



ORIGINAL ARTICLE

Educational needs Assessment and Development of in-service training Program for ICU Nurses in Subsidiary Hospitals of Semnan University of Medical Sciences

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ABSTRACT

Development and Implementation of educational needs assessment and service training programs in order to enhance knowledge; Skills and attitudes are essential for ICU nurses to ensure better health service provision to the community . The aim of this study was to identify and prioritize educational needs assessment and development of in-service training program for ICU nurses in subsidiary hospitals of Semnan University of medical sciences This study comprised of two phases of a) identifying and prioritizing training needs of ICU nurses and 2) development of an in-service training program based on this needs assessment. First phase of the study conducted using a researcher developed questionnaire for assessment of knowledge, skills and attitudes of ICU nurses and b) Bases on the viewpoints of participating nurse managers and ICU attending physicians(3 anesthesiologists, 7 ICU nurses with MS and 20 ICU nurses with BS degrees) followed by a multiple-choice specialty exam plus a competency appraisal checklist for measuring the skills of ICU nurses Census method was used for data collection in both phases of the study. Validity and reliability of data gathering toolswere tested and verified by using expert opinions and conducting pilot study on the instruments . Data analyzed with SPSS software using descriptive and inferential statistical methods (one sample T- test). First phase indicated that 66.66% respondents were belonged to the age group of 40-45 years old. They had work experience approximate 10-20 years in ICU and 63.3% were female. While 50%.of them were nurses Second phase of research represent 14 out of 28 training title which were identified by Delphi technique; were determined as needs of for nurses who working in ICU in two hospitals of Semnan. These needs of training identified in a row (1) airway maintenance, (2) arterial blood gas sampling , (3) interpretation to daily tests and familiarity with normal ranges, (4) planning, implementing and evaluating the comprehensive skin care, (5) controlling and regulating the parameters of ventilator with regards to patient's respiratory status, (6) care principles and cooperation in patient that separated from ventilator, ex-tubation and oxygenation, (7) cardiac monitoring, diagnosis of dysrhythmias and taking immediate measureat the time of fetal dysrhythmias occurrence, (8) setting and applying defibrillator device, (9) checking cardinal Venus pressure (CVP) and establishing a flow rate of medicines according to physician's prescription, (10)prevent and control of hospital infections, (11) nursing careat consciousness disorders like hallucination, illusion and physical restlessness, (12) pharmacotherapy, injection of drugs with positive inotrope (Adrenalin, Atropine, Dobutamin) (13) recognize and using of antidotes in case and (14) cardiopulmonary resuscitation (CPR) for adults . According to this study, ICU nurses professional development could be improved by the well designed and quality specialty training programs. Updating the knowledge, skills and attitudes of ICU nursing personnel through these programs should be one of the most important and critical duties of nursing administration in health care settings. Conducting detailed training needs assessment would be guaranteed by mixed method data gathering.

Key words: On the job training, ICU nurses, Educational needs assessment

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INTRODUCTION

Nurses are the essential members of the health care teams. Through decades nursing discipline is developed along with other health care professionals as an academic discipline [1]. Nurses play an

important role in the intensive care units around the world. Being knowledgeable and having a strong scientific background are two essential characteristics of personnel working in ICUs. Hence, those nurses who do not enjoy necessary competencies must not be allowed to work in these specialty wards [2].

Unfortunately in many cases this crucial role of nurses along the health care delivery spectrum has been neglected; but they have an undeniable role in preventive, disease management and rehabilitative services and expected outcomes [3]. Despite these facts many studies indicated that teaching methods of nursing professionals are not appropriate for developing the right skills [4, 5].

To maintain professional nursing standards, nurses should develop, organize and update their knowledge and skills through continuous in-service training programs [6].

The necessity of providing on the job training courses in all fields and occupational areas of nursing is an important matter, but regarding the very sensitive nature of working at intensive care units, training of ICU personnel must be paid more attention. Identifying educational needs assessment before scheduling any kind of training courses in different levels and conditions are important and nature and scope of these programs would be determined based on an educational needs assessment [7]. It is expected that provision of these educational programs facilitate achievement of organizational objectives such as provision of quality care and better medical outcomes, reducing costs and increasing clients and employees' satisfaction [8].

So it has been one of the most important issues in clinical excellence and accreditation of health care organizations with direct responsibility of Medical Education Development Centers [9].

Failing to meet the program goals can endanger patients, challenging the professional merits and reducing the job satisfaction of nurses [10]. So, we decided to put the purpose of the study on identifying and prioritizing the training needs of nurses working at ICU of subsidiary hospitals of Semnan University of medical sciences.

Materials and Methods:

This study was conducted at ICUs of *Fatemiyeh* and *Amiralmomenin* hospitals in Semnan. This study consisted of two phases. In the first phase scopes of educational needs of ICU nurses were assessed from viewpoints of ICU supervisors, head nurses and attending physicians. Census method was used to collect data from all 30 respondents. A close-ended questionnaire was developed for collecting relevant data. Scientific Validity of the questionnaire was assessed and confirmed using content validity method. The latest scientific sources including textbooks, scholarly journals, scientific articles and organizational nurses job descriptions were used to define the training items of the questionnaire. After preparation of questionnaire draft some faculty members of Semnan University of medical sciences were consulted to study and verify the questions. For testing the reliability of questionnaire the Cronbach's alpha was calculated ($\alpha = 0.94$). Likert scale was used for rating each of the 28 training items of the questionnaire in order to determine the training needs of ICU nurses. Respondents were supposed to choose between "no need for training", "minimal need for training", "medium need for training", "high need for training" and "urgent need for training" which stands for scores one, two, three, four and five respectively. Only those items with scores three, four and five were considered as training need priorities. Training items of the questionnaire included (1) patient admission and discharge, (2) monitoring of vital signs including cardiac signs and symptoms, respiratory status, any abnormal finding in central and peripheral nervous system (3) physical examination (4) determination of consciousness level with Glasgow coma scale, (5) airway maintenance, oxygenation and intubation need (6) arterial blood gas sampling and its interpretation, (7) daily routine tests interpretation and familiarity with their normal ranges, (8) planning, implementing and evaluating the comprehensive skin care (9) caring the patients with musculo skeletal disorders and diagnosing and preventing immobility complications, (10) patient education for application of assistive devices and orthoses, (11) decubitus ulcer management, (12) Calibration and maintenance of medical devices (13) patient feeding via naso gastric tubes and parenteral nutrition, (14) controlling and regulating the parameters of ventilators based on patient's respiratory status, (15) weaning the patient from ventilator, extubation and oxygenation, (16) cardiac monitoring, diagnosis of dysrhythmias and taking immediate measures at occurrence of fatal dysrhythmias (17) setting and applying defibrillator devices, (18) psychological support for patients and their families, (19) airway secretions suctioning through tracheostomy or endotracheal tube (20) determination of training and consulting needs of patients and their families (21) evaluating the performance of chest tubes, naso gastric tube, urinary catheter, pacemaker, endotracheal tubes and other types of drains, (22) Central venous pressure (CVP) monitoring and establishing a continuous flow rate of medications according to physician's prescription, (23) infection control (24) adjusting the amount of sensory stimuli in the ICU environment (25) special nursing care at the time of consciousness disorders such as ICU psychosis, delirium and restlessness, (26) pharmacotherapy, injection of drugs with positive inotropic effects (Adrenalin, Atropine, Dobutamin), (27) types of antidotes (digi fab,...) and (28) adult cardiopulmonary resuscitation (CPR).

In the second phase of the study based on identified needs priorities in the first phase of the study a blue print of a scientific test prepared with a multiple choice questionnaire to evaluate the knowledge and a checklist to evaluate the skills. Validity of the multiple choice scientific test and the checklist were examined and consensus were built by expert opinion. Moreover, for verifying the reliability of the data collection tools, a test retest with intervals of 10 days was used on eight ICU nurses.

. For each training title, three multiple choice questions were considered. The training titles covered in multiple choice test included (1) special nursing care at the time of consciousness disorders such as ICU psychosis, delirium and restlessness (2) airway maintenance, oxygenation and intubation (3) arterial blood gas sampling interpretation, (4) routine tests interpretation and familiarity with their normal ranges, (5) planning, implementing and evaluating the comprehensive skin care program, (6) controlling and regulating the parameters of ventilator with regards to patient's respiratory status, (7) respiratory care principles and weaning patients from ventilator, extubation and oxygenation, (8) cardiac monitoring, diagnosis of dysrhythmias and taking immediate measure at the time of fatal dysrhythmias (9) setting and applying defibrillator device, (10) central venous pressure (CVP) monitoring and establishing a continuous flow rate of medications based on physician's prescription, (11) pharmacotherapy, administration of drugs with positive inotropic effects (Adrenalin, Atropine, Dobutamin), (12) types of antidotes (digi fab,...), (13) adult cardiopulmonary resuscitation (CPR) (14) infection control.

Each question scored one point. About each training title, a score of three or four indicates the educational needs and a score of zero or one indicate no training needs. Furthermore, 12 checklists were developed based on the results of the first phase. Each checklist consisted of some behaviorally anchored items and each item was given a specific score and a sum score calculated for each checklist. The standard score of each checklist was calculated by Angoff method and a number of key items were included at the end of each checklist. As a result, earning a total score above the standard score indicates no training needs and below the standard score indicates the related training needs. The followings are checklist titles, total scores and standard scores (1) checklist of controlling and regulating the parameters of ventilator with regards to patient's respiratory status consisted of 17 items with a total score of 17 and a standard score of 12/5; (2) checklist of arterial blood gas sampling and interpretation consisted of 44 items with a total score of 44 and a standard score of 29.25; (3) checklist of cardiopulmonary resuscitation (CPR) for adults consisted of 91 items with a total score of 91 and a standard score of 71; (4) checklist of airway maintenance, ventilation, oxygenation and intubation consisted of 44 items with a total score of 44 and a standard score of 32; (5) checklist of pharmacotherapy, administration of drugs with positive inotropic effects (Adrenalin, Atropine, Dobutamin) consisted of 22 items with a total score of 22 and a standard score of 18; (6) checklist of planning, implementing and evaluating the comprehensive skin care program consisted of 26 items with a total score of 26 and a standard score of 20; (7) checklist of central Venous pressure (CVP) monitoring and establishing a flow rate of medicines according to physician's prescription consisting of 13 items with a total score of 13 and a standard score of 9; (8) checklist of cardiac monitoring, diagnosis of dysrhythmias and taking immediate measure at the time of fatal dysrhythmias consisted of ten items with a total score of 10 and a standard score of 7/5; (9) checklist of weaning the patients from ventilator, extubation and oxygenation consisting of 24 items with a total score of 24 and a standard score of 19/5; (10) checklist of setting and applying defibrillator device consisting of 39 items with a total score of 39 and a standard score of 29.25; (11) checklist of hospital infection precautions consisting of 20 items with a total score of 20 and a standard score of 16; (12) checklist of special nursing care at the time of disturbance in consciousness such as hallucination, delirium and restlessness consisting of 16 items with a total score of 16 and a standard score of 12.

For data gathering in the first phase of the study, after coordinating with the hospitals' administration authorities, resident physicians, supervisors and head nurses of ICUs in both hospitals were asked to participate in the research. Then the purpose of the research and the way of filling the questionnaire were explained to them. 30 out of 41 participants answered to the questions within allocated time frame. After all questionnaires were filled, data extracted from them were analyzed and finally fourteen training titles were identified as training needs. In the second phase, after providing both hospitals' ICU nurses with explanation of the research purpose and the way of answering the questions, they were asked to participate in the field research through taking part in specialty knowledge tests. Moreover, the skills of nurses were evaluated by two researchers using 12 developed checklists and directly observing care giving activities. Then the training needs of ICU nurses and the frequency of needs for each of fourteen training title in the knowledge domain were identified and then prioritized based on the achieved scores. Also, the training needs and their frequencies for each of training titles in the field of skills were identified and prioritized according to the obtained scores in observation checklists. Then after calculating the relative frequencies, the final results were prioritized. Descriptive and inferential statistics (one sample T-test) were used for analyzing the data.

RESULTS

Results of the first phase of the study indicated that 66.66% of respondents were belonged to the group of age 40-45 years old. They had work experiences between 10-20 years in ICU and mostly were female (63.3%) and 50% of them were nurses..

Results of the second phase of the study conducted using Delphi technique were indicated that 14 out of 28 titles of trainings were confirmed as educational needs of ICU nurses who working in the two hospitals of Semnan. Defibrillator see *table 1*.

The demographic results in second phase indicated that 73.3% respondents were female. 50% of them had less than 40 years-old. Also, 40% of respondents had an occupational background in nursing between 5-10 years.

The results of the multiple choice specialty knowledge test are presented in the table one indicating that most nurses (80%) had the training needs were related to controlling and regulating the parameters of ventilators and patients respiratory status, defibrillator and hospital infection control indicated as the least important training needs with only 3.33% of nurses scoring below standard point in this section see Table 1.

The results of practical test based on observational checklist for nurses skills indicated that the most frequently training need in 80% of nurses were related to central venous pressure (CVP) monitoring and establishing a flow rate of medicines according to physicians prescriptions (one sample T-test= -4.91 ; $p < 0.001$), and the least frequently training need was related to setting and applying defibrillator devices during patient arrest and CPR with only 3% of the nurses performances were below standard score (one sample T-test= 9.468 ; $p < 0.003$). See *Table 1*.

Table (1): The results of training needs assessments of ICU nurses including delphi method, specialty knowledge test and observational checklist

No	Training titles	Training Needs assessment (Delphi)		Specialty knowledge test(MC Exam)		Performance test (Behaviorally anchored checklists)	
		P	NP	P	NP	P	NP
1	patient admission and discharge	13.79	86.21				
2	monitoring of vital systems including cardio pulmonary signs and symptoms, central and peripheral nerves and abnormal findings in these systems	27.59	72.41				
3	physical examination and diagnosis of abnormal findings	23.33	76.67				
4	determination of consciousness level using Glasgow coma scale	30	70				
5	airway maintenance, oxygenation and intubation	73.32	26.68	66.67	33.3	60	40
6	arterial blood gas sampling and interpretation	73.33	26.67	66.67	33.3	67	33
7	interpretation of routine lab tests and familiarity with their normal ranges	53.33	46.67	26.7	73.33		
8	planning, implementing and evaluating the comprehensive skin care program	60.03	39.97	60	40	60	40
9	preventing immobility complications in patients with physical and musculoskeletal disorders	17.24	82.76				
10	training patients for using their assistive devices and orthoses	13.33	86.67				
11	Care and dressing of decubitus ulcers	23.33	76.67				
12	controlling , regulating and maintenance of medical devices	20	80				
13	patient feeding with gastric tubes and parenteral nutrition	23.33	76.67				
14	controlling and regulating the parameters of ventilator regarding patient's respiratory status	72.41	27.59	80	20	60	40
15	cooperation in weaning the patients from ventilator, extubation and oxygenation	62.07	37.93	46.67	53.3	3	97

No	Training titles	Training Needs assessment (Delphi)		Specialty knowledge test(MC Exam)		Performance test (Behaviorally anchored checklists)	
16	cardiac monitoring, diagnosis of dysrhythmias and taking immediate measures at the time of fatal dysrhythmias	73.33	26.67	70	30	70	30
17	setting and applying defibrillator device	66.7	33.3	40	60	3	97
18	psychological support for patients and their families	20	80				
19	airway suctioning through orotracheal, tracheostomy, endotracheal and nasotracheal tubes	23.67	76.33				
20	determination of self-care learning needs of patients and their families	16.67	83.33				
21	evaluating the normal performances of chest tubes, naso- gastric tubes, urinary catheters, pacemakers, endotracheal tubes and drainage systems	30	70				
22	Central Venous Pressure (CVP) monitoring and establishing a flow rate of medicines according to physicians prescriptions	60	40	16.67	83.3	80	20
23	hospital infection control	57.37	42.6	3.33	96.7	57	43
24	adjusting sensory stimuli to ICU patients and preventing sensory overloads and deprivations	16.67	83.33				
25	special nursing care at occurrence of consciousness disorders such as hallucinations, delirium and restlessness	53.38	46.62	10	90	7	93
26	pharmacotherapy, administration of drugs with positive inotropic effects (Adrenalin, Atropine, Dobutamin)	53.38	46.6	63.33	36.7	57	43
27	Safe and appropriate use of antidotes(dig Fab,...)	60	40	20	80		
28	cardiopulmonary resuscitation (CPR) for adults	80	20	50	50	70	30

*P=Priority NP=Not priority

As it is shown in table 2, the mean frequency rate of each training title were calculated by combination of the three needs assessment modalities including delphi method ,, the specialty knowledge exam and the performance checklist .In this way the first priority of training needs with 71.11% mean frequency was cardiac monitoring, diagnosis of dysrhythmias and taking immediate measures at the time of fatal dysrhythmias and the last priority training need revealed as special nursing care at the time of consciousness disorders like hallucination, delirium and restlessness with a mean frequency of 23.46% (see table 2).

Table (2): relative frequency rates of needs assessment based on results of needs assessment questionnaire, scientific test and practical test

No	Assessed titles	Training need				
		Delphi method	specialty Knowledge Exam	Performance Checklist	Total score	mean score
1	Controlling and regulating the parameters of ventilator according to patient's respiratory status	72.41	80	60	212.41	70.80
2	arterial blood gas sampling and interpretation	73.33	66.67	67	207	69
3	cardiopulmonary resuscitation (CPR) for adults	80	50	70	200	66.66
4	airway maintenance, oxygenation and intubation	73.32	66.67	60	199.99	66.66

No	Assessed titles	Training need				
		Delphi method	specialty Knowledge Exam	Performance Checklist	Total score	mean score
5	pharmacotherapy, administration of drugs with positive inotropic effects (Adrenalin, Atropine, Dobutamin)	53.38	63.33	57	173.71	57.90
6	planning, implementing and evaluating the comprehensive skin care program	60.03	60	60	180.03	60.01
7	Central Venous Pressure (CVP) monitoring and establishing a flow rate of medicines according to physician's prescription	60	16.67	80	156.67	52.22
8	cardiac monitoring, diagnosis of dysrhythmias and taking immediate measures at the time of fatal dysrhythmias	73.33	70	70	213.32	71.11
9	cooperation in weaning patients from ventilator, extubation and oxygenation	62.07	46.67	3	111.74	37.25
10	setting and applying defibrillator devices	66.7	40	3	109.70	36.57
11	hospital infection control	57.37	3.33	57	117.70	39.23
12	special nursing care at the time of consciousness disorders such as hallucinations, delirium and restlessness	53.38	10	7	70.38	23.46
13	Safe and appropriate use of types of antidotes(dig Fab,...)	60	20		80	40
14	Routine lab test interpretation	53.3	26.7		80	40

DISCUSSION

According to the research results, more than 50% of ICU nurses needed to be trained under above mentioned eight training titles in aspects of knowledge and skills. It seems that current in-service training programs do not provide to ICU nurses opportunity to improve their knowledge and skills appropriately. Similar studies in Iran and other countries indicated that the specialty knowledge and clinical competencies of ICU nurses are inadequate in meeting the expectations of health care managers and their clients. In one of these studies only about 5% of graduated students were evaluated as having more than average of the expected competency levels; about 85% of them only meet the minimum expected levels of clinical capabilities and about 9.5% of them were evaluated as having competencies below the expected level [11].

As similar results to our findings, a quick look at the performed continuous training programs in the hospitals and the universities of medical sciences of Iran indicated that items including cardiopulmonary resuscitation (CPR) for adults, hospital infection control, cardiac monitoring and diagnosis of dysrhythmias, airway maintenance, oxygenation and intubation, setting and applying different medical devices such as defibrillators and ventilators, arterial blood gas sampling and interpretation, skin care and prevention of decubitus ulcer and principles of communicating with and managing patients with consciousness disorders are among the main training needs of most ICU nurses [12].

In another research about complications of Health care associated Infections (HAI) in India (2012), due to lack of any structured preventive program for HAI, the researchers developed a training course for nurses on Infection control practices and implemented it. The results of this study showed a significant decrease in the HAI rate. They concluded that HAI rates could be controlled by simple and cost effective measures like providing basic training skills for Nurses [13].

Another research reports that after a year-long study with a sample size of 606 nursing students a training program which comprised of brief monthly CPR practices with voice-activated manikins achieved significantly higher CPR skills compared to the group with no such practices. [14].

Another study investigated effectiveness of three different types of in-service training in United States designed to improve early intervention abilities of practitioners to use family systems in their community based intervention practices (2010). Participants attended conference presentations (as control) or one of

two types of workshops (half day/full day or multisession in several days), or received one of the two types of onsite, field based training (basic and advanced). Results showed that both types of onsite, field based training were associated with greater educational benefits compared with the other two types of training. The field based training was the most beneficial for the practitioners. The key positive features of in-service training included active practitioner involvement in the learning opportunities (application, reflection, self-appraisal, etc.), which occurred most commonly on multiple occasions over time [15].

In a relevant study in Ireland over two thirds of nurses felt that their education on dementia specific communication strategies was insufficient or unpractical. Nurses also reported insufficient knowledge with regard to pain assessment in patients with dementia, or alternatives to physical or chemical restraints. This lack of knowledge has implications for quality of care and may have consequences for safety of patients with dementia in acute care settings. The researchers concluded that dementia care training needs to be prioritized in senior friendly hospitals [16].

Furthermore the results of a study done by Marshall *et al* (2007) indicated that ICU nurses needed to be trained about cardiopulmonary resuscitation (CPR), cardiac monitoring and diagnosis of dysrhythmias, intubation and hospital infections. Above mentioned items plus some other professional skills were considered by Washington nurses association as training needs with high priority in 2009. It is told that responding to these priority training needs of ICU nurses are considered as an international challenge for health care organizations [13].

According to the findings of the research, training need about hospital infection in the fields of knowledge and skill was 3.33% and 57% successively. This fact indicated that although the ICU nurses were knowledgeable enough theoretically, they needed to be trained to improve their competencies in this field. Moreover, regarding to the results only 39.23% of ICU nurses needed hospital infection control training which seems to be in contrast with the Marshall's findings. This discrepancy might be due to the differences in the two study contexts and the training programs of nurses in Iran and united states.

setting and applying the ICU devices including defibrillators and ventilators and regulating and controlling their parameters was identified as one training issue with high priority for nurses in a study done by Mohammadi (2005). In the study it was indicated that 43.8% of nurses considered "applying and regulating the parameters of mechanical ventilators" as one of their training priorities [14]. In comparison with the finding that "applying and regulating the parameters of ventilator device" being the second top training priority with the mean score of 70.80%, although the hospital's education development offices provide nurses with the adequate trainings when a new device is introduced to a specific ward, but because in some hospital wards they do not use a specific device frequently training of device applying and regulating methods ought to be included in the training agenda of hospital training supervisors as a common training need of nurses..

In another study by Pourmirza Kalhori and his colleagues (2012), the results indicated that cardiopulmonary resuscitation (CPR) was the most important needed skill of ICU nurses and it was necessary for them to be aware of the latest changes in the CPR protocols. Also, the electroshock therapy, cardiac monitoring, intubation and applying laryngeal airways, pharmacotherapy and injection of drugs with positive inotropic effects are more emphasized [15]. It is clear that the result of this study was consistent with the results of our research.

Given the importance of the pharmacotherapy and injection of drugs with positive inotropic effects in the current research with the overall score of 57.90%, numerous studies have been conducted in this regard. Today, the importance of patient safety in health care settings and especially medication errors prevention is emphasized more than ever [16]. Medication errors are one of the most important and potentially life threatening iatrogenic condition. In this regard, in a report published by Commission of Medication Errors in 2004 the significance of medication errors and their prevention through training programs was emphasized [17]. According to the reports of the commission one out of five deaths due to human errors is the result of medication errors and it imposes extra costs to the patients and the hospitals. Moreover, it is worth noting that as an iceberg phenomenon there are lots of unreported cases [18].

According to the results of the other study by Nasiriani in 2006, nurses' skill levels in "arterial blood gas sampling and ABGs interpretation" and "pharmacotherapy and administration of drugs with positive inotropic effects" were evaluated as moderate with an overall training need score of 34% and 35% respectively. Also the nurses skills in "applying medical devices including ventilator and its regulation" was assessed below average and with a perceived training need about 8%. These results indicated that although the current educational programs in faculties provides recently graduated nursing students with opportunities to improve their clinical knowledge and skills, but it is not enough. So providing them with the in-service trainings in hospitals and other health care facilities is emphasized [19].

Our query found no other study with the focus of “Central Venous Pressure (CVP) monitoring and establishing a flow rate of medicines according to physician’s prescription”. Thus the high training need in our study might be due to (1) the insufficiency of in-service training programs in the two hospitals of Semnan that resulted such a serious training need and (2) the type of the hospitals in our study which were not specialized and tertiary care settings. As we know in these settings a few patients need that especial health care services and subsequently the probability of nurses being encountered to those patients and provision of high tech and specialty services to them is very low.

CONCLUSION

The main goal of continuous in-service training is to improve clinical competencies of nurses in order to enable them to meet the needs of patients and raise the reputation of the health care system for the community. It is clear that achieving this goal requires that ICU nurses be trained appropriately and all their training needs be met with a sound training needs assessment and well-designed clinical training programs.

LIMITATIONS

Limitations of the study were included: 1) Unwillingness of some nursing personal and physicians to full participation and filling out the questionnaires ;2) It might be not possible to control all confounding variables such as boredom in some of the respondents and 3) time limitation of our study

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