

# Team-Based Risk Assessment and Action Plans as Participatory Methods for Safe Patient Handling in Two Swedish Municipal Care Homes for the Elderly

Ingegerd Skoglund-Öhman  
Seppo Väyrynen

Department of Industrial Engineering and Management, University of Oulu, Oulu, Finland

**Objective.** We investigated the usefulness of a team-based risk assessment method in patient transfer situations in municipal care homes for the elderly. **Methods.** Evaluation of risk assessment and action plans carried out in 2009. Focus group interviews with care givers and one-to-one interviews with managers and occupational therapists. **Results.** The evaluation showed that action plans and interventions were developed for each resident with identified risk connected with movement/transfer in daily life. Twenty-six patients (28%) of a total number of 94 were assigned to the “no risk” category regarding movement/transfer situations in daily life. The other 68 patients (72%) required further interventions, which were documented in action plans. The interviews indicated that the approach of team-based risk assessment and action plans was perceived as a functional participatory method aiming to improve daily life and work. **Conclusion.** Systematic team-based risk assessment and action plans benefit staff as well as residents at care homes for the elderly.

systematic occupational risk prevention   manual handling   elderly care

## 1. INTRODUCTION

A work development approach was started in 2009 at two care homes for the elderly in a small-sized municipality in northern Sweden. The reason for the attempt was that the Swedish Work Environment Authority at an inspection in 2008 discovered that staff at the two homes performed heavy physical tasks associated with transfer situations connected with residents' daily life. A national work environment survey by the Swedish Work Environment Authority points out that overexertion connected with manual handling and strenuous postures are major problems of health professionals [1]. Work injuries are more common among staff at elderly and disability care homes, com-

pared to other caring and service professions [1, 2]. Studies show that transfer of another person is a main risk factor for low back disorders and injuries among nursing personnel [3, 4, 5, 6, 7]. Studies also reveal that transfers can be complicated to perform, and put demands on skills in terms of coordination of movements and muscle force as well as co-operation with workmates and care receivers [8, 9, 10, 11, 12].

The Swedish Work Environment Authority states that heavy manual handling and other physically demanding work tasks shall be avoided and that employees shall get necessary instructions on lifting and transfer techniques. The Swedish National Board of Occupational Safety and Health<sup>1</sup> discusses employers' responsibility to pro-

We would like to thank the Swedish Work Environment Authority, Luleå district, and the participants in Älvsbyn municipality, Sweden. This study was supported by a grant from the Helge Ax:son Johnsons stiftelse.

Correspondence should be sent to Ingegerd Skoglund-Öhman, Work Sciences, Department of Industrial Engineering and Management, University of Oulu, Finland. E-mail: ingegerd@krivision.se.

<sup>1</sup> In 2001, the Swedish Work Environment Authority was formed due to a merger between the former Swedish National Board of Occupational Safety and Health and the 10 District Labour Inspectorates.

vide training in work techniques and employees' responsibility to follow instructions [13, 14]. Three countries of the European Union (Finland, Sweden and the UK) use national official manuals and guidance on patient handling [15]. Risk assessment plays a key role in systematic work environment management [16, 17, 18]. The safety effectiveness in an organization is reflected by the safety performance among the involved [19].

In the two municipal care homes for the elderly, occupational therapists, unit managers and safety representatives agreed to apply an approach based on structured identification of person transfer situations in everyday life. This was done to avoid the risk of developing musculoskeletal disorders or accidents in relation to transfer situations. They developed and used routines in accordance with contemporary safety management efforts in Sweden, Finland and other Scandinavian countries [16, 17, 18]. The risk assessment tools and templates of risk and action plans were developed by the regional Work Environment Authority. The routines were similar to Health Safety Environment and Quality (HSEQ) assessment, developed for heavy manufacturing and process industry and its service providers [20]. The HSEQ approach covers areas similar to Wilkinson and Dale's integrated management system [21].

The aim of this study was to examine whether team-based risk assessment and action plans on patient transfer situations are a suitable participatory method for improving daily life and work at care homes for the elderly.

## 2. PARTICIPANTS AND METHODS

### 2.1. Participants

This investigation was based on a case study at two care homes for the elderly in Älvsbyn munic-

ipality in northern Sweden. Participants were selected by purposeful sampling. This means that the entire staff of both care homes in the municipality participated by using the risk assessment method in daily work. Three focus group interviews were conducted with the care staff at each of the two care homes for the elderly, which gave an opportunity to interview one fifth of the personnel. The interviewees were selected by the manager of each care home from the staff who were on duty on the day of the interview. The interviewed staff received verbal and written information about the evaluation and participated in the study under written informed consent. Individual interviews were conducted with managers and occupational therapists of each care home. Table 1 illustrates demographics of the care homes and participants.

### 2.2. Setting

The approach involved all staff in two Swedish care homes, where routines for systematic safety management were developed and implemented in 2009. Risk assessment and action plans for patient movement/transfer situations (Figure 1) were vital for work safety at the two work sites. A description of the developed routines follows.

The personnel are asked to fill in a risk assessment for each of their individual care receivers, and hand it over to the occupational therapist. The occupational therapist observes and assesses individual transfers of each patient, proposing and testing various solutions on work techniques and facilitating tools. This may involve a number of practical tests to achieve the best possible solutions for individual residents as well as staff. Supervision provided to staff is a natural part of their daily work. The agreed measures are documented in the action plan by the occupational

**TABLE 1. Residents ( $N = 104$ ) and Personnel ( $N = 102$ ) at the 2 Care Homes, and Focus Group Participants ( $N = 20$ ) by Age, Gender and Work Experience**

Care Home	Residents	Personnel	<i>n</i>	Focus Group Participants					
				Age (years)		Women	Men	Work Experience (years)	
				Range	<i>M</i>			Range	<i>M</i>
A	53	52	11	40–62	44	11	0	12–39	24
B	51	50	9	31–59	38	8	1	9–30	22

RISK ASSESSMENT and ACTION PLAN, Person: \_\_\_\_\_ Date: \_\_\_\_\_ Page 1

1. Identify the transfer situations deemed MODERATE or SEVERE (yellow or red) in ASSESSMENT device	DESCRIBE THE CAUSE/ CAUSES OF PROBLEMS. Examples of causes, see ASSESSMENT device	RISK ASSESSMENT OF EVERY "HARD" SITUATION. See AFS 1998:1, pp 39-	INTERVENTIONS	READY	RESPONSIBLE	FOLLOW-UP
a. Lift the patient to a standing position		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
b. Move the patient between the bed, wheelchair, shower chair or toilet		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
c. Move the patient to the edge of the bed and lay down		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
d. Move the patient further back in the chair/wheelchair (when the person has slid forward or sideways)		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
e. Training, support walking		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
f. Move the patient higher up in the bed		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
g. Diaper changing in the bed		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
h. Horizontal transfer		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
i. Up from the floor after falling		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
j. Eating a meal		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				
k. Other types of transfer situations		<input type="checkbox"/> Moderate risk <input type="checkbox"/> Severe risk				

Figure 1. Form for team-based risk assessment and action plan regarding movement/ transfer situations.

therapist. All care staff have access to the joint documentation system, and are required to keep track of their patients' state of health, care and the current implementation plan. The personnel also document changes and data relating to health and daily life for the individual residents. The approach means that risk assessment is made continuously, i.e., the personnel assess new residents and all patients with changed conditions regarding movement/transfer. The occupational therapist tries out solutions for solving disclosed problems and supervises the staff. If needed, new agreements and action plans are developed. The described routines imply that the work environment approach is naturally woven into the daily work in an iterative process.

### 2.3. Data Collection

One researcher analysed all risk assessment and action plans carried out at the two care homes in 2009. These included paper versions of the documents filled in by the staff as well as the electronic record system. The number of assessments and number of individuals assigned to the categories "no risk" or "risk" in connection to transfer situations were entered in Excel. Also, the number of completed and documented action plans, and the number of documented interventions were computed in Excel. This was done to get an overview of the use of the instrument for risk assessment and action plan.

A semistructured interview guide was used in focus groups and in individual interviews [22, 23, 24, 25]. The main areas for discussion were the team, the individual elderly residents and the use of the material for assessment and action plan. These areas were selected to obtain the personnel's views on participation when solving daily transfer situations. The areas formed a basis for a discussion of the structured risk assessment method in relation to the staff and the elderly residents. One moderator conducted the focus group interviews, and a co-moderator assisted by writing notes. At the end of the focus group sessions, the participants were asked to rate four written statements on a scale from 1 = *totally disagree* to 5 = *totally agree*. All the interviews were recorded on a digital voice recorder. Focus group

interviews lasted ~40 min each, while individual interviews took ~20 min. The recorded material was transcribed, and the transcriptions were validated against the recorded material.

### 2.4. Analysis

The descriptive data on risk assessment and action plans, compiled in Excel, focused on the number of people, assessments, residents without risk, action plans, and the number of interventions in each transfer situation. Frequencies were computed and treated as nominal data.

The interviews were analysed with qualitative methodology [26, 27] inspired by qualitative content analysis [28, 29]. The objective of content analysis is to provide knowledge and understanding of the phenomenon being studied. The material was read several times to obtain an overview of the content, and meaning units (defined as coherent expressions of meaning comprising one or more sentences) were written down. Subsequently, meaning units were categorized, i.e., similar expressions were assigned to one of three categories (see section 3). One researcher compared the written text with the digital voice recording. Categorization was discussed until a consensus was reached. Written responses to survey questions were treated as ordinal data.

## 3. RESULTS

The results are presented in a quantitative part describing the assessment and action plans, and a qualitative part based on what came out of the interviews. Finally, a short questionnaire describes how focus group participants perceive the work method of risk assessment and action plans.

### 3.1. Risk Assessment and Action Plans

All 50 individual residents at home A and 44 residents home B were assessed according to transfer situations in daily life (Table 2).

Each caregiver completed an assessment for each resident. A total of 318 individual assessments were made at home A and 293 at home B. Out of the 50 residents at home A, 12 were

**TABLE 2. Risk Assessment and Action Plans Regarding Movement/Transfer Situations**

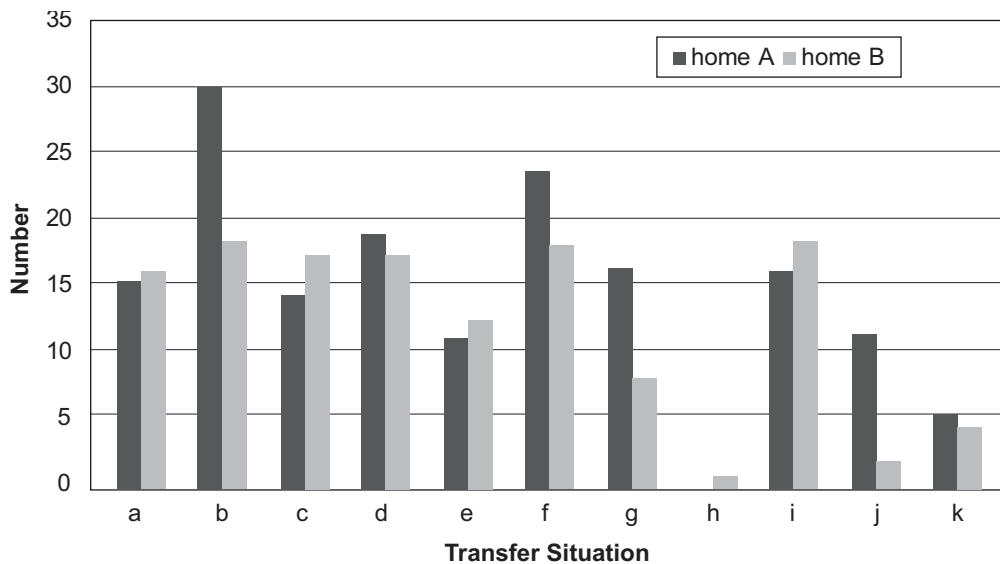
Care Home	Assessed Care Receivers	Ratings	No Risk (%)	Action Plans (%)
A	50	318	12 (24)	38 (76)
B	44	293	14 (32)	30 (68)

judged as not posing any occupational safety and health risk for the staff. For the other 38 residents, the assessments revealed risk in work activities related to transfer situations. In home B, 14 of the 44 residents were assigned to the category “no risk”. Assessments deemed as posing risk, required further action. This intervention routine resulted in specific action plans, with descriptions of measures and procedures for the risk-rated transfer (Figure 1).

Occupational risk was identified in all types of transfer situations within the a–k transfer situations. The personnel determined if moderate risk (yellow marking in the assessment instrument) or severe risk (red marking) was present in situations that were classified as “risk”. All these identified transfer situations were assessed by the occupational therapist, and an action plan was completed in co-operation with staff in the team. The action plans contained various steps for solving the problematic and strenuous elements. Instructions for the current transfer situation were documented for each patient in the documentation system used for the municipality’s elderly care.

The most common situations the staff deemed as posing risk were moving the patient between the bed, wheelchair, shower chair or toilet (30 of 50 residents assessed at home A and 18 of 44 at home B), further up the bed (23 of 50 assessed at home A and 18 of 44 at home B), and further back in the chair/wheelchair when the person had slid forward or sideways (19 of 50 assessed at home A). “Up from the floor after falling” was classified as posing risk for 18 of 44 residents assessed at home B. Risk regarding the other transfer situations was fairly evenly distributed. Action plans were developed and interventions were made if there was a determined risk. All 68 patients connected with a risk required interventions in more than one type of movement/transfer. Figure 2 illustrates the distribution of action plans in connection to transfer situations within the a–k transfer situations.

The results show that, in practice, there was systematic risk assessment at both care homes. Specific action plans and interventions were developed in all individual cases with identified risk. This indicated an improved quality in safety



**Figure 2. Number of transfer situations with action plans and interventions.** Notes. For an explanation of a–k, see Figure 1.

management. Team-based risk assessment and action plans formed a natural component of daily work, in comparison with the previous situation when systematic risk assessment was rarely conducted.

### 3.2. Interviews

The following three categories of information were identified in the analysis: (a) benefits for workers and residents, (b) practical application of the approach, and (c) knowledge and awareness of the systematic work assessment. Sections 3.2.1.–3.2.3. present interviewees' perceptions and expressions related to risk assessment and action plans. The descriptions are presented jointly from both homes for the elderly, since the discussions and aspects during focus groups did not differ between the two work sites.

#### 3.2.1. *Benefits for workers and residents*

Interviewees described the approach of team-based assessment and action plans as beneficial both for personnel and individual residents at the care homes. In one of the focus groups, this was expressed as follows: "It's good that we all can point out our opinion and talk it through with the occupational therapist ... and we are helped to an awareness about the need for changed technique, and it will be better for all of us". Several participants in all three focus groups indicated that they saw value in the approach: "The benefit is that we all are participating. We can make our voices heard in a structural manner". All participants in the focus groups said that the approach was useful for the individual resident: "Absolutely" was the answer of several employees. "It facilitates the care receiver if we have the right tools and conduct the transfer the best way." Some others said, "It is convenient and less painful for old and fragile people with aching bodies".

An occupational therapist said, "If the transfer is performed safely on behalf of personnel's work environment, it is usually lenient also for the care receiver". She pointed out a dilemma that could sometimes be cumbersome: "There might be conflicts between the individual's need for using his/her own capabilities in the moving situation,

and personnel's needs for safe working conditions. Usually you can, as a professional, be able to find a compromise". The approach was beneficial to the staff, and the occupational therapist considered it worthwhile sitting down with the staff, outlining the measures for intervention. This was done to let every employee's comments be heard, to reach the best ideas.

Unit managers stated that it was positive for the residents if transfer situations were performed in a safe and secure manner, "because if a person is moved smoothly, it will be better for all involved ... and I have recognized that the elderly, fragile resident nowadays is enabled to use his/her own abilities in movements and daily activities". The managers pointed out assessments were a concern for the entire work team. They noted that interventions were nowadays more clear and efficient when they were based on the outcomes of team assessments.

#### 3.2.2. *Practical application of the approach*

Procedures for identifying occupational risk were described in the municipality's quality database at the organizational website, available to everyone. The interviews showed that not all staff knew how to find the information. Nevertheless, it turned out that all interviewed staff categories described the procedures surrounding the use of assessment material in much the same way. They expressed that everyone in the team filled in the assessment forms, which the occupational therapist compiled. The occupational therapist discussed the proposed measures and action plans with the team. The staff also described that they often had the opportunity to try different alternatives. There was a consensus about the approach as giving everyone a chance to make their voices heard. Some of the staff said, "and what struck us when talking with the occupational therapist, was that we could perceive it [the specific transfer] so differently. Maybe I feel that a specific situation is not at all hard, while my workmate can find it so strenuous". One staff member did not share the view of the colleagues by stating, "the assessment is easy to understand, but it doesn't work in reality". She thought that the method was theoretical and not really used in practical work. However,

when asking her further about her experience of using the method, it appeared that she recently had returned after 6 months of absence due to sick leave.

Several staff members described particular demands in connection with daily movement/transfer situations. Flexibility and taking into account the current emotional state and varied functional abilities were essential when meeting a patient with dementia in daily life situations. One example of systematic assessment as guiding the staff in finding different strategies for solving specific problems was depicted in a focus group. A strategy, based on flexibility and dignity, was described as follows: "... and you do not need to do the transfer the same way every day. Some mornings, we use the ceiling lift so he will smoothly be placed in the wheelchair, and then he can save his energy to sit and wash himself at the washbasin. After that, he can later be able to use the walker when being more alert. Some other days, when he is really spry, he can walk directly with the walker in the morning". In this example, the systematic assessment was helpful. The measures taken by the occupational therapist, in collaboration with the staff, improved the previous heavy and problematic transfer situations. The occupational therapist stated that it was an advantage to work close with the caring staff, and that time was well spent when discussing the cases in a systematic manner. Experiences were shared during the discussions. New solutions were developed, taking into account the needs of both the residents and the staff.

### 3.2.3. Knowledge and awareness

The following comment is an example of several similar ones in the focus groups, highlighting the achievement of unity by the team-based approach: "It will be a better wholeness by working through the elements step by step. In one case, we have tried several solutions to find the best one. And in one other case, we visited another unit and saw a solution they had tried to this kind of problem".

Unit managers pointed out that they saw the value of the new approach, and they found a developed awareness among the staff. However,

both unit managers and occupational therapists said that such a process required some time to be developed and integrated into daily work. The managers observed that the staff's own responsibility had been enhanced. This was shown in a consistent use of specific facilitating equipment, and in reminding each other about using the agreed transfer technique. The occupational therapists stated the importance of personnel's own awareness of their own working conditions and, hence, having risk assessment in mind. The caregivers themselves were the ones who recognized the obstacles in daily work, and this approach was developed in their own best interest.

Comments from one of the managers support the aforementioned aspects: "The occupational therapist has both perspectives. It may pose great demands on her and might be hard to match both staff's and residents' needs, but until now, it has not caused any problems. If we would use an external occupational therapist on the behalf of the personnel, and our own on behalf of the residents ... in that scenario it would be a conflict". One manager said the criticism from the Work Environment Authority had positive outcomes, although the demands of managers and all involved were tough: "We really had some issues to improve ... we thought we had routines and everything, but they were not familiar to the personnel. After the criticism we have improved a lot, and the hard work gave good results for all of us, for residents as well as personnel."

### 3.3. Questionnaire for Focus Group Interviews

At the end of focus group interviews, the participants were asked to mark one of five possible responses to four statements about working with the team-based risk assessment and action plans. This was done as triangulation, which is a process that allows the researcher to confirm results by making a comparison with other sources [26, 27]. Responses were completed on a 5-point Likert scale (Table 3).

Responses to the four questions indicated that most focus group participants perceived the approach as a participatory working method. Out of the group of 20 participants, 18 were positive

TABLE 3. Perceptions About the Team-Based Method (N = 20)

Opinion	Totally Disagree	Partly Disagree	Neither Agree, nor Disagree	Partly Agree	Totally Agree
Teamwork around risk assessment and action plan is good.	0	0	2	8	10
The team-based approach results in improvements and effective solutions.	0	0	1	12	7
Everyone in the group has been able to express their views.	0	0	0	3	17
My contribution is important for the teamwork.	0	0	0	6	14

about working with systematic risk assessment and action plan, while two neither agreed nor disagreed. One caregiver did not share her colleague's conceptions about the approach as functional for problem solving and improving work conditions. All participants said they had been able to make their voices heard, and that everyone's contributions were important for the working team, though they were divided in opinions of *partly agree* and *totally agree*.

### 3.4. Summary of Results

The study aimed to examine the usefulness of team-based risk assessment and action plans in patient transfer situations. The results of the analysis indicated that the method was a suitable participatory method for improving work at care homes. The findings are supported by (a) an evaluation showing that action plans and interventions in practice were made in all cases with identified risk; (b) interviews with caring staff, occupational therapists and unit managers showed a unanimous view of the approach as a good method with benefits for both employees and residents; and (c) a short questionnaire in connection with focus groups showed the method was suitable for improving work.

## 4. DISCUSSION

### 4.1. Risk Assessment

Risk assessment needs to be conducted continuously, as an iterative and cyclic process. This corresponds to Directive 89/391/EEC [18], which states that assessments should be reviewed at regular intervals. This means that each staff member has responsibility for keeping up with current

information on the movement/transfer situation of the care receiver. The approach of team-based risk assessment gives every individual the opportunity to reflect on various moving/transfer situations at work, and also an opportunity to rank the risk. The prerequisite for such risk assessment is that the personnel develop a knowledge and awareness of risk and solutions, and knowledge of systematic management of the working environment. The interviews show that it is essential to raise the personnel's awareness of reflecting about their daily work. Daily situations often range from helping care receivers with changing body position in bed; helping them in and out of bed, into and out of a wheelchair or a shower chair, to and from the toilet; and giving manual support at training to walk [4, 9, 10, 30].

### 4.2. Perspectives in Elderly Care

Having two perspectives in mind, both workers' and care receivers', is a challenge. It is essential to remember about these perspectives as guidance when performing risk assessment in the care of the elderly. This stands in line with Kindblom's assumption that both personnel's and care receivers' resources can be mobilized, resulting in less strain for the staff as well as increased independence of the person receiving care [11]. Kindblom developed a staff education method based on natural movements, which is similar to Dewey's learning by doing, a utility-oriented approach [31]. Care providers learn from their own experiences of the natural movements, and use their understanding when supporting care receivers' abilities in moving tasks. The participative impact is essential and empowering for both parties in the daily transfer situations. Also, the cyclic



process is fundamental for reaching an on-going assessment and action process.

The usefulness of the approach in this study is twofold, resulting in benefits for both the staff and care receivers. The various quotes in section 3 prove that. A movement/transfer that is performed in a safe and secure manner can be seen as a nice, active and creative contact in everyday life between staff and the person receiving care. A safely and securely carried out transfer also means that staff can avoid the risk of being involved in a strain or injury when performing the task [9, 10, 12]. This study points to safety issues as intertwined between the personnel and care receivers. Thus, it is essential, with a resource such as an occupational therapist or physiotherapist in elderly care, to highlight the perspectives of both personnel and residents. This study shows the value of managers and other responsible staff regularly pointing to the importance of systematic risk assessment. This issue may very well be raised as a discussion point at regularly held staff meetings. The safety representatives can play an active role in anchoring the approach among the employees, and keeping the systematic risk assessment work alive in daily tasks [16].

#### **4.3. Team Work as a Means to Achieve Work Safety**

The approach with team-based risk assessment requires active co-operation of several professions, e.g., the personnel involved at the work place. The following definition illustrates the dimension of team work in health care, which emphasizes the participative perspective: "A dynamic process involving two or more health professionals with complementary backgrounds and skills, sharing common health goals and exercising concerted physical and mental effort in assessing, planning, or evaluating patient care. This is accomplished through interdependent collaboration, open communication and shared decision-making. This, in turn, generates value-added patient, organizational and staff outcomes" (p. 238) [32]. This study provides knowledge and understanding of how personnel using a method of team-based risk assessment and action plans

perceive their work. Most looked considered the method efficient for identifying risk connected with movement/transfer situations; they also found the team approach helpful in solving obstacles in such situations. Only a few staff members did not share their colleagues' view. It is disputable whether gender could influence the findings in this study as most participants were female. Nevertheless, the selection of participants reflects the overall gender distribution among staff at the two care homes, and most likely also at other homes of this kind.

#### **4.4. Mutual Benchmarking for Safety Management**

In this case, the developed holistic risk management procedure provides both individual employee and their organization with new safety and health-focused competencies, as does the HSEQ for production organizations and their supply chains [20], and all corresponding organizations that provide special courses for individuals employed by the process industry and its partner companies [33]. Both sectors, elderly care and production in manufacturing and process industries, involve heavy physical load and risk of injury. However, their causes are different: the former is mainly linked to interaction between the staff and other people, whereas the latter is linked to interaction of the staff with tools, machinery, raw materials and goods. The risk assessment procedure in this study is probably quite unique in the sense that it involves the personnel as well as others in the assessed work system. In addition, this is realized through a participatory process.

We consider purchaser–supplier collaboration, following private company practices, to be necessary in public municipality services. Frequently, not only in Finland, the supplier's employees work together, in the same shared workplaces and conditions as the purchaser's employees. The public purchaser, though often "buying" from own municipal supplying division, needs to manage these activities like industrial manufacturing companies do at their best. In the past decade, private alternatives were developed as a complement to municipality's elderly care in Sweden.

So, as we emphasize, it is a case of mutual benchmarking and bench learning to guarantee a high quality of working conditions and risk prevention. That is why we draw connections between this study's safety management and the HSEQ in the Finnish process industry.

#### 4.5. Methodological Considerations

The strength of this study was the use of purposeful sampling, which was made to obtain rich information. Purposeful sampling is often used in qualitative research [26, 27]. Assessments from the entire staff at both care homes in the municipality were included. This means that the researchers were able to go through the entire material of risk assessment connected with movement/transfer situations and musculoskeletal disorders at the two homes. The selection of participants in focus groups could be discussed, as the managers of the homes made the selection. Practicality was the main reason for choosing this selection method. This means that the manager selected personnel who were on duty on the date of the interview.

A comparison with care homes from other municipalities could have strengthened the findings of this study. This shortcoming is due to the fact that the team-based risk assessment method in patient transfer situations is new, and could only be found in one municipality in northern Sweden.

The fact that this study does not include a before–after comparison by quantifying or measuring statistical data can be seen as a limitation. However, as the scope of the study was to gain the personnel's experiences from their reality at their work sites, methods such as individual and focus group interviews were used [22, 23, 24, 25, 26, 27].

Qualitative research gives an opportunity to highlight the participants' experiences or perceptions of a current situation or phenomenon, which are not fully known. It is characterized by using "the interviewee's voice" in the material, e.g., using quotations as illustrations. Thereby, interviews were chosen to grasp these qualitative aspects. Qualitative content analysis is common when handling qualitative data in the analysis

phase. During this process, similar data is sorted together into themes, which generates the essence of participant's experiences [28, 29].

Interviewing demands qualified skills and an ability to communicate and interact effectively. The researcher must be skilled at listening to what the interviewees are really expressing, and also must have analytical skills and objectivity when judging the data. Different methods can be used to avoid researcher bias. In this study, one researcher held the recorded focus groups, while a co-moderator took notes. The researcher transcribed the recorded data, which was validated against the recorded material. The collection from several data sources, comprising a written analysis of risk assessment and action plans carried out by the staff, interviews and a short questionnaire, improves the quality of the data [25, 26, 27].

## 5. CONCLUSIONS

The present study indicates that the applied approach of team-based risk assessment and action plans is perceived by the staff as an efficient participatory approach. The process takes into account the staff's and the residents' needs. Professionals, such as occupational therapists and unit managers, acting as facilitators and enablers of the process are a precondition for implementing and integrating this method in daily work.

## REFERENCES

1. Swedish Work Environment Authority. Arbetsmiljöstatistik [Occupational accidents and work-related disease] (Report 2006:4). Stockholm, Sweden: Swedish Work Environment Authority; 2006. In Swedish, with a summary in English.
2. Ono Y, Lagerström, M, Hagberg M, Lindén A, Malmer, B. Reports of work-related musculoskeletal injury among home care service workers compared with nursery school workers and the general population of employed women in Sweden. *Occup Environ Med.* 1995;52(10):686–93. Retrieved June 20, 2013, from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1128335/>.

3. Burdorf A, Sorock G. Positive and negative evidence of risk factors for back disorders. *Scand J Work Environ Health*. 1997;23(4): 243–56.
4. Engkvist IL, Hjelm EW, Hagberg M, Menckel E, Ekenvall L. Risk indicators for reported over-exertion back injuries among female nursing personnel. *Epidemiology*. 2000;11(5):519–22.
5. Yassi A, Cooper JE, Tate RB, Gerlach S, Muir M, Trottier J, et al. A randomized controlled trial to prevent patient lift and transfer injuries of health care workers. *Spine (Phila Pa 1976)*. 2001;26(16): 1739–46.
6. Martimo KP, Verbeek J, Karppinen J, Furlan AD, Takala EP, Kuijter PP, et al. Effect of training and lifting equipment for preventing back pain in lifting and handling: systematic review. *BMJ*. 2008; 336(7641):429–31. Retrieved June 20, 2013, from: <http://www.bmj.com/content/336/7641/429?view=long&pmid=18244957>.
7. Koppelaar E, Knibbe JJ, Miedem HS, Burdorf A. Determinants of implementation of primary preventive interventions on patient handling in healthcare: a systematic review. *Occup Environ Med*. 2009;66(6):353–60.
8. Brulin C. Musculoskeletal symptoms among home care personnel. Risk factor analyses [doctoral dissertation]. Umeå, Sweden: Umeå University; 1998.
9. Kjellberg K. Work technique in lifting and patient transfer tasks doctoral dissertation. (*Arbete och Hälsa* No. 2003:12). Stockholm, Sweden: National Institute for Working Life; 2003. Retrieved June 20, 2013, from: [https://gupea.ub.gu.se/bitstream/2077/4298/1/ah2003\\_12.pdf](https://gupea.ub.gu.se/bitstream/2077/4298/1/ah2003_12.pdf).
10. Carlsson R, Ekman SL, Lagerström M. Innebörden av patientförflyttning berättat av sjukgymnaster och sjuksköterskor [The meaning of patient transfers, in the narratives of physiotherapists and nurses]. *Vård i Norden*. 2002;(1):37–41. In Swedish, with an abstract in English.
11. Kindblom K. Movement awareness and communication in patient transfer—an educational intervention [doctoral dissertation]. Stockholm, Sweden: Karolinska Institutet; 2009. Retrieved June 20, 2013, from: <http://publications.ki.se/xmlui/bitstream/handle/10616/38050/thesis.pdf?sequence=1>.
12. Wångblad C, Ekblad M, Wijk H, Ivanoff SD. Experiences of physical strain during person transfer situations in dementia care units. *Scand J Caring Sci*. 2009;23(4): 644–50.
13. Swedish Work Environment Authority. Ergonomics for the prevention of musculoskeletal disorders (AFS 1998:1). Stockholm, Sweden: Swedish National Board of Occupational Safety and Health; 1998. Retrieved June 20, 2013, from: <http://www.av.se/dokument/inenglish/legislations/eng9801.pdf>.
14. Swedish Work Environment Authority. Manual handling (AFS 2000:1). Stockholm, Sweden: Swedish National Board of Occupational Safety and Health; 2000.
15. Hignett S, Fray M., Rossi MA, Tamminen-Peter L, Hermann S, Lomi C, et al. Implementation of the Manual Handling Directive in the healthcare industry in the European Union for patient handling tasks. *Int J Ind Erg*. 2007;37(5):415–23.
16. Swedish Work Environment Authority. Systematic work environment management (AFS 2001:1). Stockholm, Sweden: Swedish National Board of Occupational Safety and Health; 2001. Retrieved June 20, 2013, from: <http://www.av.se/dokument/inenglish/legislations/eng0101.pdf>.
17. Work environment act (SFS 1977:1160). Stockholm, Sweden: Government Offices of Sweden. Retrieved June 20, 2013, from: <http://www.government.se/content/1/c6/10/49/76/72d61639.pdf>.
18. Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work. *OJ*. 1989;L183: 1–8. Retrieved June 20, 2013, from: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989L0391:en:HTML>.
19. Kjellén U. Prevention of accidents through experience feedback. New York, NY, USA: Taylor & Francis; 2000.
20. Väyrynen S, Koivupalo M, Latva-Ranta J. A 15-year development path of actions

- towards an integrated management system: description, evaluation and safety effects within the process industry network in Finland. *International Journal of Strategic Engineering Asset Management*. 2012; 1(1):3–32.
21. Wilkinson G, Dale, BG. Integrated management systems. In: Dale BG, van der Wiele T, Iwaarden VV, editors. *Managing quality*. 5th ed. Chichester, UK: Wiley-Blackwell; 2007. p. 310–35.
  22. Wibeck V. Fokusgrupper. Om fokuserade gruppintervjuer som undersökningsmetod. [Focus group interviews as research method]. Lund, Sweden: Studentlitteratur; 2000.
  23. Langford J, McDonagh D. *Focus groups. Supporting effective product development*. London, UK: Taylor & Francis; 2003.
  24. Ivanoff SD, Hultberg J. Understanding the Multiple Realities of everyday life: Basic Assumption in focus-group methodology. *Scand J Occup Ther*. 2007;13(2):125–32.
  25. Barbour R. *Doing focus groups*. London, UK: Sage; 2007.
  26. Patton, MQ. *Qualitative research & evaluation methods*. 3rd ed. Thousand Oaks, CA, USA: Sage; 2002.
  27. Silverman D, editor. *Qualitative research. Theory, method and practice*. 2nd ed. London, UK: Sage; 2004.
  28. Downe-Wamboldt B. Content analysis: method, applications, and issues. *Health Care Women Int*. 1992;13(3):313–21.
  29. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Online J Issues Nurs*. 2004;9(3):4. *Nurse Educ Today*. 2004;24(2):105–12.
  30. Nelson A, Baptiste AS. Evidence-based practices for safe patient handling and movement. *Online J Issues Nurs*. 2004; 9(3). Retrieved June 20, 2013, from: <http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume92004/No3Sept04/EvidenceBasedPractices.aspx>.
  31. Dewey J. *Democracy and education*. 1916. Retrieved June 20, 2013, from: <http://www.gutenberg.org/files/852/852-h/852-h.htm>.
  32. Xyrichis A, Ream E. Teamwork: a concept analysis. *J Adv Nurs*. 2008;61(2):232–41.
  33. Väyrynen S, Hoikkala S, Ketola L, Latva-Ranta J. Finnish occupational safety card system: special training intervention and its preliminary effects. *International Journal of Technology and Human Interaction*. 2008; 4(1):15–33.