ORIGINAL RESEARCH

The effect of emotional intelligence intervention on nursing students' practice and patients' clinical outcomes at burn intensive care unit

Heba A. Al-Metyazidy[1], Souzan Abd El-Menem Abd El-Ghafar*[2], Soheir M. Weheida[3]

[1] *Department of Critical Care Nursing, Faculty of Nursing, Tanta University, Egypt*
[2] *Department of Psychiatry and Mental Health Nursing, Faculty of Nursing, Tanta University, Egypt*
[3] *Department of Medical Surgical Nursing, Faculty of Nursing, Alexandria University, Egypt*

Received: December 28, 2018 **Accepted:** March 8, 2019 **Online Published:** March 25, 2019
DOI: 10.5430/jnep.v9n7p18 **URL:** https://doi.org/10.5430/jnep.v9n7p18

ABSTRACT

Background and objective: Emotional intelligence in nursing practice helps students better deal with clinical pressures and communicates effectively with patients. Therefore, developing students' emotional maturity may seem more important than their physical responsibilities. The current study was carried out to evaluate the effect of emotional intelligence intervention on nursing students' practice and their reflections on patients' clinical outcomes at burn intensive care unit.

Methods: This study was carried out in the Faculty of Nursing, Tanta University and Burn Intensive Care Unit at Tanta Emergency Hospital. A quasi experimental research design was utilized in the current study. A convenience sample of 120 undergraduate second year nursing students who studied critical care nursing course at academic year 2017-2018 were selected. They were divided into two equal groups, 60 students in each group as follows: Group I: Students were exposed to emotional intelligence intervention and clinical procedures. Group II: Students were exposed to clinical procedures only. In addition, a convenience sample of 60 adult critically patients with severe burn injury were selected and divided into two equal groups, 30 in each group as follow: Group I: Patients were exposed to intervention from nursing students who were undergoing emotional intelligence intervention during clinical procedures. Group II: Patients were exposed to intervention from nursing students who were trained on clinical procedures only. Three tools were used to collect the study data. Tool I: Emotional Intelligence Scale, Tool II: Nursing student's: observational checklist, and Tool III: Critically ill patient with severe burn injury's clinical outcomes assessment.

Results: There was a statistically significant improvement in the total practice mean score level among nursing students in group I than group II. Also, patients who received care from group I showed improvement in physical and psychological outcome compared to students in group II.

Conclusions: Based on the results of the present study, it can be concluded that, merging emotional intelligence into practice is a favorable method which provides the undergraduate nursing students with a higher level of practice regarding burn intensive care unit. Students who acquired intelligence practice had a statistical significant effect on improving psychological and physical outcomes of patients with severe burn injury than nursing students who are not exposed to such emotional intelligence intervention during clinical practice. Recommendation: The emotional intelligence should be incorporated into the critical care nursing course and training the students' about the appropriate way of implementation to improve their knowledge and practice and improve patients' clinical outcomes.

Key Words: Emotional intelligence, Nursing students practice, Clinical outcomes, Burn intensive care unit patient

* **Correspondence:** Souzan Abd El-Menem Abd El-Ghafar; Email: souzanabdelmenem@yahoo.com; Address: Faculty of Nursing, Tanta University, Tanta, Egypt.

1. INTRODUCTION

The undergraduate nursing students are facing with the critical challenge in performing nursing care for patients in burn intensive care unit (ICU).[1] Provision of care for burn ICU patient is physically and psychologically exhausting nursing students. These may be related to the extension of burn wounds, poor pain control, ICU monitoring required for the patient with severe burn injury and end of life symptoms which make students feel powerless.[2]

Nursing colleges focus on students' practice as this plays an essential role in enhancing the quality of care and improving patient outcomes.[1] More recently, both nursing college and the nursing literature authors are beginning to explore the role of emotions and Emotional intelligence (EI) in education as a mean to improve nursing practice.[3] A holistic view of care is currently emphasized, highlighting the need for health care professionals to provide physiological, psychological, and emotional care to their patients; a shift from caring for to caring about. Some scholars believe that EI may be a key factor in more fully preparing nursing students for providing a holistic care. Therefore, they require a high degree of self-regulation and EI.[4,5]

Emotion is fundamental to nursing practice, and EI is considered as an important characteristic of nurses that can affect the quality of their work including clinical decision-making, critical thinking, evidence and knowledge use in practice.[6] EI is generally defined as adeptness at recognizing and managing emotional experiences and responses in self and others and then integrating these to enhance thinking and consequent behaviours. The aspects of EI are completely consistent with the nursing profession. These aspects include self-awareness, self-regulation, extension of sympathy in the patient-nurse therapeutic relationship, motivation, and social skills.[7]

Self-awareness is the ability to understand and/or recognize one's emotional state of being and how it affects others. What nurses think and feel, what they believe and how they perceive themselves has a direct bearing on their interaction with patients.[8]

Self-awareness helps nursing students work from their strengths and cope more effectively in challenging health situations, reducing their anxiety, and discovering different paths in relationships and life.[9]

The second aspect of the emotional intelligence is self-regulation, it is the ability to control one's emotion and to redirect negative emotion into something positive. Through performing these tasks, they will be able to cope with pressure of clinical practices and provide quality care.[10] The third important aspect of EI is the motivation. Motivation is the inner self-drive and dedication to meet challenges and being positive even in the face of adversity.[11]

Empathy is another aspect of EI; it is defined as the ability to enter into the life of another person to accurately perceive the person's current feelings and their meanings and to communicate this understanding to the person.[12] As nursing students develop the skill of empathy, their patients will know that they are given importance. Consequently, improvement and satisfaction increase and the negative outcomes of the treatment decrease.[13] Finally, social skills aspect is the ability to create or build rapport with other individuals or build or expand networks by effectively managing relationship with them. It is indicated by one's ability to persuade, to lead teams and to lead change.[10] The nurse uses these aspects of EI in their interactions with colleagues and patients.[14]

There are numerous reasons why EI may be related to effective nursing practice in burn ICU. The first reason is that, emotions are essential to create and maintain a patient care environment.[15] Enhancing EI skills may help nurses cope with the emotional demands of the healthcare environment which can be stressful and exhausting and can potentially lead to burnout. The second one is that, the nurse's ability to establish a rapport with patients, manage their own emotions, and empathize with patients is essential to providing quality care and this is the core of EI.[16] The third reason is that, EI helps in taking decision and solving problems regarding critically patients with severe burn injury's care, improved decision making and problem solving is one reason that EI has been identified as a characteristic of effective nursing care. All of these reasons could improve patient's satisfaction with the care provided.[17]

The connection between EI and nursing students' practice is pivotal for critically patient with severe burn injury care.[18] Therefore, the nurse educators should ensure that nursing student has a high level of EI at the point of graduation from nursing program.[15,19] Moreover, EI should be learned and developed during clinical training in the undergraduate training program and there is general evidence that EI can be improved with training.[20,21]

1.1 Significance of the study

During the student clinical rotation in the burn ICU at Tanta Emergency Hospital, it was found that a great number of second year nursing students emotionally disturbed when they became contact with severe burns injured patient and unable to provide a high quality of care. They also focused on providing physical care only to these patients while ignoring the psychological one which it is very important in the

healing process. This evidence indicates that the connection between EI and nursing practice may contribute to significant enhancements in severe burn injured patients' clinical outcomes.[22] In the light of this, there is a need to evaluate whether EI is effective in improving both students' practice and severe burn injured patients' clinical outcomes.

1.2 Aim of this study

The aim of this study was to evaluate the effect of emotional intelligence intervention on nursing students' practice and patients' clinical outcomes at burn intensive care unit.

1.3 Research hypotheses

1) The undergraduate nursing students' who are exposed to emotional intelligence program exhibit a higher level of total practice mean score compared to nursing students' who are not exposed to such emotional intelligence program during clinical practice.

2) Patients' with severe burn injury who are exposed to emotional intelligence intervention exhibit a higher level mean score of both psychological and physical outcomes; psychologically includes patients' satisfaction with the care and physically such as stable vital signs, decrease length of hospital stay in burn ICU, improve total healing and minimize complications such as infection, shock and scare problems and increase patients' recovery than patients' who are not exposed to such emotional intelligence program during clinical practice.

1.4 Operational definition

Emotional intelligence intervention: Includes teaching the nursing students aspects important for learning. These aspects include developing self-awareness, how to show empathy, communicate effectively, enhancing intrinsic motivation and managing their emotions and use these aspects to achieve the goal regarding complex patient care in burn ICU.

Patient's clinical outcomes: Means achieve patient's psychological satisfaction with care provided. Also, maintain the patients' stable vital signs, decrease length of hospital stay in burn ICU and attain recovery and relieve complications such as infection, shock and scare problems.

2. Subjects and method

2.1 Research design

A quasi experimental research design was utilized in the current study.

2.2 Study setting

The study was carried out at medical surgical and critical care nursing department in faculty of nursing at Tanta University and burn ICU in Tanta emergency hospital at Tanta university hospitals.

2.3 Subjects

A purposive sample of 120 undergraduate second year nursing students who studied critical care nursing course at academic year 2017- 2018 were selected to achieve the aim of the current study. They were divided into two equal groups 60 students in each group as follows:

Group I: Students were exposed to EI intervention and clinical procedures at the critical care lab and as developed by the researcher.
Group II: Students were exposed to clinical procedures only at the critical care lab.

Students' inclusion criteria: Both sexes, provide direct care for critically patient with severe burn injury, agree to participate in the current study and expected to stay at least two weeks in burn ICU.

In addition, a purposive sample of 60 adult critically patients with severe burn injury were selected and divided into two equal groups 30 in each group as follows:

Patients group I: They were exposed to intervention from nursing students who were trained on both EI intervention and clinical procedures (Students group I).

Patients group II: They were exposed to intervention from nursing students who were trained on clinical procedures only (Students group II).

The patients were allocated randomly to the students by using sealed closed envelops including list of patients.

Patients' inclusion criteria: both sex, aged from 21 to 60 years, expected to stay at least two weeks in burn ICU, newly admitted with inhalation injury or had at least one burn complication such as hypovolemic or neurogenic shock.

2.4 Tools of the study

Three tools were used for data collection as follows:

Tool I: Modified Emotional Intelligence Scale. This tool consisted of two parts:

Part one: Students' bio-sociodemographic characteristics.

It was developed by the researchers to assess data related to nursing students' age, sex, marital status, previous degree in nursing and previous training in burn unit.

Part two: Modified Emotional Intelligence Scale.

It was originally developed by Hunsaker in 2001,[23] and modified by Goleman et al. in 2002[24] to assess nursing students' emotional intelligence in practice. It consists of 25

items divided into five subscale namely self-awareness, self-management, motivation, empathy, and relationship management (5 items in each).

Scoring system: All items were scored on a five-point likert scale coded from a 1 (very slight ability) to 5 (extreme ability) as positive responses except nine items represent negative responses where a score must be reversed. The EIS total score was ranging from 25 to 125. The higher scores mean higher level of EI.

Tool II: Nursing student's practice observational checklist.[25,26] This tool was developed by the researcher as an evaluative performance tool after reviewing literature and used to assess nursing students' practice in skill lab and during providing care for critically ill patient with severe burn injury regarding immediate care, intravenous infusion, blood transfusion, urinary catheter and wound preparation and dressing. It included 91 steps divided into five domains; 12 items immediate care checklist, 17 for Intravenous infusion checklist, 12 for blood transfusion checklist, 25 for urinary catheter checklist and 25 for wound preparation and dressing checklist.

Scoring system: Student achievement was evaluated using a 3 point likert scale ranging from not performed neither in skill lab nor burn unit = zero, needs improvement for student performance in skill lab or burn unit = 1and completely performed in both skill lab and burn unit = 3. The total scores of practice observed were 91. The higher scores indicated higher level of practice. They were classified as: scores above 75% were considered as good practice level and scores from 50% to less than 75% were considered as fair practice level and scores below 50% were considered as poor practice level.

Tool III: Critically ill patient with severe burn injury's physical and psychological outcomes assessment:

This tool was developed by the researchers to assess the patients' physical and psychological status that judge the students' practice. It was consisted of three major parts as the following:

Part one: Patients' socio-demographic and medical data[27] to elicit data related to age, sex, marital status, educational level, causes of burn, burned area in the body, multiplicity of burned area in the body, degree of burn and total body surface area (TBSA).

Part two: Patient's satisfaction questionnaire:[28–31] This part was developed by the researcher after reviewing of a literature to assess patients' psychological satisfaction with care. It consists of 25 items divided into four subscales namely; patient's perception of student's empathy (5 items), patient's trust (9 items), professional care (6 items), and communication/education (5 items).

Scoring system: The items rated on five points likert scale ranging from "strongly agree" (5 points) to "strongly disagree" (1 point), and, for the items with negative sentences, the score is assessed in reverse. The total score ranging from 25 to 125. The higher score indicates higher patient satisfaction levels with the provided care.

Part three: Patient's physical assessment:[26] It was used to assess the physical status of critically patient with severe burn injury's which include; vital signs, length of hospital stay in burn ICU, healing time and complications such as infection, shock and scare problems.

2.5 Procedures

Official permission was obtained before conducting this study from the dean of Faculty of Nursing, Tanta University and the responsible authority of burn ICU at Tanta Emergency Hospital.

All tools were developed by the researchers after extensive review of the relevant literatures except part two of tool I (emotional intelligence scale) was developed by Hunsaker in 2001.

All tools were examined for content validity by a jury of five experts in the field of critical care nursing, mental and psychiatric health nursing at Faculty of Nursing, Tanta University, and three experts in burn and psychiatry and biostatistics at Faculty of Medicine, Tanta University and modifications were done consequently.

All tools of the study were tested for reliability and Cronbach alpha was used and found to be 8.71, 8.42 and 8.63 respectively for tool I, II and II which represent highly reliable tools.

Pilot study was carried out on 15 undergraduate nursing students to assess the anonymity tools for the clarity, viability and the applicability and modifications were done consequently. Then those undergraduate nursing students were excluded later from the actual study.

The study was conducted through four phases: assessment, planning, implementation and evaluation phases.

Assessment phase: It was done for all nursing students before implementing both EI intervention and practice procedures using tool I and tool II as a pre test. Also, it was done for all patients before students' intervention using tool III as a pre test.

Planning phase: This phase was formulated based on assess-

ment phase and extensive literature review.[24, 27, 32] Goals, priorities and expected outcome criteria were taking into account when planning EI and clinical practice.

Expected clinical outcomes included: 1) Increasing the level of EI for undergraduate nursing students. 2) Improving clinical practice of nursing students. 3) Improving physical stability of critically patient with severe burn injury and achieving psychological satisfaction with care provided.

Implementation phase: In this phase, clinical practice procedure was applied to all students included in the study. The students were divided into two groups I and II. EI intervention was applied to students of group I only. These sessions were done in educational class room at the faculty of nursing. The students of group I were divided into subgroups. Each subgroup ranged between 8 and 10 students.

Emotional intelligence intervention: Six sessions were implemented for two weeks (three sessions per week), three hours for each session. The content of the intervention was presented in the following sequences:

First and second session concentrated on self-awareness training: theoretical part includes (definition, johari window, and its importance). Practical part: this is composed of the activities designed to help students develop self-awareness. It was developed by Parbury in 1993[33] and included the following: positive items and negative aspect of self, personal philosophy, beliefs about helping in nursing practice, characteristics of effective helper, ideal and dreaded patients, assessment of current skills.

Empathy training and managing emotion were the issues of session three and four. Practical part was used following theoretical part. Theoretical part includes definition, types, and steps of conveying empathetic response, criteria of empathetic response and its importance. Practical part includes two practical training exercise used in order to enhance practical empathic skills of nursing students. In each training exercise two scenarios of simulated nurse-client interaction, it prepared by the researcher after strong reviewing of related literature.[34]

Communication skills training and intrinsic motivation were the focus of session five and six. Theoretical part includes definition, types of communication, definition, types, and instruction to improve motivation. Practical part includes role play of communication skills.

The researchers selected teaching strategies which were lectures, small group discussion, and problem-solving situations. The teaching media used in this study was simulation, role playing and video.

Burn and clinical procedures sessions: Five sessions were used, two sessions were used for two consecutive days for theoretical part and three sessions were conducted for the following three consecutive days for practical part. Every session took approximately three hours.

For theoretical part, two sessions were used as follows: Session one composed of definition of burn, pathophysiology, types, causes, methods of calculation of TBSA. Session two consisted of complications and management of severe burn injury.

For practical part, three practical sessions were used following theoretical sessions for three consecutive days three hours for each. The selected procedures include; immediate care, intravenous infusion, blood transfusion, urinary catheter and wound preparation and dressing which were taught and demonstrated by the researchers. Session one covered immediate care and urinary catheter. Session two consisted of intravenous infusion, blood transfusion. Session three included wound preparation and dressing. The practical sessions were implemented in the skill lab. Demonstration and re-demonstration method were done for each undergraduate nursing student. The teaching media used in this study was simulation and problem solving situation. Demonstration and re-demonstration method were done for each undergraduate nursing students. The teaching media used in the study was simulation and problem solving situation.

Evaluation phase: As regards to students, all students were evaluated using tool I and II post intervention to evaluate students' EI and practice mean score.

In relation to clinical practices, each nursing student was observed separately in both studied groups two times: the first observation was done in the skill lab post implementation of teaching strategies to evaluate the practices regarding immediate care, intravenous infusion, blood transfusion, urinary catheter and wound preparation and dressing through observational checklist. It took an average of 15 - 20 minutes for each procedure to finish. The second observation was done in the burn unit during patient care to evaluate each student practices regarding immediate care, intravenous infusion, blood transfusion, urinary catheter and wound preparation and dressing through observational checklist using tool II. Then the mean practice score for two observation was calculated.

As regards to patients, all patients were evaluated using tool III post implementation of care provided by the students to evaluate patient's physical and psychological outcomes. Patients' group I evaluated after care provided by students' group I and patients' group II evaluated after care provided

by students' group II.

2.6 Ethical consideration

Study procedure was revised and approved by the ethical Committee of the Faculty of Nursing. Written consent was obtained from both study subjects after explanation of the study purpose. Privacy and confidentiality were assured to all study subjects. Both the study subjects had the right to quiet from this study at any time and this should be respected and assured. The nursing students were informed that their evaluation in the clinical course was not affected by the intervention applied in this study.

2.7 Data collection

Each study subjects who agreed to participate in the current study and fulfilled the inclusive criteria has been interviewed and observed by the researchers. The duration of data collection was extended from the period of the beginning of November 2017 until the end of April 2018.

2.8 Statistical analysis

The collected data were organized, tabulated and statistically analyzed using SPSS version 19 (Statistical Package for Social Studies) created by IBM, Illinois, Chicago, USA. For numerical values the range mean and standard deviations were calculated. The differences between mean values if age among studied groups were used using student's *t* test. For categorical variable the number and percentage were calculated and differences between subcategories were tested by Chi square and Fisher or Monte Carlo exact tests. The level of significant was adopted at $p < .05$.

3. RESULTS

Table 1 illustrates percentage distribution of personal characteristics of nursing students of both studied group. It can be seen that the highest percentages (41.7% and 56.7% respectively) of students of both studied groups I and II were 20 years old, while, the lowest percentages (21.7%) of students of group I was 21 years old and 1.7% of group II was 22 years old.

Table 1. Percentage distribution of personal characteristics of nursing students of both studied group

Variables	Group I		Group II		t/χ^2	*p*
	n	%	n	%		
Students' age in years						
19	22	36.7	10	16.7		
20	25	41.7	34	56.7		
21	13	21.7	15	25.0		.046*
22	0	0.0	1	1.7		
Range	19-21		19-22			
Mean ± SD	19.85 ± 0.75		20.12 ± 0.69		2.018	
Students' sex					17.045	
Males	6	10.0	26	43.3		.001*
Females	54	90.0	34	56.7		
Previous degree in nursing					9.219	
Yes[#]	2	3.3	13	21.7		.002*
No	58	96.7	47	78.3		
Previous training in burn unit					FE	
Yes[##]	2	3.3	3	5.0		1.000
No	58	96.7	57	95.0		

Note. FE =Fisher exact test; *Significant $p < .05$; # Means that 2 students of group I and 13 of group II had both Diploma and Associated degree of nursing education; ## Means that 2 students of group I and 3 of group II had a previous training in burn unit < 6 months.

As regards to sex, it was found that the majority of students of group I and more than half of group II (90.0% and 56.7% respectively) were female, while the remaining students (10.0% and 43.3%) were males.

Previous training in burn unit: It was observed that vast majority (96.7% and 95.0%) of students of both studied group I and II had not previous training in burn unit, while only 3.3% and 0.5% of both studied group I and II had previous training in burn unit for less than 6 months.

Table 2 reveals comparison of total emotional intelligence mean score among nursing students of both studied groups pre post intervention. It can be seen that there were positive statistical significant differences in favor of group I regarding self-awareness, self-management, motivation, empathy and relation management and total score as compared to studied group II (p = .001). Also there were positive statistical significant differences among students of studied group I pre post intervention regarding self-awareness, self-management, motivation, empathy and relation management and total score compared to studied group II (p = .001). The absence of any statistically significant differences between the studied groups I and II before implementing the intervention can reflect that both groups were almost matched.

Table 2. Comparison of total emotional intelligence means core among nursing students of both studied groups pre post intervention

Emotional intelligence	Group I	Group II	*t*	*p*
Self awareness				
Pre intervention	46.33 ± 9.81	44.87 ± 7.90	0.902	.369
Post intervention	76.67 ± 9.97	44.67 ± 8.27	19.137	.001*
t	20.933	0.409		
p	.001*	.684		
Self management				
Pre intervention	44.40 ± 8.32	44.00 ± 10.22	0.446	.891
Post intervention	71.07 ± 9.86	45.73 ± 10.53	13.602	.001*
t	18.63	0.614		
p	.001*	.542		
Motivation				
Pre intervention	42.93 ± 9.25	44.40 ± 9.57	0.854	.395
Post intervention	74.67 ± 8.29	43.93 ± 9.36	19.042	.001*
t	22.458	1.263		
p	.001*	.211		
Empathy				
Pre intervention	52.60 ± 8.29	52.80 ± 11.87	0.487	.997
Post intervention	73.27 ± 10.35	52.80 ± 11.87	10.066	.001*
t	19.715	0.000		
p	.001*	1.000		
Relation management				
Pre intervention	46.20 ± 10.48	43.33 ± 14.07	3.285	.001*
Post intervention	79.07 ± 12.55	52.87 ± 11.92	11.724	.001*
t	17.282	0.574		
p	.001*	.568		
Total mean score				
Pre intervention	44.57 ± 4.82	44.20 ± 6.51	0.393	.954
Post intervention	74.95 ± 5.27	45.00 ± 6.64	24.615	.001*
t	36.948	0.193		
p	.001*	.849		

*p < .05

Table 3 shows percentage distribution of students of both studied groups in relation to total practice mean score post intervention. It was observed that the majority of students of studied group I had good total practice mean score in relation to all practice domains; immediate care, intravenous infusion, blood transfusion, urinary catheter and wound dressing (88.4%, 91.7%, 90.0%, 96.7% and 86.8%) while, the minority of these students had both poor (5.0%, 3.3%, 5.0%, 0.0% and 6.6% respectively) and fair total practice mean scores (6.6%, 5.0% , 5.0%, 3.3%, 6.6%) respectively.

Table 3. Percentage distribution of students of both studied groups in relation to total practice mean score post intervention

Practice domains	Group I		Group II		χ^2
	n	%	n	%	*p*
Immediate care					
Poor	3	5.0	6	10.0	18.462
Fair	4	6.6	16	26.7	.001*
Good	53	88.4	38	63.3	
Mean ± SD	93.85 ± 5.46		84.48 ± 11.42		t = 5.737; p = .001*
Intravenous infusion					
Poor	2	3.3	8	13.3	12.110
Fair	3	5.0	11	18.3	.001*
Good	55	91.7	41	68.4	
Mean ± SD	95.59 ± 3.57		84.75 ± 9.46		t = 8.295; p = .001*
Blood transfusion					
Poor	3	5.0	4	6.6	22.574
Fair	3	5.0	19	31.7	.001*
Good	54	90.0	37	61.7	
Mean ± SD	94.17 ± 5.38		81.81 ± 44.76		t = 7.404; p = .001*
Urinary catheter					
Poor	0	0.0	5	8.3	10.909
Fair	2	3.3	10	16.7	.001*
Good	58	96.7	45	75.0	
Mean ± SD	94.07 ± 5.89		85.20 ± 9.08		t = 6.345; p = .001*
Wound dressing					
Poor	4	6.6	5	8.3	17.143
Fair	4	6.6	15	25.0	.001*
Good	52	86.8	40	66.7	
Mean ± SD	94.83 ± 5.31		79.27 ± 9.69		t = 10.908; p = .001*

Note. FE = Fisher exact test; *p < .05.

Additionally, nearly two thirds (63.3%, 68.4%, 61.7%, 75.3% and 66.7%) respectively of students of studied group II had good total practice mean score while, about one third of these students had both poor (10.0%, 13.3%, 6.6%, 8.3% and 8.3%) respectively and fair total practice mean score (26.7%, 18.3%, 31.7%, 16.7%, 25.0%) respectively.

It can be observed that there was a statistical significant difference in favor of the group I regarding total practice mean score as compared to group II (p = .001).

Table 4 reveals percentage distribution of patients of both studied groups according to sociodemographic characteristics and medical data. The results illustrated that the highest percentages (66.7% and 73.3%) respectively of patients of both studied group I and II were in the age group of more than 30 years, while the lowest percentages (33.3% and 26.7%) were in the age group of less than 30 years.

In relation to sex, more than half (53.3% and 60.0%) respectively of patients of both studied group I and II were males, while 46.7% and 40.0%) respectively were females.

As regards to type of burn, nearly three fourths (73.3%) of patients of both studied groups I and II had flame burn; more than one quarter of them (26.7% and 33.3%) respectively had inhalation injury, while only 6.7% and 13.3% of patients of both studied group I and II had an electric burn respectively.

Regarding degree of burn, the majority (80.0% and 86.7%) respectively of patients of both studied group I and II had 2nd degree of burn, while the minority (20.0% and 13.3% respectively) had 3rd degree of burn.

Concerning burn surface area, The highest percentages (66.7% and 73.3%) respectively of patients of both studied group I and II had burn more than 20% of TBSA, while the lowest percentages (33.3% and 26.7%) had burn less than 20% of TBSA.

Table 4. Percentage distribution of patients of both studied groups according to sociodemographic characteristics and medical data

Variables	Group I		Group II		t/χ^2	*p*
Patients' age in years						
≤ 30	10	33.3	8	26.7		
>30	20	66.7	22	73.3	0.464	.647
Range	21-55		21-56			
Mean ± SD	37.60 ± 12.74		39.73 ± 12.46			
Patients' sex						
Males	16	53.3	18	60.0	0.136	.713
Females	14	46.7	12	40.0		
Type of burn						
Flame	22	73.3	22	73.3	MCET	1.000
Electric	2	6.7	4	13.3		
Scalds	6	20.0	4	13.3		
Degree of burn						
2nd degree	24	80.0	26	86.7	FE	1.000
3rd degree	6	20.0	4	13.3		
Burn surface area						
≤ 20%	10	33.3	8	26.7	FE	1.000
> 20%	20	66.7	22	73.3		
Inhalation injury	8	26.7	10	33.3	FE	1.000
Vital signs						
Temperature	38.18 ± 0.78		38.32 ± 0.86		0.468	.643
Pulse	87.47 ± 6.73		91.33 ± 9.93		1.248	.224
Respiratory rate	18.27 ± 1.67		18.40 ± 2.10		0.193	.849
Systolic pressure	108.00 ± 16.13		108.27 ± 22.33		0.037	.970
Diastolic pressure	67.33 ± 12.23		68.67 ± 13.16		0.288	.776

Note. FE = Fisher exact test; MECT = Monte Carlo exact test.

Table 5 shows comparison between patients of both groups in relation to clinical outcomes post program implementation. It can be seen that there were statistical significant differences between patients of both studied groups regarding burn infection $p = .020$ and .001 respectively. On the other hands, there were no statistical significant differences among patients of both studied groups in relation to wound healing and scar formation problem $p = .682$ and .427 respectively.

Regarding shock, there were no statistical significant differences between patients of both studied groups regarding hypovolemic and neurogenic shock before student intervention $p = 1.000$ while, there were statistical significant differences between patients of both studied groups regarding hypovolemic and septic shock post student intervention $p = 1.000$.

Table 6 reveals comparison between patients of both groups in relation to patients' satisfaction pre & post intervention. It can be seen that there were statistical significant differences in favor among studied patients of the group I regarding empathy, trust, care, education, and total score post intervention compared to studied patients of the group II ($p = .001$). On the other hand, there were statistical significant differences in favor among studied patients of the group I regarding total mean patient satisfaction score pre post intervention compared to studied patients of the group II ($p = .001$).

Table 7 illustrates correlation between emotional intelligence and practice domains among nursing students immediately post implementation of the program. It can be seen that there were highly positive significant correlations regarding EI total score and practice domains which include immediate care, intravenous infusion, blood transfusion, urinary catheter and wound dressing ($r = 0.870$, $p = .0310$), ($r = 0.680$, $p = .012$), ($r = 0.750$, $p = .022$), ($r = 0.750$, $p = .022$) and ($r = 0.601$, $p = .011$) respectively.

Table 5. Comparison between patients of both groups in relation to clinical outcomes post intervention implementation

Clinical outcomes	Group I		Group II		t/χ^2	*p*
Duration of stay	31.47 ± 9.95		36.60 ± 8.14		1.547	.133
Wound healing					FE	.682
Healed	24	80.0	20	66.7		
Not healed	6	20.0	10	33.3		
Complications						
Burn infection	10	33.3	26	86.7	5.400	.020*
UTI	4	13.3	14	46.7		
CR-BSI	2	6.7	2	6.7		
Skin infection	4	13.3	10	33.3		
Shock						
Before intervention					FE	1.000
Hypovolemic	18	60.0	20	66.6		
Neurogenic shock	12	40.0	10	33.3		
After intervention					6.652	.010*
Hypovolemic	10	33.3	24	80.0		
Septic	4	13.3	6	33.3		
Neurogenic shock	6	20.0	18	60.0		
Scar formation problems	18	60.0	24	80.0	FE	.427

*$p < .05$

Table 6. Comparison between patients of both groups in relation to patients' satisfaction pre post intervention

Patients' satisfaction	Group I	Group II	*t*	*p*
Empathy				
Pre intervention	66.20 ± 8.6	64.43 ± 10.52	0.712	.478
Post intervention	91.47 ± 4.24	65.33 ± 14.48	6.710	.001*
t	14.443	0.283		
p	.001*	.784		
Trust				
Pre intervention	65.82 ± 4.31	65.14 ± 6.73	0.473	.643
Post intervention	90.07 ± 7.07	65.33 ± 11.78	6.973	.001*
t	16.043	0.081		
p	.001*	.939		
Care				
Pre intervention	66.27 ± 9.51	66.61 ± 8.39	0.154	.884
Post intervention	87.56 ± 10.04	66.44 ± 10.65	5.587	.001*
t	8.429	0.072		
p	.001*	.945		
Education				
Pre intervention	60.45 ± 8.37	62.34 ± 11.38	0.728	.467
Post intervention	89.33 ± 9.99	62.67 ± 13.41	6.176	.001*
t	12.137	0.103		
p	.001*	.919		
Total mean score				
Pre intervention	64.36 ± 2.71	65.18 ± 10.69	0.413	.685
Post intervention	89.60 ± 6.13	65.07 ± 9.98	8.115	.001*
t	20.632	0.042		
p	.001*	.967		

*$p < .05$

Table 7. Correlation between emotional intelligence and practice domains among nursing students immediately post implementation of the program

Practice domains	Emotional intelligence total score	
	R	***p***
Immediate care	0. 870	.031*
Intravenous infusion	0. 680	.012*
Blood transfusion	0. 750	.022*
Urinary catheter	0. 750	.022*
Wound dressing	0.601	.011*

*$p < .01$

4. DISCUSSION

Emotional intelligence has been found to be valuable in nursing practice. Mixing between EI and nursing practice in burn ICU enables the promotion of healthy relationships between colleagues and patients by nursing students being in tune with their own and others' emotions. EI enables nursing students to become aware of their expressed emotion and helps them work harmoniously through their thoughts and feelings. Also, it helps the nurse and nursing students reduce their stress and/or burnout, improves their health and positively impacts their patients' outcome.[35]

Concerning the effect of emotional intelligence intervention on nursing students, the present study found that there was a statistical significant difference in favor of group I compared to group II regarding self-awareness, self-management, motivation, empathy, relation management, and total EI mean score. These results may be attributed to the acquired competencies and skills developed during EI intervention itself, as the training intervention encompasses a wide array of variety of exercises such as self-awareness activities, empathy scenarios of simulated nurse-client interaction and communication skills videos. This result was agreed with Al-Hamdan et al. (2017),[36] they found that there was a positive statistical significant difference among students in relation to all EI subscales. On the other hand, this finding was incongruent with Foster et al. (2017),[37] they showed that Students' EI was improved across the program except one EI subscale; managing others' emotions and there was a statistical significance increase in the using EI subscale scores over time.

As regards to type of burn, nearly three-fourths of patients of both studied groups had flame burn. This finding was contradicted with Shan et al. (2017),[38] they stated that nearly three quarters of patients' with burn injury had scald burn.

Regarding degree of burn, the majority of patients of both studied groups had 2nd degree of burn. This result was contradicted with Shan et al. (2017),[38] they stated that nearly three quarters of patients' with burn injury had partial thickness burn.

As regards to patients' clinical outcomes, there were statistically significant differences among patients of both studied groups regarding burn infection and shock. This may be attributed to the provision of holistic care that emphasized on physiological and psychological, care to their patients by nursing students who had been trained in both EI and clinical procedures during intervention. Supporting this explanation, some scholars believe that EI may be a key factor in more fully preparing nursing students for providing a holistic care. Therefore, they require a high degree of self-regulation and EI.[4] This finding was supported with Rietschel et al. (2015),[39] they illustrated that standards of care plays a great role in optimizing patients' clinical outcomes in burn units.

Regarding the correlation between EI level and practice domains, the current study illustrated that highly positive significant correlation between total EI mean score and practice domains. This means that improving EI leads to enrichment of student practice. This result was inline with Codier et al. (2009),[40] Bakr and Safaa (2012)[41] and Al-Hamdan et al. (2017),[36] they revealed that there was a significant statistical correlation between total EI mean scores and total practice mean scores among nursing students. Also, Sharon and Grinberg (2018)[42] reported a positive correlation between EI and the degree of clinical success among nursing students. On the other hand, this result was incongruent with Jones (2013),[43] reported no positive correlation between level of EI and clinical performance among nursing students.

In relation to patient' satisfaction, there were statistically significant differences in favor in group I as compared to group II regarding patient's satisfaction. The improvement in the nursing student's EI leads to improvement in the clinical practice and reflected on their patient satisfaction. This result was congruent with Namdar et al. (2008),[44] they stated that there was a meaningful correlation between the EI and patient satisfaction. Additionally, McHugh et al. (2011),[45] stated that Improvement of nurses working conditions lead to improvement of both nurses and patients satisfaction.

Limitation of the study

These results cannot be generalized to all burn ICUs, because the results were only representative to a certain area of geographical location in Egypt. Also, the researchers were not able to adjust for confounders which may affect the patient's outcome such as nursing students worked only in the morning shift in the burn ICU based on the clinical rotation schedule.

5. CONCLUSION

Based on the results of the present study, it can be concluded that, merging emotional intelligence into practice is a favorable method which provides the undergraduate nursing students with a higher level of practice regarding burn intensive care unit. Students who acquired intelligence practice had a statistical significant effect on improving psychological and physical outcomes of patients with severe burn injury than nursing students' who are not exposed to such emotional intelligence intervention during clinical practice.

Recommendation

Based on the current study findings, it is recommended that, the emotional intelligence should be an integral part in the undergraduate nursing students practice especially inside critical care nursing course. Also, training the students' about the appropriate way of implementation to improve their knowledge and practice and improve patients' clinical outcomes.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

REFERENCES

[1] Silva I F, Moulin LL, Dantas DV, et al. Challenges made by the nursing team in the care of burned victim: literature review. International Archives of Medicine. 2016; 9(288): 1-7.

[2] Richard R, Santos-Lozada AR. Burn patient acuity demographics, scar contractures, and rehabilitation treatment time related to patient outcomes: The ACT study. Journal of Burn Care & Research. 2017; 38(4): 230-42. PMid:28644206 https://doi.org/10.1097/BCR.0000000000000490

[3] Ouyang Z, Sang J, Li P, et al. Organizational justice and job insecurity as mediators of the effect of emotional intelligence on job satisfaction: A study from China. Personality and Individual Differences 2015; 76: 147-152. https://doi.org/10.1016/j.paid.2014.12.004

[4] Zamanzadeh V, Valizadeh L, Jasemi M, Keogh B, Taleghani F. Effective factors in providing holistic care: A qualitative study. Indian J. Palliat Care. 2015; 21(2): 214-24. PMid:26009677 https://doi.org/10.4103/0973-1075.156506

[5] Kret DD. The qualities of a compassionate nurse according to the perceptions of medical-surgical patients. Medsurg Nurs. 2011; 20 (1): 29-36. PMid:21446292

[6] Adams KL, Iseler JI. The relationship of bedside nurses' emotional intelligence with quality of care. Journal of Nursing Care Quality. 2014; 29(2): 174-81. PMid:24356579 https://doi.org/10.1097/NCQ.0000000000000039

[7] Serrat O. Understanding and developing emotional intelligence. Knowledge solutions: Tools, methods, and approaches to drive organizational performance. Singapore: Springer Singapor. 2017.

[8] Eckroth-Bucher M. Self-awareness: A review and analysis of a basic nursing concept. Adv Nurs Sci. 2010; 33(4): 297-309. PMid:21068551 https://doi.org/10.1097/ANS.0b013e3181fb2e4c

[9] Arnold EC, Boggs KU. Interpersonal relationships: professional communication skills for nurses. 7th ed. Missouri: Elsevier Health Sciences; 2015.

[10] Goleman D. What Makes a Leader? Harvard Business Review. 2004; 82(1): 82-91.

[11] Ryan RM, Deci EL. Intrinsic and extrinsic motivations: classic definitions and new directions. Contemp Educ Psychol [Internet]. 2000 [cited 2015 Dec 10]; 25: 5467.

[12] Kensil CR, Trigoboff E. Contemporary Psychiatric-Mental Health Nursing. 3rd ed. United Stated Of America. Pearson Company; 2014; 183-85.

[13] Videbeck S L. Psychiatric-Mental Health Nursing. 6th ed. Philadelphia: Lippincott Williams & Willinks Company; 2014.

[14] Barkhordari M, Rostambeygi P. Emotional intelligence in nursing students. Journal of Advances in Medical Education & Professionalism. 2013; 1(2): 46-50.

[15] Kozlowski D, Hutchinson M, Hurley J, et al. Increasing nurses' emotional intelligence with a brief intervention. Applied Nursing Research. 2018; 41: 59-61. PMid:29853216 https://doi.org/10.1016/j.apnr.2018.04.001

[16] Thomas CL, Cassady JC, Heller ML. The influence of emotional intelligence, cognitive test anxiety, and coping strategies on undergraduate academic performance. Learning and Individual Differences. 2017; 55: 40-8. https://doi.org/10.1016/j.lindif.2017.03.001

[17] Lewis GM, Neville C, Ashkanasy NM. Emotional intelligence and affective events in nurse education: A narrative review. Nurse education today. 2017; 53: 34-40. PMid:28426999 https://doi.org/10.1016/j.nedt.2017.04.001

[18] Cerit E, Beser NG. Levels of emotional intelligence of nursing students. Int. J.Caring Sci. 2014; 7 (3): 936-42.

[19] Štiglic G, Cilar L, Novak Ž, et al. Emotional intelligence among nursing students: Findings from a cross-sectional study. Nurse education today. 2018; 66: 33-8. PMid:29655019

[20] Sharon D, Grinberg K. Does the level of emotional intelligence affect the degree of success in nursing studies?. Nurse Education Today. 2018; 64: 21-6. PMid:29454875 https://doi.org/10.1016/j.nedt.2018.01.030

[21] Smith T. BSN program admittance criteria: Should emotional intelligence be included? Nursing forum. 2017.

[22] Bayuo J, Agbenorku P. Coping strategies among nurse in the Burn Intensive Care Unit: A qualitative study. Burn Open. 2018; 2(1): 47-52. https://doi.org/10.1016/j.burnso.2017.10.004

[23] Hunsaker PL. Training in management skills. New Jersey: Prentice-Hall. 2001.

[24] Goleman D, McKee A, Boyatzis RE. Primal leadership: Realizing the power of emotional intelligence. Boston: Harvard Business Review Press; 2002.

[25] Vincent JL, Abraham E, Kochanek P, et al. Textbook of critical care e-book. Elsevier Health Sciences. 2016.

[26] Robbins JR, Valdez-Delgado KK, Caldwell NW, et al. Implementation and outcomes of an evidence-based precepting program for burn nurses. Burns. 2017; 43(7): 1441-8. PMid:28803724 https://doi.org/10.1016/j.burns.2017.04.017

[27] Fonseca AD, Reis SS, Silva SM, et al. Nursing care in burn patients. Unimontes Científica. 2017; 146-54.

[28] Goverman J, Mathews K, Nadler D, et al. Satisfaction with life after burn: a burn model system national database study. Burns. 2016; 42(5): 1067-73. PMid:27215148 https://doi.org/10.1016/j.burns.2016.01.018

[29] Dahl O, Wickman M, Björnhagen V, et al. Early assessment and identification of posttraumatic stress disorder, satisfaction with appearance and coping in patients with burns. Burns. 2016; 42(8): 1678-85. PMid:27707641 https://doi.org/10.1016/j.burns.2016.09.012

[30] Borracci RA, Doval HC, Celano L, et al. Patients' perceptions of argentine physicians' empathy based on the Jefferson scale of patient's perceptions of physician empathy: psychometric data and demographic differences. Education for Health. 2017; 30(1): 19. PMid:28707632 https://doi.org/10.4103/1357-6283.210513

[31] Al-Naim AF, Al-Rashed AS, Aleem AM, et al. Personality traits and academic performance of medical students in Al-Ahsa, Saudi Arabia. International Journal of Scientific Research. 2016; 5(4): 425-7.

[32] Taylor S, Jeng J, Saffle JR, et al. Redefining the outcomes to resources ratio for burn patient triage in a mass casualty. Journal of Burn Care & Research. 2014; 35(1): 41-5. PMid:24270085 https://doi.org/10.1097/BCR.0000000000000034

[33] Parbury JS. Developing interpersonal skills in nursing. London: Churchilliving Stone. 1993; 21-60. PMid:23145518 https://doi.org/10.1111/j.1365-2702.2012.04199.x

[34] Mohr WK. Psychiatric Mental Health Nursing, Therapeutic relationship. 7th ed. Philadelphia: Lippincott Company; 2015; 14-22.

[35] Fernandez R, Salamonson Y, Griffiths R. Emotional intelligence as a predictor of academic performance in first-year accelerated graduate entry nursing students. Journal of Clinical Nursing. 2012; 21(23): 3485-92. PMid:23145518 https://doi.org/10.1111/j.1365-2702.2012.04199.x

[36] Ibrahim HA, Elgzar WT, Mohamed RE, et al. Relationship between nursing students' emotional intelligence and their clinical performance during obstetrics and gynecologic nursing practical training. American Journal of Nursing. 2016; 5(6): 240-50. https://doi.org/10.11648/j.ajns.20160506.12

[37] Foster K, Fethney J, McKenzie H, et al. Emotional intelligence increases over time: A longitudinal study of Australian preregistration nursing students. Nurse education today. 2017; 55: 65-70. PMid:28528126 https://doi.org/10.1016/j.nedt.2017.05.008

[38] Shah H, Gul H, Khan MM, et al. Specialized burn wound management and its outcome: A 3-year perspective from a plastic surgery specialist center. Journal of Surgery. 2017; 3(1): 1-5.

[39] Rietschel CH, Reese JB, Hahn AP, et al. Clinical and psychiatric characteristics of self-inflicted burn patients in the United States: Comparison with a nonintentional burn group. Journal of Burn Care & Research. 2015; 36(3): 381-6. PMid:25051519 https://doi.org/10.1097/BCR.0000000000000100

[40] Codier E, Kamikawa C, Kooker BM, et al. Emotional intelligence, performance, and retention in clinical staff nurses. Nursing Administration Quaterly. 2009; 33: 310-6. PMid:19893444 https://doi.org/10.1097/NAQ.0b013e3181b9dd5d

[41] Bakr MM, Safaan SM. Emotional intelligence: A key for nurses' performance. Journal of American Science. 2012; 8(11): 385-93.

[42] Sharon D, Grinberg K. Does the level of emotional intelligence affect the degree of success in nursing studies? Nurse Education Today. 2018; 64: 21-6. PMid:29454875 https://doi.org/10.1016/j.nedt.2018.01.030

[43] Jones A. Emotional Intelligence and Clinical Performance in Senior Undergraduate Nursing Students (Published Doctoral dissertation). 2013.

[44] Namdar H, Sahebihagh M, Ebrahimi H, et al. Assessing emotional intelligence and its relationship with demographic factors of nursing students. Iranian Journal of Nursing and Midwifery Research. 2009; 13(4): 145-9.

[45] McHugh MD, Kutney-Lee A, Cimiotti JP, et al. Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. Health Affairs. 2011; 30(2): 202-10. PMid:21289340 https://doi.org/10.1377/hlthaff.2010.0100