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Impact of Educational Interventions on Disaster Preparedness and Management among Nurses

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Abstract: *The basic aim of this study is to determine the effectiveness of the Educational interventional program regarding various roles of the nurses on disaster preparedness and management by comparing the pre-test and post test score.Quantitative study approach has been adopted and the research design adopted for present study was quasi experimental (one group pre-test post-test design) and the samples were selected by the using purposive sampling technique. 400 samples were selected from Healthcare Facility of hospitals, nursing colleges and schools. A questionnaire has been prepared to elicit information regarding the demographic variables of the participants, knowledge of variousroles of the nurses on disaster management and prevention. The researcher prepared a structured Educational interventional programme, used variety of teaching methods like Lecture, Discussion, Videos, power point presentation and Educational Booklet were distributed to the participants and to the Institution. The demographic profile of the staff revealed that majority between 307(76.8%) belonged to 21 to 30yrs of age, were 188(47.0%) were BSc Nurses, 188(47.0%) and 319(79.8%), working as staff nurses or as nursing Tutor and majority of the subject 284(71%) were married.*

Findings: *In regard to the overall knowledge and the role of the nurses in disaster prevention and management pre - test mean score, standard deviation were85.16 &(9.414)whereas the post test scores were(71.35) ,(8.415)and percentage mean effectiveness 13.80% paired 't' test value was 23.40using different method of teaching and the application of the guidance booklet with significant p value level (0.001). From the study results it has been inferred statistically that there are significant differences in all items of disaster management among study subjects. There is a significant association of nurse's knowledge regarding adverse effect of disaster victims 0.014 with education is less than table value significant at p< 0.05 and there is a significant association between nurse's knowledge and adverse effect on disaster victims 0.039. It is evident that nurses with 11-20 years of experience mean score (41.61) was higher comparing to the other age categories. About the prevention and mitigation measures of disaster with year of experience at 0.011 is less than table value significant at P<0.05. The data reveals there is significant association of knowledge of nurses regarding adverse effect of disaster victims with occupation less at 0.001 P<0.01.*

Keywords: *Educational Interventions, Disaster aspects, Preparedness and Management, Effectiveness*

1. INTRODUCTION

Disasters have been defined as ecologic troubles or severe and high-magnitude emergencies resulting in deaths, injuries, illnesses, and profound damages that cannot be successfully managed using ordinary procedures or resources and require external support.Nurses have been a part of disaster preparedness and response as long as nurses have existed.. Nurses are needed for prevention, surveillance, and response of every type. Nurses are routinely assigned to assist in triage and screening for health problems, administration of first aid and psychological support, implementation of infection control procedures, and monitoring so that the congregate living situation does not lead to an outbreak of disease. They have always been key players during epidemic situations by performing contact tracing and conducting case investigations, engaging in surveillance and reporting, collecting specimens, administering immunizations, and educating the community. Hence, nurses are a key staff member behind the rapid establishment of refugee camps for those who need shelter.[1]With the increase frequency of disaster happenings globally, the need for education & training preparation is to be emphasized. Nurses should be equipped for all competencies for disaster prevention, preparedness, and response& recovery phases. The educational activities and training attended by the nurses in preparation for their performance of functions during disaster situations.

2. BACKGROUND

Disasters are a part of everyday life and they are increasing. Nowhere are they increasing faster and with greater ferocity than in Asia Pacific, the world's most disaster-prone regions. In the last two decades, 38% of all the global disasters have occurred in the countries of the South-East Asia Region. Almost two thirds (61%) of the deaths due to disasters globally have been reported from the SEA region during 1998-2008 (Knight, 2008)[2]. From 1998 to 2008, nearly 1 million people lost their lives to disasters, 3.3 million were injured and 2 billion were affected. Health systems, including human resources and physical infrastructures, though essential for population survival are very vulnerable to major emergencies and disasters (WHO/ICN, 2009)[3].Hazards in India are spread throughout the country. In one part of the country there could be heat wave, while at the same time in another part there could be cold spell. In one part of the country there may be floods, while another part there may be drought. Apart from natural hazards, India faces intended and unintended terrorist attacks and technological hazards, which have been increasing recently. There are 174 terrorist, insurgent, and extremist groups in India; many of the unknown groups are operating across the country, according to the South Asia Terrorism portal.[4]

A quasi experimental one group pretest posttest research design was conducted to assess the effectiveness of information booklet on knowledge of people regarding Disaster Preparedness. Sample for the current study was selected according to non-probability purposive sampling technique consists of men and women between 21 to 50 years residing in diverse areas. Semi-structure questionnaire was used to assess the effectiveness of information booklet on knowledge about disaster preparedness of study samples. Descriptive and inferential statistics had been used for data analysis. The research was concluded with the information booklet improved knowledge of people regarding disaster preparedness.[5]

A survey on knowledge and awareness concerning chemical and biological terrorism was used to assess the knowledge base of health care providers at an urban medical center in preparation for developing a workshop on domestic terrorism preparedness. A total of 291 nurses, physicians, nursing students, and medical students completed the knowledge and awareness survey. The knowledge scores of the respondents were low, with less than one fourth of the knowledge questions answered correctly. These findings indicate a need for nurses in continuing education.[6]

The great challenges nurses face in responding to natural, manmade, and technological disasters in comparison with the little times in teaching or learning this content during the basic nursing education program makes this study a timely one and relevant to the needs of nursing student as it provides further information that would somehow enhance knowledge, skills and attitude in relation to their future nursing career.[7]Disaster management can be defined as the arrangements made to minimize the potential adverse effects of a disaster (Manitoba Health, 2000) which aims to create a safe environment and about the necessary healthcare services for victims throughout the disastrous event (Qureshi & Gebbie, 2007) [8,9].To develop a plan for natural disaster management, it needs the support of many kinds of professionals including nursing professional before math, during math, and aftermath (Stanley, 2005) [10].Disaster Nursing can be defined as the adaptation of professional nursing skills in recognizing and meeting the nursing physical and emotional needs resulting from a disaster. The overall goal of disaster nursing is to achieve the best possible level of health for the people and the community involved in the disaster. Kerala's climate is mainly wet and maritime tropical, heavily influenced by the seasonal heavy rains brought by the monsoon. The State of Kerala is prone to a host of natural hazards such as coastal erosion, flood, drought, lightening, landslide and earthquake. All except 1 of the 14 districts in the state are prone to landslides. Wayanad and Kozhikode districts are prone to deep seated landslides while Idukki and Kottayam are prone to shallow landslides.[11,12] Disaster preparedness is to ensure that appropriate systems, procedure, and resources are in place to provide prompt effective assistance to disaster victims, thus facilitating relief measures and rehabilitation of services. Recognizing the urgent need to accelerate efforts to build the capacities of nurses in the midst of continued health threats and disasters, the ICN and WHO published "Framework of Disaster Nursing Competencies". More programs are needed to prepare and sustain an international workforce of nurses to undertake education and leadership roles.

The researcher was prompted to conduct a study among nurses regarding the **'Educational intervention programme of Disaster Preparedness and Management" c**ompetencies as applied in disaster situations.

3. MATERIALS AND METHODS

Objectives of the Study

- To assess the demographic characteristics of nursing personnel
- To determine the effectiveness of the Educational interventional program regarding various role of the nurses on disaster preparedness and management by comparing the pre-test and post test score
- To find out the association between the knowledge of the nursing personnelregarding various role of the nurses on disaster preparedness, management with selected baseline variable.

4. HYPOTHESES

H_1: There will be a significant difference in pre-test and post test Knowledge score of the nursing personnel regarding various roles of the nurses on preparedness and management of disaster situation following the educational Interventional programme

H_2: There will be a significant association between the pre-test score of the nursing personnel regarding the types of disaster and the various roles of the nurses on preparedness, and management with the selected demographic variables

5. ASSUMPTIONS

- The tools and the educational interventional strategy prepared by the investigator will be adequate to measure the knowledge, attitude of the nursing personnel towards the disaster preparedness and management
- M.Sc/B.Sc Nursing staff will have better knowledge regarding disaster management and preparedness than the General Nurse Midwifery(GNM) staff
- The nursing personnel knowledge on disaster preparedness and management may influence them to take preventive measures in tackling the hazards of disaster, and will be able to vender care to the victims in different phases of the disaster.

6. STUDY SETTING

This study was conducted in selected district of Kerala in the health care setting of hospitals, nursing colleges and schools, at the high risk disaster zones. The data for this study have been obtained from the Nurses working at the hospitals, nursing colleges and schools in selected districts at the high risk zones of Kerala. A total of 400 respondents were chosen who fulfilled the inclusion and exclusion criteria nurses working in hospital or clinic, nursing colleges and schools. Purposive non Random sampling was utilized in order to get the sample respondents from different areas of specialization. In order to elicit information from the respondents pertaining to Socio economic particulars, the training programmes attended and disaster preparedness and management, a structured Schedule has been constructed and pre-tested in the study area. Educational intervention programmes were conducted as lectures, discussions using various audio-visual techniques. The most commonly used inferential statistical tests are Z- test, t- test, ANOVA, chi- square tests et**c.** Chi- square test was used to find out the association between pre-test knowledge with selected demographic variables.

7. GENERAL CHARACTERISTICS OF THE RESPONDENTS

Demographic Profile: The present study results revealed among 400 subjects the educational the educational qualification of respondent's majority of 188(47.0%) were BSc Nurses, 173(43.2%) did General Nurse and midwifery and 39(9.8%) were MSc nurses. Studies found that higher educational attainment enhances disaster preparedness [13].Majority of respondents were between 307(76.8%)20-30 years of age, followed by 78(19.5%) between 31-40 years of age and 15(3.8%) were more than 41 years of age. This is similar to study done by Chan (2005) showed that nurses who were young (26-30 years) had lower levels of knowledge than older adults (31-40 years) in clinical management systems. Regarding the Marital status of the respondent's majority of the subject 284(71%) were married and living together and 116(29%) were single, even the Divorce respondent have

mentioned as single. Concerning the work part of the study subject's majority of the respondents were staff nurses or working as clinical instructors 319(79.8%), 42(42%) were ward in charges and only 39 (9.8%) were post graduate faculty working as teachers.

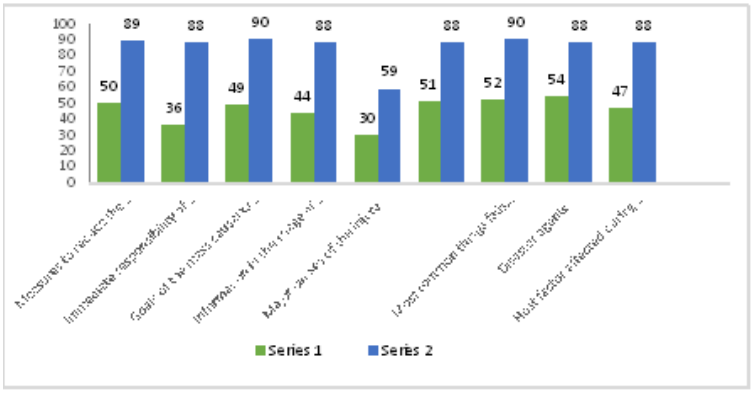


Figure No: 1 *,Awareness the study respondent regarding role of the nurses in various stages of before and after the Educational Interventions*

The figure-1, shows there was an increase in the post-test knowledge score of the Nursing personnel regarding various roles of the nurses during disaster after the Educational intervention with significant difference p value <0.00From the total 400 respondents the pre -test mean score, standard deviation regarding the principles, various stages of disaster and contributing factors of disaster management were 44(4.96), 58[4.95], 44[4.96], While in the post-test it was remarkably high 92[2.79], 92[2.79],90[3.04] with a significant p value 0.001.

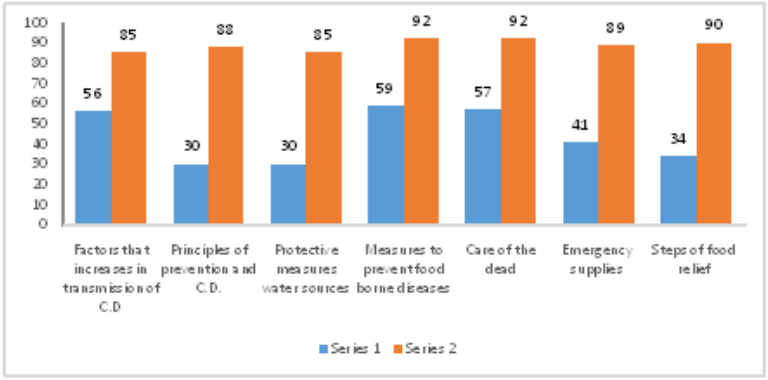


Figure No: 2, *Awareness of the nursing personnel responsibility in prevention of communicable disease during disaster before and after the Educational Interventions*

Table No:1, *Knowledge of Nursing Personnel regarding the adverse effect of disaster victims before and after the Educational Interventions*

Sl.No	Disaster related characters	No. of subjects	Pre-test score		Post test score		P value
			Mean	Standard deviation	Mean	Standard deviation	
1	Major effects of disaster	400	50	5.01	88	3.28	0.001
2	Impacts of disaster on victims	400	48	5.00	88	3.31	0.001
3	Physical symptoms of victim following disaster	400	59	4.93	88	3.28	0.001
4	Causes of post-traumatic stress disorders	400	48	5.00	86	3.63	0.001
5	High risk group of PISD	400	51	5.01	85	3.58	0.001
6	Support system of recovery phase	400	51	5.00	90	2.94	0.001
7	Role of the nurse in rehabilitation	400	44	4.97	91	2.87	0.001
8	Nursing care of victims with PISD	400	53	5.00	88	3.28	0.001

*P Value <0.001 ** significant at 1% level*

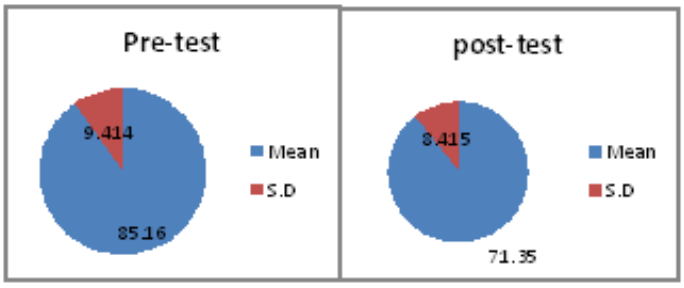
The Nursing personnel knowledge regarding the Major effects of disaster, impacts of disaster on victims, and the various physical symptoms of victims following disaster, of the study analysis reveals that the pre - test mean score, standard deviation were50 (5.01), 48(5.00), 59(4.93) whereas there was remarkable increase in the post test scores i.e. 88(3.28), 88(3.31), 88(3.28). They were all significant with p value 0.001. This table also depicts the respondents mean score, standard deviation related to Causes of post-traumatic stress disorders, High risk group of PISD, Support system of recovery phase was higher in post- test86(3.63), 85(3.58), 90(2.94) in comparing with pre-test 48(5.00), 51(5.01), 51(5.00) respectively, shows a significant p value 0.001.

Table No:2, *Knowledge of Nursing personnel regarding the prevention and mitigations of disaster management before and after the Educational interventions*

Sl.No	Disaster related characters	No. of subjects	Pre-test score		Post-test score		P value
			Mean	Standard deviation	Mean	Standard deviation	
1	Activity of community rehabilitation	400	37	4.84	87	3.39	0.001
2	Stimulation exercise	400	48	5.00	86	3.50	0.001
3	Tasks of disaster management	400	29	4.55	88	3.28	0.001
4	Consequence of deforestation	400	34	4.74	86	3.53	0.001
5	public health impact of disaster	400	38	4.86	88	3.28	0.001
6	Waste management protocol during disaster	400	45	4.98	92	5.91	0.001
7	Mitigation measures of disaster	400	37	4.83	84	3.65	0.001

*P Value <0.001 ** significant at 1% level*

The table-2, illustrates the Nursing personnel pre-test mean with the standard deviation related to the activity of community rehab titian, Importance of disaster stimulation exercise, and various tasks of disaster management were 37(4.84), 48(5.00), 29(4.55) whereas the post test score had increased to 87(3.39), 86(3.50), 88(3.28). It is evident that there is a significant difference in the p value (0.001). The respondent mean score with standard deviation regarding the Consequence of deforestation, public health impact of disaster, waste management protocol during disaster, and the Mitigation measures of disaster increased from 34(4.74) ,38 (4.86)45(4.98) ,37(4.83) to 86(3.53) , 88 (3.28), 92(5.91),84,(3.65) after intervention and was found to be statistically significant [p-0.001]



FigureNo:3, *Overall mean score and the standard deviation regarding the role of the nurses in disaster prevention and management before and after the teaching programme*

In regard to the overall knowledge regarding the role of the nurses in disaster prevention and management pre - test mean score, standard deviation was 85.16&(9.414)whereas the post test scores were(71.35) ,(8.415) and percentage mean effectiveness 13.80% paired 't' test value was 23.40 It was evident that the Educational Intervention was effective with the high significant p value 0.001.

8. EDUCATIONAL STATUS

There is a significant association of nurse's knowledge regarding adverse effect of disaster victims 0.014 with education is less than table value significant at p< 0.05. Higher education is important for developing more knowledgeable and experienced nurses who are better equipped and trained in disaster management. There is no significant association of knowledge of nurses Role of nurse's regard to various components of disaster prevention, management, and Mitigation measures of disaster with education more than the table value at p < 0.05

9. ASSOCIATION WITH YEARS OF EXPERIENCE

There is a significant association of nurse's knowledge regarding adverse effect of disaster victims 0.039,it is evident that nurses with 11-20 years of experience mean score (41.61) was higher comparing to the other categories. About the prevention and mitigation measures of disaster with Year of experience at 0.011 is less than table value significant at P<0.05.The experience in disaster training and having direct experience of disaster helps to upgrade the knowledge and confidence of the nurses to responds to disaster and there was no significant association of knowledge of nurse's role regard to various components of disaster prevention and management with Years of experience more than the table value at $p < 0.05$.

10. OCCUPATION

The data reveals there is significant association of knowledge of nurses regarding Adverse effect of disaster victims with occupation less at 0.001 P<0.01. The result of the current study reveals that emphasized that infection control professional's role in disaster preparedness and response is essential, even in non-infectious disease. And there was no significant association of knowledge of nurse's role regard to various components of disaster prevention and management, response in different stages of disaster, prevention of communicable diseases, and prevention strategy Mitigation measures of disaster with Occupation more than the table value at $p < 0.05$

11. RELIGION

There was no significant association of knowledge of nurse's role regard to various components of disaster management, prevention of communicable diseases, Adverse effect of disaster victims, prevention and Mitigation measures of disaster with Religion more than the table value at $p < 0.05$

12. CONCLUSION AND RECOMMENDATIONS

The findings reveal that the educational interventional programmes was effective in terms of improving the knowledge of the nursing personnel regarding the role of nurses during disasters in terms of preparedness, mitigation, response and recovery phase. Comparing the pre test scores, the post-test mean score, and standard deviation were found highly significant, increase in the knowledge level indicates the effectiveness of Interventional programme with significant p value level (0.001)

- Therefore, Institution should develop policies for disaster management and pay more attention to the problem of disasters and preparedness for their management. Training programs are essential to increase their awareness about disaster management.
- Nurses regardless of variations in demographic profile, should always manifest a high sense of awareness to their roles during disaster, be prepared in critical situations and apply their management skills in facing different clients and situations.
- This study should be utilized to create awareness to all the nurses, nursing students and nursing educators by enhancing their profession's capability and competency through training and educational session.
- More theory and practical hours should be allotted in the curriculum of nursing related programme so as to increase the competency of the nurses.
- Future research may be conducted a study similar or related to this present study to determine the effectiveness of the educational Interventional programme among Nursing students
- Similar study can be undertaken as comparative study between nurses working in rural and urban areas

The great challenges nurses face in responding to natural, manmade, and technological disasters in comparison with the little time spent in teaching or learning this content during the basic nursing education program makes this study a timely one and relevant to the needs of nurses as it provides further information that would enhance knowledge, skills and attitude in relation to their future nursing career and the need for education & training preparation is to be emphasized. The educational interventional programmes regarding disaster preparedness, management was founded very effective.

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