

EVALUATION OF USE OF PERSONAL PROTECTIVE EQUIPMENT FOR HEALTH CARE WORKERS IN HOSPITAL X BANTUL

Nur Syarianingsih Syam, Selvi Novita Sari, Siti Kurnia Widi Hastuti

Department of Hospital Management, Public Health Faculty, Universitas Ahmad Dahlan
Street. Prof. Dr. Soepomo, S.H. Janturan Yogyakarta 55164, Indonesia

ABSTRACT

Hospitals are a high-risk workplace for the safety and health of Human Resources (HR). Control of sources and potential hazards in hospitals can be done with the use of Personal Protective Equipment (PPE). PPE consists of gloves, masks, face/eye protection, protective gowns, and leg protectors. The purpose of this study was to evaluate the use of PPE on health workers in Bantul X Yogyakarta Hospital. This research used descriptive qualitative method with a phenomenological design. Data collection used interview guidelines for 5 informants who were selected based on the purposive method or fulfillment of certain criteria and carried out the observation of the use of PPE to 30 health workers. The results of the research related to input indicate that there are policies and standard operating procedure for the use of PPE in nursing care actions. It is also known that health care workers have received information and training on how to use PPE and personal protective equipment were always available and in accordance with the indications of actions in the central operating room unit, inpatient room, and Central Sterile Supply Departement. The results of observations of the level of PPE use in health workers (the process of use masks used by 30 officers, gloves 24 officers, dresses/ aprons 15 officers, head cover 15 officers and no activities were found with an indication of the use of goggle at the time of observation. it can be concluded that the use of PPE in hospital X Bantul has not met Permenkes standards, both in terms of the number of users (output) and in terms of the use process.

Keywords: Evaluation, health care workers, personal protective equipment, hospital

ABSTRAK

Rumah sakit merupakan tempat kerja yang memiliki risiko tinggi terhadap keselamatan dan kesehatan Sumber Daya Manusia. Pengendalian sumber dan potensi berbahaya di rumah sakit dapat dilakukan dengan adanya penggunaan Alat Pelindung Diri (APD). APD terdiri dari sarung tangan, masker, pelindung wajah/pelindung mata, gaun pelindung, dan pelindung kaki. Tujuan penelitian ini untuk mengevaluasi penggunaan APD pada tenaga kesehatan di Rumah Sakit Umum Daerah X Bantul Yogyakarta. Penelitian ini menggunakan metode deskriptif kualitatif dengan rancangan fenomenologi. Pengumpulan data menggunakan pedoman wawancara terhadap 5 informan yang dipilih berdasarkan metode *purposive* atau pemenuhan atas kriteria tertentu dan dilakukan observasi penggunaan APD kepada 30 petugas kesehatan. Hasil penelitian terkait input menunjukkan bahwa ada kebijakan dan *Standard Operating Procedures* (SOP) untuk penggunaan APD dalam tindakan asuhan keperawatan. Diketahui juga bahwa petugas kesehatan telah menerima informasi dan pelatihan tentang cara penggunaan APD dan alat pelindung diri selalu tersedia dan sesuai dengan indikasi tindakan di unit kamar operasi, ruang rawat inap, dan *Central Sterile Supply Departement* (CSSD). Hasil observasi tingkat penggunaan APD pada petugas kesehatan adalah masker digunakan oleh 30 petugas, sarung tangan 24 petugas, gaun/apron 15 petugas, penutup kepala 15 petugas dan tidak ditemukan kegiatan dengan indikasi penggunaan google pada saat observasi. Berdasarkan hasil penelitian dapat disimpulkan bahwa penggunaan APD di RS X Bantul belum memenuhi standar Permenkes, baik dari segi jumlah pengguna (*ouput*) dan dari segi proses penggunaan.

Kata Kunci: Evaluasi, tenaga kesehatan, APD, rumah sakit

Received : May 15, 2020

Accepted : July, 10, 2020

Published: July, 31, 2020

Introduction

Occupational Safety and Health (OSH) is an effort to promote and maintain the highest level of physical, mental and social welfare, where there is a prevention of the risk of experiencing workplace accidents caused by work conditions, there is the protection of workers and risks that can harm health, place and maintain workers in the environment work adapted to physiological and psychological equipment that does not endanger life.¹ Hospitals are labor-intensive industries where the opportunity for workplace accidents is very open because hospitals also need good management efforts related to occupational safety and health. Implementation of health and safety at the hospital itself aims to prevent various potential dangers that exist in the hospital. Potential hazards in hospitals include the spread of infections, accidents, radiation, chemicals, anesthetic gases, psychosocial disorders, and ergonomics.² This potential danger if not addressed can threaten the lives of hospital employees, patients and visitors in the hospital environment.³

Control of potential hazards can be done in various ways, one of which is by using personal protective equipment (PPE). PPE is a tool that is used to protect yourself or body to the dangers of workplace accidents⁴, which technically can reduce the severity of accidents that occur. Personal protective equipment does not eliminate or reduce existing hazards. This equipment only reduces the amount of contact with the hazard by placing a barrier between labor and the hazard.⁵ Personal protective equipment is very important to be worn by health workers including gloves, goggles, masks, aprons, gowns, boots/shoe covers, and hair covers.⁶

Hospital X Bantul is a government-owned hospital located in Bantul District, in providing services to patients, will have programs that seek to create worker safety or health worker. Based on an activity hospital X Bantul report from (data form the infection prevention and control team), it is known that the use of PPE has decreased from 2017-2018 and is still below the usage standard of 100%.⁷ On the implementation of the use of PPE is still found health workers using PPE are not in accordance with procedures, such as using a mask covering only the chin, did not immediately take off the gloves after nursing action.

To assess the effectiveness of a program can be evaluated at the end of the program activities by looking at the input, process, and output. Advantages of the assessment is to improve the planning, strategy, policy, for decision making, for the purpose of controlling programs/ activities, for the improvement of inputs, processes, and outputs, improvements in order or system procedures.⁸ This study aims to determine the implementation of the use of

Personal Protective Equipment (PPE) by health workers in Hospital X Bantul in terms of the system approach: input, process, and output

Method

This research was conducted in July - September 2019. This study used a qualitative method with a phenomenological approach. Research Location at Hospital X Bantul. Research variables using Donabedian model evaluating for quality of health care.⁹ These variables are structure/input, namely health workers who have been given training in the usage of PPE, PPE facilities, and Standard Operating Procedures (SOPs) that are available and used in increasing the use of PPE. The second variable is the process of the behavior of health workers in using PPE. The third variable is output, which is the compatibility of the use of PPE with the Ministry of Health having a standard / PERMENKES.

The participants or informants were selected using the purposive method, namely the selection of informants with certain criteria and considered capable of answering research problems.¹⁰ There were 5 research informants consisting of the head of the Infection Prevention and Control (PPI) team (Informant 1), 1 member of the Infection Prevention Care Nurse (IPCN) (Informant 2), nurses at inpatient room (Informant 3), nurses at the central surgical unit (Informant) 4), and staff at Central Sterile Supply Department (CSSD) (Informant 5). The central surgical unit or operating room unit and central sterilization unit were chosen because they are places that have a high potential risk of disease. The observation method involves 30 health workers observed (consisting of nurses and CSSD officers).

The process of collecting data uses in-depth interviews and observation methods. Interview guides were prepared by researchers and used to compare information about PPE inputs, processes, and outputs. Observation sheets for the use of PPE are compiled after the PPE study requires documents in the unit to be studied. The data collected is then fully managed by the researcher. Audio recordings from in-depth interviews were transcribed into the language of informants and compared with observations related to the use of PPE by 30 health workers. The data validation process used technical triangulation, which is done by checking data from the same sources with different techniques.¹¹ The triangulation method is used to compare research problems with relevant perspectives to avoid individual research biases and findings. This research has been through a review process on the ethics committee of Universitas Ahmad Dahlan and obtained a permit with the number 011906065.

Results

Input

Human Resources/ Healthcare Workers

Health workers in hospitals must use PPE in accordance with the potential hazards to be faced. The use of PPE is included in one component of the universal precaution (UC) program. The PPI Committee, as the organizer of Universal Precaution, undertakes efforts to provide training and outreach in the context of compliance with the use of PPE to health workers. Based on the results of interviews, it is known that active socialization is carried out in each work unit as revealed by the following informants,

"The socialization has been carried out after the health worker has entered or joined the hospital" (Informant 1)

Every morning in the unit there is such a thing as morning meeting where health workers in the morning shift are reminded to use PPE" (Informant 2)

The answers of the informants regarding the PPE training time were different, and some mentioned twice a year, others mentioned every three years. This difference in information is due to the provision of training for each health worker in rotation, as revealed by the following informant,

"The personal protective equipment usage training is carried out every year, but it is rotating, prioritizing those who have never participated so that all health workers are exposed." (Informant 1)

Facilitates

Personal protective equipment that should be in a health care facility based on the Minister of Health Regulation, this is as revealed by the following interview information,

"PPE in hospitals is adjusted to Permenkes, and then the order is to the pharmacy. There are also those already in the unit such as gowns, goggles that are in the unit" (Informant 1)

"There seems to be adjusted to the unit, if here (linen) it is definitely a mask and washing gloves, then protective feet, work clothes, hats" (Informant 5)

"APD there is adapted to the needs of each unit of the disparate actions so different as well, the same mask and disposable gloves. So far, it's enough if you want to use it, it's always available" (Informant 4)

The results of the interview above are supported by the results of the observation of PPE availability as follows,

Table 1. Observation Facilities of Personal Protective Equipment at Unit Hospital X Bantul in Accordance with Actions / Activities

Name of Personal Protective Equipment	Room					
	Inpatient Unit		Operating Room		Central Sterilization	
	Yes	No	Yes	No	Yes	No
Mask	✓		✓		✓	
Gloves	✓		✓		✓	
Gown/Apron	✓		✓		✓	
Shoe cover		✓	✓		✓	
Head Cover		✓	✓		✓	
Goggle	✓		✓		✓	

From the results of observation, found personal protective equipment is available in each unit and can be used by health workers in accordance to the treatment.

Regulation

The regulation was used at hospital X, can be found from the results. This is in accordance with the following interview,

"There is a PPI policy on the use of PPE based on Permenkes number 27 of 2017, the standard operational procedures made is a derivative of the policy. In the regulation, there are ways to use and remove masks, later there will be SOPs in each unit". (Informant 1)

Based on the interview results it is known that SOPs and policies relating to the use of PPE have been made and are available, according to the results of the interview as follows,

"standard operational procedures for the use of PPE in each unit are socialized to officers according to indications of their use". (Informant 2)

Process

The implementation of PPE usage can be seen in the following observation table,

Table 2. Observation Results of the Use of PPE in the Service Unit Hospital X Bantul in Accordance with Actions / Activities

Name of Personal Protective Equipment	Room					
	Inpatient Unit		Operating Room		Central Sterilization	
	Yes	No	Yes	No	Yes	No
Mask	15	0	10	0	5	0
Gloves	9	0	10	0	5	0
Gown/Apron			10	0	5	0
Shoe cover			10	0	5	0
Head Cover			10	0	5	0
Goggle						

From observations on the use of gloves in the inpatient room, it was found nine people used gloves, however it cannot be said that the other six nurses were not compliant, because

during the observation process the six nurses did not carry out activities that required the use of PPE gloves. As was the case with observations of nurses using goggles at IBS because at the time of observation there were no actions that required PPE. Meanwhile, for the use of masks in the three observation units, it was found that 30 participants used it when provide care to patients.

Based on the results of interviews with informants, it is known, the behavior of officers in using PPE not yet accordance with the SOP of usage. This is consistent with the results of the following interview,

"Nurse compliance here is good, only sometimes it is not appropriate, for example, masks are sometimes worn under the chin when dealing with patients" (Informant 3)

"It's good but there are still those who haven't, for example, don't wash their hands before using gloves or after removing gloves. The reason is sometimes forgot" (Informant 5)

Output

The output of the implementation of PPE use is the compatibility of the number of human resources using PPE with the standards set by the government. Based on document review, it is known that the compliance rate of PPE use of health workers in 2018 still below by the standard of Permenkes, but it can be said to be good, this is in accordance with the results of the following interview,

"Not according to standards, but ... if our hospital makes 80, the standard is in the good category." (Informant 1)

The use of PPE by health workers is monitored by the PPI, this is consistent with the results of the interview as follows,

"Evaluating the use of PPE with an audit system every two years. The audit was conducted by PPI. For supervision, there is an IPCN that supervises or monitors the units every day "(Informant 1)

"It is still below the Permenkes standard, but it can be said to be good. Actually, it can not be said according to the standards made by Permenkes because there are still some that have not been properly used. Like the mask on the chin "(Informant 2)

Discussion

From the results of the study, obtained information on input variables relating to policies and SOPs on the use of PPE have been socialized. The policy is the direction determined to be adhered to in work processes and organizations. The policy is one of the reinforcing factors to encourage compliance.¹¹ The policy that became a reference for infection

prevention and control committee in terms of implementing PPE use activities for all health workers in Hospital X is Ministry of Health regulation, namely Permenkes No. 27 of 2017.¹²

Socialization is one of the strategies undertaken to improve the understanding and clarity of the SOP that will be implemented.¹³ It is important to hold socialization periodically to increase the understanding of implementing nurses so that the application of SOP can run well.¹⁴ According to previous studies, policies, and SOPs that are less socialized causes health workers to lack knowledge about safe work practices.¹⁵ One of the steps to socialize policies and SOPs is to place SOPs and policies in a place that is easily seen and read by health workers so that the presence of these steps will increase the compliance of officers to carry out work in accordance with applicable procedures. This will build a work safety climate in the room so as to create a safety culture in clinical practice.¹⁴

In addition to the socialization of understanding, health workers also obtained from the provision of training. A new member of health workers takes precedence in getting training. There is a hereditary system in training the use of PPE, where health workers who have just received training have the responsibility to provide information to health workers in the unit in an assignment. One factor that influences compliance is to increasing knowledge by providing education /training.¹⁶ The provision of training can be in the form of seminars with a material presentation from outside parties with participants of each unit representation. Training plans must be prepared at each level, in addition to the type of training must be adjusted to the needs of controlling potential hazards. Training is carried out by authorized or competent persons or bodies.⁸ The training function itself is intended to train new workers for the development of performance and work environment in accordance with technological and scientific developments.¹⁷ Based on previous research, it is known that one of the strategies has been proven to be effective in increasing compliance with hand hygiene by completing supporting facilities such as providing visual aids in the form of posters or video hand hygiene.¹⁸

Results of study was finding that personal protective equipment (PPE) such as gloves, masks, goggles, gowns / aprons, foot /shoes cover, head cover are accordance to the Minister of Health Regulation, Permenkes number 27 year 2017 about Infection Prevention and Control.¹² Previous research conducted in South Africa found that one obstacle in implementing the use of PPE in health workers was the lack of provision of PPE facilities.^{19,20} The low availability of PPE is an important reason for non-compliance by officers.²¹ Based on the results of the study, observational data showed that the availability of PPE received a positive response to the research conducted. Thus this dysfunction indicates that if PPE is available but not used, it may be due to other factors that trigger the perception that PPE is not available. Women may have a perception of PPE that is not available because of inappropriate size and ergonomic factors

which could be a reason for not using PPE.²² PPE facilities that should be provided by the hospital in adequate numbers and types and are always ready to use. PPE needs in each unit should be adjusted to the potential injury that can be experienced by health workers in providing health services⁶. This is in line with previous studies in which PPE is adjusted to the needs of each patient. PPE needs are determined based on hazards and risks that exist in the workplace regarding the types of hazards and risks and accidents that often occur.⁸ In order to maintain the adequacy of PPE provision, the hospital or the responsible section is important to carry out documentation activities.

In the process variable from the observation results, it is known that health workers have used 100% PPE, but from interviews, it is known that there are still inaccuracies in the use of PPE by health workers. In other studies also found the same problem that the effectiveness of the use of PPE does not depend entirely on the availability of tools but the motivation of health workers themselves.²³ Even though they have often been socialized, the correct use of PPE is often ignored by health workers, especially when performing actions that require sensitivity, such as put the IV needle in the patient. The reason for not using gloves that can reduce the accuracy of the puncture is in line with previous research that health workers do not use PPE not because there is no equipment, but for reasons not have time and hassle.²⁴ Another reason for not using PPE is found in the use of masks that are not appropriate. Inappropriate use of masks due to being able to communicate with patients, on the other hand causes loss of protective function because it does not cover the nose or mouth.¹⁵ Based on observations of compliance in the use of PPE in this study was not caused due to the unavailability of PPE facilities.

One of the objectives of this research is to look at the output of using PPE for health workers. From interviews and document review, it is known that the use of PPE by health workers is still 88%. Audits on the use of PPE have been carried out twice a year, while supervision is carried out every day by the PPI. Enforcement of discipline in the use of personal protective equipment is needed. Supervision is carried out to ensure that every job is carried out safely and follows predetermined work procedures and instructions.⁸ According to previous studies, the lack of supervision or supervision related to the use of PPE is one of the factors that causes a decrease in nurses' behavior in the use of PPE.¹⁵ In other words, supervision plays an important role in determining whether or not personal protective equipment is used.²⁵ Compliance in the use of PPE in hospitals is affected by communication, limited equipment, supervision, and the attitude of the nurse itself.^{26,27} Supervision is carried out so that it can minimize the occurrence of cross-infection in hospitals and improve the compliance and discipline of health workers in the use of PPE that is correct and properly.

The limitation of this study is that the hospital limits this research to only certain units so that the diversity of health workers taken is also not much, so information about the use of PPE by all types of health workers can not be presented. Another problem is related to the time observation participant it is too short so that the results obtained can be biased.

Conclusion

Implementation of the management system for the use of PPE in Hospital X Bantul related to the input is available and is already running well. In the case of the process of using PPE there are still health care workers who do not use PPE in accordance with the SOP. The output of PPE usage is still below the figure set by the Minister of Health. However, it can be said to be good. Hospital management support is needed in terms of providing more active socialization and supervision related to the procedures and processes for using PPE properly so that the program of use activities related to the output of PPE usage figures can reach the Permenkes standard.

Acknowledgement

This research could not have been carried out without the support of Lembaga Penelitian dan Pengabdian kepada Masyarakat Universitas Ahmad Dahlan as the donor of funds and the Hospital X Bantul District who was willing to be the location of the study.

Funding

This research is part of a research with the main title "Evaluation of Infection Prevention and Control Program at X Bantul Hospital". This research has received a grant in fundamental research scheme from Lembaga Penelitian dan Pengabdian kepada Masyarakat Universitas Ahmad Dahlan.

Conflict of Interest

As authors, we highly guarantee that there is no conflict of interest in this research both the donor and research location.

Reference

1. Burton J. WHO Healthy Workplace Framework and Model : Background and Supporting Literature and Practices. Canada: World Health Organization; 2009.
2. Kemenkes RI. Pedoman Manajemen Kesehatan dan Keselamatan Kerja (K3) di Rumah Sakit. Jakarta; 2007.
3. Ivana A, Widjasena B, Jayanti S. Analisa Komitmen Manajemen Rumah Sakit (RS) Terhadap Keselamatan Dan Kesehatan Kerja (K3) Pada RS Prima Medika Pernalang. Jurnal Kesehatan Masyarakat (e-Journal). 2014;2(1):35–41.
4. Aguwu EN, Onyia SUA, Ndu A. Use of Personal Protective Equipment among Health Workers in a Tertiary Health Institution, South East Nigeria: Pre-Ebola Period. International Journal of Health Science and Research. 2016;6(8):12–18.
5. Suma'mur. Higiene Perusahaan dan Kesehatan Kerja (Hiperkes). Jakarta: Sagung Seto; 2009.
6. Pathmanathan AL, Hirudayaraj GJ, A MS, Paul CM. A study on personal protective equipment use among health care providers , Tamil Nadu. International Journal of Community Medicine and Public Health. 2018;5(5):1771–1774.
7. Tim PPI. Laporan Kegiatan Instalasi Pencegahan dan Pengendalian Infeksi RSUD Panembahan Senopati Bantul 2019. Yogyakarta; 2019.
8. Dwiastuti YR, Suroto, Kurniawan B. Evaluasi Manajemen Alat Pelindung Diri (APD) di Instalasi Laundry RS X. Jurnal Kesehatan Masyarakat Fkm Undip. 2015;3(April):651–663.
9. Donabedian A. The Quality of Care. How Can It Be Assessed? JAMA Network. 1988;260(12):1743–1748.
10. Sugiyono. Metode Penelitian Kuantitatif Kualitatif dan R&D. Bandung: Alfabeta; 2017.
11. Notoatmodjo S. Promosi Kesehatan dan Perilaku Kesehatan. Jakarta: Rineke Cipta; 2012.
12. Kementerian Kesehatan Republik Indonesia. Peraturan Menteri Kesehatan Republik Indonesia Nomor 27 Tahun 2017 tentang Pedoman Pencegahan dan Pengendalian Infeksi di Fasilitas Pelayanan Kesehatan. Indonesia; 2017.
13. Laramova A, Afriandi I, Pratiwi YS. Persepsi Tenaga Kesehatan Terhadap Penggunaan Alat Pelindung Diri dan Kejadian Kecelakaan Akibat Kerja di Salah Satu Rumah sakit di Kota Bandung. Jurnal Sistem Kesehatan. 2018;3(4):189–197.
14. Sari RY, Suprapti E, Solechan A. Pengaruh Sosialisasi SOP APD dengan Perilaku Perawat Dalam Penggunaan APD (Handsocon, Masker, Gown) di RSUD Dr. H. Soewondo. Jurnal Keperawatan dan Kebidanan. 2014;3(2):9–19.

15. Nurmalia D, Ulliya S, Neny L, Hartanty AA. Gambaran Penggunaan Alat Pelindung Diri oleh Perawat di Ruang Perawatan Rumah Sakit. *Journal of Holistic Nursing and Health Science*. 2019;2(1):45–53.
16. Pratama BS, Koeswo M, Rokhmad K, Studi P, Manajemen M, Sakit R, et al. Faktor Determinan Kepatuhan Pelaksanaan Hand Hygiene pada Perawat IGD RSUD dr . Iskak Tulungagung Determinant Factors of ER Nurses ' Hand Hygiene Compliance at dr . Iskak Hospital Tulungagung. *Jurnal Kedokteran Brawijaya*. 28(2):195–199.
17. Panjaitan FA, Mona S. Hubungan Pengetahuan dan Sikap Bidan Dengan Kepatuhan Pengguna APD di RSUD Embung Fatimah Kota Batam. *Jurnal Ilmiah Zona Kebidanan*. 2017;08(No.1, Desember):68–72.
18. Shekelle PG, Wachter RM, Pronovost PJ. Making Health Care Safer II : An Updated Critical Analysis of the Evidence for Patient Safety Practices. Rockville; 2013.
19. Mphahlele MT, Tudor C, Walt ML Van Der, African S, Farley JE. An infection control audit in 10 primary health-care facilities in the Western Cape Province of South Africa. *International Journal of Infection Control*. 2012;8(3):1–5.
20. Hasanah, Setiawati EP, Apriani L. Knowledge and Intention to Use Personal Protective Equipment among Health Care Workers to Prevent Tuberculosis. *Althea Medical Journal*. 2016;3(1):120–125.
21. Flinn MA, Keller B, Delaney SC. Promotion of Alternative-Sized Personal Protective Equipment. *Journal of Safety Research*. 2017;Volume 63(December):43–46.
22. Rose A, Ian W, Rae D. Personal Protective Equipment Availability and Utilization Among Interventionalists. *Safety and Health at Work*. 2019;10(2):166–171.
23. Kustriyani M, K AS, Arifianto. Hubungan Antara Motivasi Perawat Dengan Kepatuhan Penggunaan Alat Pelindung Diri di Instalasi Rawat Inap RSUD dr. Loekmono Hadi Kudus. *Journal of Holistic Nursing and Health Science*. 2018;5(1):36–42.
24. Supiana N, Supriyatiningih, Rosa EM. Pelaksanaan Kebijakan dan Penilaian Penggunaan APD (Alat Pelindung Diri) Oleh Dokter dan Bidang di Ruang Bersalin dan Nifas RSUD PKU Muhammadiyah Yogyakarta Unit I Tahun 2014/2015. *Journal of Medicoeticolegal - ethics and Hospital Management*. 2015;4(1):1–19.
25. Khairunnisak P. Faktor Yang Berhubungan Dengan Penggunaan APD Perawat di RS Islam Ibnu Sina Bukittinggi. *Jurnal Human Care*. 2018;2(2):1-11.
26. Cahyaningsih A. Evaluation of Knowledge and Compliance of Nurses on The Use Personal Protective Equipment (PPE) in Intensive Care Unit (ICU) RSUD Panembahan Senopati Bantul Yogyakarta. *Journal of Medicoeticolegal - ethics and Hospital Management*. 2017;6(3):187–193.

27. Muchlis S. Kesadaran Perawat Dalam Penggunaan Alat Pelindung Diri (APD). *Jurnal Ilmiah Mahasiswa Fakultas Keperawatan Unsyiah*. 2017;2(3):1–8.