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Impact of Implementing A Designed Intervention Palliative Care Program on Critical Care Nurses' Knowledge and Practice

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Abstract:

Background: palliative care is part of everyday practice for health care professionals. Moreover, Palliative care provides relief from pain and other distressing symptoms; affirms life and regards dying as a normal process; and intends neither to hasten nor postpone death. Also, palliative care integrates the psychological and spiritual aspects of patient care; offers a support system to help patients live as actively as possible until death; and offers a support system to help the family cope during the patient's illness and in their own bereavement. Therefore, critical care nurses must be trained to provide expert and advanced care in critical care units. **The aim of this study** is to evaluate the impact of implementing a designed intervention palliative care program on critical care nurses' knowledge and practice. **Methods:** A quasi experimental research design was utilized and the study was conducted on 30 critical care nurses at the Medical and Surgical Intensive Care Units of Oncology Center at Mansoura University Hospitals. Investigator designed an intervention program based on review of the related literature and was divided into theoretical content and practical skills. Theoretical content were focused on the following sessions: pain and symptoms control, psychological, social, spiritual, religious and cultural aspects of care, care of the imminently dying Patient, and ethical aspects of care. While practical sessions were focused on the following sessions: pain assessment, comfort measures for pain and symptoms relief, general strategies for psychological support, communication skills in ICU, care after death and strategies to deal with loss and grief. **Results**: The results of the present study indicated that a highly statistical significant difference **P=0.000** were found between total score of knowledge and total score of practice of CCNs in relation to pre /post program and pre /two months post program implementation. While there was a statistical significant difference **P=0.04** regarding total score of knowledge as compared to a highly statistical significant difference **P=0.000** regarding total score of practice in relation to post and two months post program implementation. **Conclusion**: Knowledge provides an organized body of information that is factual; it provides a foundation of correct principles and concepts. Application of this knowledge develops and enhances nursing skills.

Key word: Palliative care, Pain& symptoms control, Psychological support, Palliative care domains, Immediate death care, knowledge, practice, critical care nurses.

Introduction:

Critical care units (CCUs) were designed to provide highly skilled, lifesaving nursing care to viable patients with acute illnesses or injuries. Patients with chronic and/or terminal illness were not expected to be admitted to these units, with the possible exception of acute exacerbations of reversible complications. Patients whose care needs changed from curative to palliative were intended to be transferred out of critical care to patient care environments more suited to End Of Life (EOL). However, as more patients become "chronically critically ill", Critical Care Nurses (CCNs) are being asked more often to provide care to patients on their deathbeds [(1)]. Therefore, integration of palliative care services into CCUs is increasingly seen as a method to improve clinical care.

Admission to CCUs is a major event in a patient's life and also for the family members. The aim of every CCU admission is to do good and to cure the underlying illnes [(2)]. Therefore, palliative care requires an interdisciplinary, total person approach with a goal to allow one an opportunity to achieve physical, emotional and spiritual comfort. Additionally, palliative care involves an integrated multidisciplinary collaborative

teamwork of patients, family members, health professionals and general public toward a continuum of care emphasizing on physical, mental, social, spiritual and emotional aspects of care for life-limiting or life-threatening conditions. Education and training in palliative care influences not only the level of care provided but also the level of team participation of the healthcare professionals. Training in palliative care is a challenging process both for the trainers and for the trainees since a real-life scenario can never be simulated in an educational environment, [3,4].

Therefore, palliative care is an important aspect of an CCU clinician's daily scope of practice. Palliative care is defined by the World Health Organization (WHO) as an approach that improves the quality of life of patients and their family members facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual. Moreover, Palliative care provides relief from pain and other distressing symptoms; affirms life and regards dying as a normal process; and intends neither to hasten nor postpone death [5].

Therefore, critical care nurses (CCNs) must be trained to provide expert and advanced care in CCUs. Every day CCNs encounter death and dying by providing EOLC to patients in CCUs. Nurses are vital to end of life care (EOLC) as they are the ones present at the bedside [6,7]. Critical care nurses feel responsible for providing patients and family members with care that leads to a peaceful and dignified death. Also, nurses play a key role on the palliative care team. They often bring cohesion and care coordination to the multidisciplinary effort. Nurses are often the first to identify the suffering needs of a patient. They are present at the bedside or in the clinic for extended periods of time and, thus, have unique opportunities to assess and explore patient and family needs. This perspective places them in a vital position to facilitate care directed towards the relief of suffering and the implementation of palliative care [8,9].

Although efforts are being made to improve educational curricula and continuing professional education, practicing nurses still lack knowledge in providing palliative care variable opportunities for continuing education to improve EOL. Critical care nurses not only lack knowledge about palliative care in general and management of signs and symptoms in particular, but also lack knowledge about the process of withdrawing or withholding life-sustaining treatments, providing support to and communicating with patients and patients' families, cultural influences in the care of dying patients and patients' families from ethnic minority groups, and the spiritual needs of patients and patients' families (End of Life Nursing Education Consortium, [10].

Nurses cannot practice what they do not[11]. know (Pittsburgh, 2012). Knowledge provides an organized body of information that is factual; it provides a foundation of correct principles and concepts, application of this knowledge develops and enhances nursing skills *(Banerjee, 2010)*. So, the present study has been carried out to implement designed intervention palliative care program on CCNs' knowledge and practice to provide the best care possible to patients with life threatening illness and injury and optimal support for their families.

Research Hypothesis:

1-Mean knowledge scores of CCN post palliative care program implementation will be higher than their pre program implementation.

2-Mean practice scores of CCN post palliative care program implementation will be higher than their pre program implementation.

Subjects and Method

Study design: A quasi experimental research design was utilized in this study to evaluate the impact of implementing a designed intervention palliative care program on CCNs' knowledge and practice.

Setting: The study was conducted in the Medical and Surgical Critical Care Units (CCUs) of Oncology Center at Mansoura University Hospitals.

Subjects:

All nurses (30 nurses) who had more than two years of experience in the CCU, and were involved in providing direct care for critically ill patients in the above mentioned settings, and who were willing to participate in the study were constitute the study sample.

Tools: Two tools were developed by the investigator based on review of the related literature , and National Consensus Project for Quality Palliative Care [3,13,14,15], and used to collect necessary data about the study subjects.

Tool I: "Palliative care knowledge interview questionnaire"

This tool was used to assess and evaluate CCNs' knowledge about palliative care in the CCUs, involving true/ false questions, and multiple choice questions. This tool covers six main domains geared towards knowledge of the CCNs' about palliative care for critically ill patients. These domains were distributed as follows: pain and symptoms control; psychological, social, cultural, spiritual and religious aspects of care; care of the imminently dying patient and ethical and legal aspects of care. In addition to the above tool, the CCNs' demographic and relevant health information data were obtained by the researcher such as age, educational level, job title, years of working experience in the CCU, and working hours per week.

Scoring system: Each true answer had (1) mark and false or unknown answer had (0). The scores obtained for each set of questions was summed up to get the total score for CCNs' knowledge. The total score was computed out of 146 (100%) classified into three categories as follow: unsatisfactory knowledge ≤ 94.9 from (60 %-64.9%), satisfied knowledge 95-102.05 from (65 %-69.9%), and very satisfied knowledge ≥ 102.1 (≥ 70%).

Tool II: "Palliative care practice checklist"

This is an observation checklist used to assess and evaluate CCNs practice about palliative care in CCU. This tool covers six main domains. These domains are distributed as follows: pain and symptoms control; psychological, social, cultural and spiritual aspects of care; care of the imminently dying Patient and ethical and legal aspects of care.

Scoring system: Each item scored on the bases of "Done complete and correct" or "Done incorrect"' or "Not done" or "Not applicable", done correct and complete scored (1 point), done incorrect scored (-1 point), not done scored (zero), and not applicable were omitted from the calculation. The scores obtained for each set of questions was summed up to get the total score for CCNs' practice. Total scoring were classified into three categories as follow: unsatisfactory practice ≤ 284.7 from (60-64.9%), satisfied practice284.8-306.5 from (65-69.9%), and very satisfied practice ≥ 306.6 (≥ 70%).

Methods:

Permission to conduct the study was obtained from the hospital administrative authority. Tools were tested for their reliability and validity. The tools were reviewed by a jury composed of five experts in the field of critical care nursing and critical care medicine for revision of its content validity and clarity. Moreover, the reliability of the tools was 0.86 and 0.88 respectively. Investigator designed an intervention program based on review of the related literature; Curtis et al., (2008), Qaseem et al., (2008), Nelson *et al., (2010),* Kamal et al., (2012), National Institute of Nursing Research (2009), and National Consensus Project for Quality Palliative Care (2012) [3,16,17,18,19,15]. This

designed intervention program was divided into theoretical content and practical skills. A booklet containing the content of the program was designed and translated into a simple Arabic language by the researcher and were tested for content- related validity by 5 experts in the field of education. A pilot study was carried out on 4 nurses who were excluded from the study subjects to test clarity of the questions. The study was carried out over a period of (12) months started from the first of September 2012 to the end of August 2013. It was conducted on three phases; assessment phase, implementation phase and evaluation phase.

Ethical Approval:

All Critical Care Nurses gave a written informed consent, privacy and confidentiality of the collected data was assured and participants were able to withdraw from the study at any stage without responsibility and the study was approved by the Research and Ethics Committee of the Faculty of Nursing, Mansoura University.

Phase One:" Assessment Phase"

During this phase, an interview was conducted by the researcher to assess CCNs' knowledge about palliative care by using tool one. Also, the researcher assess palliative care clinical practices provided by CCNs to patients and their families by using tool two to determine level of achievement of the palliative care practice. A direct observation was conducted by the researcher to identifying the actual palliative care nursing practices and basic needs of nursing staff.

Phase two:" Implementation Phase"

During this phase, the designed palliative care program was applied to the CCNs'. The designed program was delivered in eight weeks, every week involved three sessions, every session take about thirty to forty minutes. The session time was between morning and afternoon shift, and some times during morning shift after routine care were done for critical ill patients. Except practical sessions that take more time but during the shift work. Practical sessions were delivered in seven training session. Designed intervention program were focused on the following sessions: pain and symptoms control, psychological, social, spiritual, religious and cultural aspects of care, care of the imminently dying patient, and ethical aspects of care. Also, CCNs sessions in palliative care was done by using lectures and booklet. Moreover, system supports including CCNs information pamphlets, and posters for CCU rooms was done. In addition, practical sessions were focused on the following sessions: pain assessment, comfort measures for pain and symptoms relief, general strategies for psychological support, communication skills in CCUs, care after death and strategies to deal with loss and grief.

Phase Three: "Evaluation Phase"

This phase consisted of comparing of each CCN's findings with the preceding one and comparison between pre, post and two months post program implementation findings were done using tool one and two to evaluate the effect of palliative care program on CCNs' knowledge and practice.

Results:

Table (1): This table shows comparison between mean ±SD of CCNs' knowledge pre, post and two months post program implementation. There are highly statistical significant differences in relation to CCNs' knowledge regarding pain, dyspnea, anorexia, nausea/ vomiting, constipation, diarrhea and fatigue between pre and post program implementation, and between pre and two months post program implementation **P=0.000**. On the other hand, there are no statistical significant differences in relation to CCNs' knowledge regarding pain, dyspnea, anorexia, constipation, diarrhea and fatigue between post and two months post program implementation. While there is a highly statistical significant difference between post and two months post program implementation regarding nausea/

vomiting **P=0.002**. Moreover, there are highly statistical significant differences in relation to CCNs' knowledge regarding psychological, social, spiritual, imminently care and ethical aspects between pre and post program implementation, and between pre and two months post program implementation **P=0.000**. While there is no statistical significant differences between post and two months post program implementation.

Table (2): This table shows comparison between mean ±SD of CCNs' practice pre, post and two months post program implementation. There were highly statistical significant difference in relation to CCNs' practice regarding pain and symptoms control between pre and post program implementation, and between pre and two months post program implementation **P=0.000**. On the other hand, there were no statistical significant differences in relation to CCNs' practice regarding pain and dyspnea, between post and two months post program implementation. While there were highly statistical significant differences between post and two months post program implementation regarding anorexia, nausea/ vomiting, diarrhea and fatigue **P=0.000**. As compared to statistical significant difference regarding constipation **P=.03.** Also, there were highly statistical significant differences in relation to CCNs' practice regarding psychological, social, spiritual, imminently care and ethical aspects between pre and post program implementation, and between pre and two months post program implementation. In addition between post and two months post program implementation **P=0.000**.

Table (1): Mean ±SD of CCNs' knowledge regarding palliative care

knowledge	Pre mean ±sd	Post mean ±sd	Post 2 months mean ±sd	t-test (p) value
pain	9.96 ± 2.2	22.9 ± 1.9	22.3 ±1.7	(p)1 21.2 (.000)** (p)2 21.7 (.000)** (p)3 1.2 (0.22)
Dyspnea	10.2 ± 1.3	12.0 ± 0.0	12.0 ± 0.0	$(p)^1$ 7.1 (.000)** $(p)^2$ 7.1 (.000)**
Anorexia	4.7 ± 2.0	7.7 ± 0.46	7.6 ± 0.72	$p)^1$ 8.0 (.000)** $(p)^2$ 8.2 (.000)** $(p)^3$ 0.61 (0.54)
Nausea/ vomiting	11.6 ± 2.7	19.4 ± 0.81	18.6± 0.85	$(p)^1$ 15.4 (.000)** $(p)^2$ 12.7 (.000)** $(p)^3$ 3.3 (0.002)**
Constipation	8.3 ± 2.1	15.3 ± 0.71	15.0 ± 1.0	$(p)^1$ 19.1 (.000)** $(p)^2$ 18.9 (.000)** $(p)^3$ 1.1 (0.27)
Diarrhea	5.9 ± 2.0	9.6 ± 0.66	9.7 ± 0.70	$(p)^1$ 9.6 (.000)** $(p)^2$ 8.8 (.000)** $(p)^3$ 0.36 (0.72)
Fatigue	4.4 ± 1.5	7.7 ± .63	7.5 ± 0.62	$(p)^1$ 10.9 (.000)** $(p)^2$ 11.0 (000)** $(p)^3$ 0.96 (0.34)
Psychological	10.1 ± 2.4	19.5 ± .97	19.3 ± 0.70	(p)1 17.6 (.000)** (p)2 17.6 (.000)** (p)3 1.1 (0.24)
knowledge	Pre mean ±sd	Post mean ±sd	Post 2 months mean ±sd	t-test (p) value
Social aspect	7.2 ±.1.3	13.5 ± .89	13.5 ± 0.73	$(p)^1$ 21.5 (.000)** $(p)^2$ 26.1 (.000)** $(p)^3$ 0.15 (0.87)
Spiritual, culture	4.8 ±1.7	11.4 ± 1.1	11.4 ± 0.85	$p)^1$ 16.5 (.000)** $(p)^2$ 16.8 (.000)**
Imminently	4.9 ± 2.1	9.7 ± .50	9.6 ± 0.62	$(p)^1$ 12.2 (.000)** $(p)^2$ 11.5 (.000)**
Ethical	5.5 ± 2.0	11.6 ± .80	11.5 ± .81	$(p)^1$ 14.5 (.000)** $(p)^2$ 14.4 (.000)**

** Highly statistical significant difference (P < 0.001)
Paired- sample t-test (P^1): comparing pre and post program implementation
Paired- sample t-test (P^2): comparing pre and post (2 months) program implementation
Paired- sample t-test (P^3): comparing post and post (2 months) program implementation

Table (2): Mean ±SD of CCNs' practice regarding palliative care

practice	Pre mean ±sd	Post mean ±sd	Post 2 months mean ±sd	t-test (p) value
pain	22.6 ± 3.4	42.1 ± 7.2	40 ±6.7	(p)1 15.7 (.000)** (p)2 13.7 (.000)** (p)[3] 1.3 (0.17)
Dyspnea	25.3 ± 1.8	37.0 ± 4.0	35.9 ± 2.4	(p)[1] 14.5 (.000)** (p)[2] 17.7 (.000)** (p)[3] 1.6 (0.10)
Anorexia	7.2 ± 1.3	11.5 ±2.0	10.2 ± 2.1	p)[1] 9.7 (.000)** (p)[2] 6.1 (.000)** (p)[3] 3.3 (.002) **
Nausea/ vomiting	30.2 ± 2.7	41.1 ± 2.6	37.4± 2.2	(p)[1] 18.1 (.000)** (p)[2] 10.7 (.000)** (p)[3] 8.2 (.000)**
Constipation	20.5 ± 2.4	29.8 ± 2.5	29.0 ± 2.6	(p)[1] 14.0 (.000)** (p)[2] 12.2 (.000)** (p)[3] 2.2 (.03)*
Diarrhea	16.7 ± 1.6	21.1 ± 1.7	19.3 ± 2.1	(p)[1] 9.8 (.000)** (p)[2] 4.9 (.000)** (p)[3] 4.2 (.000)**
Fatigue	11.0 ± .000	12.3 ± .79	12.0 ± 0.87	(p)[1] 8.9 (.000)** (p)[2] 6.2 (000)** (p)[3] 3.0 (.005)**
practice	Pre mean ±sd	Post mean ±sd	Post 2 months mean ±sd	t-test (p) value
Psychological	20.7 ± 3.7	32.6 ± 3.1	28.6 ± 3.2	(p)1 14.3 (.000)** (p)2 10.0 (.000)** (p)3 6.0 (.000)**
Social aspect	9.5 ±.93	17.3 ± 1.4	15.6 ± 1.8	(p)[1] 28.1 (.000)** (p)[2] 22.7 (.000)** (p)[3] 5.1 (.000)**
Spiritual	3.4 ±..50	7.4 ± 1.0	6.8 ± .84	p)[1] 17.0 (.000)** (p)[2] 18.4 (.000)** (p)[3] 3.6 (.001)**
Imminently	15.9 ± 1.7	21.4 ± 1.7	19.4 ± 2.2	(p)[1] 12.0 (.000)** (p)2 6.9 (.000)** (p)3 6.2 (.000)**
Ethical	7.0 ± .87	10.5 ± 1.4	9.6 ± 1.6	(p)[1] 11.4 (.000)** (p)[2] 7.4 (.000)** (p)[3] 3.8 (.001)**

Table (3): Reveals correlation between total score of knowledge and total score of practice of CCNs pre, post and two months post program implementation. It can be noted that, there was a highly statistical significant difference **P=0.000** between total score of knowledge and total score of practice of CCNs in relation to pre /post program and pre /two months post program implementation. While there was a statistical significant difference **P=0.04** regarding total score of knowledge as compared to a highly statistical significant difference ***P=0.000*** regarding total score of practice in relation to post and two months post program implementation

Table (3): Correlation between total score of knowledge and total score of practice of CCNs pre, post and two months post program implementation.

Total score	**Pre**(mean ±sd)	**Post** (mean ±sd)	**2 months Post** (mean ±sd)	*t- test (P value)*
Total knowledge score	88.0± 8.1	160.6 ± 4.5	158.4± 4.0	$(p)^1$ 54.3 (0.000)** $(p)^2$ 46.9 (0.000)** $(p)^3$ 2.1 (0.04) *
Total Practice score	190.4±11.8	284.4±12.6	264±14.1	$(p)^1$ 36.8 (0.000)** $(p)^2$ 22.7 (0.000)** $(p)^3$ 8.4 (0.000)**

Table (4): Illustrates total satisfaction score level of CCNs' knowledge related to palliative care. There were very satisfied post and two months post program implementation.

Knowledge	**Pre** mean ±sd	**Post** mean ±sd	**Post 2 months** mean ±sd
Pain **Unsatisfied** **Satisfied** **Very satisfied**	 9.6±2.1 10.6±2.9 12	 -------- -------- 22.9±1.9	 -------- -------- 22.3±1.7
Dyspnea **Unsatisfied** **Satisfied** **Very satisfied**	 10.2±1.1 10.5±1.9 8.0	 -------- -------- 12.0	 -------- -------- 12.0±0.0
Nausea/ vomiting **Unsatisfied** **Satisfied** **Very satisfied**	 10.9±2.4 14±2.6 14.0	 -------- -------- 19.4±0.81	 -------- -------- 18.6±0.85
Constipation **Unsatisfied** **Satisfied** **Very satisfied**	 8.2±2.2 8.5±1.6 10.0	 -------- -------- 15.3±0.71	 -------- -------- 15.0±1.0
Diarrhea **Unsatisfied** **Satisfied** **Very satisfied**	 5.6±1.9 6.3±2.3 9.0	 -------- -------- 9.6±0.66	 -------- -------- 9.7±0.70
Fatigue **Unsatisfied** **Satisfied** **Very satisfied**	 4.2±1.3 5.8±1.6 2.0	 ------- -------- 7.7±0.63	 -------- -------- 7.5±0.62
Psychological **Unsatisfied** **Satisfied** **Very satisfied**	 9.3±2.5 12.5±2 15.0	 -------- -------- 19.5±0.97	 -------- -------- 19.3±0.70
Social aspect **Unsatisfied** **Satisfied** **Very satisfied**	 7.3±1.3 6.8±1.1 7.0	 -------- -------- 13.5±0.89	 -------- -------- 13.5±0.73
Spiritual **Unsatisfied** **Satisfied** **Very satisfied**	 4.9±1.3 4.5±3.1 5.0	 -------- -------- 11.4±1.1	 -------- -------- 11.4±0.85
Imminently **Unsatisfied** **Satisfied** **Very satisfied**	 4.3±1.9 6.6±1.8 8.0	 ------- -------- 9.7±0.50	 -------- -------- 9.6±0.62
Ethical **Unsatisfied** **Satisfied** **Very satisfied**	 5.2±1.8 6.1±2.1 9.0	 -------- -------- 11.6±0.80	 -------- -------- 11.5±0.81

Table (5): Presents total satisfaction score level of CCNs' practice related to palliative care. Where there was an increase in satisfaction level from unsatisfied to satisfied post and two months post program implementation.

Practice	Pre mean ±sd	Post mean ±sd	Post 2 months mean ±sd
Pain			
Unsatisfied	22.6±3.4	40.4±6.6	40.4±6.6
Satisfied	--------	44.8±4.7	49.0
Very satisfied	-------	--------	--------
Dyspnea			
Unsatisfied	25.3±1.8	33.0±3.7	35.8±2.5
Satisfied	--------	39.3±1.7	37.0
Very satisfied	--------	--------	--------
Nausea/ vomiting			
Unsatisfied	30.2±2.7	39.4±2.8	37.3±2.3
Satisfied	--------	42.0±2.0	39.0
Very satisfied	--------	--------	--------
Constipation			
Unsatisfied	20.5±2.4	29.1±2.9	29.0±2.6
Satisfied	--------	30.2±2.3	30.0
Very satisfied	--------	--------	--------
Diarrhea			
Unsatisfied	16.7±1.6	21.4±1.4	19.3±2.2
Satisfied	--------	20.9±1.8	21.0
Very satisfied	--------	--------	--------
Fatigue			
Unsatisfied	11.0±0.00	12.0±0.8	11.9±0.8
Satisfied	--------	12.4±0.7	13.0
Very satisfied	--------	--------	--------
Psychological			
Unsatisfied	20.7±3.7	31.8±3.2	28.5±3.2
Satisfied	--------	33.1±3.0	30.0
Very satisfied	--------	--------	--------
Social aspect			
Unsatisfied	9.5±0.9	16.7±1.3	15.5±1.7
Satisfied	--------	17.6±1.4	18.0
Very satisfied	-------	--------	--------
Spiritual			
Unsatisfied	3.4±0.5	7.4±1.1	6.7±0.8
Satisfied	--------	7.4±1.0	7.0
Very satisfied	--------	-------	-------
Imminently			
Unsatisfied	15.9±1.7	20.9±1.8	19.4±2.2
Satisfied	--------	21.7±1.7	19.0
Very satisfied	--------	--------	--------
Ethical			
Unsatisfied	7.0±0.8	10.5±1.3	9.5±1.6
Satisfied	--------	10.4±1.5	10.0
Very satisfied	--------	--------	--------

Discussion:

Historically, the focus of critical care has been primary on curative therapies, and death has been viewed as failure. Now, awareness of the need to integrate palliative care in critical settings has increased. The challenges to providing quality EOL include the hectic, fast-based environment; different perception among team members regarding patient's goals of care as far as aggressive treatment versus seeking limited or no treatment; communication barriers between health care professionals, patients, and patients' families; and a lack of research on improvements in the care of dying in the critical care settings. Often, because of these and other barriers, pain and other symptoms, are inadequately relieved and patients' goals of care are not addressed properly [20].

Therefore, appropriate preparation of CCNs is a vital component in providing quality care to patients and their families. A central tent within this framework of preparation is the formalized education of CCNs to practice in critical care areas. Formal education in conjunction with experiential learning, continuing professional development and training and reflective clinical practice is required to develop competence in critical care nursing [9].

The present study showed improvement in the total knowledge and practice sore of the studied sample post and two months post program regarding palliative care in relation to pre program. This might be due to lack of nurses incentives to improve their knowledge, and lacks of their updating knowledge especially who working in the CCUs for several years and increase the number of patients for each nurse with overloaded by more duties and having more work hours. In addition, this area of patient care not taught in the nursing curriculum in the majority of nursing institution in Egypt.

This is in line with, Al–Kindi, et al., [21] study on palliative care knowledge and attitudes among oncology nurses in Qatar, and found that there is a clear deficiency in formal palliative care education among the nurses at the National Center for Cancer Care and Research, in Qatar. This is reflected by their lack of experience and exposure to palliative care.

On the other hand, Abu-Saad et al., [22] studied on palliative care in Lebanon: knowledge, attitudes, and practices of medical and nursing specialties and found that significant differences were found between medical and surgical nurses and physicians concerning their perceptions of patients' and families' concerns, and questions. Knowledge scores were statistically associated with practice scores and degree. Practice scores were positively associated with continuing education in palliative care, exposure to terminally ill patients, and knowledge and attitude scores. Also, Prem, et al., [23] studied of nurses' knowledge about palliative care and concluded that overall level of knowledge about palliative care was poor, and nurses had a greater knowledge about psychiatric problems and philosophy than the other aspects.

As regard to total pain, dyspnea and constipation knowledge scores were increased in post and two months post program as regard to preprogram implementation, and highly statistical significant difference were found following interventions where p values were 0.000. This is in line with Callahan, et al [24], study on assess the knowledge of palliative and EOLC by student registered nurse anesthetists and found that pretest scores on the palliative care knowledge examination (mean ± standard deviation, 20.23 ± 3.52), and posttest scores (25.97 ± 4.95). A paired comparison of means revealed a statistically significant improvement on the posttest (P = .001).

Therefore, maintaining an optimal level of comfort for critically ill patients is a universal goal for physicians and CCNs because pain is one of the major experiences that can minimize patients' comfort. The current study showed that the CCNs' knowledge scores regarding comfort measures to control pain increased after applied program and there were highly statistical significant different following interventions where p values were 0.000. This may be attributed to inadequate knowledge of pain management principles, poor communication, lack of accountability, and inadequate staff training. This is supported by the studies conducted by Pasero et al., [25].

On the other hand, study conducted by Hirsh, et al., [26], noted that nurses did not appear to routinely apply theoretical knowledge in practice. Hirsh give an explanation for poor pain practice that nurses may not understand the rationale for using specific interventions because of deficits in knowledge about the physiology, and psychology and sociology of pain. So, this may have adversely affected their practice.

Regarding psychological aspects, palliative care is holistic and comprehensive and thus ideally it should be delivered by multidisciplinary team of care givers, working closely together and defining treatment goals and care plans together with the patient and his or her family. The current study revealed that, the total scores for all items of knowledge regarding interdisciplinary team were increased in post and two months post program and highly statistically significant differences were found following interventions where p values were 0.000. These findings are consistent with Callahan, et al., [24], studies which revealed that CCNs have a key role in the provision of palliative care due to their availability within resource and they are often the coordinators of the multidisciplinary team. Therefore, quality palliative care is best provided through the collaborative practice of an interdisciplinary team to meet the physical, emotional, social and spiritual needs of the person and their family.

Regarding social aspects, it is clear that CCNs play a pivotal role in governing visiting hours, therefore an essential component in whether open visiting practices are successful will depend on the attitudes and beliefs of the CCNs. The study results revealed that nearly all of study subjects replied correctly post and two months post program implementation regarding visiting hours and there were highly significant statistical differences P=0.000. Also, the current study showed that some CCNs allowed more liberal family visitation privileges than the unit policy dictate, whereas others reduced family visiting time based on patient's anxiety. Still others base the family visiting on the nursing schedule restricting visits when the unit is busy.

Also, many CCNs believe that patients need visitors, others felt the room is simply too small to allow for visitation and patient care at the same time. On the other hand, CCNs' emphasized that families should be free to visit a patient who is near death and allow for coping during this period. They also highlighted the importance of open visitation policies, regular reports on patient's status and satisfying the significant needs of families with loved ones in the CCU. Family members may communicate with and touch the patient, which may reassure both the patient and family. Also, nurses revealed that the extended visiting hours provides a continuity of care that is invaluable to families and helps cultivate a trusting relationship to reassure families that the nurses are working for the benefit of the patient. This is in agreement with Whitton& Pittiglio, [27]. On the other hand, Kirchhof & Dahl [7] studies

showed that visiting in CCU continues to be restricted.

Regarding imminently care, the current study revealed that increased in total scores regarding involvement of the family in the physical care of the dying person, treating the body after death with respect to the cultural and religious practices of the family and families should maintain environment as possible for their dying member post, and two months post program implementation, and there were highly statistically significant difference were found. According to the American Association of Colleges of Nursing, [28], preparation on EOLC for nurses has been inconsistent, even neglected at times, in the nursing curricula. Also, Barbera et al., [29], study found a significant difference between post-test scores on attitudes towards care of the dying between the intervention and comparison groups of CCNs, regarding the adequacy of their previous education on death and dying

Kirchhoff, &Walker, [30] study on nurses' experiences caring for dying patients and reported that "Good" EOL in the CCU was described as ensuring that the patient is as pain free as possible and that the patient's comfort and dignity are maintained. Also, involvement of the patient's family is crucial. This is in agreement with Salahuddin et al., [31] study identified gaps in the knowledge and attitudes of CCNs in Pakistan. Such lack of knowledge is often reflected in the care these nurses provide to their dying patients.

On the other hand, Espinosa et al., [32] study revealed that CCNs expressed the need for more education about terminal care. Many of the CCNs said they had not been prepared to provide terminal care. Critical care nurses identified the need for protocols or guidelines to assist with the process of providing terminal care. In addition, they identified the need for a detailed class or training on how to communicate with families. Such a lack of education leaves nurses feeling unprepared on how to tell the family member how to deal with the patient.

In relation to ethical and legal aspects of care, the current study revealed that, there was highly statistical significant difference following interventions regarding ethical issues of the study subjects where p values were 0.000, except the item related to enabling patients to make informed decisions where there was no statistical significant difference were present. This is because cultural differences, impaired patients level of consciousness, lack of CCNs knowledge and decision of who speaks to the patient is a very complicated issue that occurs frequently within hospitals. Also, this area is neglected in our CCUs in Egypt and patients become very dependent upon their family and are not involved in decision making related to diagnosis or treatment. Furthermore, some patients simply do not want to be told the truth if the prognosis is dire. This finding is supported by Kirchhoff & Walker [30] study reported that cultural differences offer many opportunities for physicians to potentially clash with their patients and families concerning truth telling. Dorgham & Al.Mahmoud [33] revealed that in King *Saudi Arabia* (KSA) nurses had higher decision making autonomy than nurses in Egypt. These results may be attributed to that in Egypt nurses were overwhelmed with heavy workload due to large number of patients in relation to nurses number as a result they didn't have enough time to participate in decision making.

Conclusion:

The finding of this study reflect that total satisfaction score of CCNs knowledge in relation to pain and symptoms control, psychological aspects,

social aspects, spiritual care, imminently care and ethical issues were very satisfied post and two months post program implementation, and there were highly statistical significant differences. On the other hand, the total satisfaction score of CCNs practice in relation to pain and symptoms control, and other aspects of palliative care were unsatisfied pre program implementation. Where there was an increase in satisfaction level from unsatisfied to satisfied post and two months post program implementation, also, there were highly statistical significant differences. Hence it can be concluded that providing an information booklet is an effective method in enhancing the knowledge level of CCNs.

Recommendations:

Based on the findings of this study, the following recommendations are suggested:

1. Training CCUs staff how to assess pain for conscious and comatose patients.
2. Educating and encouraging physicians to communicate directly, in a more open manner, with each other and with nurses, patients, and patients' families members.
3. Encouraging patient's family members to participate in his care.
4. Improving patient confidentiality, privacy, and social support.
5. Facilitating open visitation in the adult critical care environment.
6. Improving staffing patterns.
7. Creating support systems for CCNs who care for dying patients.
8. Encouraging the family to talk to and touch the patient.
9. Include education in pain and symptom management, communication training.
10. Increase the number of postgraduate fellowship training programs in palliative care.

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