



## EFFECTIVENESS OF CAPACITY BUILDING PROGRAM ON USE OF ASSESSMENT SCALES FOR CRITICALLY ILL PATIENTS IN TERMS OF KNOWLEDGE OF NURSES

### Nursing

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### ABSTRACT

Nursing is a scientifically rigorous discipline which requires updated information on a regular basis to ensure that best possible care is provided to the patients. The aim of the study is to evaluate the Effectiveness of Capacity Building Program regarding the use of Assessment Scales for critically ill patients in terms of Knowledge of Nurses. Pre-Experimental study using One Group Pre-test Post-test design with total enumeration sampling technique was used to enroll 36 Nurses who directly involved in patient care in the Liver Coma ICU, ILBS. A Structured Knowledge Questionnaire was prepared to assess the Knowledge of Nurses regarding the use of Assessment Scales (Glasgow Coma Scale, Pupil Reaction Scale and Modified Ramsay Sedation Scale). The Mean Post-test Knowledge Scores were significantly higher than the Mean Pre-test Knowledge Scores. Study concluded that the Capacity Building Program was effective in enhancing the Knowledge of Nurses regarding the use of Assessment Scales.

### KEYWORDS

Capacity Building Program, Assessment Scales, Nurses

### INTRODUCTION

Nursing is a scientifically rigorous discipline which requires updated information on a regular basis to ensure that best possible care is provided to the patients. The technical advancement has made the job of a nurse to evolve continuously. It is the responsibility of every nurse to remain updated with the ongoing changes as they will affect the patient.

Nurses' knowledge of principles related to assessment for critically ill patients constitute the core and essential elements of controlling the complex experience (Francesca, Bander, Echlte, Guinta, & Williams, 2003).

Several studies have reported an inconsistency in the use of assessment scales in the clinical setting, and it is recognized that education and training is required to ensure that the tool is used as a valid indicator of patient status (Fischer & Mathieson, 2001).

#### Need for the Study

Nurses require sound knowledge base to assess the patients using the assessment scales. It is suggested that on-going educational programmes be introduced into ICUs to address the shortfall in knowledge. (Perrie, Bruce, Schmolgruber & Becker 2014).

Capacity building for nurses is for promoting an environment that increases the potential of individuals, organisations and communities to receive and possess knowledge and skills as well as to become qualified in planning, developing, implementing and sustaining health-related activities according to changing or emerging needs (Abdullah, Senany & Otheimen, 2015).

There is a need for nursing education on assessment scales used in ICUs. A competent nursing workforce is important for an effective healthcare system. (Subramanian et al., 2012).

Duran-Nah, Soberano, Puerto, Loria & Medina (2016) evaluated the knowledge that nurses specialized in intensive care (NSIC) have on the Modified Ramsay Sedation Scale (MRSS) and the way in which they apply it. Results of the study revealed that 75% of nurses did not know about the MRSS. Findings also showed that there was an elevated percentage of NSIC who did not know the MRSS and Age was the factor associated with lack of knowledge. With the view of reviewed literature and self-experience of investigator during clinical posting, researcher came to know that many nurses are facing difficulty in using the assessment scales for the critically ill patients and many studies revealed that teaching program and instruction improves the knowledge. Therefore, current study has been undertaken thereby improving the care of the patients in the critical care units

### METHODS

#### Research Approach and Design

Quantitative research approach with Pre- experimental, one group pre-

test post-test design is considered for the present study, because the study intends to ascertain the gain in knowledge of nurses who had attended capacity building program regarding the use of assessment scales for critically ill patients.

#### Population and setting

The study was conducted in Liver Coma ICU, Institute of Liver and Biliary Sciences, D-1 Vasant Kunj, New Delhi. The rationale for selecting this setting:-Familiarity with the setting, Feasibility of conducting the study, Availability of sample subjects, Administrative approval and anticipated co-operation from nurses for conducting the study.

The population of the study includes nurses who are working in Intensive Care Unit of selected hospital of Delhi and involved in direct patient care. The accessible population is nurses who are working in ICU of ILBS. The target population is nurses who are working in Intensive Care Unit of selected hospital of Delhi and involved in direct patient care.

#### Sample and Sampling Technique

Total enumeration sampling was used in the study. All nurses working in Liver Coma ICU of ILBS New Delhi and meeting the inclusion and exclusion criteria were enrolled as subjects for the study.

#### Criteria for sample selection

##### Inclusion criteria -Nurses who are:-

- Involved in direct patient care in LCICU.
- Working in LCICU for at least one month.

##### Exclusion criteria-Nurses who are:-

- Relievers from other areas of hospital for a day/ few days posted in LCICU.
- On long leave (More than 15 days)

#### Sample Size

The sample comprised of all the nurses working in LCICU in ILBS and who are involved in direct patient care during data collection period. The total number of nurses working in LCICU was 45. Out of them one nurse was ICU in-charge and five nurses were Team Leaders and therefore, they were not involved in direct patient care. From the remaining 39 nurses, three nurses were on long leave during the data collection period. Finally, 36 nurses were enrolled for the study.

#### Tool for data collection

The investigator had developed the tool (Structured Knowledge Questionnaire and Observation checklist) for data collection. **Tool-I Structured Knowledge Questionnaire** it is divided into two sections-**Section-I: Demographic details**, it has 6 items that are constructed to obtain data related to Age, Gender, Educational Qualification, Working Experience in ICU, Reads Literature about Assessment

Scales and Attending In-Service Education program(s) on assessment of critically ill patient. **Section-II: Estimation of Knowledge regarding Assessment Scales**, the items were constructed in three domains- Glasgow Coma Scale, Pupil Reaction Scale and Modified Ramsay Sedation Scale. It consists of 30 items with multiple choices. All the items had four choices out of which one option is correct. Each correct answer was awarded a score of one point. The maximum score is 30 and minimum score is zero. The reliability of the structured knowledge was calculated by Split Half reliability, Guttman Split-Half Coefficient was found to be 0.88.

**Development of Capacity Building Program**

The Capacity Building Program was prepared on the basis of the in-depth review of research and non-research literature and expert opinion in the field. Some of the important factors considered while preparing the capacity building program was simplicity of language, content coverage, simplicity and practicability. The content of Capacity building program was organised under the following heading:-

- Glasgow Coma Scale
- Pupil Reaction Scale
- Modified Ramsay Sedation Scale

Capacity building program on the use of assessment scales for critically ill patients was provided to nurses by the investigator. Administration of complete duration of program is approximately 30 minutes. Lecture cum discussion teaching method on one-to-one basis was used with the aid of Power-point presentation.

**Try out**

Try out was conducted on 10 nurses in Surgical ICU and Transplant ICU of ILBS, New Delhi from 22<sup>nd</sup> October 2018 to 27<sup>th</sup> October, 2018. Prior permission was obtained from the hospital authority. Participant Information Sheet was given and Informed Consent was taken from all the nurses before collecting the data. It takes around 15 minutes to administer tool to each nurse and then item analysis was done to assess the item discrimination index and item difficulty. The tool was found appropriate for the nurses under the study.

**Pilot Study**

Pilot study was conducted on five nurses in High Dependency Unit (HDU) of ILBS, New Delhi from 29<sup>th</sup> October 2018 to 03<sup>rd</sup> November, 2018. Findings of the pilot study reveal that it was feasible and practicable to conduct the study.

**Data collection Process**

Formal administrative permission was obtained from College of Nursing Ethical Committee, ILBS New Delhi, and also from Institute of Liver and Biliary Sciences prior to the start of the study. Data were collected from Nov'3, 2018 to Dec'3, 2018. All Nurses working in Institute of Liver and Biliary Sciences who met the inclusion criteria were enrolled in the study. Participant Information Sheet of the study was given to the subjects. Consent forms were signed before participation in the study. Total enumeration sampling technique were used. Nurses working in Liver Coma ICU of ILBS who met the inclusion criteria were enrolled for the study. Firstly the knowledge of nurses were assessed (Day-1) using structured knowledge questionnaire then, Capacity Building Program was administered (Day-1) on one-to-one basis. After intervening the intervention Knowledge were reassessed on Day-7.

**Results and Data Analysis**

The responses from the 36 subjects was entered in the master data sheet in the Microsoft Excel. Data analysis was done in SPSS V.22 using descriptive and inferential statistics.

**Demographic Characteristics of Nurses**

More than half (52.8%) of the nurses were above 30 years of age. There were 55.6% male among the nurses, while 44.4% were females. Maximum nurses (69.4%) had done Diploma/GNM. About one-third of the nurses (36.1%) had 6-10 years of working experience in ICU. Equal number of nurses (41.7%) used to read literature most of their times and sometimes and only 16.6 percent nurses never read literature. More than half of the nurses (55.6%) had previously attended in-service education program(s) on assessment of critically ill patient whereas 44.4 percent nurses had never attended any in-service education program(s). About thirty percent of nurses had attended once, 13.88 percent nurses had attended 2-3 times and 11.11 percent

had attended in-service education program 4-5 times respectively. About one-third (33.33%) of nurses had attended more than 6 months ago, 19.44% had attended 2-6 months ago and only 2.77% nurses had attended less than one month ago.

**Effectiveness of Capacity Building Program in terms of gain in Knowledge Scores of Nurses**

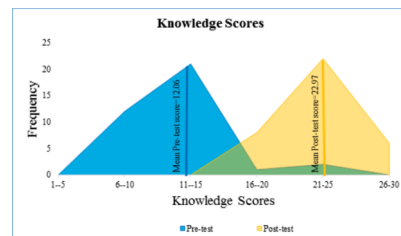
The mean post-test knowledge score (22.97 ±3.00) was higher than their mean pre-test knowledge score (12.06 ±1.62) with mean difference of 10.91.

The Capacity Building Program regarding the use of assessment scales was found to be effective in enhancing the knowledge score of nurses. It was highly evident from “t” value of 21.77 (p<0.001)

**Table 1 Comparison of mean pre-test and mean post-test knowledge scores of nurses**

n=36					
Variable	Mean ± SD	MD	SE	t value	p value
Pre-test Knowledge Score	12.06 ±1.62	10.91	0.50	21.77	0.001**
Post-test Knowledge Score	22.97 ±3.00				

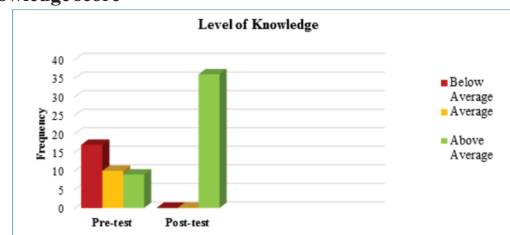
\*\*p<0.01



**Figure-1- Area Chart showing comparison between pre-test and post-test knowledge scores of nurses**

The figure-1 illustrates the knowledge scores of nurses regarding the use of assessment scales for critically ill patients before and after the administration of Capacity Building Program. Pre-test is shown nearer to the Y-axis and Post-test further away from Y-axis. The whole area chart of post-test scores has shifted towards the right side on the X-axis. The graph clearly demonstrates an improvement in the Knowledge score with mean Post-test of 22.97, which is more than mean Pre-test Knowledge scores 12.06.

**Frequency and percentage distribution of Pre-test and Post-test Knowledge score**



**Figure-2-Clustered Bar graph showing the level of Knowledge of Nurses regarding the use of assessment scales**

Nearly half of nurses 47.22 percent had below average knowledge in pre-test, 27.77% nurses had average knowledge and only 25% of nurses had above average knowledge in pre-test whereas all the nurses 100% scored above average in post-test knowledge scores.

**Domain wise mean percentage of Pre-test and Post-test Knowledge scores of Nurses**

**Table 2 Domain wise mean percentage of pre-test and post-test knowledge scores of nurses**

Domain	No. of items	Mean percentage (%)		Mean percentage gain in knowledge	Rank
		Pre-test	Post-test		
Glasgow Coma Scale	10	60.55	81.11	20.56	III

<b>Pupil Reaction Scale</b>	10	25.27	76.94	51.67	I
<b>Modified Ramsay Sedation Scale</b>	10	28.33	71.66	43.33	II

Maximum gain (51.67%) present in pupil reaction scale, followed by Modified Ramsay Sedation Scale that was 43.33 percent and Glasgow coma scale was 20.56 percent respectively.

#### Association between post-test knowledge score of nurses with selected demographic variables

There was no significant association found between Knowledge scores of nurses with their selected demographic variables (Age, Gender, Educational Qualification, Working Experience in ICU, Reads Literature about Assessment Scales and In-service education program attended)

### DISCUSSION

#### Demographic Variables

The findings of the study with respect to Age, revealed that more than half (52.8%) of the nurses were <30 years of age, 36.1 percent nurses were between 31-35 years, 8.3% nurses were between 36-40 years and only 2.8% of nurses were <40 years of age. Findings were similar with Mwangi, Gacii and Kabetu (2010) study on knowledge, attitude and practice of sedation and analgesia amongst nurses working in Kenyatta National Hospital ICU, where most of the participants were aged between 30-35 years.

As for Gender, there were 55.6 percent male among the nurses, while 44.4 percent were females in the present study. Findings of current study were inconsistent with the study done by Miyazaki, Caliri and Santos (2010), where it was seen that 85.3 percent were females. These findings are inconsistent because in the setting ILBS, Male staff are more in comparison to Females.

Findings related to Educational qualification indicates that maximum nurses (69.4%) had done GNM and 30.6 percent nurses had done Post basic/B.Sc Nursing similar findings were found in a study done by Mwangi, Gacii and Kabetu (2010) study where most of participants had done diploma in Nursing. Findings were distinct with Elhagga (2016) which revealed that most of nurses were graduate. This is because most of the staff working in the setting ILBS had done GNM.

With respect to working experience, present study showed about one-third of the nurses (36.1%) had 6-10 years of working experience in ICU, 30.6 percent nurses had 1-5 years, 22.2 percent nurses had more than 10 years of working experience and only 11.1 % of nurses had less than one year of working experience in ICU. This Finding goes dissimilar with Santos, Regina, Copes, Okuno and Batista (2016) study which revealed that nurses had 1 to 3 years of working experience whereas findings goes in same line with Mwangi, Gacii and Kabetu (2010) study which showed that 40.7% nurses had practised between 6-10 years of working experience.

In the present study, equal number of nurses (41.7%) used to read literature most of their times and sometimes and only 16.6 percent nurses never read literature while in study conducted by Waterhouse (2011) shows 74.2% of nurses do not reads literature. These findings are not similar because nurses working in ILBS are motivated to read more literature which keeps them up-to-dated.

Findings of current study shows that more than half of the nurses (55.6%) had previously attended in-service education program(s) on assessment of critically ill patient whereas 44.4 percent nurses had never attended any in-service education program(s). A similar study conducted by El-Enenin and Zaghoul (2011) reported that 74.6% nurses had attended previous training on assessment scales. This result was disagreeing with a study by Nihatolla, et al (2005) who reported that 95% of staff nurses had no training session after graduation about assessment scales. These findings differ because ILBS is an institute where In-service education programs are well encouraged and the organization continuously updating the staff with the newer technologies and techniques which reflected by quality nursing care.

#### Effectiveness of Capacity Building Program for Nurses in terms of gain in knowledge regarding the use of assessment scales for critically ill patient

In the present study, the Capacity building program was found effective in terms of gain in knowledge of the Nurses on the use of assessment scales for critically ill patient. The mean Pre-test Knowledge score was (12.06 ±1.62) and mean Post-test Knowledge score was (22.97 ±3.00) which showed that Capacity Building Program was effective. The difference in mean was statistically significant (t value was found to be 21.77. The p-value was found to be 0.001 which was highly significant at 0.05 level.)

These findings were consistent with a research conducted by Mathews (2015) who also reported effectiveness of Planned Teaching Program on changes in pupillary reaction among staff nurses of different ICUs in their study. The overall mean post-test knowledge score (27.5) was significantly higher than the overall means pre-test score (17.0), the paired 't' test value is 24.42 ( $t_{99} - 3.4 P 96 < 0.01$ ) which indicates the effectiveness of PTP.

#### Association between post-test Knowledge score of Nurses with selected demographic variables

The findings of present study revealed that there was no significant association between post-test knowledge score with age, gender, educational qualification, working experience, Literature variable and status of attended in-service education program and last attended in-service program in-service education.

Findings were homogeneous with Elhagga (2016) revealed that there were statistically insignificant relationship between knowledge and their socio-demographic variables where  $p > 0.05$ .

#### Limitations of the study

The limitations of the study were-

- The study was confirmed to a small sample of only 36 nurses of selected hospital, which limits the generalizations of the findings.
- The study was limited to only Liver Coma ICU of a selected hospital only.
- No attempt was made to measure the retention of knowledge gained due to time limitation
- Standardized tool could not be located by investigator, so investigator developed the tool for the study

### CONCLUSION

Based on the findings of the study, it was concluded that the Capacity Building Program regarding the use of assessment scale for critically ill patients was found effective in gaining the knowledge of nurses. On the basis of the findings of present study, it is recommended that further research is needed to ensure and encourage the regular revision of assessment scales-Glasgow coma scale, Pupil reaction scale and Modified Ramsay Sedation Scale. There is also a need to keep the nurses updated on the assessment scales with the help of continuous in-service education program on assessment scales for critically ill patients.

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