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Brief Communication

Physical Restraint in Adult Intensive Care Unit - Why and how are they used?

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Abstract

Background: *Physical restraint is preferred practice in adult critical care to reduce the risk of injury and ensure patient safety. However, data on the extent of restraint practice intensive care unit is unknown in our setting to develop evidence based guidelines to promote the scientific use of this modality*

Methods: *This observational study was conducted for determining the prevalence, motives and ongoing practices of physical restraint. Data were collected from direct observation of physically restrained patients, review of patients' record and from the nursing staff.*

Results: *The results revealed that physical restraint was commonly used to prevent device dislodgment and to ensure patient safety. The results illustrated a lack of documentation on initiation and monitoring of use physical restraint.*

Conclusion: *For a better care of patients, it is very important to develop a restraint policy for rational use of physical restrain respecting the patient autonomy and freedom.*

Key words: *adult critical care, intensive care unit, physical restraint.*

Introduction:

Physical Restraints are widely used in the intensive care unit (ICU) to facilitate patient tolerance of invasive therapies and to avoid potentially life-threatening consequences associated with the abrupt discontinuation of such interventions.[1,2] Adverse outcomes associated with use of restraints include the complications of immobility, emotional devastation, serious injuries, and even death. Ethical concerns are related to patients' right to autonomy and dignity, whereas the right to a safe working environment has been raised as an ethical justification for restraining disoriented and aggressive patients.[3] Although not much research on patients' perception of physical restraints has been done, existing evidence indicates that patients experience negative psychological impact and negative feelings such as anger and fear, and often they do not know why they are being restrained.[4]

Data on the use of physical restraints in ICU in our settings are lacking. High quality epidemiological data are the basis for the future development of interventions in order to achieve quality care with a minimum of physical restraints. Therefore, we performed a observational study determining the prevalence, motives and ongoing practices of physical restraints.

Methods:

This study was conducted at Grande International Hospital, Dhapasi, Kathmandu. The study population consisted of patients aged over 18 years, who were admitted in the ICU during the time of data collection for the study (Jan-June, 2016). Data were collected in preformed questionnaire from direct observation of physically restrained patients, review of patients' record and from the nursing staff. Patients were observed daily until the restraint was removed or the patient was discharged from the ICU.

Results:

A total number of 160 critically ill patients were involved in the study. Patients' ages ranged between 18- 89 years with a mean age of 51.29 years. Males represented 57.5% of the studied group, while females constituted 42.5%. Physical restrain was applied in 51.9% of the study population. The reason that most lead to the use of physical restrain was to prevent self-extubation (59.03%) followed by the patents' attempt to remove indwelling devices (40.9%), and then preventing the patient from falling (10.8%). Reason for restrain was unclear in 13.2% of patients. Mostly restless patients (50.6%), calm patients (26.5%) and drowsy patients (22.9%) were subjected to physical restraint in this study.

The most preferred types of restrain were both hands restrain (84.3%) followed by one hand restrain (15.6%). In physically restrained patients, sedative therapy was also used in 93.9% of patients. Among sedatives, opioid was most frequently used drugs given in 89.1% of patients, followed by benzodiazepines 40.9% and propofol 31.3%.Verbal counselling to patients in addition to physical restrain was

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Table1: Physical restraint practices in ICU

Physical restraining practices in ICU	n	%
The use of physical restraints in ICU		
Yes	83	51.9
No	77	48.1
Reasons for use of physical restraint*		
To prevent self extubation	49	59.1
Patient is pulling out indwelling devices	34	40.9
Reason for restraint is unclear	11	13.2
To prevent the patient from falling	9	10.8
Patients behaviour before restrain		
Restless	42	50.6
Calm	22	26.5
Drowsy	19	22.9
Parts of body restrained*		
Both hands	70	84.3
One hand	13	15.6
Both legs	4	4.8
Torso	4	4.8
Other methods adjunct to physical restrain*		
Use of sedative drugs	78	93.9
Verbal counselling	29	34.9
Restraining by ICU staff	14	16.8
Types of sedatives used*		
Opioids	74	89.1
Benzodiazepines	34	40.9
Propofol	26	31.3
Dexmedetomidine	19	22.8
Haloperidol	14	16.8
Quetiapine	10	12.1
Length of time restrained		
<1 day	9	10.8
1-2 days	13	15.6
2-5 days	28	33.7
5-7 days	16	19.2
>7 days	17	20.4
Tubes and lines removed despite restrain*		
Endotracheal tubes	5	6.1
Other indwelling devices	19	22.8
Receiving orders from physicians for application of the restraints		
Yes	12	14.4
No	71	85.5
Documentation practices after applying physical restraints:		
Yes	31	37.3
No	52	62.6
Physical injury to ICU staff from restrained patients		
Yes	3	3.6
No	80	96.4

* multiple responses allowed

used in 34.9 % of patients. To control patients' agitation, restraining of the patients by ICU staffs was used in 16.8% of patients. The maximum number (33.7%) of patients were physically restrained for 2-5 days. Despite use of physical restrain, self-extubation was reported in 6.02%; removal of indwelling devices was noted in 22.8%.

Documentation regarding the use of physical restrain every 12 hourly was carried out in only 37.3%. Only in 14.4% cases, nurses received verbal order from the doctors to make the use of physical restrain to the patients. In our study we found laceration at the restrained site in one case as a physical complication of restraining. Despite the use of physical restrain, we noted three cases of physical injury to the ICU staffs from the restrained patients.

Discussion:

The main findings of our study were that more than half of the ICU patients were physically restrained; little above ninety percent of physically restrained patients were pharmacologically restrained (sedated). In a study by Minnick et al.[5] the prevalence of physical restraint was 39%. This figure shows that the prevalence of physical restrain is higher in our ICU. Variation has been found regarding the use of physical restrain among the different ICU settings. Study comparing physical restraint practice in 50 patients in one unit in the United States with that in 50 patients in one unit in Norway found no physical restraint use in Norway compared to 39% use in the United States.[6] Physical restraining versus chemical restraining has been a subject of discussion to maintain the safe environment for patients. Recent American guidelines[3] advocate the greater use of physical over chemical restraint. At the same time, UK guidelines[7] proposing the opposite emphasis have been produced.

Restraining therapies should be used only in clinically appropriate situations and not as a routine component of therapy.[3] The reasons given for more frequent restraint use in our intensive care units are the prevention of self-extubation and the intended protection of patients from self-initiated removal of indwelling devices. In a review, the percentage of patients physically restrained at the time of self-extubation ranged from 41% to 91%.[8] However, 63% to 89% of patients who extubate themselves do not require reintubation, casting doubt as to whether self-extubation itself should be regarded as a morbid event.[9,10] These data also suggest that many patients should be considered for extubation earlier in the course of their illness. The role of restraining therapy in preventing self-extubation has not been prospectively evaluated in a randomized, controlled trial. The use of physical restraints actually may increase patient agitation and increase the incidence of self-extubation.[9] Removal of other indwelling devices and therapies in the ICU has not been as well studied as self-extubation, but it is likely that many of the same considerations apply.[11,12] The effectiveness of physical restraint in reducing rates of falls has never been documented. Patients who are restrained do fall and may sustain more serious injury. Death is the most commonly reported adverse event directly related to the use of physical

restraints.[13] There is little information concerning minor injuries caused by restraint devices like nerve or ischemic injury caused by wrist restraint, a device often used in ICUs. In our study, we found only one case in which there has been physical injury to the patient by restrained devices. It has been recognized in our study that some ICU staffs are subjected to physical hazards from the restrained agitated patients. Literatures are limited regarding this type of occupational hazards to ICU staffs.

A physician order is required to physically restraint a patient. The order must be dated and timed, must indicate the period for which restraint is to be used also the order must be renewed by physician every 24 hours. When restraints are initiated for marked agitation or violence, the physician should be notified of restraint use within one hr of restraint application, and physicians should personally examine such patients within 4 hrs. On the other hand, verbal orders must be signed by physicians within 24 hours.[3,14] The frequency of monitoring should be determined by the clinical condition of the patient. In general, a calm patient receiving restraining therapies must be monitored for complications at least every 4 hrs. Agitated patients need more frequent monitoring, and reevaluation every 15 mins is recommended until the patient becomes calm.[3] Contrary to this, in our study, we found inadequate documentation practice and lack of communication with physician regarding the initiation of physical restrain. Developing a policy to record the initiation and monitoring for every physical restrain episode could be the solution for this.

The most important alternative therapies for physical restrain are pharmacologic agents used to treat the patient's agitation. In this study, wide ranges of pharmacological alternatives like opioids, benzodiazepines, propofol, dexmedetomidine, quetiapine, haloperidol, ketamine have been used to control patient anxiety, agitation and pain. A variety of alternatives (for example: quiet single room, familiar staff, physical, occupational and recreational therapies, increased staffing level, additional supervision and observation, active listening, increased visiting, provide companionship using family, friends or volunteers) have been used during physical restraint minimization programs. However, no individual alternative has been demonstrated to be effective and most have not been subject to any evaluation.[15]

The most commonly used type of physical restraint involved restraining the both hands, followed by single hand restrain, and then restraining of torso and both legs. Crepe bandage and dressings were the restraint materials used in our study. Physical restraint products are not available because they are considered to be expensive. In the absence of policy and regulations for restraint use in the ICUs studied, the available resources were used to meet the need of patient care.

It is also reported that restraints have negative effects on patients and their families, patients feeling embarrassed in remembering the experience of being restrained in ICU.[16, 17] The role that restraint play in the development of Post traumatic stress disorder-related disorders is unknown, but there is an association between the use of sedatives and neuromuscular blocking agents and the development of this disorder.[18]

One of the potential limitations of this study is that documentation and nursing staff responses to the interview questions may be inconsistent with actual practice. The collection of data from our resource limited centre may hinder the generalizability of the findings in resource rich settings.

Conclusion:

This study provided an overall picture of physical restraint practices in ICUs in Grande International Hospital, Nepal. It made clear that physical restraints are preferred practice in intensive care units to protect patients from self removal of therapeutic devices. The study indicated the lack of documentation on initiation and monitoring of physical restraint. This reflects the need for standard guidelines and in-service training for physical restraint use in ICUs in Nepalese hospitals. Further studies are needed to determine the effectiveness of restraint-free care compared with conventional restraint practices in critical care settings, including use of non pharmacological interventions as alternatives to physical restrain.

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