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## **Anger management intervention on nurses' knowledge, coping strategy and self-efficacy in intensive care units**

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**Abstract**--Background: Anger management helps nurses overcome the difficulties and stresses they face in their daily work, promotes functioning and adaptation above a certain level, and alleviates the effects of anger. The aim of the study was to assess the effect of anger management intervention on nurse's knowledge, coping strategy and self-efficacy in intensive care unit. Subjects and Method: One-group pretest/posttest – follow-up research design was utilized. A quasi-experimental research design was utilized to accomplish the aim of the study. The study was carried out at Menoufia University Hospitals and Shebin Elkom teaching hospital which included surgical, medical departments (ICU) units. A convenient sample of 60 nurses were included. Study tools: A structured interviewing questionnaire, visual analogue scale, and coping strategy scale. Results: After intervention more than two thirds of the studied nurses (68.30%) have low level of total coping strategy at pre-

intervention, while improved to become 78.30% have a high level of total coping strategy at post intervention and decreased to 66.70% at follow-up phase. About 11.7% have high level of total self-efficacy at pre-intervention, while it changed to 73.3%, 71.7% at post and follow up intervention respectively. There was a highly statistically significant positive linear correlation between nurses' knowledge about anger management and self-efficacy and coping strategy. While there was negative correlation between anger score with self-efficacy and coping strategy. Conclusion: The anger management intervention was effective in enhancing knowledge score, decreasing nurses' anger level, improving coping strategy and self-efficacy among intensive care unit nurses. Recommendation: Continuous training program about anger management among critical care nurses is crucial.

**Keywords**---anger management intervention, coping strategy, self-efficacy, intensive care unit nurses.

## **Introduction**

Critical Care Nursing is consistently ranked as one of the most stressful jobs. There are a number of major factors that contribute to stress among nurses, including the following: excessive work overload; long working hours; role ambiguity; lack of sleep; dealing with patients who are terminally ill; exposure to infectious diseases; and exposure to various forms of workplace violence. Also, as the demand for quality nursing care from patients and medical institutions increases, the role of nurses is recognized as more important (Babapour et al., 2022).

One of the more complicated emotions that humans experience is anger. The emotion of anger is a typical response to perceived injustice and ongoing aggravation. If someone threatens any person in any way, whether it be verbally or physically, it is highly likely that they will become furious and make an attempt to respond since they were unable to accomplish their demands or achieve their goals. The caliber of thought that an individual has when confronted with provocative circumstances is the aspect that determines the degree to which they react. Individuals are able to improve their ability to manage and control their emotions, as well as their ability to improve their interpersonal relationships, when they have a deeper understanding of how emotions work and how they can be redirected and reconstructed (Kabasakal & Aydin, 2022).

Nurses working in clinical settings interact with patients through continuous communication and are often asked to suppress their emotions without being able to express them frankly, so they may experience anger, a negative emotion, several times during work. It has been shown that depending on how nurses express and resolve these

anger emotions, it affects not only the psychological stability and physical health felt by the individual but also the organizational society (Hajbaghery & Arani, 2018).

There are four components that make up anger: the external stimuli that provoke it, as well as the cognitive, emotional, physiological, and behavioral responses that people have in response to those stimuli. These components all have a bidirectional interaction with one another (Chen et al., 2021). So, the anger management program mainly consisted of understanding the causes and emotional of anger, rational thinking practice, and anger management skills training. Anger management helps nurses overcome the difficulties and stresses they face in their daily work, promotes functioning and adaptation above a certain level, and alleviates the effects of anger (Kim et al., 2019).

Self-efficacy as a factor connected to interpersonal competency was the second area of concentration for the research project. The cognitive component known as self-efficacy influences both the behavioral and emotional processes that are going on. Individuals who have high levels of self-efficacy have the belief that they are capable of reaching their goals via their own efforts (Triwijayanti et al., 2022). Furthermore, these individuals choose healthy coping mechanisms and are patient in the process of achieving their objectives. As a result, having a higher level of self-efficacy not only boosts an individual's confidence and willingness to cultivate relationships with other people, but it also enables them to effectively manage the conflict that is precipitated by those relationships. In addition, successful emotional control plays an important role in increasing self-efficacy with respect to the correlation between anger expression and self-efficacy (Xiong et al., 2020).

Coping can be defined as cognitive and behavioral attempts to control the internal and external demands that are encountered when interacting with one's surroundings. Coping reactions to rage involve activities in the social and spiritual sides of nursing as humans, and in fact, it is believed to be a relaxing and stabilizing agent, which may help individuals in preserving their mental peace through stressful occasions. Nursing professionals employ a variety of coping mechanisms to deal with workplace stress, such as situational management of situations, requesting assistance, proactive situation monitoring, self-regulation, avoidance and flight, and spiritual coping (Farahani, & Zare, 2018).

### **Significant of the Study**

Anger is a mean issue appearing as a result of stress which has been found more prevalent among nurses in intensive care units as compared to other nurses in different medical environment because nurses supposed to provide first hand care to patients in critical conditions in critical area. So, with receptive, continues, extreme and intense stress by time anger becomes uncontrolled and affect

negatively on the quality of care that nurse's deliver for such group of patients. Therefore, it can be stated, understanding the significance of anger management will enable the nurses to augment their knowledge and understanding in terms of number of essential areas that are necessary to help them to achieve personal and professional goals and bring about improvements in their overall quality of lives.

### **Aim of the Study**

This study aimed to assess the effect of anger management intervention on nurses. knowledge, coping strategy and self-efficacy in intensive care units.

### **Hypotheses of the Study**

- ICU nurses who will receive anger management intervention will have increase in their knowledge post intervention compared to pre intervention.
- ICU nurses who will receive anger management intervention will improve in their coping strategy post intervention compared to pre intervention.
- ICU nurses who will receive anger management intervention will improve their self- efficacy post intervention compared to pre intervention.
- ICU nurses who will receive anger management intervention will decrease their anger level post intervention compared to pre intervention.

### **Materials and Methods**

#### **Study design**

One-group quasi-experimental (pre-post) research design was utilized to accomplish the aim of the current study.

#### **Study Setting**

The study was carried out at ICU units in Menoufia University Hospitals and Shebin Elkom teaching hospital which included surgical, medical, cardiac, pediatric and neurology intensive care units.

#### **Study sampling**

ICU Nurses' (60) were recruited using a convenience sampling technique at previously mentioned setting, who accepted to participate in the study. The Study duration extended over a period of six months from the 1st of January 2022 to the end of June 2022.

## **Sample size**

The sample size was calculated based on a results of study carried out by Yun & Yoo, (2021) and by estimating an effect size of 0.51, based on mean of anger scores  $16.60 \pm 1.90$  at pre, while post intervention  $10.90 \pm 0.34$ , and statistical power of 90%, level of confidence (1-Alpha Error): 95%, Alpha 0.05, Beta 0.1, and statistical power of 90%. The sample size, which is established at 55 nurses. After accounting for 10% sample attrition (5–6 nurses), the final sample size was 90 nurses. A test comparing two means was used to determine the sample size through Kane SP. Sample Size Calculator. (Rosner, 2011).

## **Tools of Data Collection**

Five tools were used for data collection:

### **Tool I: A structured interviewing questionnaire**

It was developed by the researchers in the Arabic language. It involved questions concerned with the demographic profile of studied nurses, included socio-demographic characteristics of the studied nurses such as age, gender, residence, educational level, marital status, training courses related angry management, work experiences, and unit work.

### **Tool II: Nurses' knowledge Questionnaire**

It was developed by the researchers after reviewing the related literature ,it concerned with knowledge and concepts related anger management (2 items), concept of anger (2 items), ways improve anger management (3 items), emotional regulation (2 items), and importance of anger management (4 items).Scoring system: the questionnaire contained 13 knowledge assessment items each was two points Liker scale (0 – 1) as (0) for don't know/ wrong answer and (1) for correct answer. These items were as follow: knowledge and concepts related anger management (2 items), concept of anger (2 items), and ways improve anger management (3 items), emotional regulation (2 items), and importance of anger management (4 items) .Nurses 'knowledge about anger and its management was evaluated giving a score of 0-13. The total score of each nurse was categorized into "unsatisfactory knowledge" when the nurse achieved less than < 70% of the total score and "satisfactory knowledge" was considered when the nurse achieved more than & equal  $\geq 70\%$  of the total score.

### **Tool III: Visual analogue scale (VAS)**

It was used to estimate the anger level and the degrees of rage experienced both at work and outside, it was developed by (stern et al., 1997). From 0 (no anger) to 10 (severe fury), respondents rated their level of rage on a straight line. Higher scores indicated increased anger.

#### **Tool IV: Coping Strategy scale: (adaptive coping strategy or maladaptive coping (escape-avoidance strategy)**

It adapted from Tesfaye, (2018). It designed to measure coping with job stress. It included 18 items distributed at adaptive approach attempts to manage or alter the problem causing the stress measured through plan-full problem solving (5 items), symptom management (3 items), social support (3 items) and self-controlling (2 items). These subscales having a total of 13 items from 18, and their sum score range a minimum score of 13 and maximum of 52 which indicates the higher the score the more preferred coping strategy used by the nurse. Maladaptive approach as escape/avoidance (5 items) the score of the 5 items added and their sum score range a minimum score of 5 and maximum of 20 which indicates the higher the score the preferred coping strategy used by the nurse. All total scores of nurses categorized as high coping if score >70%, moderate 50% to 70%, and low coping if score <50%.

#### **Tool V: Nursing profession self-efficacy scale**

It adapted from Caruso et al., (2016). It encompasses nurses' global confidence in coping ability across a range of challenging work situations that are typically faced by nurses. It included 19 items divided on attributes of caring situations "12 items" and Professionalism "7 items". Each item scored by Likert scale as always, sometimes, never 3, 2 and 1 score respectively for positive items and vice versa for negative items. All total scores of nurses categorized as high self-efficacy if score >70%, moderate 50% to 70%, and low self-efficacy if score <50%.

### **Operational Design**

#### **Preparatory phase**

This phase included a literature review for developing the tools, as well as testing the validity and reliability of the study developed tools. This included a review of the past and current related literature and studies, using available books, periodicals, magazines, and articles to get acquainted with the various aspects of the study research problems. The developed tool was tested for their reliability by using Cronbach's alpha coefficient test in SPSS program version 21 by a statistician to splits all questions on instrument and computes all correlation value for them. It was carried out on 10% of studied nurses (n=6) and the results were Cronbach's  $\alpha = 0.817$  as good for knowledge, 0.893 as good for coping strategy, and 0.902 as excellent for self-efficacy.

#### **Ethical Considerations**

The research approval was obtained from the director of Menoufia University Hospitals and Menoufia teaching hospital. As well as oral consent was obtained from each nurse after the researcher informed them about the aim of the study. Moreover nurses, who agreed to participate in the study, informed that all data

gathered during the study were confidential. Also, they have the right to withdraw from the study at any time.

### **Administrative approval**

Necessary official approval to conduct the study was obtained from Menoufia University Hospital and Shebin Elkom teaching hospital including ICU units. Oral permissions were obtained to conduct the study from the head of ICU units after.

### **Pilot study**

A pilot study was carried out with a sample of 6 nurses. It carried out before data collection to evaluate the feasibility, time, cost, adverse events, and improve upon the study design before the performance of a full-scale research study. There were no modifications were accordingly done so the participants in the pilot study were included in the sample.

### **Fieldwork**

The researchers attended at Menoufia University Hospital and Shebin Elkom teaching hospital, 2 days weekly for each hospital, at the morning shift from 9.00 a.m. to 1.00 p.m. Data collection extended over a period of 6 months period from the 1<sup>st</sup> of January 2022 to the end of June 2022 for pretest, educational program session implementation, posttest, and follow-up. The researcher started by introducing herself to nurses and simply explaining the aim of the study. Data collection was carried out through distributing the questionnaire to ICU nurses. Time consumed for full the questionnaire was 30 minutes.

### **The framework of the study**

#### **Assessment phase**

Assessment of nurses' knowledge about anger management, coping strategy, anger score, and self-efficacy before the implementation of the educational intervention was done.

#### **Planning phase**

Based on the findings of the assessment phase; goals, priorities, and expected outcomes was formulated to meet nurses' needs of knowledge related anger management, anger scores, improving coping strategy, and enhancing self-efficacy of nurses.

#### **Implementation phase**

The current intervention's theoretical framework was a cognitive behaviour therapy model created using Beck's cognitive theory (Wright et al., 2017). Because of the intimate connection between cognition, emotion, and behavior, automatic thought patterns and cognitive biases contribute to angry conduct.

Preparation of suitable media such as booklet, boosters, and brochures for teaching the nurses. The illustrated intervention handouts was distributed to 6 groups; each group included ten nurses. Implementation of the educational intervention was carried out at the previously mentioned settings. The educational anger management intervention consisted of five sessions once every week & every session continued for 20- 30 minutes. Three nursing college professors, a psychiatrist, and a clinician in emotional psychology then examined the preliminary program. The 1<sup>st</sup> session included concept of anger, benefits of anger management and skills of coping strategy, and self-efficacy. The 2<sup>nd</sup> session focused on improved emotional awareness focuses on the full emotional experience, separating the automatic reaction and "it just occurs experience" into one of higher identification and understanding. 3<sup>rd</sup> session: Techniques for reducing arousal include incremental muscular relaxation, focused breathing, altering assessments, and self-instruction. 4<sup>th</sup> session: training in behavioural coping, communication and assertiveness skills. 5<sup>th</sup> session: managing and coping with anger in the ICU workplace.

### **Evaluation and follow up phase**

Reevaluation of nurses' knowledge related anger management, anger scores, improving coping strategy, and enhancing self-efficacy of nurses was carried out using the same assessment tools immediately post intervention and follow-up the educational program and were compared with pretest levels.

### **Statistical Analysis**

Data were organized, categorized, result were presented in tables. Data were analyzed using a compatible personal computer using the Statistical Package for the Social Sciences (SPSS Inc; version 21; IBM Corp., Armonk, NY, USA). Qualitative data were described using numbers and percentages. Continuous variables were presented as means  $\pm$  standard deviation. An ANOVA test is a type of statistical test used to determine if there is a statistically significant difference between two or more categorical groups by testing for differences of means using variance. Cochran's Q test is used to determine if there are differences on a dichotomous dependent variable between three or more related groups. The results were considered significant when the probability of error is less than 5% ( $p < 0.05$ ) and highly significant when the probability of error is less than 0.1% ( $p < 0.001$ ).

## Results and Discussions

Table 1  
Distribution of studied ICU nurses related to their characteristics (n=60)

Items	N	%
Age:		
- 20 - <30	19	31.7
- 30 - <40	30	50
- 40 – 50	11	18.3
- Mean (SD)	33.7(4.79)	
Gender:		
- Male	13	21.7
- Female	47	78.3
Educational level:		
- Diploma of nursing	17	28.3
- Technical health institute	25	41.7
- Bachelor of nursing	12	20
- Postgraduate	6	10
Residence:		
- Rural	22	36.7
- Urban	38	63.3
Marital status:		
- Married	43	71.7
- Unmarried	17	28.3
Experience:		
- <5 years	16	26.7
- 5 – 10 years	29	48.3
- >10 years	15	25
- Mean (SD)	7.45(2.80)	
Training courses about angry management:		
- Yes	4	6.7
- No	56	93.3
Unit work		
- NICU	12	20
- ICU	17	28.3
- PICU	9	15
- CCU	12	20
- SICU	10	16.7

As shown in table (1), the study was conducted including 60 nurses. Regarding their characteristics, half of them (50%) aged from 30 to less than 40 years old with mean 33.7(4.79) years old. More than three quarters of them (78.3%) are females. As regard their Level of education, more than one third of them (41.7%) are technical health nurses. Almost two thirds of them (63.3%) are from urban area. Nearly three quarters of them (71.7%) are married. Concerning experience, almost half of them (48.3%) have from 5 to 10 years. In addition, most of them (93.3%) attained training courses about angry management. As well, more than one quarter of them (28.3%) work at ICU unit.

Table 2  
Distribution of studied ICU nurses related their knowledge about anger management pre, post, and follow up intervention (n=60)

Domains	Pre		Post		Follow up		test	p- value	
	N	%	N	%	N	%			
Concept of anger management "2 items"	Satisfactory	17	28.3	55	91.7	52	86.7	10.456	<0.01**
	Unsatisfactory	43	71.7	5	8.3	8	13.3		
Concept of anger "2 items"	Satisfactory	20	33.3	57	95	54	90	11.225	<0.01**
	Unsatisfactory	40	66.7	3	5	6	10		
Ways improving anger management (3 items)	Satisfactory	12	20	53	88.3	51	85	12.300	<0.01**
	Unsatisfactory	48	80	7	11.7	9	15		
Emotional regulation (2 items)	Satisfactory	10	16.7	52	86.7	49	81.7	14.712	<0.01**
	Unsatisfactory	50	83.3	8	13.3	11	18.3		
Importance of anger management (4 items)	Satisfactory	11	18.3	53	88.3	50	83.3	12.999	<0.01**
	Unsatisfactory	49	81.7	7	11.7	10	16.7		

Table (2) concerned with the studied nurses' knowledge about anger management at pre post and follow up intervention. It clarified that, there is a marked improvement in their knowledge with a highly statistically significant difference ( $P < 0.01$ ) between phases of intervention as regard all features registered. As evidence, about two thirds of the studied nurses (66.7%) have unsatisfactory level of knowledge about "Concept of anger" at pre intervention, while it changed to be most of them (95% and 90%) have satisfactory level of knowledge at post and follow up intervention respectively. In addition, nearly three quarters of them (71.7%) have unsatisfactory level of knowledge about "Concept of anger management" at pre intervention, whilst it changed to be most of them (91.7% and 86.7%) have satisfactory level of knowledge at post and follow up intervention respectively.

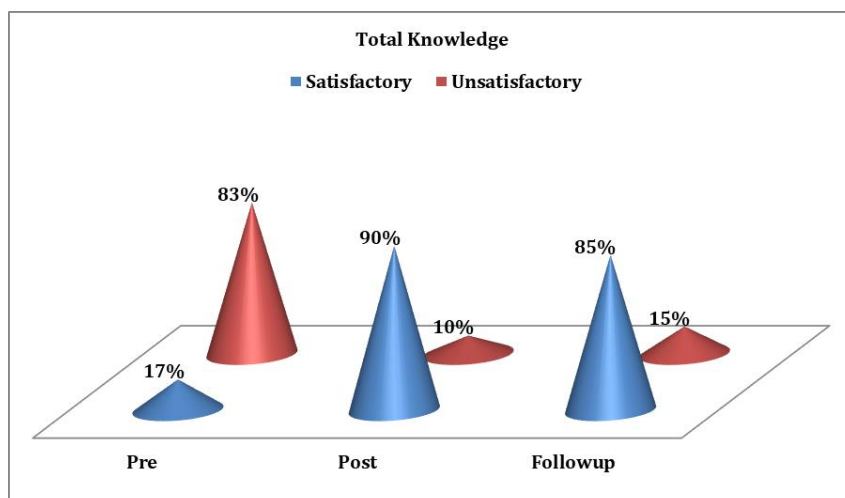


Figure 1. Distribution of studied ICU nurses related their knowledge about anger management pre, post, and follow up intervention (n=60)

Figure (1) illustrates that, most of the studied ICU nurses (83%) have unsatisfactory level of total knowledge about anger management pre intervention while improved to be the majority of them (90%) have satisfactory level of total knowledge post intervention and slightly decreased to (85%) at follow-up phase.

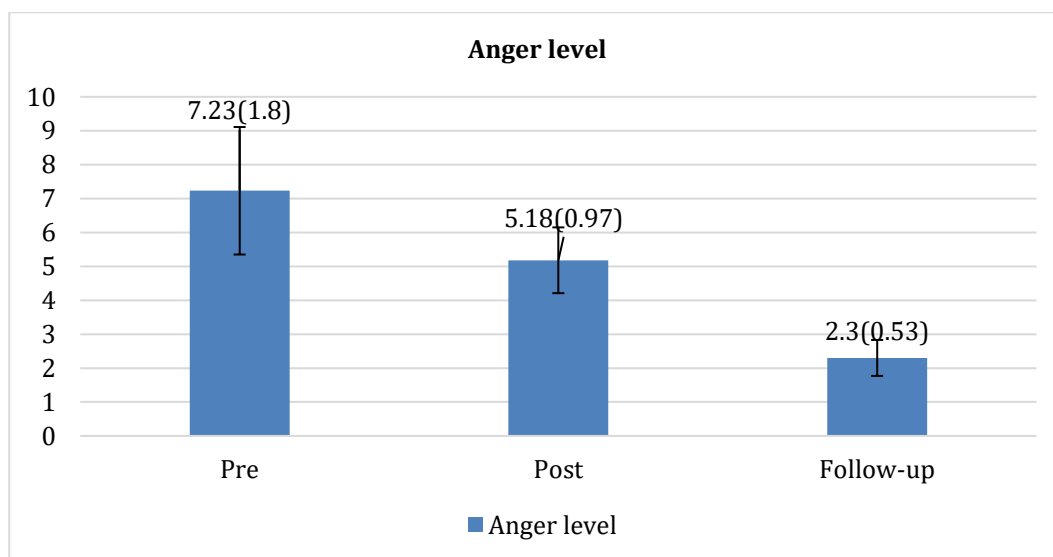


Figure 2. Mean score of studied ICU nurses related their anger levels pre, post, and follow up intervention (n=60)

Figure (2) illustrates mean score of studied ICU nurses related their anger levels at pre, post, and follow up intervention. It shows that mean score of anger levels was 7.23 (1.8) pre intervention, 5.18 (0.97) at post intervention, while 2.3 (0.53) at follow-up.

Table 3  
Distribution of studied nurses related their self-efficacy pre, post, and follow up intervention (n=60)

Domains	Pre		Post		Follow up		test	p value	
	N	%	N	%	N	%			
Attributes of caring situations	High	8	13.3	45	75	51	85	9.768	<0.01**
	Moderate	16	26.7	7	11.7	5	8.3		
	Low	36	60	8	13.3	4	6.7		
Professionalism situations	High	6	10	43	71.7	45	75	10.161	<0.01**
	Moderate	15	25	11	18.3	7	11.7		
	Low	39	65	6	10	8	13.3		
Total	High	7	11.7	44	73.3	43	71.7	12.300	<0.01**
	Moderate	17	28.3	10	16.7	12	20		
	Low	36	60	6	10	5	8.3		

Table (3) displays the studied ICU nurses' self-efficacy at pre, post and follows up intervention. It represents that, there was a marked improvement in their self-efficacy with a highly statistically significant difference ( $P < 0.01$ ) between phases of intervention as regard all domains listed. As evidence, less than one fifth of the studied nurses (13.3%) have high level of self-efficacy regarding "Attributes of caring situations" at pre intervention, while it changed to be three quarters (75%) at post intervention and most of them (85%) at follow up. Additionally, only one tenth of them (10%) have high level of self-efficacy as regard "Professionalism situations" at pre intervention, while it changed to be nearly three quarters (71.7%) at post intervention and three quarters of them (75%) at follow up.

Moreover, the same table portrays that there was a marked improvement in the studied nurses' total self-efficacy level with a highly statistically significant difference ( $P < 0.01$ ) between phases of intervention. As evidence, only more than one tenth of the studied nurses (11.7%) have high level of total self-efficacy at pre intervention, while it changed to be nearly three quarters (73.3%, 71.7%) at post and follow up intervention respectively.

Table 4  
Distribution of studied ICU nurses related their coping strategy pre, post, and follow up intervention (n=60)

Domains	Pre		Post		Follow up		test	p value	
	N	%	N	%	N	%			
Plan-full problem solving	High	9	15	47	78.3	49	81.7	10.002	<0.01**
	Moderate	16	26.7	6	10	5	8.3		
	Low	35	58.3	7	11.7	6	10		
Self-control mechanism	High	7	11.7	45	75	43	71.7	11.240	<0.01**
	Moderate	12	20	10	16.7	9	15		
	Low	41	68.3	5	8.3	8	13.3		
Social support	High	10	16.7	41	68.3	44	73.3	9.882	<0.01**
	Moderate	12	20	13	21.7	8	13.3		

Symptom management	Low	38	63.3	6	10	8	13.3	8.760	<0.01**
	High	8	13.3	43	71.7	39	65		
	Moderate	11	18.3	10	16.7	12	20		
Escape/avoidance	Low	41	68.3	7	11.6	9	15	12.194	<0.01**
	High	9	15	43	71.7	41	68.3		
	Moderate	12	20	9	15	13	21.7		
	Low	39	65	8	13.3	6	10		

Table (4) shows the studied nurses' coping strategy at pre post and follow up intervention. It indicates that, there is a marked improvement in their coping strategy with a highly statistically significant difference ( $P < 0.01$ ) between phases of intervention as regard all features registered. As evidence, only less than one fifth of the studied nurses (15%) have high level of coping strategy regarding "Plan-full problem solving" at pre intervention, while it changed to be more than three quarters (78.3%) at post intervention and most of them (81.7%) at follow up. Additionally, only more than one tenth of them (11.7%) have high level of coping strategy as regard "Self-control mechanism" at pre intervention, whilst it changed to be three quarters (75%) at post intervention and slightly decreased to nearly three quarters (71.7%) at follow up phase.

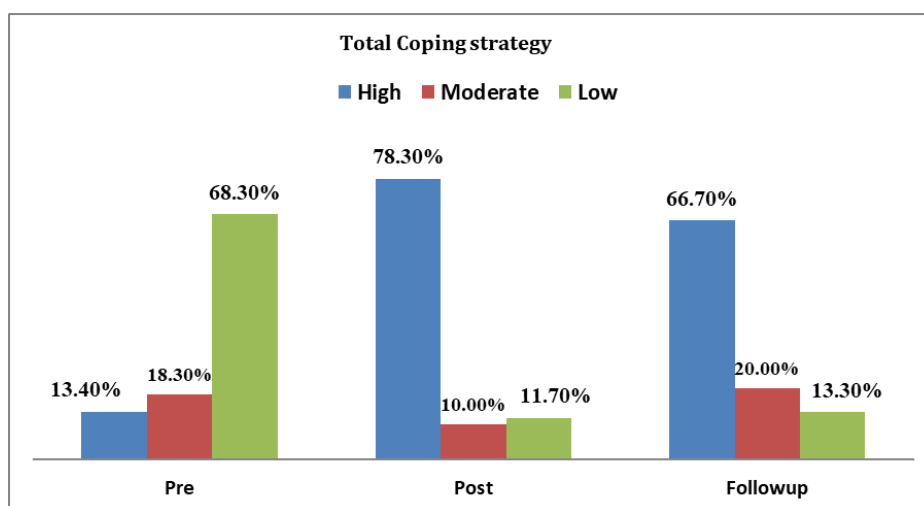


Figure 3. Distribution of studied ICU nurses related their total coping strategy pre, post, and follow up intervention (n=60)

Figure (3) represents that, more than two thirds of the studied nurses (68.30%) have low level of total coping strategy at pre intervention, while improved to be more than three quarters of them (78.30%) have high level of total coping strategy at post intervention and slightly decreased to (66.70%) at follow-up phase.

Table 5  
Correlation between studied variable post interventions

	Total knowledge	Self-efficacy	Anger levels	Coping strategy
Total knowledge	r.	0.602	-0.499	0.513

	p		<0.01**	<0.01**	<0.01**
Self-efficacy	r.			-0.478	0.528
	p			<0.01**	<0.01**
Anger levels	r.				-0.463
	p				<0.01**
Coping strategy	r.				
	p				

\*\*high significant <0.01\*\*

Table (5) illustrates that, there was a highly significant statistical positive correlation between the studied nurses' total knowledge and self-efficacy ( $r = 0.602$ ,  $p < 0.01$ ), also between total knowledge and coping strategy ( $r = 0.513$ ,  $p < 0.01$ ). In addition, a highly significant statistical positive correlation is found between the studied nurses' self-efficacy and coping strategy ( $r = 0.528$ ,  $p < 0.01$ ). Moreover, there was a highly significant statistical negative correlation between the studied nurses' total knowledge and anger levels ( $r = -0.499$ ,  $p < 0.01$ ). And so, a highly significant statistical negative correlation is found between the studied nurses' self-efficacy and anger levels ( $r = -0.478$ ,  $p < 0.01$ ), also between coping strategy and anger levels ( $r = -0.463$ ,  $p < 0.01$ ).

## Discussion

According to the studied ICU nurses' characteristics, the current study showed that half of them aged from 30 to less than 40 years old with mean (sd) 33.7(4.79) years old. More than three quarters of them are females. As regard their Level of education, more than one third of them are technical health nurses. Almost two thirds of them are from urban area. Nearly three quarters of them are married. Concerning experience, almost half of them have from 5 to 10 years. In addition, most of them attained training courses about angry management. More than one quarter of them work at ICU unit. These results supported with the study conducted by Shalaby et al., (2018) who stated that above two thirds of the studied sample were in the age group between 31 to 50 years old and the majority of nurses were females. In relation to marital status, the result demonstrates that more than half of the studied sample was married. While, inconsistent with Ying et al., (2021) stated that about one third of nurses had year experience from 6 to 10 years and about three quarters of them worked at adult ICU.

According to knowledge level, the current results revealed that most of the studied nurses have unsatisfactory level of total knowledge about anger management pre intervention while improved to be the majority of them had satisfactory level of total knowledge post intervention and slightly decreased to 85% at follow-up phase. These results attributed to effective education intervention which provided by the researcher dependent on pretest scores and need of nurses. These results agree with the study by Lök et al., (2018) who reported that anger management education improve nurses' knowledge about technique of managing anger at p-value <0.05\*.

Regarding to anger score of nurses, mean score of anger levels was 7.23 pre intervention, 5.18 at post intervention, while 2.3 at follow-up, that detect significant improvement at their anger level. These results may be due to effective training program provided by the researchers and using different methods of teaching. These results agreed with the study by Moustafa et al., (2022) who reported that there was a high statistically significant difference in total adolescent anger rating scale among studied sample pre–post intervention. Also, Yun and Yoo, (2021) showed that the novel anger management program effectively reduced anger and job stress and improved psychological well-being among clinical nurses in South Korea. Moreover, regular with Lee et al., (2016) showed that anger and stress decreased after programs that implemented a cognitive-behavioral approach. Another study that applied cognitive emotional behavior therapy with nurses observed similar findings (Kim and Yoon, 2018).

In addition, our results stated that there was a marked improvement in the studied nurses' total self-efficacy level with a highly statistically significant difference ( $P < 0.01$ ) between phases of intervention. As evidence, only more than one tenth of the studied nurses have high level of total self-efficacy at pre intervention, while it changed to be nearly three quarters at post and follow up intervention. These results similar with the study conducted by Turan, (2021) who found that the anger management psycho-education program affected the psychological resilience and emotional state of intensive care nurses. Furthermore, Lee et al., (2019) detected that interventions designed to promote positive psychological well-being may help improve nurses' practice. Furthermore, Jang et al., (2018) found that anger expression style was a major influencing factor influencing nursing performance. Teaching anger management has been effective on adjustment with  $p < 0/001$  and on self-efficacy of adolescent also with  $p < 0/001$  (Hejazi et al., 2011). Moreover, Han et al., (2015) found that anger expression affects self-efficacy and interpersonal competency.

According to coping strategy, the current results indicated that more than two thirds of the studied nurses have low level of total coping strategy at pre intervention, while improved to be more than three quarters of them have high level of total coping strategy at post intervention and slightly decreased at follow-up phase. These results attributed to preparation of suitable media such as booklet, boosters, and brochures for teaching the nurses. These results similar with study by Turan, (2021) who found that applying anger management program to nurses, psychological resilience, improve coping skills and job satisfaction was observed. Also, these results suggested that the Anger Management Mindfulness was effective on mental fatigue, total fatigue, and mental health (Ando et al., 2022). Likewise, Bardsiri et al., (2021) reported that empowering emergency nurses regarding anger management can help improve their mental status and coping skills with critical situations. Too, Yun & Yoo, (2021) revealed that anger management had positive effect on nurses' adjustment at their work.

Finally, there was a highly significant statistical positive correlation between the studied nurses' total knowledge and self-efficacy, also between total knowledge and coping strategy. In addition, a highly significant statistical positive correlation is found between the studied nurses' self-efficacy and coping strategy. Moreover, there was a highly significant statistical negative correlation between the studied nurses' total

knowledge and anger levels. Additionally, a highly significant statistical negative correlation was found between the studied nurses' self-efficacy and anger levels, also between coping strategy and anger levels. These results were in agreement with the study conducted by Jun, (2016) who detected that significant correlations were observed between anger expression, self-efficacy and interpersonal competency. Self-efficacy exerted a partial mediatory effect on the relationships between interpersonal competency and anger-in and anger-control within the anger expression subscales. Also, Cheriki et al., (2022) reported that there was correlation between improving nurses' knowledge and decreasing anger level. Furthermore, Lee et al., (2009) showed that anger control significantly affected positively on improving organizational performance and efficacy of nurses.

### **Conclusion**

Based on the current study, it was concluded that the educational intervention for anger management was effective to enhance nurses knowledge score, decrease nurses' anger level and improving coping strategy and self-efficacy among ICU nurses.

### **Recommendations**

- Continuous training program about anger management among critical care nurses is crucial.
- Periodic monitoring by standardized scales to measure anger level and coping strategy among nurses at intensive care units.
- Mental health consultation should be facilitated to encourage critical nurses to seek professional and medical assistance.
- Further studies are needed to assess factors affecting anger level among ICU nurses

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