

Working and living with home care – a workplace for one, a home for the other

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As home care increases and care is moving from nursing homes and hospitals into people's homes, there are problem areas that need to be addressed and solved in a better way than today. Nurses and other home care workers are exposed to several risks when the patients' home environment becomes their workplace. There are also several risks for the patients when their homes are transferred into "small hospitals". This paper presents the initial results from a study to identify the need for improvements in the *physical environment* in home care, from the perspective of both employees and patients, and to generate useful and attractive solutions. Interviews and observations were carried out, where staff members from three different healthcare teams in one municipality in Sweden were observed during their care giving shift in patients' homes. The results indicate that care is often provided in a specific place in the home. Inadequate resources for hygiene, working surfaces or lighting result in non-ergonomic work postures, eye strain, and other risks for the practitioner and the patient. Many situations and activities are not performed in a standardized manner but open to individual differences. The interviews turned out to be the wrong approach for identifying the need for improvements, while observations through shadowing proved to be more suitable.

Practitioner Summary: The amount of advanced care and technology being moved into ordinary homes is increasing. This creates the need for a physical design of the interior of the home environment which decreases the risks for both staff and patients, and creates a pleasant home environment. This study identified various objects and work situations that need improvement. Many of the homes visited lacked support for ergonomic work postures, hygienic work surfaces, adequate lighting and appropriate places to store materials.

Keywords: Home care, work environment, ergonomics, home

1. Introduction

According to the Swedish National Board of Health and Welfare, there were approximately 184,400 people (of a population of 9.3 million) who received home care in Sweden in 2008 (The Swedish National Board of Health and Welfare, 2009). Of these, nearly 50% were in the age span of 80-89 years. This is not only a Swedish phenomenon but is recognized on an international level as well (Rechel et al., 2013). Both the number of people cared for at home as well as the proportion of advanced care is increasing continuously.

When care moves into the home environment the home also becomes a workplace for a number of professionals, mainly nurses and home care staff, but also paramedics, technicians, doctors and other professionals who visit the home. Since the home environment is not under the employer or employee's control, additional challenges exist that are unique for providing care in a home environment. National statistics from the US show that in this context, the work environment contains several risks (U.S. National Institute for Occupational Safety and Health, 2010). Sprains and strains due to the excessive use of force when lifting, pushing or pulling, or awkward work postures are examples of common reasons for home care employees' absences due to sick leave. Other examples include unsanitary conditions, slips and falls, and risks when moving between homes, risks that should be avoided according to today's work environment regulations. Swedish reports (AFA Insurance, 2014) indicate that home healthcare aides and nurses are at risk for long-term absences due to sick leave (38.4 and 23.7, respectively, of 1000 employed), of which musculoskeletal disorders and mental illness are most common.

In home care the home environment is both the personnel's workplace and the patient's home. It is thus a challenge to achieve reasonable working conditions and good patient safety, while not turning the home into a hospital at the same time. The requirements for a good work environment are mutually dependent on

the demands for patient safety. Patient safety cannot be maintained unless the working conditions are good and the work environment can never be acceptable if patient safety is compromised.

This paper is derived from a study aimed at identifying the need for improvements in the physical environment in home care and to generate useful and attractive solutions. The solutions need to be functional for the professionals while at the same time preserving a homelike atmosphere. The purpose of the paper is to present and discuss the initial results of the study. More specifically the paper reports the identified elements in the work/home setting (furniture, tools, equipment, and tasks) that need improvement. It goes on to report how different methods can be combined to carry out this type of study in the best way possible. The study has been conducted in cooperation with a municipality in South Sweden.

2. Method

The aim of the initial part of the study was to gain an understanding of the overall problem areas and issues related to the physical space of the work environment. Data was collected from interviews that were conducted with home healthcare workers in various positions, followed by observations in the home.

Five interviews were carried out with practitioners in different roles in home care in different municipalities in southern Sweden: three nurses, one doctor and one medical technician. The interviews served as a good introduction to issues and needs related to working in this environment. The interviews were audio recorded and transcribed. We noticed, however, that the interviewees had some difficulties putting their experiences in words. We thus thought it was important to see and experience their working conditions ourselves. We changed our method at this point to observing the home care *in situ*. For this we contacted a municipality that was interested in participating in the study to improve the conditions for their home care personnel. We were given access to their home care organization to conduct observations.

The study was thus a qualitative field study, which is suitable for studying people in their natural habitat (Merriam, 1998) or as Czarniawska (2007) puts it, "to study a field of practice". This is also the best way to acquire knowledge and understanding of other peoples' reality (Lofland & Lofland, 1995). We carried out "direct observations" (Burgess, 1984) because we wanted to find out how workplaces were adapted to the personnel's work and to the patients' needs. When conducting a direct observation, the observer is always present in his/her role as a researcher and the people being observed are informed about the observer's role (Ibid).

It is not an easy task to observe people carrying out their work, especially when they move around. We thus used a shadowing technique, described by Czarniawska (2007), in which we followed different members of the staff as they went about their daily tasks. The shadowing technique allowed us to follow the staff in their working environment in a neutral way without disrupting the patient/staff interaction. For each observation, a researcher shadowed a staff member for an entire shift wherever the work was done (at the office, in a meeting with colleagues, with patients for care giving, on a bike for transport between patients in different locations, etc.). The researcher's role was to stay in the background and not influence any of the activities being carried out. The researchers had the same dress code as the staff in order to blend in, but without interfering with the work.

We decided not to make audio recording or written notations during the care giving situation out of respect for the patients and to protect their privacy. Short summaries of the observations were instead made during breaks and a more complete documentation was prepared the next day. Patients were informed in advance regarding the observations through written material and they provided their consent to participate.

3. The study

The municipality chosen for the study has a population of 44,000 and is located in southern Sweden. The selection criteria were that the municipality should have: an interest in cooperating, an interest in improving home care, and be located in reasonable travel distance from Lund University.

The municipality organizes its home care into three different working units: 1) *Home Help Service Unit*, which mainly consists of nursing assistants. Their task is to provide daily care and assist the patient in daily activities such as getting dressed, personal hygiene, cleaning, preparing food, simpler healthcare tasks such as taking medications and dressing simpler wounds. 2) *Home Healthcare Unit*, which mainly consists of nurses with access to doctors. Their tasks are only related to medical care such as handling and distributing prescribed medication on a regular basis; collecting medical tests to check the status of diseases/conditions; working as the patient's coordinator for different medical agencies; and treatment of wounds. 3) *The*

Reablement Unit supports the patient when the need for care changes, such as when the patient returns from hospitalization. The unit attends and assesses the patient for three weeks to identify all possible needs that have to be met for the patient to continuing living at home with home care assistance. This unit consists of people from several different professions, such as nursing assistants, nurses, occupational therapists, physiotherapists and care administrators.

The three units are all active in the same geographical part of the municipality, which means that on some occasions, members from all units may visit the same patients. We have carried out observations in all three units. Four observations from each unit are planned for a total of twelve; nine has been carried out so far. The number of homes included in each observation has varied between two and seven depending on the staff's workflow, planned tasks and external circumstances.

3.1. Examples of described and observed situations

A number of different aspects relating to working in the home environment have been identified during the shadowing sessions. The overall impression is that this is a complex environment where the tasks performed are closely linked to the way the work is organized. One task performed in one working unit may be performed in a somewhat different way in another. It is also related to each practitioner's individual way of resolving a situation, even though all practitioners are to some extent prepared for unexpected events that can interrupt their daily scheme.

The remaining sub-sections provide an overview of the problem areas that have been observed, illustrated by concrete examples from the shadowing sessions.

3.1.1. Solutions on the fly

One thing that became clear from the initial interviews was that the personnel working in home care are used to coming up with solutions 'on the fly' as they do not always have access to adequate equipment in the work situation. This was one of the reasons why observations in the home proved to be a better method for the study. The personnel often need to come up with ad hoc solutions. One nurse described a situation where he was to give a nutrient solution intravenously to a patient who usually does not need it. He brought the nutrient bag with him and the equipment to attach the bag to the patient. The patient did not have a stand where the nurse could hang the bag, so one had to be improvised. He hung the bag in the window on the curtain rod fixed with tape. The nurse explained that he always carried a roll of tape in his bag for emergency situations and that it had been his rescue in many unexpected situations.

In the shadowing sessions we can see that the practitioner, often in consultation with the patient and/or relatives, handles unexpected situations or a lack of material by coming up with a different solutions, or returning later with the correct equipment. One observed example was a nurse visiting an older man for a medical test to check the status of his disease. When the nurse entered his home, the man was sitting in an armchair in the living room. The nurse brought her things and got down on her knees, sitting on the floor beneath him to be able to insert a needle to collect a blood sample. Her work policy is to do the work where the patient is, with as little disturbance to the person's everyday life as possible. The man protested because he was concerned about the nurse's working position. He suggested moving into the kitchen instead so that the nurse could do her job standing. The nurse restarted her task in the kitchen. However, the lamp over the table did not provide efficient light to carry out the task. A relative looked for an additional source of light to help the nurse, but could not find one. Instead, the man and the nurse moved to yet another location where the nurse could get adequate lighting.

3.1.2. Hygiene

Lack of access to water, unsanitary conditions both in the home and in personal hygiene, and lack of access to clean surfaces to work on, can all be considered as disturbances. The doctor interviewed raised the issue of hygiene and that she felt uncomfortable (from her professional point of view) when she had to place her sterilized equipment on a patient's quilt and treat the patient lying in bed. She compared the situation to working at a hospital with 'clean' surfaces on which to place the bag. Generally, equipment needs to be placed on the bed with the patient since there are no accessible working surfaces near to where the task is being performed, which is not optimal due to the risk for contamination.

Disposable gloves are available in all homes along with hand sanitizer. We observed that the use of this material varied a lot. Some kept their gloves on during the whole visit, others wore gloves only while they were physically interacting with the patient, and yet others never wore gloves, even when taking blood samples from the patient. The reason they gave for not wearing gloves was because they did not want to offend the patient, but to maintain the personal relationship they had with the patient. It was as if the gloves would create distance and mistrust from the practitioner's side in relation to the patient.

The same disparity could be seen in the use of disposable shoe protection. The reason for using it is to protect the patient's home from dirt and bacteria from outside the building, but also to prevent its transfer between different patients and between patient and staff. We could see different ways of usage: shoe protection was used once and then disposed in one case; it was used by the staff at one patient's home and later reused at the next patient's home; or the same shoe protection was used/reused by different members of the staff but never left the patient's home.

This indicates that there is no standardized way of how certain tasks are to be performed. Thus, individual practitioners create their own routines and habits, such as in the example above with gloves and shoe protection.

3.1.3. Space and work surfaces

The home is, for natural reasons, not adjusted to be a place for performing care. A hospital, a nursing home or similar facilities have spaces adapted to the activities that are to be performed, whereas a home can never be adapted in the same way. A threshold between two rooms may suddenly be a hindrance for the patient to move around, a risk for falling and a work environment problem for practitioners. The home may be adjusted to some extent for certain equipment. Ramps may be used to overcome the worst threshold problems; lift support at the bedside or sofa and a walker are aids that increase the patient's ability to move around. There are also a number of other aids of various sizes to support either the patient or the practitioners. The combination of supporting equipment and the home environment is not optimal since there is seldom space to use the equipment without certain modifications in behaviour.

In the homes that were visited, a walker was almost always part of the equipment and used by the patient for moving around. While this was great help, it also presented some difficulties. One example is when the person with the walker is going into the bathroom. Typically the bathroom is not big enough to accommodate the walker, so it has to be left outside. The patient approaches the bathroom, needs to reach over the walker to open the door, and then turn around and move backwards into the bathroom while letting go of the walker to grab hold of something else to maintain stability. In this situation it is also tricky for the practitioner to follow since the walker is parked just outside the door.

The practitioner and the patient seem to have an agreement of how to provide the care, at least when the task is done on a regular basis. The patient and relatives fall into their roles and perform what is expected of them when the home care practitioner arrives. We could see that care is often given at a specific location in the home. One example was a visit to a woman with a recently amputated leg. The patient had quite recently left the hospital. The nurse redressed her wound on a sofa in the living room. A huge kitchen table had been placed in a corner for this activity. Different things for cleaning and dressing the wound were placed on top of the table. Since the surgery was recent and the nurse had not found the best way to dress the wound, she had placed many more products than usual for taking care of the wound in the patient's home so she could experiment on a day-to-day basis to find the best method. In this situation the patient was always sitting in the sofa and the nurse on her knees on the floor, occasionally moving to the table for new material. This is yet one of many examples of when the patient, mobile or not, is in the same place every time the home care practitioner arrives, a place that has been prepared with extra furniture and materials that the care personnel need. The work surfaces of these prepared locations rarely function well for the tasks

that are performed when it comes to hygiene or space. This is because all of the patient's personal belongings are placed there as well, such as remote controls, books, papers, water, food, medications, phone, pencils and glasses.

Our observations show that the home environment is always modified to some extent to fit the home care needs. The degree of modification is dependent on the intensity of the care (from bedridden patients in need of much medical equipment to patients that only need help with medication distribution), the conditions of the home environment (from small, old apartments with little flexibility, to modern homes with more space and greater possibilities to make adjustments), the social situation (e.g. the presence of a partner in the home versus the person living on their own), and the attitude of the patient to making changes in the home environment.

3.1.4. Lighting

Some of the nurses in the interviews highlighted the lack of light as the main problem. Since ineffective light, especially the colour and brightness, made it more difficult to make judgement as to whether a wound was healing as expected or not. In hospitals the light is standardized, whereas in home care you have to use what is available in the patient's home. During shadowing we could also observe that many residents had their curtains down so that the amount of daylight was not always maximized.

Bad lighting conditions not only pose a risk for visual strain, they can also be a major cause of bad working postures that contribute to general musculoskeletal problems (Hemphälä, 2014).

3.1.5. Disposable materials and packaging

There are many disposable materials present in the home as an effect of home care. This can include materials the patient uses (diapers, moisturizers, medicine, etc.), or material dedicated to the practitioner (gloves and plastic aprons, etc.), or material that is needed in caring for the patient (dressing material, syringes, etc.). We observed that this material was often visible and not arranged to blend in with the home environment. We noticed in some homes that one room was used for storage of boxes with disposable materials, especially if the apartment had a guest room or similar; but in many other homes, the material was in the room where patients spent most of their time, such as the living room, or the boxes were placed in the entrance.

In one apartment the disposable material was stored in the bathroom shower. This meant that whenever the nursing assistant helped the patient take a shower, she first had to remove all the boxes to another room and return them after the shower.

One work environment issue is also related to the packages used for both disposable material and medicine. When preparing medicine for the patient by placing pills in a dosette box, for example, there can be a number of packages that must be opened in different ways, a task that needs both concentration, fine motor skills and good vision. One nurse explained that he sometimes had pain in his hands and fingers after a day including several medication distributions because of the repeated interaction with dosette boxes and various packages.

3.1.6. Work postures

Lack of space, non-adapted furnishing and unforeseen situations can increase the risk for using non-ergonomic postures when working. As described in the introduction, this is one of the most common reasons for sick leave in home care. This is a difficult matter to solve since it is impossible to rebuild the entire home to adjust, for example, bathrooms and doorways, or to require residents to buy new furniture that is better suited to the caring situation. Some adjustments can be subsidized by the local authorities if considered necessary, but there are limitations to what can be done and the residents need to also feel comfortable with the suggested changes.

Typically a nurse or nursing assistant visits the patient's home on their own with nobody to assist them in the caring situation. One nurse stated that he could often use an extra pair of hands when dressing a wound. Instead, he used different parts of his body to support the patient while working with his hands. He portrayed himself as an octopus in these situations.

Another example of when the environment is not feasible to either practitioner or patient was found in a home where there was a patient with extensive care needs including a healthcare bed and several walking and lifting aids, all squeezed into the living room on the bottom floor of the house. The house did not have a

bathroom on that floor and no elevator to move the patient to the top floor. In order to clean the patient, he was positioned in a wheelchair in front of the kitchen sink and the upper part of his body was washed in this position, which was not very convenient for him or the practitioner. The lower part of his body was washed with washcloths in bed. This was not a temporary solution while waiting for a more sustainable solution. It was a solution that the family and staff had accepted for a long time.

3.1.7. Summary

To summarize the problems areas observed and presented above, we can state that the poor physical design of furnishings, equipment and technical systems, lack of work surfaces and poor lighting cause increased risks for staff and patients. These areas will be in focus later on in the project.

In addition, we could see that care is often provided in a specific place in the home. This place is adjusted to the patient since s/he resides there during a major part of the day, while it to some extent is also prepared for the caring situation by having required material lying visible in a place nearby. However, it does not imply that the hygiene, working surfaces or lighting is satisfactory for the practitioner, resulting in non-ergonomic work postures, eye strain, and other risks for both practitioner and patient. The impression is that the practitioners are very respectful about being in the patient's home and basically always listen to and adapt to the patient's desires (as long as they are not too extreme or involve a serious risk).

We saw that many situations and activities are not performed in a standardized way but open to individual differences. Each practitioner creates his/hers own way of acting to a certain degree, and maybe there are more situations that would benefit from having more clear routines. For this purpose and from the perspective of our project one could reflect upon how physical solutions may contribute to this by providing physical barriers, for example, or incentives to act in certain ways.

4. Discussion

4.1. On methodology

One obstacle we faced during the interviews was that our subjects had difficulties exemplifying the improvements that were needed in the physical environment to be able to do their work without taking risks for themselves and their patients. It was difficult in the interview format to pose questions that triggered the interviewees to verbalize their experiences. During the five initial interviews, we became aware that the information we were after was, to a high degree, situation based and embedded in the professionals' tacit knowledge. Interviews as a method for collecting information was an insufficient approach for identifying the problem areas we were looking for. Consequently, we decided to use shadowing which we believed would better reveal this tacit and situation based information.

Compared with the initial interviews, shadowing has provided us with a better understanding of specific aspects of the staff's working environment. We also gained insight into how the different units worked together and how the differences can influence the physical work environment in particular, and the work environment in general (including the psychosocial aspects). Shadowing elucidates what activities progress in a routine manner and what needs to be improvised by the staff. It also illustrates the ad hoc solutions the staff come up with and the circumstances in which they occur. This method gives the researcher the opportunity to directly discuss the observations made. Sometimes it is possible to ask directly in the situation or in close connection to the situation, such as during transportation from one home to the other. This is a very valuable aspect of performing observations, since the thoughts that come up can be put forward and discussed immediately in context with the subject (Czarniawska, 2007).

Although we as observers were meant to be "shadows" following personnel without interfering with their activities, it was difficult to be just a shadow and not to some extent participate in the situation either by talking to the personnel or the patient. The personnel were often keen to describe their activities and involve the observer in a discussion about them. Sometimes the patient or relatives also interacted with the observer by asking questions about their participation or by telling them more about their situation. Even though information had been provided to the patients previously and upon arrival at their home, we were often assumed to be nursing students or new staff. One can thus argue about the extent to which we were actually "shadows" in the true meaning of the word, and if this in any way influenced the way the practitioners or residents acted. A concrete example of when a patient's partner influenced the observation was during a visit where the personnel really wanted the observer to see a special activity that was considered as a high risk situation. While this activity was being conducted, the partner was eager to show different aspects of their

home environment that were more or less problematic for them in relation to the patient's care need. This prevented the observer from observing the difficult situation that was going on in another area of the home.

4.2. On the findings

It became obvious during the interviews that there are probably many situations like the ones described above where situation based solutions are used. As a consequence the job of providing care in a patient's home is very different from the more standardized way of working in a hospital or nursing home. It was also hard for the staff members to verbalize these examples because they are so accustomed to adapting themselves to unexpected situations that these have become part of their daily routines and are no longer remarkable for themselves.

We also learnt from the interviews that there are many other factors than those connected to the physical environment that affect the working environment for people working in home care. The subjects brought up problem areas such as communication problems, stress due to many patients to visit, and stress due to constantly being interrupted by phone calls. This is highly related to the coordination and communication within and between teams, which is an aspect that we have been able to learn more about in the different work organization in the three units involved in the study. A concrete example between the units that affects both patients and staff members is the access to occupational therapists, physiotherapists and care administrators. Where the Reablement Unit can manage to get new equipment or assistive aids in place at the patient's home within half a day if needed, the Home Help Service Unit sometime has to wait 3-4 weeks for the occupational therapists or physiotherapists to visit the patient to assess the need for a new equipment. Then the evaluation report is sent to the care administrator who draws up the order to send the equipment to the patient. All of the aspects related to organization and communication are of relevance and will be kept in mind, although our project is limited to aspects connected to the physical space.

For many of the identified issues there is much equipment available on the healthcare market to support both staff and patients. For some reason this supporting equipment is not used. Why is not clear. Is it because the practitioners are not aware of it? That information about available equipment is not reaching them? Or is there no time or resources to learn about or test it? Is it because the devices are too bulky or just not practical enough to carry around when moving between homes? Or are there other reasons? This aspect needs to be investigated further in the project where organization and models for economical compensation are factors that will have an influence.

Besides the issue of creating practical and useful solutions, we stated initially that it is also about maintaining a homelike feeling. So far in the study we have followed the home care providers in their daily work, which means that the main focus has been on home care from their work perspective. However, we have seen through the observations several home environments and met several patients and relatives, and even though no explicit interviews or observations from their point of view have directly been carried out, we have obtained much information related to how the care may influence their home.

When equipment focused on aiding the patient or staff is introduced, we see that it is not designed in a way that smoothly fits into the home environment. It appears to be designed for a public healthcare institution. A hand support attached to the bed is white and plastic and does not blend in because it does not come in the same design as the bed; disposable materials are laying around in boxes or on top of a table or shelf which "interrupts" the homelike feeling; and a hospital bed forces the patient to move into the living room, because he is unable to share the bedroom with his partner. These are all examples of how the patients and relatives environment is affected. The sickness has the highest priority and is thus allowed to take up space and attention while much could be done to reduce this feeling and still not sacrifice patient safety or work environment aspects. Developing equipment that is both functional and aesthetic is central to the solutions to be created in the future part of the project.

4.3. Conclusion and further work in the study

This article summarizes the initial part of a study that aims to identify the elements in the work/home setting (furniture, tools, equipment, and tasks) that are in need of improvement. A number of work areas that involve specific situations that can be improved have been identified and exemplified at this stage of the project. To verify the results from the observations we plan to share the results at work place meetings with the units involved to let them respond, add to and discuss the conclusions in a focus group format (Denscombe, 2009).

The needs we have identified will be the starting point for product development to create new products and ideas that can facilitate the work tasks for the staff and provide safe and aesthetic devices for the patients. The product development will take place in Industrial Design Master courses, where a group of students can approach the same problem to come up with a diversity of ideas for how to address it, and as Bachelor and Master Degree projects, in which one specific problem can be approached more thoroughly. This process will be performed in collaboration with nurses, occupational therapists and companies that will serve as sounding boards and active participants in evaluation and development. The last step is to evaluate the product concepts with staff and patients in their homes.

Further on, the patients' and relatives' perspectives will be examined, which has not been in focus so far, to let this influence the design and development as well. We will then investigate how they experience that their home environment has been affected by home care and what they feel about this and what they would desire for future changes. This will have an impact on the continuation of the project, which is to create products/design solutions for the identified problems.

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