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Effectiveness of video assisted teaching program on knowledge and preventive practices of Catheter Related Blood Stream Infections (CRBSIs) among health care professionals in selected Intensive Care Units (ICUs) of a tertiary care hospital Udupi

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"ABSTRACT

A research study entitled “Effectiveness of a video assisted teaching program on knowledge and preventive practices of Catheter Related Blood Stream Infections (CRBSIs) among health care professionals in selected Intensive Care Units (ICUs) of a tertiary care hospital, Udupi” was carried out at Manipal University, Manipal by Jeffin Thomas Jacob for the award of M.Sc. Nursing degree.

The objectives of the study were to develop and validate a video on preventive practices of CRBSI, assess the CRBSI preventive practices and knowledge on prevention of CRBSI among health care professionals as measured by as observational checklists and structured knowledge questionnaire and to evaluate the effectiveness of video assisted teaching programme, in terms of improvement in knowledge scores as measured by structured knowledge questionnaire and practice scores as measured by observation checklists. The conceptual framework of the present study is based on the Context Input Process Product (CIPP) model, devised by Guba in 1960s and further developed by Stufflebeam in 2003 (Zhang, et al., 2011).

The study hypothesized that there will be a significant difference between the pre-test and post-test knowledge scores and practice scores on CRBSI preventive practices of the health care professionals working in the intensive care units.

The tools used in the study were tool on demographic proforma, structured knowledge questionnaire on catheter related blood stream infections, observation checklist on central line insertion practices for doctors, observation checklist for nurses

while assisting for central line insertion, observation checklist on administration of medications through the central line, observation checklist for central line dressing. Content validity and reliability of the tools were established and all the tools were pre- tested. The Pilot study revealed the feasibility of the study and permissions from all the relevant authorities were obtained prior to conducting the study.

The study was conducted during the month of January to March 2017 at Kasturba Hospital, Manipal and the areas included ICU1, ICU2, ICU3 and Casuality ICU of Kasturba Hospital, Manipal. A total of 4 ICUs were involved in this study.

The gathered data was coded and summarized in a master data sheet and was analyzed using SPSS 16.0 version. Both descriptive and inferential statistics were used for the data analysis. A total of 72 participants were included in the study and majority of the study participants were females 60 (83.3%), with a mean age of 26.31±3.82 years. Years of experience ranged from 1-5 years for 59 (81.9%) of the participants and 13 (18.1%) had more than five years of experience. Only 18 (25%) of the participants had the awareness of Evidence Based Guidelines for CRBSI preventive practices.

In the pre-test, out of 72 participants, 16 (22.2%) participants had poor knowledge, 36 (50%) had average knowledge, and 20 (27.8%) had good knowledge whereas in the post –test conducted after seven days of the training program 2 (2.8%) participants had average knowledge, 35 (48.6%) had good knowledge and 35 (48.6%) participants had excellent knowledge on preventive practices of CRBSI. The area wise calculation of mean percentage, actual gain of pre-test and post-test knowledge scores also showed that mean percentage pre-test scores ranged from 67.7% in the area of

baseline knowledge on CRBSI and infection control practices and 96.6% in the post-test, 57.2% in the area of knowledge on central line insertion practices and 81.4% in the post

–test, ,56.8% in the area of knowledge on central line maintenance practices and 83.63% in the post-test . The actual gain score was highest in the area of baseline knowledge on CRBSI and infection control practices ranged from 67.7 -96.6%.

Out of 30 pre-test observations of central line insertion practices majority 28 (93.3%) had worn cap, 29 (96.7%) had worn mask, 27 (90%) had performed hand hygiene, 30 (100%) had compliance in the areas of sterile gown, sterile gloves, sterile drape, skin preparation with chlorhexidine, Aseptic technique throughout the procedure, and disposal of sharps and only 18 (60%) of them had performed hand hygiene procedure after the central line insertion. Whereas in the post-test, out of 30 observations of central line insertion practices, 29 (96.3%) of participants had performed hand hygiene, 30 (100%) had compliance in the areas of wearing cap, wearing mask, sterile gown, sterile gloves, sterile drape, skin preparation with chlorhexidine, aseptic technique throughout the procedure, and disposal of sharps and 19 (63.3%) of them had only performed hand hygiene procedure after the procedure. The data shows that most of the physicians had followed the preventive practice measures while doing central line insertion, even though the video assisted teaching intervention was given there was no much clinically significant difference in the practices of doctors while doing central line insertion in the post-test observations because already they had a good practice towards the preventive practice measures while doing central line insertion, and only in the area of hand hygiene after doing the central line insertion procedure the compliance was less compared to other areas.

Out of 30 pre-test observations of nurses assisting during central line insertion procedure only 7 (23.2%) had worn cap, 9 (30.0%) worn mask, 9 (30.0%) performed hand hygiene, 19 (63.3%) worn gloves, there was 30 (100%) had compliance in the areas of handling of sterile tray and supplies, maintains sterile field throughout the procedure, disposal of sharps and other wastes as per hospital policy and only 4 (13.3%) had performed hand hygiene after the procedure whereas in the post-test out of 30 observations 17 (56.7%) had worn cap, 25 (83.3%) worn mask, 15 (50.0%) performed hand hygiene, 36.7 (93.3%) worn gloves, there was 30 (100%) had compliance in the areas of handling of sterile tray and supplies, maintains sterile field throughout the procedure, disposal of sharps and other wastes as per hospital policy and only (26.7%) performed hand hygiene after the procedure . The data shows that nurses had less compliance in the areas of wearing the cap, wearing mask and hand hygiene while assisting during central line insertion.

Out of 90 pre-test observations of practices of administration of medications through central line only 25 (27.5%) had performed hand hygiene before administering the medications, 11 (12.2%) had used clean or sterile gloves, 54 (60.0%) followed strict aseptic technique while preparing medications, only 4 (4.4%) had cleaned the cap or hub, there was 90 (100%) compliance in the areas of selection of appropriate lumen, disposal of needles and syringes and there was only (21.1%) compliance towards performance of hand hygiene after the procedure, whereas in the post-test out of 90 observations 50 (55.6%) had performed hand hygiene before administering the medications, 82 (91.1%) had used clean or sterile gloves, 89 (98.9%) followed strict aseptic technique while preparing medications, 51 (56.7%) had cleaned the cap or hub,

there was 90 (100%) compliance in the areas of selection of appropriate lumen, disposal of needles and syringes and there was only 34 (37.8%) compliance towards performance of hand hygiene after the procedure. The data shows that even after the video teaching program there was low compliance in the areas of performance of hand hygiene before administering the medications, cleansing of cap or hub and hand hygiene after administering the medication procedure.

Out of 50 pre-test observations of central line dressing procedure only 11 (22.0%) had performed hand hygiene before doing the procedure, 48 (96.0%) had put a pair of clean gloves, only 11 (22.0%) had put on a new pair of sterile gloves after removing the old dressing, 33 (66.0%) had applied antiseptic to the site, 48 (96.0%) had used transparent dressing or sterile gauze dressing to the site and only 15 (30.0%) had performed hand hygiene after the procedure, whereas in the post-test out of 50 observations of central line dressing procedure only 34 (68%) had performed hand hygiene before doing the procedure, there was 50 (100%) compliance in the areas of use of clean gloves and use of antiseptic to the site, and use of sterile gauze or transparent dressing, 37 (74.0%) had put on a new pair of sterile gloves after removing the old dressing, and only 26 (52.0%) performed hand hygiene after the procedure. The data shows that even after the video teaching program there was a low compliance in the areas of use of a new pair of sterile gloves after removing the old dressing, and in the areas of hand hygiene before and after the procedure. The post-test scores in knowledge, practices of nurses while assisting during central line insertion, practices of medication administration through central line and central line dressing was significantly associated with the teaching programme as the $p<0.05$. Hence the training program on

CRBSI preventive practices brought significant change in the post-test scores of knowledge and practices of nurses assisting during central line insertion, administration of medication through central line, central line dressing practices.

The Center for Disease Control and Prevention strongly recommends that reporting and monitoring for infection control practices is a critical component of CRBSI prevention. It also emphasizes about education and training among health care professionals regarding how to implement and assess infection control measures and periodic reassessment of the knowledge among them also has been shown to reduce the incidences of CRBSI. The present study showed that video assisted teaching on hospital infection measures regarding CRBSI was effective in enabling participants to improve their knowledge and practice of infection control and thereby reduce infection in the hospital.

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