



Factors that influence nurse compliance in using personal protective equipment at mufid sigli general hospital

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ABSTRACT

The hospital is a health facility unit for the community which is inseparable from the occurrence of work accidents, especially for health workers, one of the reasons is that nurses who use PPE are not in accordance with the Hospital Standard Operating Procedures (SOP). There are still many health workers who are not compliant with using personal protective equipment. This study aims to analyze the factors that influence nurse compliance in using Personal Protective Equipment at Mufid Sigli Hospital. This research is a quantitative study with a cross-sectional study design conducted at Mufid Sigli Hospital. The sample in the study was determined by the total sample technical formula, so that there were 65 nurses in the sample. The results showed that there was an influence of nurses' attitudes on nurses' adherence in using PPE, hospital regulations on nurses' compliance in using PPE, convenience for nurses' compliance in using PPE, supervision of nurses' compliance in using PPE, availability of facilities on nurse compliance in using PPE in Mufid Sigli Hospital. It is recommended that nurses should be able to use Personal Protective Equipment to minimize the occurrence of work accidents, it is recommended for the hospital to increase supervision and impose sanctions for health workers who do not use personal protective equipment, complete personal protective equipment and ensure that PPE can always be used effectively and efficiently.

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1. INTRODUCTION

Hospitals are providers of services in the health sector, hospitals are very complex places with various kinds of drugs, tests and procedures, tools and technology, as well as various professions that provide patient services 24 hours a day continuously. If the diversity and routine of services is not managed well, it can lead to Unexpected Events (KTD) (Riyadi.2012)

Security and safety are very important to pay attention to in hospitals or are referred to as general precautions (Universal Precautions / UP) which are guidelines set by the Atlanta CDC (1985) to prevent various diseases that are transmitted through blood / body fluids in the hospital environment. (Riyadi. 2012). Precaution standards are protective measures against exposure to nurses and patients. Implementation of standard precautions includes managing consumable medical

equipment, washing hands to prevent cross infection and using personal protective equipment (PPE) (Nursalam. 2014).

According to the World Health Organization (WHO) in 2020, Personal Protective Equipment (PPE) that can be used to prevent contamination includes the use of gloves, protective glasses, masks, aprons, gowns, shoes and head coverings. The use of PPE is an effort to create optimal work health and safety. The behavior of nurses in using PPE is one of the determining factors in implementing the use of PPE in hospitals (Anderson. 2012).

The National Safety Council (NSC) report shows that the incidence of accidents in hospitals caused by non-compliance in the use of PPE is 41% greater than the incidence of worker accidents in other industries. Cases that often occur include needle stick injuries (NSI), sprains, back pain, scratches/cuts, burns, infectious diseases and others. Based on existing data, acute incidents are significantly greater among hospital workers. a number of cases were reported to receive compensation for hospital workers, namely sprains, strains: 52%; contusion, crushing, bruising: 11%; cuts, lacerations, punctures: 10.8%; fractures: 5.6%; multiple injuries: 2.1%; thermal burns: 2%; scratches, abrasions: 1.9%; infections: 1.3%; dermatitis: 1.2%; and others: 12.4% (National Safety Council. 2001).

Data from the International Labor Organization (ILO) for 2020 shows that every year 2.3 million people in the world die as a result of work accidents, either due to occupational diseases or accidents due to not using PPE while at the work site (International Labor Organization. 2020). 2019 Workers' Social Security (Jamsostek) data shows that the number of work accidents in Indonesia reached 10,911 cases caused by negligence in the general use of PPE in several work units (BPJS. 2020). The use of PPE by nurses who work in hospitals is part of nurses' efforts to provide an environment free from infection as well as an effort to protect themselves and patients against disease transmission. It is very important for a nurse to wear PPE when carrying out their duties. PPE has two functions, namely for the benefit of the patient and at the same time for the benefit of the nurse herself. Personal protective equipment in daily practice functions more as "patient protection" than as "officer protection". Protecting patients from the possibility of microbial infections is a basic task that begins when the patient enters the hospital to undergo medical procedures and nursing care until the time comes for the patient to be discharged from the hospital (Potter. 2009).

Personal protective equipment must be used by nurses when working in hospitals to protect them when carrying out nursing procedures with the aim of preventing the transmission of germs and reducing the risk of contracting disease. The hospital is a place to treat patients with various diseases, including infectious diseases, from the mild to the most severe. Compliance with the use of PPE before carrying out medical procedures on patients is one of the efforts made to minimize the risks that occur and as a form of guaranteeing work safety and security when carrying out medical procedures. Occupational Health and Safety (K3) behavior of nurses in hospitals is very important, because even the smallest actions of nurses can pose a risk to nurses and patients. Nurse compliance in using PPE is behavior as a professional regarding recommendations, procedures or regulations that must be carried out and obeyed according to fixed procedures (protap). Low compliance behavior towards the use of PPE among nurses can have an impact on the safety and health of nurses. Nurses' compliance in using PPE can be influenced by the authority of the agency where they work so that health workers feel that using PPE is a necessity. Apart from that, it is also influenced by the nurse's own willingness or awareness to use PPE.

One of the hospitals in Pidie Regency with a fairly high work accident rate is Mufid Sigli General Hospital, in 2020 the work accident rate was 23.3%, in 2021 it increased to 31.2%, in 2022 the work accident rate decreased again to 33.2%, (Pidie Health Office. 2022) Based on the results of the initial survey conducted by researchers in February 2023 by conducting interviews with the head of the room, it was found that the work accident was caused by nurses' non-compliance in using PPE. From the exposure of the head of the room it was known that, there were several nurses who do not comply with using PPE, this is because supervision of the use of PPE is rarely carried out because the head of the

room assumes that nurses already know when PPE is used to protect themselves, even though the availability of PPE is adequate because the stock given each month is in accordance with the number of workers especially nurses and also the number of patients admitted. (Mufid Hospital. 2022)

Based on the results of interviews with 4 nurses, it is known that the reason why nurses do not use PPE when treating patients is that 4 nurses said that the hospital does provide PPE, but the PPE available is not complete, such as aprons, gowns, shoes and covers. limited head. Limited PPE in hospitals may be due to a lack of attention from the head of the room in providing PPE, or the hospital budget is limited so that funds for procuring PPE are also limited. Another reason is because nurses are lazy, forgetful, unfamiliar, and busy. These reasons are closely related to nurses' awareness/behavior in using PPE. The actions shown by nurses so far have not been optimal, this has been proven by the fact that nurses are still found using personal protective equipment that does not comply with the hospital's Standard Operating Procedures (SOP).

2. RESEARCH METHOD

Design This research is a correlational study with a cross sectional design. Cross sectional is a research to study the dynamics between risk factors and effects, by means of an observational approach or collecting data simultaneously at one time. This research examines the relationship between risk factors and the consequences that occur in the form of certain diseases or health conditions at the same time (Sugiyono, 2017). This research is to look at the factors that influence nurses' compliance in using personal protective equipment at the Mufid Sigli General Hospital. The population in this research is all research objects or subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions drawn. The population in this study were all nurses who worked at the Mufid Sigli General Hospital, 65 inpatient nurses by determining the total sampling sample.

3. RESULTS AND DISCUSSIONS

Results

Table 1
Table 1. Distribution of Characteristics of Research Respondents on Nurse Compliance Using PPE at Mufid Sigli General Hospital (n=65)

	Age	n	%
	20-25 Years	20	31
	26 -31 Years	20	31
	32-37 Years	10	15
	38-43 Years	15	23
	Gender	n	%
	Man	10	15
	Woman	55	85
	Education	n	%
	D3 Nursing	21	35
	Nurse	38	62
	Masters in Nursing	6	3
	Total	65	100

Based on table 1 above, it shows that of the 65 respondents who were testedliti, it is known that the majority of respondents are aged 20-25 and 26-31 years, namely 20 (31%) respondents respectively, while the other respondents are aged 32-37 years, namely 10 (15%) respondents, aged 38-43 years, namely 15 (23%). Of the 65 respondents studied, it was discovered that the majority of respondents were female, namely 55 (85%) respondents, while the other respondents were male,

namely 10 (15%) respondents. Of the 65 respondents studied, it is known that the majority of respondents were educated as nurses, namely 38 (62%)

Table 2. Distribution of Nurses' Compliance Using PPE in Hospitals

Attitude	n	%
Negative	44	68
Positive	21	32
Total	65	100

Based on table 2 above, it shows that of the 65 respondents studied, the majority of respondents had negative work attitudes, namely 44 (68%) respondents, while the other respondents had positive work attitudes, namely 21 (32%).

Table 3. Distribution of Nurses' Compliance Using PPE at Mufid Sigli General Hospital Based on Regulations (n=65)

Firm	25	44.3	
Not strict	Hospital Regulations	n	%
Total	65	100	

Based on table 3 above, it shows that of the 65 respondents studied, the majority of respondents stated that the Hospital Regulations were not strict, namely 40 (55.7%) respondents, while the other respondents stated that the Hospital Regulations were strict, namely 25 (44.3%) respondents.

Table 4. Distribution of Nurses' Compliance Using PPE at Mufid Sigli General Hospital Based on Supervision (n=65)

Supervisor	n	%
Active	25	43
Not active	40	57
Total	65	100

Based on table 4 above, it shows that of the 65 respondents studied, the majority of respondents stated that supervision was not actively carried out, namely 40 (57%) respondents, while other respondents stated that supervision was active, namely 25 (43%) respondents.

Table 5. Distribution of Nurses' Compliance Using PPE at Mufid Sigli General Hospital Based on Comfort (n=65)

Comfort	n	%
Comfortable	25	43
Uncomfortable	40	57
Total	65	100

Based on table 5 above, it shows that of the 65 respondents studied, the majority of respondents stated that it was not comfortable, namely 40 (57%) respondents, while other respondents stated that the hospital was comfortable, namely 25 (43%) respondents.

Multivariate Data Analysis.

Table 6. Selection of Variables as Candidate Models in Multiple Linear Regression Tests Based on Bivariate Analysis

Variable	p value	Information
Attitude	0,000	Candidate

Regulation	0.002	Candidate
Supervision	0.003	Candidate
Comfort	0.002	Candidate
Completeness of Facilities	0.002	Candidate

Based on table 6 above, it can be seen that all variables, namely five variables, are candidate models in the logistic regression test where the p value is <0.25 .

Table 7. Results of logistic regression analysis can be seen in the following table

Variable	B	p value	Exp(B)OR	95%CI for Exp(B)
Attitude	2,041	0,000	7,699	1,302-45,530
Regulation	0,382	0.002	1,465	0,345-6,225
Supervision	0,428	0.002	1,534	0,340-6,910
Comfort	0,578	0.003	1,783	0,416-7,649
Complete facilities	0,667	0.002	1,949	0,480-7,915

Based on table 13 above, it can be seen that the final stage of logistic regression analysis produces one variable that has the most influence on nurses' compliance in using PPE at the Mufid Sigli General Hospital, namely the attitude variable p value 0.002, OR = 13.138 (95% CI = 2.609-66.174) means that respondents who have a work period of > 5 years have a 13.138 chance of not complying with the use of PPE compared to respondents who have a work period of ≤ 5 years with a B coefficient value of 2.576 which is positive, the more respondents have a work period of > 5 years, the more There were also respondents who did not comply with the use of PPE at the Mufid Sigli General Hospital.

Discussion

The Influence of Nurses' Attitudes on Nurses' Compliance in Using PPE at Mufid Sigli General Hospital

Based on the research results, it is known that of the 65 respondents studied, the majority of respondents had a negative attitude, namely 44 (68%) respondents. There were 21 (32%) respondents who had a positive attitude and were compliant in using PPE, as many as 15 (24.6%) respondents had a negative attitude and were not compliant in using PPE. Based on the results of the calculations above, it is known that the statistical test results obtained a significant p value of $0.001 < 0.05$, so it can be concluded that there is an influence on nurses' attitudes on nurses' compliance in using PPE at the Mufid Sigli General Hospital.

The results of research conducted at Mufid Sigli General Hospital show that the majority of respondents have a negative attitude, this is closely related to the length of time nurses work at Mufid Sigli General Hospital. Based on the research results, it is known that as many as 60% of Mufid Sigli General Hospital nurses are new nurses, while 40% are old nurses. The longer a nurse works, the more cases she handles, thereby increasing her experience, conversely, the shorter a person works, the fewer cases she handles. This is closely related to the nurse's compliance, because usually older nurses already have experience in handling patients, where they will be afraid of contracting or even transmitting the disease so they are obedient in using this PPE.

Most of the nurses at Mufid Sigli General Hospital do not think that if they do not use PPE then this cannot protect patients from all potential dangers, for example from chemicals or diseases that can be transmitted from the air. Using gloves can prevent the risk of accidents and work-related illnesses in inpatient installations. This research is in line with research conducted by Salma Adilah (2018). The results of the Chi-square test show that the respondent's education level ($p=0.021$) and peer support ($p=0.04$) are significantly related to the level of nurses' compliance with the behavior of using personal protective equipment. Meanwhile, respondent's age ($p=0.779$), respondent's work period

($p=0.871$), respondent's knowledge ($p=0.516$), respondent's attitude ($p=0.354$), respondent's workload ($p=0.059$), regulations ($p=0.207$), facilities ($p=1,000$) (Salma Adilah.2018).

The Influence of Nursing Hospital Regulations on Nurse Compliance in Using PPE at Mufid Sigli General Hospital

Based on the research results, it is known that of the 65 respondents studied, the majority of respondents stated that hospital regulations were not strict, namely 40 (55.7%) respondents. Of the 34 (55.7%) respondents studied, it was found that 11 (18.0%) respondents stated that hospital regulations were not clear but nurses complied with the use of PPE and 23 (37.7%) respondents stated that the regulations hospitals are not clear however and nurses are not compliant in the use of PPE. Based on the results of the calculations above, it is known that the statistical test results obtained a significant p value of $0.042 < 0.05$, so it can be concluded that there is an influence of hospital nursing regulations on nurses' compliance in using PPE at the Mufid Sigli General Hospital.

The results of research conducted by researchers found that the majority of nurses stated that regulations existed but were not strict, so nurses felt they had no obligation to use this PPE. The lack of clarity in this regulation also has an impact on a worker's knowledge and safe behavior, so that nurses do not feel that this is a threat to themselves. This can encourage him not to take action to defend himself from work accidents. Therefore, nurses with a better level of knowledge are expected to have better awareness and ultimately be able to demonstrate better behavior.

Strict hospital regulations must be accompanied by firm actions as well. Therefore, hospitals need to require nurses to always use PPE when working. However, apart from that, hospitals must also provide strict sanctions for nurses who do not use PPE, but what researchers found in the field is that hospitals do not provide sanctions to nurses who do not comply with the use of PPE while working, so that there are still nurses who do not comply with using them. PPE, hospitals do not give rewards to nurses who comply with the use of PPE while working, even though when someone is lured with a reward, that person will try to get the reward. Then the hospital never gives warnings to nurses who do not comply with the use of PPE while working so that nurses do not feel guilty or afraid when they do not use complete PPE. Hospitals also do not apply fines to nurses who do not comply with using PPE. Especially nurses who do not use PPE three times should be expelled from the hospital.

In the researcher's opinion, hospital regulations that are less strict about the use of PPE at the Mufid Sigli General Hospital have a significant relationship with the level of compliance with its use. The use of PPE at the Mufid Sigli General Hospital will also not be good, this is because the information provided is not good, there is no direction in using PPE from the hospital, lack of leadership assertiveness and lack of time estimation in monitoring the use of PPE properly and correctly.

The Influence of Supervision on Nurse Compliance in Using PPE at Mufid Sigli General Hospital

Based on the research results, it is known that of the 65 respondents studied, the majority of respondents stated that supervision was not active, namely 40 (57%) respondents. Of the 38 (62.3%) respondents, it was found that 12 (19.7%) respondents stated that supervision was not active but nurses were compliant in using PPE and as many as 26 (42.6%) respondents stated that supervision was inactive and nurses and not complying with the use of PPE. Based on the results of the calculations above, it is known that the statistical test results obtained a significant p value of $0.022 < 0.05$, so it can be concluded that there is an influence of supervision on nurses' compliance in using PPE at the Mufid Sigli General Hospital.

Supervision is an occupational health and safety action in hospitals and this is a form of integrated effort by all hospital workers, patients, visitors or accompanying sick people to create a work environment and hospital workplace that is healthy, safe and comfortable for home workers. sick, patients, visitors and the public in the hospital environment. One of the occupational health and safety

factors is that actions have a big influence on occupational health and safety for nurses in hospitals. The supervision carried out is an effort in the work to avoid danger. Work safety is safety related to work tools, work materials, processing processes and the work environment. Work safety is the duty of everyone who works, because work safety is also an effort to create a safe and comfortable atmosphere for everyone in the hospital.

The use of PPE at the Mufid Sigli General Hospital is a system that relates to all elements involved in work activities. These include people doing the work, work materials such as objects or items being worked on, work tools used in the form of machines and other equipment. Apart from that, K₃ also concerns the work environment, both manufacturing and objects and goods in the work area. Work safety is an effort to condition buildings, machines and workers' conditions to be free from the risk of work accidents. This effort is made to prevent unwanted work accidents. Furthermore, K₃ is an idea and effort to ensure the integrity and perfection of both the physical and spiritual workforce in particular, the results of work and culture towards a just and prosperous society. Hospitals benefit from efforts to implement K₃ by increasing worker productivity because worker safety is guaranteed.

The use of PPE at the Mufid Sigli General Hospital is very dependent on the sense of responsibility of management and officers, regarding their respective duties and obligations as well as cooperation in the use of PPE at the Mufid Sigli General Hospital. This responsibility must be instilled through clear rules and strict supervision. Pattern of distribution of responsibilities, education to all officers, guidance and training and enforcement of discipline. The head of the organization/unit for the use of PPE at the Mufid Sigli General Hospital must specifically prepare implementation data and information in all workplaces, formulate problems and analyze the causes of problems, ways to solve them and communicate them to work units, so that they can be implemented well. Next, monitor and evaluate program implementation, to assess the extent to which the program implemented has been successful. If there are still deficiencies, deviations need to be identified and solutions sought.

In the researcher's opinion, the role of nurses in the PPE use program at Mufid Sigli General Hospital can be said to be very meaningful, considering that the functional duties of nurses using PPE in hospitals are so broad. It can be said that the main focus of occupational health care is occupational health and safety for workers with an emphasis on preventing disease and injury. It's just that occupational health care is not as expected. The role of the profession in developing the level of professionalism does not yet appear meaningful. To maintain the quality of professionalism, it is time for all of us to think about the efforts that need to be made. One of them is that professional organizations are expected to increase their role in developing and monitoring their members, as well as continuing to be active in improving the abilities and skills of their members.

The Influence of Nurse Comfort on Nurse Compliance in Using PPE at Mufid Sigli General Hospital

Based on the research results, it is known that of the 65 respondents studied, the majority of respondents did not have comfort, namely 40 (57%) respondents. Of the 32 (52.2%) respondents, 8 (13.1%) respondents did not have comfort but nurses were compliant in using PPE and 24 (39.3%) respondents did not have comfort and were not compliant in using PPE. Based on the results of the calculations above, it is known that the statistical test results obtained a significant p value of $0.003 < 0.05$, so it can be concluded that there is an influence of nurse comfort on nurse compliance in using PPE at the Mufid Sigli General Hospital. The feeling of comfort in using PPE is closely related to compliance with the use of PPE at the Mufid Sigli General Hospital. The magnitude of the influence of the comfort and discomfort of wearing PPE can be seen from the R square value on working time, which means that the independent variable of wearing PPE simultaneously influences working time, the longer the nurse is in the room wearing PPE, the more uncomfortable she feels wearing PPE.

This is also in accordance with observations in the field, where there are still many workers who feel uncomfortable using eye protection on the grounds that it is troublesome and interferes with

movement. In this study, most respondents felt uncomfortable using PPE when working because they were not used to it, they did not have the freedom to work, it was complicated, and the condition of the PPE was poorly maintained. The poorly maintained condition of PPE is caused by workers not caring about the cleanliness of the PPE provided by the hospital. In the researcher's opinion, it is important to implement procedures for implementing occupational safety and health in the form of supporting/approving all K3 programs, especially for the prevention of work accidents, so efforts are made to have a pro-active attitude in applying new knowledge regarding the implementation of occupational safety and health. The more proactive you are in applying new knowledge, the more positive you will be about the use of PPE at the Mufid Sigli General Hospital, thereby reducing the incidence of work accidents.

The Influence of Facilities Availability on Nurse Compliance in Using PPE at Mufid Sigli General Hospital

Based on the research results, it is known that of the 65 respondents studied, the majority of respondents stated that there were no facilities available, namely 15 (23%) respondents. There were 9 (14.8%) respondents who stated that there were no facilities available and were compliant in using PPE, 26 (42.6%) respondents stated that there were no facilities available and were not compliant in using PPE. Based on the results of the calculations above, it is known that the statistical test results obtained a significant p value of $0.002 < 0.05$, so it can be concluded that there is an influence of the availability of facilities on nurses' compliance in using PPE at the Mufid Sigli General Hospital.

The results of research by Apriluana et al., (2016) conducted at the Banjarbaru District Hospital regarding the relationship between age, gender, length of work, knowledge, attitudes and availability of personal protective equipment (PPE) with the behavior of using PPE among health workers shows that there is a significant relationship. There is a significant relationship between age, length of work, knowledge and attitudes ($p\text{-value} < 0.05$) and there is no significant relationship between gender and availability of PPE ($p\text{-value} > 0.05$) and the behavior of using PPE among health workers. The use of personal protective equipment for nurses in carrying out nursing actions on patients has a very important role in avoiding contamination from exposure risks such as body fluids, blood, wounds and patient mucous membranes, both directly and indirectly. According to the Directorate General of P2MPL (2010), the types of personal protective equipment required in health service units include gloves, face shields/masks/goggles, head coverings, protective gowns (work clothes/aprons), and protective shoes.

These protective equipment do not always have to be used at the same time but depend on the type of action being carried out. Compliance is a form of behavior that arises as a result of interactions between health workers and patients so that patients understand the plan with all its consequences and agree to the plan and carry it out (Ministry of Health, 2011). Compliance can be measured by individuals who comply or obey because they understand the meaning of the applicable provisions. Changes in an individual's attitude start from obeying the rules, often receiving rewards if they follow the recommendations. Adherence to a health program is a behavior that can be observed and can be directly measured. Compliance is also a form of obedience to rules or discipline in carrying out established procedures. Based on the results of previous research, there are many factors that influence nurses in using PPE as a form of guaranteeing work safety and security when carrying out nursing actions, including motivational factors, behavior and habits that are usually carried out by nurses themselves.

In the researcher's opinion, the lack of use of PPE when carrying out actions on patients is based on the results of observations by researchers on respondents in several nursing service rooms, after carrying out the analysis, this condition is only situational, which means that when the nurse is going to take action on the patient, it is known in advance what the condition is. infectiousness from the patient's disease so that if it is known that the disease is at high risk of being transmitted, the nurse will consciously use personal protective equipment. The reason why nurses do not use personal

protective equipment is that they feel uncomfortable, especially when using gloves, which even adds to the difficulty during the procedure, for example when providing fluids and electrolytes through parenterals when using plaster which always sticks to the gloves so that it ends up being annoying or uncomfortable. . However, in this situation the nurse will not take the risk of infection if it is known that the patient's disease is contagious, so the nurse will still use personal protective equipment properly and correctly.

4. CONCLUSION

Based on the research results, it was found that there was an influence of nurses' attitudes, hospital regulations, comfort, supervision, availability of facilities on nurses' compliance in using personal protective equipment at the Mufid Sigli General Hospital, while the nurses' attitude factor was the most dominant influence on nurses' compliance in using PPE. at the Mufid Sigli General Hospital

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