Assessing Nurses Knowledge Regarding Risk Management System

Hosnia Abd-Elhakam Abd Elkader[1], Samia Adam[2], Rabab Mahmoud Hassan[3],
[1]M.Sc Nursing Administration Department, [2,3] Professor of Nursing Administration,
Nursing Administration Department- Ain Shams University

Abstract

Background: Risk management is the organized effort to identify, assess, and reduce risk to patients, visitors, staff and organizational assets. Risk management in its best form may be to use it in a pro-active manner in identifying and managing the risks. In health care, risk management can mean the difference between life and death. **Aim:** The present study was aimed at designing a nursing risk management system. **Subjects:** nurses were included in the study and Jury group. **Setting:** the study was conducted at critical units in El-Demerdash Hospital. **Methods:** three tools were used to collect data for this study, knowledge assessment questionnaire, an observation checklist, and an opinnionire sheet. **Results**: there was unsatisfactory knowledge level among nurses regarding risk management before designing a new system. **Conclusion**: There was highly statistically significant improvement in nurses' knowledge level after designing a nursing risk management system. **Recommendation:** nursing risks must be covered widely and in-depth in nursing curriculum of nursing schools, maintain for continuous auditing of patients' incident reports to detect deficiencies and work to correct it

Key words: Risk management, Nurses knowledge.

Introduction

Risk is a probability/threat of damage, injury, liability loss that is caused by vulnerabilities and that may be avoided thorough redemptive action/s. Interaction of humans with health systems pose a threat to them mainly because of the; complex technology, intensely complex procedures, high demand on services, time pressure, high expectations from the service users, hierarchical by nature of training and responsibilities **(Kuhn, 2019).**

World Health Organization estimates show that in developed countries as many as 1 in 10 patients is harmed while receiving hospital care .According to AHRQ national health disparities report 2013, rate of harm associated with hospital stays in U.S hospitals is 25.1 per 100 admissions. Major contributors to these hospital-acquired conditions (HACs) were; adverse drug events, catheter associated urinary tract infections, patient falls, pressure ulcers, surgical site infection, central line associated infections, venous thrombo-embolism and ventilator associated pneumonia . According to institute for Healthcare improvement (IHI), medical errors have become the third leading cause of death in the United States each year, behind cancer and heart disease **(Hubbard, 2017)**.

According to **(Battles, 2018)** report, rate of harm associated with hospital stays in U.S hospitals is 25.1 per 100 admissions. Major contributors to these hospital-acquired conditions were; adverse drug events, catheter associated urinary tract infections, patient falls, pressure ulcers, surgical site infection, central line associated infections, venous thrombo-embolism and ventilator associated pneumonia. According to Institute for Healthcare improvement, medical errors have become the third leading cause of death in the United States each year, behind cancer and heart disease.

Risk Management is a structured process for minimizing potential liability to health care providers, avoiding harm to patients, stabilizing health care providers' insurance costs and protecting hospitals from ruinous financial losses. Broadly defined, risk management includes any activity, process, or policy to reduce liability. Exposure from both a patient safety and a financial perspective, it is vital that health centers. Conduct risk management activities aimed at preventing harm to patients and reducing medical malpractice claims **(Leviton, 2018).**

Risk management is the process by which vulnerabilities are identified and changes are made to minimize the consequences of adverse patient outcomes and liability. Related clinical initiatives to reduce risk and harm should be part of a larger organizational commitment to patient safety. Steps of the Risk Management Process the first step is to identify the risks that the business is exposed to in its operating environment, analyze the Risk, evaluate or Rank the Risk, treat the risk monitor and Review the Risk **(Karamali, 2017).**

The Purpose of Risk Management in Healthcare Organizations deployment of healthcare risk management has traditionally focused on the important role of patient safety and the reduction of medical errors that jeopardize an organization's ability to achieve its mission and protect against financial liability. Employees can reduce the likelihood and severity of potential project risks by identifying them early. If something does go wrong, there will already be an action plan in place to handle it **(Monica, 2019)**

This helps employees prepare for the unexpected and maximize project outcomes. Core principles in regards to risk management. to perform an actual risk assessment, the following target areas should be part of the overall risk management procedure (as defined by the International Standards Organization):The process should create value, an integral part of the organizational process, factor into the overall decision making process, explicitly address uncertainty, systematic and structured **(Pat williams,2018)**.

Based on the best available information, tailored to the project, take into account human factors, transparent and all-inclusive, dynamic and adaptable to change, continuously monitored and improved upon as the project moves forward **(Adibi, 2016).**

Manage risk: **Avoiding Risk**: The surest way to prevent the potential loss arising from a certain activity is to completely avoid it. For example, if I want to avoid the possibility of having to pay for a stranger's medical expenses due to an auto accident, I could stop driving a car. **Transferring Risk**: Another way to deal with risks is to transfer them to a third party. We can transfer risk in several ways, but the most practical, cost-effective, and common approach for high-severity risks with a low probability of occurrence is through insurance. **Retaining Risk**: Retention is the most suitable approach when the potential severity of a loss is low, regardless of how frequently it is expected to occur, or if the cost of insuring the risk would be higher over time than the actual potential loss incurred. **Reducing Risk:** unwilling to avoid an activity; take steps to reduce the probability and potential severity of loss associated with the activity. For example, installing burglar and fire alarms. When investing, we can reduce risk through proper due diligence, diversification, seeking the advice of qualified experts **(Groves, 2016).**

Risk managers assist hospital trainers and department managers with educating employees about risk, liability and risk management policies and procedures. A risk manager helps with the development of risk management training programs and speaks directly with staff about risk. He also educates contractors and outside healthcare practitioners attached to the hospital and discusses with them risk-related changes they need to make **(Mark de bruijne, 2019)**

Additionally, a risk manager reviews hospital and practitioner medical malpractice and liability insurance and makes insurance coverage recommendations. By definition, safety culture is part of organizational culture and is upheld by staff at all levels and in every department. Risk management is not just a clinical concern. Everyone contributes **(Battles, 2017)**.

Maintenance workers identify and remove trip hazards in and around the facility. Housekeeping plays a vital role in infection control. Food service monitors food safety as well as patients' individual dietary restrictions. Registration, Health Information Management and IT staff all ensure that patients are identified and logged into systems correctly so they receive the appropriate treatment. Administration provides access to ongoing training and promotes an open-door policy that

encourages employees to report risks and incidents **(Attar, 2017).**

Although patient safety and medical liability are paramount, hospital risk management in today's healthcare climate encompasses much more, from data security and regulatory compliance to environmental hazards, facility safeguards and behavior in the workplace. Only by creating a facility-wide culture of safety can hospitals proactively identify and address risks that arise in these and other areas. Especially in small and rural hospitals, where risk managers generally wear several hats, buy-in at every level and in every department is critical. Nurses have a pivotal role to play in clinical risk management and promoting patient safety in health care domains. Accordingly, nurses need to be prepared educationally to manage clinical risk

effectively when delivering patient care. Based on their education, experience, and competencies, nurses share the responsibility to participate in the evaluation of risks and in the implementation of appropriate strategies for error prevention during the providing care **(Briner, 2017).**

Aims of the study

Designing a nursing risk management system

Subjects and Methods

Research design:

Descriptive used to in carrying out this study.

The study setting:

The study was conducted at El-Demerdash University Hospital. It is affiliated to Ain Shams University specialized surgical and postoperative care.

Subjects:

Subjects included in the study were 61 nurses. They are working in the critical units.

Tool of data collection

1- Knowledge questionnaire sheet: this tool was aimed to assessing nurses' knowledge related to risk management system. It was developed based on **(Sullivan &Decker, 2005; Abd El-Kader, 2013; Perry, et al., 2014).** It includes two parts:

***a*-The first Part:** Contains personal & job characteristic data of samples' subjects as; age, gender, educational qualification, years of experience, and previous attending a training program. It was developed by the researcher.

***b*- The second Part**: It consists of (40) questions multiple-choice questions and (10) true &false that covered risk management system. The questions categorized into three dimensions as demonstrated in the following: Risk overview (10), risks in nursing practice (24), hospital & patient safety (16).

Scoring system

Nurses' responses were scored "one" for the correct answer and "zero" for the incorrect answer. The total score for all questions was (50). The scores of the items were summed up and the total was divided by the number of items, giving a mean score for this part. Mean score was expressed as mean percentage. Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.

II- Operational design

1-Preparatory phase

This stage started from April 2018 till April 2019. The researcher reviewed national, international, current and past related literature, and using text books, articles, journals, and theses concerning the topic of the study. Based on this review, the researcher began to develop the study tools and be acquainted with risk many entent.

Tools validity:

After the construction of data collection tools, two types of validity tests were used in this stage, face validity and content validity. The validity of the tools was judged by nine jury members having experience in nursing

administration and medical surgical nursing from Cairo University and Ain shams University. Based on jury recommendations necessary modifications, corrections, addition and/or omission of some items were done by the researcher.

Tools reliability:

The reliability test was done to assure the consistency, determine how strongly the attributes were related to each other and to the composite score. The reliability test was used in this stage for two tools for data collection using Cronbach's Alpha test. It was 0.86 which indicates accepted internal consistency of the tools.

2- Pilot study

Upon developing the data collection tools, a pilot study was started in May 2019, to examine the applicability, clarity of language, test the feasibility and suitability of the designated tools, estimate the time needed to fill in the study tools. Six nurses enrolled in different hospital units they represent 10 % of study subjects. They were included in the main total study sample. Data obtained from the pilot study was analyzed, and no modifications were done. The time consumed in answering the Knowledge questionnaire sheet ranged from 60-70 minutes.

Field work:

The actual field work started at the beginning of July2019, and was completed by the end of October 2020. The researcher met the hospital director and nursing director to explain the aim of the study to gain their approval on data collection. The current study carried out on five phase: assessment phase, system planning phase, system validation phase, orientation staff phase, post orientation phase.

Phase I (Assessment): The researcher collected data by himself through meeting the subject and explaining the purpose of the study to them in the study setting. Knowledge questionnaire sheet were distributed and completed by nurses or by asking them. The researcher was present all the time during fulfilling the forms to answer any questions from 12 Pm: 1 pm during morning and afternoon shifts from 7pm: 8pm in the evening. The time needed by nurses to complete the Knowledge questionnaire sheet was ranged between 50-60 minute. The researcher preserving the confidentiality of the information. This stage took about two weeks.

Ethical considerations

The protocol of the study was approved by the Research and Ethics committee at the Faculty of Nursing, Ain-shams University. A verbal informed consent was obtained from each nurse before collecting any data after explaining to her/him the study aim and procedures. Participants were informed about their right to refuse participation or to withdraw from the study at any time without giving any reason. Data were considered confidential and used only for research purpose. No harmful maneuvers were performed or used, and no foreseen hazards were anticipated from conducting the study on participants.

III- Administrative design

An official letter was issued from the Faculty of Nursing, Ain-Shams University to obtain permissions from the Director of El-Demerdash Hospital to conduct the study. Then, the researcher met with the medical and nursing directors to explain the aim and procedures of the study in order to gain their cooperation.

IV- Statistical design

Data entry was done using SPSS v25 computer software package. Quality control was done at the stages of the coding and data entry. Frequency distribution was conducted as descriptive statistics for all study variables. chi square test was used to assess the difference in the frequency distribution of all study variables between pretest and posttest, paired t test was used to assess the difference in mean of both total knowledge and total practice between pretest and posttest. Pearsons' correlation was used to assess the relationship between the study variables. One-way ANOVA and independent t-test were used to assess the relation between the study variables and participants' demographic data.

Results:

Table (1): Shows that **near half** (47.5%) of them were 25-35 years old, **near two thirds** (63.9%) of them were females, **near two thirds** (63.9%) of them had nursing diploma, more **than one third** (44.3%) of them had 10-20 years experience, only 13.1% of them had attended risk management training program.

Table (2): Regarding definition of risk (36.1%) of them had satisfactory knowledge in pre system, increased to be (100%) in post system. Regarding risk committee role none of them had satisfactory knowledge in pre system, increased to be (91.8%) in post system.

Table (3): Regarding nursing documentation dimension: about one fifth (19.7%) of the studied nurses had satisfactory knowledge about the item (An error occurs in writing medical record) in pre system, increased to be (95.0%) in post system. Regarding patient falling dimension: only 8.2% of the studied nurses had satisfactory knowledge about the item (Definition of patient fall) in pre system, increased to be (98.3%) in post system.

Regarding bed sore dimension: about one fifth (19.7%) of the studied nurses had satisfactory knowledge about the item (Definition of bed sore) in pre system, increased to be (93.4%) in post system.

Regarding medication error dimension: more than one quarter (27.9%) of the studied nurses had satisfactory knowledge about the item (medication intake rights) in pre system, increased to be (98.4%) in post system.

Table (4): No one of the studied nurses had satisfactory knowledge about item "Most types of Hospital infection" in pre system, increased to be (91.8%) in both items in the post system.

Table (5): Shows that there were insignificant statistical differences in nurses' knowledge according to their demographic characteristics in pretest and posttest

Table (1): Personal & job characteristics of the studied nurses (n=61)

Characteristics of the studied staff nurses		No.	%
Age	Less than 25 years	4	6.6
	25-35 years	29	47.5
	More than 35 years	28	45.9
Gender	Male	22	36.1
	Female	39	63.9
Qualifications nursing	Diploma	39	63.9
	High average Diploma	10	16.4
	Bachelor degree	12	19.7
Experience in nursing	Less than 10 years	10	16.4
	10-20 years	27	44.3
	More than 20 years	24	39.3
Previous attending of training program	Risk management	8	13.1
	Healthcare quality	13	21.3
	Infection control	39	63.9
	Patient safety	1	1.6

Table (2): Nurses' knowledge regarding risk overview Dimension (n=61)

Risk overview Dimension	Satisfactory knowledge	
	No	%
Definition of risk	22	36.1%
Risk management steps	14	23%
Risk manager duties & responsibilities	1	1.6%
Risk committee role	0	0%
Risk assessment priorities	4	6.6%

Table (3): Nurses' knowledge regarding risks in nursing practice Dimension (n=61)

Risks in nursing practice Dimension	Satisfactory knowledge	
	No	%
Nursing documentation		
Nursing documentation specifications	13	21.3%
Writing in medical record	12	19.7 %
Patient falling		
Definition of patient fall	5	8.2%
Patient fall report	14	23%
Bed sore		
Definition of bed sore	12	19.7%
bed sore sites	21	34.4%
Medication error		
Medication intake rights	17	27.9%
before giving medication	7	11.5%
Symptoms of drug allergy	7	11.5%

Table (4): Nurses' knowledge regarding hospital &patient safety Dimension (n=61)

Hospital &patient safety Dimension	Satisfactory knowledge	
	No	%
Most types of Hospital infection	0	0 %
Dual Patient identification during blood transfusion	13	21.3%
Received the verbal order	7	11.5%
Patient restriction	20	32.8 %
High-alert medications	14	23%
RRT code activated	0	0 %

Table (5): Relationship between personal data and knowledge regarding risk management pre system

Variables	Categories	Pre system		pre
		Mean	SD	P1
Age	< 25 years	**74.75**	**4.64**	.889
	25-35 years	**73.72**	**5.10**	
	> 35 years	**74.46**	**7.50**	
Gender	Male	**73.22**	**6.05**	.98
	Female	**74.64**	**6.33**	
Qualifications in Nursing	Diploma	**73.48**	**5.39**	.365
	High average diploma	**73.90**	**8.82**	
	BSc	**76.41**	**6.30**	
Experience	**< 10 years**	**74.60**	**5.87**	.753
	10- 20 years	**74.62**	**5.52**	
	> 20 years	**73.37**	**7.21**	
Previous attending of training program	Risk management	**75.62**	**5.92**	.434
	Healthcare quality	**74.69**	**8.08**	
	Infection control	**73.87**	**5.58**	
	Patient safety	**65.00**	**.**	

***p value is significant at ≤0.05, highly significant at ≤0.001**

Discussion:

Risk management in healthcare is a structured process to reduce potential liability of healthcare providers, avoid harm to patients, stabilize insurance costs for healthcare providers and protect hospitals from devastating financial losses. Risk management involves a proactive multidisciplinary approach consisting of identifying risk and preventing loss; Loss reduction and risk financing **(Adibi, 2016).**

The present study aimed at assessing nurses' knowledge regarding nursing risk

management system, at El-Demerdash Hospital. Results of this study revealed that; there is a highly statistically significant improvement in nurses' risk management knowledge.

The present study displayed that there is less than half of the sample had satisfactory knowledge regarding to " risk definition",

In agreement with this, **Mostafa (2009)** studies enhancing nurses' knowledge and awareness about risk management: study overview. Found that there was a highly statistically significant difference between pre and post-developing system result among study subjects regarding their knowledge and awareness about the risk management at the hospital

None of the studies nurse had satisfactory knowledge regarding to **"Risk committee role".** This result may be attributed to the fact that the field of risks is recent for nurses.

This study at the same line with study of **Corinna, (2019)**. who indicated that responsibilities of a risk committee include the following: oversee the risk management infrastructure, address risk and strategy simultaneously, including consideration of risk appetite, monitor risks, oversee risk exposures, determine the level of operational risk, advise the board on risk strategy and approve management risk committee charters .

The present study findings one fifth of studied nurses had satisfactory knowledge regarding to nursing documentation**.** This result is due to the nurses' lack of awareness of the importance, skills and specifications of writing in the medical file.

In agreement with this, **Abd El-Kader (2013)** studies the factors affecting nurses' performance regarding documentation clarified that all nurses had unsatisfactory knowledge regarding documentation accuracy related to patient's information. In addition to **Sapyta & Eiger (2017)** reported that nurses' knowledge documentation accuracy improved from the pre to post phase.

More than one quarter of the studied nurses had satisfactory knowledge about the item (medication intake rights) in pre system. This result may be due to the Work overload and large number of the nursing tasks so that measuring a patient's vital signs doesn't take before the medication giving in the units

In disagreement with this, **George, (2018)** emphasized that the measuring and recording a patient's vital signs accurately is important as this gives an indication of the patient's physiological state at regular intervals during a patient's stay. Patients undergoing surgery will often have their vital signs recorded on admission to hospital, before the medication giving and before any procedure.

Regarding to **"hospital infection",** the finding indicated that, no one of the studied nurses had satisfactory knowledge about **"** types of Hospital infection**"** in pre system. While there are highly statistically significant improvements in nurses' knowledge post system. This result may be attributed to the system that emphasized the prevention of nosocomial infection as one of the patient safety goals.

In disagreement with the results of present study, **Centers for Disease Control and Prevention (2018)** clarified that a urinary tract infection is the most common type of healthcare-associated infection reported to the National Healthcare Safety Network. Between 15-25% of hospitalized patients receive urinary catheters during their hospital stay. The most important risk factor for developing a catheter-associated infection is prolonged use of the urinary catheter. Therefore, catheters should only be used for appropriate indications and should be removed as soon as they are no longer needed.

Conclusion:

There was highly statistically significant improvement in nurse's knowledge level after designing a nursing risk management system.

Recommendations:

- Nursing risks must be covered widely and in-depth in nursing curriculum of nursing schools.
- Maintain for continuous auditing of patients' incident reports to detect deficiencies and work to correct it

References

Abd El-kader, H.A. (2013): Factors affecting nurses' performance regarding documentation in surgical units, unpublished Master Thesis, Faculty of Nursing Ain Shams University, Egypt.

Abd-Elsattar, R. Saker, (2018): Training as a means for improving staff nurses

documentation skills, published Doctorate, Faculty of Nursing, Ain Shams University; 2018

Adibi H, Khalesi N, Ravaghi H, Jafari M, JeddianA (2016): Development of an effective risk management system in a teaching hospital. Journal of Diabetes and Metabolic Disorders; 11(1):1–7.

Attar Jannesar N, Tofighi S, Hafezimoghadam P, Maleki M. (2017): Risk Assessment of Processes of RasouleAkram Emergency Department by the Failure Mode and Effects Analysis (FMEA) Methodology. Hakim Research Journal; 13(3):165–176.

Battles, J.B., & Lilford, R.J. (2015): Organizing patient safety research to identify risks and hazards. Quality and Safety in Health Care, 12, ii2-ii7.

Battles, J.B., & Lilford, R.J. (2017): Organizing patient safety research to identify risks and hazards. Quality and Safety in Health Care, 12, ii2-ii7.

Centers for Disease Control and Prevention (2018): Guideline for Prevention of Catheter-associated Urinary Tract Infections 2009

Corinna Cagliano (2019): A systemic methodology for risk management in healthcare sector: risk management committee, Safety Science, Journal of

George Castleding (2018): The importance of measuring and recording vital signs correctly, British Journal of Nursing Vol. 15, No. 5Professional Misconduct

Groves P.S, Meisenbach R.J, Scott-Cawie (2016): Keeping patients safe in healthcare organizations: a structuration theory of safety culture. Journal of Advanced Nursing; 67(8):1846–1855.

Hubbard Douglas (2015): The Failure of Risk Management: Why It's Broken and How to Fix It. John Wiley & Sons. p. 46.

Jamileh Farokhzadian, Nahid Dehghan Nayeri, and Fariba Borhani (2015): Assessment of Clinical Risk Management System in Hospitals: An Approach for Quality Improvement

Karamali M, Zaboli R,, Salem M, Rafati H (2017): Risk management assessment in selected wards of hospitals of Tehran. Iranian Journal of Military Medicine; 12(4):197–202.

Leviton J, Valentine J. (2018): How risk management and patient safety intersect: Strategies to help make it happen.

Mark de bruijne, Bauke tenhuisen (2019): Roles of Risk Managers: Understanding How Risk Managers Engage in Regulation. Published online by Cambridge University Press: 24 July 2019.

Monica Foerster (2019): Eight Steps to Establish a Firm Risk Management Program, July 21, 2019 |

Mostafa M.G. (2009): Enhancing nurses' knowledge and awareness about risk management: study overview; unpublished Master; Faculty of Nursing, Helwan University; Egypt.2013.

Pat Williams L. (2018): Monitoring and Reviewing Risks In Your Organization; Monitoring and reviewing risks.

Perry, A., Potter, P., &Ostendorf, W., (2014): Clinical nursing skills and techniques, patient's record, 8th ed., Mosby, Inc.: Elsevier, Inc.: Canada. pp. 50-53.

Rowland HS, &Rowland BL (2000): Nursing administration handbook, 4th ed. Gettysburg, Maryland, Aspen, 9-41.

Sapyta, Y., & Eiger, C. (2017): Improving pediatric nurses' knowledge, accuracy, and confidence through code documentation simulation, Featured Article, Elsevier Inc. 13, Issue 6, PP. 278-283 Accessed on: 1/1/2018 4.30 pm. Available at: http://08101hxy9. 1106.y.https.www.sciencedirect.com.mplbci.ekb.eg/science/article/pii/S1876139916300640

Selim, F.M: (2018): Implementation of PDCA process of quality and measuring its effect on nurses' practice of patient safety goals, faculty of Nursing, Ain Shams University, 2018

Sullivan EJ, & Decker P. (2005): Effective management in nursing, 2nd Ed. New York, Addison–Weseley, 499–512