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RE-EDUCATION OF GOOD ERGONOMICS IN NURSING FOR
SUOMIKOTI

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The aim of this thesis was to promote and “refresh” the good ergonomics in nursing for Suomikoti in Sweden. The author noticed the need for re-education or “refreshment” of the nursing ergonomics among the permanent personnel as well updating knowledge of functioning of the existing assistive devices. Suomikoti has already a good and comprehensive transfer and ergonomics education and practical training for new employees arranged by their own physiotherapist and occupational therapist. It covers use and maintenance of different assistive devices used in Suomikoti and practical training of good ergonomics.

Occupational accidents can be generated by lethargy and weakening ability to function caused by shift work. Shift work is exhausting and the wellbeing of the staff is a daily concern. Hurry, stress and fatigue lead poor working postures and ergonomics in nursing. Therefore it would be worthwhile checking to effective solutions. Regular leisure-time physical activity has been found to be associated with more positive mood, general feeling of well-being, as well as lower level of anxiety. Exercise training in addition to the meal regularity, is important for shift worker’s well-being, as the changing working hours affect mealtimes. Regular meals rhythm also change the day program and may help in adapting to shift work.

Health care deals with everyday life with heavy patients and a lot technology is used. Occurred burden handling accident may be a starting point years of sustained musculoskeletal problems. Physically the most loading work is experienced in long term health care and in elderly home care. For this reason, care facilities, transfer assistive devices, personnel transfer skills and knowledge must be invested in. Reducing the workload and the promotion of safe working conditions require sustained activity and good management.

The purpose of this thesis is to create an educational material of good ergonomics in nursing for permanent nursing personnel in Suomikoti. The presentation material is for Suomikoti use only. This work is intended to increase public awareness of existing solutions and ergonomics and encouraged to adopt them. The work also includes the theory about shift works challenges to workers and practical tips for nursing personnel to have active daily living to prevent fatigue at work.

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1 INTRODUCTION

Physical and mental loading in nursing has increased during the last ten years. Work is most loading in those care places where elderly people and poorly moving patients are taken care of. In addition patients' lifts and transfers repeated bent and twisted back positions are according to researches evident risk factors for back pain. Adding here constant standing, walking, hurry and work psychosocial factors, it is not surprising that many loading factors appear abundant musculoskeletal symptoms and diseases and force nursing personnel to early retirement. (Tamminen-Peter, Moilanen & Fagerström 2015, 5.)

In nursing human body is a tool. Nursing work is medium-heavy work, which requires good physical condition and body movements control i.e. motor skills from personnel. Body movements and management is emphasised in un-expected work situations, when you have to react quickly and change movement according to new situation. (Tamminen-Peter, et al. 2007, 24.)

Shift work and irregular working hours are more harmful to health and vitality than regular day job. However, atypical working hours have increased, as a developing technology, and the rapid internationalization of the working-day society are forced the normal circadian rhythm failure. Shift work is exhausting and wellbeing of staff is a daily concern. Therefore it would be worthwhile checking to effective solutions. (Ronkainen 2013, 5.)

2 PURPOSE AND AIM OF THESIS

The aim of this thesis was to promote and "refresh" the good ergonomics in nursing for Suomikoti in Sweden. The purpose of this thesis is to create an educational material of good ergonomics in nursing for permanent nursing personnel in Suomikoti. Good ergonomics includes also work wellbeing and prevention of shift work health problems. The author noticed the need for re-education or "refreshment" of the nursing

ergonomics among the permanent personnel as well updating knowledge of functioning of the existing assistive devices. Suomikoti has already a good and comprehensive transfer and ergonomics education and practical training for new employees arranged by their own physiotherapist and occupational therapist. It covers use and maintenance of different assistive devices used in Suomikoti and practical training of good ergonomics.

3 THESIS PROCESS

Below is listed the thesis process schedule. During the process the author had meetings with the tutor teacher and ongoing process was updated also in the class group thesis meetings. The thesis process was started in summer 2015 and graduation was planned in the beginning of autumn 2016.

Table 1. Thesis process schedule

Idea from summer job 2015	6-8/2015
Refreshing idea with the tutor teacher	4.9.2015
Creating thesis template	21.9.2015
Library meeting	22.9.2015
Presenting study plan 1. seminar (5 cr)	28.9.2015
Agreement with Suomikoti	9-10/2015
Theory reading	9/2015-5/2016
Writing thesis	10/2015-8/2016
Presenting 2. seminar (5 cr)	6/2016
Thesis presentation	26.8.2016

4 SUOMIKOTI INTRODUCTION

Suomikoti is a residential community within the meaning of Finnish-speaking elderly permanent housing. Suomikoti locates in Stockholm in Sweden. There is 53 apartments and all have cooking facilities and a large bathroom; there is 17 nursing home and 36 dementia apartments. Suomikoti can receive the spouses. There is a sauna, which also relatives can reserve. Outdoors there is a garden and a greenhouse. (Website of the Suomikoti 2015.)

The staff is educated. The doctor, who is specialized in elderly diseases (geriatric) is Finnish, and he has a reception once a week. Suomikoti has a physiotherapist and an occupational therapist. Aim is to provide Finnish elderly mode of living, which is a high-quality, safe and activating. Finnish language is used in Suomikoti and Finnish traditions are followed. Suomikoti has a residents' council, which meets about once in a month. At the meetings the residents will discuss topical issues related to housing and receive information about upcoming events. Relatives gather a couple of times a year to discuss housing and activities. (Website of the Suomikoti 2015.)

Applying to Suomikoti progresses following: Stockholm residents should contact their municipality board and the contact person will settle this matter. In other municipalities, residents should consult their municipality elderly care service. Suomikoti will inform about released place to elderly and offer must be answered within a few days. (Website of the Suomikoti 2015.)

4.1 Suomikoti Association

Suomikoti Association is the owner of the Suomikoti. It is a non-profit organization, the purpose is to organize elderly care for the Finnish-speaking Finns. The members decide in the annual meeting about future activities and financial guidelines. The entire surplus is used to develop activities. The Executive Board is responsible for the annual meeting activities and budget. The Executive Board shall not be remunerated for their work. (Website of the Suomikoti 2015.)

4.2 Suomikoti history

The Suomikoti Association was founded in January 1989. The initiative was by Hilja Jensen, who in the 1960's realized that Stockholm would require a Finnish speaking nursing home when a large group of emigrants became old at the time. She worked in the elderly care home where Finnish speaking was forbidden. (Website of the Suomikoti 2015.)

The association was contacted by the Stockholm Convention and requested that the need for the Finnish nursing home were surveyed. Research showed that the need was high, which gave impact to the association operations. Suitable premises were found in the county council of Sabbatsberg the hospital area. The building was an old pathology facility, and construction of facilities for new uses required major change. (Website of the Suomikoti 2015.)

Suomikoti began operating in 1995. The house received a special permit from the provincial government for its operations, although all apartments did not have their own toilets and showers. Apartments were for a total of 49. When the plans for a new residential area in Sabbatsberg, Suomikoti was forced to move place in 2006. Operations were temporarily for a few months in Bromma hospital until November 2006 was reached to relocate the existing premises in Enskede. (Website of the Suomikoti 2015.)

4.3 Suomikoti activities

Suomikoti was the first Finnish language elderly care home in Sweden. Activities have varied during years. Friend service began when first residents moved to Suomikoti. Day activity for Finnish pensioners began in 1996 and continued couple of years. This activity was ended because association did not have contracts with municipalities. Re-activation of this has been under discussions several times, but it is considered to require too many resources at the expense of other activities. (Suomikoti; Korkealaatuista vanhustenhuoltoa ja -hoitoa suomeksi! 2015, 26-27.)

In recent years activities have been developing various routines and organization, because operation is controlled by authorities and they require more and more documentation about residents care. The most important goal is to improve operation quality same as taking care of required documentation to authorities. Based on inquiries, nowadays potatoes are cooked and food is heated in every department's own kitchen. Cooked food smell stimulates the appetite and beautiful table setting adds comfort. (Suomikoti; Korkealaatuista vanhustenhueltoa ja -hoitoa suomeksi! 2015, 26-27.)

Since 2007 Suomikoti has had an occupational therapist, who is responsible for activating residents. The physiotherapist, who is responsible for resident's physical well-being, has worked from the beginning of Suomikoti foundation. Nowadays there is also a medical pedicurist. Other activities are e.g. karaoke, music and dances. Also garden is very popular during summer time. Raised breeding grounds are accessible also for wheelchair resident's to participate for gardening. (Suomikoti; Korkealaatuista vanhustenhueltoa ja -hoitoa suomeksi! 2015, 26-27.)

4.4 Ergonomics in Suomikoti

Below is listed existing transfer and ergonomics education content in Suomikoti. Physiotherapist Birgitta Mäki and occupational therapist gives education to other personnel. Ergonomics education is based on LIKO competence (www.liko.com). Social law and regulation requires ergonomics education as well. This ergonomics education content is given to all employees, also summer workers. (Mäki personnel communication 2.10.2015 and 5.10.2015). LIKO organizes STAMP program (Safe Transfers and Movement Program) developed by Hill-Rom. Liko is an expert in the field of patient transfers and patient solutions. Liko's product portfolio includes lifts, slings and lifting accessories. (Website of the Hill-Rom 2016.)

Table 2. Existing transfer and ergonomics education material in Suomikoti

Lyftkorkort "Lifting licence" theory and practice
Laws and social guidelines of Board
What is ergonomics?
What studies shows about manual transfers?
When injuries happen in nursing/transfer situations?
What are the signs of overloading back?

Back anatomy, disc/soft tissue damages, development of disc prolapse
What to notice in manual transfer? Prevention. Working postures.
How do you take care of your physical fitness?
Discussion
How do you prepare with your work pair transfer situation?
Basic principles of using transfer assistive device; using natural movement patterns, giving time to inhabitant and possibility to participate to transfer, working close inhabitant and using short lever arm, back straight, shoulders down, no twisting movements to body etc.
Practicing weight shifting in shoulder width standing position and in sideways – what is the difference? Applying to practical work situations.
Repetition and going through assistive devices and slings.
Finally written exam. After exam going through questions.
Certificate: Lyftkörtkort “Lifting licence”

In the above table is listed the topics of the ergonomics education. The ergonomics education is held in two parts; first part is more practical training and in second part everything is refreshed again but more in a theory kind of lesson. Assistive device part is the most time consuming part; acute transfer- and lift assistive devices, two types of standing lifts and all used slings. Personal assistive devices used per resident are checked through as well. Verbal guidance is emphasized a lot, it is a Finnish way of working. Suomikoti pays “Friskvård” wellbeing money to personnel annually 2000 SEK/person. Personnel can use it for various sport or culture activities in their leisure time. Birgitta Mäki also agrees that continuous ergonomics education is beneficial both for employees as well as Suomikoti and its resident’s wellbeing. (Mäki email 15.7.2016.)

5 ERGONOMICS

The aim of ergonomics is to develop physical activities as a whole, so that it is suitable with specific needs of power and repetitions for humans. A good work result is to be achieved, so that the employee’s resources and the working and functional capacity are maintained as long as possible. The word ergonomics comes from the Greek works ergo (work) and nomos (natural laws). (Website of the Työterveyslaitos 2015.)

Ergonomics is studying and developing of human and operating system's interaction, productivity, efficiency and well-being improvement. With help of ergonomics; work, tools, work environment and other operating system are adapted to meet human needs and characteristics. Ergonomics helps to improve human safety, health and welfare, as well as smooth and efficient operation of the system. (Website of the Ergonomiayhdistys ry 2011.)

International Ergonomics Association specifies that ergonomics (or human factors) encourages a holistic approach in which aspects of physical, cognitive, social, organizational, environmental and other relevant factors are taken into account. Cognitive ergonomics means perception, memory, reasoning and motor response as they affect interactions among people. Topics can include mental workload, work stress and decision-making. Organizational ergonomics includes organizational structures, policies and processes. It is recognized in terms personnel management, working hours design, co-operation and working in teams. Physical ergonomics focuses on the human anatomical, physiological and biomechanical characteristics in relation to physical activity. Relevant topics include working positions, handling materials and equipment's, repetitive movements, work related musculoskeletal disorders, work environment layouts, safety and health. (Website of the International Ergonomics Association 2015.)

6 PHYSICAL LOADING IN NURSING

Health care deals with everyday life of heavy patients and technology is used a lot. Accident insurance statistics shows that every year in Finland happens about 18000 burden handling accidents, of which 2000 happens in health care. Occurred burden handling accident may be a starting point years of sustained musculoskeletal problems. For this reason, care facilities, transfer assistive devices and personnel transfer skills and knowledge must be invested. (Website of the Työterveyslaitos 2015.)

The welfare of employees and work productivity are the major challenges in health care. Work spaces, work processes, workplace concepts and tools as well as the design of safe working methods and learning will require a more efficient utilization of ergonomics knowledge. The majority of the new jobs are created in social and health care. (Website of the Työterveyslaitos 2015.)

By work and health 2009 survey in social and health care work appears difficult and uncomfortable working postures and heavy lifting. Many of the tasks involves a lot of standing and walking. Lifting with hands is common; more than 25 kg loads are handled more often than in most other industries. Physically the most loading work is experienced in long term health care and in elderly home care. Development challenges are related to work physical loading, personnel management, mental stress and threat of violence. (Website of the Työterveyslaitos 2015.)

Earlier researches shows, that good transfer skill and using assistive devices decreases physical loading at work. Reducing the workload and the promotion of safe working conditions require sustained activity and good management, particularly from close superiors. (Hellstén 2014, 33.)

6.1 Musculoskeletal loading and prevention in nursing

Nursing work is both physically and mentally loading. In suitable amount loading is beneficial for health, but in case excessive amount of loading or loading continues a very long time, its effect changes to negative. Different musculoskeletal disorders, such as fatigue, stiffness and searing pain are common in many fields. In care work profuse walking, frequent occurred bending and overall assisting in patient transfers increase occurrence of symptoms and degree of difficulty. Also prolonged, less overloading can lead tissue temporarily or long-term damage and the consequent symptoms. Psychosocial and mental factors affects to occurrence and duration of symptoms. (Tamminen-Peter & Wickström 2013, 11.)

Fluency and productivity in health care work can be improved for example by developing ergonomics. Employee's well-being and safe care of the patient in health care

requires: effective and adaptable work spaces, smooth and efficient working processes, ergonomic and adjustable workstations, user-friendly tools and safe and low loading working methods, in particular patients' transfers. (Website of the Työterveyslaitos 2015.)

In rehabilitative nursing essential is take advantage of patient's own resources and ability to move. The nurse has to recognize patient's resources and limitations for moving. In addition nurse needs to know active interaction in patient's guidance. Nurse should work in a good, balanced position and exploit transfer assistive devices and environment appropriately. Variations in patient's conditions and unpredictable movements causes dangerous situations, which are difficult to predict. Nursing personnel needs to be aware of these and recognize danger related to these unpredictable situations. (Tamminen-Peter, Moilanen & Fagerström 2015, 16-17.)

The risk factors for back pain are large or long-lasting physical loading; repeated down bending's or liftings, static working postures or trembling. Psychosocial factors may prolong or worsen back symptoms. Examples are anxiety, depression, dissatisfaction to work or work's excessive mental stress. Back pain risk factor is also passive lifestyle. Best back pain treatment is its prevention. Prevention should begin already early in childhood by motivating physically active lifestyle and promoting good working postures and working methods. Physically active lifestyle maintains or improves body muscle strength and management. Through this it prevents back pain and its recurrence, shortens relapsed back pain duration and reduces back pain sick leaves at work. (Talvitie, Karppi & Mansikkamäki 2006, 309, 311.)

6.2 Patient transfers

Physically loading work tasks in care work are assisting patient's movement and lifts and lifting and transfers done with hands. Transfers done with hands means using muscle power to transfer burden by lifting, lowering, pushing, pulling, carrying or rolling. The basic principle is to avoid lifting patient with hands and long term working in bad posture. (Website of the Työterveyslaitos 2015.) In picture 1. is shown correct posture in patient transfers.



Picture 1. Correct posture in patient transfers. (Website of the Corpmed 2016)

Very common is by either one or two nurses performing lifting under the armpit (lifting dragging). It has been found for nurse biomechanically strained and uncomfortable for the patient and it may cause resisting behavior. For hemiplegic patient it may cause soft tissue damages to shoulder area. Grapping the armpit or arm prevents patient from using the arms and thereby participation to transfers. (Website of the Työterveyslaitos 2015.)

Nurses experienced patient transfers made by roof lifts lighter than with sling lift. Using roof lifts is more ergonomic compared to other lift types because it is easily available and its moving is easy. Research shows that about an hour education of lift user training is not enough, that for ergonomic use you need more time in user education.

Recommendations for good ergonomics:

- Patient lift assistive devices use is recommended because use is fast and physically lighter for nurses.
- Using roof lifts is lightest but sling lifts are needed to enable lifts at floor outside of the rails.
- Before purchasing lifts compatibility to other assistive devices is recommend to notice.
- When remodel or renovate buildings, planning roof rails is important.
- In roof lifts most functional and also most expensive is H-rail system, which covers whole room.
- In development patient lifts usability, users, patients and nurses needs to be noted, environment and other assistive devices in the room.

- Standing assistance use supports rehabilitation promoting nursing, because in standing position patient puts weights to own legs and maintains body in upper position during transfer. (Fagerström & Tamminen-Peter 2010, 125-127.)

Results from Leena Tamminen-Peter's 2005 study "The physical strain when assisting a patient to move – An ergonomic evaluation of three transfer methods" shows that the better the nurse's skill, the greater comfort, safety and control patients experienced when being transferred. The study shows that the patient's support from somewhere other than the nurse is an important factor in decreasing the physical load of the nurse. Also patients are better able to participate in their transfer, when nurses learned to activate them more effectively and gave them more time and space to do so. Practical tips for nurses when assisting patients in transfers: activate patient verbally and by facilitating those muscles, which are needed in transfer. Nurses should give time for patient to activate own muscles, nurse waits for patients move. Nurses works mainly besides of patient and moves along with patient's movement. Nurses should give patient a support where to take support. Taking support gives safety to patient and secures weight sifting to legs. Nurse should not grab patient from arm pit but guides movement from hip and back. Patient is guided based on normal basic movement patterns. Nurse avoids reaching and bending and works so that own weight stays on top of foot and back is straight. (Tamminen-Peter 2005, 5, 91-92.)

6.3 Working postures in nursing

The basic principle is to avoid lifting patient with hands and long term working in poor posture. This requires the availability of the relevant patient lifts and height adjustable beds, wash levels and shower chairs. In nursing and care work nurses need to use their bodies in various ways and they need to pay attention to their own working positions. Overstretching and bending should be avoided, instead one should work so that the weight stays on top of legs and back is straight. Nurses should take support of own hand or body, for example the edge of the bed in order to reduce the load on back muscles. Working in the floor level should be avoided, but if necessary squat down instead of bending. When assisting the patient movement, one should work legs in "walking position". Then balance is better and movement is smoother, when working

in “legs shoulder width apart standing position”. (Website of the Työterveyslaitos 2015.) Pictures 2. and 3. shows recommended postures and leg positions.



Picture 2. and 3. Recommended postures and leg positions. (Isoheiko 2016)

Manual handling of loads involves a risk of injury. If the burden falls, it can cause an accident, or carrier of the burden can in difficult lifting positions lose own balance, fall off or fall over. Even one wrong done heavy lifting (quick lift) can cause permanent disability. In continuous lifting at work fatigue increases the risk of accidents. (Website of the Työterveyslaitos 2015.)

7 HEALTH PROBLEMS IN NURSING SHIFT WORK AND PREVENTION

Shift work is known to have harmful effects on health. The most common irregular work-related problems include sleep disturbances, fatigue, gastrointestinal symptoms, metabolic disorders, heart and circulatory diseases, breast cancer, mental health symptoms, stress-related disorders, risk of accidents and reproductive health static. The main reason behind symptoms and diseases in irregular working time arrangements is physiological disruption of circadian rhythms. There are also psychological and social effects in rhythm disturbance. In addition to mixing with the daily rhythm disorders can predispose also unhealthy changes in lifestyle, such as smoking, poor diet and excessive alcohol consumption. For unsocial hours social stress factors can cause

symptoms and long-term exposed to a variety of diseases. Occupational accidents can be generated by lethargy and weakening ability to function caused by shift work. (Ronkainen 2013, 11.)

Shift work health problems can be prevented by regular working time arrangements, regular health checks allows and including healthy lifestyle. Shift workers will benefit more likely performing healthy lifestyles, such as regular exercise and a varied diet. Occupational health services should pay particular attention to the shift workers for prevention of health risks and improving health habits. (Ronkainen 2013, 16.)

Below is listed shift workers tips for recovery of work based on Tuukka Ronkainen pro gradu. (Ronkainen 2013, 72.) Every 3-5 hours consumed regular meal rhythm would be beneficial. The main meal would be good to schedule in the beginning of the work shift. Aim to eat a warm meal according to plate model. Official plate model example by the National Nutrition Council picture 4. is below. Remember to drink enough during the work shift. Regular meal rhythm is a way of life that should be adopted without much of effort. Breaks have been made just for you, so use it for the benefit of time and enjoy your snacks. The most important task of regular eating is to prevent the excessive hunger and keep state of alertness good.



Picture 4. Official plate model guidelines. (Website of the Valtion Ravitsemusneuvottelukunta 2016)

Shift worker should exercise aims to stimulate working day and improve the quality of sleep. Exercise helps to relax and forget about work matters. Enhancing muscle training 1-2 times a week would be beneficial. Exercise does not require a great use of

time, even 10 minutes exercise time has numerous health effects. A brisk outdoor exercise before the shift refreshes positively. Energy levels during the working day can be maintained with a basic fitness condition. (Ronkainen 2013, 72.)

8 RE-EDUCATION MATERIAL OF GOOD ERGONOMICS IN NURSING FOR SUOMIKOTI

The model of presentation formed to be PowerPoint presentation. The presentation material is for Suomikoti use only. In the presentation the author goes through physical risk management and physical loading in nursing work, safe assisting methods and principles, health problems in nursing shift work and prevention, tips for recovery from shift work and practical training for body control and body awareness. In co-operation with Suomikoti's physiotherapist Birgitta Mäki, the author got free hands to plan the content of "refreshment" package. The author hopes to form further discussions of re-education meetings to be regularly arranged for permanent nursing staff at Suomikoti and increase every personnel's own wellbeing.

9 DISCUSSION

The purpose of this thesis was to create an educational material of good ergonomics in nursing for permanent nursing personnel in Suomikoti. Idea was created during my summer work at Suomikoti 2015. I noticed the need for re-education among the permanent nursing personnel by observing their work. There was many possible areas to focus in and the first challenge was to restrict the topic to achieve a comprehensive yet easy to follow study. In ergonomics there are possibilities in assistive device point of view, physical, cognitive, social, organizational and environmental ergonomics point of view. I decided to concentrate on physical loading in nursing and health problems in nursing shift work as well as their prevention.

There are personnel wellbeing, atmosphere and educational development processes ongoing and under development in Suomikoti. The managing department of Suomikoti understands importance within all the areas and they are willing to develop working methods, increase good ergonomics knowledge and improve working atmosphere and environment more convenient to nursing personnel as same as to inhabitants. When we had a discussion about writing thesis to Suomikoti, it got positive and good feedback from the physiotherapist and the executive director of Suomikoti. It was very satisfying to find a topic for real need as a form of “re-educational” package. Suomikoti has a good, variety of modern assistive devices available. I was really interested of Suomikoti’s basic idea to give care in Finnish language to elderly people in Sweden. I noticed that the permanent nursing personnel did not use assistive devices as much as they could have been using. The reason was the hurry or then the lack of knowledge and the thought that using assistive devices would take too much time. Stress and stressful atmosphere was noticed time to time. I also wanted to point it out in my thesis, that choosing healthier in life, everybody can increase their own wellbeing and coping with shift work challenges better.

During my summer work experience I found out how important it actually is having good ergonomics in nursing work. Most of the elderly have several diseases and their ability to move independently is decreased, also inhabitants may be quite heavy and they need help and assistance in all active daily living tasks: transfers, dressing/undressing, toileting, showering, walking and eating. Dementia, memory problems and mental health problems have increased as well and that gives another perspective to be noted in nursing tasks. Nursing personnel have to struggle daily with the matter how much time they can use in assistance of one inhabitant. Inhabitants’ condition and ability level can vary totally day to day and more and more inhabitants need at least two nursing people to help in the tasks. In Suomikoti there is a requirement that in transfers there has to be always at least two assistive persons. That is a very good rule in safety point of view, both personnel and inhabitant, but it causes also timing and scheduling challenges in the department. Having a good, professional and communicating personnel is really important. Even nursing work is physically and mentally loading; positive and supportive atmosphere, environment, other personnel and superiors have a major role in work wellbeing.

Originally the plan was to hold the education session in Suomikoti Sweden by myself, but then I got a permanent job in Finland and could not arrange a trip to Sweden. So I changed the plan and prepared a PowerPoint material for Suomikoti physiotherapist's use. That is why I had to add to the PowerPoint presentation quite a lot written text, as another person will hold the presentation. The material has been produced for Suomikoti use only. The idea was to limit the subject area quite narrow but also to have information as wide as possible. Time limit for one educational session would be around one hour. That is the time that I thought would be reasonable in enabling personnel to participate to education during their working shift.

Finding information and theory was quite easy, as there are a lot of literature of ergonomics in nursing. I used quite a lot Finnish Institute of Occupational Health (Työterveyslaitos) references, as they were clear, versatile and easy to read. The institute is well recognized, professional and widely respected resource and they it has created many teaching material. Having a wider variety in reference content could have had even more professional perspective, but this thesis is not a literature review. In existing ergonomics education material Swedish laws and regulations are presented as they stand, so I did not see a need to focus on them in this thesis. Having a client in Sweden created a distance in co-operation. Having "free hands" at the same time was hard, because no wishes or requests was made by Suomikoti. That made it sometimes difficult decide everything on my own.

Further research areas could be for example different inquiries to personnel; how they feel working environment and atmosphere at Suomikoti, follow up research how assistive devices are used in daily nursing duties, what challenges nursing personnel feel about assistive devices, how daily program could be developed to be less loading to personnel, how knowledge and information flow could be shared to all personnel (meetings when changing shifts, nurse and other personnel meetings), wellbeing inquiries, also creating regularly arranged ergonomics education could be beneficial to personnel. I hope this thesis is a starting point in arranging good ergonomics education. Maybe the threshold of using assistive devices could be decreased and this way physical loading at work could be decreased as well.

I was interested of the topic when doing this thesis, as I have been able to experience the practical nursing duties by myself. One needs to be in good physical condition and remember good ergonomics all the time. I was able to deepen my knowledge about ergonomics and shift workers challenges. I hope with my work I can give some tools to nursing personnel and increase discussions at Suomikoti around this topic. I was sorry for not being able to arrange personal education session by myself at Suomikoti, but on the other hand I am glad to have been able to start working as a physiotherapist already. Writing PowerPoint presentation to the physiotherapist's use was a useful and practical idea. Personnel will receive the PowerPoint presentation or a print out of the practical tips part for themselves.

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