

Improving hygiene care for residents and caregivers





Abstract

How can we get more out of a prevention programme to further reduce back pain prevalence, compensation claims and sick leave for caregivers, while at the same time improving the dignity and quality of care for patients and residents?

Reducing static load during hygiene care can reduce the risk of musculoskeletal injuries in caregivers. The right choice of equipment may offer cost-effectiveness by preventing injury-related absenteeism, reducing the time required to bathe patients, as well as providing an option to reduce the number of caregivers needed. Supportive equipment may also improve conditions for the patients/residents by offering them more options for mobilisation and a better quality hygiene experience.

The impact of static load on work-related injuries

A growing body of evidence indicates that the risk of static or postural load on musculoskeletal injuries has been underestimated

In fact, studies show that static or postural load may have a comparable or even larger impact on musculoskeletal disorders than the dynamic load¹⁻⁵.

By reducing static load, hospitals and care facilities can further reduce the likelihood of injury, while at the same time improving patient care¹⁻⁸.

Static load can be strenuous for two reasons. First, the weight of the caregiver's own trunk, arms and head place a strain on the back, neck and shoulder areas: these parts of the body make up about two-thirds of the total body weight. Second, muscles must stabilise this weight of the trunk, head and arms. The more a caregiver bends forward, the greater the influence of these loads become. This requires substantial muscle power, which increases the more the nurse bends forward. Muscle fatigue occurs quickly in these positions.

If these postures need to be maintained for prolonged periods, back or neck pain may result.

A caregiver's back is bent, twisted, or both during a substantial percentage of the total work time. This can at times add up to more than 2 hours per shift^{2,6}. The United States Department of Labor emphasises the potential detrimental effect of working in such awkward postures⁹.

In fact, all working postures that last more than one minute in a position of more than 30-45 degrees flexion (Figure 1), rotation and/or lateroflexion should be avoided¹⁰. Such postures lasting more than four minutes at a time - which hygiene care often requires demand urgent preventative action^{4,10,11,12}.

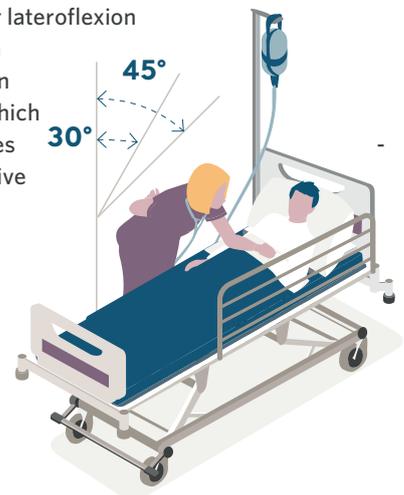


Figure 1

Covert load vs. overt load

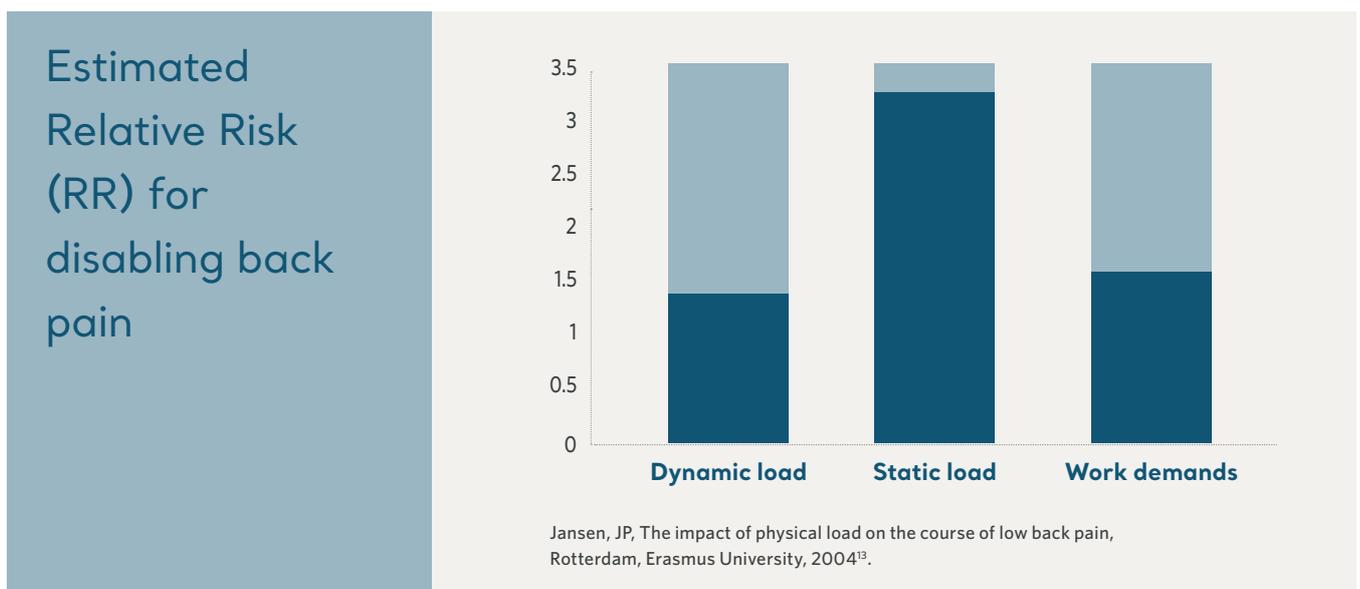
Static load is referred to as "covert load" because caregivers often do not feel the strain that it places on their bodies. This is in contrast to "overt load" where the instantaneous pain that they may feel while transferring a patient manually will warn them and motivate them to use adequate equipment.

Static load: causes injuries over time

Research in nursing indicates that exposure to static load is often related to long-term disabling back pain¹³ (Figure 2)

For static load, the effect seems to be cumulative in nature. Older caregivers seem to report problems related to static load 1.68 times as often as the group below 55 years^{4,13}. This appears to be related more to their lifetime exposure than to their present exposure. This is why static load is sometimes called the “silent killer”, emphasising the importance of early interventions on long-term caregiver health¹⁴. Dynamic and static load are therefore two sides of the same ergonomic coin.

Figure 2



Ergonomic efficiency: beyond dynamic load

While hospitals and long-term care facilities have reduced their injury rates over time, caregivers still face significantly higher rates of injury than in other industries^{10,11}

Reducing the impact of manual patient transfers and repositioning, including those which take place during bathing, showering and toileting, have long been considered an evidence-based part of any prevention programme^{10,11}. Studies indicate that to further reduce the risk of physical strain and injuries and make caregivers perceive their work as lighter and easier, prevention programmes must be further expanded to reduce static or postural load¹⁵.

Ergonomic hygiene solutions mean less risk for caregiver health

Exposure to static load is particularly high during hygiene care. Given the fact that more than half (61%) of residents in elderly and home care need daily assistance with washing and showering⁴, the impact of interventions aimed at reducing caregivers' static load can be profound. Jansen et al.¹³ found that exposure to postural load for no longer than 1 hour and 45 minutes per week already resulted in a RR (Relative Risk) of 3.18 for disabling back pain for caregivers.

Caregivers are exposed to static load for more than two hours per shift^{2,3,6}. Washing procedures alone may last anywhere from six minutes to more than an hour per procedure and Knibbe et al.¹⁵ indicate that caregivers are exposed to static overload during 33-46% of the duration of the washing procedures. The Knibbe et al. study also concluded that state-of-the-art, high-low, ergonomically designed equipment for washing and showering can potentially improve the static load by increasing the neutral back postures from 54% to 74%: an improvement of 37%¹⁵.

"Mobilising and activating the patient during hygiene procedures does not appear to increase either the duration or magnitude of static load if adequate equipment is provided."¹⁵

Two ways to reduce static load

A recent quantitative analysis of static load during hygiene activities indicated that static load can be substantially reduced in two ways¹⁵

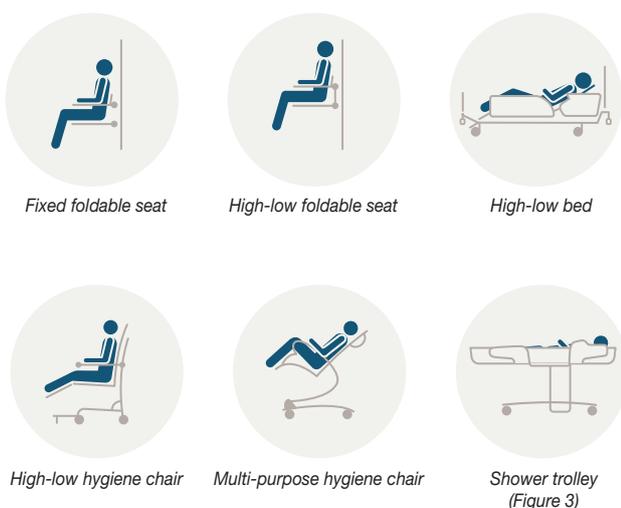
Reducing the length of exposure

When washing and showering under standardised conditions, the type of equipment and the washing technique had a significant impact on the total duration of hygiene care. Especially washing on a high-low bed appeared to take more time - on average three to six minutes longer when compared to the other equipment studied¹⁵ (Figure 3).

Improving the posture of the caregiver

The most influential factors were again the type of equipment, but also the skill of the caregiver, and the patient's mobility. In the Knibbe et al. study¹⁵, the high-low bed resulted in the least favourable scores compared to the other equipment. Bathing on a high-low bed both takes longer and also results in less favourable caregiver postures. For the benefit of both the patient or resident and the caregiver, bathing in bed should be seen as the last choice and not as a routine option¹⁵.

Figure 3



The Knibbe et al. study showed that by choosing the best equipment and method for the job, both duration and magnitude of postural load can be substantially improved¹⁵.

Advanced equipment and patient interaction

Advanced hygiene care equipment, such as the high-low hygiene chair, multi-purpose hygiene chair and the showering trolley can have a positive impact, especially for patients and residents with impaired mobility⁴

In relation to this, a recent study concluded that for patients for whom it is vital to stimulate and activate mobility, the use of adequate equipment that would facilitate this did not take significantly more time and did not lead to more postural stress¹⁵. Increasing patient and resident participation in mobility may also postpone further deterioration and improve overall health and quality of life^{16,17}.

The use of adequate equipment often enables caregivers to work on their own, without the assistance of another caregiver. This will also promote the one-to-one interaction between patient and resident and caregiver, which is perceived as important for optimising patient care especially when caring for people with dementia¹⁸. In addition, working with two caregivers is not only inefficient, but it also leads to ergonomic compromises as both caregivers need to be able to reach the patient or resident in the middle of the bed.

"The selection of equipment can improve efficiency of nursing procedures without compromising and often even improving quality of care¹⁵".



Summary

By summarising the findings from literature and recent studies, it is clear that, with adequate equipment and changes to the hygiene environment, safer, calmer and more ergonomic hygiene procedures for both patient and caregiver are indeed possible. Shorter duration, more options for delivering care by one caregiver instead of two and better options for mobilising the patient/resident are a few of the

options found^{4,15,21}. Additional ways to improve hygiene procedures should also be considered, such as the inclusion of music and other stimuli, together with improved nursing skills in the use of equipment. This will increase satisfaction for caregivers and residents and patients in order to provide optimal hygiene care – both now and in the future.

References

1. Jansen J, Morgenstern H, Burdorf A. Dose-response relations between occupational exposures to physical and psychosocial factors and the risk of low back pain. *Occupational Environmental Medicine* 2004;61(12):972-979.
2. Freitag S, Fincke-Junod I, Seddouki R et al. Frequent bending – an underestimated burden in nursing professions. *Annals of Occupational Hygiene* 2012;56(6):697-707.
3. Freitag S, Seddouki R, Dulon M, Kersten JF, Larsson TJ, Nienhaus A. The effect of working position on trunk posture and exertion for routine nursing tasks: an experimental study. *Annals of Occupational Hygiene* 2014;58(3):317-325.
4. Knibbe JJ, Knibbe NE. Vijfde monitoring fysieke belasting in verpleeg- en verzorgingshuizen, thuiszorg en kraamzorg 2015 in opdracht van A+O VVT [Fifth National Monitoring Physical Load in Nursing Homes, Home Care and Maternity Care 2015, Commissioned By A+O VVT], The Hague, 2015.
5. Schall MC Jr, Fethke NB, Chen H. Working postures and physical activity among registered nurses. *Applied Ergonomics* 2016;54:243-250.
6. Engels JA, Landeweerd JA, Kant Y. An OWAS-based analysis of nurses' working postures. *Ergonomics* 1994;37(5):909-919.
7. Knibbe NE, Knibbe JJ. Postural load of nurses during bathing and showering of patients: results of a laboratory study. *Journal of the American Society of Safety Engineers* 1996;37-39.
8. Knibbe NE, Knibbe JJ, Waaijer EM. How smart is the Carevo? Results of a study on a new shower trolley generation. *The Ergonomics Open Journal* 2013;6:1-5.
9. Solutions to control hazards. United States Department of Labor Web site, OSHA 2011. <https://www.osha.gov/SLTC/ergonomics/controlhazards.html>. Accessed May 2016.
10. ISO/TR, Ergonomics – Manual handling of people in the healthcare sector: ISO/TR 12296. Geneva, 2012.
11. Hignett SM, Fray M, Battevi N et al. International consensus on manual handling of people in the healthcare Sector: Technical Report ISO/TR 12296. *International Journal of Industrial Ergonomics* 2014;44(1):191-195.
12. Annotated summary ISO/TR 12296 : ArjoHuntleigh document (PDF) / <http://www.arjohuntleigh.com/knowledge/safe-patient-handling/clinical-guidelines/iso/>
13. Jansen, JP, The impact of physical load on the course of low back pain, PhD Thesis, Rotterdam, Erasmus University, 2004.
14. Knibbe JJ, Knibbe NE. Static load in the nursing profession; the silent killer? *Work* 2012;41:5637-5638.
15. Knibbe JJ, Knibbe NE, Heitink EBL. Evaluating different methods of showering and washing patients: assessing ergonomic, time, and quality aspects, *Am J SPHM*, 2016, 6,2, 49-64.
16. Lahmann NA, Tannen A, Kuntz S, Raeder K, Schmitz G, Dassen T, Kottner J. Mobility is the key! Trends and associations of common care problems in German long-term care facilities from 2008-2012. *Int J Nursing Studies* 2015, 52, 167-174.
17. Grönstedt H, Frändin K, Bergland A, Helbostad JL, Granbo R, Puggaard L, Andresen M, Hellstrom K. Effects of Individually Tailored Physical and Daily Activities in Nursing Home Residents on Activities of Daily Living, Physical Performance and Physical Activity Level: a Randomized Controlled Trial, *Gerontology*, 2013, 59, 220-229.
18. Knibbe, JJ, Knibbe NE, ARBO Catalogus VVT, A+OVVT, The Hague, 2009.
19. Vink, A. And van Bruggen-rufi, M. The effect of music therapy for people with dementia, *Handbook of Gerontology research methods: understanding successful aging*, Routledge, 2017
20. <http://www.ecumen.org/blog/ecumen-pilot-study-shows-light-therapy-helps-reduce-dementia-symptoms#.Vwu2YKQrLcs>
21. Knibbe JJ, Knibbe NE. Evaluation of a novel bed sheet used to reposition and transfer patients in an intensive care unit, *British Journal of Nursing*, 2015, 24, 6, 18-23.

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