

# **Analysis of Health Workers' Risk Factors Occupational Health and Safety at the Meuraxa Hospital**

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## **ABSTRACT**

Hospital is a health service institution that provides complete individual health services from inpatient, outpatient and emergency services. A country must regulate regulations regarding K3RS. This is based on the assumption that the health sector is one of the risky sectors. Injury rates to health workers in this sector are equal to or higher than in other industries generally considered hazardous. These hazards or threats can be classified into biological, physical, ergonomic, chemical, and psychological risks. Protection of hospital human resources and visitors to occupational safety and health risks in hospitals must be a major concern as an effort to increase work productivity which has implications for the quality of service in the hospital.

This research is a quantitative research analytic survey design with cross sectional approach, which aims to determine the analysis of risk factors that most influence on occupational safety and health.

The most dominant factor influencing occupational safety and health is the work unit variable in inpatients, namely the inpatient work unit which has an effect of 18.2 times on occupational safety and health.

**Keywords:** Hospital, OSH, SAQ

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**BACKGROUND**

Increased awareness regarding occupational safety and health (OSH) has increased in the last two decades (1). Hospital Occupational Safety and Health is all activities carried out to ensure and protect the safety and health of hospital Human Resources (HR), patients, patient companions, visitors, and the hospital environment through efforts to prevent occupational accidents and diseases work(2). These hazards and risks can increase occupational health problems which can lead to economic losses for the healthcare organization(3).

Massachusetts Department of Public Health (MDPH) data shows that 2,947 hospital workers were hit by sharp objects consisting of 1,060 nurses, 1,078 doctors, 511 phlebotomy technicians and the remaining 1,119 other support staff. (4). The number of work accidents at Gadjah Mada University Hospital in 2015 increased by 266.7%, namely 16 cases and during 2016 there were 7 cases of work accidents.(5). A study at RSPW Malang shows that most nurses perform unsafe actions and have had workplace accidents(6 ). Research on the description of nurses' behavior in implementing OSH management in Aceh from internal and external factors is in a good category, namely 52.5% and 58.8% (7)

The attitude of health care providers regarding factors related to OSH is a component of safety culture. This can be measured using a questionnaire called the Safety Attitudes Questionnaire (SAQ). Some of the points assessed in the questionnaire include: cooperation climate, job satisfaction, management perceptions, safety climate, working conditions and stress events. This tool has good psychometric properties and can be used to measure the attitudes of health care providers regarding six domains related to health and safety in the hospital.(8).

The Meuraxa Regional General Hospital in the Banda Aceh City Government since September 20, 1997. Banda Aceh Mayor Decree Number: 315 of 2009, December 30, 2009 concerning Determination of the Status of Regional Public Service Agency Financial Management Patterns Meuraxa Regional Hospital, Banda Aceh City, has officially established the Meuraxa Hospital with the status of BLUD, until now the Meuraxa Hospital is a class B hospital since October 2010 based on the Decree of the Minister of Health Number: 1519 / MENKES / SK / X / 2010 concerning Class Determination of Government-Owned Meuraxa Hospital The area of Banda Aceh City, Aceh Province as Class B.

The quality of service in the hospital is inseparable from the available human resource competencies. Protection of hospital human resources against occupational safety and health risks in the hospital environment must be the main concern of hospital management as an effort to increase the productivity of health workers which has implications for the quality of service in the hospital.(9). Occupational safety and health risks need to be assessed in order to prevent occupational accidents and occupational diseases that have the potential for material and non-material harm.(10).

**METHODS**

This research is a quantitative research analytic survey design with cross sectional approach, which aims to determine the analysis of risk factors that most influence on occupational health and safety. The sample in this study were health workers with sample selection using the Accidental Sampling technique using the Slovin formula so that a total sample of 250 health workers was obtained with the inclusion criteria who have worked at least 1 year, D3 education.

**RESULTS****Frequency Distribution of Respondents to Healthcare Workers  
at the Meuraxa Hospital**

No.	Variable	Category	(f)	(%)
1	Gender	Male	59	23.6
		Women	191	76.4
2	Age	17-25 Years	32	12.8
		26-35 Years	84	33.6
		36-45 years	86	34.4
		46-55 Years	48	19.2
3	Level of education	S1 / S2 and equivalent	161	64.4
		D3 / equivalent	89	35.6
4	Length of work	<5 years	153	61.2
		≥5 years	97	38.8
5	Work unit	IGD	30	12.0
		ICU	33	13.2
		Inpatient	187	74.8
6	Workload	High	98	39.2
		Moderate	87	34.8
		Low	65	26.0
7	Work Capacity	Corresponding	246	98.4
		It is not in accordance with	4	1.6
8	OSH training	Ever	196	78.4
		Never	54	21.6

Based on the table above, it can be seen that of the 250 respondents of health workers at the Meuraxa Hospital based on gender, most of them were women, namely 191 respondents (76.4%), based on the age of most of the late adults, namely 36-45 years, as many as 86 respondents (34.4%), based on the educational level most of the S1 / S2 are equivalent, namely 161 respondents (64.4%), based on the length of work, most of which are <5 years as many as 153 respondents (61.2%), based on the work unit, most of them are inpatient 187 respondents (74.8%), based on the workload, most of them had a high workload, namely 98 respondents (39.2%), based on the work capacity, most of them had the appropriate work capacity, namely 246 respondents (98.4%), and based on OSH training, most of them had attended training, namely 196 respondents (78.4%).

**The Effect of Length of Work with Occupational Safety and Health on Health  
Workers at Meuraxa Hospital  
(N = 250)**

Length of work	Occupational Health and Safety				Total		P. value	OR (95% CI)
	Positive Attitude		Negative Attitude					
	F	%	F	%	F	%		
<5 years	110	71.9	43	28.1	153	100		
≥5 years	10	10.31	87	89.6	97	100	0,000	22.2 (10.5-46.8)
<b>total</b>	120	48	130	52	250	100		

Based on the table above shows that of the 153 respondents who work less than 5 years have a positive attitude towards work safety and health as many as 110

people (71.9%) and of the 97 respondents who work more than 5 years have negative attitudes towards occupational health and safety as many as 87 people (89.6%). The results of statistical tests showed that the value of  $P = 0.000$  and the value of OR 22, 2 means the health workers who have worked for a long time  $\geq 5$  years has a tendency of 22.2 times to have a negative attitude towards occupational safety and health risks compared to those who work  $< 5$  years for health workers at Meuraxa Hospital.

### The Influence of Work Units with Occupational Safety and Health on Health Workers at Meuraxa Hospital (N = 250)

Work unit	Occupational Health and Safety				Total		P. value	OR
	Positive Attitude		Negative Attitude					
	F	%	F	%	F	%		
IGD	29	96.6	1	3,3	30	100		
ICU	29	87.8	4	12.1	33	100	0.227	4 (0.4-37.9)
Inpatient	62	33.1	125	66.8	187	100	0,000	58.4 (7.7-439.2)
<b>total</b>	120	48	130	52	250	100		

Based on the table above, it shows that of the 30 respondents who work in the emergency room, 29 people (96.6%) have a positive attitude towards work safety and health, and 1 person has a negative attitude (3.3%). Of the 33 respondents who work in the ICU have positive attitudes towards occupational health and safety as many as 29 people (87.8%), and 4 people who have negative attitudes (12.1%). Of the 187 respondents who work in inpatient rooms, 62 people (33.1%) have positive attitudes towards health and safety, and 125 people have negative attitudes (66.8%).

The results of the statistical test showed that health workers working in the ICU had no effect on occupational safety and health with a  $P$  value = 0.227 and an OR value of 4, meaning that working in the ICU has a 4 times risk of having a negative attitude towards occupational safety and health compared to those working in the ER. but not significant. Health workers working in inpatients received  $P = 0,000$  and OR 58.4, meaning that working in inpatient rooms has a 58.4 times tendency to have a negative attitude towards occupational safety and health risks compared to IGD for health workers at Meuraxa Hospital.

### The Effect of Workload on Occupational Safety and Health on Health Workers at Meuraxa Hospital (N = 250)

Workload	Occupational Health and Safety						P. value	OR
	Positive Attitude		Negative Attitude		Total			
	F	%	F	%	F	%		
High	8	8.16	90	91.8	98	100		
Moderate	48	55.17	39	44.8	87	100	0,000	0.0722 (0.031-0.166)

Low	64	98.4	1	1.54	65	100	0,000	0.001 (0.0001- 0.0113)
<b>total</b>	120	48	130	52	250	100		

The results of statistical tests showed that the value of  $P = 0.000$  and the OR value for those who work with a moderate workload is 0.072, meaning that moderate workloads have a tendency of 0.072 times to the risk of occupational safety and health for health workers at Meuraxa Hospital. The OR value for those who work with a low workload is 0.001, meaning that low workloads have a tendency of 0.001 times the risk of occupational safety and health for health workers at Meuraxa Hospital.

### The Effect of Work Capacity with Occupational Safety and Health on Health Workers at Meuraxa Hospital (N = 250)

Work Capacity	Occupational Health and Safety				Total		P. value	OR (95% CI)
	Positive Attitude		Negative Attitude					
	F	%	F	%	F	%		
Corresponding	119	48.3	127	51.6	246	100	0.374	2.8 (0.28-27)
It is not in accordance with	1	25	3	75	4	100		
<b>total</b>	120	48	130	52	250	100		

Based on the table above, it shows that of the 246 respondents who work with appropriate work capacities, 119 people (48.3%) have positive attitudes towards work safety and health and 127 people have negative attitudes towards occupational safety and health (51.6%). Of the 4 respondents who work with an unsuitable work capacity, 1 person (25%) has positive attitudes towards occupational health and safety and 3 people have negative attitudes towards occupational safety and health (75%). The results of statistical tests obtained  $P$  value = 0.374 (value  $< \alpha$  value 0, 05) then  $H_a$  is rejected, meaning that there is no influence of work capacity on occupational safety and health risks for health workers at Meuraxa Hospital.

### The Influence of Education Level with Occupational Safety and Health of Health Workers in Meuraxa Regional Hospital (N = 250)

Health Workers in Meruata Regional Hospital (N = 250)									
Level of education	Occupational Health and Safety						P. value	OR (95% CI)	
	Positive Attitude		Negative Attitude		Total				
	F	%	F	%	F	%			
S1 / S2 and equivalent	48	29.81	113	70.19	161	100	0,000	0.1 (0.05-0.18)	
D3 / equivalent	72	80.9	17	19.10	89	100			
total	120	48	130	52	250	100			

Based on the table above, it shows that of the 161 respondents who work with an education level of S1 / S2 and equivalent, 48 people (29.81%) have positive attitudes towards occupational health and safety and 113 people have negative attitudes towards

occupational safety and health (70.91%). ). Of the 89 respondents who worked with an education level of D3 / equivalent had a positive attitude towards occupational health and safety, 72 people (80.9%) and 17 people had negative attitudes towards occupational safety and health (19.10%). The results of statistical tests showed that the value of  $P = 0.000$  and the value of OR 0, 1 means that the level of education has a tendency of 0.1 times the risk of occupational safety and health for health workers at the Meuraxa Hospital.

### The Effect of Hospital OSH Training with Occupational Safety and Health for Health Workers at Meuraxa Hospital (N = 250)

K3RS training	Occupational Health and Safety						P. value	OR (95% CI)
	Positive Attitude		Negative Attitude		Total			
	F	%	F	%	F	%		
Ever	101	51.5	95	48.4	196	100	0.035	1.9 (1.04-3.6)
Never	19	35.1	35	64.8	54	100		
<b>total</b>	120	48	130	52	250	100		

Based on the table above, it shows that of the 196 respondents who have attended K3RS training, 101 people (51.5%) have positive attitudes (51.5%) and 95 people have negative attitudes towards occupational safety and health (48.4%). Of the 54 respondents who had never attended Hospital OSH training, 19 people (35.1%) had positive attitudes towards occupational health and safety and 35 people had negative attitudes towards occupational safety and health (64.8%). The statistical test results obtained  $P$  value = 0.035 and OR value 1, 9 means that Hospital OSH training has a tendency of 1.9 times the risk of occupational safety and health to health workers at the Meuraxa Hospital.

### The Final Model Multivariate Analysis of Risk Factors for Health Workers on Occupational Safety and Health at Meuraxa Hospital

Variable	Odds Ratio	95% CI	P-Value
<b>Improper working capacity</b>	0.03	0.0019 - 0.4	0.012
<b>Education level D3 / equivalent</b>	0.4	0.15 - 1.07	0.069
<b>Length of work <math>\geq 5</math> years</b>	9,2	2.9 - 28.9	0,000
<b>Work unit</b>			
ICU	2,3	0.18 - 29.9	0.512
Inpatient	18.2	1.78 - 185.66	0.014
<b>Workload</b>			
Moderate	0.06	0.02 - 0.211	0,000
Low	0.002	0.0002 - 8.7	0,000

Based on the table above, it can be seen that the variables that significantly influence health workers on occupational safety and health are inpatient work units, with a value of  $P = 0.014$  and Odds Ratio = 18.2 meaning that inpatient work units have a tendency to influence 18.2 times the opportunity to occupational safety and health compared to others. Hospital OSH training was not included in the multivariate analysis, because when it was tested simultaneously the value was 0.8441, which is greater than 0.2, which means that it does not meet the requirements for the multivariate test.



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**DISCUSSION**

The results of this study indicate that there is an influence between the length of work for health workers at the Meuraxa Hospital. In this study, the average working tenure <5 years has a positive attitude towards occupational safety and health compared to a work period of ≥5 years, and the length of work has a 22.2 times tendency towards occupational safety and health risks. Another study conducted by Mc.Govern showed a significant relationship between length of work and universal precautions where the study found that health workers who had worked > 5 years were 1.7 times better at adherence than workers who worked <5 years.(11) .

The length of work is proportional to the work experience gained. Work experience is an activity that is carried out to improve paid and unpaid work skills, and can improve workers' careers. A person gets a lesson how he can work properly, efficiently and safely from his long work. (12)

Researchers think this can be because health workers who have worked <5 years old still have a high level of discipline, enthusiasm, and work motivation. Most of those who work <5 years old are fresh graduates who still have anxieties when doing work, and are contract workers whose work contracts can be terminated if they make mistakes.

The results showed that there was an influence between the work unit and the safety and health of health workers at the Meuraxa Hospital. In this study, it was found that health workers who work in inpatient rooms have a negative attitude of 66.84% towards occupational safety and health, while those who work in the ER and ICU have a positive attitude towards occupational safety and health, respectively 96. 67% and 87.88%. This study also shows that inpatient work units have 18.22 times the risk of occupational safety and health at Meuraxa Hospital than others. Other research conducted by Sitohang showed a significant relationship between attitudes and the implementation of K3RS in the IGD Bunda Thamrin Hospital Medan. namely the majority of 27 respondents were positive and implemented K3RS well 65.8% (13). Salawati's research in 2014 at the ICU RSUDZA Banda Aceh showed that there was a significant relationship between attitudes and K3 actions of nurses in controlling nasocomial infections (14).

The results showed that there was a significant influence between workload and occupational safety and health among health workers at the Meuraxa Hospital. In this study, it was found that health workers with high workloads had negative attitudes towards occupational safety and health, while health workers with moderate and low workloads had positive attitudes towards occupational safety and health. Another study conducted by the 2015 maharja at RSU Haji Surabaya, that the higher the workload, the higher the fatigue level of the nurses at RSU Haji Surabaya. This is supported by Nawawinetu 2012, that one of the contributors to work fatigue is an increase in workload.

The results showed that there was no influence between work capacity and occupational safety and health among health workers at Meuraxa Hospital. Work capacity is a health status and the ability to complete a job well within a certain time. Research conducted by Perwita Sari, 2014 at RSUD DR. Mohamad Soewandhie Surabaya explained that work capacity can cause work fatigue that leads to work accidents, which causes work fatigue is the number of health workers who are not proportional to the number of patients.

The results showed that there was an influence between the level of education and occupational safety and health of health workers at the Meuraxa Hospital. In this study, the results showed that the education level of S1 / S2 and equivalent had a positive attitude of 113 people (70.19%), and the level of education of D3 / equivalent had a positive attitude of 72 people (80.90%). From the results of this study, education level has a 0.1 times effect on

occupational safety and health. The level of education of a person is very closely related to the knowledge they have, although it is not absolutely obtained from formal education, but can be obtained from non-formal education.

The results showed that there was an influence between K3RS training and occupational health and safety. Officers who have attended K3RS training have a positive attitude towards occupational safety and health. In contrast, health workers who have never attended K3RS training have a negative attitude towards occupational safety and health. This research is supported by research conducted by Sentya, 2017 showing that health workers who do not complete training have a 5 times risk of experiencing work accidents compared to those who complete the training.

## CONCLUSION

The results of the analysis of risk factors for health workers on occupational safety and health at Meuraxa Hospital are as follows:

There is a significant effect between length of work on occupational safety and health at the Meuraxa Hospital

There is a significant influence between work units on occupational safety and health at Meuraxa Hospital

There is a significant influence between workload on occupational safety and health at Meuraxa Hospital

There is no significant influence between work capacity on occupational safety and health at Meuraxa Hospital

There is a significant influence between the level of education on occupational safety and health at RSUD Meuraxa

There is a significant influence between K3RS training on occupational safety and health at Meuraxa Hospital

The most dominant factor influencing occupational safety and health is the work unit variable in hospitalization with a value of  $P = 0.014$  and  $OR = 18.2$  meaning that the work unit inpatient has an effect of 18.2 times on occupational safety and health.

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