of awareness of the workers against the implementation of HSE in the workplace.

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