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Short Paper

Compliance of Nurses on Standard Precaution Practices in Handling Suspected COVID-19 Patients

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Abstract

The Centers for Disease Control has developed standard precautionary procedures to reduce the spread of hospital-acquired diseases. The National Public Health Agency was intended to reduce nurses' non-compliance with traditional preventive strategies, which may increase their risk of exposure to infectious diseases, particularly during pandemics. The study aimed to determine the compliance rate of nurses with standard precaution practices in handling suspected COVID-19 patients. The current study used the descriptive method of research and purposive sampling techniques such as total population sampling was utilized to examine each population with a particular characteristic. A questionnaire has been adapted from previous literature and studies. The research problems were interpreted and analyzed using IBM Statistical, frequency and percentages, the 5-point Likert Scale, and Pearson Product Moment Correlation Coefficient. The researcher drew the following conclusions: The majority of respondents were young individuals who were just starting in the nursing profession. All nurses followed standard precaution procedures while dealing with suspected COVID-19 patients with an increased degree of compliance. One of the factors influencing nurses' adherence to conventional precautionary practices was an increased workload resulting from a personnel shortage. The respondent's profile variables have no bearing on the nurses' compliance rate with standard precaution procedures. The following was recommended: Continuing in-service education for nurses should be applied using evidence-based practices. Keeping the patient-staff ratio should be perceived to avoid a shortage of staff and work overload. Companies should develop fresh tactics and boost the sustainability of the healthcare system in order to handle new issues brought on by the pandemic, and use intervention to reinforce workplace policies in healthcare settings and users of the health system's continuous needs. implementation of a strategic program to increase the

nurses' confidence in strict compliance with standard precaution practices in handling suspected COVID-19 patients.

Keywords – Nurse, COVID-19 patients, HCW, and healthcare-associated infections (HAIs)

INTRODUCTION

A standard precaution, commonly known as a universal precaution, was developed in the United States by the Centers for Disease Control and Prevention [CDC] in 1996. The CDC initiated the minimum infection control practices that are being performed to protect both nurses and clients in all health care settings from the transmission of blood-borne and other pathogens (Garcia-Zapata, 2010). It includes hand hygiene, personal protective equipment (PPE), safe injection practices, handling and cleaning contaminated equipment, and respiratory hygiene/cough etiquette. Hand hygiene is the simplest, cheapest, and most effective method of reducing healthcare-associated illnesses (Mathur, 2011).

Despite detailed guidelines, knowledge and compliance with standard precautions vary among health care workers and are inadequate in both underdeveloped and developing countries (Robert, 2015). In addition, regardless of the guidelines developed and set in several countries, compliance with aseptic precautions is "poor and lacking" (Jawaid, 2009). Similarly, standard precautions are the minimum infection prevention practices that may apply to all patient care, irrespective of their status, whether suspected or confirmed, in any health care setting. These practices aim to protect both health care workers (HCWs) and prevent them from transmitting the infections to their patients.

Although health organizations worldwide recognize SPs as the best way to prevent HAIs like COVID-19, compliance with these measures is still suboptimal among health care providers. Compliance with SPs must be enhanced among nurses, who participate in direct and repeated patient care and, thereby, can be more exposed to microorganisms associated with cross-infection (Melia, 2014). Notably, increasing evidence indicates that nurses' compliance with SPs can contribute to the reduction of HAIs among patients and health care providers, thus improving the effectiveness and safety of the care provided. Conversely, healthcare-associated infections (HAIs) can be considered the most frequent adverse event in healthcare worldwide.

LITERATURE REVIEW

Several studies have found a relationship between improved standard precaution practices and reduced infection rates (World Health Organization Guidelines on Hand Hygiene in Health Care, 2009). Moreover, studies report that nurses in other parts of the

world have insufficient knowledge of standard precaution and infection control practices. Lack of knowledge of HAIs makes them prone to different infections. (Sax, 2015). The study by Powers (et al., 2016) in New York identified the nurses' knowledge and their compliance with standard precautions and reported that the mean score of nurses' knowledge of standard precautions was 81+17 %. The nurses had good compliance with SPs. Similarly, a study on 4,439 health care workers, including nurses, to determine their knowledge of standard precautions by Atif (2013) in thirty-four health care institutes in France It was stated that the mean scores on hand hygiene were 72.6%, while 7.35% of the answers were given by the respondents on the use of appropriate barriers and disposal. 90.0% of the nurses felt the need for training on standard precautions and infection control while working in a university-affiliated hospital in Iran (Askarian, Memish, Khan, 2017). Student nurses studying in different hospitals in Hong Kong, China, have 78.2% knowledge of SPs (Pereira,Lam, Chan, Malaguti, Toffano, Gir, 2015).

According to Gammon and Gould (2005), healthcare workers have limited knowledge and training on standard precautions. On the contrary, a study in Pakistan showed that only 4.7% of physicians reported cleansing their hands before having direct contact with their patients. Also, nurses from various parts of the world have varying levels of compliance with SPs. The report of the French Audit General on compliance with standard precautions concluded that HCWs have good compliance (94%) with hand hygiene (Jawaid, Iqbal, & Shahbaz, 2019). A comparative study of nurses in Brazil found 69.4% compliance with standard precautions, compared to 57% compliance in Hong Kong (Giard, 2016). Sadoh (2016) also reported that 37% of the nurses had poor compliance with standard precautions.

In Cyprus, the unavailability of equipment, the adverse effects on nurses, workload, psychological factors, working experience as nurses, and physician influences are the main factors affecting their compliance (Chan,2012). In a dental school in Iran, lack of knowledge, workload, lack of facilities, and interpersonal conflicts are the critical factors in reduced compliance with standard precautions. Healthcare workers' lack of knowledge related to standard precautions was one of the main factors that affected the health care workers' compliance with standard precautions in Zagazig University Hospital in Egypt (Orabi, 2017). The varied factors that enhanced the nursing student's compliance with standard precaution knowledge in Hong Kong were good infection control training, adequate managerial support, perceived susceptibility, and compliance benefits. On the other hand, lack of knowledge, lack of means, and lack of time were the factors that influenced the health care workers' compliance with standard precautions (Hedayati, Marjadi, and Askarian, 2014).

Consequently, the compliance rate was defined as how workers' behaviors correspond with the authority's prescriptions. Thus, careful monitoring among nursing staff on infection control and prevention behaviors is needed to guarantee optimal levels of safety. For this reason, a valid and reliable tool to measure nurses' compliance with SPs is required (Hayes, 2017). As cited by the World Health Organization in their recent

updates on infection prevention and control (IPC) strategies to prevent or limit COVID-19 transmission, including 1. They ensure triage, early recognition, and isolation of suspected and confirmed COVID-19 to mitigate the cause; 2. They provide the application of standard precautions for all COVID-19 patients; 3. using additional precautions (contact and droplet precautions, wherever applicable for aerosol-generating procedures and support treatments, airborne precautions) for suspected and confirmed COVID-19 cases; and 4. implementing administrative controls and using environmental and engineering management tools. For the record, the United States of America, the epicenter of COVID-19 in the world, was recorded last May, 2020. More than 60,000 health workers have been infected, and nearly three hundred have died from COVID-19. The numbers mark staggering increases every week. This tally does not provide a complete picture of illness in this essential workforce. Only 21% of the case reports included information that could help identify the patient as a health worker (American Health Organization and World Health Organization, 2020). The increasing number of infected cases can be linked to insufficient personal protective equipment (PPE) and inadequate knowledge of some nurses on the proper standard precautionary measures against COVID-19 while they continue to operate.

The most common route of human-to-human transmission in health care settings has been mucosal contact with infectious respiratory droplets, or fomites. However, prior studies showed the detection of coronaviruses in sputum, nasal or nasopharyngeal secretions, endotracheal aspirate, bronchoalveolar lavage, urine, feces, tears, conjunctival secretions, and blood and lung tissues. Other significant research has revealed that SARS-CoV-2 can survive in sputum, serum, and manure for at least 96 hours, 72 hours in urine, and up to 9 days on surfaces. Thus, the recommended mitigation strategies may need to be sufficiently broad to control these transmission modes (Pan American Health Organization and World Health Organization, 2020).

The scientists reasoned that when an infected person coughs or sneezes, the large respiratory droplets expressed from the patient's mouth and nose are likely to transmit the virus from the infected patient to a healthy person (Guo,2020). The propelled droplets can land directly on the mucous membrane of the mouth, nose, or eyes of a nearby person or surfaces of objects. These droplets travel up to four meters and increase the risk of infection for HCPs. Guo (2020) also identified SARS-CoV-2 on the shoe soles of HCPs working in Intensive Care Units (ICUs); therefore, shoes can carry the virus.

The United States of America, the world's COVID-19 epicenter, has more than 60, 000 infected health workers, and nearly 300 have died from COVID-19 since May 2020. Every week, the figures rise dramatically. This tally does not provide a full picture of illness in this essential workforce, because only 21% of the case reports included information that could help identify the patient as a health worker (American Health Organization and World Health Organization, 2020). The possible causes of the increasing number of infected cases were that they do not have enough personal protective

equipment (PPE) and some nurses continue to operate with inadequate knowledge about the proper standard precautionary measure against COVID-19.

In the local context, Manila, Philippines, has a total of 2,315 health workers who have been evaluated positive for the Novel Corona Virus (COVID-19), with 837 deaths and 2,843 recoveries as of May 19, 2020 (Centers for Disease Control and Prevention, 2020). There have been few studies on SP compliance among health care workers in hospitals in the Philippines (Tayaben, 2015). These studies focused on the nurses' compliance with standard precautions to control hospital-acquired infections. One of these studies was the study conducted by Pasay (Enguito, Robles, & Awa, 2015) about the compliance with standard precautions among hospital nurses in Ozamiz City, Philippines. The findings suggested extremely high compliance with a more significant percentage of nurses in Ozamiz City to most of the standard precautions that showed a positive indication for a reduction in healthcare-associated infections. However, the remaining few nurses who have seldom or have not practiced the protocol indicate their susceptibility to cross-infection.

METHODOLOGY

The study utilized the descriptive type of research. In this study, the data are the demographic profile of the respondents, the factors affecting nurses' compliance with standard precaution practices, and the degree of compliance of nurses with standard precaution practices in handling suspected COVID-19 patients. On the other hand, correlational research shows quantitative analyses of the strength of relationships between two or more variables. These variables are the demographic profile of the respondents, namely, a. length of service, b. clinical setting, c. infection control training/seminar attended, d. respondents' knowledge of traditional precaution practices and compliance rate with standard precautions practices when dealing with suspected COVID-19 patients.

The researcher employed purposive sampling in the selection of the respondents for this study. Respondents are nurses from an Urdaneta City, Pangasinan, Philippines, hospital's emergency room and ward. The study respondents were thirty nurses in the emergency room and twenty in the ward. With only fifty nurses, complete enumeration will be used, integrating all nurses from the aforementioned departments/sections. A purposive sampling technique such as total population sampling was utilized to examine each population with a particular characteristic.

Descriptive analysis involves the collection of data to evaluate the hypothesis established. Such data was collected using a variety of instruments, like questionnaires, tests, and survey forms. The research methods mentioned above were chosen because they revealed the necessary connections between the data collected. Thus, the researcher will transcend numerical and quantitative values in this study to explore the concrete recommendations for health care institutions and their operations in handling

suspected COVID-19 patients concerning nurses' compliance with standard precaution practices.

RESULTS

Table 1 presents the respondent's profile. The majority of the respondents were in the age bracket of 26–30 years old, with a frequency of 26 or 52 percent. Those 31-35 years old have a frequency of 16 or 32 percent, those 21-25 years old have a frequency of 6 or 12 percent, and those 36-40 years old and older have a frequency of 2 or 4 percent. It can be noted that most of the respondents were female, with a frequency of 30 or 60 percent, compared to the males, with a frequency of 20 or 40 percent. In terms of length of service, the data revealed that the majority of the respondents had been in the service for 4-6 years with a frequency of 21 or 42 percent, 1-3 years with a frequency of 16 or 32 percent, 7-10 years with a frequency of 8 or 16 percent, and 10 years and above with a frequency of 5 or 10 percent.

The data showed that most of the nurses were assigned to the emergency room with a frequency of 28 or 56 percent, followed by the general ward with a frequency of 16 or 32 percent, and OR/DR and ICU with a frequency of 3 or 6 percent. It showed that the majority of the respondents did not undergo training with a frequency of 28 or 56 percent, followed by those with training with a frequency of 22 or 44 percent. It was discovered that the majority of nurses (46, or 92 percent) were highly knowledgeable about standard precautionary practices, while 4 respondents, or 8 percent, claimed to be moderately knowledgeable. The early recognition and prompt implementation of appropriate infection prevention and control (4.66) and PPE and Patient Placement (4.69). The overall weighted Mean is 4.66 which is highly compliant (Table 2).

As shown in Table 3 of the ten factors cited, it can be seen in the data that "workload due to a shortage of staff makes it difficult for me to take standard precautions (44 or 88.0%)." I feel discomfort with PPEs while performing skills (it reduces my efficiency by forty-two, or 84.0%) topped the factors that kept them from observing or complying with the standard precautionary measures. Likewise, the data revealed a large gap between the factors that were rated highly and those that were considered the minimum factors in compliance with the standard precautionary measures. This is evident in the indicators.

Table 1. Distribution of the Respondents in terms of their Profile Variables

n=50

Profile Variables	Frequency	Percentage
Age		
21 – 25	6	12.0
26 – 30	26	52.0
31 – 35	16	32.0
36 – 40	2	4.0
Gender		
Male	20	40.0
Female	30	60.0
Length of Service (in years)		
1- 3	16	32.0
4 – 6	21	42.0
7 – 10	8	16.0
Above 10	5	10.0
Clinical Setting		
Intensive Care Unit	3	6.0
Emergency Room	28	56.0
Operating/Delivery Room	3	6.0
General Ward	16	32.0
Infection Control Trainings/Seminars Attended		
No Training	28	56.0
With trainings	22	44.0
Knowledge on Standard Precautionary Practices		
11–15 (Moderately Knowledgeable)	4	8.0
16-20 (Highly Knowledgeable)	46	92.0
Mean Score:	17.68 (Highly Knowledgeable)	

Table 2: Compliance Rate of Nurses on Standard Precautionary Practices in Handling Suspected COVID-19 Patients (n=50)

Indicators	**Average Weighted Mean**	**Descriptive Equivalent**
Early recognition and prompt implementation of appropriate infection prevention and control	4.66	Highly Compliant
PPE and Patient Placement	4.69	Highly Compliant
Overall Weighted Mean	**4.66**	**Highly Compliant**

Legend:

Statistical Range	**Descriptive Equivalent (DE)**
4.50 – 5.00	Highly compliant Always
3.50 – 4.49	Compliant Often
2.50 – 3.49	Moderately Compliant Sometimes
1.50 – 2.49	Slightly compliant Seldom
1.00 – 1.49	Not compliant / Never

The items "*I do not know about standard precautions*", and "*I have a lot of experience and confidence in my skills*" were not considered factors that kept them from observing standard precautionary measures. Such claims or scores are good as they indicate that the nurses always adhere to the said actions regardless of how long they have been in the nursing profession or skilled in doing such measures. Equally, factors such as physician influence, the doctor did not use universal precautions (1 or 2.0); psychological factors like the influence of PPEs on nurse appearance (2 or 4.0); unavailability of resources like personal protective equipment (PPEs), and patient discomfort are obstacles to the use of PPEs by nurses (4 or 8.0); in an emergency, I do not have time to use standard precautions (9 or 18.0), and the unavailability and dissemination of infection control policies (12 or 24.0).

As shown in the computed R-values, all generated significance values were higher than the set.05 level of significance (Table 4).

Table 3. Factors Affecting Nurses' Compliance of Standard Precautionary Practices

Factors	Frequency (n = 50)	Percentage (%)
1. In Emergency situation I do not have time to use Standard precautions	9	18.0
2. Unavailability of resources like personal protective equipment (PPEs)	4	8.0
3. I feel discomfort with PPEs, while performing skills (it reduces my efficiency)	42	84.0
4. Workload due to shortage of staff make it difficult for me to take standard precautions	44	88.0
5. Psychological factors like Influence of PPEs on nurse appearance	2	4.0
6. I have a lot of experience and confidence in my skill	0	0.0
7. (Physician influence) the doctor him/herself doesn't use universal precautions.	1	2.0
8. Unavailability and dissemination of infection control policies.	12	24.0
9. Patient discomfort is an obstacle to the use of PPEs by nurses.	4	8.0
10. I don't know about standard precautions.	0	0.0

Table 4. Relationship Between the Compliance Rate of Nurses on Standard Precautionary Practices in Handling Suspected COVID-19 Patients and their Profile variables

	Early Recognition and Prompt Implementation		PPE and Patient Placement		Overall Compliance Rate	
Profile Variable	**r-value**	**sig**	**r-value**	**Sig**	**r-value**	**sig**
Age	0.254	0.075	0.132	0.360	0.200	0.164
Sex	-0.090	0.536	-0.157	0.277	-0.132	0.359
Length of Service	0.097	0.504	0.069	0.635	0.086	0.551
Clinical Setting	-0.057	0.695	-0.191	0.184	-0.136	0.348
Infection Control Trainings Attended	0.271	0.057	0.227	0.113	0.261	0.067
Knowledge of Standard Precautions Practices	0.199	0.166	0.159	0.271	0.188	0.192

***Significant at .05 level**

DISCUSSION

RESPONDENT'S PROFILE

It can be gleaned from the data that most of the respondents were young adults and way ahead in acquiring or gaining more experience in the nursing profession. In relation to this, Perrin et al. (2007) discovered that the majority of nurses in the Philippines are young. The data presented there were more female respondents in this study than males. The predominance of women in nursing services is also seen in the United Kingdom, Switzerland, and Canada (Yassi et al., 2007; Stein et al., 2003). According to the WHO (2012), women compose more than 75% of the healthcare workforce in many countries, making them very significant healthcare providers. Majority of the nurses have been in the service for a few years. Filipino nurses tend to gain at least a minimum of two years' hospital experience to comply with the requirement abroad (Enguito, Robles, & Awa, 2015). A nurse's commitment is the most important factor that influences her performance and depends on other variables, according to Kelarijani et al. (2014).

Chang and Choi conducted a study in 2007 to ascertain the impact of years of service on employees' organizational commitment. This study's goal was to investigate the relationship between nurses' lengths of service and their various responsibilities. It implied that the number of nurses assigned to the emergency room was greater in number. This can be attributed to the influx of patients nowadays in hospitals where immediate and fast care is needed.This can be interpreted to mean that the vast majority of respondents did not receive infection control training. This is due to the fact that nurses are paid very little and must frequently pay to attend seminars. The vital role of nursing in patient care and scientific progress within the field of nursing reveals the necessity of professional development (Sajjadnia et al., 2015). In addition, with the results of the study by Atefi et al. (2014), policymakers should consider nurses' professional development needs and implement initiatives to improve nurses' rewards and other benefits as they influence job satisfaction.It implied that the nurses had adequate information or knowledge of standard precautionary practices. A study by Luo et al. (2010) stressed that substantial knowledge of SP principles is a factor impacting nurses' compliance.

COMPLIANCE RATE OF NURSES

Table 2 presents the compliance rate of nurses on standard precautionary practices in handling suspected COVID-19 patients. It is noteworthy that where the compliance rate of nurses on standard precautionary practices in handling suspected COVID-19 patients is concerned, the respondents claimed to be highly compliant, as shown by the overall weighted mean, 4.66, which equates to highly compliant. This is because the two indicators, early recognition and prompt implementation of appropriate infection prevention and control (4.66) and PPE and Patient Placement (4.69), were both

assessed as highly compliant. Between the two indicators, it is apparent that the nurses were giving more attention and/or consideration to the practice of using PPE and patient placement compared to the other mentioned indicator. This affirmed what Siegel (2007) pointed out about the need for nurses' strict compliance with standard precautions, as it has been recognized as an efficient and effective means to prevent and control healthcare-associated infections in patients and health workers.

FACTORS AFFECTING COMPLIANCE OF NURSES ON STANDARD PRACTICES

Table 3 presents several factors that can be attributed to nurses' compliance with standard precautionary practices. Relative to this, the study results were identical to the findings by Hedayati, Marjadi, and Askarian (2014) and Chan (2012). Similar factors kept nursing from fully complying with standard preventive measures. While it is good that factors were regarded as not maintaining the nurses or respondents from observing the usual preventive measures, it can be a cause of concern that discomfort with the PPEs and workload due to a shortage of staff affected the respondents' full compliance with the standard precautionary measures. This upholds Garner's (2016) stand that, as the incidence of hospital-acquired infections (HAIs) has increased globally, strict implementation of standard precautions in health care settings should be conducted.

SIGNIFICANCE RELATIONSHIP OF PROFILE VARIABLES AND COMPLIANCE RATE OF NURSES

Table 4 shows the relationship between the compliance rate of nurses on standard precaution practices in handling suspected COVID-19 patients and their profile variables. The Pearson Correlation was utilized to find out the significant relationships between the compliance rate of nurses to traditional precautionary practices in handling suspected COVID-19 patients and their profile variables. Among the variables evaluated and evaluated, results showed no significant relationship between the compliance rate of the nurses with traditional precaution practices and their profile variables, namely age, sex, length of service, clinical setting, infection control training attended, and knowledge of traditional precaution practices. As shown in the computed R-values, all generated significance values were higher than the set.05 level of significance. Overall, it can be inferred from the data that respondents' profiles in terms of age, sex, length of service, clinical setting, infection control training attended, and knowledge of standard precautions practices have no bearing on the compliance rate of the nurses on traditional precaution practices. It supports the result of the study (Enguito, Robles, & Awa, 2015) that found that the difference in compliance among nurses when grouped by profile was not statistically significant and the correlation between knowledge and compliance was not significant either.

CONCLUSIONS

Standard precaution guidelines are the most crucial components to reducing cross-transmission between healthcare professionals and patients. The guidelines serve as a warning to the medical system, particularly during pandemics. The majority of the respondents did not attend infection control seminars but still had high knowledge of standard precaution practices. The very high compliance of a greater percentage of nurses in standard practices is a positive indication for a probable reduction in healthcare-associated infections, especially during a pandemic.

The outcomes of the study supported what the Centers for Disease Control maintains on the necessity of detecting or obeying safety protocols like the wearing of PPE to lessen the risk of getting a work-related infection in the healthcare setting, especially with the global outbreak of COVID-19. The major factors affecting nurses' obedience to standard precaution practices were workload and staff shortage, which indicated that the safety of nurses was at risk of acquiring the infection when caring for suspected COVID-19 patients. The study presented that the respondent's profile in terms of age, sex, length of service, clinical setting, infection control training attended, and knowledge of standard precaution practices had no bearing on the compliance rate of the nurses with standard precaution practices.

RECOMMENDATIONS

Based on the findings, the following were recommended, continuing in-service education for nurses should applied using evidence-based practices to apply standard precautions for infection control and continuous monitoring the infection control team on nurses' compliance and keeping the patient-staff ratio should perceive to avoid a shortage of staff and work overload, which was mentioned as a significant factor for compliance of nurses on standard precaution practices. In Addition, the administrator of the hospital should provide posters and accessibility of written policy to each unit to remind the nurses to follow the standard precaution practices in handling suspected COVID-19 patients and develop fresh tactics and to boost the sustainability of the healthcare system in order to handle new issues brought on by the pandemic, and intervention to reinforce workplace policies in healthcare settings and users of the health system's continuous needs. To end, the hospital administrators and nurse managers should develop and implement a strategic program to increase the nurses' confidence in strict compliance with standard precaution practices in handling suspected COVID-19 patients.

IMPLICATIONS

Undeniably, COVID-19 has affected the lives and health of millions of people across the world. This overwhelmed many countries' healthcare systems and, of course, affected healthcare providers such as nurses fighting on the frontlines to safeguard the lives of everyone involved. Exploring the concerns and issues nurses face during their battle, the study will help and support them and develop protocols and plans to improve their preparedness.

Hospital administrators and nurse managers should have a focal point of action in implementing guidelines in standard practices during a pandemic to prevent transmission of COVID-19 to healthcare workers. Future researchers, the current study's researchers, express the need for additional and ongoing research to monitor nurses' compliance with standard practices, especially given that communicable diseases are discovered on a yearly basis, which can result in a global pandemic. Thus, anchored on the findings of the study, providing nurses the support they need, not just in responding to the COVID-19 crisis but in ensuring that they can work and respond to this crisis with more confidence, beginning with strict adherence to standard precaution practices in handling suspected COVID-19 patients.

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