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### Title: Depression, Anxiety and Stress among ICU Restrained Patients and their Related Factors

**Running Head:** Depression, Anxiety and Stress among ICU Restrained Patients

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**Anxiety, Depression and Stress among ICU Restrained Patients and Their Related Factors**

## Abstract

**Background:** Using restraint in critically ill patients is a complex decision and related to patient criteria, environment and care providers.

**Aim:** Explore anxiety, depression and stress level among ICU restrained patients and their related factors. **Method:** A descriptive correlational design was conducted for this study, which implemented in intensive care units at Egypt of Health care Authority, Port Said hospitals. A purposive sample of 129 adult ICU restrained patients was enrolled in the current study. One instrument was used in this study

**Results:** The study results revealed that restrained patients in ICU suffered from psychological effect like anxiety, depression and stress. Additionally, patients previous hospitalization related significantly to anxiety and stress with P-Value of (0.020, and 0.002) respectively. Moreover patient violence during restrain related significantly to anxiety, depression and stress with P-Value of (0.021, 0.023, and 0.023) respectively.

**Conclusion:** Results of the current study concluded that anxiety is the highest psychological effect among restrained patients. However, patient violence during restrain related significantly to anxiety, depression and stress.

**Keywords:** Anxiety, Depression, ICU Patients, Restrain, Stress

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## Introduction

Patients treated from critical disease required regular observations and monitoring around hours by critical care nurse because of their life-threatening health problems that might be faced by these patients. Moreover, these patients are vulnerable to different coma stages. Otherwise, almost of critically ill patients adjusted with medical devices as peripheral and central lines, monitor, breathing support devises as ventilator or airway that could be harmful if disconnect by the patients themselves (Kandeel and Attia, (2016). A Vast percentage of critical care patients in various intensive care units/or specielities restrained

physically because of changed or diminished their conscious level (Nasrate, Shamlawi, and Darawad, (2017).

Restraint is limiting patients' movement through using material and/or device to restrict free movement of the patient or avoid usual access to his/her body parts. About 65% of patients were restrained to prevent falling. However, Restrain implementation prevalence is 62% in patients with altered level of consciousness (Ang, et al., 2016). The Decision of proceeding intensive care patients restrain is difficult to taken. However, it always interrelated to patients' health conditions, care provider skills and setting of care additionally should be considered (Taha and Ali, (2017). There are many ways of restraints like environmental, chemical or using medication, physical and seclusion. Attaching material or devices to restrict patients body movement is known as physical restraint that applied using bedside rails, belt, limb ties, tucking very tightly in sheets, and straps (Danivas, et al., 2016 a).

Medication is used for chemical restraint that used to limit or control patient reaction or behavior. The environmental restrain is known as speculation that used to isolate patient environmentally as placing a person in separate closed room alone or in a specific area (Danivas, et al, 2016 b). There are many health conditions or problem like pressure ulcers, edema, respiratory conditions, musculoskeletal status like fracture, dislocation or paralysis contraindicated patient restrain and so ethical dilemma is enrolled. Otherwise, these patients are vulnerable for psychological effect like stress, anxiety, and/or diminished self-esteem (Younis and Sayed (2017).

Physical problems could be result of proceeding restraint in intensive care patients like pressure ulcer, edema of restrained limbs, circulation impaction, and injured skin at restraint site. Therefore, regular and continuous observation and assessment of restrained patients is indicated and implemented by the nurses provided direct care for the patients. Restrained patients should be assessed continuously to avoid such complications through patient positioning, passive and active exercise as rang of motion as possible. Monitoring patients hourly and interchange restrained sites every two hours as available unless contraindicated. Evaluate psychological and physical effect of restrain regularly to limit complications of restraining (Suliman, Aloush, and Al- Awamreh, (2017).

Nursing role for restrained patients beginning before proceeding restrain procedure through appropriate patients preparation and implanting restrain in the right way to avoid

complications physically and/or psychologically. Then, post restrain care as restrained patients' assessment and monitoring according hospital rules and patients' health condition should be done regularly (De Jonghe, et al., 2016).

### **Study Significant**

The prevalence of restrain in health care facilities falls between 15% and 66% in nursing homes, however, it ranged from 33% to 68% in hospitals. The essential indication of proceeding restrain among intensive care patients is avoiding disconnection of adjusted devices from the patients. There are different tools used commonly in intensive care units for restraining patient physically as Vest, Wristlet, Jacket, Mittens, Merry Walker, Helmet, and Water mattress might be a limitation of patient care (Cadore, et al. 2014).

On the other hand, the study of Kandeel and Attia (2016) at intensive care units of Mansoura City reported that patients restrained because of dislodgment of medical equipment, however, pressure ulcer lesion, edema of patients limbs, circulation impaction and skin injury at site of restrain could be occurred for restrained patients. Additionally, Psychological effect of restrain is predicted and occurred in various health care settings specially intensive care units. Therefore, the current study aim to explore the level of most common psychological effect like anxiety, depression and stress that could be occurred among ICU patients as a result of restrains use.

### **Study aim**

The current study aims to explore anxiety, depression and stress level among ICU restrained patients and their related factors

### **Objectives**

1. Estimating depression, anxiety and stress level among adult ICU restrained patients at Egypt of Health care Authority, Port Said hospitals.
2. Determine patient factors associated with anxiety, stress and depression in adult ICU restrained patients at Egypt of Health care Authority, Port Said hospitals.

### **Materials and Method**

#### **Research Design**

A descriptive correlational design was used.

## Study Setting

The present study implemented at adult ICUs in Egypt of Health care Authority, Port Said hospitals which named;

|   |                              |                       |         |
|---|------------------------------|-----------------------|---------|
| 1 | Al- Salam hospital           | 2 intensive care unit | 21 beds |
| 2 | Al-Tadamun hospital          | 3 intensive care unit | 17 beds |
| 3 | El-hayat Port Fouad hospital | 1 intensive care unit | 9 beds  |
| 4 | Elmabra hospital             | 2 intensive care unit | 17 beds |
| 5 | Alzhoor central hospital     | 1 intensive care unit | 10 beds |

## Sample

A purposive sample cover 129 adults ICU restrained patients was enrolled in the study.

## Participants' inclusion characteristics

1. Adult patients.
2. Both sexes.
3. Able to communicate effectively and hadn't any an apparent cognitive impairment, or bad general health status that interfere with patient's cooperation.

## Instrument

One instrument was utilized to assess the study patients, the instrument includes two parts: First part covered questions in an Arabic language to identify types, causes of current restrain, previous restraint and occurrence of violence from patient during restrain. In addition to that, patient diagnosis and previous hospitalization frequency were assessed.

The second part which named; Depression, anxiety and stress scale (DASS21). The DASS21 scale constructed by Lovibond and Lovibond, (1995). This scale used with the aim of estimating depression, anxiety and stress levels among adult intensive care restrained patients. The scale of (DASS-21) consists of 21 items; seven items concern depression issue and seven items to assess Anxiety and the last seven items about Stress Symptoms. The depression items assess hopelessness, dysphoria, self-deprecation, devaluation of life, lack of interest and involvement, anhedonia, and inertia. The anxiety items assess skeletal muscle effects, autonomic arousal, situational anxiety, and subjective experience of anxious affect. However, items of stress assess nervous arousal, difficulties in relaxation, and being easily upset or over-reactive. Validity and reliability of DASS-21 Arabic version was tested by Ali

et al. (2017) using Cronbach's alpha for its sub-scales and its value was 0.81 for depression, 0.76 for anxiety, and 0.67 for stress.

The DASS-21 is Likert scale, each item ranged from zero to 3. Zero means did not apply to me at all, one refer to applied to me some degree or some of time, two means applied to me to a considerable degree/good part of time, and three means applied to me very much/most of the time. Depression, anxiety and stress are calculated by summing the scores for the relevant items and the total was divided by the number of items, giving a mean score of each state. After assessing depression, anxiety and stress, the score of each sub-scale was multiplied by 2 because DASS-21 is the short version and the long version score of DASS is 42. Moreover, personal data of patients was assessed as age, sex and level of education.

### **DASS-21 Scoring System**

Each sub-scale severity ranged from normal to extremely sever; Depression score (0-9) considered normal, (10-13) was mild, (14-20) was moderate, (21-27) was sever and  $\geq 28$  was extremely sever. Anxiety was rated normal when scored (0-7), mild if scored (8-9), moderate if scored (10-14), sever when scored (15-19) and if  $\geq 20$  was defined extremely sever. However, the final sub-scale was stress which rated normal if patient score fallen between 0 and 14, mild if fallen between 15 and 18, moderate if scored 19 -25, sever was identified if patient score was 26 -33 and extremely sever if  $\geq 34$ .

## **Methods**

### **Preparatory phase**

Study preparation started with extensive literature review through various research articles, text-books from different perspective to acquired body of knowledge related to study core of that used to adapt appropriate instrument for patients assessment, and study implementation. Reviewing the Scientific websites like Pubmed, Cochranne database, Ebesco additionally was done.

### **Instrument Validity**

DASS-21 was translated from English to Arabic, and then retranslated from Arabic to English to ensure clarity, accuracy and avoid ambiguity of the scale wording. A panel of five experts in the nursing field reviewed the translated scale. Their opinions elicited concerning the construction, clarity, significance, and comprehensiveness of the Arabic version of the scale. Accordingly, the required modifications were done.

## **Instrument Reliability**

Reliability of the DASS-21 was proven using Cronbach Alpha. It was evidenced to be reliable with value of  $\alpha = 0.79$ .

## **Study Pilot**

Exactly 10% (13) of restrained intensive care patients were enrolled in the pilot study. Participated patients fulfilled the criteria of study sample and were evaluated using the study instrument to ensure feasibility, clarity and practicability of the used instrument. Otherwise the time of patient assessment was calculated and accordingly it was considered during data collection of the present study. No modifications were done. Patients participated in the pilot study did not share in study sample.

## **Procedure:**

Collection of the data proceeded over 10 months throughout the period from beginning of August 2021 to May 2022. Participated patients data maintained safe and confidential. Researchers clarified for the patient their availability of withdrawal from the study any time without any consequences. It was carried out by the researchers at selected settings; official approval was obtained from Egypt of Health care Authority, Port Said hospitals directors of the aforementioned settings. The researchers started to collect data and clarified the objectives for the study patients. The data collected directly from the patients when it was possible and according ability of the patients. Study tool was filled in by the researcher. Numbers of patients was ranged from one to two restrained ICU patients daily. Each interview ranged from 20 to 30 minutes depending on the responses of the patients. Each intensive care unit at Egypt of Health care Authority, Port Said hospitals in Port Said Governorate was visited two to three days weekly according availability of patients. After completion of data collection, the researcher revised all statements included in the study instrument to ensure its completeness. Then, the researchers thanked the participated for their cooperation and offered time.

## **Ethical considerations:**

An approval was obtained from the Faculty of Nursing Dean. Then, the protocol permitted by the Scientific Research Ethics' Committee of the Faculty of Nursing, Port Said University (Code NUR (9/3/2020) (15). In addition, official permission was taken from directors of hospitals enrolled in the study. Next, an oral acceptance was taken from patients shared in the

study. A clearly overview about the purpose of the study was clarified before data collecting. Additionally, Patients have the right to share or not in the study without any consequences. then, the collection of the data didn't disturb the health team work of participated hospitals.

## Results

The current study conducted on 129 adult restrained patients with mean age of  $55.09 \pm 13.65$ , male and female patients were nearly the same percentages. Additionally, 44% of study patients had secondary school and 27.1% were illiterate. Additionally, the majority of study patients were admitted with stroke, followed by cancer, then diabetic ketoacidosis with the following values (26.4%, 16.3 % and 15.5%) respectively. On the other hand, 51.9 of study patients hospitalized first time during current study (see table 1).

**Table 1: Participated restrained patients demographic characteristics and clinical data (N=129)**

| Demographic characteristics |                   | N                 | %    |
|-----------------------------|-------------------|-------------------|------|
| Age                         | 20 to<30 years    | 1                 | 8    |
|                             | 30 to <40         | 15                | 11.6 |
|                             | 40 to <50         | 28                | 21.7 |
|                             | 50 to 60          | 44                | 34.1 |
|                             | > 60              | 41                | 31.8 |
| Range of age                |                   | 60                |      |
| Age (mean $\pm$ SD)         |                   | $55.09 \pm 13.65$ |      |
| Sex                         | Men               | 65                | 50.4 |
|                             | Women             | 64                | 49.6 |
| Level of education          | Illiterate        | 35                | 27.1 |
|                             | Secondary school  | 57                | 44.2 |
|                             | Technical diploma | 5                 | 3.9  |
|                             | Bachelor          | 31                | 24.0 |
|                             | Student           | 1                 | 0.8  |

|                          |     |    |        |
|--------------------------|-----|----|--------|
| Previous hospitalization | Yes | 62 | (48.1) |
|                          | No  | 67 | (51.9) |

**Table 2: Patients data related restrain in ICU. (N=129)**

| Patients data related restrain                            |                                   | N   | %    |
|-----------------------------------------------------------|-----------------------------------|-----|------|
| Diagnosis                                                 | Coma                              | 10  | 7.8  |
|                                                           | Decrease level of consciousness   | 6   | 4.7  |
|                                                           | Diabetic ketoacidosis             | 20  | 15.5 |
|                                                           | Stroke                            | 34  | 26.4 |
|                                                           | Cancer                            | 21  | 16.3 |
|                                                           | Meningitis                        | 5   | 3.9  |
|                                                           | Acute liver failure               | 5   | 3.9  |
|                                                           | Renal failure                     | 11  | 8.5  |
|                                                           | Respiratory failure               | 8   | 6.2  |
|                                                           | Hypertension                      | 7   | 5.4  |
|                                                           | Chest infection                   | 2   | 1.6  |
| Chronic diseases:                                         | Heart diseases                    | 4   | 3.1  |
|                                                           | Hypertension                      | 41  | 31.8 |
|                                                           | Diabetic                          | 25  | 19.4 |
|                                                           | Cancer                            | 10  | 7.8  |
|                                                           | All                               | 49  | 38.0 |
| Types restraints                                          | Physical                          | 114 | 88.4 |
|                                                           | Chemical                          | 12  | 9.3  |
|                                                           | Physical & chemical               | 3   | 2.3  |
| Causes of current restraint                               | Agitation                         | 92  | 71.3 |
|                                                           | Remove the connections            | 62  | 26.4 |
|                                                           | Agitation & remove the connection | 1   | 2.3  |
| How you ever been restricted                              | No                                | 102 | 79.1 |
|                                                           | Yes                               | 27  | 20.9 |
| Was there violence from the patient during the restraint? | No                                | 46  | 35.7 |
|                                                           | Yes                               | 83  | 64.3 |

Physical restrain represent 88.4% of studied patients. 71.3% restrained because of agitation. However 79.1% have not ever been restrained. Additionally, 64.3% of studied patients were violent during restraining them (see table 2).

**Table 3. Severity Levels of Anxiety, Depression and Stress in Adult ICU Restrained Patients (N= 129)**

| Severity Level  | Anxiety   | Depression | Stress    |
|-----------------|-----------|------------|-----------|
|                 | N (%)     | N (%)      | N (%)     |
| Normal          | 58 (45.0) | 62 (48.4)  | 89 (69.0) |
| Mild            | 10 (7.8)  | 13 (10.2)  | 11 (8.5)  |
| Moderate        | 22 (17.1) | 33 (25.8)  | 16 (12.4) |
| Sever           | 18 (14.0) | 15 (11.7)  | 9 (7.0)   |
| Extremely Sever | 21(16.3)  | 5 (3.9)    | 4 (3.1)   |

The study results found that 45% of ICU restrained patient had a normal level of anxiety and 48.4% also had normal level of depression. While normal level of stress represents 69% of study patients (see table 3).

**Table 4. Factors related Adult ICU Restrained Patients associated with Anxiety, depression and stress levels**

| Patients factors                 | Severity levels of Anxiety, Depression and Stress |                                  |                              |
|----------------------------------|---------------------------------------------------|----------------------------------|------------------------------|
|                                  | Anxiety<br>$\chi^2$ (P-value)                     | Depression<br>$\chi^2$ (P-value) | Stress<br>$\chi^2$ (P-value) |
| Age groups                       | 14.076 (0.593)                                    | 36.600 (0.002)                   | 13.3599 (0.646)              |
| Sex                              | 5.475 (0.242)                                     | 4.736 (0.316)                    | 5.105 (0.277)                |
| Education                        | 14.347 (0.573)                                    | 17.149 (0.376)                   | 26.459 (0.049)               |
| Diagnosis                        | 55.584 (0.113)                                    | 45.692 (0.402)                   | 57.708 (0.081)               |
| Previous hospitalization         | 11.727 (0.020)                                    | 8.073 (0.089)                    | 17.038 (0.002)               |
| Previous restrain                | 5.775 (0.217)                                     | 9.597 (0.048)                    | 20.432 (0.000)               |
| Types of restrain                | 10.760 (0.216)                                    | 14.656 (0.066)                   | 7.602 (0.473)                |
| Causes of restrain               | 4.305 (0.829)                                     | 15.911 (0.044)                   | 5.834 (0.666)                |
| Patient violence during restrain | 11.608 (0.021)                                    | 11.312 (0.023)                   | 11.383 (0.023)               |

|                 |               |                |                |
|-----------------|---------------|----------------|----------------|
| Chronic disease | 9.599 (0.887) | 13.156 (0.661) | 24.780 (0.074) |
|-----------------|---------------|----------------|----------------|

*Significant level considered when P- Value.  $\leq 0.05$ ,  $\chi^2$  = Chi Square*

The study results elicited that patients previous hospitalization was related significantly to anxiety and stress with P-Value of (0.020, and 0.002) respectively. However, patients violence during restrain related significantly to anxiety, depression and stress with P-Value of (0.021, 0.023, and 0.023) respectively. Otherwise, patient age group related significantly to depression and education related significantly to stress (see Table 4).

## Discussion

The current study found that adult restrained patients mean age was  $55.09 \pm 13.65$  years. Consistent with these results the study of Alostaz, Rose, Mehta, and Johnston (2022) which found that restrained patients in intensive care their mean age  $58 \pm 1.92$  years old. Moreover, male and female patients were nearly the same percentages as found by the current study. Inconsistent with that the study of Suwardianto and Kurniajati, (2022) who reported that restrained females patients represent more than two thirds in ICU. While, Alostaz et al. (2022) revealed that two thirds of ICU restrained patient were males. In this respect this variation could be referred to criteria of study sample related sex or culture difference of each study country. On the other hand the present results found that more than two fifth of studied patients finished secondary school and more than one fifth were illiterate.

Furthermore, the majority of the current study patients were admitted with stroke, followed by cancer, then diabetic ketoacidosis. On the other hand, more than one third of participated patients treated from heart diseases, hypertension, diabetes and cancer while, more than a quarter treated only from hypertension. Consistent with these result, the study of Saeidi et al. (2021) which found more than three quarters of their study patients in critical care area diagnosed with cardiovascular problems, pulmonary edema, hypertension and embolism.

The present study results showed additionally that the most of patients restrained physically. However, more than three quarters of current participated patients have ever been restrained. Agree with these results the literature review study of Teece, Baker and Helen Smith, (2020) which found that prevalence of physical restrain in intensive care patients ranged from 100% to zero percent in Europa. Additionally, Agitation was the main cause of restrain in the majority of intensive care patients. Agree with these results the study of Suwardianto and Kurniajati, (2022) who reported that agitation is installed with Conventional

restraints in the inpatient room. From my point of view patient diagnosis and presence of some health condition like agitation may be indication for physical restrain.

Additionally, nearly two thirds of studied patients were violent during restraining them. This may be referring to that more than two thirds of study patient were agitated in the same study. Otherwise, violence is a risk and/or predictor of stress and anxiety. The study results revealed also that restrained ICU patient suffered from psychological effect like anxiety and depression which occurred in less than half of patients that ranged from mild to extremely sever level. Additionally, stress was found in more than one quarter of study patients that ranged from mild to extremely sever level.

Regarding anxiety levels, more than half of the current study patients were not anxious. However, moderate and sever anxiety level represent less than one fifth of the study sample. These results disagree with Suwardianto and Kurniajati, (2022) who found that less than half of their study had mild anxiety however more than one third had sever anxiety level and only 3.7% were not anxious. Otherwise, at 2015 a study of Jeitziner et al. reported that anxiety symptoms rarely appear in intensive care patients thoroughly. However, anxiety grade was high in intensive care patients in relation to patients immediately discharged from intensive care as showed by the regression analysis. However differences in anxiety did not exist after six to twelve months later. While, Smithard and Randhawa (2022) stated that depression and anxiety are common complications of physical restrain in critical care area.

Otherwise, the current study revealed that patients' previous hospitalization related significantly to anxiety and stress. These results could be interrelating with patients' previous hospitalization that covered more than half of participated patients. However, more than three quarters of the current patients have ever been restrained which could be increased risk for stress and anxiety or psychological effect at all. On the other hand, patients' violence during restrain related significantly to anxiety, depression and stress as found by the current study results. This could be referring to that nearly two thirds of the same study patients were violent during restraining and it is a reflection of psychological effect related to restrain.

Furthermore, patient age group related significantly to depression in the current study. However age and gender were not related significantly to anxiety. These results were supported by the study of Suwardianto and Kurniajati, (2022) which revealed that gender and age did not related to anxiety in ICU restrained patients. While, the patients educational level was significantly associated with stress as revealed by the current study. Consistent with

that result the study of Saeidi et al. (2021) who found that stress and anxiety were different significantly by age, education and type of critical care unit. Otherwise, the level of education of the current studies patients was varied from illiterate to bachelor and this prove the strength of relation between stress and education.

## Conclusion

The current study results concluded that anxiety had the highest psychological effect among restrained ICU patients. However, patient violence during restraint related significantly to anxiety, depression, and stress. Additionally, previous hospitalization related significantly to anxiety and stress. However, previous restraints related significantly to depression and stress. Conducting the same study using other research designs such as quasi-experimental (control and study group) and/or longitudinal study design is recommended.

## Study limitation

Depression, anxiety, and stress scale (DASS21) used to collect study data is a self-report so it could affect the validity of the data. Therefore, the study result could not be generalized. Otherwise, intensive care patients are vulnerable to stress and anxiety.

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