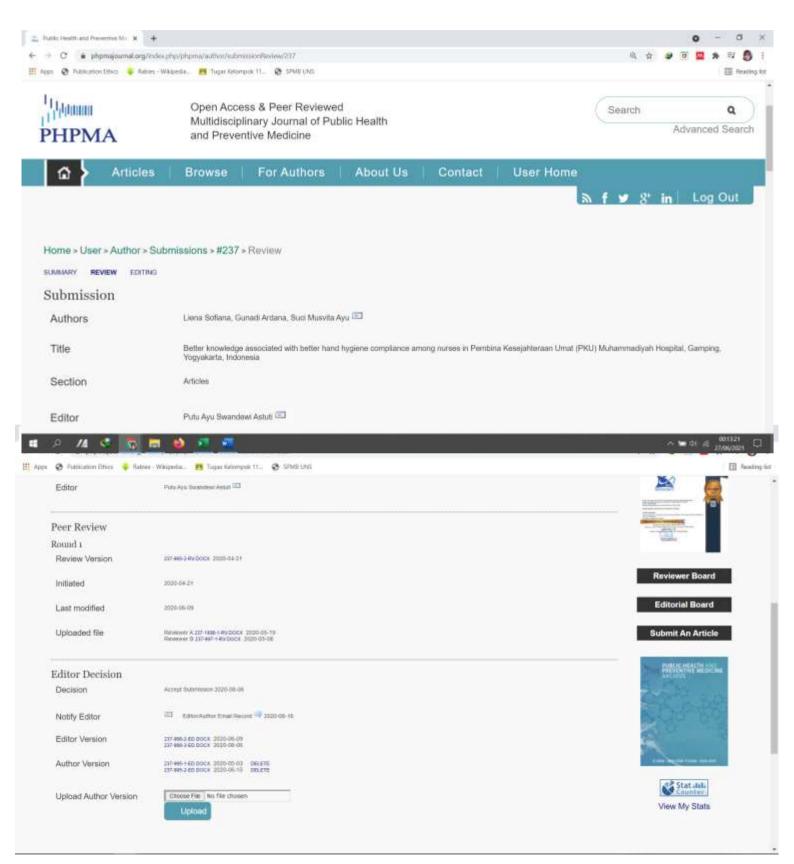**BUKTI KORESPONDENSI**
(LIENA SOFIANA, NIY. 60090585)
" Better knowledge associated with better hand hygiene compliance among nurses in Pembina Kesejahteraan Umat (PKU) Muhammadiyah Hospital, Gamping, Yogyakarta, Indonesia"

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SUMMARY **REVIEW** EDITING

Submission

Authors	Liena Sofiana, Gunadi Ardana, Suci Musvita Ayu
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AN ANALYSIS OF NURSING COMPLIANCE FACTORS IN HAND HYGIENE BEHAVIOR

ABSTRACT

Background and purpose: Infectious diseases are still the main cause of high morbidity and mortality rates in the world, one type of infection is Nosocomial Infection. According to WHO (2011), nosocomial infections can cause 5000 deaths and become a national burden of millions of dollars. Failure to perform good and proper hand hygiene is considered a major cause of infections related to health care. Hand hygiene is a basic technique that is important in preventing infection. Health workers are the most vulnerable in transmitting infections are nurses, because for 24 hours accompanying patients. This study aims to determine the relationship of knowledge, attitudes and motivation with the level of nurse compliance in hand hygiene behavior in class III inpatient rooms of PKU Muhammadiyah Gamping Hospital.

Methods: This research is a quantitative study using a cross-sectional approach. This study aims to determine the pattern of relationships between two or more variables in a given time. The sample of this study consisted of 41 permanent nurses working in class III inpatient rooms of PKU Muhammadiyah Gamping Hospital.

Results: The results of this study indicate that there is a significant relationship between knowledge and the level of nurse compliance in hand hygiene behavior, namely the chi-square test (0.001), while the variables that are not related to nurse compliance in hand hygiene behavior are attitudes and motivation with the results of the chi-square test attitude (0.577) and motivation (0.771).

Conclusion: Variable related to the level of nurse compliance in hand hygiene behavior in class III inpatient rooms of PKU Muhammadiyah Gamping Hospital is knowledge.

Keywords: Compliance, Hand Hygiene, Knowledge, Attitude, Motivation.

Commented [u1]: Tittle is unclear and too general
Suggestion: Change the tittle to "The Relationship Between Knowledge of…….and Nursing Hand Hygiene Complience in……(study location)

Commented [u2]: Add the prevalence of Nurses's hand hygiene complience

Commented [u3]: Good knowledge of……increase the hand hygiene behavior in class III inpatient rooms of PKU Muhammadiyah Gamping Hospital.
Include suggestion to hospital's PPI

INTRODUCTION

Infectious diseases are still the main cause of high morbidity and mortality rates in the world. One type of infection is Nosocomial Infection. This infection causes 1.4 million deaths every day worldwide (1). Nosocomial infection is currently one of the causes of increasing morbidity and mortality in hospitals, so that it can become a new health problem in developing countries and in developed countries (2).

Failure to perform good and proper hand hygiene is considered to be a major cause of infections related to health services and the spread of multi-resistant microorganisms in health facilities and has been recognized as an important contributor to the outbreak. As a result of non-compliance with hand hygiene in hospitals, 9% of nosocomial infections worldwide occur with variations between (3-20%) in hospitalization (3). Health workers who are most vulnerable in transmitting infections are nurses, because for 24 hours accompanying patients, it is assumed to take a significant role in contributing to the prevention of nosocomial infections. Awareness about hand hygiene in health workers is a fundamental behavior in efforts to prevent infection in hospitals (4).

Seeing the high incidence of nosocomial infections that occur both in the world and in Indonesia, it is necessary to reduce the number of incidents, namely by applying hand hygiene (5). Hand hygiene is an important basic technique in preventing infection, hand hygiene during the implementation of nursing actions isand the most effective way to prevent nosocomial infections in the hospital environment. Awareness of the importance of hand hygiene in health workers is needed in efforts to prevent nosocomial infections. The results of several previous studies indicate that knowledge of hand hygiene is the most basic thing that must be possessed by a nurse (6). Other research also shows that attitude and motivation are also related to nurse compliance in the application

54 of hand hygiene (7).

55 Based on observations and interviews with a PPI Superintendent (Infection

56 Prevention and Control) at PKU Muhammadiyah Gamping Hospital, information was

57 obtained that for compliance with hand hygiene, especially nurses are always high,

58 because nurses already know about the 5 moments of hand hygiene and the 6 steps hand

59 hygiene procedure according to World Health Organization (WHO) standards and can

60 practice it well, but there are still some nurses who miss 5 moments of hand hygiene,

61 based on observations made by PPI supervisors (Infection Prevention and Control),

62 nurses often miss 1 and 2 moments before contact with patients and before performing

63 aseptic procedures when carrying out nursing care, because nurses have a perception by

64 assuming that the application of hand hygiene or not according to them it has no effect.

65 Based on the phenomena mentioned above, the researcher is interested in conducting

66 research on "Factors Related to Nurse Compliance Levels in Hand Hygiene Behavior in

67 Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital".

68
69 **METHODS**

70 This research was a quantitative study used a cross sectional approach. This type

71 of research aims to determine the pattern of relationships between two or more variables

72 in a given time. The population in this study were permanent nurses working in class III

73 inpatient rooms of RSU PKU Muhammadiyah Gamping, amounting to 41 people. The

74 sampling technique used in this study was Total Sampling, that is the sample used in this

75 study were all permanent nurses working in class III inpatient rooms of RSU PKU

76 Muhammadiyah Gamping. Tools and instruments in this study used questionnaires and

77 observation sheets. Data that has been collected through observation and questionnaire,

78 and then data analysis used the chi square test. This study has received ethical approval

79 from the ethical committee of Ahmad Dahlan University with registration number

80 011908081.

81
82 **RESULTS**

83   Respondent characteristics are used for diversity of respondents based on age,

84 gender, level of education, length of service, and basic PPI training. This is expected to

85 provide a clear picture of the condition of the respondents and their relation to the

86 problems and objectives of the research.

87   Table 1. Characteristics of Respondents in Class III Inpatient Room of PKU
88   Muhammadiyah Gamping Hospital in 2019

No	Respondent Characteristics	Total (n)	Percentage (%)
1.	Age (Year)		
	17-25	7	17.1
	26-35	33	80.5
	36-45	-	-
	46-55	1	2,4
2.	Gender		
	Male	9	22
	Female	32	78
3.	Education		
	SPK	-	-
	D3	16	39
	S1	6	15
	Profession	19	46
4.	Working period		
	New ≤ 3 years	24	58
	Long> 3 years	17	42
5.	Basic PPI Training		
	Never	5	12
	Ever	36	88
	Total	41	100

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Commented [u11]: Is there any reference to categorize working period into 2, new and long?

89

90   Table 1 shows the characteristics of respondents by age with the largest number by

91 age categorization according to (8) which is in the age range of 26-35 years with a number

92 of 33 nurses with a percentage (80.5%) and at least being in the age range of 46-55 years

93 with a number of 1 nurses with a percentage (2.4%). Based on gender characteristics, the

94 most number is female with 32 nurses with a percentage (78%), while male is 9 nurses

95 with a percentage (22%). Characteristics of respondents based on education level showed

96 that the most number was Profession with 19 nurses with a percentage (46%), and the

97 least was S1 education with a total of 6 nurses with a percentage (15%). Characteristics

98 of respondents based on years of service show that the most number is new years with 24

99 nurses with a percentage (58%) while those with long tenure are 17 nurses with a

100 percentage (42%) and respondent characteristics based on basic PPI training indicate that

101 5 nurses with a percentage (12%) had never attended basic PPI training and as many as

102 36 nurses with a percentage (88%) had attended basic PPI training, most nurses had

103 attended Basic PPI Training held at PKU Muhammadiyah Gamping Hospital.

104 Table 2. Univariate Results of the Distribution of Knowledge Frequency, Attitude,
105 Motivation and Compliance Level of Nurses in Hand Hygiene Behavior in
106 Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

No	Variable	Total (n)	Persentage (%)
1.	~~Education~~Knowledge		
	Low	19	46
	High	22	54
2.	Attitude		
	Poor	30	73
	Good	11	27
3.	Motivation		
	Low	14	34
	High	27	66
4.	Compliance in *Hand Hygiene*		
	No	12	29
	Yes	29	71
	Total	41	100

Commented [u12]: Add more table to explain each question from the knowledge, attitude and motivation questionnaires

107

108 Table 2 shows that nurses who have low knowledge are 19 nurses with a percentage

Commented [u13]: Add the prevalence of Hand hygiene compliance (71%)

109 (46%), while nurses who have high knowledge are 22 nurses with a percentage (54%).

110 Nurses who have a ~~bad~~ poor attitude are 30 nurses with a percentage (73%), while nurses

111 who have a good attitude are 11 nurses with a percentage (27%). Nurses who have low

112 motivation are 14 nurses with a percentage (34%), while nurses who have high motivation

are 27 nurses with a percentage (66%). There were 12 nurses who had compliance with hand hygiene compliance, which were 12 nurses with a percentage (29%). Meanwhile, nurses who have compliant hand hygiene compliance rates are 29 nurses with a percentage (71%).

Table 3. Bivariate Results Relationship between Knowledge and Compliance Level of Nurse Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

Knowledge	Compliance Level				Total		P Value	RP 95% CI
	not obedient		Obedient					
	n	%	n	%	n	%		
Low	11	26.8	8	19.5	19	46.3		12.737
High	1	2.4	21	51.2	22	53.7	0.001	(1.807 – 89.785)
Total	12	29.3	29	70.7	41	100		

Table 3 shows that nurses with low knowledge category have compliance level of non-compliant hand hygiene are 11 nurses with percentage (26.8%) and nurses who have compliance with compliance with hand hygiene are 8 with percentage (19.5%). Meanwhile, nurses with a high knowledge category with non-compliant hand hygiene levels were 1 nurse with a percentage (2.4%) and those who had compliance with hand hygiene compliance were 21 nurses with a percentage (51.2%).

Chi-square test results showed that the p value 0.001 <0.05, which means that there is a significant relationship between knowledge and the level of nurse compliance in hand hygiene behavior. Biological significance was found to be IDR 12,737 (CI = 95% 1,807-89,785) which means nurses with low knowledge categories had a risk of 12,737 times greater risk of not complying with hand hygiene compliance compared to nurses who had high knowledge.

Table 4. Bivariate Results Relationship between Attitude and Compliance Level of Nurse Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

Commented [u14]: Fix table 3 to proper 2x2 table using row percentage

Commented [u15]: Prevalence ratio?

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Attitude	Compliance Level				Total		P Value	RP 95% CI
	Not Obedient		Obedient					
	n	%	n	%	n	%		
Poor	10	24.4	20	48.8	30	73.2		
Good	2	4.9	9	22.0	11	26.8	0.577	1.833 (0.474 − 7.085)
Total	12	29.3	29	70.7	41	100		

137

138   Table 4 shows that nurses with a bad attitude category proved to be non-compliant

139 in terms of hand hygiene, amounting to 10 nurses with a percentage (24.4%) and those

140 compliant were 20 with a percentage (48.8%). Meanwhile, nurses with a good attitude

141 category with non-compliant hand hygiene compliance levels amounted to 2 nurses with

142 a percentage (4.9%) and had obedient hand hygiene compliance levels totaling 9 nurses

143 with a percentage (22.0%).

144   Chi-square test results showed that p value 0.577> 0.05 which means there is no

145 significant relationship between attitude and the level of nurse compliance in hand

146 hygiene behavior. Biological significance is found to be IDR 1.833 (95% CI 0.474-7.085)

147 which means that attitude can be said is not necessarily a risk factor.

148 Table 5. Bivariate Results Relationship of Motivation and Compliance Level of Nurse
149   Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping
150   Hospital in 2019

Motivation	Compliance Level				Total		P Value	RP 95% CI
	Not obedient		Obedient					
	n	%	n	%	n	%		
Low	5	12.2	9	22.0	14	34.1		
High	7	17.1	20	48.8	27	65.9	0.771	1.378 (0.533 − 3.558)
Total	12	29.3	29	70.7	41	100		

151

152   Table 5 shows that nurses with low motivation categories who are not compliant in

153 terms of hand hygiene are 5 nurses with a percentage (12.2%) and those who are obedient

154 are 9 with a percentage (22.0%). Meanwhile, nurses with high motivation but not

compliant in terms of hand hygiene were 7 nurses with a percentage (17.1%) and those who were obedient were 20 nurses with a percentage (48.8%). Chi-square test results showed that p value 0.771> 0.05, which means there is no significant relationship between motivation and the level of nurse compliance in hand hygiene behavior. Biological significance is found to be IDR 1,378 (CI = 95% 0.533-3,558) which means motivation can be said to be not necessarily a risk factor.

DISCUSSION

The Effect of Knowledge on Nurse Compliance Level in Hand Hygiene Behavior

Based on the bivariate results in table 3, it can be concluded that there is a relationship between knowledge and the level of nurse compliance in hand hygiene behavior. Nurses who have low knowledge are more disobedient compared to nurses who have high knowledge, with a p value of 0.001. Biologically meaningful, knowledge is a risk factor because it has a value of Rp.

Based on table 3 it can be seen that nurses who have low knowledge amount to 8 nurses with a percentage (19.5%) who perform hand hygiene behaviors obediently, while nurses who have high knowledge total 21 nurses with a percentage (51.2%) who perform behaviors hand hygiene obediently. This shows that a person's high knowledge can influence a person's behavior or actions in complying with hand hygiene obediently. The results of this study indicate that the relationship of nurses' knowledge with adherence to hand hygiene behavior can be influenced by good knowledge factors owned by nurses, there are several factors including education, the higher the nurse's education level, the more information obtained, in addition to the training which was followed by the majority of nurses on the prevention and control of nosocomial infections including on hand hygiene as well as adequate supporting facilities for hand hygiene in accordance

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180 with standard operational procedures (SOP) such as hand washing posters in every sink

181 and hand rub in each nursing room in the ward in class III PKU Muhammadiyah Gamping

182 Hospital.

183   Knowledge is very important in shaping one's actions. Knowledge is a factor that

184 can influence one's actions so that behavior based on knowledge will last longer than

185 those that do not, thus the better a person's knowledge the better they do it. So knowledge

186 can also influence one's behavior (9). This study shows the level of nursing education is

187 Nursing DIII as many as 16 nurses with a percentage (39%), Professional Nursing as

188 many as 19 nurses with a percentage (46%), while S1 nursing education as many as 6

189 nurses with a percentage (15%), so nurses get theories about implementation of hand

190 hygiene during higher studies, nurses get more knowledge.

191   This is in line with research that explains that the level of education also influences

192 the receipt of information, for example when given information about how to do the six

193 steps of washing hands that are standardized by WHO, if higher education will be more

194 open and faster to absorb and apply the information obtained. Education has an important

195 role in determining human quality, high nurse education will improve the quality of

196 nursing care in hospitals. (10)

197 **The Effect of Attitude on Nurse Compliance Level in Hand Hygiene Behavior**

198   Based on the bivariate results in table 4, it can be concluded that there is no

199 significant relationship between nurses' attitudes and the level of nurse compliance in

200 hand hygiene behavior with a p value of 0.577. Nurses who have a bad attitude tend to be

201 disobedient in terms of hand hygiene are 10 nurses with a percentage (24.4%), while

202 nurses who have a good and disobedient attitude are 2 nurses with a percentage (4.9%).

203 Biological significance is found to be IDR 1.833 (95% CI 0.474-7.085) which means that

---

Commented [u18]: no data mentioned in the article/results. How many % nurses with good knowledge had high education level, more information obtained, training, supporting facilities and SOP?

Commented [u19]: Add more references discussing the relationship between knowledge and hand hygiene compliance What kind of knowledge needed to increase the compliance?

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204 attitude can be said is not necessarily a risk factor.

205   The results of this study indicate that there is no relationship between attitude and

206 nurses' compliance with hand hygiene behavior which can be caused by attitude not being

207 an action. The attitude of a good nurse will affect compliance with good hand hygiene,

208 although there are still some nurses whose attitude is not necessarily obedient to doing

209 hand hygiene. The results obtained from questionnaires filled out by nurses and the results

210 of field observations indicate that nurses' attitudes towards the implementation of hand

211 hygiene when performing nursing actions are still low. A total of 12 nurses are often found

212 not to do hand hygiene before touching with patients and before performing clean / sterile

213 procedures. Bad attitudes of nurses are also often found when wearing gloves, nurses do

214 not do hand hygiene before using gloves, but after using gloves nurses must do hand

215 hygiene. Gloves can not replace the function of washing hands, it is because of the

216 possibility of small damage that is not visible to the eye. For this reason hand washing

217 must be done before and after using gloves, gloves must be replaced if there is a torn,

218 dirty and perforated (11).

219 Attitude is a response of someone who is still closed, attitude is also a person's readiness

220 to act. A good attitude will give someone good or bad actions. A good attitude is a thing

221 that can form good behavior so that a good attitude will affect nurses' compliance in hand

222 hygiene behavior (12).

223   Individual attitudes are usually consistent with one another and in their actions are

224 also consistent with others (13). attitude can help to achieve goals so that someone will

225 be positive or negative, because there are nurses who feel able or unable to take action in

226 accordance with procedures in washing hands (14). Supporting factors for an attitude to

227 manifest in an action include the availability of facilities. PKU Muhammadiyah Gamping

228 Hospital has adequate hand hygiene facilities or infrastructure. Hand hygiene facilities

229 available in each class III inpatient room include washbasins, anti-bacterial fluids, rubbish

230 bins, hand rubs, tissues and hand washing posters covering six steps of washing hands

231 according to WHO. The existence of facilities or infrastructure is useful to support nurses'

232 attitudes to perform compliance with hand hygiene. an attitude has not automatically

233 manifested in an action. The attitude clearly shows the suitability of the reaction with the

234 stimulus (12).

The Effect of Motivation on Nurse Compliance Levels in Hand Hygiene Behavior

236 Based on the bivariate results in table 5, it can be concluded that there is no

237 significant relationship between motivation of nurses and the level of nurse compliance

238 in hand hygiene behavior with a p value of 0.771. Nurses who have low motivation tend

239 to be non-compliant in terms of hand hygiene, which is 5 nurses with a percentage

240 (12.2%), while nurses who have high motivation tend to be disobedient, amounting to 7

241 nurses with a percentage (17.1%). Biological significance is found to be IDR 1,378 (CI =

242 95% 0.533-3,558) which means motivation can be said to be not necessarily a risk factor.

243 ~~The results of this study indicate that the absence of a motivational relationship~~

244 ~~with nurses' compliance in hand hygiene behavior can be caused because there are still~~

245 ~~some nurses whose awareness in themselves to carry out hand hygiene measures is still~~

246 ~~low, as many as 14 nurses found that motivation is still low from the questionnaire filled~~

247 ~~out, so that it can affect compliance in implementing hand hygiene properly and correctly.~~

248 ~~If nurses realize that implementing hand hygiene is important for every health worker,~~

249 ~~nurses will do hand hygiene properly and correctly.~~ The results obtained from the

250 questionnaire filled out by nurses indicate that there are 5 nurses who do hand hygiene if

251 there is supervision or monitoring from superiors only, so that it can affect the motivation

Commented [u26]: Add reference which explain the PKU hospital facilities

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252 of nurses in implementing hand hygiene. This causes the need for self-awareness of the

253 individual itself to do hand hygiene properly. Support from the head of the room or the

254 Chairperson can also increase compliance with hand hygiene behaviors. Coworkers are

255 also one of the factors that can influence a person to take an action, if the environment

256 around doing good things such as doing good hand hygiene, indirectly someone will

257 follow the same thing.

258 High motivation possessed by nurses can increase nurse compliance in carrying

259 out the six steps of washing hands properly and correctly (15). Factors that influence a

260 person's motivation are due to personal needs, goals and perceptions of the person or

261 group concerned and in what way those needs and goals will be realized. Motivation is a

262 need in humans that needs to be met. The response to a need will be manifested in an

263 action to meet those needs. If these needs have not been fulfilled then strength will arise

264 to meet those needs (16).

265 Motivation theory according to Douglas Mc Gregor states that motivation is

266 important to encourage someone to work because motivation is the energy that drives a

267 person to get up to carry out work tasks to achieve the goals set. Motivation is one of the

268 drivers of the emergence of an attitude and intention to do something. motivation is an

269 impetus for someone to achieve desires so that an agreement is reached between personal

270 needs and organizational goals (17).

271 Nurse motivation improvement can be positively done through the provision of

272 rewards (awards) to nurses who have good compliance with the implementation of hand

273 hygiene according to standards. So far, there has been no reward for nurses, but it has

274 already been suggested and might be done if financial management is good. In addition

275 by involving nurses in training programs, seminars and workshops, providing adequate

276 compensation can positively increase nurses' motivation. Provision of positive motivation

277 that always gives gifts or rewards to members who succeed in doing good actions and

278 negative motivation that always gives a penalty or threat to members who do wrong in

279 taking action (9).

280
281 **CONCLUSION**

282 High knowledge on……..increases compliance nurse on hand hygiene Variable related

283 to the level of nurse compliance in hand hygiene behavior in is knowledge, andwhile

284 variable attitude and motivation do not related to the level of nurse compliance in hand

285 hygiene behavior are attitude and motivation.

286
287 **ACKNOWLEDGMENT**

288 We would like to thank you to all respondent who were willing to be participants in this

289 study.

290

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331

AN ANALYSIS OF NURSING COMPLIANCE FACTORS IN HAND HYGIENE BEHAVIOR

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Conclusion: Variable related to the level of nurse compliance in hand hygiene behavior in class III inpatient rooms of PKU Muhammadiyah Gamping Hospital is knowledge.

Keywords: Compliance, Hand Hygiene, Knowledge, Attitude, Motivation.

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Commented [Y3]: Please modify the sentence to also include implication or recommendation from the reserach

Commented [Y4]: In my opinion, nurse or health worker is one of important key words

INTRODUCTION

Infectious diseases are still the main cause of high morbidity and mortality rates in the world. One type of infection is ~~Nosocomial~~ nosocomial ~~Infection~~infection. This infection causes 1.4 million deaths every day worldwide (1). Nosocomial infection is currently one of the causes of increasing morbidity and mortality in hospitals, so that it can become a new health problem in developing countries and in developed countries (2).

Failure to perform good and proper hand hygiene is considered to be a major cause of infections related to health services and the spread of multi-resistant microorganisms in health facilities and has been recognized as an important contributor to the outbreak (citation?). As a result of non-compliance with hand hygiene in hospitals, 9% of nosocomial infections worldwide occur with variations between ~~(3-20%)~~ in hospitalization (3). Health workers who are most vulnerable in transmitting infections are nurses, because for 24 hours accompanying patients~~,~~ ~~I~~it is assumed to take a significant role in contributing to the prevention of nosocomial infections. Awareness about hand hygiene in health workers is a fundamental behavior in efforts to prevent infection in hospitals (4).

Seeing the high incidence of nosocomial infections that occur both in the world and in Indonesia, it is necessary to reduce the number of incidents, namely by applying hand hygiene (5). Hand hygiene is an important basic technique in preventing infection, hand hygiene during the implementation of nursing actions is the most effective way to prevent nosocomial infections in the hospital environment. Awareness of the importance of hand hygiene in health workers is needed in efforts to prevent nosocomial infections. The results of several previous studies indicate that knowledge of hand hygiene is the most basic thing that must be possessed by a nurse (6). Other research also shows that

attitude and motivation are also related to nurse compliance in the application of hand hygiene (7).

Based on observations and interviews with a PPI Superintendent (Infection Prevention and Control) at PKU Muhammadiyah Gamping Hospital, information was obtained that for compliance with hand hygiene, especially nurses are always high, because nurses already know about the 5 moments of hand hygiene and the 6 steps hand hygiene procedure according to World Health Organization (WHO) standards and can practice it well, but there are still some nurses who miss 5 moments of hand hygiene, based on observations made by PPI supervisors (Infection Prevention and Control), nurses often miss 1 and 2 moments before contact with patients and before performing aseptic procedures when carrying out nursing care, because nurses have a perception by assuming that the application of hand hygiene or not according to them it has no effect. Based on the phenomena mentioned above, the researcher is interested in conducting research on "Factors Related to Nurse Compliance Levels in Hand Hygiene Behavior in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital".

METHODS

This research was a quantitative study used a cross sectional approach. This type of research aims to determine the pattern of relationships between two or more variables in a given time. The population in this study were permanent nurses working in class III inpatient rooms of RSU PKU Muhammadiyah Gamping, amounting to 41 people. The sampling technique used in this study was Total Sampling, that is the sample used in this study were all permanent nurses working in class III inpatient rooms of RSU PKU Muhammadiyah Gamping. Tools and instruments used in this study used were questionnaires and observation sheets. Data that has been collected through observation

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and questionnaire, ~~and~~ then ~~was~~ ~~data analysis~~ analysed ~~used~~ using the chi square test. This study has received ethical approval from the ethical committee of Ahmad Dahlan University with registration number 011908081.

RESULTS

Respondent characteristics are used for diversity of respondents based on age,

gender, level of education, length of service, and basic PPI training. This is expected to provide a clear picture of the condition of the respondents and their relation to the problems and objectives of the research.

Table 1. Characteristics of Respondents in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

No	Respondent Characteristics	Total (n)	Percentage (%)
1.	Age (Year)		
	17-25	7	17.1
	26-35	33	80.5
	36-45	-	-
	46-55	1	2,4
2.	Gender		
	Male	9	22
	Female	32	78
3.	Education		
	SPK	-	-
	D3	16	39
	S1	6	15
	Profession	19	46
4.	Working period		
	New ≤ 3 years	24	58
	Long> 3 years	17	42
5.	Basic PPI Training		
	Never	5	12
	Ever	36	88
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Table 1 shows the characteristics of respondents by age with the largest number by

age categorization according to (8) which is in the age range of 26-35 years with a number of 33 nurses with a percentage (80.5%) and at least being in the age range of 46-55 years

with a number of 1 nurses with a percentage (2.4%). Based on gender characteristics, the most number is female with 32 nurses with a percentage (78%), while male is 9 nurses with a percentage (22%). Characteristics of respondents based on education level showed that the most number was Profession with 19 nurses with a percentage (46%), and the least was S1 education with a total of 6 nurses with a percentage (15%). Characteristics of respondents based on years of service show that the most number is new years with 24 nurses with a percentage (58%) while those with long tenure are 17 nurses with a percentage (42%) and respondent characteristics based on basic PPI training indicate that 5 nurses with a percentage (12%) had never attended basic PPI training and as many as 36 nurses with a percentage (88%) had attended basic PPI training, most nurses had attended Basic PPI Training held at PKU Muhammadiyah Gamping Hospital.

Table 2. Univariate Results of the Distribution of Knowledge Frequency, Attitude, Motivation and Compliance Level of Nurses in Hand Hygiene Behavior in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

No	Variable	Total (n)	Persentage (%)
1.	Education		
	Low	19	46
	High	22	54
2.	Attitude		
	Poor	30	73
	Good	11	27
3.	Motivation		
	Low	14	34
	High	27	66
4.	Compliance in *Hand Hygiene*		
	No	12	29
	Yes	29	71
	Total	41	100

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Table 2 shows that nurses who have low knowledge are 19 nurses with a percentage (46%), while nurses who have high knowledge are 22 nurses with a percentage (54%). Nurses who have a bad attitude are 30 nurses with a percentage (73%), while nurses who have a good attitude are 11 nurses with a percentage (27%). Nurses who have low

motivation are 14 nurses with a percentage (34%), while nurses who have high motivation are 27 nurses with a percentage (66%). There were 12 nurses who had compliance with hand hygiene compliance, which were 12 nurses with a percentage (29%). Meanwhile, nurses who have compliant hand hygiene compliance rates are 29 nurses with a percentage (71%).

Table 3. Bivariate Results Relationship between Knowledge and Compliance Level of Nurse Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

Knowledge	Compliance Level				Total		P Value	RP 95% CI
	not obedient		Obedient					
	n	%	n	%	n	%		
Low	11	26.8	8	19.5	19	46.3		12.737 (1.807 – 89.785)
High	1	2.4	21	51.2	22	53.7	0.001	
Total	12	29.3	29	70.7	41	100		

Table 3 shows that nurses with low knowledge category have compliance level of non-compliant hand hygiene are 11 nurses with percentage (26.8%) and nurses who have compliance with compliance with hand hygiene are 8 with percentage (19.5%). Meanwhile, nurses with a high knowledge category with non-compliant hand hygiene levels were 1 nurse with a percentage (2.4%) and those who had compliance with hand hygiene compliance were 21 nurses with a percentage (51.2%).

Chi-square test results showed that the p value 0.001 <0.05, which means that there is a significant relationship between knowledge and the level of nurse compliance in hand hygiene behavior. Biological significance was found to be IDR 12,737 (CI = 95% 1,807-89,785) which means nurses with low knowledge categories had a risk of 12,737 times greater risk of not complying with hand hygiene compliance compared to nurses who had high knowledge.

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Table 4. Bivariate Results Relationship between Attitude and Compliance Level of Nurse

Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

Attitude	Compliance Level				Total		P Value	RP 95% CI
	Not Obedient		Obedient					
	n	%	n	%	n	%		
Poor	10	24.4	20	48.8	30	73.2		
Good	2	4.9	9	22.0	11	26.8	0.577	1.833 (0.474 – 7.085)
Total	12	29.3	29	70.7	41	100		

Table 4 shows that nurses with a bad attitude category proved to be non-compliant in terms of hand hygiene, amounting to 10 nurses with a percentage (24.4%) and those compliant were 20 with a percentage (48.8%). Meanwhile, nurses with a good attitude category with non-compliant hand hygiene compliance levels amounted to 2 nurses with a percentage (4.9%) and had obedient hand hygiene compliance levels totaling 9 nurses with a percentage (22.0%).

Chi-square test results showed that p value 0.577> 0.05 which means there is no significant relationship between attitude and the level of nurse compliance in hand hygiene behavior. Biological significance is found to be IDR 1.833 (95% CI 0.474-7.085) which means that attitude can be said is not necessarily a risk factor.

Table 5. Bivariate Results Relationship of Motivation and Compliance Level of Nurse Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

Motivation	Compliance Level				Total		P Value	RP 95% CI
	Not obedient		Obedient					
	n	%	n	%	n	%		
Low	5	12.2	9	22.0	14	34.1		
High	7	17.1	20	48.8	27	65.9	0.771	1.378 (0.533 – 3.558)
Total	12	29.3	29	70.7	41	100		

Table 5 shows that nurses with low motivation categories who are not compliant in terms of hand hygiene are 5 nurses with a percentage (12.2%) and those who are obedient

are 9 with a percentage (22.0%). Meanwhile, nurses with high motivation but not compliant in terms of hand hygiene were 7 nurses with a percentage (17.1%) and those who were obedient were 20 nurses with a percentage (48.8%). Chi-square test results showed that p value 0.771> 0.05, which means there is no significant relationship between motivation and the level of nurse compliance in hand hygiene behavior. Biological significance is found to be IDR 1,378 (CI = 95% 0.533-3,558) which means motivation can be said to be not necessarily a risk factor.

DISCUSSION

The Effect of Knowledge on Nurse Compliance Level in Hand Hygiene Behavior

Based on the bivariate results in table 3, it can be concluded that there is a relationship between knowledge and the level of nurse compliance in hand hygiene behavior. Nurses who have low knowledge are more disobedient compared to nurses who have high knowledge, with a p value of 0.001. Biologically meaningful, knowledge is a risk factor because it has a value of Rp.

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Based on table 3 it can be seen that nurses who have low knowledge amount to 8 nurses with a percentage (19.5%) who perform hand hygiene behaviors obediently, while nurses who have high knowledge total 21 nurses with a percentage (51.2%) who perform behaviors hand hygiene obediently. This shows that a person's high knowledge can influence a person's behavior or actions in complying with hand hygiene obediently. The results of this study indicate that the relationship of nurses' knowledge with adherence to hand hygiene behavior can be influenced by good knowledge factors owned by nurses., there are several factors including education, the higher the nurse's education level, the more information obtained, in addition to the training which was followed by the majority of nurses on the prevention and control of nosocomial infections including

> **Commented [Y18]:** How do you relate the proportion with the influence of good knowledge nurse to the low knowledge? Perhaps there is other factors

on hand hygiene as well as adequate supporting facilities for hand hygiene in accordance with standard operational procedures (SOP) such as hand washing posters in every sink and hand rub in each nursing room in the ward in class III PKU Muhammadiyah Gamping Hospital.

> **Commented [Y19]:** Please state clearly how this relate with the finding (strong influence of knowledge)

Knowledge is very important in shaping one's actions. Knowledge is a factor that can influence one's actions so that behavior based on knowledge will last longer than those that do not, thus the better a person's knowledge the better they do it. So knowledge can also influence one's behavior (9). This study shows the level of nurs~~cing~~ education is Nursing DIII as many as 16 nurses with a percentage (39%), Professional Nursing as many as 19 nurses with a percentage (46%), while S1 nursing education as many as 6 nurses with a percentage (15%), so nurses get theories about implementation of hand hygiene during higher studies, nurses get more knowledge.

> **Commented [Y20]:** Please make the argument clearer, because almost all nurse obtained certain level of education, but some of them were not performing hand hygiene well. So how you can explain about nurse who do not have good knowledge on hand hygiene while they should theoretically obtain it from their education?

This is in line with research that explains that the level of education also influences the receipt of information, for example when given information about how to do the six steps of washing hands that are standardized by WHO, if higher education will be more open and faster to absorb and apply the information obtained. Education has an important role in determining human quality, high nurse education will improve the quality of nursing care in hospitals. (10)

> **Commented [Y21]:** Do you have the analysis of association of education level with the level of compliance to prove?

The Effect of Attitude on Nurse Compliance Level in Hand Hygiene Behavior

Based on the bivariate results in table 4, it can be concluded that there is no significant relationship between nurses' attitudes and the level of nurse compliance in hand hygiene behavior with a p value of 0.577. Nurses who have a bad attitude tend to be disobedient in terms of hand hygiene are 10 nurses with a percentage (24.4%), while nurses who have a good and disobedient attitude are 2 nurses with a percentage (4.9%).

Biological significance is found to be IDR 1.833 (95% CI 0.474-7.085) which means that attitude can be said is not necessarily a risk factor.

The results of this study indicate that there is no relationship between attitude and nurses' compliance with hand hygiene behavior which can be caused by attitude not being an action. The attitude of a good nurse will affect compliance with good hand hygiene, although there are still some nurses whose attitude is not necessarily obedient to doing hand hygiene. The results obtained from questionnaires filled out by nurses and the results of field observations indicate that nurses' attitudes towards the implementation of hand hygiene when performing nursing actions are still low. A total of 12 nurses are often found not to do hand hygiene before touching with patients and before performing clean / sterile procedures. Bad attitudes of nurses are also often found when wearing gloves, nurses were frequently found do not performingdo hand hygiene before using gloves, but after using gloves nurses must do hand hygiene. Gloves can not replace the function of washing hands, it is because of the possibility of small damage that is not visible to the eye. For this reason hand washing must be done before and after using gloves, gloves must be replaced if there is a torn, dirty and perforated (11).

Attitude is a response of someone who is still closed, attitude is also a person's readiness to act. A good attitude will give someone good or bad actions. A good attitude is a thing that can form good behavior so that a good attitude will affect nurses' compliance in hand hygiene behavior (12).

Individual attitudes are usually consistent with one another and in their actions are also consistent with others (13). attitude can help to achieve goals so that someone will be positive or negative..........?, because there are nurses who feel able or unable to take action in accordance with procedures in washing hands (14). Supporting factors for an

attitude to manifest in an action include the availability of facilities. PKU Muhammadiyah Gamping Hospital has adequate hand hygiene facilities or infrastructure. Hand hygiene facilities available in each class III inpatient room include washbasins, anti-bacterial fluids, rubbish bins, hand rubs, tissues and hand washing posters covering six steps of washing hands according to WHO. The existence of facilities or infrastructure is useful to support nurses' attitudes to perform compliance with hand hygiene. an attitude has not automatically manifested in an action. The attitude clearly shows the suitability of the reaction with the stimulus (12).

The Effect of Motivation on Nurse Compliance Levels in Hand Hygiene Behavior

Based on the bivariate results in table 5, it can be concluded that there is no significant relationship between motivation of nurses and the level of nurse compliance in hand hygiene behavior with a p value of 0.771. Nurses who have low motivation tend to be non-compliant in terms of hand hygiene, which is 5 nurses with a percentage (12.2%), while nurses who have high motivation tend to be disobedient, amounting to 7 nurses with a percentage (17.1%). Biological significance is found to be IDR 1,378 (CI = 95% 0.533-3,558) which means motivation can be said to be not necessarily a risk factor.

The results of this study indicate that the absence of a motivational relationship with nurses' compliance in hand hygiene behavior can be caused because there are still some nurses whose awareness in themselves to carry out hand hygiene measures is still low, as many as 14 nurses found that motivation is still low from the questionnaire filled out, so that it can affect compliance in implementing hand hygiene properly and correctly. If nurses realize that implementing hand hygiene is important for every health worker, nurses will do hand hygiene properly and correctly. The results obtained from the questionnaire filled out by nurses indicate that there are 5 nurses who do hand hygiene if

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there is supervision or monitoring from superiors only, so that it can affect the motivation of nurses in implementing hand hygiene. This causes the need for self-awareness of the individual itself to do hand hygiene properly. Support from the head of the room or the Chairperson can also increase compliance with hand hygiene behaviors. Coworkers are also one of the factors that can influence a person to take an action, if the environment around doing good things such as doing good hand hygiene, indirectly someone will follow the same thing.

High motivation possessed by nurses can increase nurse compliance in carrying out the six steps of washing hands properly and correctly (15). Factors that influence a person's motivation are due to personal needs, goals and perceptions of the person or group concerned and in what way those needs and goals will be realized. Motivation is a need in humans that needs to be met. The response to a need will be manifested in an action to meet those needs. If these needs have not been fulfilled then strength will arise to meet those needs (16).

Motivation theory according to Douglas Mc Gregor states that motivation is important to encourage someone to work because motivation is the energy that drives a person to get up to carry out work tasks to achieve the goals set. Motivation is one of the drivers of the emergence of an attitude and intention to do something. motivation is an impetus for someone to achieve desires so that an agreement is reached between personal needs and organizational goals (17).

Nurse motivation improvement can be positively done through the provision of rewards (awards) to nurses who have good compliance with the implementation of hand hygiene according to standards. So far, there has been no reward for nurses, but it has already been suggested and might be done if financial management is good. In addition

by involving nurses in training programs, seminars and workshops, providing adequate compensation can positively increase nurses' motivation. Provision of positive motivation that always gives gifts or rewards to members who succeed in doing good actions and negative motivation that always gives a penalty or threat to members who do wrong in taking action (9).

CONCLUSION

Variable related to the level of nurse compliance in hand hygiene behavior in is knowledge, and variable not related to the level of nurse compliance in hand hygiene behavior are attitude and motivation.

ACKNOWLEDGMENT

We would like to thank you to all respondent who were willing to be participants in this study.

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AN ANALYSIS OF NURSING COMPLIANCE FACTORS IN HAND HYGIENE BEHAVIOR

ABSTRACT

Background and purpose: Infectious diseases are still the main cause of high morbidity and mortality rates in the world, one type of infection is Nosocomial Infection. According to WHO (2011), nosocomial infections can cause 5000 deaths and become a national burden of millions of dollars. Hand hygiene is a basic technique that is important in preventing infection. The aims was to determine the relationship of knowledge, attitudes and motivation with the level of nurse compliance in hand hygiene behavior in class III inpatient rooms of PKU Muhammadiyah Gamping Hospital.

Methods: This research is a observational analytic used a cross-sectional study. The sample of this study consisted of 41 nurses working in class III inpatient rooms of PKU Muhammadiyah Gamping Hospital with total sampling. The instruments used questionnaires and observation sheets. Data analysis in this study used the chi square and fisher test.

Results: Based on descriptive analysis the prevalence of hand hygiene complience is 71%. The results of this study indicate that there is a significant relationship between knowledge and the level of nurse compliance in hand hygiene behavior, namely the chi-square test (0.001), while the variables that are not related to nurse compliance in hand hygiene behavior are attitudes and motivation with the results of the chi-square test attitude (0.577) and motivation (0.771).

Conclusion: Variable related to the level of nurse compliance in hand hygiene behavior in class III inpatient rooms of PKU Muhammadiyah Gamping Hospital is knowledge.

Keywords: Compliance, Hand Hygiene, Knowledge, Attitude, Motivation.

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- Shorter background, aim is in the background section
- Methods should be elaborated
- Result, descriptive analysis should be briefly included
- In the conclusion.--> add your recommendation

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If so, this will be much better if the authors included all of them in this paper

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- calculation of minimum required sample size
- variables or data that were collected. Including classification of the data

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Those who collected the data, are they well known by the participants
How the observation was performed? Did the samples know they are being observed? Or is it participatory observation. Please explained (This is important to see is there any possibility of bias; which should be discussed in the limitation section of the study.

Similarly, does the questionnaire filled by the samples (self-administered?) or asked and filled by the data collector?

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most number is female with 32 nurses with a percentage (78%), while male is 9 nurses with a percentage (22%). Characteristics of respondents based on education level showed that the most number was Profession with 19 nurses with a percentage (46%), and the least was S1 education with a total of 6 nurses with a percentage (15%). Characteristics of respondents based on years of service show that the most number is new years with 24 nurses with a percentage (58%) while those with long tenure are 17 nurses with a percentage (42%) and respondent characteristics based on basic PPI training indicate that 5 nurses with a percentage (12%) had never attended basic PPI training and as many as 36 nurses with a percentage (88%) had attended basic PPI training, most nurses had attended Basic PPI Training held at PKU Muhammadiyah Gamping Hospital.

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	High	27	66
4.	Compliance in *Hand Hygiene*		
	No	12	29
	Yes	29	71
	Total	41	100

Table 2 shows that nurses who have low knowledge are 19 nurses with a percentage (46%), while nurses who have high knowledge are 22 nurses with a percentage (54%). Nurses who have a bad attitude are 30 nurses with a percentage (73%), while nurses who have a good attitude are 11 nurses with a percentage (27%). Nurses who have low motivation are 14 nurses with a percentage (34%), while nurses who have high motivation

are 27 nurses with a percentage (66%). There were 12 nurses who had compliance with hand hygiene compliance, which were 12 nurses with a percentage (29%). Meanwhile, nurses who have compliant hand hygiene compliance rates are 29 nurses with a percentage (71%).

Table 3. ~~Bivariate Results~~ Relationship between Knowledge and Compliance Level of Nurse Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

Knowledge	Compliance Level				Total		P Value	RP 95% CI
	not obedient		Obedient					
	n	%	n	%	n	%		
Low	11	26.8	8	19.5	19	46.3	0.001	12.737 (1.807 – 89.785)
High	1	2.4	21	51.2	22	53.7		
Total	12	29.3	29	70.7	41	100		

Table 3 shows that nurses with low knowledge category have compliance level of non-compliant hand hygiene are 11 nurses with percentage (26.8%) and nurses who have compliance with compliance with hand hygiene are 8 with percentage (19.5%). Meanwhile, nurses with a high knowledge category with non-compliant hand hygiene levels were 1 nurse with a percentage (2.4%) and those who had compliance with hand hygiene compliance were 21 nurses with a percentage (51.2%).

Chi-square test results showed that the p value 0.001 <0.05, which means that there is a significant relationship between knowledge and the level of nurse compliance in hand hygiene behavior. Biological significance was found to be IDR 12,737 (CI = 95% 1,807-89,785) which means nurses with low knowledge categories had a risk of 12,737 times greater risk of not complying with hand hygiene compliance compared to nurses who had high knowledge.

Table 4. Bivariate Results Relationship between Attitude and Compliance Level of Nurse Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

| Attitude | Compliance Level | | | | Total | | P Value | RP 95% CI |
| | Not Obedient | | Obedient | | | | | |
	n	%	n	%	n	%		
Poor	10	24.4	20	48.8	30	73.2		1.833
Good	2	4.9	9	22.0	11	26.8	0.577	(0.474 – 7.085)
Total	12	29.3	29	70.7	41	100		

Table 4 shows that nurses with a bad attitude category proved to be non-compliant in terms of hand hygiene, amounting to 10 nurses with a percentage (24.4%) and those compliant were 20 with a percentage (48.8%). Meanwhile, nurses with a good attitude category with non-compliant hand hygiene compliance levels amounted to 2 nurses with a percentage (4.9%) and had obedient hand hygiene compliance levels totaling 9 nurses with a percentage (22.0%).

Chi-square test results showed that p value 0.577> 0.05 which means there is no significant relationship between attitude and the level of nurse compliance in hand hygiene behavior. Biological significance is found to be IDR 1.833 (95% CI 0.474-7.085) which means that attitude can be said is not necessarily a risk factor.

Table 5. Bivariate Results Relationship of Motivation and Compliance Level of Nurse Hand Hygiene in Class III Inpatient Room of PKU Muhammadiyah Gamping Hospital in 2019

| Motivation | Compliance Level | | | | Total | | P Value | RP 95% CI |
| | Not obedient | | Obedient | | | | | |
	n	%	n	%	n	%		
Low	5	12.2	9	22.0	14	34.1		1.378
High	7	17.1	20	48.8	27	65.9	0.771	(0.533 – 3.558)
Total	12	29.3	29	70.7	41	100		

Table 5 shows that nurses with low motivation categories who are not compliant in terms of hand hygiene are 5 nurses with a percentage (12.2%) and those who are obedient are 9 with a percentage (22.0%). Meanwhile, nurses with high motivation but not

compliant in terms of hand hygiene were 7 nurses with a percentage (17.1%) and those who were obedient were 20 nurses with a percentage (48.8%). Chi-square test results showed that p value 0.771> 0.05, which means there is no significant relationship between motivation and the level of nurse compliance in hand hygiene behavior. Biological significance is found to be IDR 1,378 (CI = 95% 0.533-3,558) which means motivation can be said to be not necessarily a risk factor.

DISCUSSION

The Effect of Knowledge on Nurse Compliance Level in Hand Hygiene Behavior

Based on the bivariate results in table 3, it can be concluded that there is a relationship between knowledge and the level of nurse compliance in hand hygiene behavior. Nurses who have low knowledge are more disobedient compared to nurses who have high knowledge, with a p value of 0.001. Biologically meaningful, knowledge is a risk factor because it has a value of Rp.

Based on table 3 it can be seen that nurses who have low knowledge amount to 8 nurses with a percentage (19.5%) who perform hand hygiene behaviors obediently, while nurses who have high knowledge total 21 nurses with a percentage (51.2%) who perform behaviors hand hygiene obediently. This shows that a person's high knowledge can influence a person's behavior or actions in complying with hand hygiene obediently.

The results of this study indicate that the relationship of nurses' knowledge with adherence to hand hygiene behavior can be influenced by good knowledge factors owned by nurses, there are several factors including education, the higher the nurse's education level, the more information obtained, in addition to the training which was followed by the majority of nurses on the prevention and control of nosocomial infections including on hand hygiene as well as adequate supporting facilities for hand hygiene in accordance

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Add implication of the finding. So, what or what next? This will become recommendations that are coming out from this study.
Add study limitation

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with standard operational procedures (SOP) such as hand washing posters in every sink and hand rub in each nursing room in the ward in class III PKU Muhammadiyah Gamping Hospital.

Knowledge is very important in shaping one's actions. Knowledge is a factor that can influence one's actions so that behavior based on knowledge will last longer than those that do not, thus the better a person's knowledge the better they do it. So knowledge can also influence one's behavior (9). This study shows the level of nursing education is Nursing DIII as many as 16 nurses with a percentage (39%), Professional Nursing as many as 19 nurses with a percentage (46%), while S1 nursing education as many as 6 nurses with a percentage (15%), so nurses get theories about implementation of hand hygiene during higher studies, nurses get more knowledge.

This is in line with research that explains that the level of education also influences the receipt of information, for example when given information about how to do the six steps of washing hands that are standardized by WHO, if higher education will be more open and faster to absorb and apply the information obtained. Education has an important role in determining human quality, high nurse education will improve the quality of nursing care in hospitals. (10)

The Effect of Attitude on Nurse Compliance Level in Hand Hygiene Behavior

Based on the bivariate results in table 4, it can be concluded that there is no significant relationship between nurses' attitudes and the level of nurse compliance in hand hygiene behavior with a p value of 0.577. Nurses who have a bad attitude tend to be disobedient in terms of hand hygiene are 10 nurses with a percentage (24.4%), while nurses who have a good and disobedient attitude are 2 nurses with a percentage (4.9%). Biological significance is found to be IDR 1.833 (95% CI 0.474-7.085) which means that

attitude can be said is not necessarily a risk factor.

The results of this study indicate that there is no relationship between attitude and nurses' compliance with hand hygiene behavior which can be caused by attitude not being an action. The attitude of a good nurse will affect compliance with good hand hygiene, although there are still some nurses whose attitude is not necessarily obedient to doing hand hygiene. The results obtained from questionnaires filled out by nurses and the results of field observations indicate that nurses' attitudes towards the implementation of hand hygiene when performing nursing actions are still low. A total of 12 nurses are often found not to do hand hygiene before touching with patients and before performing clean / sterile procedures. Bad attitudes of nurses are also often found when wearing gloves, nurses do not do hand hygiene before using gloves, but after using gloves nurses must do hand hygiene. Gloves can not replace the function of washing hands, it is because of the possibility of small damage that is not visible to the eye. For this reason hand washing must be done before and after using gloves, gloves must be replaced if there is a torn, dirty and perforated (11).

Attitude is a response of someone who is still closed, attitude is also a person's readiness to act. A good attitude will give someone good or bad actions. A good attitude is a thing that can form good behavior so that a good attitude will affect nurses' compliance in hand hygiene behavior (12).

Individual attitudes are usually consistent with one another and in their actions are also consistent with others (13). attitude can help to achieve goals so that someone will be positive or negative, because there are nurses who feel able or unable to take action in accordance with procedures in washing hands (14). Supporting factors for an attitude to manifest in an action include the availability of facilities. PKU Muhammadiyah Gamping

Hospital has adequate hand hygiene facilities or infrastructure. Hand hygiene facilities available in each class III inpatient room include washbasins, anti-bacterial fluids, rubbish bins, hand rubs, tissues and hand washing posters covering six steps of washing hands according to WHO. The existence of facilities or infrastructure is useful to support nurses' attitudes to perform compliance with hand hygiene. an attitude has not automatically manifested in an action. The attitude clearly shows the suitability of the reaction with the stimulus (12).

The Effect of Motivation on Nurse Compliance Levels in Hand Hygiene Behavior

Based on the bivariate results in table 5, it can be concluded that there is no significant relationship between motivation of nurses and the level of nurse compliance in hand hygiene behavior with a p value of 0.771. Nurses who have low motivation tend to be non-compliant in terms of hand hygiene, which is 5 nurses with a percentage (12.2%), while nurses who have high motivation tend to be disobedient, amounting to 7 nurses with a percentage (17.1%). Biological significance is found to be IDR 1,378 (CI = 95% 0.533-3,558) which means motivation can be said to be not necessarily a risk factor.

The results of this study indicate that the absence of a motivational relationship with nurses' compliance in hand hygiene behavior can be caused because there are still some nurses whose awareness in themselves to carry out hand hygiene measures is still low, as many as 14 nurses found that motivation is still low from the questionnaire filled out, so that it can affect compliance in implementing hand hygiene properly and correctly. If nurses realize that implementing hand hygiene is important for every health worker, nurses will do hand hygiene properly and correctly. The results obtained from the questionnaire filled out by nurses indicate that there are 5 nurses who do hand hygiene if there is supervision or monitoring from superiors only, so that it can affect the motivation

of nurses in implementing hand hygiene. This causes the need for self-awareness of the individual itself to do hand hygiene properly. Support from the head of the room or the Chairperson can also increase compliance with hand hygiene behaviors. Coworkers are also one of the factors that can influence a person to take an action, if the environment around doing good things such as doing good hand hygiene, indirectly someone will follow the same thing.

High motivation possessed by nurses can increase nurse compliance in carrying out the six steps of washing hands properly and correctly (15). Factors that influence a person's motivation are due to personal needs, goals and perceptions of the person or group concerned and in what way those needs and goals will be realized. Motivation is a need in humans that needs to be met. The response to a need will be manifested in an action to meet those needs. If these needs have not been fulfilled then strength will arise to meet those needs (16).

Motivation theory according to Douglas Mc Gregor states that motivation is important to encourage someone to work because motivation is the energy that drives a person to get up to carry out work tasks to achieve the goals set. Motivation is one of the drivers of the emergence of an attitude and intention to do something. motivation is an impetus for someone to achieve desires so that an agreement is reached between personal needs and organizational goals (17).

Nurse motivation improvement can be positively done through the provision of rewards (awards) to nurses who have good compliance with the implementation of hand hygiene according to standards. So far, there has been no reward for nurses, but it has already been suggested and might be done if financial management is good. In addition by involving nurses in training programs, seminars and workshops, providing adequate

compensation can positively increase nurses' motivation. Provision of positive motivation that always gives gifts or rewards to members who succeed in doing good actions and negative motivation that always gives a penalty or threat to members who do wrong in taking action (9).

CONCLUSION

Variable related to the level of nurse compliance in hand hygiene behavior in is knowledge, and variable not related to the level of nurse compliance in hand hygiene behavior are attitude and motivation.

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