



Letter to Editor

Safety of health providers in the physical handling of patients in nursing care

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Physical handling of patients with reduced or limited mobility and independence is an everyday task for many healthcare workers. Patients need physical assistance to move after injuries, during post-operative periods, as a consequence of certain chronic diseases, or when they are in an altered state of consciousness. One of the priorities during patient handling is ensuring the safety of both the patient and the staff. Safe handling can be ensured with correct and appropriate use of handling equipment, proper staffing, and proper staff training with regard to patient handling (1).

Proper patient handling begins with targeted education and guidance from hospital management. Physical handling includes lifting, carrying, pushing, supporting, and mobilization of patients (2). To provide high-quality care, it is necessary to understand the function of the musculoskeletal system before handling a patient as well as to understand the special needs of each patient. A nursing assessment is used to determine the strength and stability of the patient and which movements will need to be assisted (3). Additionally, the type of environment (e.g., home, hospital, etc.), the required equipment, and the number of staff members needed also have to be known in advance. Moving a patient using improper techniques can impact the quality of care and puts the patient and the staff at increased risk of injury.

In our opinion, present-day patient handling techniques in the Czech Republic

do not reflect the desired goals in this area. The whole system of handling techniques is lacking a diversity of aids and equipment in every healthcare institution for safe manipulation. There is unsatisfactory space around beds to use the proper equipment. Healthcare workers have insufficient knowledge and skills to use the equipment properly. Sometimes they don't use it, because they think that they spare time. Positioning (mechanical, electric) beds are not regular furnishing in all healthcare institutions. Also, the education of healthcare workers is not as intense as in other countries. The function of the musculoskeletal system depends on the quantity of muscle mass, overall fitness, and flexibility, all of which have been rapidly decreasing in the overall population, as well as the subpopulation of healthcare providers. The physical fitness of today's young population is decreasing, which is linked to the increased tendency of children being overweight or obese (4, 5).

Also, the percentage of children with bad body posture is growing, which is a consequence of sedentary lifestyles (6). Physical fitness and basic motor skills are known to have an indisputable positive effect on mobility, which is also true for disabled individuals. Therefore, it is important to increase the knowledge base of all healthcare students in the areas of developmental kinesiology, biomechanics, and kinesiotherapy. Students should also receive an overview of all available primary and secondary injury prevention measures with practical applications for clinical

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physiotherapists, who routinely deal with these problems.

The healthcare workers' work is often monotonous, performed in awkward postures, or under conditions that fail to meet ergonomic principles (7). Employers need to pay close attention to employee safety and fully implement recommended measures to prevent injuries during patient handling. The most frequently reported diseases connected with patient handling are contagious and parasitic diseases followed by dermatoses and injuries caused by musculoskeletal overload (8). While an 80-yr-old female patient who weighs 60 kg and has just undergone end prosthesis replacement surgery may weigh the same as a 60 kg steel beam, to safely transfer her from bed to chair or chair to toilet requires very different lifting techniques. To safely assist such a patient, the relevant risks and problems must be identified prior to the assist; additionally, the assisting person needs to know their own limitations, which is rarely seen these days. Proper perception of one's own body, changes in muscle tension, joint stress, etc., should be one of the basic self-diagnostic skills for those who routinely handle patients (9) to prevent work-related low back pain (WRLBP). WRLBP is a very common health problem, and those in the nursing profession are at a particularly high risk of WRLBP (10). The multidimensional movement and the multisegmented design of the spine ensure good overall flexibility and mobility; however, these features also make the spine prone to injury when subjected to ergonomic stressors. Work positions, which deviate from upright standing, create an imbalance of forces acting on the spine. This includes poorly distributed gravitational forces (compressive and shear forces), but can also include lever forces and torque forces. These forces individually and collectively cause the antigravity muscles to work harder, especially the tonic muscles (11, 12). An assessment of the load put on the spine during patient transfer found that the compression load on the spine while lifting a patient from a hospital bed ranged from 5,178 N to 6,717 N (13). This value far

exceeds the recommended safety standard for compressive spine forces defined by NIOSH (the National Institute for Occupational Safety and Health), which is 3,400 N. Clearly, even routine patient handling puts health care providers at increased risk of WRLBP (14).

There is a number of reasons for increased risk of back problems including insufficient professional training, poor working conditions, or a work environment that prevents the use of ergonomic principles or insufficient numbers of healthcare staff working at a given facility (15). The intensity and duration of *fatigue* (16) are related to the type of work, length of shift, and the fatigue recovery time of each individual. Healthcare workers often lack sufficient *physical fitness* (the person's endurance, flexibility, ability to maintain correct body posture, structural balance, and correct movement), to perform certain activities or even maintain correct body posture for shifts that can last from 8 to 10 hours. Many healthcare workers lack the muscle strength and endurance (physical fitness) needed to meet the work demands of their daily schedule. It is also clear that the *work environment* can also play an important role in the development of WRLBP. One of the psychological factors is that healthcare workers often put more emphasis on patient safety than on their own safety, which can lead to injury. Health care workers are expected to deliver the same high level of care regardless of the patient's size or physical limitations (11). As a result, many healthcare professionals perform activities that put them at risk of injury.

The consequences of working in non-ergonomic body positions are usually not immediately visible; instead, they often appear later, even several years later (15). When non-ergonomic body movements are repeated, or non-ergonomic positions are held for an extended time, the distribution of pressure and strain forces on the spine and in the surrounding tissues will lead to physiological changes. The body system adapts to these imbalanced new forces, over time, musculoskeletal disorders related to the profession occur, including non-specific

back pain. Low back injury, which leads to WRLBP, is a significant health problem that needs to be addressed not only in hospitals but also in workplaces nationwide.

It seems that education, instruction on ergonomic movements, and “back school” (i.e., increasing back strength and flexibility) are not adequate solutions for this problem. One possible solution would be to periodically change the assigned tasks and duties to avoid repetitive injuries and long-term exposure to non-ergonomic forces. Another solution is greater variability and more extensive use of handling equipment (15).

The fact that this is a global problem is evidenced by the activities of the American Nurses Association (ANA), which called for and elaborated a standard for safe patient handling. It was based on research done in 2013 that showed 62% of general nurses suffered from musculoskeletal disorders and found that 80% of nurses worked despite experiencing persistent musculoskeletal pain (16). The standard deals with risks and preventions through education, more suitable work conditions, additional staffing, and evaluation of lifting situations and the development of patient handling protocols, which should be administered by top management and ward management. To provide quality patient care and treatment, including physical patient handling, the health, and safety of healthcare providers must be protected.

Conclusion

So far, this way of thinking is absent from the Czech population. Society often views healthcare professionals as saviors and Samaritans, who belong, after all, to “the helping profession;” however, insufficient attention is being paid to the job-related health risks faced by these professionals. We have found the issue of moving and handling patients in nursing care to be very important and worthy of research. There is considerable evidence of shortcomings when it comes to minimizing the risk to healthcare workers while moving, transferring, repositioning, and lifting

patients in Czech Republic. The healthcare community needs to strive to implement standards for patient handling and moving that put the health and safety of healthcare providers on the same level as the health and safety of patients. To that end, our internal multidisciplinary research team has created a research project to address this issue.

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Conflict of interests

The authors have no conflict of interest to declare.

References

1. Kanaskie Ml., Snyder, C. Nurses and nursing assistants decision-making regarding use of safe handling and mobility technology: A qualitative study. *Appl Nurs Res.* 2018 Feb 1;39:141-7. doi: 10.1016/j.apnr.2017.11.006. Epub 2017 Nov 6.
2. Berman A., Snyder S. 2012. *J. Kozier & Erb’s Fundamentals of Nursing: Concepts, Process and Practice.* 9th ed. USA: Pearson. ISBN 978-0-13-802461-1.
3. Villarroya, A., Arezes, P., Díaz-Freijo, S. and Fraga, and F. Comparison between five risk assessment methods of patient handling. *International Journal of Industrial Ergonomics* 2016 March; 52: 100-8. <https://doi.org/10.1016/j.ergon.2015.10.003>
4. Bunc V. et al. The school youth at the end of 20th century. Project summary report Ministry of Health of Czech Republic 2000 (in Czech: Školní mládež v konci 20. Století). Závěrečná zpráva projektu MŠMT ČR, VS 97131. Praha: FTVS UK. 2000
5. Vignerová J., Riedlová, J., Bláha, P., et al. [Statewide anthropology research of children and youth]. 2006; (in Czech: Celostátní antropologický výzkum dětí a mládeže). Praha: PřF UK, SZÚ, 2006.
6. Martínek L., Tóthová V., Zeman M. Sedentary life in the context of educational attainment. *Journal of Nursing, Social Studies, Public Health and Rehabilitation* 2015; 6: 3-4. ISSN 1804-1868.

7. Machálková L., Mikšová Z., Mazalová L., Šamaj M. [Evaluation of nurse's physical characteristics and physical load]. *Journal Czech Anthropology* 2012; 62: (1) 24-29 (Czech).
8. Fenclová Z., Havlová D., Voříšková M., Urban P., Peclová D., Žofka J. [Occupational Diseases in Czech]. (in Czech: State Health Institution. Nemoci z povolání v České republice. Státní zdravotní ústav) [on-line]. Retrieved from: http://www.szu.cz/uploads/NRNP/aktual_Hlase_i_NzP_2016.pdf.
9. Maček M., Radvanský J. Physiology and Clinical Aspects of motion activity. (in Czech: Fyziologie a klinické aspekty pohybové activity). Praha: Galén, 2011; ISBN 978-80-7262-695-3. p.245.
10. Duthey, B. WHO Background Paper 6.24 Low back pain. 2013 March 15:1-29 https://www.who.int/medicines/areas/priority_medicines/BP6_24LBP.pdf.
11. de Castro AB, Hagan P, Nelson A. Prioritizing safe patient handling: The American Nurses Association's handle with care campaign. *JONA: The Journal of Nursing Administration*. 2006 Jul 1;36(7):363-9. doi: 10.1097/00005110-200607000-00009.
12. Milhem M, Kalichman L, Ezra D, Alperovitch-Najenson D. Work-related musculoskeletal disorders among physical therapists: A comprehensive narrative review. *International journal of occupational medicine and environmental health*. 2016 Jul 4;29(5):735-47. doi: <https://doi.org/10.13075/ijomeh.1896.00620>
13. Marras WS. The future of research in understanding and controlling work-related low back disorders. *Ergonomics*. 2005 Apr 15;48(5):464-77. doi: 10.1080/00140130400029175.
14. Ramsey T, Davis KG, Kotowski SE, Anderson VP, Waters T. Reduction of spinal loads through adjustable interventions at the origin and destination of palletizing tasks. *Human factors*. 2014 Nov;56(7):1222-34. doi: 10.1177/0018720814528356.
15. Czupryna K, Nowotny-Czupryna O, Nowotny J. Ergonomic determinants of back pain in physiotherapists involved in paediatric neurorehabilitation. *Ortopedia, traumatologia, rehabilitacja*. 2014;16(4):407-18. doi 10.5604/15093492.1119618.
16. Powell-Cope G., Rugs D. What Elements of the 2013 American Nurses Association Safe Patient Handling and Mobility Standards are Reflected in State Legislation? *Am J Safe Patient Handl Mov*. 2015 March 1; 5(1): 13-8.