Effectiveness of Competency Training Program on Modified Early Warning System (MEWS) upon the Knowledge of Nurses in Selected Hospitals, Chennai

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Abstract

Background: Adverse events results in unintended harm to the patients including permanent disability and death. MEWS was introduced to identify and document the deteriorating patients in hospital settings. Adequate training and education of nurses will enhance early recognition and response in preventing adverse events. **Objective:** The objective of the study was to assess the effectiveness of competency training program on MEWS among nurses. **Methodology:** A Quasi experimental study was conducted among nurses who were working in inpatient units of selected hospitals, Chennai. 140 nurses were selected as participants out of which (n=70) is constituted to experimental group and (n=70) was constituted to control group. Pre-test knowledge was assessed in both groups. Competency training program on MEWS was given to experimental group of nurses and post test was assessed after one month. **Results:** The mean post-test knowledge scores was significantly higher in experimental group (M=18.2) to that of control group (M=10.6) which shows the effectiveness of competency training program on MEWS with (t=22.29, p<0.001). **Conclusion:** The present study reveals that Competency training program on MEWS had a significant increase in the knowledge of nurses in the experimental group.

Keywords: Adverse event, health, Nurse.

Introduction

An adverse event is defined as an event that results in unintended harm to the patient which can be minimised by constant attention and monitoring. An adverse event occurred in 16.6% of admission, resulting in permanent disability in 13.7% of patients and death in 4.9%. 51% of events were considered to be preventable. [1]

Deteriorating patients are not assessed or managed in a timely manner due to the failure of the nursing and medical staff in early recognition of warning signs. The early recognition of clinical deterioration followed by prompt and effective action can minimize the occurrence of adverse events.[2]

MEWS was introduced to identify and document the clinical deterioration and it is found to be an effective tool in identifying the warning signs of deterioration in hospital settings.

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The introduction of early warning scoring systems in hospitals has seen vast improvements in vital sign documentation along with reductions in unplanned ICU admissions and hospital deaths.[3]

Knowledge on MEWS makes the health care professionals assertive in taking care of deteriorating patients and in turn can reduce cost, length of stay and mortality, which can be beneficiary to them. Nurses are the primary responders in identifying in- hospital adverse events. Adequate training and education of nurses on MEWS will further enhance the early recognition and prompt response in preventing adverse events.

Purpose
The purpose of the study is to assess the effectiveness of competency training program on MEWS among nurses.

Hypothesis
Ho1: There will be no significant difference in the level of knowledge regarding MEWS in the control and experimental group of Nurses before and after

competency training program on Modified Early Warning System.

Ho2: There will be no significant association between selected demographic variables and post test level of knowledge on Modified Early Warning System among control and experimental group of Nurses.

Materials and methods

A quasi experimental study was done among nurses to assess the effectiveness of competency training program on MEWS. Nurses who were working in inpatient units were selected using purposive sampling. 140 nurses were selected as the participants out of which (n=70) was allotted to experimental group and (n=70) was constituted to control group.

Study instruments constitutes of

Demographic variable Proforma of staff nurses includes age, sex, education, years of experience and area of working

Structured Questionnaire on Modified Early Warning System includes 25 multiple choice questions relating to hemodynamic, cardiovascular, respiratory, neurologic and MEWS observations.

Pre-test knowledge was assessed in both experimental and control group of nurses. Competency training program on MEWS was administered to the experimental group of nurses. Competency training program includes basic emergencies in the hospital, the ways of monitoring warning signs and observations done using MEWS chart.

Post-test was conducted after one month of competency training program. Data was computed using inferential and descriptive statistics. Level of knowledge and effectiveness of competency training program was assessed using 't' test. Association between the demographic variables and post-test knowledge was assessed using chi square.

Results

The findings of the study was computed in two different headings

➢ Frequency and Percentage Distribution of Background Characteristics of Control and Experimental Group of Nurses
➢ Comparison of Mean and Standard deviation of Pre-test and Post-test Knowledge scores regarding MEWS among Control and Experimental group of Nurses
➢ Association between Selected Demographic Variables and Post-test Knowledge regarding MEWS in Control and Experimental Group of Nurses

Table 1: Frequency and Percentage distribution of Background Characteristics of Nurses

Background Characteristics	Experimental group (n=70)		Control group (n=70)		χ^2
	f	%	F	%	p value
Age in years					
20-25	57	81.43	60	85.71	0.462
26-30	8	11.43	9	12.86	p>0.05
>30	5	7.14	1	1.43	NS
Years of experience					
≤ 1 year	22	31.43	21	30	0.33
>1 year	48	68.57	49	70	p >0.05
					NS
Area of working					
Medical ward	24	34.28	22	31.43	0.12
Surgical ward	16	22.86	16	22.86	p >0.05
Cardiac ward	16	22.86	17	24.28	NS
Neuro ward	14	20	15	26.43	

The data from above table reveals that majority of nurses in both control and experimental group were aged less than 25 years, (85.71%, 81.43%), had an experience of more than one year (70%, 68.57%) and 34.28%, 31.43% were working in Medical ward.

Table 2: Comparison of Mean and Standard deviation of Pre-test and Post-test Knowledge scores regarding MEWS among Control and Experimental group of Nurses

Knowledge Scores (0-25)	Control Group (n=70)		Experimental Group (n=70)		't' Value	'p' value
	Mean	SD	Mean	SD		
Pre-test	10.02	3.11	11.4	2.15	3.05	p=0.002
Post-test	10.6	1.9	18.2	2.14	22.29***	p=0.0001

The data from above table shows that the mean knowledge scores in experimental group (M=18.2) was higher than the control group (M=10.6) of nurses which shows the effectiveness of competency training program with t value of 22.29 at p<0.001.

Table 3: Association between Selected Demographic Variables and Post-test Level of Knowledge of MEWS among Control and Experimental group of Nurses

Variables	Control Group (n=70)			Experimental Group (n=70)		
	Upto Mean	Above Mean	χ^2 p value	Upto Mean	Above Mean	χ^2 p value
Years of Experience Upto 1 year	10	11	0.06 (df=1) p=0.79	3	9	2.38 (df=1) # p=0.11
Above 1 year	25	24		15	33	
Area of working Medical & Surgical ward	17	23	2.27 (df=1) p=0.13	18	20	0.69 (df=1) p=0.40
Cardiac & Neuro ward	18	12		12	20	

The above table reveals that there is no significant association between the selected demographic variables and post-test knowledge of MEWS.

Discussion

The aim of the study was to assess the effectiveness of competency training program on modified early warning system upon knowledge of nurses. MEWS helps in improving monitoring of deteriorating patients thereby preventing adverse events.

The study reveals that majority of nurses in both control and experimental group were aged less than 25 years, (85.71%, 81.43%), were females (94%, 93.29%) and were qualified with B. Sc (N) (90%, 85.71%). Most of them had more than one year of experience (70%, 68.57%) and 34.28%, 31.43% were working in Medical ward.

It is evident from the above findings that the nurses who were directly involved in patient care are young novice nurses. Hence adequate training on Modified Early Warning System can help nurses in early identification of deteriorating patients. Similar findings were reported in the study on identifying the preparedness for graduate nurses in identifying deterioration and responding to it[4]. It was done through an integrative review and the factors which provoke them from taking actions include lack of experience, workload, and lack of resources. This can be improved through proper training and simulated teaching[5-6].

In this study majority of the nurses in control group (95.71%) and experimental group (81.43%) had inadequate knowledge during the pre-test whereas after the implementation of competency training program majority of nurses in the Experimental group (65.71%) gained adequate knowledge. Mean and standard deviation of pre-test knowledge scores of the Control group (M = 10.02 & SD = 3.11) and the experimental group (M=11.4 & SD= 2.15) was similar. Whereas, after the competency training program on MEWS the experimental group scored higher (M = 18.2 & SD = 2.14) compared to the control group (M =10.6 & SD = 1.9). This shows the effectiveness of the competency training program on MEWS ('t' value of 22.29) at p<0.001.

The study findings revealed that there is no significant association between selected demographic variables and post-test knowledge of MEWS among control and experimental group of nurses

Conclusion

With the rising complexities of hospitalized patients, it is reported that upto 17% of all hospitalized patients will experience an adverse events during their hospital stay. For the patients with unexpected deterioration, delayed intervention is associated with increased morbidity and mortality. It is important to recognize the warning signs and to take an appropriate and timely response. Nurses are the primary responders in identifying deteriorating patients. They should develop clinical skill in identifying and clinically judging the warning signs of the patients. This study is based on

Modified Early Warning System to identify deteriorating patients among Nurses.

The findings of the study revealed that there is an increase in knowledge of using MEWS after competency training programme. Thus the nurses had gained adequate knowledge and practice of early identification of deteriorating patients using MEWS chart.

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