

# Safety and Comfort during Transfers by Lifts

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**Abstract**— Assistive technology is increasingly exploited to assist disabled elderly persons. Safety and comfort during transfer are relevant problems either for cared persons or for caregivers. The literature suggests an agreement between patients' and carers' perception. Our aim is to explore this possible concordance in more detail, in the gerontechnological perspective of lift utilization. We want to address two related sets of items. For the client: during the different subcomponents of the transfer manoeuvre, the self-perceptions of adequacy of the time taken, and of comfort, security and calm, or pain; which phase of the transfer manoeuvre is felt as worst; preference between mobilisation with / without hoist; adequacy of the information received before and throughout the manoeuvre; the liking to advise the hoist to others; an overall feeling about the transfer manoeuvre through the lift. For the staff: during the different subcomponents of the transfer manoeuvre, the perception of adequacy of the time taken, and of comfort, security and calm – on client's side – and of own pain or distress; the technical knowledge, familiarity and adequacy of instructions about the hoist; since how much time (s)he has been using it; possible changes in the way (s)he perceives it; the liking to advise the hoist to others; which sensations (s)he deems the client feels during the transfer manoeuvre through the lift. We shall have the possibility to analyze different combinations of client / operator couples: same client with different caregivers, and vice versa, while using the same technical device. Preliminary results show that both patients and personnel like transferring with the lift, and support the relationship between patients' and health professionals' perceptions.

## INTRODUCTION

ASSISTIVE technology is increasingly exploited to assist disabled elderly persons. Safety and comfort during transfer are relevant problems either for cared persons or for caregivers [1]. On patients' side, quality in work technique probably influences the safety and well-being of the patient being transferred: that is to say it is a matter of quality of care. Experiences of pain in the hemiplegic shoulder of stroke patients might suggest that patient safety during assisted transfers depends on the transfer technique by professionals. Ratings of safety and comfort by patients have already been used to compare different transfer techniques and transferring aids for specific transfer tasks. On caregivers' side, more than one nurse out of three may suffer from back pain along one year and a half of activity, leading to absence from work in some 10 % - especially in case of low mood, implying an odds ratio of 3.4 even in women who were free from

pain at baseline and after adjustment for earlier history of back complaints. Low mood might be a proxy for stress and job dissatisfaction, and might reflect an influence particularly on more severe disease or an effect on women's ability to cope when symptoms occurred. This high incidence of low back sufferings (33 new episodes for 100 woman years) is not only a burden on the many nurses who develop back pain but also a substantial cost to employing hospitals in lost efficiency, lost time, wasted training, and claims for industrial injuries [2], [3].

The high rate of back disorders in nurses is associated with heavy physical workload, particularly in lifting and moving patients, and with adverse postures. One approach to prevention, therefore, is through improvements in ergonomics and training, with avoidance or modification of the tasks that carry the highest risks.

In the longitudinal study on Southampton's hospital's nurses, after adjustment for potential confounders, posing all low back pain as the outcome, exposure-response trends were observed for manual transfer of patients between bed and chair; transfer of patients between bed and chair with a hoist; manually moving patients around - that is, repositioning them on the bed; and lifting patients in or out of the bath with a hoist. Yet, associations with back pain leading to absence from work were less clear: further, the association with frequent transfers between bed and chair with a hoist completely disappeared. Manual transfers and repositioning would be expected to stress the spine, but the association with lifting by hoist is harder to explain: it may reflect confounding by other tasks that are associated with bathing patients [2].

Therefore, the local health authority appointed to our skilled nursing home a plan to improve safety and well-being for both kinds of involved people. Yet, a preliminary survey picked up one only adverse event during transfer by lifts for an inpatient along one year, and very low rates of musculoskeletal complaints among health care professionals. Hence we re-framed our plan in a more qualitative meaning. Our current aim is to explore the possible agreement between patients' and carers' perceptions during transfers, in the gerontechnological perspective of hoist utilization.

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## METHODS

We want to address two related sets of items. For the client: during the different subcomponents of the transfer manoeuvre, the self-perceptions of adequacy of the time taken, and of comfort, security and calm, or pain; which phase of the transfer manoeuvre is felt as worst; preference between mobilisation with / without hoist; adequacy of the information received before and throughout the manoeuvre; the liking to advise the hoist to others; an overall feeling about the transfer manoeuvre through the lift. For the staff: during the different subcomponents of the transfer manoeuvre, the perception of adequacy of the time taken, and of comfort, security and calm – on client's side – and of own pain or distress; the technical knowledge, familiarity and adequacy of instructions about the hoist; since how much time (s)he has been using it; possible changes in the way (s)he perceives it; the liking to advise the hoist to others; which sensations (s)he deems the client feels during the transfer manoeuvre through the hoist. Mutually referring questionnaires have been developed on purpose. Different combinations of client / operator couples are being sorted: same client with different couples of caregivers, and vice versa, while using the same technical device.

## RESULTS

First, we have implemented a matrix to clearly drive the health care professionals while using hoists, according to good care practice criteria. An example for hemiplegia is shown in the table I.

At the present early stage of the work, we are committed to the overall methodology. As for results, we are focussing on a kind of hoist that has been conceived to help patients and staff while changing absorbent pads. This device has been adopted by our team for a broader array of functions, according to a rehabilitative conception of everyday assistance job.

Patients rated the time employed to be transferred as right, felt comfortable and denied any pain, along each transfer manoeuvre subcomponents: tying up, mobilisation, slings removal. Lifting and mobilisation were the most bothersome subcomponent. Patients preferred to be transferred by hoist and regarded as adequate the information received before and throughout the manoeuvre. They definitely believed to advice such an hoist to others. Their feelings throughout the manoeuvre were positive: from trusting towards staff to being at one's ease along a smooth transfer by a relaxed personnel.

Staff rated the time deployed to tie up patients as adequate, but the manoeuvres of moving them and removing slings as lengthy, in comparison to the time they had spent without the hoist. All three manoeuvres were deemed comfortable by staff members on patients' side. The first two mentioned manoeuvres were somewhat painful, at variance with the last one. Personnel declared longstanding familiarity with the hoist, good technical knowledge and adequate instructions received about it, so that they learnt to appreciate it and would like to utilise it in case of private necessity. Further, staff guessed patients trusted them while being mobilised carefully.

TABLE I: example of good practice matrix to guide personnel for transfer manoeuvres in different diseases / disabilities

Disease	Functional impairment	Transfer from supine to sitting	Transfer from sitting to upright	Transfer from bedside to wheelchair	Transfer wheelchair / w. c.
Hemiplegia	Spasticity in one side of the body	Slide – sheet with facilitation technique by one caregiver	Slide – sheet with facilitation technique by one caregiver	Active hoist with facilitation technique by one caregiver	Active hoist by one caregiver

## DISCUSSION

Our first data favour the adoption of a lift whose using has been properly extended from mere assistance towards a more thoroughly rehabilitative employment. The limitations of this study don't need to be stressed, as they are self-evident, mainly the small number of cases examined till now. Yet the hints we are yielding are encouraging. Judgements were positive both on patients' and personnel's opinions, even if the latter expressed some concerns as for time and pain during specific transfer manoeuvre subcomponents. Our preliminary results agree with the concordance between patients' and carers' perceptions during transfers with hoists, according to the literature. Maybe the correlation coefficients have been previously found elsewhere as loose [4] because those relationships were centred on self perceptions about own side. On the other hand, we are focusing also on caregivers' feeling about patients' perceptions, in order to strengthen a "therapeutic alliance" mediated by a properly chosen and used assistive device, in a naturalistic setting [6].

It is noteworthy that some personnel who deemed to be acquainted and well informed about hoists perceive some pain during specific phases of transfer with lifts. Occupational back injury is the second leading occupational injury in the USA: among health care personnel, nurses have the highest rate of back pain, with an annual prevalence of 40 - 50 % and a lifetime prevalence of 35 - 80 % [7]. It would seem obvious that the main route to preventing back disorders among nurses is likely to lie in improved ergonomics. In the past years many NHS trusts have invested substantially in aids for handling patients, such as sliding sheets and hoists, but the outcome has yet to be properly assessed [2]. It has been well documented that patient handling can be done safely with the use of assistive equipment and devices that eliminate the hazards of serious back injuries to nurses [7]. Recently a review challenged the current widespread practice of advising workers on correct lifting technique, because of lack of evidence to support such custom [8]. The Cochrane review (2007), according to the same Authors, states that there is limited to moderate evidence that manual material handling advice and training with or without assistive devices do not prevent back pain, back pain-related disability or reduce sick leave when compared to no intervention or alternative interventions. There is urgent need to address these inconsistencies [9]. More effective methods of implementing change in work systems are needed [10]. Caution should be taken in interpreting stand-alone policies [11]. Yet, even incongruent information assume greater salience when considered in the context of our staff, that mainly consists of an ageing female cohort of nurse aids and nurses - including workers having physical frailties - who can be assigned to transfer job - albeit with precautions [7]. The

present stage of the study should pave the way to the acquisition of more data: we may focus on specific transfer manoeuvre subcomponents picked out by our enquiry, in order to improve care-giving [12]. A "no strenuous lifting" program - which combined training with assured availability of mechanical and other assistive patient handling equipment - most effectively improved comfort with patient handling, decreased staff fatigue, and decreased physical demands, in a randomized clinical trial [13]. Multi-faceted programs can result in lower overall injury rate, fewer modified duty days taken per injury, significantly save costs, while increasing job satisfaction and being well accepted by patients, nursing staff and administrators [11]. Safe residents handling and movement programs significantly reduced the rate, severity and cost of injuries to caregivers associated with lifting and moving resident. Adverse reactions by residents towards caregivers declined after the "best practice" program was implemented. Cost benefit analysis proved favourable in less than three years [14].

## CONCLUSION

We are aware of possible conflicts between patients' wishes and needs, and professionals' safety concerns, such as when the former aim at most of independence in transferring, and the latter fear for physical loads - especially in case of non weight-bearing and/or non-compliant patients. Indeed, the degree of cooperation by the same patient wasn't always rated consistently by each member of caregivers couples. Yet, transfers are often a step in the rehabilitative process, and anyway "there is more to lifting than preventing back pain". Better understanding the interactions between patients, staff and technical aids during transfer is essential to better serve these patients [15]. "High tech and high touch" Gerontechnology may be valuable in preventing that care job might be at odds with rehabilitation needs and human rights in health and social care [16].

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