

# A Quasi-Experimental Study to Evaluate the Knowledge and Performance of Physical Restraint Among Nurses'

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## ABSTRACT

**Background:** Critical care nurses use bodily restraints to protect endotracheal tubes, central lines, and arterial lines. High percentage of severely ill patients in various critical care units may need physical restraints due to changes in awareness. Nurses' expertise and practice of physical restraints affect constrained patients' care and prevention.

**Methods:** A quantitative quasi-experimental (pre-test, post-test (in Diyala governorate/Iraq with sample involving 50 nurses. Constructed questionnaire includes knowledge scale and performance checklist.

**Results:** The 50 participants findings show improve nurses' knowledge 92% and 90%, performance 90% and 82% during immediately post-test and follow up test.

**Conclusions:** The study concludes that relatively improve nurses' performance concerning physical restraining of critical patients, with subsequent reductions in the frequency of related complications among these patients.

**Keywords:** Knowledge, Performance, Physical Restraint

## INTRODUCTION

Incapacitated, disoriented, or agitated critical care unit patients need special security and safety<sup>1</sup>. Pain, underlying conditions, lack of sleep, hypoxia, myocardial ischemia, alcohol or drug withdrawal, altered cellular metabolism, mechanical ventilation, or both can also shift awareness. Restlessness, confusion, and delirium are signs<sup>2</sup>. Unconsciousness is either the abnormal state of complete or partial unawareness of oneself or environment, or the state of absolute absence of awareness and the ability to react even when provoked<sup>3</sup>.

Physical restraints (PRs) have long been a controversial practice in medical and nursing<sup>4</sup>. PRs restrict a person's free mobility and common in hospitals worldwide, especially in critical care units. Due to the unfamiliar treatment environment, disease discomfort, and treatment, patients may inadvertently remove life-supporting tubes like tracheal intubation, central venous catheters, and other drainage tubes<sup>5</sup>. Physically restricting critically ill patients is tough and depends on the patient, practitioner, and circumstances. Wrist restraints, mitts, elbow immobilizers, belts, vests, leg restraints, bedside bars<sup>6</sup>.

To prevent confused patients from disrupting nursing care, critical care facilities use physical control. Contractures, fractures, cyanosis, edema, pressure ulcers, breathing problems, aspiration, and paralysis should not be restrained. Due to ethical concerns about patients' autonomy and dignity, informed assent from patients or families is required<sup>7</sup>. Disruptive behaviors in 80% of critically ill patients brought to the critical care unit may require physical restraint to prevent the removal

of life-supporting medical devices, falls, and harm to the patient or others. The critical unit staff tries to reduce these actions by settling the attendant with patients, lowering bed height, raising bed rails, and giving sedatives before physical restraint<sup>8</sup>. Nurses use these concepts to improve patient outcomes, reduce illness, mortality, and complications and errors. The highly trained staff benefits ICU patients and their families<sup>9</sup>. The aim study was done to evaluate nurses' knowledge and performance about physical restraint.

## METHOD

A quantitative quasi-experimental (pre-test, post-test (design at Baqubah Teaching Hospital in Diyala governorate/Iraq. The population of this research comprised of nursing staff. The sample of this study comprised of critical care unit nurses who work at Baqubah Teaching hospital. The minimum sample size is 50 according to the population of 62 nursing staff and 95% level of confidence with a margin of error of 5. Sampling of this study is a nonprobability (convenient) sampling method. The research sample was distributed as follows: 50 nurses who were exposed to the program and completed the study. 6 nurses who completed the pilot study and were excluded from the original study. The data for this study were collected using a questionnaire which consisted of three parts (a) socio-demographic characteristics (b) knowledge scale about physical restraint (c) performance checklist. This scale and checklist are used to measure nurses' knowledge and performance toward physical restraint in critical care units. The knowledge section of the questionnaire consisted of 20 items, which

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were used to measure knowledge of nurses towards the definition, indications and contraindications, proper application and legal and ethical considerations of physical restraint use. A three- point ordinal scale (Agree, Uncertain and Disagree) was applied to determine nurses' responses to the items; it contained negative and positive sentences. The performance checklist for nurses is composed of (94) items divided into six content domains. SPSS version (24) was used to analyze the data in order to interpret and explain the study's results.

## RESULTS

The findings in Table 1 presented the distribution of the study sample according to their demographic characteristics. Results in this table revealed that (28.22 years) mean age of study sample. Males were constituted the higher percentage (68%) of the study sample, and the remaining were females. Nurses' qualification among nurses presented (68%) were Bachelor, followed by (20%) of them Diploma, and only (12%) of them were prepared. Years of experience in the nursing showed (60 %) of them were working through the range of years less than 5 years in the hospital, also 40 % of nurses have more than 5 years of experience. The study presented that 70% of nurses have less than 5 years' experience at critical care units and 30% have more than 5 years' experience.

Table 2 shows the study findings reveal that there is a highly significant difference in the overall responses of the study sample throughout three measurement periods (pre-test, immediately post-test and follow-up test) with a p-value of less than 0.01, compared to the statistical mean.

Table 3 shows that there is a significant difference in the immediately post-test and follow-up test compared to the pre-test.

## DISCUSSION

The finding showed that a highly significant difference in the overall responses of the study sample throughout two measurement periods (pre-test and immediately post-test) with a p-value of less than 0.01, compared to the statistical mean. Additionally, the findings of the study show that there is an improvement in the nurses' knowledge at the immediately post-test compared to the pre-test scores, according to the score of physical restraint knowledge scale similar to the results of study conducted by Awad (2019) this study was conducted in the three ICUs affiliated to Mansoura Emergency Hospital to evaluate the effect of a designed physical restraint protocol on critical care nurses' knowledge and practices ,showed improvement in general level of knowledge of participants regarding PR after implementation of the protocol (100%) from protocol implementation with statistically significant differences. According to the researcher's view, the age of

**Table 1:** Distribution of the sample according to demographic characteristic

Characteristics	Frequency	Percent
Age		
M±SD= 28. 22±6. 10		
Total	50	100
Gender		
Male	34	68
Female	16	32
Total	50	100
Nurses' Qualification		
Preparatory	6	12
Diploma	10	20
Bachelor	34	68
Total	50	100
Years of Experience in The Nursing		
Less Than 5 Years of Experience	30	60
More Than 5 Years of Experience	20	40
Total	50	100
Years of Experience at Critical Care Units		
Less Than 5 Years of Experience	35	70
More Than 5 Years of Experience	15	30
Total	50	100
Attendance of Previous Training Course		
Yes	0	0
No	50	100
Total	50	100
Number of Patient Care Per Day		
2 patients	8	16
3-4 patients	34	68
≥5 patients	8	16
Total	50	100
Working Shift Time		
Day Shift	16	32
Night Shift	0	0
Day and/Night Shift	34	68
Total	50	100

**Table 2:** Statistical distribution of the study sample by their overall responses with significant difference between pre-test and immediately post-test, follow-up test scores regarding to knowledge of physical restraint

Overall Nurses' Knowledge toward Physical Restraint	Pre-test				Immediately Post-test				Follow-up test			
	Freq.	%	Ms.	SD	Freq.	%	Ms.	SD	Freq.	%	Ms.	SD
Low	45	90			0	0			1	2		
Moderate	5	10	1.60	0.432	4	8	2.70	0.5	4	8	2.55	0.7
High	0	0			46	92			45	90		

t-test (-8.173), d.f. (49), p-value (.000)

(M.s) mean of score, (Sd) stander deviation H. = High (2.34 – 3.0); M. = Moderate (1.67 – 2.33); L. = Low (1 – 1.66), (S): significant, (T test): t-test, (D f): degree of freedom

**Table 3:** Statistical distribution of the study sample by their overall responses with significant difference between pre-test and immediately post-test scores regarding to performance of physical restraint

Overall Nurses' Performance Toward Physical Restraint	Pre-test				Immediately Post-test				Immediately Post-test			
	Freq.	%	Ms.	SD	Freq.	%	Ms.	SD	Freq.	%	Ms.	SD
Unsatisfactory	40	80			1	2			3	6		
Need Improvement	9	18	1.12	0.346	4	8	1.82	0.379	6	12	1.78	0.430
Satisfactory	1	2			45	90			41	82		

t-test (-7.673), d.f. (49), p-value (.000)

M: Mean, SD: Standard Deviation (Unsatisfactory= 1-1.33; Need Improvement= 1.34-1.66; Satisfactory= 1.67-2), (S): significant, (T test): t-test, (D f): degree of freedom.

the participants, the high academic achievement (Bachelor) and their desire to learn and learn about a topic that is not frequently discussed in the curricula or in training courses are all factors that helped in their success in implementing the program and improving their knowledge<sup>10</sup>. Study conducts a study in Malaysia to assess the effect of educational intervention on the knowledge, attitude, intention, and practice of nurses towards physical restraint, the knowledge, attitude, intention, and practice mean scores of 245 nurses were compared between pre- and post-intervention phases. The results showed that the educational intervention resulted in a statistically significant increase in the mean knowledge<sup>11</sup>. The finding shows the study findings reveal that there is a highly significant difference in the overall responses of the study sample throughout two measurement periods (pre-test and follow-up test) with a p-value of less than 0.01, compared to the statistical mean.

Additionally, the findings of the study show that there is an retain in the nurses' knowledge at the follow-up test compared to the pre-test scores according to the score of physical restraint knowledge scale similar to the results of study conducted by Fawzy Zaki et al. (2021) showed there was statistically significant correlation between studied nurses' total knowledge and patient outcome after one month of program implementation. This indicated that improvement in nurses' knowledge, and patient outcome<sup>12</sup>. The study findings reveal that the nurses' performance has improved from their pre-test scores to their immediately post-test scores when compared to their pre-test scores, this similar study conduct by Eskandaria, (2018) who evaluated the effect of educational intervention on nurses' knowledge, attitude, intention, practice and incidence rate of physical restraint use and concluded that educational intervention resulted in a statistically significant increase in the mean practice scores and a decrease in the mean intention scores of nurses towards physical restraint use<sup>11</sup>. The finding shows that there is a significant difference in the follow-up test that was conducted a month after the immediate post-test, but with a lower mean and a lower satisfactory performance rate compared to the immediate post-test.

**CONCLUSIONS**

**The study concludes significantly improve nurses' performance concerning physical restraining of critical care patients, with subsequent reductions in the frequency of related complications among these patients. Additionally, no significant association was found between the demographic characteristics of nurses and their performance. A qualitative study to provide an in-depth exploration of nurses' feelings, beliefs, and experiences regarding the use of physical restraint would have added value to the results.**

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**Competing Interest:** None

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