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Review article

Validity and reliability of the HEMPA method for patient handling assessment

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ABSTRACT

Specific methods currently exist to assess occupational hazards resulting from patient handling in the healthcare sector, according to ISO/TR 12296. They are all similar in nature, but with a different analysis perspective; for that reason a comparison of the most relevant methods was performed in a previous research. As a result, a basis of a new tool that integrates the complementary aspects of those methods was proposed. To verify the validity and reliability of that method, a study within a hospital setting was carried out in five medical and surgical units of a public health institution. Based on the obtained results, the analysed method (called HEMPA) proved to be valid and reliable. Also, this method reflects a positive correlation between risk and damage and correctly quantifies risks regarding patient's dependence.

Contents

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1. Introduction

It is a frequently reported fact in the scientific literature that patient handling is one of the main risk factors among caregivers (Engkvist et al., 1998; Goldman et al., 2000), particularly in terms of back pain (Hoogendoorn, 2002; Smedley and Egger, 1995) and musculoskeletal disorders development (Larese and Fiorito, 1994; Leigthon and Reilly, 1995; Ando et al., 2000). Caregivers are exposed to various risk factors, such as lifting and transferring patients, pushing and pulling heavy equipment or working in awkward postures (National Research Council and Institute of Medicine, 2001). Musculoskeletal disorders are therefore of particular relevance, as workers who experience pain or fatigue are more likely to suffer accidents. In fact, some workers who suffer disabling injuries have abandoned the profession (Stubbs et al., 1986). Moreover, workplaces with a high incidence of these risks support high losses, with increased costs and staff turnover (OSHA, 2009). Regarding musculoskeletal disorders due to biomechanical overload, it was found that there is prevalence of back pain among nurses, particularly in the lumbar region, mainly because of the great variability of patient handling, the nature of liftings and the lack of training about the correct execution of movements (Bordini et al., 1999). In addition, patient handling has been increasingly recognized as a high risk activity, so the task could be redesigned to reduce risk exposure, implementing practical handling programs to improve the patient safety (De Castro et al., 2006).

Another study also suggests that injuries severity can be reduced substantially with a proper ergonomic intervention to reduce the physical stress and the risk of injury of caregivers (Garag and Owen, 1994).

Regarding the above, it is known that there have been major advances studying working conditions, aiming at accurately assess risks. Among these advances, there are certain methods to evaluate the patient handling technique (Kjellberg et al., 2000) or specific methods as MAPO, DINO, Dortmund Approach, Care Thermomether or PTAI that proved to be valid, as reported in previous studies (Battevi et al., 2006; Johnsson et al., 2004; Jager et al., 2010; Steer and Knibbe, 2008; Karhula et al., 2009). Additionally, it has been shown that multifactorial interventions are most appropriate for reducing musculoskeletal injury rates (De Troyer, 2015). In this sense, the European Panel on Patient Handling Ergonomics (EPPHE) in its international technical report recommended a comprehensive strategy, based on risk analysis associated with patient handling and taking into account all factors that could affect that task in the most complete way.

For that reason, it seems clear that prevention of musculoskeletal disorders resulting from patient handling requires proper assessment tools to provide the most balanced approach possible, according to a group of variables that influence this handling. Thus, due to the lack of a comprehensive measurement tool, the TROPHI method (proposed by Fray and Hignett, 2013) aims to evaluate both complex and multifactorial interventions during patient handling. Other tools combine several strategies integrated into a single generic program, to improve worker's occupational health (Hignett and Fray, 2010). Also it has been proposed a method to compare all patient handling tasks, based on the examination of twelve variables, setting a single indicator to evaluate all the interventions (Fray and Hignett, 2010).

Keeping that orientation, a study comparing five of the most relevant assessment methods of patient handling -MAPO, DINO, PTAI, Care Thermometer and Dortmund Approach, all of them included in ISO/TR 12296:2012 standard-was developed (Villarroya et al., 2016). With this purpose, the most valued items were integrated into a single method called HEMPA (“Herramienta de evaluación de movilización de pacientes”, or “Patient handling assessment tool”) to obtain an overall quantitative assessment.

HEMPA intends to be a comprehensive method, regardless the weaknesses or limitations of the previously compared methods, which also pursue the same purpose, that is, to evaluate patient handling risk, although they follow different pathways. This tool aims to provide a quantitative final result to determine whether the risk of suffering musculoskeletal disorders during patients transfer is acceptable, moderate or unacceptable for the caregiver, regarding the patient's degree of dependence. Therefore, the aim of the current study is to establish the validity and reliability of the HEMPA method to assess patient handling risks, similarly to other previously published studies (Radovanovic and Alexandre, 2004; Battevi et al., 1999, 2006). This paper also includes a brief discussion of the considered items, the way scores are assigned as well as the quantification of the resulting risk levels.

2. Materials and methods

2.1. 2.1 HEMPA items

HEMPA is an assessment tool based in observation of workplaces where patient handling takes place regularly. The method compiles the items that were considered to be relevant in the previously mentioned comparison (Villarroya et al., 2016). These items are major components of a typical healthcare scenario, mostly cited in ISO/TR 12296, and are taken from the valuation criteria adopted by the different methods analysed:

a) Dependency level.
b) Environmental conditions.
c) Workspaces.
d) Minor aids.
e) Major aids.
f) Transfer execution and postural analysis.
g) Handling outcome.