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RESEARCH ARTICLE

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

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Abstract

Nurses being the frontline workers who work round the clock and evaluate patient's condition and interpret improvement, they should master the skill of nursing assessment so that they can provide a comprehensive care to the patients. The aim of the present study was to evaluate the Effectiveness of Capacity Building Program regarding the use of Assessment Scales for critically ill patients in terms of Practice of Nurses. Pre-Experimental study using One Group Pre-test Post-test design was conducted. Total enumeration sampling technique was used to enroll 36 Nurses who directly involved in patient care in the Liver Coma ICU, ILBS. An Observation Checklist was prepared to assess the Practice of Nurses regarding Assessment Scales (Glasgow Coma Scale, Pupil Reaction Scale and Modified Ramsay Sedation Scale). The Mean Post-test (18.83 ± 2.11) Practice Scores were higher than the Mean Pre-test (9.36 ± 2.07) Practice Scores and it was highly significant at $p < 0.001$. The study concluded that the Capacity Building Program was effective in improving the Practice of Nurses regarding the use of Assessment Scales for critically ill patients. Therefore, it can be concluded that there is a need to provide education regarding the use of Assessment Scales for critically ill patients after regular intervals.

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Introduction:-

Nurses form the first line of primary care for patients. They are responsible to assess patients systematically and as a whole. One of the major challenges that nurses face during assessment is neurological dysfunction especially for patients with coma (Ayoub, Saifan, Alaween, Hussain & Salim, 2018)

Assessing unconscious patient can be a challenging experience. The skills required to care for unconscious patient are not specific to critical care as unconscious patients are nursed in a variety of clinical settings. Nursing such patients can be a source of anxiety for nurses. (Loni, 2012)

Nurses being the frontline workers who work round the clock and evaluate patient's condition and interpret improvement, they should master the skill of nursing assessment so that they can provide a comprehensive care to the patients. But literature reveals that they are not competent enough for assessment of critically ill patient (Loni, 2012).

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Need for the Study

Knowledge itself does not ensure safe practice but safe practice is not possible without knowledge. Since accountability forms the basis of professional nursing practice. (Perrie, Bruce, Schmollgruber & Becker 2014).

Capacity building for nurses is for promoting an environment that increases the potential of individuals, organisations and communities to receive and possess 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).

Many studies have indicated a need for the nursing education system to keep pace with continuous changes in nursing practice. The literature suggests that the results of apprenticeship are not satisfactory, which is indicated the need for more attention to this aspect (Adami & Kiger, 2005).

According to an explorative study conducted by Shoirat (2006) in Edinburgh on nursing students. Understanding of the GCS, it has been observed that most respondents have not been confident in practical use of the GCS. However, they would want to improve their practical skills and the study has concluded that a short training course would be needed to make sure that students are able to use the GCS effectively while minimizing errors.

There are suggestions that nurses should be practicing the profession, from a phase of dependence on abstract concepts, to apply the concrete skills by analyzing the situation as a whole.

There is a need for nursing education on assessment scales used in ICUs. A competent nursing workforce is important for an effective healthcare system. Providing up to date and practical strategies may help to reduce nurses' challenges in managing critically ill patients. Broader autonomy and effective decision making can be seen as beneficial for the nurses besides having a clearer and structured management guidelines (Subramanian et al., 2012).

With the view of reviewed literature and self-experience of investigator during clinical posting, researcher came to know that many nurses are facing difficulty while practicing and using the assessment scales for the critically ill patients and many studies revealed that teaching program and instruction improves the knowledge and practice. Therefore, current study has been undertaken thereby improving the care of the patients in the critical care units

Methods:-**Research Approach and Design**

The primary objective of the present study was to assess the effectiveness of a Capacity Building Program on use of Assessment scales for critically ill patients in terms of Practice of nurses in ICU. Therefore, quantitative research approach was considered for the present study.

The investigator considered pre- experimental, one group pre-test post-test design to be suitable for the present study, because the study intends to ascertain the improvement in Practice 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:-

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

Exclusion criteria

Nurses who are:-

1. Relievers from other areas of hospital for a day/ few days posted in LCICU.
2. 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 (Observation checklist) for data collection. Observation checklist was based on statement and objective of the study, to assess the effectiveness of Capacity Building Program on the Practice of Nurses regarding the use of Assessment Scales for Critically Ill patient in ICU of selected Hospital of Delhi. 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. Tool-I Observation Checklist to assess the Practice of Nurses regarding the use of assessment scales for critically ill patient. It comprised of total 22 items. The practice checklist was divided into three practice domains: Glasgow coma Scale, Pupil reaction scale, Modified Ramsay sedation scale. The observer observes the performance of the nurses. Each item was marked by the observer as 'YES' if the participant performed the respective activity (item), 'NO' if the participant failed to perform. Each of the 'YES' response was scored as '1' and 'NO' was scored as '0'. Possible maximum score is 22 and minimum score is zero. In order to establish the reliability of Observation Practice checklist, inter-rater reliability was calculated. The Intra-class Correlation of Observation Practice Checklist of Glasgow Coma Scale, Pupil reaction scale, Modified Ramsay Sedation Scale was - 0.93, 0.92, 0.95 respectively.

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:-

1. Glasgow Coma Scale
2. Pupil Reaction Scale
3. 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 22nd October 2018 to 27th 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.

Ethical Considerations

Ethical permission to conduct the study was obtained from College of Nursing Ethical Committee, ILBS New Delhi. Reference no- F15(2/2.25)/2017/ HO(M)/ILBS/2420.

Pilot Study

Pilot study was conducted on five nurses in High Dependency Unit (HDU) of ILBS, New Delhi from 29nd October 2018 to 03rd 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, prior to the start of the study. Permission was taken 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 practice of nurses were assessed (on Day-1) using observation checklist. After assessing the practice, Capacity Building Program was administered (Day-1) on one-to-one basis. After intervening the intervention Practice were reassessed on Day-7.

Results and Data Analysis:-

The data was obtained from the thirty six subjects. The responses from the thirty-six 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.

Practice Scores of Nurses regarding the use of Assessment Scales

Effectiveness of Capacity Building Program in terms of gain in Practice Scores of Nurses

The mean post-test practice score (18.83 ± 2.11) was higher than their mean pre-test practice score (9.36 ± 2.07) with mean difference of 9.47.

The Capacity Building Program regarding the use of assessment scales was found to be effective in improving the practice score of nurses. It was highly appreciated from "t" value of 21.84 ($p < 0.000$)

Table 1:- Range, mean, standard deviation, mean difference, standard error and Comparison of mean pre-test and mean post-test Practice score of nurses regarding the use of Assessment Scale

n=36

| Variable | Range | Mean \pm SD | MD | SE | t value | p value |
|--------------------------|-------|------------------|------|------|---------|---------|
| Pre-test Practice score | 6-13 | 9.36 ± 2.07 | 9.47 | 0.43 | 21.84 | 0.000** |
| Post-test Practice score | 14-22 | 18.83 ± 2.11 | | | | |

** $p < 0.01$

Maximum possible score=22 Minimum possible score=0

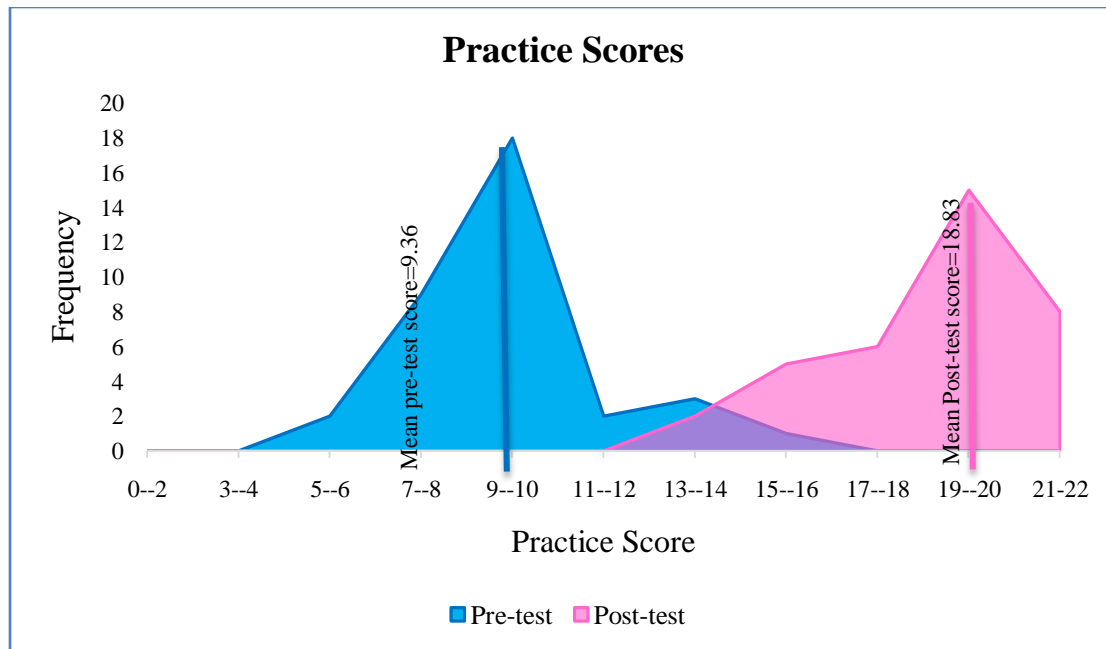


Figure-1:- Area graph showing comparison between pre-test and post-test practice scores of nurses.

Area chart of Pre-test and Post-test Practice scores of the Nurses. This figure illustrates the Practice 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 Practice score with mean Post-test Practice score of 18.83, which is more than mean Pre-test Practice scores 9.36.

Frequency and percentage distribution of Pre-test and Post-test Practice score

Majority of nurses (80.55%) scored average in pre-test practice scores, 13.88% nurses were above average and only 5.55% nurses were below average in pre-test practice scores, whereas all the nurses (100%) scored above average in post-test practice scores.

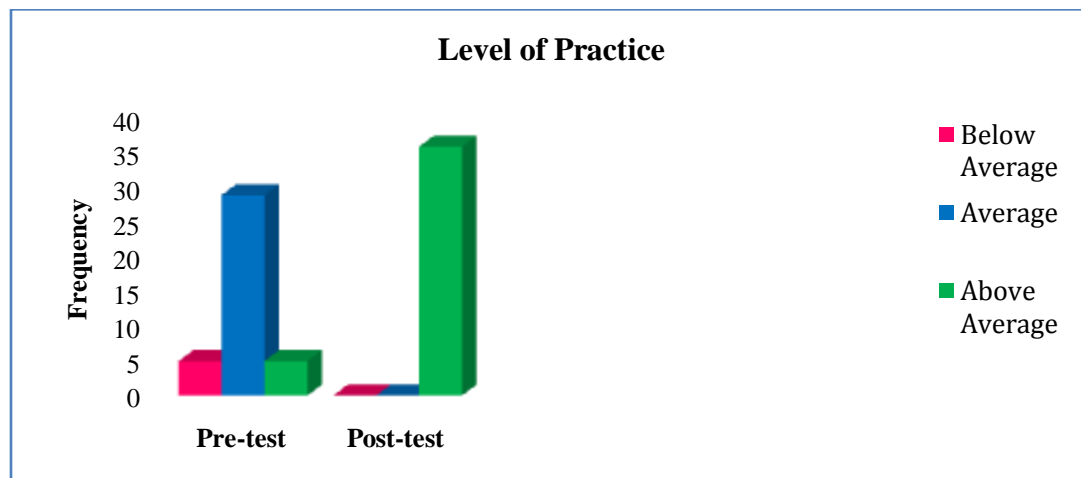


Figure-2:- Clustered Bar graph showing the level of Practice of Nurses regarding the use of assessment scales.

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

Maximum gain (50%) present in Modified Ramsay Sedation Scale, followed by Pupil Reaction Scale that was 46.11 percent and Glasgow coma scale was 36.73 percent respectively.

Table 2:- Domain wise mean percentage of pre-test and post-test Practice scores of nurses n=36

| Domain | No. of item | Mean percentage (%) | | Mean percentage gain in practice | Rank |
|--------------------------------|-------------|---------------------|-----------|----------------------------------|------|
| | | Pre-test | Post-test | | |
| Glasgow Coma Scale | 09 | 49.38 | 86.11 | 36.73 | III |
| Pupil Reaction Scale | 10 | 39.44 | 85.55 | 46.11 | II |
| Modified Ramsay Sedation Scale | 03 | 32.4 | 82.40 | 50 | I |

Association between post-test practice score of nurses regarding the use of assessment scales with selected demographic variables

There was no significant association found between Practice 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 Zaghloul (2011) reported that 74.6% nurses had attended previous training on assessment scales. This result was disagreeing with a study by Nihmatolla, 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 practice regarding the use of assessment scales for critically ill patient

In the current study, the Capacity Building Program was also found effective in improving the Practice of the Nurses. The mean post-test practice score (18.83 ± 2.11) was higher than their mean pre-test practice score (9.36 ± 2.07) with mean difference was 9.47. It was highly evident from “t” value 21.84 ($p < 0.000$).

The findings were consistent with the study of Teles, Bhupali & Madhale (2013) on Effectiveness of Self Instructional Module. The study also revealed that during the pre-test all the staff nurses 83.64 percent had average skill. After the administration of the Self Instructional Module in post-test 35(63.64%) of staff nurses had average skill and 20(36.36%) had good skill, t value was 40.8 and p value was 0.002, which implies the effectiveness of Self Instructional Module.

Findings were also similar with another study done by Nair (2015) on the effectiveness of Planned Teaching Program in terms of knowledge and practice of nurses regarding changes in pupillary reaction. The finding of the study revealed that nurses significantly gained ability related to assessment of changes in pupillary reaction and the PTP was effective in terms of assessment of pupillary changes.

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

The findings of present study revealed that there was no significant association between post-test practice score 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 similar with studies conducted by Lane, Báez, Brabson, Burmeister & Kelly (2015) study on Effectiveness of instructional video on Glasgow Coma Scale for EMS providers in Albert Einstein Medical Center, revealed that there was no significant relationship of practice of nurses with their socio-demographic variables.

Limitations of the study

The limitations of the study were-

1. The study was confirmed to a small sample of only 36 nurses of selected hospital, which limits the generalizations of the findings.
2. The study was limited to only Liver Coma ICU of a selected hospital only.
3. No attempt was made to measure the retention of knowledge gained and improved practice due to time limitation
4. 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 and improving the practice 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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