

General knowledge of intensive resuscitation nurses on hospital-acquired infection in 7A Military Hospital

HAI knowledge in 7A Military Hospital resuscitation nurses

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Abstract

Aim: The study aimed to make a general description of knowledge about the hospital-acquired infection of intensive resuscitation nurses units in 7A Military Hospital, Hochiminh City, VietNam, in 2019.

Materials and Methods: The study employed a descriptive, cross-sectional approach with quantity investigation and purposive sampling on 93 personnel in three intensive resuscitation units in 7A Military Hospital. The data were collected via direct interviews with the questionnaire.

Results: Only 61.29% of the investigated personnel had a proper general knowledge of hospital-acquired infection. Knowledge of specific aspects of hospital-acquired infection was only on an average level as follows: 59.14% for sterilization, 51.61% for standard prevention, 49.46% for blood infection prevention, 44.09% for surgical wound infection prevention, 46.24% for hospital-acquired pneumonia prevention, and 69.89% for safe injection.

Discussion: General knowledge about hospital-acquired infection was limited in intensive resuscitation nurses due to lack of self-education and training. Education level, personal experiences, and attitudes were other factors. Flaws in the design of the questionnaire might hamper the collected data quality but the study still provided usable insight of the issues and facilitates further researches and developments.

Conclusion: General knowledge about hospital-acquired infection is limited in intensive resuscitation nurses; hence the improvement of education and training for career requirements is needed. Furthermore, supervisions and feedbacks from hospital units are essential to prevent hospital-acquired infection.

Keywords

Hospital-Acquired Infection (HAI); Infection prevention; Nurse; Intensive resuscitation; Intensive care

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Introduction

Hospital-acquired infection (HAI) is the infection acquired during treatment in hospital, not already presented or in the incubated form at the time of admission, and usually occurs 48 hours after admission. WHO (2002) in "Prevention of hospital-acquired infections: A practical guide" reported an 8.7% rate of hospital-acquired infection in 55 hospitals across 14 countries. The prevalence rate of HAI is 7.1% in Europe and may be doubled or more in developing countries [1]. In the U.S., there are 2 million cases of hospital-acquired infection annually which leads to 90000 fatalities and the overall direct cost to hospitals ranges from US\$28 billion to 45 billion [2]. HAI is considered to partly contribute to the outbreaks of some severe diseases in Africa and Asia [1].

The 2005 reports of the Vietnam Ministry of Health showed a 5.7% rate of hospital-acquired infection in 19 hospitals across the country (available in <http://choray.vn/quitrinhkiemsoat/Data/chuong1.html#chuong1.1> in Vietnamese). Hospital-acquired infections can cause fatality, increase antibiotic administration, prolong treatment, raise the cost, and burden on the patients, their relatives, and the healthcare system. The 7A Military Hospital is the surgical hospital in Hochiminh City, Vietnam. There are 3000 surgically operations are performed annually in the hospital; hence overloading is a constant issue. Therefore the prevention of hospital-acquired infection is performed as a continuous program in the hospital to reduce hospital-acquired infection, guarantee patient safety, and improve patient care. However, prevention of hospital-acquired infection in medical facilities is still not done well, according to Nguyen and Tran (2012) below half of the practical healthcare personnel in Vinh Long province (VietNam) properly follow the guidelines [3] and lack of knowledge is one of the main reasons [3]. Personnel in the nursing section play a key role in infection since they actively participate in inpatient care from admission to discharge [4]. For nurses in resuscitation units, the prevention of hospital-acquired infection is even more crucial. There were studies on the knowledge of the nursing personnel in general about the issue, but none was done on the ones of intensive resuscitation units. Hence our research was done to describe the general knowledge of the nurses in three intensive resuscitation units of the 7A Military Hospital.

Material and Methods

Experiment participants

All the nurses with at least vocational qualifications, directly working in the intensive resuscitation unit, postoperative resuscitation unit, and nerve postoperative resuscitation unit of the 7A Military Hospital, took part in the investigation.

Time and place

The study was performed in the three abovementioned resuscitation units of the 7A Military Hospital from 3 June 2019 to 30 December 2019.

Study design

The study followed a descriptive cross-sectional approach.

Sampling

The study sampled all the 93 nurses working in the three resuscitation units who satisfied the criteria.

Collected data

The data were collected through a direct interview with a questionnaire. Data collected included general characteristics of behavior and lifestyle (age, marital status, ethnic group, education and qualification, income, length of service, etc.), and knowledge of hospital-acquired infection. Investigated knowledge included general knowledge, knowledge of sterilization, knowledge of standard prevention, knowledge of blood infection, knowledge of surgical wound infection, knowledge of hospital-acquired pneumonia, knowledge of safe injection. Higher scores represented better knowledge of the issue and vice versa. The questionnaire went through a pre-study test beforehand.

Data analysis

Quantity data were checked, purified, and inputted by Epidata 3.1 and was statistically analyzed by Stata 12. Statistical analysis was used to describe the general characteristics of investigated personnel. Quality variables were expressed in frequency and percentage. Quality variables were expressed as mean, median, and standard deviation. The descriptive statistical method using the value of the gross number, and the portion was employed to describe the general knowledge of hospital-acquired infection in resuscitation nurses.

Ethical declaration

This study was authorized by the Medicine Scientific Research Ethics Committee of the 7A Military Hospital (Number: 45/QĐ-HĐYĐ-BV7A, date: 29.03.2019). Participation was strictly voluntary, verified by signed documents. Anonymity and data privacy were strictly guaranteed for the sake of investigated participants. The patients and relatives were well-informed about their conditions and equal treatment and were asked to take part in the study.

Results

General information

A total of 93 nurses participated in the study. The average age was 32.3 years and the percentage of personnel aged under and over 30 was similar (52.69% and 47.06%, respectively). Most participants were female (76.34%); 58.06% of the nurses had vocational qualifications, 22.58% had junior college qualification, and 19.36% had a university degree. Most personnel were trained in Ho Chi Minh City (75.27%). The average working length was 7.7 years, and more than half of the participants had worked for more than five years. Over 80% of the nurses had some knowledge of hospital-acquired infection, and the primary information source was from the hospital (50.54%); other information sources included colleagues and "others" classification. Only 43.01% reported being educated about hospital-acquired infection.

General knowledge of hospital-acquired infection

The general understanding of hospital-acquired infection was not satisfactory in the investigated nurses and merely achieved above-average level; only 57 nurses (61.29%) had correct general knowledge of the issue. Seventy-one nurses (76.34%) had proper knowledge of the definition, 90 nurses (96.77%) correctly knew the causes of hospital-acquired infection, 73 nurses (78.49%) were properly aware of the basic aims of the prevention program, 70 nurses (75.27%) correctly knew

the prevention and control methods, and 72 nurses (77.42%) correctly performed the methods.

Knowledge of sterilization

Amongst 93 resuscitation nurses, 55 (59.14%) received only an average level of proper knowledge on sterilization. Eighty-six nurses (92.47%) had a proper understanding of medical tool sterilization, 77 nurses (82.80%) properly knew the sterilization principles, 81 nurses (87.10%) correctly knew how to choose the sterilization agents, 86 nurses (92.47%) were properly aware of the sterilization level, and 85 nurses (91.40%) correctly knew which kind of tools should be sterilized.

Knowledge of standard prevention

The understanding of standard prevention was achieved only at an average level, as only 48 personnel (51.61%) were correctly aware of all five types of questioned standard prevention knowledge. Seventy-one resuscitation nurses (76.34%) were correctly aware of medical gloves guidelines, 85 nurses (91.40%) had a proper understanding of protective equipment, 90 nurses (96.77%) correctly knew about the required protective equipment for patient care, 91 nurses (97.85) had correct knowledge of pathogen transmission route in hospital, and 72 nurses (76.34%) had proper practical knowledge in standard prevention.

Knowledge of blood infection prevention and control

Less than half of the investigated resuscitation nurses had a proper understanding of all five types of questioned blood infection prevention and control issues (46 personnel, 49.46%). Seventy-three nurses (78.49%) knew the correct types of skin infection solution, 88 nurses (94.62%) knew the proper catheter insertion method, 83 nurses (89.25%) correctly knew the risks of a blood infection, 83 nurses (89.25%) had a proper understanding of infusion tube maintenance, and 77 nurses (82.80%) had correct knowledge of infection prevention during bandage replacement.

Knowledge of surgical wound infection

The general knowledge about the prevention of surgical wound infection in resuscitation nurses was unsatisfactory as only 41 personnel (44.09%) had a proper understanding of all five types of questioned surgical wound infection knowledge. However, the practical knowledge of the issue was satisfactory (84 personnel, 90.32%). The results of other four questioned types were as follows: 94.62% (88 nurses) for the level of infection, 82.80% (77 nurses) for risks of patient care-related infection, 80.65% (75 nurses) for factors causing surgical wound infection, and 76.34% (71 nurses) for cautions and indications for prevention.

Knowledge of hospital-acquired pneumonia

The general knowledge of the prevention of surgical wound infection in resuscitation nurses was unsatisfactory as only 41 personnel (44.09%) had a proper understanding of all five questioned types of hospital-acquired pneumonia, however, the knowledge of oral hygiene using medical gauze and saline was satisfactory (90 personnel, 96.77%). The results of other four questioned types were as follows: 79.57% (74 nurses) for tooth brushing for patients with tracheal intubation, 89.25% (83 nurses) for routes of pathogen infiltration, 76.34% (71 nurses) for practical knowledge of prevention, and 89.25% (83 nurses) for factors causing hospital-acquired pneumonia.

Knowledge of safe injection

The general knowledge of safe infection in resuscitation nurses was fair but not wholly satisfactory as 65 nurses (69.89%) correctly knew all three questioned types of this issue. The specific results of the three classes were as follows: 91.40% (85 nurses) for injection principles, 83.87% (78 nurses) for preliminary care of cuts and puncture wounds, and 84.95% (79 nurses) for the safe injection procedure.

Discussion

Hospital-acquired infection is a global issue, and strict regulation in standard prevention is essential [2]. The results in our study showed that general knowledge of intensive resuscitation in this issue was at the fair level (61.29%), similar to the results of Fashafsheh et al. (2015) (53.9%) [5], however, was lower than the results of Nguyen and Tran (2012) in Vinh Long Province (90.2%) [3]. The reason probably was the high workload and work intensity of the resuscitation nurse, which prevented them from further self-education for hospital-acquired infection. Therefore, an improvement of education and training in this issue is essential for nurses and resuscitation nurses especially, as new kinds of the pathogen with high resistance are growing [1, 4]. Lack of updated knowledge and additional training is the fundamental reason for inadequate prevention of hospital-acquired infection [4].

Many studies worldwide mentioned improper practices of infection prevention, both in developed and developing countries [3, 6, 7]. In our study, 51.61% of the investigated nurses had proper knowledge of standard prevention guidelines, higher than the results of Sodhi et al. (2013) in India [7]. Lower than half of the nurses had a correct answer of all the knowledge points in blood infection prevention and control, the rate was similar to the survey of Ulman et al. (2014) in New Zealand [8]. Only 44.09% of the nurses accurately answered all the knowledge points in surgical wound infection prevention, similar to the rate in Teshager et al.'s study (2015) (40.7%) [9]. The rate in hospital-acquired pneumonia was 46.24%, lower than the results of Jordan et al. (2014) (65.7%) [10], the reason probably was due to the differences between the samples in the two studies. Education level may affect knowledge of hospital-acquired infection as the personnel with university or higher qualifications tend to have better knowledge of the issue. Length of service is also a factor as longer working length can provide more practical experiences. The different definition of infection prevention and control in various studies may also count. And different attitudes of the personnel concerning the issues are also another factor.

It is essential to provide adequate knowledge of standard infection prevention for medical staffs, especially the ones who frequently have direct contact with patients. A study showed that improvement in training and education for the nurses in special care units was positively related to the understanding of and proper conduct of the medical guidelines, limited the cases of hospital-acquired infection and improved the medical treatment outcome [11]. Hospitals themselves play an important role here; hence they should implement the intervention and coordination strategies (medical staff education, supervision, warning, and feedback system), constantly update new data, and improve the professional capabilities of the staffs, only

with these efforts the nurse's attitude and behavior in infection prevention can improve [11].

There were several limitations in our study, for example, the content and difficulties of the questions were not appropriate hence the resulted answers might not completely reveal the true knowledge of the personnel about hospital-acquired infection. Nonetheless, the study managed to provide a further view on the general knowledge of the hospital staff about the issues and could encourage further studies in 7A Military Hospital and other medical facilities on the real circumstances and the development of the corresponding education and training programs.

Conclusion

Our study achieved some notable results on the general knowledge of the intensive resuscitation nurses in the 7A Military Hospital about the hospital-acquired infection. Merely more than half (61.29%) of the nurses had a proper general knowledge of the prevention of hospital-acquired infection. Understanding of certain aspects in the issue was only at an average level: 59.14% in sterilization, 51.61% in standard prevention, 49.46% in prevention of blood infection, 44.09% in prevention of surgical wound infection, and 46.24% in prevention of hospital-acquired pneumonia, and 69.89% in safe injection. Therefore the hospital should improve the training and education for the hospital staff, maintain a constant education regime and coordinate with warning, supervision and feedback systems from the units to prevent and minimize the rate of hospital-acquired infection.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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