THE EFFECTIVENESS OF NURSES TRAINNING PROGRAM ON NOSOCOMIAL INFECTION CONTROL IN VIETNAM

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ABSTRACT

Introduction: *Nosocomial infection is an important issue in care quality management in Vietnam. It is the top concerns of health organization related to the safety of patients and health care workers (HCWs).*

Objectives: *To assess the effectiveness of nurses training program on knowledge, and practice on nosocomial infection control at ChoRay hospital, Ho Chi Minh city, Vietnam.*

Material and Method: *Pretest and post-test study design. All nurses who were working at the HepatoBiliary- Pancreatic, Orthopedics, Digestive, Burns, Neurology A and Neurology B of Cho Ray Hospital were recruited. One month before the training program started, all nurses of six units and observed as the baseline measurement. Then, a six-weeks training program was conducted, nurses were trained once per week. After completing the training program,the checklist and observations for all participants as post evaluation.*

Rusults *: The mean age of nurses was 32.4 ± 5.5 years old, minimum 22 and Maximum 54 years old. The average working experience was 8 ± 4.7 years, each nurse took care of 22 ± 6.3 patients a day.*

Generally, there was a significant improvement in knowledge of hospital infection control of 108 nurses participating in this research. For example, before taking part in the training course, only (2.8%) of the nurses could answer correctly all 26 questions about general knowledge of infection control. However, 58.1% of nurses answered all the questions correctly after participating in the training class about infection control for six weeks. The nurses also improved their practice significantly on hand hygiene, according to guidelines recommended by WHO and Ministry of Health of Vietnam, and intravenous injection.

Conclusion: *Results of this study implies that it is necessary to organize a standard training programs of nosocomial infection control regularly for nurses to update their knowledge and practice. Even though they were well trained before working for the hospital, if they are not regularly reminded about the importance of preventing nosocomial infection, their knowledge and quality of practice on nosocomial infection might be deteriorated over time.*

Key words*: Knowledge, practice about infection control of nurses.*

I. INTRODUCTION

Nosocomial infection is an important issue in quality management of care in Vietnam which is the top concern of health organization related to the safety of patients and health care workers (HCWs). Nosocomial infection is still an unsolvable problem

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even in developed countries. The studies showed that nosocomial infections increased prevalence of mortality, prolong length of hospital stay, increased use of antibiotics, thus increased antibiotic resistance and increased in medical care cost. Nosocomial infection is one of the important index that reflects professional quality of hospital care. Statistics showed the prevalence of nosocomial infection is about 5 to 10% in developed countries and up to 15 to 20% in developing countries(Pittet, 2014). Although there is now a good healthcare system, the prevalence of nosocomial infection still remains high at 3,8%(Behnke et al., 2013).

In Vietnam, NIC is still in the initial stage. Ministry of Health (MOH 1997) has promulgated the "Hospital Infection Control Regulation", However, this regulation has not been fully established in some hospitals. The studies recruited 901 patients from 12 hospitals in 1998, and 11 hospital 2001, and 19 hospitals in 2005 had showed that the prevalence were (11.5%),(6.8%) and (5.7%), respectively(MOH.VN, 2005). A cohort study at Cho Ray hospital inVietnam by (Thu, Mai, Tien, & Trang, 2008) showed that the incidence of surgical site infection (SSI)was (14.4%), of which the incidence of surgical site infection in Neurology department was (7.9%), and in Orthopedic department was (14.5%).

Therefore, the researcher aimed to evaluate the effectiveness of training programs to improve nurses' knowledge and practice on infection control in hospitals in Vietnam. The results could serve as a reference for health managers to develop measures in controlling nosocomial infections and provide better nursing practice in order to reduce nosocomial infection rate. The role of nurse is extremely important in preventing hazards and sequelae of healthcare - associated nosocomial infection.

Objective: To assess the effectiveness of nurses training program on knowledge, and practice on nosocomial infection control in Vietnam.

II. METHOD

Pretest and posttest study design was used. A total 108 nurses Male and female derived from 6 departments at the HepatoBiliary- Pancreatic, Orthopaedics, Digestive, Burns, Neurology A and Neurology B of Cho Ray Hospital participating in this research since 15/10/2014 to 15/02/2015. In first part we used the Questionnaire about nosocomial infection control in 30 minutes to completing and we used the (checklists) to observe some professional skills of nurses. Step2: Training program on NIC practice. Step 3NICs Performance evaluation; compare the difference between pretest and posttest. Statistical analysis was carried out by soft- wave STATA 12.0, the Chi-square test was used to test the difference among proportions.

Exclusive criteria

Nurses who are responsible for administrative work, working experiences less than one year, head nurses, and doctors or nurses who disagreed to participate in the study were excluded.

III. RESULTS

Table 1. The characteristics of the studied sample (n=108)

Variable	Min	Max	Median	Mean	SD
Age (year)	22	54	33	32.38	5.47
Working time (year)	02	27	08	8.16	4.68
The number of patients cared per day	08	35	23	22.07	6.25

*SD standard deviation

Table 2. The characteristics of sample(n=108)

Characteristic	N	%
Gender		
1. Male	18	16.7
2. Female	90	83.3
Working Department		
3. HepatoBiliary-Pancreatic Surgery	20	18.5
4. Orthopaedics Surgery	15	13.9
5. Digestive Surgery	19	17.6
6. Neuro SurgeryA	18	16.7
7. Neuro SurgeryB	20	18.5
8. Burns Surgery	16	14.8
Education		
9. University	16	14.8
10. Secondary	92	85.2

Most of nurses participating in the research were female (83.3%), distributed equally at participating departments. Most of nurses had college (intermediate) degrees (85.2%). Some of them were holding a bachelor degree (15%). Only one nurse had a postgraduate degree at master level (0.93%). Compared with other studies in Vietnam by Tan and his colleagues in 2010, (95%) nurses' educational level was at intermediate level.

Table 3. General knowledge on nosocomial infection control

General knowledge on nosocomial infection control	**Pre intervention**		**Post intervention**		**P-value (paired-t test)**
	n	**%**	**n**	**%**	
General knowledge of nosocomial infections control	1	0.9	23	21.3	<0.01
Knowledge of time for hand hygiene	2	1.9	71	65.7	<0.01
Knowledge Infection control during intravenous injection	0	0	89	82.4	<0.01
General knowledge standard for precautions and isolation	0	0	50	46.3	<0.01
General knowledge sterilization and risk management	0	0	81	75.0	<0.01
Total score	**3**	**2.8**	**63**	**58.1**	**<0.01**

In a summary, there was only three nurse who could answer correctly all 26 questions about general knowledge of infection control. However, after participating in the training class about infection control in six weeks, 63 nurses could answer all the questions correctly. Paired T-test showed that the difference between before and after training was (55.3%) and statistically significant.

Table 4. Hand hygiene occasions and practice of nurses (n=108)

Hand hygiene occasions	Pre intervention n=108		Post intervention n=108		P-value (paired-t test)
	n	%	n	%	
Before patient contact	31	28.7	76	70.4	<0.01
Before aseptic task	30	27.8	76	70.4	<0.01
After body fluid exposure risk	38	35.1	79	73.2	<0.01
After patient contact	39	36.1	71	65.7	<0.01
After contact with patient surrounding	35	32.4	78	72.2	<0.01
General hand hygiene occasion of nurses	**5**	**4**	**33**	**30.6**	**<0.01**

Before training, based on WHO guidelines on hand hygiene only (4%) of the nurses practiced the guideline correctly during patient care period. However, after the training, (30.6%) of the nurses followed the guidelines correctly. There was (26.6%) improvement in this case. A statistical significant difference was performed by paired t-test with p <0.01.

Table 5. Hand hygiene techniques by nurses (n=108)

Six step hand hygiene technique	Pre intervention n=108		Post intervention n=108		P-value (paired-t test)
	n	%	n	%	
Remove jewelry and watch. Wet hands Take soap up rubbing palm to palm	102	94.4	95	87	1.4
Massage between fingers, right palm over back of left hand, left palm over back of right hands Scrub with fingers locked including finger tips	92	85.2	105	97.2	<0.01
Rub with fingers interlaced	34	31.5	88	81.5	<0.01
Scrub with fingers locked including finger tips finger tips	9	8.3	63	58.4	<0.01
Rub rotationally with thumbs locked	30	27.8	79	73.2	<0.01
Rotationally top of fingers to palm and vise verse. Rinse hands under running water. Hands dry by clean towel	56	51.9	87	89.8	<0.01
Total Scores core of Hand Hygiene Practice	**0**	**0**	**7**	**6.5**	**<0.01**

Among the six steps, the statistical result associated with step 1 looked a bit strange. There was a decrease in the percentage of nurses who practiced correctly after training course, from (94.4%) to (87%). At step 1, after intervention, the nurses did not practice in their good mood, the number of nurses practiced correctly was 95 out of 108, which was lower than the statistics collected before intervention, which was 102 out of 108. However, this difference is not statistically significant, as p=1.4.

Table 6. Intravenous injection practice by nurses

Intravenous injection practice	Pre-intervention		Post-intervention		P-value (paired-t test)
	n	%	n	%	
Nurse wash hands, wear mask before procedure	40	37	62	57.4	<0.01
Choose injection site	100	92.6	108	100	<0.01
Wear gloves	40	37.0	81	75	<0.01
Antiseptic on injection site from inside to out side	40	37.4	62	57.4	<0.01
Push air in syringe out	84	77.8	100	92.6	<0.01
Antiseptic and slight press on injection position	52	48.2	99	91.7	<0.01
Nurse wash hands again	26	24.0	83	76.9	<0.01
Total score of intravenous injection practice	**5**	**4.6**	**21**	**19.5**	**<0.01**

Results of intravenous injection by nurses were showed in (Table 4.5-3). The data showed that the percentage of nurses perform 7 principles of sterilization practice properly during intravenous injection scored as "passed". The pass rate was only (4.6%) (n = 5) during pre-intervention, compared with post intervention, the ratio increased to (19.5%) (n = 21) with statistically significant at p<0.01.

IV. DISCUSSION

Training knowledge and monitoring compliance practice on infection control of nurses is widely applied in many developing countries around the world. In this study, it did not only improved knowledge but also enhanced practical skills, to help nurses to have the opportunity to review their knowledge and update the latest evidence about the infection control, at the practical level. It helped nurses' performance proficiency, and maintained proper practice. In Vietnam, hospitals often face patients overload problem, so isolating patients became very difficult and consequent, which lead to a high infection in the population.

Regular training program for all healthcare workers especially nurses was essential and urgent in the present context, because at hospitals, nurses accounted for three-quarters of the medical worker, and they also closely monitor and care for patients during hospitalization.

V. CONCLUSION

From results of this study, we found that there was a need to organize standard training program of infection control to update new knowledge and practice for all nurses periodically.

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