



Cardiac Care Unit Nurses' Perception of Educational Competencies (Modified Delphi Method)

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ABSTRACT

Educational competency is an important professional qualification for nurses. Applying knowledge to nursing care for special patients is an integral part of professional nursing in special units in hospitals. This study was conducted to assess cardiac care nursing educational competencies using modified Delphi method. Participants were 60 CCU nurses from hospitals in Shahid Sadoughi University of Medical Sciences in Yazd selected through purposive and snowball sampling. Data was collected using semi-structured interviews during the first round and questionnaires during the second and third rounds. Data was analyzed using conventional content analysis method in the first round and quantitative descriptive analysis in the second and third rounds. For panelists the most important educational competencies to empower Cardiac Care Unit (CCU) nurses were 37 qualifications including personal characteristics (tolerance, carefulness, smartness, work ethic, lifelong self-learning, self-confidence, responsibility), professional characteristics (being experienced and trained, being skilled, speed and accuracy), the ability to adapt to extreme conditions, quick and accurate forecast and management of heart problems, being interested in educating the patients, students and colleagues, having the ability to interpret ECG, control dysrhythmia, cardiac blocks and myocardial infarction. The findings of this study determine educational competencies required for CCU nurses. Accordingly matrons and nursing supervisors can evaluate their check lists, provide competency assessment worksheets, examine nurses on arrival, periodically while in service, and enhance their competencies.

Key Words: Professional competency, cardiac care, nurse, Delphi research

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INTRODUCTION

CCU is one of the most critical units of hospitals in which special care is needed because of the complexity and critical condition of patients[1, 2]. Nurses are more available than other health care team, spend more time with patients and reduce patients' concerns by answering their questions and providing proper care to them.[3] Care behaviors in CCU include all critical care related to

survival of the patient. CCU nurses are faced with enormous problems. With regard to the critical condition of patients these nurses can be the most effective factor on patients' health.[4] Since all the problems relating to patients is more important and critical in CCU nursing care in this environment should be adequately professional and well-timed[5]. Williams et al. stated that: "Meeting individual needs of patients is the basis of nursing care. The ultimate goal of nursing staff is to help patients do activities

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they cannot do alone" [6]. It is believed that care occurs when nurses know patients' wants and views and put themselves in their shoes. Therefore with a better understanding of patients' perception of the priority of care behaviors nurses can provide the necessary support and comprehensive care according to individual needs of patients.[7] Human resources constitute the foundation of health systems. If the plans and projects related to training of human resources are not compatible with health and social conditions of a country it will not be able to raise people's health to a level where they can economically and socially have productive lives. Meanwhile nursing has a significant role in providing these health services. In terms of importance it is enough to say that almost a third of operating budget of health centers is devoted to nursing unit [8].Nursing care is the preoccupation of every hospital. And the ultimate goal of nursing managers is to improve nurses' training and knowledge to deliver higher quality care [9]. Professional competence of nurses is influenced by their educational competency [10]. The concept of professional competence specifically in intensive care nursing is somewhat different from nursing in general. This difference is due to the nature of ICU and its special conditions. ICU is one of the most critical units of hospitals in which special care is needed because of the complexity and critical condition of patients [11, 12]. Clinical and professional competence are divided into three and four main areas respectively. In the area of clinical competency, concepts such as special nurse's familiarity with the basics of nursing care, familiarity with clinical guidelines, and nursing interventions have been proposed. Within the area of professional competence concepts such as nursing care ethics, decision-making, patient care improvement and collaboration with other intensive care team members have been mentioned [13]. One aspect of nurses' competency is related to their educational competence. Applying knowledge to the care of special patients is an integral part of professional nursing in special units in hospitals. However special care training courses for nurses vary from country to country. The number of studies examining the knowledge of intensive care nurses and examining the impact of trainings on improving special nursing care quality is limited in Europe [14].Also members of the European Specialist Nurses Association believe that there is a need for a single educational curriculum for in-service training of all members of the care team including nurses, doctors, physical therapists and other people involved [15]. Lakanmaaa et al (2012) used Delphi technique to examine the qualifications required for specialist nursing care. The results of this study showed that the competencies required in the ICU can be divided into five main areas: knowledge, skills, values and attitudes, nursing experience and personal areas of nursing. Four areas can be found in the existing competencies and the personal domain is involved in new nursing. The results showed that nursing

competence needs in the ICU is multidimensional [16]. Nursing competence is the ability to simultaneously use knowledge, skills, attitudes and values in patient care. Nursing competence has recently attracted more attention because of its importance. Given the increasing significance of nursing competence it is important to precisely understand its dimensions, including educational, clinical, and moral aspects. The concept of professional competence specifically in intensive care nursing is somewhat different from its concept in nursing in general. This difference is due to the nature and specific conditions of CCU. Despite the importance of nursing care and caring behaviors there is much difference in educational competencies and caring behavior priorities in this regard which can affect nursing care. Considering the importance of the concept of educational competency especially in CCU this study aims to examine the CCU nurses' perception of educational competencies.

MATERIALS AND METHODS

This is a descriptive study using modified Delphi technique. The Delphi technique was applied to obtain consensus among clinicians about the items related to Cardiac Care Unit (CCU) nurse's educational competency. Data was collected in three rounds. The study population involved the matrons and nurses working at the CCU of training hospitals in Yazd with at least bachelor's degree and one year clinical experience. Sampling technique was purposive sampling. In the first round of Delphi 6 matrons were interviewed and a questionnaire consisting of demographic information (age, sex, education level, work experience and position) and an open-ended question [As you have valuable experience in CCU, in what areas (both medical and non-medical) does a competent and professional nurse need learning?] was dispatched to 60 participants by email, fax and mail. Content analysis was carried out on the data obtained from interviews and completed questionnaires. The second-round questionnaire consisted of the items extracted from the first round of Delphi and the items obtained through searching databases. These databases included Science Direct (Elsevier), Wiley-Blackwell Complete STM Collection, Nursing Consult, Pub Med, CINAHL, Google Scholar, SID, MAGIRAN, and Medlib. Persian keywords searched in the databases were educational competency and CICU nurse; English keywords were cardiac nurse, nursing need, assessment, and educational need. The options AND & OR, and NOT were used for the search. In the second round 60 panelists were asked to rank the items in order of significance on Likert scale in other words they were asked to quantify the items. The four points of Likert scale were: (1) it is not important at all, (2) it is not important, (3) it is important, and (4) it is very important. Data was analyzed by SPSS 18. The items with over 95% importance were accepted. The written responses were analyzed through content analysis technique. In the third round of Delphi the accepted items from the second round were developed into a



questionnaire which was sent to 63 panelists. They were asked to whether they were in agreement or disagreement about educational competency of CCU nurses. SPSS 18 and descriptive statistics were used in the third round. It should be noted that during the third round given the expansion of the CCU in the hospital, some other nurses were willing to participate in the study to whom the questionnaire was sent. The items that gained 80% agreement or consensus were kept and the rest were discarded. The remained items were approved as the final results and published. It should be noted that for moral considerations research goals were explained to all participants and their informed written consent were acquired.

RESULTS

In the first round 6 matrons and 59 nurses participated in the study. They were from 26 to 50 years old. The mean and standard deviation of their age was 37.05 ± 5.66 . They had 3 to 28 years of work experience. The mean and standard deviation of work experience was 13.42 ± 6.48 . With regard to sex 51 (86.44%) were female and 8 (13.55%) were male. In terms of education 4 (6.77%) had a master's degree in nursing and 55 (93.22%) had bachelor's.

Also based on analysis of the codes, to have a competent nurse for education in the CCU, three main themes or categories were obtained: personal competency of specialist nurse (such as tolerance, carefulness, smartness, work ethic, lifelong self-learning, self-confidence, and responsibility), professional competency of specialist nurse (such as being experienced and trained, being skilled, having speed and accuracy), and organizational competency (to value the status of trained nurses, allocating material benefits to education, allocating intellectual benefits to education, efficient educational supervision, and efficient management supervision). The subcategories were merged with the items derived from searching literature and 94 items were obtained.

The results of second round of Delphi

In the second round 7 matrons and 49 nurses participated in the study. They were from 25 to 50 years old. The mean and standard deviation of their age was 36.03 ± 6.27 . They had 3 to 28 years of work experience. The mean and standard deviation of work experience was 13.28 ± 7.11 . With regard to sex 47 (83.92%) were female and 9 (16.07%) were male. In terms of education 5 (8.92%) had a master's degree in nursing and 51 (91.07%) had bachelor's. In this round the panelists' comments about 94 items were collected. 51 items gained the relative frequency of "very important" and "important". These items were accepted for the next round and the rest were excluded (Table 1).

In the third round, 53 approved items were sent to participants to determine the percentage of their agreement. 37 items obtained over 80% agreement and the rest were discarded (Table 2). Finally the

resulting items were introduced as the necessary qualifications for CCU nurses.

DISCUSSION

Selecting qualified and competent nurses for CCU and improving their knowledge and performance has a critical impact on ensuring the quality of nursing care and improves care delivery to patients. Due to the nature of CCU nurses working in this unit need a whole range of educational competencies. Writing on the importance of cardiovascular nursing, Fridlund et al. state that cardiovascular nursing is developing rapidly and there is much evidence about the effects of these nurses' performance on reducing the suffering of patients. However there is not enough awareness about of the extent and content of cardiovascular nursing education in Sweden [17]. Timmins also wrote that cardiovascular nurses need ongoing education to perform their role. Accordingly professional organizations should strive to plan appropriate educational courses for their members [18]. Roschkov et al believe that roles and responsibilities of cardiovascular nurses are extensive and varied. They have various clinical, educational, administrative, and research responsibilities which need a better understanding in the future.[19] Based on their findings, CCU nurses should know about all the diseases directly related to their unit and other diseases which are diagnosed in their patients. In designing a curriculum for cardiovascular nursing, Astin et al (2015) found that eight themes necessary: (1) principles of cardiovascular pathophysiology; (2) optimizing cardiovascular health; (3) assessment and planning; (4) Principles and practices of individual- and family-centered care; (5) education and communication; (6) emotional and spiritual wellbeing; (7) physical well-being and comfort; and (8) checking the quality of care[20]. According to the results and the results of other researchers cardiovascular nursing involves different areas of health and treatment including primary, secondary and tertiary care. Therefore a cardiovascular nurse should have knowledge and skill in the areas of health promotion, cardiac prevention and rehabilitation, acute, chronic and episodic care and palliative care [21]. Based on the results of a study Holm et al cardiovascular nurses should be able to collect information on medical and family history, physical examination and diagnostic test results including genotypes [22]. Ballew et al. state that cardiac nurses must learn how to manage gastrointestinal bleeding as in patients with heart failure who have a device [23]. Cardiovascular nurses in Europe need to improve their knowledge and performance in oral anticoagulant therapy to provide optimal service to cardiac patients and to minimize side effects [24].

Nursing care for the elderly with cardiovascular disease needs having cardiovascular knowledge, knowing how to train patients, health assessment, developing care plans, procedures to ensure the quality of care, etc[22]. Coronary care nurses are

responsible for evaluating and managing patients' symptoms often by using technology. Moreover they should be able to develop therapeutic relationships with their patients and in the first step they should provide vital physical and mental care in both the critical and relief stages of the disease.[25] Cardiac nurses need to have more knowledge and special practical training to provide information about sexual concerns and give sexual advice to cardiac patients.[26] To train patients about cardiovascular diseases healthcare workers need to learn advanced communication skills, identify educational needs, competencies and motivation in adult education and counseling patients about lifestyle.[27,28]

CONCLUSION

As cardiac care nurses play an important role in ensuring nursing care quality in cardiovascular wards and can improve the care delivered to the patients it is necessary to select the nurses carefully so that they have appropriate professional and personal qualities. In line with this they should receive training on general, basic nursing, and specialist cardiac content through integrated educational approach. At the same time, managerial and organizational requirements should be established to maintain and improve their competencies and capabilities.

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Table 1. Frequency distribution of educational competencies of CCU nurses with an importance of above 95% for panelists

row	Educational competencies of CICU nurses	Over 95% importance		row	Educational competencies of CICU nurses	Over 95% importance	
		Number	Percent			Number	Percent
1	Having normal, healthy physical and mental conditions	55	98.21	28	Having the ability to relieve pain and differentiate cardiac pain	56	100
2	Having appropriate personal characteristics	55	98.21	29	Having the ability for bedsores care	54	96.42
3	Having appropriate professional characteristics	55	98.21	30	Being able to do oxygen therapy	55	98.21
4	Having the ability to adapt to critical conditions	54	96.42	31	Having the ability to train patients	55	98.21
5	Quick and accurate forecast and management of heart problems	54	96.42	32	Having the ability to write educational content for patients	54	96.42
6	Being interested in educating the patients, students and colleagues	55	98.21	33	Knowing learning and study methods	54	96.42
7	Participating in educational activities of the institute	55	98.21	34	Having the ability to monitor vital signs	55	98.21
8	Having the ability to interpret ECG	55	98.21	35	Having the ability for invasive hemodynamic monitoring	55	98.21
9	Having the ability to manage various types of dysrhythmias	55	98.21	36	Having the ability to manage critically ill patients until arrival of the doctor	55	98.21
10	Having the ability to manage various types of cardiac blocks	55	98.21	37	Having the ability to manage cardiac patients with other diseases such as brain, kidney dialysis diseases	55	98.21
11	Having the ability to manage various types of common cardiac diseases	56	100	38	Having the ability to manage stress	56	100



12	Having the ability to manage myocardial infarction	56	100	39	Having the ability to manage anger	54	96.42
13	Having the ability to manage heart failure	55	98.21	40	Time management ability	55	98.21
14	Ability to manage pulmonary edema	55	98.21	41	Ability to manage the CCU	55	98.21
15	Ability to manage pulmonary embolism	55	98.21	42	Problem solving ability	55	98.21
16	Ability to manage cardiopulmonary resuscitation	56	100	43	Crisis management ability	55	98.21
17	Ability to work with ventilator	55	98.21	44	Observing patient's rights	55	98.21
18	Ability to work with electroshock	56	100	45	Ability to manage hospital's information system and data base search	54	96.42
19	Ability to work with a syringe pump	55	98.21	46	Observing patient's safety	55	98.21
20	Ability to work with monitoring	56	100	47	Observing personnel's safety	55	98.21
21	Ability to work with electrocardiography	55	98.21	48	Observing occupational health	55	98.21
22	Ability to work with different types of pacemakers	54	96.42	49	Ability to prevent and control nosocomial infection	55	98.21
23	Knowing how to increase self-confidence	54	96.42	50	Isolation capability	54	96.42
24	Ability to interpret electrolyte tests	55	98.21	51	Efficient educational supervision	54	96.42
25	Ability to interpret cardiac enzyme tests	55	98.21	52	Having good evaluation scores	54	96.42
26	Ability to interpret blood clotting tests	55	98.21	53	Getting optimal satisfaction of superiors (supervisors, managers, physicians)	54	96.42
27	Report writing ability	54	96.42				

Table 2. Frequency distribution of educational competencies of CCU nurses with an importance of above 80% for panelists

row	Educational competencies of CICU nurses	Over 80% agreement		row	Educational competencies of CICU nurses	Over 80% agreement	
		Number	Percent			Number	Percent
1	Having appropriate personal characteristics	58	92.06	20	Ability to interpret cardiac enzyme tests	54	85.71
2	Having appropriate professional characteristics	59	93.65	21	Ability to interpret blood clotting tests	51	80.95
3	Having the ability to adapt to critical conditions	58	92.06	22	Report writing ability	54	85.71
4	Quick and accurate forecast and management of heart problems	60	95.23	23	Having the ability to relieve pain and differentiate cardiac pain	61	96.82
5	Being interested in educating the patients, students and colleagues	62	98.41	24	Having the ability to train patients	52	82.53

6	Having the ability to interpret ECG	63	100	25	Having the ability for invasive hemodynamic monitoring	55	87.3
7	Having the ability to manage various types of dysrhythms	63	100	26	Having the ability to manage critically ill patients until arrival of the doctor	52	82.53
8	Having the ability to manage various types of cardiac blocks	61	96.82	27	Having the ability to manage cardiac patients with other diseases such as brain, kidney dialysis diseases	55	87.3
9	Having the ability to manage various types of common cardiac diseases	58	92.06	28	Having the ability to manage stress	55	87.3
10	Having the ability to manage myocardial infarction	59	93.65	29	Time management ability	51	80.95
11	Having the ability to manage heart failure	58	92.06	30	Problem solving ability	56	88.88
12	Ability to manage pulmonary edema	60	95.23	31	Crisis management ability	53	84.12
13	Ability to manage pulmonary embolism	62	98.41	32	Observing patient's safety	54	85.71
14	Ability to manage cardiopulmonary resuscitation	60	95.23	33	Observing personnel's safety	58	92.06
15	Ability to work with ventilator	58	92.06	34	Observing occupational health	54	85.71
16	Ability to work with electroshock	57	90.47	35	Ability to prevent and control nosocomial infection	53	84.12
17	Ability to work with different types of pacemakers	60	95.23	36	Efficient educational supervision	54	85.71
18	Knowing how to increase self-confidence	51	80.95	37	Getting optimal satisfaction of superiors (supervisors, managers, physicians)	54	85.71
19	Ability to interpret electrolyte tests	51	80.95				