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A SURVEY ON TASKS PERFORMED IN ELDERCARE

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ABSTRACT

In the Netherlands, a vast increase of the expenses on eldercare is expected for the future. Currently, an IT system is under development that aims to assist care providers with their tasks in providing care services. Before such a system can be used in practice, insight is needed on the current work situation in eldercare. This paper presents interview surveys on tasks currently performed by professionals in two nursing houses. Both the professional population and details on how it spends its time are described. Little room is observed for automating tasks in nursing and/or caring houses.

KEYWORDS

Homecare systems, elderly common problems, service tailoring.

1. INTRODUCTION

In the Netherlands, 19% of the health care budget of 1999 was spent on funding nursing and caring houses (Polder et al, 2006). In 2003, 14% of the Dutch population was over 65 years of age and this number is expected to raise up to 23% in 2040 (Jong, de, 2003). A number of studies from the Dutch planning agency (Dutch: "Sociaal en Cultureel Planbureau") show that the total expenses on nursing and caring for elderly people will rise from 2% to at least 3% of the Dutch gross national product (GNP).

Within the U-Care project (U-Care project, 2011), research is undertaken to develop a platform that enables tailoring of generic services to specific service consumers. The project aims to reduce the burden placed on (health) care providers when caring for elderly people by automating specific tasks currently performed by care providers, hopefully, helping to stop the increase of expenses on eldercare and cover the shortage of labor force in this domain. The platform consists of atomic services that serve as building blocks that deliver a small, yet distinctive, service to a care consumer. Care providers can tailor these atomic services, resulting in composite services that satisfy individual requirements of care consumers.

Since no assumptions can be made about the care providers affinity with computers, service tailoring has to be very simple. To achieve this, a number of *service blueprints* will be made available to the service provider that can be tailored to the specific needs of a care receiver. For example, the composite service blueprint might be "taking medicine'" consisting of atomic services for enabling a medicine dispenser, generating reminders for taking the medicine and alerting a care provider if the medicine is not taken in time.

To deliver a number of useful *composite service blueprints* to the care providers, it is necessary to discover which common tasks are currently being performed to guide the development of blueprints. The main question that this research answers is: *"Which common care tasks are provided in nursing and caring houses in the Netherlands and which of them are suited for service blueprinting"*. The following questions break this research question down into smaller questions:

1. Which professions are active in eldercare in the Netherlands? What percentage of the total time spent is performed by each profession?
2. Which common tasks are performed by each profession and how much of the total time spent on elderly care is spent on each type of task?
3. How are these tasks performed?
4. Which of these tasks can be translated in a composite service blueprint?

Answering question 1 will show how much time is spent by each profession in eldercare. This will provide direction in selecting professionals to interview when trying to answer question 2. Answering question 2 will provide a list of tasks currently performed in elder care and will show how much of the total

time is spent on a specific task. Answering question 3 provides how each task is performed currently without using an IT-based system. These detailed descriptions can also be used to set up the actual service blueprints. Answering question 4 helps to select those tasks that can be blueprinted.

Throughout this paper, the term *nursing house* is used to refer to a nursing and/or caring house. Both houses researched employ *state-registered carers* that can provide medication that is prescribed by a medical specialist. There are also regular carers that are not allowed to provide medication. The term *carer* is used when no distinction is necessary. The first nursing house that has been studied uses *health care dossiers*. These are detailed dossiers that are maintained about every resident and contain all information on their next of kin, medication and their day-to-day situation. Every resident has a *first responsible carer* that oversees the dossier and defines specific tasks and goals for the resident in the dossier. Residents are helped with activities like getting dressed, cleaning and showering. These activities together are called the *daily routines*.

The remainder of this paper is structured as follows. Section 2 describes how the interviews were conducted. Section 3 summarizes the results of these interviews. The results will be discussed in section 4 and conclusions are drawn in section 5.

2. RESEARCH METHOD

This section describes how the interviews were conducted and the results were gathered. The method followed is close to an approach proposed for a case study (Yin, 2009). This approach is the best in cases where questions about how and why needs to be answered and historical facts are not considered (Yin, 2009).

Eight nursing houses in Overijsel (The Netherlands) have been asked to participate in this research. Of these eight, only two accepted. Most rejections were due to time constraints. At the houses that were willing to participate, interviews were scheduled by the staff of the houses. Unfortunately, it was not possible for the interviewer to select who to interview himself. However, at both locations persons playing the most prominent roles have been interviewed; team leaders and (state-registered) carers.

At both nursing houses, an interview has been conducted with the manager responsible for the care. These interviews were short and focused on gaining the goodwill for more interviews to be conducted and to investigate whom exactly worked at that particular nursing house.

After the interview with the manager at each location, a number of interviews with other personnel have been conducted. The first part of these interviews concentrated on retrieving the tasks that the interviewee performed on a normal day. After gathering a complete list, more details were asked about how much time was spent on each task. First the interviewee was asked to order the tasks on the time they take. Only after this the interviewee was asked to fill in how much time was spent exactly. The second part of the interview concentrated on getting insight in how specific tasks were carried out.

3. RESULTS

3.1 Time Spent on Different Tasks

Table 1 presents the results of the interviews with the managers of the nursing houses. It presents how many hours are spent by each profession on a weekly basis. Furthermore, a short introduction on the philosophy and inner working of both nursing houses was given to the interviewer.

House A is a modern caring house providing (health) care. The staff is organized in three teams, each lead by a team leader. All team leaders report to the “manager care.” Every resident can keep his own physician, so no physician is associated with the nursing house. If needed though the nursing house can obtain a *physician*, *psychotherapist*, *dietitian* etc. from the larger organization the house is a part of. The staff at nursing house A as presented in Table 1 is responsible for 68 residents and 2 short-stay recovery rooms. The care level provided varies from domestic care to full eldercare.

House B applies a concept called small-scale living (Dutch: “kleinschalig wonen”), which tries to shift the focus from providing care to promoting welfare under their clients. Even though they recognize good

health care is an aspect of welfare, they try to deliver on other aspects of welfare as well. House B has a flat organizational structure with just one manager. All personnel except for the manager and carers in house B are also provided by a mother organization. In this case, the average hours spent by them are available. House B has two departments, a nursing house and a caring house. The staff for nursing house B as presented in Table 1 is responsible for providing full health care to 12 residents with a somatic condition, 18 residents with a psychogeriatric condition and 12 residents that are entitled to eldercare. As can be seen in Table 1, at both locations the majority of the labor force consists of carers. Even at location A where a bit more time is spend by team leaders, it should be noted they share tasks with the carers for about half of their time. Also, other roles are visible. However, they are often performed by persons who are hired on an as-needed basis.

Table 1. Labor force: Professionals working at nursing houses A and B in hours/week and percentages

Profession	House A	House B
Nurse	24 (3.4%)	n/a
Team leader	50 (7.1%)	0 (0%)
Location manager	18 (2.6%)	0 (0%)
Managing care	15 (2.1%)	20 (1.7%)
Central duties	15 (2.1%)	n/a
Physician	n/a	8 (0.7%)
Psychiatrist	n/a	8 (0.7%)
Psychotherapist	n/a	8 (0.7%)
Welfare worker	n/a	18 (1.6%)
Carer (state-registered)	372 (52.8%)	980 (84.9%)
Carer	210 (29.8%)	112 (9.7%)
Total	704 (100%)	1154 (100%)

Table 2. Time spent on different tasks at houses A and B in hours/week and percentages of the total time spent. (Unmentioned tasks are marked as not available and percentages do not necessarily add up to a 100%)

Profession	Profession	House A	House B
Carers	Daily routines	8h 10m (38.8%)	5h 30m (39.3%)
	Health care dossiers	4h 20m (20.6%)	n/a
	Medication	2h 45m (13.1%)	> 1h (>7.1%)
	Meetings	2h (9.5%)	n/a
	Planning	1h (4.8%)	n/a
	Helping people move around	1h (4.8%)	n/a
	Providing coffee/tea/lunch	n/a	> 1h (>7.1%)
	Housekeeping	n/a	> 1h (>7.1%)
	Personal attention	n/a	> 1h (>7.1%)
Team leaders	Daily routines	6h 30m (40.6%)	
	Project work	3h 15m (20.3%)	
	Dossier evaluations	3h 15m (20.3%)	
	Meetings	1h 30m (9.3%)	
	Administration	1h (6.3%)	
	Personnel / Planning	30m (3.1%)	

All interviews with carers or team leaders started with retrieving common tasks as presented in Table 2. These figures cannot be considered as correct up to each percent, mainly due to the difficulties classifying tasks and finding out how much time is spent on each of them. Also, tasks are often intertwined and team leaders might include activities like providing medication as part of the *daily routines* since they classify their complete morning as helping with *daily routines*. Finally, care providers are often interrupted by residents using the in-house phone system. All this makes estimations less reliable.

The task *administration* involves updating the health care dossiers that are kept in residents rooms in house A. This task involves both regular interaction as interaction as the *first responsible carer*. At house B, a special task *personal attention* was mentioned. They mean taking the time to read a newspaper to a resident that can no longer read or taking a walk with him. This is part of the philosophy of house B and therefore mentioned separately.

In Table 3, these results are extrapolated to all employees of houses A and B. The way hours are spend by regular and state-registered carers are assumed to be the same. The presence of regular carers causes a shift in the duties of any state-registered carers, so this seems a reasonable assumption.

Table 3. Different tasks at houses A and B in percentages of the total time spent. Tasks that were not mentioned in the interviews are marked as not available. The times spent by regular and state-registered cares are assumed to be the same.

Task	House A	House B
Daily routines	32.5%	36.9%
Health care dossiers	17.6%	n/a
Medication	10.8%	> 6.7%
Meetings	7.9%	n/a
Planning	4.0%	n/a
Helping people move around	4.0%	n/a
Coffee / Thee / Lunch	n/a	> 6.7%
Housekeeping	n/a	> 6.7%
Personal attention	n/a	> 6.7%
Rest / Unknown	21.2%	n/a

3.2 Task Execution

For all tasks on which more than 10% of the total time is spent a more detailed description will be given. These are three tasks: Daily routines, health care dossiers and providing medication. The first one is not very interesting for blueprinting, since this task is difficult to shift from people to IT. Interviews also objected to this idea, since if such a thing would be possible, it would introduce robots into very intimate situations for residents. This leaves two tasks to be discussed in detail: health care dossiers and medication dispensing.

In house A, all residents have a health care dossier in their room. When working as a carer at the room of a resident, observations about the condition of the resident can be made by the carer. All these observations have to be written down in the health care dossier. This is the responsibility of every carer and mostly occurs while performing the daily routines. Interacting with the health care dossiers as first responsible carer involves three things: Setting goals for residents that apply to their situation, reflecting on these goals and reports of fellow carers and undertaking appropriate action like calling a physician or inquiring about medication when neccesary. Twice a year, a team leader uses the dossiers to schedule an evaluation with the resident and his physician. In this evaluation, the (health) care provided to the resident is discussed with him, the physician and family. At nursing house B, the interviews mentioned no dossiers or similar approach.

At nursing house A, each patient has a closet at his own room containing his medication. The medication is kept in sealed bags. These closets are generally not locked, except when this is necessary from a safety point of view. Each resident has in his health care dossier a page listing all the medication he has to take and when it has to be taken. A medication round starts at the floor office and all residents that need medication are visited. The carer also consults a special list to see if any temporary medication has been subscribed. After this, the medication is prepared and in most situations carers have to wait until all medication is taken before they can move on. Some residents can take their medication themselves, so their medication for the whole day is put down in advance. One of the examples used to explain service tailoring has been the task of dispensing medicine. After explaining this task to the team leader responsible for medication safety at house A, she stated that out of the current 68 residents, at most ten could take their medication in this way safely.

At house B, there is no centralized list of residents that have to be visited for medication. Each group, consisting of six residents, has only one list containing all the medication for the six residents. Also no personal trays or sealed bags for each resident exist. Here also, all medication is kept in a locked closet. In this house, the carer always has to wait until all the medication is taken before moving on to the next resident.

The manager of house A was glad to see that everyone was spending time on the daily routines, since this is where most of the workload is concentrated. Four out of five employees of house A claimed the task dossiers/administration takes more time than the task daily routines while it was the other way around. Although all of the interviewees were positive about introducing IT, none of them had any concrete ideas on where IT would have added value and all mentioned the work should keep a human touch.

Another IT solution that received positive comments from all interviewees was recording the administration. A system would then automatically translate the recordings to written entries in a health care

dossier. A lot of administrative work is done by carers at house A and they believe this kind of solution would have added value for their work by reducing they time spend writing.

A team leader at house A felt that IT-based homecare systems would have more chance in extramural situations. She stated that people only move to a nursing house when they really cannot care for themselves. People still living at home, might even appreciate the technology and the extra independence they gain from such technology. This opposed to people living in a nursing house who, generally, appreciate every visit.

4. DISCUSSION

This research aimed at taking a step away from designing IT solutions before attempting to introduce IT. Its goal is to provide insight in the current time allocation in eldercare and show which tasks are appropriate for automation. This research is limited to the professionals that are directly providing care. Other professionals such as cooks, cleaners and technicians are not considered.

Only two nursing houses were visited during the interviews and at each house only a limited number of interviews could be conducted. However, it seems reasonable to assume that these two nursing houses do not significantly differ from other nursing houses, especially since both nursing houses are part of a bigger organization. The results achieved do show on which tasks most time is spent. However, strong reservations have to be made about the preciseness of the results. For example, based on the results above, it can be stated that roughly one third of time spent, is spent on daily routines. More precise statements are not justified.

Another difficulty when trying to estimate the accuracy of the results is that there are no results to compare with. Surprisingly, almost no research of this kind could be found when trying to compare the results with earlier research. The most comparable research found was on time allocation in meetings between physicians and eldercare receivers (Tai, 2007). They used recordings of visits and could very precisely measure what topics were discussed and how much time was spent on each topic. More research has been done in the domain of non-professionals. A study in Canada by Cranswick and Dosman (2008) also identifies a list of tasks often performed by non-professional caregivers. Other research in this domain mostly concentrates on the consequences of non-professional care giving for people that have a job (Hammer and Thompson, 2009) or their employers (Dembe, 2008; Sherman and Reed, 2008). Most other papers that come up are directly concerned with solutions for automating tasks (Marcelino and Pereira, 2009; Kaluza et al, 2011), but no real research into which tasks currently are performed and how often could be found.

Based on the performed interviews, it is also not possible to make a claim about the generalizability of the results. More research is needed to verify the obtained results and compare them with similar research in other nursing houses. There is also the risk that the interviewees forgot to mention tasks or were inaccurate in there estimations. Other studies might yield more complete or different results. However, brief statements during two of the interviews at house A from employees that worked at other nursing houses as well, suggested that the practice at nursing house A is comparable to other nursing houses in the Netherlands. Therefore, it seems reasonable to assume that similar research at other nursing houses in The Netherlands and maybe even the whole of Western Europe will yield similar results.

Other interesting further research might focus on interviewing care receivers, yielding another view on the automation of care providing. Especially in extramural situations this might provide different results.

5. CONCLUSION

The first two interviews with the managers of both nursing houses provided detailed information on the professions that are working in Dutch health care. Based on Table 1, it can be concluded that over 85% of time is spent by nurses and carers. Only around 2% of time is spent on overhead and/or managers. The remainder of the time is divided between supporting professionals, nurses and more carers.

Further investigation of the tasks performed by all professionals revealed that over 50% of the time is spent on providing care. In nursing house A, a little over 10% is spent on overhead such as planning and meetings and another 18% is spent on administrating delivered care. Since nursing house B does not have this formal approach, little time is spent on administration and is most likely included in the times mentioned

on other tasks. It is also visible that personnel at nursing house B have more tasks around the house taking up over 14% of their time. At both nursing houses a small amount of time is spent by supporting professionals.

Tasks descriptions are delivered in section 3.2 for each task taking more than 10% of the total time. The daily routines are ignored based on clear indications of the professionals that this task cannot be automated.

It is difficult to state which tasks can be (partially) automated. The example proposed in section 1 was considered a clear candidate. However, looking at section 3.2, it does not seem likely that this is a good scenario. A new possibility is that of automating administration in health care dossiers.

In conclusion, little possibility has been found in this research for introducing a platform such as the one currently under development in the U-Care project. A number of processes occur around the health care dossiers that are kept on paper currently. Partly automating the storage and retrieval of forms in these dossiers using speech recognition software, might be something that the U-Care platform can do. Other tasks like the daily routines vary too much to be automated or need personal supervision for security reasons (medication). Therefore, very little opportunity for service blueprinting is found.

Note that the negative conclusion stated before, only applies to the domain of intramural care provided by nursing houses. This means that more opportunities might exist in extramural care. Furthermore, benefits here are potentially much higher, since extramural care involves a lot of travelling.

Another potentially positive aspect of introducing a service platform in (health) is improved quality of service. A clear example is non-stop blood pressure registration over once a day. Another unexplored option is that of caring for more residents at the same time using help from the U-Care platform. Future research might show approaches exist in which the U-Care platform can provide the means to care for more elderly without having to increase the number of carers.

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