

The implementation of a caring safety model to decrease adverse events

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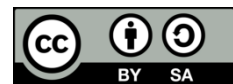
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ABSTRACT

Patient safety is the most crucial health service orientation. An appropriate clinical risk management system is needed to sustain the safety culture in the hospital. This study aimed to examine the implementation of the caring safety model (CSM) in reducing the adverse events (AEs) in patients. A quasi-experimental design (pretest-posttest control group design) was conducted, involving samples in two hospitals in Indonesia. Nurses in the experimental group followed the CSM training and applied it to nursing care, while nurses in the control group followed the standard care. AEs were assessed on indicators of medication error, patient falls, phlebitis, decubitus, and surgical site infection. The implementation of CSM was evaluated for its impact on AEs reduction. CSM-based care could reduce AEs in patients better than standard care. The final observation variable of the experimental and the control groups resulted in a value of sig of <0.05 , demonstrating a difference in AEs between CSM-based nursing care and standard care. The implementation of CSM-based nursing care was better than the standard care for AEs reduction. The finding implies that CSM can be employed in reducing AEs in patients.

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1. INTRODUCTION

Patient safety is one of the main components of service quality in hospitals, clinics, and other healthcare facilities. Patient safety is related to accuracy in identifying patients, effective communication, drug safety handling, accuracy in carrying out surgical or invasive procedures, reducing the risk of cross-infection, and reducing the risk of patients falling [1], [2]. However, unexpected events or so-called adverse events (AEs) that occur in hospitals or health clinics appear to be unavoidable in health care [3], and this potential persists, although professional nurses carry out health care [4]. AEs can cause disability or organ damage and temporary or permanent disability. It is undoubtedly detrimental to the patient. Organizationally, these AEs have a broad impact on decreasing public confidence in the quality and system of nursing in hospitals, doctors, nurses, and all healthcare stakeholders [5]. Hospitals that do not meet health service standards are vulnerable to AEs. This fact is reinforced by increased allegations of medical errors in healthcare [6]. Therefore, every action must be safe based on the latest and valid scientific evidence and carried out according to the best practices to ensure patients avoid clinical risks. This requires a clinical risk management system that focuses on safety culture. Without a strategy that focuses and is oriented towards a safety culture, consciously or unconsciously, AEs will occur. Medical science and technology are developing rapidly in diagnostic and curative fields, which vary from simple to sophisticated. However, some

technologies have not been implemented by a health service culture oriented toward patient safety and service providers [7]. In various situations, patients often become victims even though, in reality there is no intentional element in it.

The previous study [8] showed a surprisingly high number of AEs. A retrospective cohort study (368 medical records related to AEs) in a hospital in South America (2018-2019) showed an incidence of AEs of 22.6% related to general care, 18.8% of drugs, 13.2% of nosocomial infections, and the rest was nursing systems, and diagnoses. They identified the severity of AEs, which was 16.2% in the severe, 20.7% in the moderate, and 63.2% in the mild categories. In many cases of AEs in Europe, health professionals, doctors, and nurses, including midwives on average, have witnessed, experienced, and were directly involved in AEs situations [9]. One of the health clinics in Sweden reported 22.4% of doctors had experienced AEs complaints from patients [10]. The United States Institute of Medicine (IOM) reports annually about 3.7% of AEs in each hospital, with a total mortality rate of nearly 100,000 [11]. In Indonesia, the AEs reporting system is not well recorded, where health workers often do not report AEs even though they witness and are involved in treating patients with AEs [12]. The last national report was in 2016, where 688 cases were identified, the rest could not be found or might be undisclosed to the public [13]. The results of a recent study at Wongsonegoro Hospital in Indonesia showed that the number of AEs was still high, around 19.3% in 2019 [11]. Psychologically, the situation AEs experienced provoked stress for health workers in handling patients' medical conditions, even psychological disorders (trauma) [14]. Concern also exists when nurses face the professional and occupational consequences of AEs [15]–[17] reputational, legal, and economic problems [18]–[20]. A high number of AEs (approximately 3-16%) are reported in various countries [21]. Their associated impacts have further attracted worldwide attention, and their handling has long been on the agenda of the World Health Organization (WHO) [22].

In developing countries, various risk factors have been identified that can lead to AEs; they include inadequate health infrastructure and facilities, limited medicines, minimal effort to prevent and control nosocomial infections, low competency, and poor officer performance due to insufficient remuneration, reward systems, lack of education, and training [23]. In addition, the failure of the credential system also affects individual and hospital performances [24]. On the one hand, for whatever reason, patients should not become victims of the weaknesses of the existing management system. Therefore, hospital patient safety needs to be managed more seriously. As such the clinical risk factors and AEs could be minimized. Since 2012, there have been improvements in service quality in Indonesia through hospital accreditation, shifting and orienting to a new paradigm, namely patient-focused services. Patient safety is the main indicator of the new accreditation assessment. The 2012 version of the Hospital Accreditation Standard refers to the Joint Commission International (JCI), which includes patient-focused service standards, hospital management standards, and international patient safety goals. Commitment is very much needed from all healthcare stakeholders to carry out quality planning, control, and management to realize improved patient safety. In this regard, the nurses as the technical service implementing element have the most direct contact with patients.

Nurses in hospitals are needed to carry out patient care for 24 hours/day. Nurses interact and carry out interpersonal relationships with patients and their families all the time to help patients meet their basic needs. Therefore, it is necessary to have a good quality of nursing care to meet patient expectations and satisfaction. Caring is the core of Nursing Science; it needs to be developed into a model containing elements of patient safety. In this report, the caring model was based on Swanson's Caring Theory. It is a process of maintaining belief, compassion (being with and knowing), and competence (doing for and enabling) to achieve patient well-being [25]. What is meant by patient safety, according to the International of Medicine (IOM), is "the prevention of harm to patients" with an emphasis on preventing errors, learning from mistakes that occur, and building a culture of safety for services, organizations, and patients [26]. Prevention of harm is free from preventable injuries caused by health services [27]. The concept of patient safety refers to the Joint Commission International. It emphasizes processes: correctly identifying patients, communicating effectively, high alert drug safety, ensuring the accuracy of patient procedures, reducing the risk of nosocomial infections, and reducing the risk of patient falls and injury [28].

In the current study, the concepts of patient safety and caring are combined into a model of nursing care called the caring safety model (CSM), as shown in Figure 1. This CSM is conducted in the nursing care system to reduce the AEs. Specifically, this study examined the impact of applying the patient safety model to CSM-based nursing care and its effect on the reduction of AEs for patients in hospitals. The implementation of CSM in hospital service concept aims to reduce adverse event.

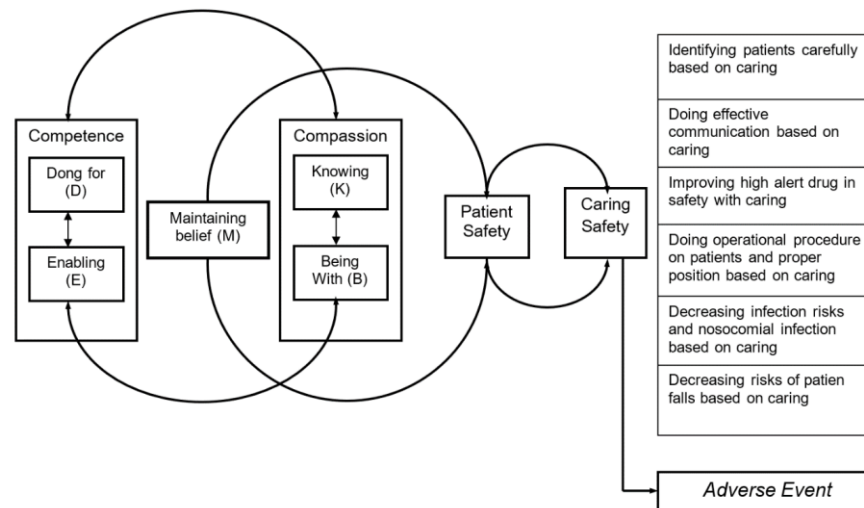


Figure 1. The CSM scheme influences the risk of adverse events

2. METHOD

Quasi-experiment research was conducted by adapting the pre-test and post-test control group design [29]. The treatment given is training and application of CSM for nurses. Before the training was carried out, initial observations were made of the treatment and control groups. Final observations were made after training and analysed their effect on the risk of AEs reduction in patients. The intervention in this study lasted for six months. Eighty-two patients were involved in this study [30]. The inclusion criteria of the participants are a minimum of two days inpatient, receiving surgery/invasive procedure, cooperative, intravenous fluid drips, and no mental disorder. This study involved sampling of two public hospitals in West Nusa Tenggara Province, Indonesia, consisting of patients in all intensive care units at the Regional General Hospital A in East Lombok Regency as the experimental group and the Regional General Hospital B in West Lombok Regency as the control group. The hospitals involved in this study have the same characteristics and procedures to minimize confounding variables. CSM was implemented in the field by following the CSM module and the standard operating procedure. AE was measured using an observation sheet instrument consisting of: a) medication error reporting and prevention, medication error (ME) with a value of 0=None; 1-9=there is a medication error ($r=0.74$ Cronbach alpha value=0.81); b) morse fall scale and humpty dumpty scale, with a score of ≥ 51 : high risk 25-50: low risk Score 0-24: no risk ($r=0.39$ Cronbach alpha value=0.94); c) VIP Score (visual infusion phlebitis score) with a value of 0=None; 1-5=there is phlebitis ($r=0.36$, Cronbach alpha value=0.84); d) norton scale ((decubitus ulcer rate) with a value of 0=None; 1=presence of decubitus (score<14) ($r=0.46$ Cronbach alpha value=0.94); e) Southampton scoring system measures surgical wound infection (ILO) using value 0=None; 1-5=there is infection ($r=0.50$ Cronbach alpha value=0.81). Descriptive analysis was used to describe AE patients in each group before and after intervention. Tests were conducted to analyse the difference between the initial and final observation AEs in hospitalized patients. The test used the paired t-test. Each test was carried out at a significance level of 0.05. Statistical data were analysed using IBM SPSS® version 23. This research was approved by the health research ethics committee of Qamarul Huda Badaruddin University No: 021/EC/FKES-UNIQHBA/YPPQH/X/2021.

3. RESULTS AND DISCUSSION

An overview of the variation in AEs data in patients observed in the experimental and control groups is presented in Table 1. Medication errors (ME) were divided into ME did not occur and ME occurred (at all error levels). Likewise, phlebitis data are all conditions ranging from the presence of early signs and symptoms of phlebitis to an advanced stage. Fall patient data are a collection of data about patients who have fallen and conditions that have the potential to pose a risk of falling patients, both low risk and high risk. Data on surgical site infection (SSI) were all conditions of SSI occurrence in patients. All conditions related to pressure sores that had a score of 14 were categorized as pressure sores, or there is a risk of pressure sores.

Observation is an assessment of AEs before and after treatments for each experimental group (implementation of the CSM-based nursing care) and the control group (standard care). The interpretation of the result data as shown in Table 1 shows that the experimental group observation variables obtained a p-value (<0.001) (showing there are differences in AEs before and after CSM-based nursing care). It means

that the application of CSM influences reducing AEs. In the control group, the observation variable in the control group (standard care) p-value was 0.080 (showing there was no difference in AEs before and after standard care treatment). It means that standard care did not affect decreasing the AEs. In the final observation variable of the experimental group and the control obtained a value of sig (0.001)<0.05 (showing there is a difference in AEs between the CSM-based nursing care and the standard care), meaning that the application of the CSM-based nursing care was better than the standard care on AEs reduction.

Table 1. Adverse event data observed in the experimental group (A) and control group (B)

Adverse events variable	Group			
	The experimental group (n=41)		Control group (n=41)	
	Pre-test	Post-test	Pre-test	Post-test
Medication errors (ME)				
There is no ME	15	29	15	15
There is ME	26	12	26	26
Phlebitis				
There is no phlebitis	17	31	22	22
There is phlebitis	24	10	19	19
Decubitus				
There is no decubitus	18	22	19	23
There is decubitus	23	19	22	18
Patient fall				
Nothing	8	24	9	9
Low risk	18	17	18	17
High risk	15	0	14	15
Surgical site infection (SSI)				
There is no SSI	23	27	26	25
There is SSI	18	14	25	26
p-value	<0.001*		0.080	

Note: *experimental vs control, p value=<0.001 (Wilcoxon test)

Professional training of nurses can play an essential role to monitor and minimize Adverse drug events (ADEs). One of the positive findings was that most nurses can (83.6%) report the ADEs. This is comparable to a previous study finding which found that nurses had an effective role in reporting ADEs [31]. The applied CSM was based on Swanson's caring theory [25]. Caring-based patient safety is a model in nursing care that contains variables or elements of knowing, being with, doing for, enabling, maintaining belief, and patient safety with indicators of correctly identifying patients, effective communication, increasing drug safety that needs to be watched out for, carrying out procedure surgery or other invasive measures appropriately, reducing the risk of nosocomial infection and reducing the risk of patient falls or accidents. In the context of nursing care, the encouragement of patients' active participation and motivation to be involved in the CSM is an important factor in the success of its implementation. A previous study [32] found that patient participation and motivation in planning care and rehabilitation using Swanson's caring theory is effective in overcoming vasculitis problems in elderly patients. In addition to patient factors, the success of nursing care is also determined by the knowledge of nurses about nursing care and the need for care using the CSM. Therapeutic relationships between nurses, patients, and or patients' families are effective in nursing care, for example in healing patients suffering from cellulitis [33]. Nursing care interventions, maintaining belief, doing for, knowing, and being with, were found to be effective as spiritual therapy in lung cancer patients who suffer from spiritual disorders [34]. This nursing care can also be used as physical and psychological therapies for mothers who deliver babies who died (babies were stillborn) to avoid AEs during and after treatments [35]. Caring is the integration of nursing knowledge to optimize health care and avoid adverse events in patients [36]. To make a change in the nursing system, caring is the way to go [37]. The practice of caring in the nursing system is developed based on experience and knowledge [38], and CSM provides opportunities for optimizing the health nursing system and avoiding adverse events in patients. Nurses need to implement a caring-based safety culture in all institutions, allowing teams to feel safe when reporting errors, because only through knowledge of adverse events will it be possible to understand the situation properly, exploring truly effective implementation methods for preventive measures [39].

4. CONCLUSION

The present study has examined the impact of applying the patient safety model to nursing care based on the CSM and its effect on reducing AEs in hospitals. Before the implementation of CSM, the nurses were provided with CSM training, and the results of the assessment showed that their knowledge was good

and very good. At the implementation stage, CSM-based nursing care influenced reducing AEs in patients, and it was found to be better at reducing AEs when compared to standard care. This finding is an opportunity for hospitals to optimally and sustainably cultivate a patient safety culture, especially in reducing AEs.




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