

Effect of Nursing Intervention on Students' Stressors related to their Training in Pediatric Critical Care Settings

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Abstract

The clinical experience is frequently perceived as a stressor in clinical education by nursing students. This study is a quasi-experimental aimed to assess the stressors related to students' training in pediatric critical care settings (PCCSs), study the factors affecting students' training in PCCSs, design, implement and evaluate nursing intervention based on needs assessment of the students. This study was conducted at Pediatric Nursing Departments in both Faculty of Nursing/Ain Shams and El-Fayoum Universities. The study involved 120 purposive students in the 3rd academic year/ Pediatric Nursing Department regardless their age, residence and socioeconomic standards. Tools of the data collection were used pre and post nursing intervention namely, pre designed interviewing questionnaire (to assess the students' characteristics, data about factors that affect the students' training in PCCSs as well, the stressors perceived by the students in their training and the students' knowledge related to their training in PCCSs), Hamilton Rating Scale (to assess the students' anxiety level). The main results of the study showed that, there was a statistical significant difference between the students' knowledge regarding to PCCSs and total stress level pre and post nursing intervention among the study group compared with the control group. The study concluded that, the application of nursing intervention reduce the students' stressors related to their training in pediatric critical care settings. The study recommended orientation program, identifying students' needs in the pediatric critical care settings and developing effective nursing interventions to reduce their stress

Key words: Critical care – Nursing intervention– Pediatric nursing students- Stressors.

Introduction

Stress has been defined as a barrier to concentration, problem solving, decision making and other necessary abilities for students' learning (Yazdani et al., 2010). It is a known fact that Pediatric and Neonatal Intensive Care Units are places that generate tensions and stress, motivated by interpersonal relationship, intense emotions caused by

the constant exposure to risks of dying, by the frequent oscillation between success and failure and by the demands imposed on the team (Grzeskowiak et al., 2012).

In nursing students, stress comes from many sources especially academic aspects which is highly stressful and may lead to dropout of study program. However, the nursing students are frequently faced with dynamic, stressful

situations in their clinical education which include, using newly acquired technical skills, managing higher acuity patients, integrating didactic theory into the clinical setting, long and early hours in the clinical setting and dealing with staff who may or may not be accommodating in having the presence of student nurses on their unit (Sharma et al., 2011).

Awareness of the existence of stress in nursing students by nurse educators and responding to it, will help to diminish student nurses experience of stress. In order to enhance the learning environment and prevent adverse effects of stress, measures should be instituted early in the educational process. However, a variety of interventions have demonstrated the ability to manage educationally related stress and related symptoms (Moscaritolo, 2009).

Significance of the study:

It is important for clinical instructor to reduce students' stress in PCCSs through support and promote a positive learning environment. More nursing programs would be willing to integrate stress reducing interventional strategies into curriculum to improve students' clinical performance, success and retention. Therefore, this study will be conducted to assess the effect of nursing intervention on students' stressors related to their training in pediatric critical care settings.

Aim of this study:

1. Design, implement and evaluate the effect of nursing intervention based on need assessment of the students' training in pediatric critical care settings.

Research hypothesis:

The application of nursing intervention will alleviate the students' stressors related to their training in pediatric critical care settings.

Subjects and Methods:The subjects and methods of the current study will be discussed under 4 main designs as the following:

1. Technical Design:

The technical design for this study includes research design, setting, subjects as well as tools of data collection.

Research Design:

A quasi experimental research design was utilized in this study.

Research settings:

This study was conducted at Pediatric Nursing Departments/ Faculty of Nursing at both Ain Shams and El-Fayoum Universities.

Subjects:

A purposive sample of 120 students who were enrolled in pediatric nursing departments at the academic year 2014 – 2015 under the following inclusion criteria; students in 3rd year, pediatric nursing department regardless their age, residence and socioeconomic standard. The students with previous academic failure at pediatric nursing course and students enrolled from technical nursing institute were excluded from the study as they are having past experience of training in pediatric critical care settings.

Tools and technique of data collection:

Data for the present study was collected using these tools:

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I. Interviewing questionnaire (pre/post intervention) A pre designed interviewing questionnaire format was designed and written in English language by the researcher after reviewing the related literature to gather data as clear in the following parts

Part (1): The characteristics of the studied sample which included (age, sex, nationality and type of accommodation).

Part (2): Effect of stress on (Physical, psychological, social and performance response to stress) as perceived by the students related to their training in PCCS

Part (3): knowledge of the studied students related to care of critically ill pediatric patients in PCCS. It consisted of (35) questions in form of MCQs (16), true and false (14) and matching questions (5). Knowledge obtained from the students was checked with a model key answer prepared by the researcher, the total score of the studied students' knowledge was (40) grade that was distributed according to the importance of each item or question.

Scoring system for the questionnaire Each correct answer was scored one. The total score of the students' knowledge regarding PCCSs and stress in PCCSs was evaluated as satisfactory ($\geq 60\%$) and unsatisfactory level ($< 60\%$).

II. Hamilton Anxiety Rating scale

It was adopted from **Hamilton, (1959)** to assess the anxiety among the studied students. It consisted of (14) item was the anxious mood, tension, fears, insomnia, intellectual, depressed mood, somatic (muscular), somatic (sensory), cardiovascular symptoms, respiratory symptoms, gastrointestinal symptoms,

genitourinary symptoms, autonomic symptoms and behavior. The responses for these items were scored as the following:

Scoring system:

Each item is scored on Hamilton Anxiety Rating Scale of 0 (not present) to 4 (severe), with a total score range of 0-56, where < 17 indicates mild, 18- 24 moderate, 25-30 severe and more than 30 very severe anxiety.

2. Operational Design

I) Preparatory phase

A review of the past, current related literature covering various aspects of the problem was done using available local and international books, articles, periodicals and magazines to get acquainted with the research problem and to develop the study tools for data collection and contents of the nursing intervention.

II) Exploratory phase

The tools were tested and evaluated for their face and content validity by five experts in Nursing and Medical fields/Ain Shams University and also to ascertain relevance, clarity and completeness of the tools, experts elicited responses were either agree or disagree for the face and content validity was done. The items on which 85% or more of the experts have agreed were included in the proposed tool. Accordingly, the required corrections and modifications were done. Testing reliability of proposed tools was done by using the Cronbach alpha test, it was assessed at 98%.

3. Administrative Design

An official permission to conduct the study was obtained from Dean of the

faculty Ain Shams University and El-Fayoum University for their agreement to carryout the study.

Ethical Consideration

The research approval was obtained from ethical committee/Faculty of nursing/Ain shams University, approval of the students was obtained orally before conducting the study, the researcher explained the objective and aim of the study to each study subject and the study is harmless. The studied students assured that, all the gathered data will be treated confidentially for the research purpose only, the study subjects are allowed to choose to participate or to quit at any time without penalty.

Pilot study

A pilot study was done at Pediatric Nursing Department of Faculty of Nursing at El-Fayoum University to assess the applicability and estimate the time required to gather data using the previously mentioned tools to test study process. A pilot study was carried out including 12 students representative 10% of the study sample who met the inclusion criteria of the study. The results of data obtained from the pilot study helped to modify some items of the questionnaire in form of omission/addition/rephrasing.

III) Field work

The actual field work was carried out for 3 months during the 2nd semester of the academic year 2014/2015 started from the last week of February, 2015 ended at the second week of May, 2015. Where the researcher was available for 2 days/week over a 3 months period. The students were arranged in an alphabetical order (120 students) where the first 60 students were recruited as a study group and the rest of them (60 students) were recruited as a control group. Then students were subdivided again in both

groups into further two subgroups each one involved 30 students.

The nursing intervention was provided to the study group. Students in both study and control groups were subjected to same learning experience planned by the pediatric nursing departments in each university. The study tools were filled by the students in both study and control groups pre/post nursing intervention. The researcher collected the data in the skill laboratory of NICU affiliated to the Faculty of Nursing/Ain Shams University. Each group interviewed for 30 – 45 minutes, aim of the study was explained and the oral approval to participate in the study was taken before beginning the data collection as a prerequisite to include students in the study.

Nursing intervention

Nursing intervention was designed by the researcher to meet the actual needs of the studied students in pediatric critical care settings that alleviate their stressors. Nursing intervention was implemented for the study group only during their actual learning experience.

The implementation of the nursing intervention was covered fourteen sessions, including theoretical and practical content developed and selected to meet the students' need by the researcher to fulfill the study aim.

Theoretical part

The theoretical part was covered through two sessions. It was concerned with providing the pediatric nursing students with an overview about pediatric critical care that included: definition of pediatric critical care, definition of critically ill pediatric, indications for admission into PCCSs, description of pediatric critical care settings, stressors facing the students in the pediatric critical care settings, communication process

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with the clinical instructors and health team. Additionally, the content of this part was concerned with the practical part.

The practical part:

The practical part composed of 12 sessions, it was concerned with the nursing skills required for providing care for critically ill pediatric patient. It includes: technique of cardiopulmonary monitoring, the oxygen saturation monitoring, cardiopulmonary resuscitation, mechanical ventilation, oxygen therapy, nebulizer, suctioning and capillary blood sampling, vein puncture and nasogastric tube insertion /care.

Teaching strategies

Different teaching strategies were used such as; modified lectures, group discussion, role play, picture, real object demonstration and re-demonstration using simulation models in addition to ensure exposure of a study group to same learning experience and received the same teaching experiences at their study setting.

The implemented nursing intervention was in the form of orientation related to pediatric critical care setting, compact disk (CD) contain videos of nursing procedure used in pediatric critical care settings. The students also were exposed for relaxation technique and breathing exercise under the guidance of the researcher to help students in managing their stress related to training in PCCSs.

Evaluation:

Upon the completion of the nursing intervention (after three weeks), the post test was done for students to evaluate the effect of nursing intervention related to the students' stressors in their

training in PCCSs using the same study tools.

Statistical Design:

Data collected were revised, categorized, tabulated and analyzed by using the number and percentage distribution. The quantitative data were described using arithmetic means, standard deviation, t paired test, Analog scale and coefficient variation were applied. The qualitative data were also analyzed through chi square test and fisher exact test to determine whether there was a statistical significant difference or not. The above mentioned statistical techniques were obtained by using the statistical package of social sciences (SPSS) version (17) was P value; P-value: > 0.05 not significant, P-value: < 0.05 significant, P-value: < 0.01 highly significant.

Results:

As seen in **table (1)** there was no statistical significant differences between both groups of the study in relation to their characteristics namely; gender, age and accommodation status. Where 68.3% of the study group were females compared to 70% in the control group. Concerning the age of the studied sample, the results showed that, 60% in the study group compared with 70% in the control group were in the age group of 20 < 21 years with $\bar{x} \pm SD$ 21.0 \pm 0.63 & 20.9 \pm 0.55 respectively. Also the majority of students in both the study and control groups were living with their families.

Table (2) indicated, a highly statistical significant difference was observed between both groups of the study regarding to their total knowledge in pediatric critical care settings, stress and nursing procedure pre and post nursing intervention (P<0.001), where the total knowledge of the studied students

was improved post nursing intervention in the study group compared with the control group.

As shown in **table (3)** a highly statistical significant difference was observed between both groups of the study in relation to their total stress level in pediatric critical care settings pre and post nursing intervention where the total stress level alleviated post nursing

intervention in the study group compared with the control group.

As evident from **table (4)** there was a statistical significant difference between studied students' total stress level and their total knowledge post nursing intervention where total stress level improved in study group who have satisfactory knowledge post nursing intervention.

Table (1): Number and percentage distribution of the study groups according to their characteristics (n= 120).

Item	Study group n.=(60)		Control group n.= (60)		Test of significant	P- value	
	No	%	No	%			
Gender						X ² 0.039	0.843
▪ Male	19	31.7	18	30			
▪ Female	41	68.3	42	70			
Age in years:						t. test 2.098	0.350
▪ 19:<20	10	16.7	10	16.7			
▪ 20 :<21	36	60	42	70			
▪ 21:≤22	14	23.3	8	13.3			
$\bar{x} \pm SD$	21.0 ± 0.63		20.9 ± 0.55		X ² 3.528	0.317	
Accommodation status:							
▪ Living with family	54	90.0	49	81.7			
▪ Living with relatives	2	3.3	5	8.3			
▪ Living in university hostel	3	5.0	6	10.0			
▪ Renting private home	1	1.7	0	0			

P-value: > 0.05 not significant. P-value: < 0.05 significant. P-value: < 0.01 highly significant.

Table (2):The difference between the study and control groups according to their total knowledge regarding to PCCSs and stress pre and post nursing intervention (n=120).

Total knowledge	Study group n= 60				Control group n.= 60				Pre		Post	
	Pre		Post		Pre		Post		X ²	P value	X ²	P value
	N O	%	N O	%	N O	%	N O	%				
Satisfactory knowledge ≥ 60	7	11.7	59	98.3	6	10	23	38.3	0.086	0.769	49. 910	**<0.00 1
Unsatisfactory < 60	53	88.3	1	1.7	54	90	37	61.7				
Exact significance	<0.001				<0.001							

P-value: > 0.05 not significant. P-value: < 0.05 significant. P-value: < 0.01 highly significant

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Table (3): The difference between the study and control groups according to their total level of stress pre & post nursing intervention(n=120)

Item	Study group NO.= 60				Control group NO.= 60				Pre		Post	
	Pre		Post		Pre		Post		X ² Fisher exact test	P- value	X ² Fisher exact test	P- value
	NO	%	NO	%	NO.= 60	%	NO.	%				
Not present	4	6.7	36	60.0	4	6.7	5	8.3	7.383	0.090	53.637	*<0.001
Mild	13	21.7	24	40.0	26	43.3	32	53.3				
Moderate	32	53.3	0	0	22	36.7	20	33.3				
Sever	10	16.7	0	0	8	13.3	3	5.0				
Very sever	1	1.7	0	0	0	0	0	0				

P-value: > 0.05 not significant, P-value: < 0.05 significant. P-value: < 0.01 highly significant

Table (4): Relation between the studied students' total knowledge regarding to PCCS, stress and their total stress level pre & post nursing intervention (n=120).

Students' level	Pre intervention						Post intervention						X ²	P value		
	Study n=60			Control n=60			Study n=60			Control n=60						
	Satisfactory n=7	Unsatisfactory n=53	%	Satisfactory n=6	Unsatisfactory n=54	%	Satisfactory n=59	Unsatisfactory n=1	%	Satisfactory n=23	Unsatisfactory n=37	%				
Knowledge level	2	28	46.7	2	3.3	5.0	35	58.3	1	1.7	1.7	2.8	4.7	3.9	0.06	
Not present	2	28	46.7	2	3.3	5.0	35	58.3	1	1.7	1.7	2.8	4.7	3.9	0.06	
Mild	2	28	46.7	11	18.3	18.3	24	40.0	0	0	0	15	25.0	4	6.7	0.005
	2	28	46.7	11	18.3	18.3	24	40.0	0	0	0	15	25.0	4	6.7	0.005
Moderate	3	43	71.7	29	48.3	80.6	5	8.3	0	0	0	15	25.0	4	6.7	0.005
	3	43	71.7	29	48.3	80.6	5	8.3	0	0	0	15	25.0	4	6.7	0.005
Severe	0	0	0	10	16.7	23.3	0	0	0	0	0	2	3.3	5	8.3	0.005
	0	0	0	10	16.7	23.3	0	0	0	0	0	2	3.3	5	8.3	0.005
Very severe	0	0	0	1	1.7	2.5	0	0	0	0	0	0	0	0	0	0.00
	0	0	0	1	1.7	2.5	0	0	0	0	0	0	0	0	0	0.00

P-value: > 0.05 not significant.

P-value: < 0.05 significant.

P-value: < 0.01 highly significant

Discussion:

Stress is a global phenomenon and affects everyone. Nursing students report perceiving higher levels of stress than other students in conjunction with elevated external stressors, including increased clinical responsibilities and course requirements (**Jimenez et al., 2010**). Increased levels of stress may lead to poor academic performance, burn-out and the development of inadequate coping mechanisms (**Gibbons, 2010**).

There is association between stress and the nursing profession at NICU and the issues go beyond the working place, such as: having to deal with the pediatric patient's unpredictability, the professional's relationship with the pediatric patient's relatives and with the health team members, as well as the death of newborn patients (**Valizadeh et al., 2012**). Knowledge of the stressors and their severity among nursing students in the nursing training colleges can be helpful in effective management and counseling of the students on how to cope and adapt to stressors (**Labrague, 2013**).

Regarding to the characteristics of studied students the study findings revealed that, more than two thirds (70%) were females. This finding was supported by **Potur et al., (2014) and Singh, (2013)** who indicated that, female students experienced higher levels of stress more than male counterparts did. This was contradicted with **Abdulghani et al., (2011)** who stated that, the gender differences in specific stress symptoms and overall prevalence of stress were scarce and did not turn out to be a significant factor in reporting of stress. The researcher believes that, the gender distributions were reflective of a typical nursing program population with females serving as the majority of the students.

The findings of the present study revealed that, more than two thirds of studied students (70%) were in the age group of 20 < 21 years with $\bar{x} \pm SD$ 21.0 \pm 0.63 & 20.9 \pm 0.55 respectively. This finding was supported with **Al Barrak et al., (2011)** who indicated that, stress was lowest among students younger than 20 years old this could be interpreted by that majority of age group in his study was in the age group 20-22 years and above. This was contradicted with **Rodrigues et al., (2011)** who reported that, a weak negative association between age and stress level. The researcher believes that, the students at this age engage to their pediatric nursing education and their clinical training also younger students tend to experience or report emotional symptoms as a response to stress compared to the older students.

In relation to the studied students' knowledge about stress in pediatric critical care settings pre and post intervention, where the students' in the study group knowledge was satisfactory post intervention compared to the control group. This was supported with **Shultz, (2011)** who stated that, nursing students reported tension due to inability to perform nursing activities and attributed it to lack of knowledge and inadequate preparation. The researcher believes that, increase knowledge about stress and its causes and approaches that can be used to overcome the stress can be enhanced and reduce stress level in nursing students related to their training in pediatric critical care settings.

In relation to the students' knowledge about care of critically ill pediatric patient pre and post intervention the study findings revealed that, the students' knowledge was satisfactory post intervention in the study group compared with the control group. The researcher believes that, the students stressed when they did not have the adequate knowledge

and skills to provide competent care to critically ill pediatric patients or to make decisions about patient related situations during their clinical practice. This was explained by **Barazet al., (2015)** who reported that, students' feelings of inadequacy and lack of knowledge necessary to carry out specific procedures often leads them to fear of making a mistake. This was identified by students as an inhibitor of learning in clinical.

In relation to total stress level in pediatric critical care settings post intervention the study results revealed that, the total stress level of the studied students was reduced post intervention in study group compared with control group. The researcher believes that, stress and anxiety related to the lack of clinical knowledge or skills to accomplish tasks or to perform clinical procedures. Using strategy of problem-focused coping methods and finding some methods to be effective those were seeking social support, asking peers or nurses for help when dealing with critically ill pediatric patient and seeking advice from a clinical instructor to guide and asking questions when unsure about the clinical procedure that reduce stress level in nursing students related their training in pediatric critical care settings.

The findings of study revealed that, there was a statistical significant difference between studied students' total stress level and their total knowledge post intervention in study group compared with control group where the stress level improved in study group who have satisfactory knowledge. This finding was supported with study by **Labrague, (2013)** who stated that, the most common stressor came from lack of professional knowledge and skills. This finding also was supported with study by **Shultz, (2011)** entitled factors related to stress in nursing students, who stated that, nursing students reported tension due to inability to perform nursing activities and attributed it to lack of knowledge and

inadequate preparation. The researcher believes that, adequate students' knowledge and practical skills related to the care of the critically ill pediatric patients increased their capabilities to deal with critically ill pediatric patients and increase their self-confidence and accomplish the task.

Conclusion & Recommendations:

In the light of the study findings, it could be concluded, the application of nursing intervention alleviated the students' stressors related to their training in pediatric critical care settings. Also support the hypothesis of the current study.

Based upon the results of the current study the following recommendations are suggested:

- Applying orientation program before starting students' training in pediatric critical care settings.
- Identifying students' needs and facilitating their learning in the pediatric critical care setting.
- Generalize the results of nursing intervention to alleviate students' stressors through the common publishing journal.
- Strengthen the students' nursing skills related care of critically ill pediatric patients.
- Guidance and support should be provided to students during their clinical training in PCCSs when even needed/ necessary
- Empower students ability to cope with stress by using stress management techniques which is either physical or mental.

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