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## DESCRIPTION OF WORK HAZARDS IN NURSES AT SMC RS TELOGOREJO

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**Abstract.** The hospital environment has the potential for disease transmission, nurses as implementers of nursing care are at risk of contracting infectious diseases in carrying out their duties. In hospitals there are occupational hazards including biological hazards, chemical hazards, ergonomic hazards, physical hazards, and psychosocial hazards). The purpose of this study was to determine the description of work hazards in nurses at SMC Telogorejo Hospital. This research is a descriptive survey by conducting observations and interviews, *nonprobability sampling* technique *Purposive Sampling* type with a large sample size of 228 respondents. The results of this study illustrate that the majority of nurses have exposure to physical work hazards (cold climate), biological work hazards (*airborne*), chemical hazards (use of disinfectant liquid and handsocon), ergonomic work hazards (medical actions), and psychosocial work hazards (workload). From this study it was found that overall nurses at SMC Telogorejo Hospital were exposed to work hazards in the mild category. It is expected that SMC Telogorejo Hospital monitors and evaluates the application of OHSRS to Nurses in carrying out their duties and responsibilities so as to improve the performance, safety and health of Nurses.

**Keywords:** Occupational Hazard, Nurses, Hospitals Bibliography: 54 (2012 - 2022)



## INTRODUCTION

Community or society is a collection of people who live together in an area or location, forming a culture and interacting with each other in a sustainable manner and bound by a common identity (Stanhope and Lancaster, 2020). *The American Nurses Association* (ANA) defines community health nursing as a synthesis of clinical nursing and public health practices that are comprehensive, holistic and ongoing to maintain and improve population health with a practice focus on promotive and preventive efforts without neglecting curative and rehabilitative and aimed at the community as a whole, both individuals, families, groups, and communities. Communities in the labor group are at risk of occupational diseases (Nies and McEwen, 2019).

The community needs one of the health service units, namely hospitals that organize individual health services in a perfect manner that provides , outpatient and emergency services. According to its characteristics, the health service unit is influenced by the development of health science, technological advances and the socio-economic life of the community which must remain able to improve services that are of higher quality and affordable to the community in order to realize the highest health (Indonesian Law No. 44 of 2009). Nurses are the most dominant personnel providing services to patients for 24 hours continuously. Thus, nurses are the personnel who most often have direct contact with patients and families, so their role determines the quality and image of the hospital. Nursing services

determine the value of a health service so that nurses are one of the vital elements in the hospital (Artianingsih,2016).

Nurses have roles and responsibilities related to direct service to patients, causing high public demand for quality nursing services, so nursing services are also required be able to provide good and professional services which will also improve the quality of the hospital (Widyana, 2016). Hospitals are required to implement Occupational Health and Safety (K3) Efforts which are carried out in an integrated and comprehensive manner in the Hospital so as to avoid the risk of Occupational Diseases (PAK) and Occupational Accidents (KAK) (Kepmenkes RI, 2010; Ruli,2017).

Nurse performance is an action taken by a nurse in an organization in accordance with their respective authorities and responsibilities, not violating the law, rules and norms and ethics, where good performance provides satisfaction to service users (Mathius, 2013). The performance of nurses as the spearhead of health services is an important thing to study in maintaining and improving the quality of health services. Good performance is a bridge in guaranteeing the quality of health services provided to patients (Langingi, 2015).

Occupational health is an element of health related to the work environment and work, which can directly or indirectly affect work efficiency and productivity. Meanwhile, occupational safety is a major means of preventing accidents.



work that can cause losses in the form of injury or injury, disability or death, property losses, damage to equipment or machinery and extensive environmental damage (Tarwaka, 2014). The basic concept of Hospital Occupational Safety and Health (K3RS) is an integrated effort of all hospital workers, patients, visitors or caregivers of the sick to create a healthy, safe and comfortable work environment, hospital workplace for hospital workers, patients, visitors / caregivers of the sick as well as for the community and the environment around the hospital (Sucipto, 2014).

*The International Labor Organization (ILO)* estimates that each year about 24 million people die from accidents and diseases in the work environment including 360,000 fatal accidents and an estimated 1.95 million caused fatal diseases that arise in the work environment. *The World Health Organization (WHO)* notes that 35% to 50% of the world's workforce is exposed to physical, chemical and biological hazards (Bachri, 2014). In Indonesia in 2013 there were an average of 99,000 cases of work accidents, 70% of which were fatal, death and lifelong disability. From the report on the implementation of occupational health in 26

Provinces in Indonesia in 2013, the number of cases of general diseases in workers was around 2,998,766 cases, and the number of cases of work-related diseases amounted to 428,844 cases (Kepmenkes, 2014). Research conducted in a hospital (Central Java General Hospital), nurses tend not to report occupational accidents to the K3 department of the hospital. A total of 23.81% of nurses in the ICU claimed to have experienced common workplace accidents such as slips and falls. Nurses who experienced the most mechanical hazards were ICU nurses (32.69%). Psychosocial factors such as excessive workload, shifts

work, and work-related stress is mostly experienced by nurses in the ICU (27.27%) (Anggit P, 2016).

Based on the results of a survey on February 2, 2022 with a questionnaire from 20 nurses at SMC Telogorejo Hospital, the results of exposure to physical hazards (Cold temperature 60%), chemical hazards (Allergy to disinfectant liquid 20%), biological hazards (Air contact / airborne 77.8%), ergonomic hazards (Lifting and moving patients 61.1%), and psychosocial hazards (The number of patients with unbalanced nursing staff 89.8%). Hospitalization is a service for patients who enter the hospital using beds for the purposes of observation, diagnosis, therapy, medical rehabilitation and other medical support (DEPKES RI, 1987). Based on the background regarding the potential occupational hazards that occur in hospitals which will have an impact on the performance, safety and health of nurses, the researcher interested in conducting research on the potential occupational hazards of nurses at SMC Telogorejo Hospital, so the researcher is interested in conducting nursing research with the title "Overview of occupational hazards in nurses at SMC Telogorejo Hospital".

## RESEARCH METHODS

This research is quantitative research with a descriptive research design or research that describes the data to be made either alone or in groups. The sample used was 228 respondents. *The* sampling technique used *purposive sampling*. The data collection tool in this study is an interview sheet or form containing the identification of potential hazards that may occur in the SMC treatment room of Telogorejo Hospital.



## RESEARCH RESULTS

### 1. Respondent Characteristics

#### a. Age

Table 1  
Frequency Distribution of Respondent Characteristics Based on Age in Nurses at SMC  
Telogorejo Hospital 2022  
(n:228)

Age	Frequency (n)	Percentage (%)
26 - 35 Years	100	43.9
36 - 45 Years	63	27.6
46 - 55 Years	65	28.5
Total	228	100.0

Age in this study was categorized according to the Indonesian Ministry of Health (2009) as early adulthood (26 - 35 years), late adulthood (36 - 45 years) and late adulthood (46-55 years). Age is related to a person's maturity, maturity, and ability to work. The older the age the more able to show mental maturity and the faster rational thinking, able to make decisions, the wiser, able to control emotions, obey the rules and norms and commitment to work (Yusuf, M. 2016).

Young people often experience cases of occupational accidents, this may be

due to carelessness and haste (Triwibowo and Puspilandani, 2013). The more age, the level of maturity and strength of a person will be more mature in thinking and working. Because with increasing age, a person's maturity in thinking is getting better so that he will be motivated to do every job in serving patients professionally (Nursalam, 2008). In the age group over 45 years with a working period (> 10 years) there is a decrease in physical function (Wulandari, 2012). Cold temperatures in the workplace old and very young are equally more at risk of hypothermia (Nugroho, 2012).

#### b. Length of Service

Table 2  
Frequency Distribution of Responde Characteristics Based on Years of Work in Nurses  
at  
SMC Telogorejo Hospital in  
2022 (n: 228)

Length of Service	Frequency (n)	Percentage (%)
< 5 Years	39	17.1
5 - 10 Years	62	27.2
> 10 Years	127	55.7
Total	228	100.0

The results showed that most of the respondents in this study already had

tenure of about < 5 years with a total of 349 respondents (17.1%), while for a working period of 5 - 10 years as many as 62



respondents (27.2%) and ten years of service > 127 respondents (55.7%). At the beginning of work, nurses have more job satisfaction, and it decreases over time gradually by five or eight years and increases again after more than eight years. The a person works, the more skilled he or she will be in carrying out the work (Hariandja, 2008). Someone who has served the organization for a long time has a high level of satisfaction. the longer a person works, the more cases he or she handles so that he or she will be more satisfied.

The more his experience increases, on the contrary, the shorter the person works, the fewer cases he handles (Sastrohadiworjo, 2008). Work experience provides a lot of expertise and work skills. Work experience gives a lot of awareness to a nurse to take an action in accordance with established procedures. Experience is one of the factors of the working period, and most nurses have a working period between 8-10 years (67.5%) (Mulyaningsih, 2013).

## 2. Occupational Hazard Variables

### a. Physical Work

#### Hazard

Table 3

Frequency Distribution of Respondents Based on Physical Work Hazard (n:228)

	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Needle Puncture	91	39.9%	137	60.1%
Slipped	53	23.2%	175	76.8%
Noise	58	25.4%	170	74.6%
Radiation	71	31.1%	157	68.9%
Cold Climate	118	51.8%	110	48.2%
Electricity	15	6.6%	213	93.4%
Total	228	100%	228	100%

The results of research on physical work hazards show that the majority of physical work hazards in nurses found 118 respondents (51.8%) experiencing physical work hazards cold climate. Physical hazards are potential hazards that can cause health problems to exposed workers. As a nurse, you can work professionally in carrying out your duties and obligations as an ideal and responsible nurse. The potential physical hazard is the cold climate, in the hospital there is a special unit with a cold climate that serves as a critical service area. to prevent bacterial growth and

virus. Excessive exposure to cold climates can reduce the agility, sensitivity and strength of nurses so that workers' movements become slow, difficult to move accompanied by decreased muscle strength (Wilson&Corlet, 1992). Environments with cold climates Nurses wear protective clothing called *scrubs* (Amalia, 2020).

Every year, work accidents in nurses while caring for patients always increase. Starting from being accidentally pricked by a needle to contracting a disease (Ade, 2007). The potential hazards and risks of work accidents that exist in an agency are caused by a lack of concern on the part of the agency.



related to all work hazard triggers such as electrical loads that can have a direct impact on labor and the environment. Replacement of cables, and maintenance of electrical installations carried out regularly can minimize the occurrence of occupational hazards due to electrical installations (Nurjannah, 2012). Most of the nurses (54.5%) or 54 people did *unsafe actions* at work and most of the nurses (54.5%) did *unsafe actions* at work.

(25.3%) or 25 nurses who perform *unsafe actions* are included in the long service category (> 10 years) or called senior nurses. With the most types of *unsafe actions* (23.3%) is operating work equipment not according to standards (Maria, 2015).

b. Biological Working Hazard

Table 4  
Frequency Distribution of Respondents Based on Biological Work Hazard  
(n:228)

	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Blood spatter	52	22.8%	176	77.2%
Urine splash	34	14.9%	194	85.1%
Exposed to sweat	37	16.2%	191	83.8%
Sputum splash	67	29.4%	161	70.6%
Airborne	110	48.2%	118	51.8%
Exposure to liquid hull	24	10.5%	204	89.5%
Total	228	100%	228	100%

Table 4 shows that the majority of biological occupational hazards in nurses were found to be

110 respondents (51.8%) experienced airborne physical occupational hazards. Biological hazards are microorganisms that cause disease, such as bacteria, viruses, fungi, and parasites. These microorganisms are transmitted by direct contact with infected people or contamination of fluids and body secrets of other people who have been infected (Irzal, 2016). An infection can be transmitted in more than one way, and those related to HAIs are contact, droplet and airborne transmission (Ministry of Health, 2017). A common occupational risk faced by health care workers

is contact with blood and body fluids during routine patient care. exposure to these pathogens increases their risk of serious infection and possible death. Healthcare workers working in surgical and delivery rooms are exposed to a higher risk of exposure to pathogens than other departments (Gerson and Vlavov, 1992; Linda 2004). Exposure to biological hazards such as airborne, blood and urine splashes that occur in relatively young nurses is possible due to carelessness, negligence and lack of emotional control, therefore supervision and attention are needed for nurses who are still relatively young (Burham, 2012).



c. Chemical Occupational Hazard

Table 5

Frequency Distribution of Respondents Based on Chemical Occupational Hazard (n:228)

	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Disinfectant liquid	65	28.5%	163	71.5%
Antiseptic	40	17.5%	188	82.5%
Use of handscoon	65	28.5%	163	71.5%
Cytostatic drugs	7	3.1%	221	96.9%
Hemodialysis waste	7	3.1%	221	96.9%
Oxygen leakage	6	2.6%	222	97.4%
Total	228	100%	228	100%

The results showed that the majority of chemical work hazards in nurses were found to be 65 respondents (28.5%) experiencing work hazards of disinfectant liquids and the use of handscoons. Risk control of hazards identified after the previous assessment, so that hazard risk control is prioritized on hazards with the highest category to low. Risk control in the High category can be done by reducing the risk of harm as low as possible so that the risk of harm is acceptable. In the risk assessment related to the management of medical waste and hazardous waste, medical waste and hazardous waste that are poorly handled will cause problems for health.

workers, patients, and the public with the presence of toxic properties in the waste (Bokhooredkk, 2014). Chemical hazard control efforts (disinfectants), namely work activities to treat patients during the day, must pay attention to warning signs in the work area to anticipate the dangers of chemicals available in the room and pay attention to the use of chemicals according to procedures (Hanafi & Partawibawa, 2016). Chemical work hazards in the form of frequent use of handscoon, personal protective equipment is equipment needed to protect health workers in danger in the workplace. Personal protective equipment is worn when performing actions in a safe manner (Barbara, 2012).



d. Ergonomic Work Hazard

Table 6

Frequency Distribution of Respondents Based on Ergonomic Work Hazard (n:228)

	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Workload	141	61.8%	87	38.2%
Interpersonal relationships	50	21.9%	178	78.1%
Patient's family	95	41.7%	133	58.3%
PPE	64	28.1%	164	71.9%
Patient safety	4	1.8%	224	98.2%
Work shifts	34	14.9%	194	85.1%
Total	288	100%	228	100%

Table 6 shows that the majority of

do work which repeated

psychosocial work hazards in nurses. It was found that 141 respondents (61.8%) experienced workload work hazards. Unnatural work attitudes are work attitudes that cause the position of body parts to move away from the natural position, for example the movement of hands raised, the back is too bent, to lift up etc. The further the position of body parts from the center of gravity of the body, the higher the risk of skeletal muscle complaints. The farther the position of body parts from the body's center of gravity, higher the risk of skeletal muscle complaints. This unnatural work attitude is generally due to the characteristics of task demands, work tools and workstations that are not in accordance with the capabilities and limitations of workers (Grandjean, 1993; Anis & McConville, 1996; Waters & Anderson, 1996 & Manuaba, 2000).

More than a third of nurses have experienced back injuries severe enough to cause nurses to leave work (Zerwekh & Claborn, 2009). Occupational safety and health Hospital occupational safety and health standards that the potential hazards of ergonomics, namely incorrect posture and

(Permenkes, No. 66 Year 2016). Complaint Musculoskeletal complaints begin to be felt at working age, namely at the age of 25 - 65 years. Complaints will usually begin to be felt at the age of 35 years and will increase with age. This happens because in middle age, muscle strength and endurance will increase (Dryastiti, 2013).

Humans are susceptible to musculoskeletal disorders, whether mild or severe, at the age of 25 years, the longer the working period of nurses by doing repetitive movements and activities for years, the greater the likelihood of experiencing musculoskeletal disorders, both mild and severe (Puspita & Dewi, 2015). Physical stress over a period of time results in reduced muscle performance, with symptoms of reduced movement. Pressures will accumulate every day for a long period of time, resulting in worsening health, also known as clinical or chronic fatigue (Karyati, S. et al, 2019).



e. Psychosocial  
Occupational Hazards

Table 4.7

Frequency Distribution of Respondents Based on Psychosocial Occupational Hazard  
(n:228)

	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Workload	141	61.8%	87	38.2%
Relationship interpersonal	50	21.9%	178	78.1%
Patient's family	95	41.7%	133	58.3%
PPE	64	28.1%	164	71.9%
Patient safety	4	1.8%	224	98.2%
Work shifts	34	14.9%	194	85.1%
Total		288 100%		228 100%

The results showed that the majority of psychosocial work hazards in nurses were found 141 respondents (61.8%) experiencing workload work hazards. Sources of danger in hospitals can also come from the social environment of workers, such as coworkers or patients. Colleagues who are not in line or cannot work well together can cause pressure for other workers which results in work stress. When a worker experiences stress, it will affect reduced concentration and decreased work productivity which can lead to work accidents (Yesci, 2018). Nurses in addition to providing nursing care with many patients, there is also administration, entering documentation with a new system, namely digital. Excessive workload on nurses can trigger stress and *burnout*. Nurses who experience stress and *burnout* allow them to not be able to perform effectively and efficiently because their physical and cognitive abilities are reduced which may occur due to an imbalance between the number of patients and the number of nurses working in the hospital, so that nurses get more workloads than nurses.

The maximum ability of the nurse so that the nurse experiences mental workload and causes unsafe actions (Purba, Y.S 2015).

Reactions to stressors depend on the nurse's personality and previous experiences with stress and coping mechanisms. The productive age is often faced with challenges. If they are not able to manage them, they can be potentially stressful. However, personality factors play an important role. In the presence of a stressor, individuals who are at a productive age tend to do confrontational coping to change circumstances that are considered stressful (Perry and Potter, 2005; Suherni, 2012). The length of a person's working period will affect the level of fatigue felt, because the longer the working period will cause a feeling of saturation with monotonous work that is done every day repeatedly. This will affect the level of fatigue experienced by each worker (Suma'mur, 2014). Nurses who work longer will be more experienced in doing their job and the lower the nurse's desire to leave their job (Umam, 2012).



## CONCLUSION

Respondents in this study were the most exposed to occupational hazards, namely early adulthood (26-35 years) with a work period of > 10 years. the majority of physical hazards in nurses at SMC Telogorejo Hospital are cold climate (51.1%). The majority of occupational biological hazards in nurses at SMC Telogorejo Hospital are *airborne* (48.2%). the majority of occupational chemical hazards in nurses at SMC Telogorejo Hospital are the use of *handscoon* (28.5%). the majority of occupational ergonomic hazards in nurses at SMC Telogorejo Hospital are medical actions (41.7%). The majority of work psychology hazards in nurses at SMC Telogorejo Hospital is workload (61.8%).

## ADVICE

Future researchers are expected to connect work hazard variables with work hazard components.

## LITERATURE

Amalia, Aziza, et al, (2020). Thermohygroether with Data Storage for Surgical Room Monitoring. University of Muhammadiyah Yogyakarta: *Electromedical Engineering Vocational Program*

Anggi Pratiwi, Widodo H, Adi Heru Sutomo. (2016). Management commitment, knowledge, behavior in OHS and work accidents of nurses in private hospitals Yogyakarta: *Journal Of Community Medicine And Public Health*.

Bachri, Syaiful. (2014). *Factors influencing behavior Occupational safety and health behavior (k3) on Employees in the production area of the weaving section*

Pt.Unitex tbk in 2010. Thesis Program Kemas

Harnilawati (2013). *Introduction to Community Nursing Science*. Sulawesi: As Salam Library

Hidayah, (2018). *Overview of Quality of Work life (QWL) in Nurses in one of the Hospitals in Surakarta*, Semarang

Hidayat A. (2014). *Nursing research methods and data analysis techniques*. Jakarta: Medika Salemba

Iftadi, (2012). *Determination of Hazard Factors Faced by Nurses at Karanganyar Regency Hospital and Proposed Prevention Using AHP Method*

Kariadi, D. R. D. (2013), *Guidelines for Patient Admission and Discharge Criteria for the Intensive Care Unit. Intensive Care Unit. Dr. Kariadi General Hospital*, Semarang.

Regulation of the Minister of Health of the Republic of Indonesia Number 66 of 2016 concerning *Occupational Safety and Health of Hospitals*. Jakarta

Sucipto, C.D. (2014). *Occupational Safety and Health*. Yogyakarta: Gosyen Publishing.

Tarwaka (2014). *Occupational safety and health management and implementation of OSH in the workplace*. Surakarta: Harapan Press.

Utari, (2018). *The Relationship between Body Mechanics and the Incidence of Lowback Pain ICU Nurses and Awal Bros Hospital HCU* Tower of knowledge.

Way M. (2019), Job demand, job control, and support: a comparison of three nursing work environments.



[Internet]. Job Demand, Job Control & Support: A Comparison of Three Nursing Work Environments. *State University of New York at Buffalo*; 2008 [cited 2019 Oct 24].

Yesica, (2018). *Identification of Potential Occupational Hazards in Inpatient Installation Nurses at the Cibuur Drug Dependence Hospital*

