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COMMENTS TO RESEARCH ARTICLE

Support tools for the decision to use mechanical restraints in intensive care units: Are they useful?☆

Herramientas de soporte a la decisión del uso de contenciones mecánicas en las unidades de cuidados intensivos: ¿son útiles?

Hevener S, Rickabaugh B, Marsh T. Using a decision wheel to reduce use of restraints in a medical-surgical Intensive Care Unit. AJCC. 2016; 25(6): 479–86.

Abstract

Background Little information is available on the use of tools in intensive care units to help nurses determine when to restrain a patient. Patients in medical–surgical intensive care units are often restrained for their safety to prevent them from removing therapeutic devices. Research indicates that restraints do not necessarily prevent injuries or removal of devices by patients.

Objectives To decrease use of restraints in a medical–surgical intensive care unit and to determine if a decision support tool is useful in helping bedside nurses determine whether or not to restrain a patient.

Methods A quasi-experimental study design was used for this pilot study. Data were collected for each patient each shift indicating if therapeutic devices were removed and if restraints were used. An online educational activity supplemented by 1-on-1 discussion about proper use of restraints, alternatives, and use of a restraint decision tool was provided. Frequency of restraint use was determined. Descriptive statistics and thematic analysis were used to examine nurses' perceptions of the decision support tool.

Results Use of restraints was reduced 32%. No unplanned extubations or disruption of life-threatening therapeutic devices by unrestrained patients occurred.

Conclusions With implementation of the decision support tool, nurses decreased their use of restraints yet maintained patients' safety. A decision support tool may help nurses who are undecided or who need reassurance on their decision to restrain or not restrain a patient.

Commentary

The use of mechanical restraints (MR), defined as ''any device, material or equipment attached to or near a person's body and which cannot be controlled or easily removed by the person and which deliberately prevents or is deliberately intended to prevent a person's free body movement to a position of choice and/or a person's normal access to their body'',[1] has not been a subject of great interest in intensive care units (ICU) until recent years. This growing interest has arisen as a result of the ethical implications posed by their use, the high variability in their prevalence reported worldwide, and the controversial effectiveness in preventing the removal of life-support devices such as the endotracheal tube by the patient. Part of this variability is due to differences in conceptualizing what an MR is and what it is not, as well as the source used (graphs, records, and questionnaires to professionals) to collect data from different studies.

The main reason given by professionals to justify the use of MRs in the ICU is to preserve patient safety related to life support devices.[2] National and international organizations recommend minimizing the use of MR in all therapeutic areas, including the ICU, reserving them as the last therapeutic resort after an individualized reflection on the need of use.[3]

With the prospect of aiding this reflexive use, the management of tools to guide the use of MRs (protocols, algorithms, decision wheels, etc.) and help professionals in decision-making on the implementation, maintenance and removal of the MRs in each case seems, a priori, a wise

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choice. In this American single-centre pilot study a support tool (wheel-shaped) is put forward, which guides professionals in the decision of whether to use an MR or not. Prior to putting into practice the use of the said wheel, an *online* educational activity, and 1-on-1 in-depth discussions between the participants and the researchers were provided, on the indications and alternatives to the use of MRs in critically ill patients.

Methodologically, the study is considered as a quasi-experimental design with endpoints on the prevalence of the use of MRs, self-removed devices and other associated factors, before and after the educational intervention. During the study there was a 32% decrease in the use of MRs – from a pre-educational activity incidence of 0.37 (mean ratio) to 0.18 (mean ratio) in the post-educational activity group ($p = 0.002$). Also, the incidence of self-removed devices reduced, but not significantly, from 64 to 51 incidents. The authors recognize that in the evolution of the study there are design biases and confounding variables which were not considered initially, and that have an impact on the final result. This can be understood as the result of a mixture of effects.

One of the first aspects that was highlighted during this training was the use of mitts that were not attached to the bed, as an alternative and not as an MR per se. During the course of the study the use of mitts was added to the medical record, considering their use as an alternative to MRs. This conceptualization of MR which excludes 'mitts not attached to the bed' as a method of contention (definition of *Medicare and Medicaid Centers for Services*), confronts with the definition by Bleijlevens et al. (more widely accepted). Therein it explains that mitts limit the free access of the person to his/her own body as they are unable to use their fingers, and therefore they should be considered as a type of MR, although less restrictive than wristlets.

The authors of this study note this limitation and are aware that most of the nurses in the formative period stated that they considered mitts as a method of containment. They feel that this factor had the greatest impact on the results, and although they finally conclude that a significant reduction was achieved in the use of MRs, the reality is that it involves a reduction of the intensity of the restriction without an associated increase of self-removal of therapeutic devices. This detail appears to be particularly relevant because it adds evidence to the widespread belief that the use of MRs is essential to the maintenance of life-support devices. The idea of MRs as safety devices to prevent the self-removal of devices is controversial aspect, not proven by scientific evidence. In a systematic review of the factors associated with self-extubation, Da Silva et al. reports that between 25 and 87% of patients are restrained at the time of self-extubation and its use is not significantly associated with a reduction despite the ''false sense of security'' its use can give to professionals.[4]

The measuring instrument used was the decision wheel designed by Hurlock-Chorostecki and Kielb.[5] We are unaware if it is validated or not, and it only evaluates three areas: patient behaviour (assessed subjectively), the devices it includes, and the level of independence. It does not include certain aspects, such as the analgesia/sedation strategies followed, the objective and systematic evaluation of the degree of pain, sedation or delirium,[6] whether causes of agitation (pain, hypoxia, etc.) were discarded, whether the pharmacological management of these was considered an alternative to using MR or the patient's muscle strength. Neither does the wheel take into account any environmental factors such as workload or the noise level of the units.

Regarding adherence of the use of the tool, it is surprising that it was used by less than a third of the participants, in situations considered as ambiguous or in situations which the professionals needed to confirm their decisions, and that two-thirds of the sample did not reach a significant agreement on its bedside worth.

Although the authors present the study as quasi-experimental, they include a qualitative thematic analysis in which they explore the nurses' perceptions of the decision wheel. It should be noted that they do not clearly specify the questions they asked the study subjects, the data collection technique, the theoretical framework used nor the qualitative data analysis process. As shown in the *verbatim items*, the professionals who perceived confidence in the decision based on their clinical assessment described the tool as a guide in making decisions but not as the only measure to determine the final decision. This question is interesting and shows that this tool is not as powerful as initially expected because the professionals tend to ignore its results if they contradict with the decisions they would take based on their professional judgement. However, this tool should never replace the reflective thinking and professional clinical judgement, based on the individualized needs of each patient. These results seem consistent with the view that the decision of implementation, maintenance and removal of MRs is a complex decision influenced by many variables, and it is strongly influenced by the environment in which the clinical practice develops, which produces a cultural pool of professionals in regards to the decision to use MRs.[6]

As for the study results, it is also interesting to reflect on how the data were collected. It was the nurses themselves who documented the episodes of device-removal, and whether the patient had MRs at that time or not. But they only documented one episode per shift, regardless of the number of times the same device was removed during that same shift. This is a very important limitation and bias that prevents us from knowing the real prevalence of removed devices (although this strategy is used before and after the educational activity). Moreover, the presence of the principal investigator next to the professionals during the study period, together with the fact that the investigator performs his/her healthcare work in the centre where the study is conducted, could act as an attention bias and cause the Hawthorne effect (study participants change their behaviour if they know they are being studied).

In Spain, we do not know what the prevalence in the use of MRs is in the ICU and whether the use of these tools would be transferable and applicable to our environment which widely differs from the North American context. We could meet constraints such as: the lack of multidisciplinary work and consensus when deciding whether or not to use MRs; the absence of an individualized evaluation of each patient; and the reservation of MRs as the last therapeutic option, after eliminating non-pharmacological or pharmacological interventions to manage agitation. Despite the aforementioned limitations of the study, it is noteworthy to consider

that the combination of training activities and the use of decision support tools can achieve a reduction in the use of MRs, or a less restrictive use of the same, without resulting in an increase in the self-removal of life-support devices. To encourage a reflexive use, the training activities should include actions towards the patient, the professionals and the environment, through activities proposed by professionals but also by organizations aimed at preserving both the physical and the psychological safety of the people we care for.

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