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Original Article

Relationship Between Knowledge, Attitude and Supervision Hand Hygiene Compliance

Wartini[1*], Maria Komariah[2], Furkon Nurhakim[1]

[1]Postgraduate Study Program, Faculty of Nursing, Universitas Padjadjaran, Bandung, West Java, Indonesia
[2]Faculty of Nursing Science, Universitas Padjadjaran, Bandung, West Java, Indonesia

[*](Correspondence author email: tienwartini78@gmail.com)

ABSTRACT

Health Care Associated Infection has become a serious problem in hospitals, and one of the causes is low hand hygiene compliance. Factors influencing compliance with the five moments of hand hygiene are knowledge, attitudes, and supervision. Research was conducted to identify factors related to nurses' compliance with the implementation of the five moments of hand hygiene. Analytical correlational research with a cross-sectional approach was conducted at RSUD in November 2023 with a sample of 123 nurses. The questionnaire used was based on Herzbergh's motivation theory and the 26-item Manchester Clinical Supervision Scale (MCSS-26). Bivariate test using Chi Square, and multivariate analysis with logistic regression were performed. The results showed that there is a relationship between knowledge and compliance (p=0.000), there is a relationship between training and compliance (p=0.016). There is a relationship between motivation and compliance (p=0.000), there is a relationship between attitudes and compliance (p=0.000). There is a relationship between facilities and compliance (p=0.011), there is a relationship between supervision and compliance (p=0.000). The dominant factors influencing are supervision (3.178), attitude (2.921), and knowledge (0.138). The conclusion of the study is that there is a relationship between knowledge, training, attitudes, motivation, facilities, and supervision on compliance with the five moments of hand hygiene, the dominant factors influencing are supervision, attitude, and knowledge in order.

Keywords : *Knowledge Factors, Attitude Factors, Supervision Factors, Hand Hygiene Compliance*

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INTRODUCTION

Health Care Associated Infection (HAIs) has become a health problem in various countries, including Indonesia. HAIs are infections that occur during the care process in hospitals or other health care facilities that are not apparent or not in the incubation period when the patient first enters the hospital or only appear after the patient leaves the hospital, including infections due to work that occur in hospital staff [1].

Based on WHO data, the incidence of HAIs in hospitals worldwide reaches 9% or approximately 1.4 million of hospitalized patients, HAI rates show about 8.7% of 55 hospitals in 14 countries in Europe, the Middle East, Southeast Asia, and the Pacific[2]. Ministry of Health data on the incidence of HAIs in Indonesia reached 15.74% of hospitalized patients, much higher than developed countries which reached 4.8-15.5%. Nosocomial infection data in West Java is higher compared to Central Java and East Java, reaching 2.2%, Central Java reaches 0.8% and East Java reaches 0.5%.

HAIs data in 2022 at RSUD Sumedang reached 2.19%, with the highest infection rate occurring in Ventilator Associated Pneumonia (VAP) reaching 7.04‰. A study explains that the factors causing VAP are due to hand hygiene that does not comply with standards[3].

The impact of HAIs causes the number of patient days to be longer, reaching 5-10 days.

The occurrence of permanent disabilities, increased resistance of microorganisms to microbial agents, increased health care costs, and death[4].

Hand hygiene is an effective effort in preventing HAIs. Prevention of infection transmission in hospitals can be realized properly if health workers have a level of hand hygiene compliance according to standards. The existing phenomenon, compliance of health workers in performing hand hygiene is still considered low. Hand hygiene compliance worldwide ranges from 40% to 50%[5].

The average compliance of health workers in Southeast Asia such as Vietnam 31%, the Philippines 11%, and Indonesia 36%. This data shows the still low level of compliance of health workers with hand hygiene protocols[6]. The average compliance with hand hygiene at RSUD Sumedang in 2021 reached 80.03% (standard 85%), with the lowest moment before patient contact reaching 79.45%.

Studies explain that factors related to nurse compliance in implementing hand hygiene are motivation, availability of facilities, and head of ward supervision, while knowledge and attitudes have no relationship with hand hygiene compliance [7].

This study is supported by [8] that there is a significant relationship between education, employment status, training, experience or tenure, knowledge, attitudes, and rewards with the compliance of health**.**

Lawrance Green in [9] explains that human behavior is influenced by three main factors, namely predisposing factors which include knowledge, attitudes, beliefs. Supporting factors include the availability of facilities or infrastructure. Driving factors include the attitudes and behavior of nursing staff.

METHOD

Correlational analytical research with a cross-sectional approach. This studi will be conducted at RSUD Sumedang in November 2023. The population 178 nurse inpatient room.

The sample used a cluster sample of 123 nurses. Nurses are selected during the service at that time who meet the criteria. The measuring instrument uses a knowledge questionnaire with a validity test of 0.460, an intrinsic and extrinsic motivation questionnaire from Herzbergh, with a validity test of the motivator factor of 0.458, a hygiene factor of 0.492. Manchester Clinical Supervison Scale 26-item questionnaire (MCSS-26) with a validity test of 0.361. Univariate analysis uses frequency distributions. Bivariate analysis uses Chi Square to find the relationship between the factors knowledge, education, years of work, training, attitudes, motivation, infrastructure and supervision on hand hygiene compliance. Multivariate analysis using logistic regression,

RESULTS

Table 1. Description Complaince Factors five Moment Hand Hygiene N=123)

No.	Sub variables	Category	*f*	%
1.	Knowledge	Enough	2 9	23.6
		Good	94	76.4
		Total	123	100
2.	Education	D III Nursing	85	69.1
		Bachelor's Degree in Nursing	38	30.9
		Total	123	100.0
3.	Years of service	< 5 years	31	25.2
		≥5 years	92	74.8
		Total	123	100
4.	Training _	Not yet Training	73	59.3
		Already Training	50	40.7
		Total	123	100
5 .	Motivation	Low	48	39.0
		Tall	75	61.0
		Total	123	100
6 .	How are the respondents ?	Negative	45	36.6
		Positive	78	63.4
		Total	123	100
7.	Infrastructure _ hand hygiene	No complete	45	36.6
		Available complete	78	63.4
		Total	1 23	100
8 .	Supervision	Not enough	51	41.5
		Good	72	58.5
		Total	123	100

The characteristics of respondents in table 1 were obtained from 123 respondents, dominated by women, 74.8%. More from half respondents are of age productive 51.2%, with employment status of 69.9% of BLUD staff. Part big respondents 76.4 % have good knowledge, and 69.1% Diploma III in Nursing. More than half of the working period is 74.8 % who have worked more than five years. As for

those who have not participated in training, more than half, namely 59.3%, as many as 60.2% show high motivation, more than half, 63.4%, have a positive attitude. More than half, 63.4%, said that the availability of *hand hygiene* facilities and equipment in each room was complete, and more than half, 58.5%, said that supervision activities were carried out well.

Table 2. Description of Nurse Compliance Levels in Implementation *Five Moments Hand Hygiene* (N=123)

Dependent Variable	Category	*f*	%
Nurse compliance in *five moments of hand hygiene*	No Obedient	45	36.6
	Obedient	78	63.4
	Total	123	100

Table 2 shows, it is obtained that the level of nurse compliance is higher from half of the respondents 63.4 % categorized as compliant in implementing the five moments of hand hygiene.

Table 3. Analysis Results Bivariate Related Factors with Compliance Nurses in Implementing *Five Moment Hand Hygiene*

Variable		*p**	OR (95%C.I)
Knowledge	Enough Good	0,000 *	0.103 (0.51-0.450)
Training	Not yet Already	0.016 *	2,613 (0,578-3,934)
Motivation	Low Tall	0,000*	5,256 (0.439-4.033)
Attitude	Negative Positive	0,000 *	5,910 (0.909-7.125)
Infrastructure	Incomplete Complete	0.011 *	2,661 (0.500-3,949)
Supervision	Not enough Good	0,000*	5, 429 (0.853-7.108)

Table 3 describes the result of bivariat analysis between independent and dependent. There is a most significant relationship between supervision factors and nurse compliance in implementing the five moments of hand hygiene p-value (0.000) and OR 5, 429 (0.853-7.108). This means that supervision has the opportunity to further increase compliance. There is a significant relationship between attitude and nurse compliance in implementing the five moments of hand hygiene p-value (0.000) and OR 5,910 (0.909-7.125). There is a significant relationship between motivation and nurse compliance in implementing the five moments of hand hygiene p-value (0.000) and OR 5,256 (0.439-4.033). There is a significant relationship between the availability of hand hygiene infrastructure and nurses' compliance in implementing the five moments of hand hygiene p-value (0.011) and OR 2,661 (0.500-3,949). There is a significant relationship between training with nurse compliance in implementing the five moment hand hygiene p-value (0.016) and OR 5,256 (0.439-4.033). And knowledge of nurses' compliance in implementing five moments of hand hygiene p-value (0.000) and OR 0.103 (0.51-0.450).

Table 4 Analysis Results Multivariate Factors That Influence Nurse Compliance in Implementing *Five Moment Hand Hygiene*

Variable		B	Sig.	Exp(B)	OR (95% CI)
Step 1	Knowledge	-1,884	,001	,152	0.103 (0.51-0.450)
	PPI training	.411	.401	1,508	2,613 (0,578-3,934)
	Motivation	,286	,613	1,331	5,256 (0.439-4.033)
	Nurse's attitude	,934	,075	2,545	5,910 (0.909-7.125)
	Infrastructure –	,340	,519	1,405	2,661 (0.500-3,949)
	Supervision	,901	,096	2,462	5, 429 (0.853-7.108)
	Constant	1,349	.102	3,854	
Step 2	Knowledge	-1,935	,000	.144	0.103 (0.049-0.422)
	PPI training	,429	,379	1,536	2,613 (0,590-4,001)
	Nurse's attitude	1,014	,043	2,757	5,910 (1.032-7.365)
	Infrastructure	,416	,410	1,516	2,661 (0,563-4.079)
	Supervision	,968	,065	2,633	5, 429 (0.940-7.374)
	Constant	1,435	,076	4,199	

Step 3	Knowledge	-1,919	,000	,147	0.103 (0.51-0.426)
	PPI training	,487	.311	1,627	2, 613 (0,634 -4.177)
	Nurse's attitude	1,016	.041	2,762	5,910 (1,043 -7, 315)
	Supervision	1,117	.023	3,057	5, 429 (1.167 -8.007)
	Constant	1,560	,049	4,760	
Step 4	Knowledge	-1,983	0,000	0.138	0.103 (0.048-0.395)
	Nurse's attitude	1,072	0.028	2,921	5,910 (1,122-7,604)
	Supervision	1,156	0.017	3,178	5, 429 (1,231-8,207)
	Constant	1,774	0.020	5,894	

Based on table 4 analysis multivariat, it can be identified that there are 4 steps to the end. The first step is that all selected variables go into modeling. In the next stage motivation is issued, then in the next stage infrastructure and training facilities are issued. Based on the results of analysis of several factors dominant influence on nurses' compliance in implementing the five moments of hand hygiene respectively, these are supervision factors (OR=3.178), nurses' attitudes (OR= 2.921), and nurses' knowledge (OR= 0.138).

DISCUSSION

Relationship between Knowledge and Hand Hygiene Compliance

This research shows that nurses' knowledge about implementing five moment hand hygiene is good (76.4%), with work experience (74.8%) of more than 5 years. Based on logistic analysis, knowledge is a dominant factor but can reduce compliance as such knowledge has the characteristic that it must be updated or maintained, so that nurses do not forget and comply with carrying out five moments of hand hygiene according to standards. The level of compliance shows that 63.4% comply with five moments of hand hygiene. Thus, it is necessary to provide regular understanding or training and feedback to be able to maintain knowledge about hand hygiene.

Knowledge is a very important domain for the formation of a person's actions[9]. Knowledge is the result of sensing which is influenced by the intensity and perception of objects[6]. In line with this research, it is explained that the respondents' knowledge was 67.2% and the results of the analysis showed that there was a relationship between knowledge and hand hygiene compliance[10].
One study stated that health workers' knowledge increased in all locations after educational sessions[1]. It is necessary to increase procedural knowledge, where this knowledge includes how a person performs in carrying out the steps in a process[11]. The better the respondent's knowledge, the better the respondent's attitude in implementing the five moments of hand hygiene.

According to[9] a person's education will influence differences in knowledge, so that education influences the learning process, the higher a person's education, the higher their ability to perceive information and the easier it will be to receive information. Higher education is expected to perform well compared to those with low education[12]. Individuals with a higher level of education are assumed to have better knowledge and skills in the ability to complete work.

The level of education in this study shows (69.1%) that DIII Nursing is more common than SI Nursing, so it is possible that there are other, unstudied factors that more strongly influence compliance.

Relationship between attitude and hand hygiene compliance

In this study, it showed a positive attitude (63.4%), with high motivation (60.2%). Attitudes involve opinions and emotions within a person[13]. Attitudes are obtained from the process of experience, learning, and identification. A person who has a positive attitude is associated with good motivation as an encouragement to behave. Positive attitudes of nurses tend to have a good understanding of hand hygiene, have awareness of the importance of hand hygiene for the safety of patients and nurses. Attitudes are formed from the components of trust or belief in an object, emotional life or assessment of an object and the tendency to act [9].

Studies show that nurses' positive attitude towards performing hand hygiene is associated with high nurse motivation. The higher the motivation, the more positive the attitude will be. There is a fairly strong relationship between motivation and nurses' compliance in performing hand hygiene with a value of p =

0.012 (<0.05), r = 0.433 [14]. Research conducted by [11] shows that motivation influences officer compliance in implementing infection prevention and control.

The research results show that the level of motivation is in line with the resulting performance, if motivation is high, then performance is good and vice versa. The statistical test results obtained p=0.000. This means there is a relationship between motivation and nurse performance[15].

According to G.R. Terry motivation is the desire that exists within a person to carry out various actions. Good motivation from individuals will foster an attitude of good behavior. Self-regulation interventions can help individuals wash their hands more frequently. The motivation module (Mot) carried out sequentially is very important, helping to set goals and the self-regulation module (SelfR) is able to translate goals into actual behavior [16].

Attitudes will not be realized if they are not supported by infrastructure, this influences nurses' interest in wanting to carry out hand hygiene so that nurses are aware and care about their health. One of the keys to success in implementing a hand hygiene program in a hospital is the availability of hand hygiene (hand rub) facilities at every service point in the hospital[17]. The availability of functional and easily accessible handwashing facilities is essential to ensure handwashing compliance. The main barriers reported in performing HH were insufficient supplies (57.9%), skin reactions (26.3%), workload (26.3%), and lack of facilities (22.7%) [15] .

The Relationship between Supervision and Hand Hygiene Compliance

Supervision activities carried out by IPCN and IPCLN showed good (58.5%). Based on bivariate statistics, there is a most significant relationship between supervision factors and nurse compliance in implementing *the five moments of hand hygiene* Supervision carried out as an effort to improve service quality is very important to optimize nurses' compliance in implementing hand hygiene for infection prevention and control. If supervision is good, then performance will be good. Supervision is carried out objectively by the head of the room as IPCLN which aims to develop staff. The results of this study are supported by the existence of a fairly strong relationship between the supervision of the head of the room and nurses' compliance in carrying out hand hygiene with a value of p = 0.014 (<0.05), r = 0.423 [14].

Supervision can influence the condition of nurses in generating, directing and maintaining hand hygiene behavior. Implementation of supervision is not only to monitor whether nurses have implemented hand hygiene according to standards or not, but also with regular supervision they can find problems that can be immediately provided with direct assistance. The monitoring and evaluation carried out ensures that the implementation of infection prevention and control activities is in accordance with standards. It is hoped that feedback from monitoring and evaluation results will realize improvements through changes in the understanding and behavior of officers in implementing five-moment hand hygiene compliance.

Supervision is part of the direction function to improve the quality of nursing services. Monitoring service quality in the form of hand hygiene compliance is a concrete form that provides appreciation and forms positive behavior for nurses which makes it an assessment of the ability to develop services in real terms[18].

IPCN has a standard awareness monitoring program, responsibility for infection prevention and control in hospitals. Supervision carried out by IPCN ensures that the services provided are safe for patients and staff. If the infection prevention and control program in the hospital is implemented well, it requires management support in implementing the five moment hand hygiene culture, there needs to be supervision and evaluation for officers through education and supervision involving the head of the room, Infection Prevention Control Link Nurse (IPCLN), Infection Prevention Control Nurse (IPCN) and infection prevention and control committee [19].

Another study shows that academic-based supervision influences hand washing compliance, academic supervision in the form of guidance or teaching, support from nurses in washing hands according to procedures, thereby increasing knowledge and compliance [20]. The research results of [20] explain that supervision needs to be carried out continuously with the ultimate aim of increasing nurses' knowledge and compliance in implementing hand hygiene.

CONCLUSION

The research results showed that nurses' hand hygiene compliance levels were still not up to standard. The results of the bivariate analysis show that there is a relationship between knowledge, motivation training, attitudes, infrastructure and supervision with compliance with five moments of hand hygiene. The most dominant factors that influence are supervision from IPCN and IPCLN, nurses' attitudes and nurses' knowledge. Suggestions for nursing practice are to increase knowledge through education and training as well as regular feedback. Feedback is provided by giving rewards to nurses as hand hygiene ambassadors. Providing rewards aims to increase nurses' motivation in carrying out five moment hand hygiene so that nurses will feel appreciated, so that nurses have awareness and a sense of responsibility to carry out hand hygiene according to standards. To maintain hand hygiene compliance, it is necessary to strengthen the head of the room as an IPCLN to supervise the unit because the head of the room is the driving force in health services. IPCN's role as PPI practitioners in hospitals is to further improve monitoring to ensure nurses work safely to avoid the risk of transmitting infections related to health care.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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