



Comparison between Milgram's and Niven's Obedience Theory on Nurses in Obedience using Personal Protective Equipment

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ABSTRACT

Personal protective equipment (PPE) is a protection tool from potential hazards in the workplace. Low nurse obedience to using PPE at hospitals can increase the occurrence of work accidents. Nurse obedience to using PPE can be seen from the external factors suggested in Milgram's theory and internal factors explained in Niven's theory. This study aimed to compare nurse obedience to using PPE through the analyses of Milgram's and Niven's theories. This study was an observational study with a cross-sectional study design. The population of this study was 187 nurses in the inpatient installation of Dr. R. Sosodoro Djatikoesoemo Bojonegoro Hospital. A sample of 113 nurses were then selected to be the respondents. The influence test was performed using linear regression. Based on Milgram's theory, external factors were more dominant in controlling obedience to using PPE. The external factors that had a significant effect included location status, proximity to authority figures, and the legitimacy of authority figures. Meanwhile, Niven's theory showed only one internal factor, understanding instruction significantly influenced nurse obedience to using PPE. Therefore, it is recommended to formulate regulations and a more binding system through rewards and punishment to increase nurse obedience to using PPE.

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Kata kunci:

Teori Milgram

Teori Niven

Kepatuhan

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ABSTRAK

Alat Pelindung Diri (APD) merupakan alat yang melindungi diri dari potensi bahaya di tempat kerja. Rendahnya kepatuhan perawat dalam menggunakan APD di rumah sakit dapat meningkatkan terjadinya kecelakaan kerja. Kepatuhan perawat dalam menggunakan APD dapat dilihat dari faktor eksternal yang dikemukakan dalam teori Milgram dan faktor internal yang dijelaskan dalam teori Niven. Penelitian ini bertujuan untuk membandingkan kepatuhan perawat dalam menggunakan APD melalui analisis teori Milgram dan Niven. Penelitian ini merupakan penelitian observasional dengan desain penelitian cross sectional. Populasi penelitian ini adalah 187 perawat di Instalasi Rawat Inap RSUD Dr. R. Sosodoro Djatikoesoemo Bojonegoro. Sampel sebanyak 113 perawat kemudian dipilih menjadi responden. Uji pengaruh dilakukan dengan menggunakan regresi linier. Berdasarkan teori Milgram, faktor eksternal lebih dominan dalam mengontrol kepatuhan penggunaan APD. Faktor eksternal yang berpengaruh signifikan antara lain status lokasi, kedekatan dengan figur otoritas, dan legitimasi figur otoritas. Sedangkan teori Niven hanya menunjukkan satu faktor internal yaitu pemahaman instruksi berpengaruh secara signifikan terhadap kepatuhan perawat dalam menggunakan APD. Oleh karena itu, direkomendasikan untuk merumuskan peraturan dan sistem yang lebih mengikat melalui *reward* and *punishment* untuk meningkatkan kepatuhan perawat dalam menggunakan APD.

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INTRODUCTION

The implementation of the occupational health and safety program at hospital is one effort to create a safe and healthy workplace in reducing the risk of work accidents and occupational diseases (Khoeirudin et al., 2020). Nurses at hospitals are at the forefront of providing nursing services to patients. Nursing services require them to always be in direct contact with patients, having the biggest potential to cause nosocomial infections, not only in patients but also nurses. The report of the National Safety Council showed that work accidents at hospitals were 41% more than at other industrial workplaces. Cases that often occur at hospitals are needle sticks, scratches, and infectious diseases.(Putri et al., 2017)

Personal Protective Equipment (PPE) is a protection tool functioning to isolate some or full parts of the human body from the potential dangers in the workplace. PPE for the need of standard vigilance consists of gloves, lab coat, hazmat, eye protection, and surgical masks. PPE used by health workers must be adjusted to the risk of potential exposure to infectious diseases that may be associated with service procedures performed to patients(World Health Organization, 2020) The importance of using PPE affects the occupational health and safety of nurses.

Obedience to PPE usage for performing medical procedures to patients is crucial to minimize the risks and guarantee safety and security at work. To reduce the number of work accidents, nurses must use PPE at work. The use of PPE aimed to protect the skin and mucous membranes from the risk of exposure to blood, all types of body fluids, secretions, excreta, non-intact skin, and mucous membranes of infected patients. PPE is one of the efforts to prevent occupational accidents and diseases due to potential hazards that hardly can be eliminated or controlled.(World Health Organization, 2020). For example, one of the problems observed in glove use was the absence of a change of gloves for clinical treatment at each change of patient.(Mostafazadeh-Bora et al., 2018)

Furthermore, obedience according to the Milgram's theory is a type of social behavior, associated with someone's obedience and disobedience to instructions because of authority coercion (Milgram, 1963). Meanwhile, according to the Niven's theory, obedience is a person's behavior to follow the agreed terms (Niven, 2002). In the view of Milgram's theory, there are some external factors that influence obedience, while Niven's theory suggests internal factors also affect obedience.

Stanley Milgram's theory of obedience states that obedience can be created by someone who is in the agentic state to transfer responsibility to an authority figure as the commander. In the Milgram's experiment, when the participant could order someone else to punish an electric shock, thereby relieving him of a direct responsibility for his actions, the obedience rate increased to 92.5%. The

Milgram's theory describes some external factors that influence obedience such as location status, legitimacy of authority figures, proximity to authority figures, the status of authority figures, personal responsibility, and peer support(Milgram, 1963).

Meanwhile, according to Neil Niven's theory, obedience comes from the word "obedient" which means discipline and obedience. It states that obedience is the extent to which a person obeys the conditions that have been agreed voluntarily. Furthermore, it also suggests that obedience is influenced by six internal factors, namely understanding of instruction, quality of interaction, belief, attitudes, personality, and social isolation (Niven, 2002).

METHODS

The research was conducted in April 2020. This study was an observational study with a cross-sectional design. It was classified as quantitative research involving 187 nurses as the population at the Inpatient Installation of Dr. R. Sosodoro Djatikoesoemo Bojonegoro Hospital. The number of samples in this study was determined using simple random sampling following Lemeshow's formula (Lemeshow et al., 1997). It is resulted in a total sample size of 113 respondents.

Data analysis was carried out by calculating the distribution of ratings for each variable in the Milgram's theory and Niven's theory, as well as identifying the influence of external and internal factors on nurse obedience to using PPE. The effect test was performed using a linear regression test to compare the effect of Milgram's and Niven's theories of obedience. The study was conducted following the ethics approval e of the Health Research Ethics Committee of Dr. R. Sosodoro Djatikoesoemo Hospital (Ref. Number: 445/037 / 412.202.1 / SK / 2020).

RESULTS AND DISCUSSION

The assessments of each variable in the Milgram's and Niven's theories determined scores of nurse obedience in the inpatient installation of Dr. R. Sosodoro Djatikoesoemo Hospital in Bojonegoro (see Table 1). Table 1 presents that external factor in the Milgram's theory included location status, personal responsibility, peer support, proximity to authority figures, legitimacy of authority figures, and authority figure status. The results showed peer support was a quite good factor contributing to nurse obedience at 54.0%. While the quite bad factor was personal responsibility at 21.2%.

Table 1.
Distribution of Assessment based on Milgram's Theory in Inpatient Installation

Variables in Milgram's Theory	Distribution Results*								Total	
	Quite Bad		Bad		Good		Quite Good		n	%
	n	%	n	%	n	%	n	%		
Location Status	0	0.0	11	9.7	76	67.3	26	23.0	113	100.0
Personal Responsibilities	0	0.0	24	21.2	65	57.6	24	21.2	113	100.0
Peer Support	0	0.0	7	6.2	45	39.8	61	54.0	113	100.0
Proximity to Authority Figures	0	0.0	14	12.4	70	61.9	29	25.7	113	100.0
Legitimacy of Authority Figures	0	0.0	6	5.3	61	54.0	46	40.7	113	100.0
Authority Figure Status	0	0.0	7	6.2	71	62.8	35	31.0	113	100.0

*Data from the original research at Dr. R. Sosodoro Djatikoesoemo Hospital, Bojonegoro in 2020

Table 2.
Distribution of Assessment based on Niven's Theory in Inpatient Installation

Variables in Niven's Theory	Distribution Results*								Total	
	Quite Bad		Bad		Good		Quite Good			
	n	%	n	%	n	%	n	%	n	%
Understanding of Interaction	0	0.0	14	12.4	32	28.3	67	59.3	113	100.0
Quality of Interaction	0	0.0	42	37.1	62	54.9	9	8.0	113	100.0
Belief	0	0.0	0	0.0	26	23.0	87	77.0	113	100.0
Attitude	0	0.0	3	2.7	58	51.3	52	46.0	113	100.0
Personality	0	0.0	22	19.5	79	69.9	12	10.6	113	100.0
Social Isolation	6	5.3	33	29.2	44	38.9	30	26.6	113	100.0

*Data from the original research at Dr. R. Sosodoro Djatikoesoemo Hospital, Bojonegoro in 2020

Table 3.
Nurse Obedience Level in Inpatient Installation

Level of Obedience	Distribution Results*	
	n	%
Disobedient	11	9.7
Moderately Disobedient	57	50.4
Obedient	40	35.4
Quite Obedient	5	4.4
Total	113	100.0

*Data from the original research at Dr. R. Sosodoro Djatikoesoemo Hospital, Bojonegoro in 2020

Based on Table 2, internal factors in the Niven's theory were understanding of instruction, quality of interaction, belief, attitudes, personality, and social isolation. Among the factors, belief was categorized quite good at 77.0%. Meanwhile, the quite bad factor was social isolation at 5.3%. Table 3 shows the obedience level of nurses to using PPE. Most of the nurses had the moderate obedience level at 50.4%. Meanwhile, only 4.4% of the respondents were quite obedient.

Table 4.
Effect of External Factors on Nurse Obedience to Using PPE in Inpatient Installation

External Factors in Milgram's Theory	Obedience*	
	β	ρ
Location Status	0.217	0.031**
Personal Responsibilities	-0.176	0.063
Peer Support	0.033	0.752
Proximity to Authority Figures	0.246	0.019**
Legitimacy of Authority Figures	0.240	0.028**
Authority Figure Status	-0.142	0.176

*Data from the original research at Dr. R. Sosodoro Djatikoesoemo Hospital, Bojonegoro in 2020

**Significance value of 5% based on multiple linear regression test

In Table 4, the linear regression test show that three external factors in the Milgram's theory such as location status ($\rho = 0.031$; $\beta = 0.217$); the proximity of the authority figure ($\rho = 0.019$; $\beta = 0.246$), and the legitimacy of authority figure ($\rho = 0.028$; $\beta = 0.240$) showed a significant effect on nurse obedience to using PPE. At the location status, the value of β means that the extreme change of one obedience unit was caused by a change in location status by 21.7%. In the factor of proximity to authority figures, it means that

extreme change of one obedience unit could result in a change in location status by 24.6%. An extreme change of one obedience unit could result in a change in location status by 24.0%. Only understanding of instruction had a significant effect on nurse obedience to using PPE ($\rho = 0.019$; $\beta = 0.246$). The β -value of 0.203 on understanding of instructions means that extreme change of one obedience unit could result in a change in location status at 20.3%.

DISCUSSION:

This study compared the Milgram's and Niven's theories of obedience to the use of PPE. This quantitative study can be useful for the recommendation of agency health policies in determining the factors that affect obedience to the use of PPE.

Effect of External Factors based on Milgram's Theory on Obedience to Using PPE

The results indicated that external factors such as location status ($\rho = 0.031$), the proximity of authority figures ($\rho = 0.19$) and legitimacy of authority figures ($\rho = 0.028$) had a significant effect on nurse obedience to using PPE. The results are consistent with Myers' and Smith' research, which stated that external factors, including perceptions of location status, personal responsibility, peer support, legitimacy of authority figures, the status of authority figures, and proximity of authority figures significantly influenced obedience (Myers & Twenge, 2017).

If someone believes that the program organizer is an institution that has legality, prestige, and honor, members of the organization will obey its rules. This statement was supported by research in Yale University. Many participants said that if it was not for Yale's reputation, participants would not have obeyed the rules (Myers & Twenge, 2017). The organization's reputation plays an important role in obedience.

The result of this current study is also coherent with the results of research conducted by Ulum and Wulandari, showing an influence between organization's reputation or in other words location status and nurses' obedience to providing nursing service (Ulum & Wulandari, 2016). Higher obedience occurs because nurses have good perceptions and a sense of pride about the organization (Ulum & Wulandari, 2016). Organizational prestige was positively related to employee engagement in the organization (Smith, 2012). The studies are in line with the current research discovering

location status factor had a significant effect on obedience to the use of PPE ($\rho = 0.043$).

The results showed that personal responsibility did not have a significant effect on obedience to using PPE ($\rho = 0.063$). Instructions or orders from superiors sometimes become a burden for execution. The nurses in charge had the responsibility to execute the commands, but the supervisors will also be responsible for their mistakes. In this condition, both the nurses and supervisors transferred responsibility and shared values due to authority figure the nurses respect. (Ulum & Wulandari, 2016)

Peer support apparently did not affect nurse obedience to using PPE ($\rho = 0.752$). The result of this study accords with research conducted by Amalia, who found that peer support did not affect health worker obedience (Amalia et al., 2016). Individuals tend to be together with groups that have similar social and demographic characteristics, for example, age, gender, race, religion, hobbies, and occupation. Besides, they tend to act and behave like a member of that group. Those who do not fit into the group's behavior will be excluded. Therefore, disobedience may occur due to the presence of colleagues who refuse to comply (Billikopf, 2015). If a person has social support from their colleague who disobey the rules, a chance for him to disobey will also increase.

The results of the analysis showed that the proximity of the authority figure affected nurse obedience to using PPE ($\rho = 0.019$). The closer to an authority figure, the more obedient to using PPE. The result of this study follows the research conducted by Ulum and Wulandari, highlighting an effect between the proximity of authority figures and obedience in nursing care (Ulum & Wulandari, 2016). Research conducted by Mahfudhoh and Rochmah also spotted a significant effect between the proximity of authority figures and nurse obedience to the nursing care standards (Mahfudhoh & Rochmah, 2015). In other words, the better the nurse's proximity to authority figures, the higher the level of nurse obedience.

The results of the analysis showed that the legitimacy of authority figures affected nurse obedience to using PPE ($\rho = 0.028$). The experiments of Myers and Smith confirmed a similar finding. When the experimenter received a phone call that required him to leave the laboratory, he assigned another person to take in charge of his task (Myers & Twenge, 2017) Meanwhile, 80% of the respondents in another study refused to comply if there is no legitimacy from an authority figure (Perlstadt, 2017). The existence of superiors' legitimate authority will make subordinates obey their orders. If subordinates are aware of the legitimate authority of their leader, they will obey their orders and rules.

In addition to legitimacy of authority figure, the status of the authority figure may also affect public obedience to government's regulations in using PPE according to health protocols. For example, the community obeys the regulations during the COVID-19 pandemic as they consider the orders of authority figures, i.e., government leaders (president, governor, mayor or regent) and religious leaders (Witono, 2020). The status of authority figures in this study was assessed from the nurses' perceptions of the skills, abilities, knowledge, and professionalism of the head of the inpatient room.

The status of authority figures did not have a significant effect on nurse obedience to using PPE ($\rho = 0.176$). Other studies have also shown that people with higher status of authority could also abuse their authority. For example, nurse managers ignored several missed nursing care actions and persuaded doctors not to report the nurse's deviation to

increase nurse obedience scores (Baljani et al., 2020). The educational status, knowledge, and experience of the head nurse show that the status of an authority figure did not affect obedience to using PPE. The study described the status of authority figures belonged to most nurses with almost the same quantity and quality.

Effect of Internal Factors in Niven's Theory on Obedience to Using PPE

The results analyzed by Niven's theory showed only one internal factor of Niven's theory, understanding of instructions, significantly affected nurse obedience to using PPE ($\rho = 0.043$). Niven's theory mentions several internal factors, including understanding instructions, quality of interaction, belief, attitudes, personality, and social isolation. Of all these factors, only understanding of instruction had a significant effect on nurse obedience to using PPE. In conclusion, the use of PPE was not dominantly influenced by nurses' internal factors, but by external factors.

Understanding of instructions is defined as the ability to follow instructions properly and correctly (Marcus et al., 1996), especially the importance of using PPE to avoid work accidents. These result is consistent with the research of Cahyaning, finding a significant effect of understanding instructions on nurse obedience (Cahyaning Pramesti, 2017). Nurses who are not compliant can be given training or seminars to rewind their knowledge about the importance of using PPE and thus they can understand the instructions of using PPE.^[18] Nurses with good understanding of the instruction will tend to obey the order.

Belief is useful in predicting nurse disobedience. Two factors underlying a person's belief in health are vulnerability and severity (Niven, 2002). The result indicated nurse belief did not affected nurse obedience to using PPE ($\rho = 0.284$). It is consistent with research conducted by Sudarmo, who also found a similar conclusion on nurse belief (Sudarmo et al., 2017).

There was also no significant effect of attitude on nurse obedience to using PPE ($\rho = 0.375$). Research conducted by Khoeirudin also noted attitude did not affect obedience to the use of PPE at ER at Dr. Slamet Garut Hospital (Khoeirudin et al., 2020). Individual's attitude was perhaps influenced by the head's supervision. If there is no control from the authority figure, individuals can be disobedient to the Standard Operating Procedures (SOP) for the use of PPE. Another supporting study conducted by Sihombing also stated a similar finding (Sihombing, 2014).

Personality is a dynamic psycho-physical system that determines individual's unique ways of adapting to the environment (Hall & Lindsay, 1965). The result of the analysis showed that personality did not affect nurse obedience to using PPE ($\rho = 0.482$). The Niven's theory asserts that a person's degree of social isolation was negatively related to obedience (Niven, 2002). Social isolation can affect the level of disobedience to taking actions. This current study highlighted social isolation did not affect nurse obedience to using PPE ($\rho = 0.782$). This is also in line with the report of the National Academies of Science, Engineering, and Medicine which said social isolation was not significantly related to individual loneliness causing disobedience (The National Academies of Sciences, Engineering, 2020).

Comparison of Obedience to Using PPE based on Milgram's and Niven's Theory

Based on the results of the study, external factors stated in the Milgram's theory more influenced nurse obedience to using PPE than internal factors in the Niven's theory. Three external factors in the Milgram's theory that had significant results involved location status ($\rho = 0.031$), the proximity of authority figures (0.19), and legitimacy of authority figures ($\rho = 0.028$). Meanwhile, only understanding of instruction as an internal factor in the Niven's theory had a significant effect on nurse obedience to using PPE ($\rho = 0.043$). The results of this study are in line with Dewi's research stating that external factors affected nurses' obedience to handwashing at Ade Muhammad Djoen Sintang Hospital (Dewi, 2017). Research of Ulfa and Sarzuli similarly did not find any influence of internal factors on nurse obedience to implementing catheter installation standards at PKU Muhammadiyah Yogyakarta Hospital (Ulfa & Sarzuli, 2016).

According to Julianto, nurse obedience to using PPE is influenced by several factors, namely education and training that the organization commits to provide, authority figures who can have a positive influence on their work environment to increase work motivation, binding regulations, adequate facilities, and financial support (Julianto et al., 2015). Nurses will obey to using PPE if they are aware of the principles of patient safety. A strong hospital system and control in implementing the standard use of PPE is required and can be applied by giving warnings or even penalties for nurses who do not comply with the SOP.

The Dr. R. Sosodoro Djatikoesoemo Bojonegoro Hospital requires a strong system to encourage nurse obedience sustainably. External factors such as location status, the proximity of authority figures, and the legitimacy of authority figures only affected nurse obedience temporarily. Nurses should have awareness and initiative internally to always understand the principles of their safety and patient safety and thus should obey to using PPE continuously and sustainably.

Ernawaty in her research stated that obedience based on Milgram and Niven's theories depended on obligation and volunteerism of specialist doctors in completing patient medical records (Ernawaty et al., 2019). Specialists were obliged to fill in the medical records because of having the authority figures. They did volunteer to fill out medical records because they understood the instructions given. Moreover, external factors in the Milgram's theory more affected nurse obedience to using PPE than internal factors in the Niven's theory (Andini, 2020). This study also implied nurses' low awareness of using PPE (Andini, 2020). According to Siddiqui, nurses must be aware of the potential dangers arising when they do not use PPE or inappropriately use PPE when providing care for patients with Covid-19 (Siddiqui, 2020). All of these efforts aim to sustain the standard use of PPE for work safety.

The results of this study also indicated the need for hospital policy recommendations to create binding regulations and systems in the form of rewards and punishments. Nurse obedience to the standard use of PPE is one of prevention measures from work accidents and patient safety incident. Nurses should comply with the health protocols as they also become a role model to the public in general and patients with Covid-19.

CONCLUSION

External factors in the Milgram's theory had a more significant effect on nurse obedience to using PPE than

internal factors in the Niven's theory. It can be concluded that external factors such as location status, the proximity of authority figures, and legitimacy of authority figures dominantly influenced nurse obedience to using PPE. Of the internal factors in the Niven's theory, only understanding of instructions had a significant effect on nurse obedience to using PPE. It means internal factors of nurses did not motivate them to realize the importance of obedience to using PPE. However, external factors only affected obedience temporarily, while internal factors could shape the character and behavior of nurses to remain obedient in nature. Therefore, it is necessary for Dr. R. Sosodoro Djatikoesoemo Hospital to make rules and a binding system by providing rewards and punishments that can reinforce nurse obedience to using PPE.

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