

RESEARCH ARTICLE**Nurses' Knowledge and Performance Toward Physical Restraint at Critical Care Units****Abbas Hamid Kamil¹, Wafaa Abed Ali Hattab^{2*}**1. *Ministry of Health, Diyala Health Directorate, Iraq;*2. *Department of Adult Nursing, College of Nursing, University of Baghdad, City of Baghdad, Iraq.***Corresponding author: Abbas Hamid Kamil****Email: abbasnurse1992@gmail.com****ABSTRACT**

Nurses in critical illness settings typically use physical restraints to preserve the patients' equipment and therapy, such as endotracheal tubes, central lines, and arterial lines. Due to changes in their level of awareness while a patient is in a critical care unit, a high percentage of critically ill patients admitted to various critical care units may require physical restraints. The nursing care offered to constrained patients and the prevention of its problems depend heavily on the knowledge and practice of nurses about physical restraints. The study evaluated nurses' knowledge and practices toward physical restraint at the critical care unit and identified the relationships between demographic characteristics and nurses' knowledge and practices toward physical restraint at the critical care unit. Fifty nurses, who were selected by a non-probability (convenient) sampling method, participated in this descriptive study. The study instrument was knowledge parts of the questionnaire initially developed by Janelli et al. (1991) in the USA for nursing homes; in 2006, the original developers adopted them for all hospital units (Janelli et al., 2006). The knowledge section of the questionnaire consisted of 20 items, which were used to measure nurses' knowledge of 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. Positive items, if answered with "agree," were considered correct; if answered with "disagree," items were considered incorrect. To evaluate the nurse's practices concerning physical restraint, the researcher observes and checks for correct or incorrect performance. The practices checklist for nurses comprises (94) items divided into six content domains. This research showed that 90% of nurses had low knowledge about physical restraint, and 80 % of the participants had unsatisfactory performance. The study recommended developing local policies for physical restraint use, including detailed descriptions of conditions requiring its use to be mandatory.

Keywords: Knowledge, Performance, Physical Restraint, Critical Care Units

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INTRODUCTION

The definition of physical restraint (PR) is any action or practice that prohibits a person's free bodily mobility to a position of choice and normal access to his or her body by the use of any means attached or adjacent to a person's body that he or she cannot control or remove easily. (Bleijlevens et al., 2016).

The physical constraint is now often used domestically and internationally in clinical settings, particularly in critical care units. Patients frequently feel anxious and restless due to the unfamiliar treatment environment, the suffering of the disease, and the particular nature of the treatment; as a result, they may unintentionally remove some vital tubes for life support, such as the tracheal intubation, a central venous catheter (CVC), and other various drainage tubes (Gu et al., 2019).

Kaya and Dogu (2018) stated that these behaviours harm the patient and present numerous dangers and treatment difficulties. Therefore, nurses in critical care units frequently restrain patients physically during nursing procedures to temporarily restrict their activities to maintain patient safety and the efficient delivery of care, making this practice more prevalent than it is in general hospital departments.

Applying physical restriction to critically sick patients is a difficult choice influenced by the patient's personality, the practitioner, and the surrounding circumstances. Numerous restraints can be used, including wrist restraints, mitts, elbow immobilizers, belts, vests, leg restraints, and bedside rails. (Pan et al., 2018)

Eskandari et al. (2018) reported that the major purpose of physical and chemical restraint is to keep the patient safe when their level of consciousness changes, although chemical restraint comes with a risk of sedation. Accordingly, physical restraint is practised in a critical care setting to stop confused patients from interfering with the delivery of nursing care.

A study revealed that 75% of ICU patients were restrained for a median duration of 3 days during their ICU stay. Even in the presence of opioid use, when ventilated, a patient's chances of being physically restrained increased by eight times (Hamilton et al., 2017). While nurses continue to cite the prevention of extubation as a reason to apply physical restraints, physically restrained patients experience an increased incidence of self-extubating of endotracheal tubes (Hall et al., 2018).

METHOD

AIMS OF THE STUDY

The study aims to

1. Evaluate nurses' knowledge and performance toward physical restraint.

The Study Design: A quantitative (descriptive design) study design was used in this research to accomplish the study's objectives.

Study Setting: The research was carried out by nurses working in critical care units in Baqubah Teaching Hospital.

Study Sample: The sampling of this study is a nonprobability (convenient) sampling method. The minimum sample size is 50 according to the population of 62 nursing staff and a 95% level of confidence with a margin of error of 5

Instrumentation: The researcher developed this tool to evaluate nurses' knowledge and performance toward physical restraint in critical care units. Two tools were utilized to collect data in this study includes:

Part One: Demographic and professional characteristics. This portion is with the collection of basic demographic data from the nurses from interview questionnaire sheets such as (age, gender, nurses' qualifications, years of experience in nursing, and years of experience at the critical care units).

Part two includes questions to assess nurses' basic knowledge regarding physical restraining. The knowledge parts of the questionnaire were initially developed by Janelli et al. (1991) in the USA for nursing homes; in 2006, the original developers adopted them for all hospital units (Janelli et al., 2006). The knowledge section of the questionnaire consisted of 20 items, which were used to measure nurses' knowledge of 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. Positive items, if answered with "agree," were considered correct; if answered with "disagree," items were considered incorrect.

Part three: Performance checklist to evaluate the nurse's practices concerning physical restraint; the researcher observes and checks for correct or incorrect performance. The practices checklist for nurses is composed of (82) items divided into six content domains.

First domain: (19) items related to Environmental Modifications and Alternatives Before Physical Restraint

Second domain: (3) items related to Monitor Altered Levels of Consciousness and Delirium.

Third domain: (48) items related to the Restraint Phase.

Fourth domain: (10) Prevent Complication of Physical Restraint items.

Fifth domain: (4) items related to After Restraint

Validity of the Study: Validity of tools was done by a group of experts to check the relevancy, clarity, comprehensiveness, and applicability of the questions.

Pilot study and reliability of questionnaire: The pilot study aimed to determine the suitability of the language of the questionnaire and whether it was understandable for participants and to test the reliability (test re-test reliability and internal consistency) of the knowledge and performance questionnaire.

Rating and Scoring: The responses for knowledge questions are scored and rated on a levels dichotomous scale: (2) points for the correct choice, (1) points for uncertain choice and (0) for incorrect choice. The response performance checklist (2) points for being done correctly and completely, (1) points for being done correctly but incompletely, and (0) not done or done incorrectly.

Data Analysis: The present study's data is analyzed using the Statistical Package of Social Sciences (SPSS) version (23). The researchers used descriptive and inferential data analysis to analyze the results.

Implication of the study

One of the values of this study is the adoption and validation of the knowledge and performance of nurses towards the physical restraint (KAIP) questionnaire in Iraq. Thus, it is appropriate for application by educators, administrators, policymakers, and researchers to improve the quality of care provided to patients who may need to be restrained. Based on the level of knowledge and performance of nurses, a program to minimize physical restraint can be appropriately planned, implemented, and evaluated.

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 mean age of the study sample. Males constituted the higher percentage (68%) of the study sample; the remaining were females. Nurses' qualification among nurses presented (68%) were Bachelors, followed by (20%) with them Diplomas, and only (12%) of them were prepared. Years of experience in nursing showed (that 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 of experience in critical care units, and 30% have more than 5 years of experience.

Table (2) shows that most nurses had low knowledge of physical restraint in most answers to 20 questions.

Table (3) shows that most nurses had unsatisfactory performance toward physical restraint in all domains.

Table 1. Participants' sociodemographic characteristics (N = 50)

| 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 in Critical Care Units | | |
| Less Than 5 Years of Experience | 35 | 70 |
| More Than 5 Years of Experience | 15 | 30 |
| Total | 50 | 100 |

Table 2. Nurses' Knowledge Toward Physical Restraint

| No. | Items | Mean | SD | Ass |
|-----|---|------|-----|-----|
| 1 | Physical restraint is a vest or safety attire used to prevent injuries. | 1.5 | 0.6 | L |
| 2 | Physical restraint is only allowed if it is required to protect patients or other people from injuries. | 1.60 | 0.7 | L |
| 3 | Physical restraint must be used when a nurse cannot supervise a patient intensively. | 2.13 | 0.9 | M |
| 4 | The use of physical restraint is the first option to prevent self-removal of the endotracheal tube (F) | 1.77 | 0.6 | M |
| 5 | Patients have the right to refuse to be restrained. | 1.50 | 0.6 | L |
| 6 | Families can refuse to allow the use of physical restraint (T) | 1.37 | 0.6 | L |
| 7 | Confusion or disorientation are good reasons for the use of physical restraint. | 1.63 | 0.8 | L |
| 8 | Physical restraint requires a medical prescription (T) | 1.77 | 0.6 | M |
| 9 | Hyperactive delirium is the main reason for the use of physical restraint (F) | 1.57 | 0.7 | L |
| 10 | The occurrence of complications associated with physical restraint should be assessed every 6h (F) | 1.37 | 0.6 | L |
| 11 | The use of physical restraint is associated with the Development of post-traumatic stress after discharge (T) | 1.37 | 0.6 | L |
| 12 | The need to remove physical restraint must be assessed every 8h (T) | 1.50 | 0.7 | L |

| | | | | |
|----|---|------|-----|---|
| 13 | Patients are not to be restrained while lying down facing up on the bed for fear of spluttering or choking. | 1.60 | 0.7 | L |
| 14 | There have been deaths related to the use of vest physical restraint. | 1.37 | 0.6 | L |
| 15 | Restraints should be put on snugly so that there is no space between the restraint and the patient's skin | 1.37 | 0.6 | L |
| 16 | A patient should never be restrained while lying flat in bed because of the danger of choking | 1.5 | 0.6 | L |
| 17 | When a patient is restrained, skin can break up, or restlessness can increase | 2.0 | 0.7 | M |
| 18 | When a patient is restrained in bed, the restraint should not be attached to the side rails | 1.37 | 0.6 | L |
| 19 | A record should be kept on every shift of patients in restraints | 1.5 | 0.6 | L |
| 20 | In an emergency, a nurse can legally restrain a patient without a physician's order | 2.13 | 0.7 | M |

(M.s) mean of the score, (SD) stander deviation Ass. = Assessment; H. = High (2.34 – 3.0); M. = Moderate (1.67 – 2.33); L. = Low (1 – 1.66)

Table3. Nurses' Performance Related to Physical Restraint

| Performance Related to | | Weighted | Freq. | % | Ms. ± SD |
|---|------------------|----------|-------|------|-------------|
| Promoting Rest and Sleep for the Critically Ill Patient | Unsatisfactory | | 28 | 56 | 1.02± 0.069 |
| | Need Improvement | | 16 | 32 | |
| | Satisfactory | | 6 | 12 | |
| | Total | | 50 | 100 | |
| Monitor Altered Level of Consciousness and Delirium | Unsatisfactory | | 39 | 88.0 | 1.2 ± 0.3.3 |
| | Need Improvement | | 11 | 12.0 | |
| | Satisfactory | | 0 | 0.0 | |
| | Total | | 50 | 100 | |
| Environmental Modifications Before Physical Restraint by Nurses | Unsatisfactory | | 41 | 82 | 1.10± 305 |
| | Need Improvement | | 8 | 16 | |
| | Satisfactory | | 1 | 2 | |
| | Total | | 50 | 100 | |
| Restraint Phase | Unsatisfactory | | 46 | 92 | 1.06± 0.254 |
| | Need Improvement | | 4 | 8 | |
| | Satisfactory | | 0 | 0 | |
| | Tota1 | | 50 | 100 | |
| Assess and Prevent Complications of Physical Restraint | Unsatisfactory | | 37 | 74 | 1.23± 0.430 |
| | Need Improvement | | 11 | 22 | |
| | Satisfactory | | 2 | 4 | |
| | Tota1 | | 50 | 100 | |
| Termination Restraint Phase | Unsatisfactory | | 44 | 88 | 1.13± 0.346 |
| | Need Improvement | | 6 | 12 | |
| | Satisfactory | | 0 | 0 | |
| | Tota1 | | 50 | 100 | |

DISCUSSION

The data analysis finding shown in Table 1 Distribution of the Sample according to demographic characteristics presented the distribution of the study sample revealed a mean age of 28.22 years old. This finding was consistent with a study by Fawzy Zaki et al. (2021) conducted to evaluate the effectiveness of an educational program on critical care nurses' performance and patients' outcomes regarding physical restraints in the Intensive Care Unit at Benha University Hospital, which found that the majority of the study population was mean the ages of 28.89 years. According to the researcher, the presence of a large proportion of nurses whose age is less than 30 years is a result of the hospital administration's endeavour to provide a young group capable of bearing the pressures and workloads in critical care units. Another reason is the large number of appointments that occurred on the staff of the Ministry of Health, according to the conversation between the researcher and the health care providers in the hospital.

In the current study, male nurses were 68 percent of the participants, with 32 females accounting for the remaining participants. In contrast to a study at Guilan University of Medical Sciences by Gheidari et al. (2019) to determine the knowledge, attitude and performance of nurses in intensive care units regarding the application of physical restraint of patients and their related factors, all 179 (92.7% %) nurses were female. According to the researcher's opinion, the advent in the percentage of males more than females is due to several reasons, including that working in critical care units requires high endurance and courage, females' shying away from nursing work and going to administrative work, as well as the influence of society and some societal traditions, even though the education system in Iraq gives a larger percentage to women for admission to nursing study and direct appointment after the end of the academic study.

The nurses' qualifications in this research were bachelor's (68%), followed by 20% of their diplomas (12%) were Preparatory and only (0 %) were postgraduate certifiable. Awad (2019) conducted this study in the three ICUs affiliated with Mansoura Emergency Hospital to evaluate the effect of a designed physical restraint protocol on critical care nurses' knowledge and practices.

The study found that most nurses (51.7) hold a bachelor's degree.

Also, this research about nurses' years of experience in nursing showed that 60% were less than 5 years of experience, and 40 % were more than 5 years of experience. Similarly, a study conducted by AL-Gabri et al. (2015) to assess nurses' knowledge and performance about physical restraints in critically ill patients found that overall, the survey group had a median career experience of fewer than 5 years in their current job.

Another research conducted in Jordan by Nasrate al. (2020) to evaluate the impact of a training program on nurses' knowledge, attitude and H. practice regarding PR use in ICUs found that 31 (77.5%) of nurses had less than 5 years of experience, while 9 (22.5%) had more than 5 years. According to the researcher's interpretation, the more years of experience you have, the more knowledgeable you are about physical restraint, complications, its impact, and ways to reduce it.

Years of experience at critical care units in this study showed the distribution among nurses revealed that more than half, 70%, had less than 5 years, and the other 30% had more than 5 years. This finding similar to the study conducted in the Intensive Care Unit of Benha University Hospital by Fawzy Zaki et al. (2021) reported that in 36 samples (60.0%) were had 1-5 years of experience, and (40.0%) were had more than 5 years at critical care units.

Table 2 showed a low level of knowledge on most items scale about physical restraints at pre-test except items (3,4,8,17,20), with a moderate level of knowledge. This research reflected the results of research conducted by Taha NM and Ali ZH (2013); because of the preceding, it was quite expected to find very low levels of knowledge among the nurses in the present study before implementing the guidelines. This was noticed in all the tested areas of knowledge. This lack of knowledge would harm the nursing care provided to these patients. Additionally, it might lead to complications among the patients, leading to legal problems for the nurse providing the care. The significant improvements demonstrated during the post-guidelines phase indicate that these nurses needed such information.

Table 3 shows that a high percentage of nurses in the critical care unit had unsatisfactory performance related to promoting rest and sleep for critically ill patients, monitoring altered levels of

consciousness and delirium, environmental modifications before physical restraint by nurses, restraint phase, assessment and prevent complication of physical restraint & termination restraint phase at the pre-test period of measurement before application of instructional program. Younis Sayed Ahmed (2017) also added that their study results demonstrated that the nurses' total mean practice scores were unsatisfactory and inadequate before applying clinical guidelines. He explained that such low-performance standard in physical restraints practice is due to factors such as no physician's order that the nurse can follow, lack of cooperation between nurse and physician or lack of physicians' knowledge regarding their role in restraining a patient.

CONCLUSIONS

The study concluded that nurses' knowledge of physical restraint in critical care units is low. This study shows unsatisfactory nurses' performance toward physical restraint, and there is also no statistical association between the nurses' knowledge and their sociodemographic characteristics.

Ethical Approval Statement

This research study, titled " **Nurses' Knowledge and Performance Toward Physical Restraint at Critical Care Units**" conducted by [Abbas Hamid Kamil ¹, Wafaa Abed Ali Hattab ²], has received ethical approval from the [nursing college ethical committee] at [University of Baghdad].

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AUTHOR'S CONTRIBUTIONS

All authors contributed equally to the conception and design of the study, data collection, and analysis, and drafted the initial manuscript. All authors critically reviewed and edited the manuscript. All authors approved the final version of the manuscript for submission.

DISCLOSURE STATEMENT:

The authors report no conflict of interest.

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