



MEASUREMENT HAND WASHING COMPLIANCE *FIVE MOMENT* BY NURSE AT CIJANTUNG KESDAM HOSPITAL

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ABSTRACT

Healthcare Associated Infection (HAIs) are infections that occur during the treatment process at the hospital or in other health care facilities, where when the patient is admitted there is no infection or is not in the incubation period, or the infection is hospital-acquired but appears after discharge, as well as infection in health workers who happen because of his job. The purpose of this study is to determine the direct and indirect effects and the amount between supervision, availability of infrastructure, PPI training, compensation, work commitment and perceptions of compliance with five-moment handwashing by nurses at the Kesdam Cijantung Hospital. The method used in this research is a quantitative approach using a design *cross-sectional*. The sample used was 80 nurses as respondents. The analysis method used is the *Structural Equation Model (SEM)* using SmartPLS 2.0 and SPSS 20. The results of hypothesis testing with the *Structural Equation Model (SEM)* with the smartPLS method show that the variable influences supervision (26.8%), the availability of infrastructure (11, 12%), PPI training (7.03%), compensation (21.36%), work commitment (8.86%) and perception (6.2%) on compliance with handwashing *five-moment* by nurses at the Kesdam Cijantung Hospital. Suggestions are that the hospital should continue to make improvements by increasing awareness of the importance of hand washing to prevent nosocomial infections, and monitoring the implementation of hand washing.

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Introduction

Healthcare Associated Infection (HAIs) are infections that occur during the treatment process at the hospital or in other health care facilities, where when the patient is admitted there is no infection or is not in the incubation period, or the infection is hospital-acquired but appears after discharge, as well as infection in health workers who happen because of his job. This infection is not limited to the patient, but also infection in health workers who are acquired during patient care measures. Especially for infections that occur or are acquired in the hospital, hereinafter referred to as Hospital Infection (IRS) (Betty, S 2012)

HAIs are an important issue around the world. This infection continues to increase from 1% in several European and American countries, to more than 40% in Asia, Latin America and Africa. Infectious diseases are still the main cause of high morbidity and mortality in the world. One type of infection is HAIs. These infections cause 1.4 million deaths every day worldwide. The incidence of infection in hospitals is around 21% where nosocomial infection is a serious problem that can be a direct or indirect cause of patient death, (Boyce, JM)

In Indonesia, nosocomial infections reached 15.74%, far above developed countries which ranged from 4.8-15.5%. Research conducted in 11 hospitals in DKI Jakarta in 2014 showed that 9.8% of inpatients received new infections during treatment. Patients who are hospitalized are at risk of exposure to HAIs, there are 4 HAIs that most often occur, including patients who have an IV at risk of Primary Blood Flow Infection (IADP), patients who have dour catheters are at risk of Urinary Tract Infection (UTI), patients who are mechanically ventilated at risk for *Ventilator Associated Pneumonia (VAP)* and patients who were operated on containing Operating Area Infection (IDO), (Masloman, AP. 2016)

There are five times (*Five Moment*) that are important for health workers to carry out hand hygiene, namely before contact with the patient, before aseptic action, after exposure to the patient's body fluids, after contact with the patient, and after contact with the patient's environment. This is aimed at preventing the risk of microbial transmission to patients and preventing the risk of microbial transmission to the patient's health care provider and environment. (Firmansyah, E., Tri, A., & Widiyanto, S. 2014)

The impact that occurs if nurses do not wash their hands for five moments or fail to carry out proper hand hygiene and hand hygiene are considered to be the main causes of hospital infections and the spread

of multiresistance in health care facilities and have been recognized as important contributors to the outbreak.

The factors that affect the level of compliance in washing hands with *five moments* are supervision, availability of infrastructure, PPI training, compensation, work commitment and the perception of nurses. One of the important dimensions in realizing the goal for nurses to comply with washing hands with *five moments* is supervision. Supervision is absolutely necessary where there is a collaborative interaction between two or more people in carrying out activities in the organization. Supervision determines direction and goals and guidance in carrying out work. Supervision in accordance with the wishes of nurses will make nurses feel comfortable when working and nurses will be more enthusiastic when working. The work spirit of nurses can support the achievement of the goals and objectives of the institution because morale can encourage nurses to work harder and better. (Maryunani. 2016)

Supervision can be said as a way of a leader (leader) in directing, encouraging, and arranging all elements in a group or organization to achieve goals. Supervision of superiors has an important role in increasing employee compliance in carrying out their daily duties. The ability and skills *leadership* to direct are an important factor in leadership effectiveness. In the style of supervision, the important factors of leadership cannot be separated from their personality which has been influenced by the environment or education and social culture. Supervision of superiors is defined as the ability that a person has to influence others to work towards certain goals and objectives (Thoha, M 2014)

Another factor that affects compliance is the availability of facilities and infrastructure. Compliance in implementing hand washing with *five moments* is closely related to health behavior. Compliance with standard precautions consists of worker / individual factors, job / task factors and environmental / organizational factors. Compliance with the implementation of hand washing with *five moments* which is still low can be due to limited facilities in the prevention and control of infection, the availability of hand washing facilities in the ward which are not evenly available, if available sometimes without soap and towels. Availability of running water, alcohol-based hand sanitizer is not widely available and there is often a shortage of gloves, gowns and masks. There are still many hospitals that do not yet have containers for sharps disposal, (Jeong 2016).

The PPI training factor also influenced nurses' compliance in washing their hands with *five moments*. Training is a series of individual activities in systematically increasing skills and knowledge so that they are able to have professional performance in their fields. Training is a learning process that allows employees to carry out their current work according to standards.

Financial compensation is also one of the factors that affect nurses' compliance in washing hands with *five moments*. Factors that affect compliance are divided into four factors, one of which is the financial satisfaction factor, which is a factor related to employee security and welfare which includes the system and amount of salary, social security, various benefits, facilities provided, promotions and so on. . (Fuadi 2013)

The work commitment factor is also one of the factors that influence nurses' compliance in washing their hands with *five moments*. Commitment can be increased by developing a performance improvement monitoring system, and understanding the values and goals of the organization to maintain the alignment between the vision and mission. A highly committed individual is likely to see himself as a true member of the organization, and to see himself as a long-term member of the organization. Conversely, an individual who has low commitment is more likely to see himself as an outsider, and they do not want to see himself as a long-term member of the organization. (Jeong. 2016)

Prevention of HAIs by applying the principle of asepsis and applying high standards to eliminate potential sources of disease. Inhibiting the route of bacterial transmission from potential sources and bacterial reservoirs to people who are not infected with *hand hygiene* effective, especially for nurses is also one of the prevention.

The results of a preliminary study conducted at the Kesdam Cijantung Hospital showed that there were several problems related to the lack of compliance of nurses at Cijantung Hospital, which had an impact on the achievement of nurses' compliance in implementing 5 moments of Hand hygiene. HAIs at Cijantung Hospital in 2016 ranged from 0.86 - 14.49 %, while in 2017 it was between 0.37 - 2.62 %. The compliance of Cijantung Hospital nurses who carried out 5 Hand hygiene moments in 2017 has reached 72.4% and is still unstable, it still changes up and down the hand washing compliance rate from the target has been set at 80%. Meanwhile, the impact of health services that do not comply with the five moments and hand hygiene is the increased risk of HAIs infection in patients.

The problem in this study is that there is no measurement of important indicators such as compliance with SPO, accuracy of service and responsibility for describing nurse compliance at Cijantung Hospital,



where this is important because it is included in intrinsic and extrinsic factors where the presence of two factors can influence work compliance.

The purpose of this study was to determine the direct and indirect effects and the amount between supervision, availability of infrastructure, PPI training, compensation, work commitment and perceptions of the five-moment handwashing compliance by nurses at the Kesdam Cijantung Hospital.

Method

research is a survey research with a design *cross sectional* which aims to analyze the causal relationship between variables through hypothesis testing, namely to analyze the effect of supervision, the availability of infrastructure, PPI training, compensation, work commitment and perceptions of compliance with the five moment handwashing by nurses. at the Cijantung Public Health Hospital.

This research will be carried out in the working area of the Cijantung Hospital. The research was conducted in January 2019. Population is a group or group of individuals or research objects that have certain standards of predetermined characteristics.¹⁴ The total population in this study were 188 people who served at the Cijantung Military Service Hospital. Meanwhile, the minimum number of samples taken by the researcher directly through the object is 80 respondents based on a large number of indicators. For the purposes of this study, respondents were determined by involving the population of nurses who served at Cijantung Hospital.

The sampling technique used in this research was *purposive sampling*, sampling which is a method based on specific criteria which became the research requirements.¹⁵ The number of samples is taken in accordance with the rule of the number of samples in the guideline *Partial Least Squares (PLS)* where the sample size taken is 5 to 10 multiples of the number of indicators to be studied. So in this case the sample size taken is still in the range of 60 to 120. The number of samples taken is in accordance with the rule for the number of samples in the guidelines *PLS* with the Gozali formula, where the sample size taken is 5 to 10 multiples of the number of indicators used. will be researched.¹⁶ The number of samples obtained was based on the total population in each room of the Cijantung Public Health Hospital divided by the total population then multiplied by the number and number of samples.

The data collected are primary data, primary data specifically collected for the needs of ongoing research. The primary data in the study were the profile data of the health centers and the identification of the respondents, which contained respondent data. Meanwhile, secondary data collection is data which is the source of research data obtained by researchers indirectly.¹⁷

This study used an *instrument* in the form of a questionnaire / question containing each indicator in 4 variables. The primary data collection method used in this study was obtained through distributing questionnaires conducted by researchers to respondents who have met the established criteria. The questions are made using *Differential Semantic*.¹⁸

The univariate analysis in this study uses a frequency distribution that describes the independent variables (namely supervision, availability of infrastructure, PPI training, compensation, work commitment and perceptions) and dependent (compliance with the handwashing *five-moment* by nurses). The univariate analysis conducted was to determine the characteristics of each endogenous and exogenous variable to determine the distribution description and each of the variables studied.

Bivariate analysis in this study using the test *chi square*, which is to determine whether the variable is included in the regression model, where variables with a value $p < 0.05$ can enter the regression model in multivariate analysis.

Multivariate analysis in this study using the SEM path diagram serves to show the pattern of the relationship between the variables studied through *Partial Least Square (PLS)*. The output of PLS the root results of all constructs is greater than the correlation between constructs. The AVE value for all constructs is greater than 0.5 so that the measurement evaluation model has *discriminant validity* a good or valid if the value is *loading factor* above 0.5 against the construct aimed based on the *substantive content* by looking at the significance of weight ($t = 1.96$). The value of *Cronbach's Alpha and Composite reliability* for all variables has a value greater than 0.70 so it can be said that the contract has good reliability.¹⁸

Results and Discussion

description of the characteristics of the respondents includes age, education and years of service. Of the 80 respondents, the majority of respondents were young adults 36 - 45 years old as many as 39 people (49%), while respondents aged 26 - 35 years were 32 people (40%) and over 46 years old were 9 people (11%).

Based on the education level, the majority of respondents with Academy / Diploma education are 56 people (70%), while 24 respondents (30%) have undergraduate education. Meanwhile, based on the working period, most of the respondents who worked for more than 1 year were 41 people (51%), while the respondents who worked for less than 1 year were 39 people (49%).

The nurse's compliance variable, the respondent's answer range between 46-67, is close to the theoretical range (15-75) with a mean value of 56.44 and a standard deviation of 5.70. This indicates that respondents tend to consider nurses' compliance at the Cijantung Public Health Hospital to be important. In the supervision variable, the respondent's answer range between 48-68 approaches the theoretical range at the highest value (15-75) with an average value of 55.96 and a standard deviation of 5.64. This indicates that respondents' perceptions tend to consider the supervision variable important.

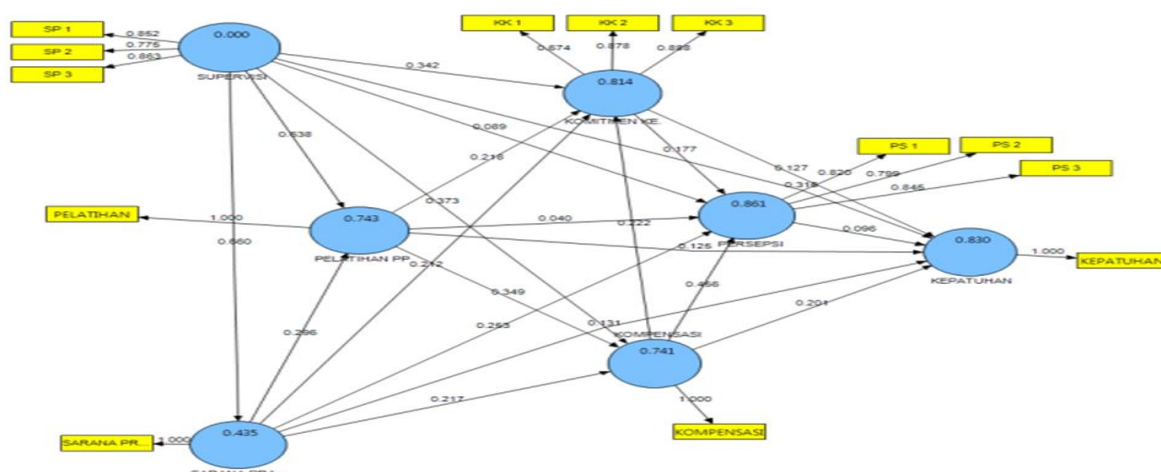
The assessment of the infrastructure provided 48-68 is in the middle of its theoretical range (15-75) with an average value of 59.14 and a standard deviation of 6.71, this indicates that respondents' perceptions tend to consider infrastructure important. In the PPI training variable, assessment of PPI training nurses between 23-43 approached their theoretical range (15-75) with a mean value of 34.24 and a standard deviation of 5.58. This indicates that respondents tend to consider PPI nurse training important.

The assessment of compensation between 23-43 approaches the theoretical range (15-75) with a mean value of 34.71 and a standard deviation of 5.30. This indicates that respondents tend to think compensation is important. In the work commitment variable, the assessment of nurses' work commitment between 40-61 approaches the theoretical range (15-75) with an average value of 49.13 and a standard deviation of 4.86. This indicates that respondents tend to consider the work commitment of nurses important. In the perception variable, the assessment of nurses' perceptions between 23-43 is close to the theoretical range (15-75) with an average value of 34.71 and a standard deviation of 5.30. This indicates that respondents tend to consider the perception of nurses important.

The results of the univariate research also showed that in the nurse's compliance variable the smallest respondent's answer score was 46 and the largest was 67 with an average of 56.44 median 57 and the highest answer value was 53. For the supervision variable the smallest respondent's answer score was 48 and the largest is 68 with an average of 55.96, median 54 and the highest answer value is 53. For the infrastructure and infrastructure variable, the smallest respondent's answer value is 48 and the largest is 68 with an average of 59.14, the median of 61 and the highest answer score is 63.

The PPI training variable, the smallest respondent's answer score was 23 and the largest was 43 with an average of 34.24, the median of 37 and the highest answer value was 37. For nurse compensation variables, the smallest respondent's answer value was 23 and the largest was 43 with an average. 34.71 median 35 and the highest answer score is 40. For work commitment variable, the smallest respondent's answer score is 40 and the largest is 61 with an average of 49.13, the median is 48 and the highest answer score is 47. For the variable perception of nurses The smallest respondent's answer value was 23 and the largest was 43 with an average of 34.71, median 35 and the highest answer score was 40.

The test was *chi square t* conducted to see the variation in the total respondents' answers per variable on the characteristics of the study because the results of the test *chi square* with a significance level of 5% were all greater than 0.05. This shows that all variables have no relationship with the characteristics of the respondent. Approach results Analysis of *Structural Equation Modeling* (SEM) is shown in Figure 1.



Based on Figure 1, it can be seen that an indicator is declared valid if it has the *loading factor* highest for the intended construct compared to the *loading factor* for other constructs. The *loading factor* value for SP1 - SP3 is the highest for the Supervision variable compared to other variables, so that the Supervision variable is able to predict the value *loading factor* SP1 to SP3 is higher than other variables.

The results of the data processing analysis show that the construct used to form a research model, in the confirmatory factor analysis process, has met the criteria *goodness of fit* predetermined. The value *probability* in this analysis shows a value above the significance level of 0.05. From the results of the data processing above, it is also seen that each indicator or dimension forming latent variables shows good results, namely with a high *loading factor* value where each indicator is greater than 0.5. With these results, it can be said that the indicators forming the latent variable constructs of Supervision, Infrastructure, PPI Training, Work Commitment, Perception and Nurse Compliance have shown good results.

The results of the data processing analysis show that the construct used to form a research model, in the confirmatory factor analysis process, has met the criteria *predetermined goodness value*. The value *probability* in this analysis shows a value above the significance limit, namely 0.05. Based on the results of data processing above, it can be seen that each indicator forming latent variables shows good results, namely with a high *loading factor* value where each indicator is greater than 0.5.

The assessment *discriminant validity* is to compare the value of *AVE* each construct with the correlation between constructs and other constructs in the model so it is said to have a good *validity discriminant* value. After being tested for validity and it was stated that the variables and indicators were valid, the reliability test was carried out. Reliability test is done by looking at the value of the *composite reliability* of the indicator block that measures the construct of the results *composite reliability* will show a satisfactory value if it is above 0.70. The results of the outer model reliability evaluation can be seen in the table by evaluating the *Cronbach's Alpha* value and *composite reliability*.

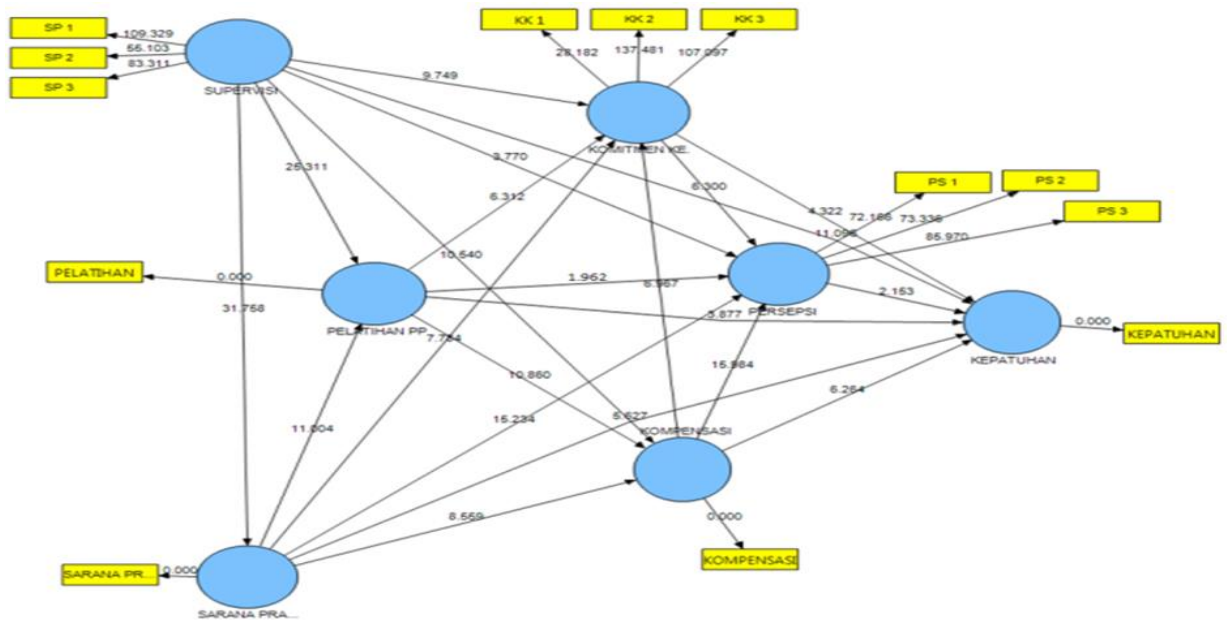


Figure 2. Inner Model (T-Statistic)

Figure 2 shows a satisfactory value if it is above 0.70, the results of the outer model reliability evaluation can be seen in the table by evaluating the value of Cronbach's Alpha and composite reliability. The variable is declared reliable because the value of Cronbach's Alpha and Composite reliability is above 0.70 so it can be said that the construct has good reliability. The Inner Model significant evaluation results are set in the SmartPLS 2.0 Output. Furthermore, the Inner Model test is carried out, testing the structural model is carried out by looking at the R Square which is the test Goodness-fit model. The following are the results of measuring the value of R Square, which is also the value of the goodness-fit model.

Table 1. Percentage of Influence Between Variables on Nurse Compliance Variables

Source	LV Correlation	Direct Path	Indirect Path	Total	Direct (%)	Indirect (%)	Total (%)
Supervision	0.854	0.316	0.548	0.864	27.01%	0.49%	27.50%
Infrastructure	0.746	0.131	0.191	0.322	9.76%	0.11%	9.87%
Training PPI	0.831	0.125	0.132	0.257	10.39%	0.05%	10.44%
Compensation	0.843	0.201	0.076	0.277	16.95%	0.02%	16.97%
Work Commitment	0.846	0.127	0.017	0.144	10.77%	0.002%	10.78%
Perception	0.845	0.096	-	0.096	8.15%	-	8.15%
Total					83.0%	0.7%	83.7%

Based on the table above, it states that supervision has a direct and indirect effect on nurse compliance. The result of the parameter coefficient test between Supervision of nurse compliance shows that there is a direct effect of 27.01%, Infrastructure facilities on nurse compliance indicate a direct effect of 9.76%, PPI training on nurse compliance shows that there is a direct effect of 10.39%, Compensation for nurse compliance indicates there is an effect 16.95% direct, Work Commitment to nurse compliance shows that there is a direct effect of 10.77%. The perception of nurses' compliance shows that there is a direct effect of 8.15%,

while for the indirect effect of supervision on nurse's compliance is 0.49%, the indirect effect of infrastructure on nurse compliance is 0.11%, the indirect effect of PPI training on nurse compliance is



0.11%. 0.05%, the indirect effect of compensation on nurse compliance is 0.02%. The indirect effect between commitment to nurse compliance is 0.002%, while the indirect effect between perceptions of nurse compliance is 0.00%. in other words, this states that the variables of Supervision, Infrastructure, PPI Training, Compensation, Commitment and perception are $(27.01\% + 9.76\% + 10.39\% + 16.95\% + 10.77\% + 8.15\%) = 83.0\%$

Conclusion

The results of this study indicate that the compliance of Handwashing Five Moment by nurses at the Cijantung Regional Health Hospital is influenced by the influence of supervision (27.01%), availability of infrastructure (9.76%), PPI training (10.39%), compensation (16.95%), work commitment (10.77%) and perception (8.15%) of the handwashing compliance five moment by nurses at the Kesdam Cijantung Hospital.

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