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Research Article

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Pain Assessment, Using the Critical Care Pain Observational Tool in Intensive Care Unit. An Observational Study, Lahore, Pakistan

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Abstract

Aim: *Aim this study is to determine impact of enforcement of the critical Care Pain Observation Tool (CPOT) on the quantity and frequency of ICU's management of analgesic.*

Background: *Severely critically admitted patients to the Intensive care unit may also experience from specific painful stimuli, but the evaluation of pain is difficult due to the fact that the maximum number of patients are almost sedated and also unable to self report. Thus, optimizing pain assessment in those sufferers is far-reaching.*

Pain control or management of the pain is one of furthermost important obligations of staff nurses in an extensive care unit. The Critical Care Pain Observational Tool (CPOT) is the one of important behavioral pain scale that have been developed and tested to detect pain in significantly ill nonverbal adults.

Methods: *A observational quantitative study is done in a tertiary care hospital in Lahore. Study duration is 4 months, from January 2020 to May 2020. The target population of study is nurses who are working in different type of (Icu) units. Sample size is 200. An observational checklist consisted of 22 items is used as research instrument.*

Result: *No any pain assessment or used any pain tool or intervention done by any staff nurse. Pain assessment checked through direct observation in first phase, In this phase observe nurses pain assessment in 24 hours, physician pain assessment in 24 hours, After direct observation there was held a educational session about pain assessment and pain management according pain observation tool, And then We then carried out this empirical analysis in order to verify the CPOT validity and feasibility through questioners and make it accessible around the staff nurses. Mostly nurses believed that there was sufficient helpful in assessing patients pain by using of CPOT in nursing practice.*

Conclusion: *lThe results of this research indicate that the Critical Care Pain Monitoring Method may be used as a reliable method for pain appraisal in chronically ill adult intubated patients. This method is effective and efficient in patients who are chronically ill with a regimen of analgo-sedation focused on no-hypnotic, opioid-infusion. CPOT ratings were well associated with the self-reported pain experience of patients, and demonstrated outstanding reliability amongst raters. That makes the CPOT's a powerful method for pain evaluation.*

Keyword: CPOT; Pain assessment; Critically ill patient; Pain observation tool

Introduction

Pain is one of most common complaints and maximum extreme stressors among patients in the intensive care unit, particularly due to the use of invasive devices, interventions by care vendors including endotracheal suction, change in dressing, and change in function. Consistent with exclusive studies, seventy one percent of sufferers inside the ICU recollect their painful feelings or experience after convalescing from illness and plenty of also declare that in this era their pain had no longer been in reality relieved.

Pain is subjective experience and there's no way of measuring it objectively. Precise pain dimension therefore depends on the overt conversation, both behavioral and verbal, of the affected person.

Manifestly, the patient self-reporting is most dependable indicator and sign of pain evaluation. In central care units, many reasons make verbal conversation tough for sufferers; inclusive of intubation, low level of attention, hypnotics or sedative drug management, intubation, or mechanical ventilation [1].

Pain management in extremely ailing people in ICU is a very intricate procedure requiring a lot of aspects to consider. The pain is one of those facets in an ICU admitted patient that is highly overshadowed despite being an extremely influential aspect of patient's life. Even some discharged patients remember the pain as their worst memory after 5 years. The following factors are shown contributory to perception of pain in ICU patients such as Respiratory intervention, Nasogastric intubation, Venous catheters, Arterial catheters and Immobilization.

What underestimates the patients' pain is the sedation and hypnosis that prevail in ICU admitted patients. No standard approach yet exists the estimate the pain in such patients. All proposed methodologies have their own pros but more cons. In a conscious patient, the best way to assess pain is Visual analog scale (VAS) while in ICU it is Critical Care Pain Observation (CPOT). Nevertheless, the features that make these measurements gold standards is still an unresolved mystery [2].

The Significantly critically ill patients frequently revel in an experience of the pain inside the intensive care unit. Unrelieved pain increases to terrible physiological and mental activities that can be unfavorable to the analysis of significantly unwell patients. Suitable ache-relieving interventions occur best in which dependable and valid assessment has been carried out. It's miles typically well-known that the patient self document is most reliable indicator of the life and severity of pain. However, due to mechanical ventilation a widespread amount of seriously sick sufferers may not be able to report their pain. Estimates by clinicians about the pain degrees of these patients sometimes understate actual levels. For important care nurses and clinicians, pain assessment in nonverbally ventilated ICU patients remains tough. A pain monitoring tool, the critical treatment pain evaluation system (CPOT), has recently been created for a systematic measurement of discomfort in non-verbal ventilated patients. In 2015, the new medical practice tenet approximately ache advocated the use of the CPOT for critical patients who're not able to self report pain [3].

Research Aim

To assess the assessment of pain and impact of enforcement of the Critical Care Pain Observation Tool (CPOT) on the quantity and frequency of ICU's management of analgesics. And give seriously unwell ventilated adults a pain assessment technique with the help of validating a CPOT in tertiary care hospital, Lahore, Pakistan.

Specific Objectives:

1. To determine interrater reliability of nurses in ICU, When using pain assessment tool (CPOT).
2. To describe nurses' assessment or evaluation practices to assess pain.
3. Explain the effectiveness of pharmacological interventions

Gap Analysis

There are minimal studies done on CPOT at local area hospital. According to different studies there are a limited use of CPOT in larger hospital areas. Nurses are un aware of utility of CPOT in clinical settings in Pakistan.

Literature Review

This study did by the Mascarenhas, M., in 2018 at Raymore hospital, Scotland. He claimed pain is a harm that is curable for ICU patients who cannot report about pain because of mechanical ventilation and infusions. This QI project is a milestone for the assessment of pain and treatment by CPOT tool. This study also justifies that augmented testing and adaptations are useful techniques for consideration of change in practice and also stated that this project has improved quality of pain management in our sitting [4].

Another retrospective study that performed o 441 adults in ICU over 49 days. Data consisted of frequency, type of pain assessment, sedation, analgesia, administered communication, CAM ICU status and bedside nurse perceived pain. This study depicted that use of CPOT can increase the frequency of pain assessment, especially for non-communicative patients. Use of suitable observational assessments, propofol and analgesics can be seen [1].

Similarly, a cross sectional design as used for 2 studies. In first 52 intubated and 76 non intubated patients were examined to find out consistency, criterion related and discriminative validity of CPOT. Pain assessment done by numeric scale in both high and low pain situations. In other study 49 non intubated 43 intubated patients were assessed to find inter rater reliability. Pain assessment with CPOT done by nurse and researcher independently. Result showed that CPOT was valid and relatable for both patient types in ICU [5].

Another 2018 research by Cheng, L. H., found that The CPOT was proved accurate and effective for pain management in non-intubated amd intubated patients with ICU. Evaluating pain-related observable behaviors of patients through the use of observational scale CPOT is an option for ICU pain evaluation, especially for noncommunicating adults. More experiments will examine the method in broader population of critically ill patients, assess the effectiveness and practical use of this tool and evaluate the therapeutic impact of using tool to enhance pain management [5].

A analysis published in 2016, a report author clarified that the Critical-Care Pain Observation System is a therapeutic method prescribed for pain management of critically ill nonverbal individuals. Although the use of this method has been confirmed in various critical care patient classes, little is understood about its efficacy of use in critical patients at the high risk of dying in ICU (Intensive care unit), The Critical care Pain Observation Method seems to be accurate, can be used reliably and can distinguish painfully against non-painful conditions in high-risk nonverbal critically ill adults [6].

Another cross-sectional study in Ethiopia showed that the mean knowledge scores of midwives and nurses were 42.8% and 43.9% respectively. In this study 64.2% of nurses respond to the correct suctioning, 66.7% Effective mask ventilation, 60.4% depth of chest compression during CPR. The finding of this study had implied that emphasis should be placed on determining the extent of conceptual knowledge of midwives in order to increase their performance towards neonatal resuscitation [7].

Methodology

A direct observational quantitative study design was done Slovin's

sampling formula was used to find the sample size of the study population. Where, n=sample size, N= number of total population, e= Error margin of 0.05 when confidence interval is 95%. Total population is 250, so according to formula: n=N/1+ (N) (E). So, sample size is 120. Convenient sampling technique was used to collect data.

Data collection method

1.1 Pain assessment checked through direct observation in first phase, In this phase observe nurses pain assessment in 24 hours, physician pain assessment in 24 hours, nurses interventions after pain assessment, utility of any pain assessment tool by nurses, and interventions after pain assessment of patients.

1.2 After direct observation there was held a educational session about pain assessment and pain management according pain observation tool, During this phase, new policy and guideline documents were released, and ICU charts were redesigned to incorporate the CPOT. All nursing staff attended an education session on pain assessment and correct use of the CPOT.

1.3 And then We then carried out this empirical analysis in order to verify the CPOT validity and feasibility through questoiners and make it accessible around the staff nurses. The findings of this analysis explored the feasibility, utility of CPOT by nurses in ICU.

Data Analysis

Data is collected through checklist having 19 items of standard protocols by observing practices of 153 participants. Collected data is analyzed and computed using frequencies, table and percentage by SPSS version 25.0.

Ethical Approval

The study was conducted after institutional from Lahore School of Nursing, The University of Lahore and Organizational ethical committee from hospitals. Informed consent was taken from participants and their privacy was kept confidential. Also informed them to withdraw from the study at any time without penalty.

Table 1: Socio-demographic Variables

Age	20to25 years	14	11.7
	26to30 years	69	57.5
	31to35 years	37	30.8
	Total	120	100.0
Sex	Male	41	34.2
	Female	79	65.8
	Total	120	100.0
Current employment position	Nurse Officer	120	100.0
Highest level of education earned in nursing	Diploma	80	66.7
	Bachelor Degree	40	33.3
	Total	120	100.0
Working experience in ICU	1-6 Years	84	70.0
	7-14 Years	36	30.0
	Total	120	100.0
Patient Diagnose	Medical	74	61.7
	Surgical	46	38.3
	Total	120	100.0
Patient incubated?	Yes	80	66.7
	No	40	33.3
	Total	120	100.0
Patient Sex	Male	85	70.8
	Female	35	29.2
	Total	120	100.0

Demographic Characteristics of Participants

In demographic data patient ages, nurses ages, education and experience were discussed. Nurses ages under 20 to 25 years were 11.7%, 26 to 30 years were 57.5%, 31 to 35 years were 30.8%. 34.2% were male nurses, 65.8% female nurses.70.0% nurses experienced 1-6 years in ICU, 30% experience time 7 to 14 years. 61% patients diagnosed with medical issues and 38.8% diagnosed with surgical issues.

Table 2: Pre educational session observations

		Frequency	Percent
(Physician Reviews during 24 hours) Which system assessed by physician in 24 hours?	Cardiovascular system	36	30.0
	Respiratory	42	35.0
	Central nervous system	24	20.0
	Gastrointestinal	18	15.0
	Total	120	100.0
Which type of pain tool used during patient assessment by physician?	Nothing	120	100.0
(Nursing Pain review during 24 hours) Which type of pain tool used during patient pain assessment by Nurse?	Nothing	120	100.0
Number of pain review by Nurse?	One time	31	25.8
	Two time	58	48.3
	Three time	31	25.8
	Total	120	100.0
Analgesic plan changed?	Yes	34	28.3
	No	86	71.7
	Total	120	100.0
New prescription?	Yes	34	28.3
	No	86	71.7
	Total	120	100.0
If yes, as a result of assessment?	Yes	30	25.0
	No	86	71.7
	Not sure	4	3.3
	Total	120	100.0
Number of times plan changed in 24 hours?	One time	89	74.2
	Two time	31	25.8
	Total	120	100.0
(Analgesia prescribed) IV Infusions	Fentanyl	15	12.5
	Morphine	68	56.7
	Remifentanil	16	13.3
	Clonidine	21	17.5
	Total	120	100.0
Other analgesia	Ketamine	10	8.3
	Paracetamol	44	36.7
	NSAIDs	66	55.0
	Total	120	100.0
Epidural?	Yes	20	16.7
	No	100	83.3
	Total	120	100.0
PCA or PCEA?	Yes	57	47.5
	No	63	52.5
	Total	120	100.0
Other regional	Yes	50	41.7
	No	70	58.3
	Total	120	100.0

(Sedation prescribed) Infusion?	Propofol	23	19.2
	Midazolam	15	12.5
	Other infusion	22	18.3
	PRN sedation	21	17.5
	Not sedated	39	32.5
	Total	120	100.0

Pain assessment checked through direct observation in first phase, In this phase observe nurses pain assessment in 24 hours, physician pain assessment in 24 hours, nurses interventions after pain assessment, utility of any pain assessment tool by nurses, and interventions after pain assessment of patients. Physician were reviewed 30.00% of cardiovascular system and 35.00% reviewed of respiratory system ,20.00% reviewed of central nervous system and 15.00% reviewed of Gastrointestinal system. No any pain assessment or used any pain tool or intervention done by any staff nurse. 25.83% nurse assess pain one time ,48.33% two time and 25.83% nurses assess pain three time. 28.33% nurses change analgesic plan for patients with pain and 71.67% were not change any analgesic plan. 28.33% nurses advised new prescription and 71.67% not prescribed to any prescription for patients. assessment plan changed 74.17% (1 time) and 25.83% (2 time) in 24 hours. There were prescribed IV infusions, 12.50% Fantanyl, 56.67% Morphine, 13.33% Remifentanil and 17.50% clonidine. 16.67% Epidural prescribed and 83.33% not recommended Epidural after pain assessment. there were prescribed sedative infusions, 19.17% Propofol, 12.50% Midazolam, 18.33% Other infusions, 17.50% PRN sedation and 23.50% not sedated.

Table 3: Post Educational session Questionnaire

(Pain assessment awareness among nurses) Assess pain regularly?	Yes	69	57.5
	No	51	42.5
	Total	120	100.0
Used CPOT before?	Yes	26	21.7
	No	94	78.3
	Total	120	100.0
Received education regarding pain assessment and management?	Yes	120	100.0
Best way to tell whether your patient in pain?	Vital sign	50	41.7
	Behavior	60	50.0
	Ventilator compliance	10	8.3
	Total	120	100.0
Was the length of time sufficient to train to use the CPOT accurately?	Sufficiently	72	60.0
	Very	48	40.0
	Total	120	100.0
Were the directives about the use of the CPOT clear?	Sufficiently	69	57.5
	Very	51	42.5
	Total	120	100.0
Is the CPOT quick to use?	Sufficiently	73	60.8
	Very	47	39.2
	Total	120	100.0
Is the CPOT simple to understand?	Sufficiently	44	36.7
	Very	76	63.3
	Total	120	100.0
Is the CPOT easy to complete?	Sufficiently	48	40.0
	Very	72	60.0
	Total	120	100.0
Would you recommend using the CPOT routinely?	Sufficiently	28	23.3
	Very	92	76.7
	Total	120	100.0

Is the CPOT helpful for nursing practice?	Sufficiently	15	12.5
	Very	105	87.5
	Total	120	100.0
Has the CPOT positively influenced your practice in assessing the patient's pain?	Sufficiently	37	30.8
	Very	83	69.2
	Total	120	100.0

After this a education session held and CPOT was introduced and then again take information through questioners about feasibility, utility of CPOT in nursing practice. our findings showed that there were 57.50% nurses assessed pain regularly and 42.50% nurses did not assess the pain. 60.00% length of time sufficient to train to use the CPOT accurately. And 40.00% was opposite. 21.67% nurses used CPOT before assess pain and 78.33% nurses did not use. 40.00% sufficient to complete task of COPT. As well as 60.00% believed there was very easy to complete task of CPOT. 23.33% nurses recommend the using of CPOT in routine bases and 76.67% nurses in very range. 30.83% nurses believed that there was sufficient helpful in assessing. Patients pain by using of CPOT in nursing practice but 69.17% nurses were opposite.

Discussion

In this before and after study, we first performed a observation assessment to assess pain assessment in intensive care units on 120 adult ICU patient charts, over 2 days. Data collected included frequency, documentation of pain and type of pain assessments, sedation and analgesia administered, documentation of the effects of analgesic medication and bedside nurse-perceived pain.

Exchange Our research shows that the majority of patients involved in this sample did not have physicians and nurses reporting pain tests. The shortage of evidence does not automatically correlate with the shortage of an examination. Nevertheless, the inability to report the test results at best represented the reality that a poor priority was assigned to pain recording, and at worst, the nursing staff did not conduct any assessment of pain. Documenting the results of analgesic treatment and the causes for opioid dosage adjustments are vital to health care stability. Nearly the number of patients getting morphine infusions, just about two-fifths of patients undergoing analgesic prescription modifications required a pain management doctor just nurse paperwork. Consequently, the patient reports did not explain transparently the opioid results and the rationales underlying pain treatment adjustments. It was noteworthy that pain tests were not reported in more than four-fifths of ward round evaluations, again suggesting that contact on this dimension of patient treatment was missing.

It compared radically with the quality of certain physiological processes reporting, such as cardiovascular tests, which were regularly reported in the medical records of the majority of doctors and nurses ' entries. Therefore, it is doubtful that a shortage of pain management data has historically represented inadequate medical documentation. By comparison, the more analytical results produced from an evaluation of clinical pain. Specific reasons may have involved a lack of desire to perform the test; for example, owing to a belief that sedated patients may not feel discomfort, task fatigue or lack of ability to utilize the test methods. Importantly, our findings show that this has become a trend in nurses that has not been influenced by their degree of expertise, and that initiatives ought to be aimed at both rates of nurses and seniority of physicians [8]. It is hard to adequately understand whether the duration of stay in specialty units favorably affected doctor and nurse pain reporting while in general units has the reverse impact. This could reflect the reality that discharge from ICU in specialist units may be postponed due to awareness of a pain control problem, whilst this would not exist in a general unit. Conversely, it is more possible in general hospitals that ICU step-down treatment and release may be postponed because of a lack of regular ward rooms. Hence, patients who do not need a high standard of treatment stay in the ICU because it is considered that they need less regular pain monitoring as they are less unwell. Nevertheless, patients in general wards will still be treated periodically for discomfort, so this should not be a justification for a duration of stay relationship.

Our results indicate that over three quarters of patients with an in situ airway system do not have a recorded pain evaluation. In addition, our study findings illustrate the difficulties of measuring pain in those who are unable to self-report, and it is troubling that functional pain measures were so badly embraced by all health care professionals in this sample. Globally, there has been widespread reluctance among nurses to implement regularly tested pain evaluations following the availability of the ACCM guidelines [9].

Possible explanations for the difference between guidance and adoption include a lack of expertise, and employee cynicism regarding the efficacy of these therapeutic tools. Recent research by Van der Woude et al. underscored the assumption among nurses that subjective pain perception is preferable to standardized measures, given data to the contrary [3]

Interestingly, an improvement in the incidence of nursing pain tests was related to an rise in practitioner volume. Some units have differentiated themselves by prioritizing pain evaluation, and more methodological or ethnographic research is required to determine whether such units have measured pain more often and more robustly than others.

Afterwards we performed Educational session after pain assessment observation

During this phase, new policy and guideline documents were released, and ICU charts were redesigned to incorporate the CPOT. All nursing staff attended an education session on pain assessment and correct use of the CPOT. And then We then carried out this empirical analysis in order to verify the CPOT validity and feasibility through questainares and make it accessible around the staff nurses. The findings of this analysis explored the feasibility, utility of CPOT by nurses in ICU.

Pain management of critically ill patients is hardly ever recorded using approved tools. Observation of physiological indices (heart

rate, arterial pressure, respiration rate) is deceptive because they may rely on the underlying cause of exacerbation, However, while it should be noted that shifts in simple vital parameters may only indicate the existence of pain and the need to use a appropriate instrument to detect it, in the majority of studies devoted to this problem, raises the need for pain. During both painful and painless procedures the heart rate and arterial pressure can increase. In fact, certain criteria are not consistent with the patient's discomfort evaluation and clinical test results. They can also not be seen as a criterion for determining the frequency and severity of pain in patients being handled in ICUs. Regular pain level monitoring increases stress control and patient quality of life at and following admission of ICUs. Pressure control of dependent patients, i.e. chronically ill patients admitted of ICU, is focused on accurate and repeatable pressure severity and pain assessment measures in order to determine the magnitude and duration of the medical procedures needed.

According to Chanques et al, who analyzed the group of 100 people, the use of NRS across five scales developed for this function became the most effective method for measuring pain severity. Nonetheless, a verified, accurate and easy-to-use method will be implemented where self-assessment of the individual is not feasible. The importance of therapeutic measures is stressed, which enables regular and consistent pain severity measurement, irrespective of the individual participating in the evaluation.

The study findings available suggest that the use of functional pain appraisal systems increases clinical and rehabilitation care in critically ill patients, provides more effective pain control procedures, decreases sedative intake and shortens mechanical ventilation. The Behavioral Pain Scale (BPS) and Critical Care Pain Assessment Method (CPOT) are, in the authors ' opinion, the most accurate and better-established behavioral measures in patients who can not self-report discomfort [10].

ICU nurses considered the CPOT to be both practical and effective. Its incorporation into everyday practice may improve pain management of patients with serious illnesses. It is one of the measures, as established by international standards, to increase the standard of treatment and patient outcomes. Scientific findings and the outcomes of prospective research studies indicate that the occurrence of pain remains underreported and unresolved in chronically sick, intubated, manually ventilated patients. Part of the issue lies in the assumption that methods for measuring interpersonal distress were never created [11].

The Polish version of the CPOT demonstrated very good reliability amongst raters, with ICC above 0.9 for all time points. It is especially significant considering that nine separate investigators completed the CPOT–rater A was the primary investigator and rater B was one out of eight research team members. Unlike other researchers who used only two observers as CPOT raters for all tests, we set this goal and identified it as a major limitation to their analysis [12].

Conclusion

In conclusion, the results of this research indicate that the Critical Care Pain Monitoring Method may be used as a reliable method for pain appraisal in chronically ill adult intubated patients. This method is effective and efficient in patients who are chronically ill with a regimen of analgo-sedation focused on no-hypnotic, opioid-infusion. CPOT ratings were well associated with the self-reported pain experience of patients, and demonstrated outstanding reliability amongst raters. That makes the CPOT's a powerful method for pain evaluation [13-18].

Implications for Practice

CPOT is an appropriate method of evaluation of physical pain in adult MV facilities, it is necessary to use a consistent method of pain management to better treat pain in individuals.

Limitations

Limitations to the analysis do need to be discussed. We did not determine the Cronbach coefficient as in previous studies each sub question in the CPOT scale was validated. It should also be emphasized that the community we examined was comprised predominantly of adult males and females. Considering that adolescents, children and females may have different pain recognition thresholds, one should bear in mind the value of the CPOT in evaluating pain in the other populations not studied here. More work may be required in other places to verify this method.

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