

The Effect of Education on the Understanding and Nurse Attitude About Needle Stick Injury (NSI) in Applying the Universal Awareness

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ABSTRACT

Needle Stick Injury or NSI is a term for occupational accidents experienced by health workers caused by needling or sharp medical objects that have been contaminated with infectious fluid from a patient. Potential transmission of disease infections can occur due to needles / sharp used medical items used for patients who injure the exposed staff. One of the preventions of Needle Stick Injury is by providing education to improve nurses' understanding and attitude in universal precautions. This study aims to determine the effect of offering education on nurses' knowledge and attitudes About Needle Stick Injury (NSI) in applying universal precautions in Private Hospitals - Central Jakarta. The research design used is a quasi-experiment, with a Pre Test and Post Test without Control design approach. The population in this study were nurses with a sample of 107 people. The sampling technique uses total sampling. The study's results using the Wilcoxon Sign Test show no differences in the level of understanding of nurses before and after being given education with p-value = 0.220 (> 0.05). While the nurse attitude variable using Paired T-test showed the differences in nurses' attitudes before and after being given education with P-value = 0,0001. Based on these results, education can be used to improve nurses' attitudes in the application of universal precautions.

Keywords: Attitude, Needle stick injury, The Universal Awareness, Understanding

1. INTRODUCTION

Nosocomial infections are infections caused by bacteria present in hospitals. The bacteria are usually obtained from other people in the hospital. Bacteria that become normal flora (bacteria that usually exist in the body and under normal circumstances do not cause harm) the person himself, or bacteria, fungi, viruses, or parasites that contaminate the environment through the tools in the hospital, one of which is a needlestick injury. *Needlestick Injury* or NSI is the penetration of the skin by a hypodermic needle or another sharp object when health workers carry out clinical activities in health institutions, such as hospitals, clinics, health centres, laboratories, which are caused by punctures or tears from hypodermic needles, knives, scalpels, scissors, glass-like glass objects, tubes, scissors, syringes, and other sharp objects [1,2,3,4,5,6,7,8,9,10]

Needlestick Injury or NSI is a term for work accidents experienced by health workers caused by needle sticks or punctured sharp medical objects getting contaminated with infectious fluids from patients. At

first glance, NSI looks like a minor work accident because it was just a needle punctured or cut by a sharp medical object. However, it turns out that there is a significant potential for transmission of infectious diseases that can be transmitted from needles / sharp medical objects that were used for patients then injure the exposed staff. Therefore, we need to increase self-awareness so that we do not experience the occurrence of the NSI. The diseases that can be transmitted to officers from this NSI incident are in the Blood Borne Disease group. Blood Borne Disease is a disease transmitted by blood-borne microorganisms, namely Hepatitis B, Hepatitis C, and HIV. The disease is a disease caused by a virus that can cause severe complications in the future [9,10,11].

PBM Private Hospital Group has 14 (fourteen) hospitals in Aceh, North Sumatra, Pekanbaru, South Sumatra, DKI Jakarta, West Java, South Kalimantan, North Kalimantan, Southeast Kalimantan and Sorong. The PBM Private House Group, one of the hospital corporations belonging to Indonesian State-owned Enterprises, has participated in the handling of COVID-19 by changing the function of Private Hospital X in

South Jakarta from serving common diseases to handling COVID-19 specifically since early April 2020.

Based on data from the HSE (Health Safety Environment) PBM Private Hospital Group, from January to December 2019, there were 12 (twelve) needle stick injuries, but ten people reported to the PBM Private Homes HSE Group. Based on an interview with the deputy director of nursing at this private hospital in February 2020, it was obtained that the regulations regarding the management of universal precautions set by hospitals are carried out by the PPI (Infection Control Prevention). The PPI team organization is managed by 1 (one) nurse called IPCN (Infection Prevention Control Nurse). IPCN or infection prevention and control nurses are practitioner/professional nurses who work full-time and specialize in infection or dealing with diseases related to health services in hospitals and other health care facilities [8] Meanwhile, if you look at the management of sharp objects by nurses, in the inpatient unit in 2019, 1 (one) nurse was reported to have suffered a needle stick injury[12].

The incidence of NSI is influenced by several factors, including the lack of careful behaviour, the actions of nurses who are still not under procedures, unsafe actions/ procedures, and there are no standard operating procedures that cover the safety of nurses in a medical action. Based on the HSE Group Hospital data, NSI occurred in January - December 2019 at a Private Hospital - in Central Jakarta. There was 1 (one) needle stick incidents incident, and in January - July 2020, there were 3 (three) needle stick incidents. So there was an increase in the number of incidents of 150% until July 2020. Based on this phenomenon, the researchers wanted to know "How are nurses' understanding and attitudes about Needle Stick Injury (NSI) in applying universal precautions in Private Hospitals - Central Jakarta before and after being given education"[12].

This study aims to determine the effect of providing education on nurses' understanding and attitudes about Needle Stick Injury (NSI) in applying universal precautions in Private Hospitals - Central Jakarta.

2. METHOD

This study used a *pre-experimental* design with *one group pre* dan *post-test design*. It used one group sample without a *control* group. The sample group was measured for understanding, initial attitude (pre-test), and then given a video slide show education about needle stick injury and universal precautions for 60 minutes. Then we measure the knowledge and final attitude (post-test). The population of this study is all nurses of Private Hospital X, which serves 107 patients. This study used *total sampling* as the sampling technique.

Nurses are gathered while wearing masks and keep a minimum safe distance of 1 (one) metre. The duration of the offline meeting is a maximum of 1 (one) hour. The first session is at 09.00 – 10.00 AM for nurses who come

home from night and afternoon duties. The second session is at 02.00 – 03.00 PM for nurses who come home from morning duties and days off.

The researcher analyzed the results in two parts: univariate analysis using frequency distribution and bivariate analysis to test the difference between the independent and dependent variables. It used the Non-parametric test: Wilcoxon Sign Test for the understanding variable because the data were not normal. While, for the respondent's attitude variable, the researcher used the Paired T-test because the data were normal.

3. RESULTS

Univariate analysis: characteristics of respondents consisting of age, gender, education, years of service, employment status, job position, and training as follows

3.1. Characteristics of Respondents

According to the characteristics of respondents, almost half of them were 26-35 years old, as many as 50 respondents (47%). More than half of the respondents were female, as many as 63 respondents (59%). More than half of the respondents had Associates Degree Nursing education, as many as 66 respondents (62%), and almost half of them had 0-1 year of service, as many as 48 respondents (45%).

Analysis of Difference in Understanding and Attitude of Respondents before (*pre*) and after (*post*) being Given education

The use of bivariate analysis was used to determine the effect of providing education on nurses' understanding and attitudes about Needle Stick Injury (NSI) applying universal precautions at Hospital X - Central Jakarta. This analysis was also to test the differences in respondents' understanding before and after being given education by using the non-parametric Wilcoxon Sign Test as a statistical test, with a significance level (Level of Significance) of 5%. There is an effect with the following conditions if the *p-value* <0.05 and no effect if the *p-value* > 0.05.

According to the table, the average level of respondents' understanding before being given education was 9,11 and the average level of respondents' understanding after being given education was 9,29. According to statistical test results, it got *P-value* 0,220 (>0,05). Then it concluded that there was no difference in the nurses' level of understanding before and after being given education. It also found no effect in educating nurses on nurses' understanding of Needle Stick Injury (NSI) in applying universal precautions in Private Hospitals - Central Jakarta.

The average level of respondents' attitude before being given education was 67,30, and the average level of respondents' attitude after being given education was 72,00 with a *standard Error* of 0,923. According to

statistical test results, it got *P-value* 0,0001 (<0,05). Then it concluded that there was a significant difference in nurses' level of attitude before and after being given education or there was an effect in providing education on nurses' attitudes about Needle Stick Injury (NSI) in applying universal precautions in Private Hospitals - Central Jakarta.

4. DISCUSSION

4.1. Characteristics of Respondents

Table 1. Frequency Distribution of Respondents' Characteristics in Private Hospital X – Central Jakarta (n=107)

| Characteristics of Respondents | Frequency | % |
|--------------------------------|------------|------------|
| Age | | |
| 21-25 years old | 39 | 36 |
| 26-35 years old | 50 | 47 |
| 36-45 years old | 13 | 12 |
| 46-55 years old | 5 | 5 |
| Gender | | |
| Male | 44 | 41 |
| Female | 63 | 59 |
| Education | | |
| Associates Degree Nursing | 66 | 62 |
| Nursing Profession | 41 | 38 |
| Years of Service | | |
| 0-1 year | 48 | 45 |
| 1-5 years | 19 | 18 |
| > 5 years | 40 | 37 |
| Total | 107 | 100 |

The characteristics of respondents included age, gender, education, and years of service. Based on the characteristics of the respondents, almost half of the respondents were aged 26-35 years old, as many as 50 people (47%). The results of this study are in line with research conducted by Ratnawati (2011), which said that most of the respondents were 25 years old, namely 25%, of productive age. According to researchers, adulthood is a person's productive period, so with many activities and getting older, someone sometimes ignores standard operating procedures, especially in Needle Stick Injury (NSI), to affect the level of health vulnerability[13].

Based on the gender of the respondents, more than half of the respondents were female, as many as 63 people (59%). The results of this study are in line with the research conducted by Pangalila et al., 2011, regarding the correlation between workload and needlestick injuries to nurses at the GMIM Kalooran Amurang Hospital Sam Ratulangi Manado. Most respondents according to gender were female respondents, as many as 60 respondents (75, 9%). According to the researcher, there are a lot of female respondents at Private Hospital X – Central Jakarta is due to the majority of women being interested in the nursing profession. It is due to a large number of needs for health workers, especially nurses. In addition, women have a higher level of concern than men.

Based on the education of the respondents, more than half of the respondents had Associates Degree Nursing education, as many as 66 people (62%). The results of this study are in line with the research of Ratnawati (2011) *Needle Stick Injury and the Factors that Influence it on Nurses in the Melati 2 ward dr. Soeradji Central General Hospital - Tirtonegoro Klaten University*, where most respondents' education level was Associates Degree (68.2%) [13]. Based on the theory, Health workers must be educated about the risks of their work and should understand the need to use standard precautions for everyone, at all times, regardless of the diagnosis. Regular in-service education should be provided to all medical and non-medical personnel in the health care environment. In addition, pre-service education for all health workers should also address standard precautions [14,15].

According to researchers, a person's understanding and awareness of his health determine the extent to which a person understands and comprehends health. This understanding can be an action, knowledge, or prevention effort to maintain optimal health as we know that the purpose of education is to change attitudes. People with higher education will better understand how universal precautions are managed. With education, a person's understanding will increase, which is expected with this understanding, there can be a change in the nurses' attitude. Ratnawati (2011) *Needle Stick Injury and the factors that influence nurses in the Melati 2 Ward dr. Soeradji Central General Hospital - Tirtonegoro Klaten University*, with the highest years of service of 1 – 9 years (72.2%)[13].

Based on years of service of respondents, almost half of the respondents had 0-1 year of service, as many as 48 people (45%). According to the researcher, the years of service affect nurses' attitude in carrying out nursing actions so that they are more skilled. In this study, the hospital had more respondents with 0-1 year of service because this hospital had just changed the function of the hospital from a general hospital to a particular hospital for the covid 19 treatment. Changes in hospital status impacted the need for high nurse resources [16,17]. The nurses who participated in the recruitment and selection process mainly were nurses who had just completed their education. Nurses who accepted to join this hospital had years of service less than 1 (one) year.

4.1.1. Analysis of Difference in Understanding and Attitude

Table 2. Analysis of Difference in Understanding and Attitude of Respondents before (*pre*) and after (*post*) being Given education (n=107)

| Variable | N | Mean | Median | SD | Min - Max | P-value |
|----------------------------|-----|-------|--------|------|-----------|---------|
| Respondents' Understanding | | | | | | |
| Pre Education | 107 | 9,11 | 9,0 | 1,01 | 6 - 10 | 0,220 |
| Post Education | 107 | 9,29 | 10,0 | 0,93 | 7 - 10 | |
| Respondents' Attitude | | | | | | |
| Pre Education | 107 | 67.30 | 68.0 | 7.30 | 50 - 80 | 0,0001 |
| Post Education | 107 | 72.00 | 72.0 | 6.46 | 55 - 80 | |

Based on the bivariate analysis results, there was no difference in the level of respondents understanding before (*pre*) and after (*post*) being given education in Private Hospital X. Based on the statistical test results, it got a *P-value* of 0,220 ($>0,05$). Then it concluded that there was no significant difference in nurses' understanding before and after being given education. And it was no effect in providing education on nurses' knowledge about Needle Stick Injury (NSI) in applying universal precautions in Private Hospitals - Central Jakarta. The was no effect in giving education with nurses' understanding about Needle Stick Injury (NSI) in using universal precautions.

The results of this study are different from a study by Sulisdiyanto et al. (2015, in his study entitled *the Correlation of Knowledge and Nurses' Attitude about Universal Precautions with the Implementation of Universal Precautions in Regional Public Hospital District Penajam North Paser*. There was a correlation between nurses' knowledge and the implementation of universal precautions. It had a moderate and positive pattern (*p-value* 0.000; 0.005; *r*: 0.747). According to a theory, knowledge is the result of knowing, and this occurs after people have sensed a certain object. The knowledge included in the cognitive domain, one of which is understanding, is the ability to explain correctly about known objects and interpret the material correctly. People who have understood the object or material must explain and mention it. The researcher concluded that there was no difference between nurses' understanding before and after being given education because new nurses were given mandatory training before they went to work, one of which was about universal precautions.

4.1.2. Analysis of Difference in Attitude of Respondents

Analysis of Difference in Attitude of Respondents before (*pre*) and after (*post*) being Given Education in

Private Hospital X. Bivariate Analysis Results of the Difference in Respondents' Attitude Before (*pre*) and After (*post*) being given Education, According to Statistical test results, it got *P-value* 0,0001 ($<0,05$). Then it concluded that there was a significant difference in nurses' level of attitude before and after being given education or there was an effect in providing education on nurses' attitudes about Needle Stick Injury (NSI) in applying universal precautions in Private Hospitals - Central Jakarta. Based on the research results, it concluded that there was an effect in providing education and nurses' attitude about Needle Stick Injury (NSI) in applying universal precautions before and after being given education with *P-Value* 0,0001 ($< 0,05$). Then *Ho* was accepted. There was an effect in providing education and nurses' attitude about Needle Stick Injury in applying universal precautions.

These study results are in line with Ratnawati (2011) study entitled *Needle Stick Injury and the Factors that Influence it on Nurses in the Melati 2 ward dr. Soeradji Central General Hospital - Tirtonegoro Klaten University*. The attitude had a moderate closeness with Needle Stick Injury (*C-value* = 0,411).

This study is also in line with Hery Sulisdiyanto, Supriadi, Rusni Masnina (2015) in their research entitled *the Correlation between Knowledge and Attitude of Nurses about Universal Precautions with the Implementation of Universal Precautions in Regional Public Hospital District Penajam North Paser*. There was a correlation between nurses' attitude and the implementation of universal precautions, with moderate correlation and positive pattern (*P-Value* 0,000; α 0,005; *r*: 0,605). According to the theory of Attitude Building by Azwar (2007), factors that influence the building of attitudes include The influence of other people who are considered necessary in general; individuals tend to have a conformist attitude or one direction with the attitude of people who are considered essential. According to the researcher, it concluded that by providing education it will change the attitude of nurses, for that education is very important to always be applied as an upskilling nurse.

5. CONCLUSION

There were no differences in the level of understanding of nurses before and after being given education with *p-value* = 0.220 (> 0.05), while the nurse attitude variable using Paired T-test showed there were differences in nurses' attitudes before and after being given education with *P-value* = 0,0001. Based on these results, education can be used to improve nurses' attitudes in the application of universal precautions.

AUTHOR'S CONTRIBUTIONS

RA and FPSI conceived and design the work, RA collect the data, FPSI and WWW analyze the data

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