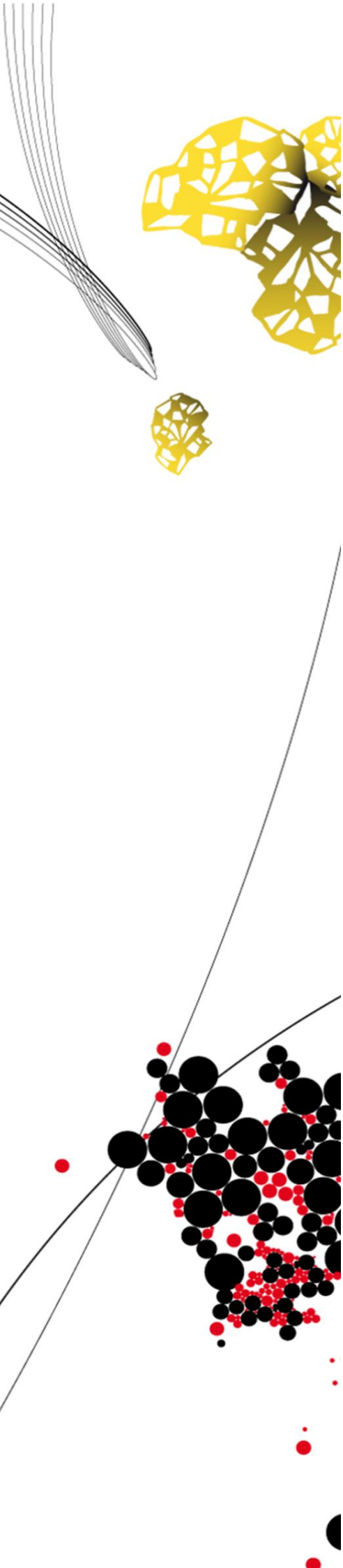




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MASTER THESIS

Health Sciences

Usability of a new eHealth Monitoring Technology (HELMA) that reflects health care needs for Clients with Cognitive Impairments and their (In) Formal Caregivers

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Usability of a new eHealth Monitoring Technology (HELMA) that reflects health care needs for Clients with Cognitive Impairments and their (In) Formal Caregivers

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Abstract

Introduction: The number of older people with cognitive impairments (CI) is rising due to the aging population. Prolong, improve and support the independent living at home for older people with CI is important to enhance autonomy and quality of life for as long as possible. New technologies to support the clients and (in) formal caregivers with frequently monitoring of the health needs of clients are needed. As such, an eHealth monitoring application was developed (HELMA), to provide insight in health status of clients and improving quality of care of clients.

Objective: The aim of this study is to evaluate the Actual Use, Ease of Use and Perceived Usefulness of HELMA, for people with CI and their (in)formal caregivers.

Method: A mixed-method approach was used. We collected demographic variables, cognitive functioning, ADL functioning, System Usability by means of a questionnaire. Besides, subgroup of participants (N= 10 clients, N=5 formal caregivers and N=5 informal caregivers) were randomly selected and interviewed based on Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM) to gain insight in the Ease of Use Perceived Usefulness, Facilitating Conditions, Behavioural Intention to Use, Attitude, Trust and Job Compatibility of HELMA. Mini Mental State Exam (MMSE) was used for cognitive functioning. Activities of daily living (ADL) was assessed with the Katz ADL. The system usability was measured with SUS questionnaire.

Actual use of HELMA was measured with logging the number of login, duration of filling in HELMA and the viewing the weekly or monthly overview for (in)formal caregivers was analysed.

Results: Fifty-four clients with CI, fifteen formal and fourteen informal caregivers participated in this study. The average SUS score of HELMA from formal caregivers is 72.2, indicating “good” usability. All formal caregivers and thirty percent of the clients were positive about that HELMA provided insight in the health status of clients. Most formal caregivers (60 %) and forty percent of clients were positive about the second aim, being improving the quality of care.

Clients and formal caregivers were positive about the Ease of Use of HELMA. They experienced the questions of HELMA as simple, interesting and clear. However, clients were not able to use HELMA by themselves, because they did not have the digital skills. Most clients’ Attitude towards willingness to learn and to use a new technology were negative.

Conclusions: HELMA could be a useful and Ease of Use technology for home care situation to help support clients and (in) formal caregivers with frequently monitoring of the health needs. Training of digital skills of clients with CI by implementation in daily care and improve HELMA is essential for using of HELMA by themselves.

Keywords: health monitoring; subjective monitoring; cognitive impairments; technology; eHealth; (in)formal caregiver; home care

Introduction

The prevalence of people with cognitive impairments (dementia) is increasing worldwide [1, 2]. Literature showed that worldwide 47 million people suffer from dementia [3]. Likely, these numbers will rise above 131 million by 2050. The economic impact of dementia is high. Worldwide, the costs of dementia is US\$818 billion and this increases every year [3, 4]. People with dementia are confronted with a syndrome that increasingly affects their memory, thinking, behavior and ability to perform everyday activities [5, 6]. This has severe implications on clients' independence and quality of life [7]. The average duration of dementia is between 2 and 10 years and ranges from mild cognitive impairments to severe dementia. Dementia is overwhelming not only for the people who suffer from it, but also for their caregivers and families and impacts them physically, psychologically and economically [8-10].

In the Netherlands, a large number of older adults with cognitive impairments (CI) receive home care, allowing older adults to maintain their independence and quality of life. Home care takes place at the client's home. The care system is based on the active role and collaboration of various persons around the client, such as family members, caregivers, neighbors and general practitioners [11]. However, this current home care system gives particular limitations. The consequences and chronic nature of cognitive impairments causes different care needs for the clients [12]. Therefore, some clients may need more frequent visits than others, based on the severity of their physical and cognitive functioning [13]. In the current care system, formal caregivers and informal caregivers get insight in the health status of the client during home visits of the client. However, most of the changes in symptoms happen in the absence of (in)formal caregivers and often clients try to conceal their disability [14]. In addition, clients have to provide information to the (in)formal caregivers during the home visits, but since they suffer from cognitive impairments, this information cannot be considered as fully trustworthy and valid [15]. Consequently, in the current care system, important information about the health status of the client might be missed and the care does not perfectly fit the needs of the client which decreases the quality of care, eventually increasing the healthcare costs [16-18]. To improve the quality of care, a more frequent and targeted approach that fits the needs of the client seems important [19].

A promising method to overcome the limitations of current care are assistive technologies that can provide information about the real-time needs of the client. In the context of the globally aging population, many studies have underlined the possibilities of e-Health applications, due to increased easily usable internet connection and the advantages of accessibility, flexibility and personalized applications [20-24]. E-health is defined as *"health services and information delivered or enhanced through the Internet and related technologies"* [25]. A recent review of Nijhof [8] showed that there are three categories of eHealth that can be distinguished for clients with cognitive impairments: (1) help with the symptoms of dementia (signaling technology), (2) social contact and company for the client, and (3) health monitoring and safety. Research showed that eHealth can be a useful service for supporting people with cognitive impairments who live at home, thereby decreasing the burden of care on the caregivers, while improving client education and self-management [9, 10].

Other research indicated that the use of eHealth in the home setting is successful at supporting clients with cognitive impairments and their caregivers by earlier detection of needs, increasing self-monitoring and thereby encouraging independency [9, 13, 26-29]. As such, eHealth can help in identifying care needs, risks and monitor disease progression [30, 31]. This has potential in delaying institutionalization by adjusting care to the client's needs and thus increases quality of care and decreasing costs of medical care [32, 33].

Although promising results regarding the use of e-health in this population of clients, implementation is difficult as this is mostly an old population not familiar with these kinds of technologies and they suffer from cognitive impairments [34]. Indicating that it might be difficult for them to learn and use new technologies, special needs are required in the development of these technologies targeting these

clients. Different eHealth application frameworks show the importance of involving users early in the development process to get their perspective during continuous and systematic evaluations. This way, usability problems can be prevented and higher attrition rates can be achieved [35-37]. As such, we used a user-centered design approach, involving all stakeholders in the development of a new e-health technology. In November 2016, we initiated workshop at the elderly home 'TriviumMeulenbeltZorg (TMZ)' in Enschede. In this workshop five formal and five informal caregivers participated. The objective was to gather information with regards to clients' daily needs and how technology could help to monitor this. Participants discussed how care needs are currently detected when they visit the client with CI and how technology could help with identifying these needs more accurate. The most important need that came forward from the workshop was the need for (in)formal caregivers to get information from three perspectives (client, formal and informal caregiver) about the needs of clients with CI at different moments in time and also in absence of the (in) formal caregiver. Monitoring through three perspectives gives more precise information about the needs and through more frequent monitoring changes might be detected earlier. Besides, informal caregiver mentioned the need to be set at ease through information at distance about the care needs of clients and maintain their self-management.

As a result of this workshop, HELMA has been developed. HELMA is a remote health monitoring application that reflects health care needs of clients with cognitive impairments in four health and well-being domains (physical, cognitive, environmental and social). The aim was to provide insight and detect changes (decline or progress) in the overall health status and well-being of clients, which makes it possible to intervene more adequately when necessary improving the quality of care. HELMA enables frequently monitoring of the health status by means of a digital questionnaire from three different perspectives. HELMA is based on the theoretical framework of OMAHA [38, 39]. OMAHA is a widely nationally and internationally classification system (onset of care) which is part of the International Classification of Nursing Practice (ICNP®). OMAHA is used for problem classification to onset and changing of the care plan, at least once in six months. HELMA is used to monitor this more frequently, at least once time in the week.

The aim of this study was to evaluate HELMA focusing on Perceived Usefulness, Ease of Use and Actual Use. We evaluated HELMA following the framework of DeChant et al [40, 41] in which the type of assessment is tailored to the development life cycle of the technology. We used a stage 1 approach in which we evaluated HELMA on technical efficacy and in terms of access and quality of HELMA.

Methods

Study design

A mixed method study was performed. We conducted a qualitative usability study (interviews and questionnaires), complemented with quantitative study (datalog-analysis). The most common methods, defined in the ETR 095 Human Factor guide [42], were secondary sources, logging, observation, questionnaire, interview and self-descriptive methods. In this study three of the six usability methods were used [43].

Setting

This study was performed at home care clients and (in)formal caregivers of TriviumMeulenbeltZorg (TMZ). TMZ is a healthcare organization in Netherlands especially for elderly with physical and/or cognitive impairments. TMZ has nursing homes, homes from elderly and home care. TMZ home care teams consist of a maximum of fifteen formal caregivers and are self-directed teams which provide complete client care, ranging from putting on compression stockings to the provision of medications and administration of insulin. The teams give home care to 30-60 clients in a given neighborhood and work with the clients and their formal caregivers to meet clients' needs and help them to continue independently living at home.

Participants

Participants recruited for this study were clients, formal and informal caregivers. Inclusion criteria for clients were: 1) receiving home care of TMZ; 2) having cognitive impairments or dementia; 3) living independently at home. All formal caregivers were employees of TMZ.

To recruit participants, the first author organized workshops to inform formal caregivers about HELMA and asked them if they and the person they cared for were willing to participate. The formal caregivers were also informed about the inclusion criteria and based on that they asked the clients and informal caregivers to participate in this study. The Medical Ethical Committee of Medisch Spectrum at Twente declares that this study does not need the criteria necessary for an assessment by a Medical Ethical Committee according to Dutch law. Informed consent was obtained from all participants. After that, participants were instructed about the use of HELMA and they received their log-in accounts. They could start using HELMA after that.

Eleven homecare teams from Enschede, Almelo and Hengelo were asked to participate in this study.

HELMA

HELMA helps to monitor the clients' healthcare problems through a digital questionnaire which can be filled in by (1) the client; (2) informal caregivers and (3) formal caregivers. Main objectives of HELMA are: 1) providing insight in (changes in) health status of clients and 2) improving quality of care of clients. HELMA is web-based, therefore it is accessible through various devices: PC, laptop, tablet and smartphone. Figure 1 shows the architecture of HELMA. More information about the development of HELMA can be found by unpublished study of Lentelink.

HELMA is used online in the home setting and results can be accessed via a secure web portal by clients and (in)formal caregivers. HELMA consists of 24 questions about the general health, physical, mental, social, and environmental aspects of the clients, based on the Omaha system [39] (see figure 2). For the client, a decision tree has been made so that clients with CI are not overloaded with questions each time. HELMA always starts with one question each time (how are you feeling today?) and an accompanying question (did you use your medication?). Dependent on the answer of this first question (good/not good), clients are asked to fill in more questions to specify their feelings on the specific four domains (mentally, socially, physically, environmentally). Depending on their answers, clients receive a minimum of 2 and a maximum of 24 questions (see appendix 1 for the decision tree and questions asked). Formal and informal caregivers fill in all 24 questions about the client every time. Formal caregivers were instructed to use HELMA at least once a week and the informal caregiver were free to use HELMA.

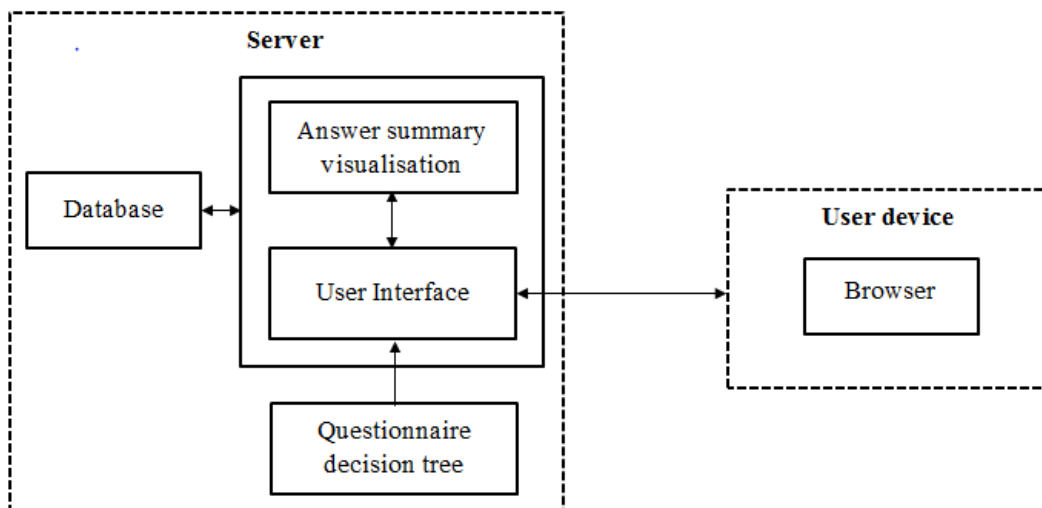


Figure 1, Architecture of HELMA

The (in)formal caregivers and clients are presented a global status overview of the health status of the

client during the last week. A full view of all answers of both the caregivers and the clients is presented and answers of both the caregivers and the clients are compared. As such, (in)formal caregivers can see in a quick overview whether something has changed in the status of the client and whether he needs to adjust care and/or contact the client (see figure 2).

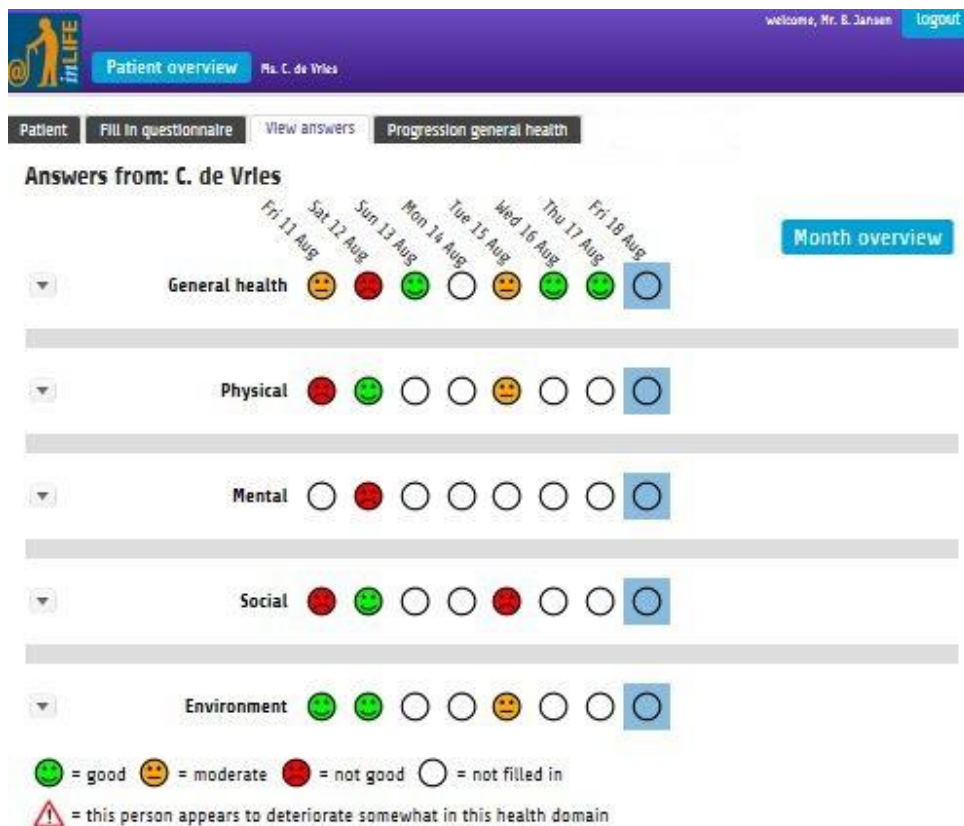


Figure 2, Domains of HELMA

Experimental protocol

All clients received a questionnaire about demographics and technology use, activities of daily living, and cognitive functioning before the start of the study (T0).

All informal caregivers that were involved with HELMA received a questionnaire about the demographics at T0 and system usability scale after using HELMA (T1).

All formal caregivers received a questionnaire about demographics at T0 and system usability scale at T1 (see figure 3).

A subgroup of participants (client, formal and informal caregivers) were randomly selected to be interviewed about their experiences with HELMA and more in-depth information about the Perceived Usefulness and Ease of Use, after four weeks of using HELMA (T1).

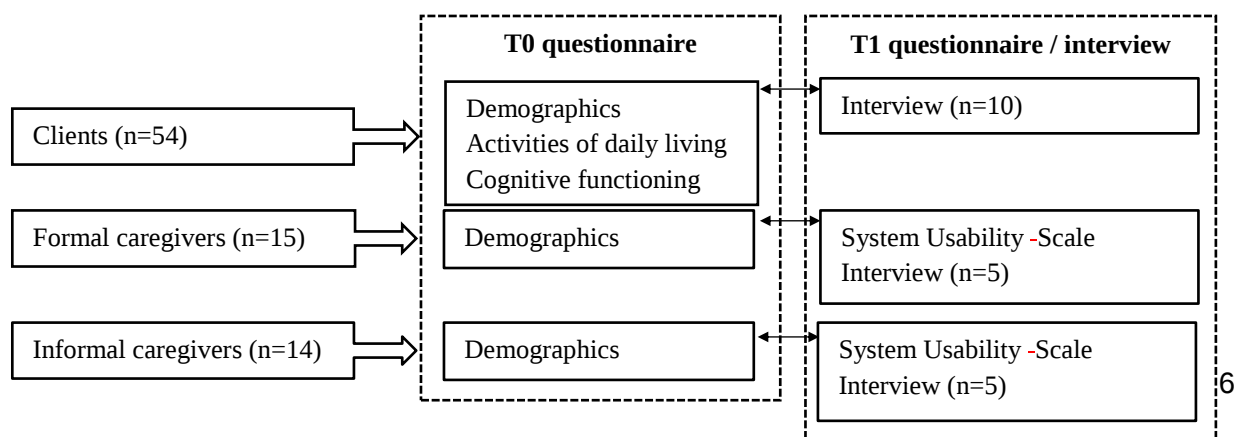


Figure 3, Experimental protocol

HELMA is used between 23-11-2016 to 22-05-2017. Participants were instructed to use HELMA for a minimum of four weeks and at least once a week. Clients had the opportunity to use HELMA as often as they wanted. The caregivers use HELMA when they visit the client at home. If clients did not own a technology to use HELMA, they had the opportunity to use a laptop provided by the caregiver. Informal caregivers were not obligated to use HELMA, only if they wanted to.

Outcome measures

Demographic variables and technology use

We collected demographic variables including age, sex, work status, cognitive functioning, and ADL functioning at baseline by means of a questionnaire as well as data about the use of Internet and technology of the participants. Cognitive functioning was measured with the Mini Mental State Exam (MMSE) [44, 45]. The range of MMSE score is from 0 (highest cognitive impairments) to 30 (not cognitive impaired) [46]. Self-report of the ability to perform activities of daily living (ADLs) were assessed with the Katz ADL [47]. Clients were scored on a scale of I to IV for independence in each of the six functions. A Score of I indicated full function, II indicate partial dependency and III or IV indicated depending on care [48]. Higher scores on this scale indicated lower ability to perform activities of daily living.

Usability

To gain insight in the usability of HELMA, the System Usability Scale (SUS) is used. The System Usability Scale (SUS) is a short ten items questionnaire to investigate the satisfaction with the application [49]. There is no validated translated version of the SUS in Dutch. For this study, the Dutch translated version of Wever, Hermens en Vollenbroek-Hutten [50] is used. The items can give a subjective overview of the systems usability. Rating of the SUS is from one (disagree totally) to five (agree totally) and the range is a score from 0 to 100. A score higher than 70 is considered as good usability, a score of 85 or higher as excellent usability and a score of 90 or higher indicates best imaginable. A score of 50 or lower is considered as poor or unacceptable usability [51, 52].

Perceived Usefulness and Ease of Use

Perceived Usefulness and Ease of Use was evaluated using the Technology Acceptance Model (TAM) [53] and the Unified Theory of Acceptance and Use of Technology (UTAUT) [54, 55] which are two of the most common theories explaining acceptance of technology in literature. For this study we focused on four constructs of these models, being: Perceived Usefulness, Ease of Use, Facilitating Conditions and Attitude. Trust and Job Compatibility are added variables.

Perceived Usefulness and Ease of Use are measured after four weeks of using HELMA (T1) by means of an interview with a sub selection of clients and (in)formal caregivers. Clients, formal and informal caregivers were randomly selected from the users list of HELMA. Twenty participants, were interviewed (see appendix 2), to get information about their experiences of HELMA. This group consisted of ten clients, five formal caregivers and five informal caregivers.

Actual use of HELMA

The results of using HELMA were saved in log data. These log data contained information about the number of login in HELMA for each participant, the duration (e.g. how many minutes for filling in each questionnaire) and the frequency of viewing the weekly or monthly overview for (in)formal caregivers.

Data analysis

The results of HELMA were quantitatively analyzed by using Excel. Graphs were made in Excel to show the number of login, the duration (e.g. how many minutes for each questionnaire) and the viewing the weekly or monthly overview for (in)formal caregivers.

The data of drop outs is not included in this study. Only the data of participants who fully completed four weeks of use were included.

The interviews were audio recorded, transcribed and qualitatively analysed using thematic analysis from Braun & Clarke [56, 57]. The transcriptions were re-read and incremental coded by two researchers by noting the number of the participants who answered a same of response. The transcripts were read by both researchers and provided a code independently based on theories included in the UTAUT and TAM model. In case of disagreement, a third coder could be asked for advice. A coding scheme based on the category, the code and description was made for the interview questions. For example, the question 'Did the use of HELMA had an added value for you?' of the interview, was assigned to the code 'added value'. Some quotes from respondents, representative of the categories, were marked to add in the results. The codes that are equal or correspond to each other were assigned to one category. Several main codes were sub coded as positive, neutral or negative.

Some transcripts were re-read by an external researcher to ensure that the categories and codes were correctly described in the coding scheme. When all interviews were coded, the results were analyzed.

Results

A total of 54 clients, 28 formal caregivers and 14 informal caregivers participated in the study (see figure 4). However, a total of 28 formal caregivers made an account and 15 of them completed the questionnaire. Data on actual use was collected from all participants. Data on demographics, Ease of Use and Perceived Usefulness is only collected from the participants who fulfilled the interview and questionnaire.

None of the clients were able to use HELMA by themselves and needed help from their (in)formal caregiver. As such, to be able to participate in the study (in)formal caregivers helped the clients with completing HELMA after their routine care moment. For this, the caregiver opened the laptop or computer and logged in on the clients account. They read the question out loud. The client responded to the question asked and the caregiver filled in this answer for the client on the computer. After this, the formal caregiver had to log in on his own caregiver account, to be able to fill in HELMA from his perspective.

Participants' demographics

The flowchart of participants is summarized in figure 4. In total, eleven clients and four informal caregivers dropped out during the study. Four clients dropped out after the introduction of HELMA and seven clients during the intervention weeks. The reasons for clients dropping out were personal circumstances, such as lack of motivation (n=4), health problems (n=3), out of care (n=3) and one client (n=1) passed away. The reason for dropping out of informal caregivers were lack of time (n=2) or not giving care to the client anymore (n=2).

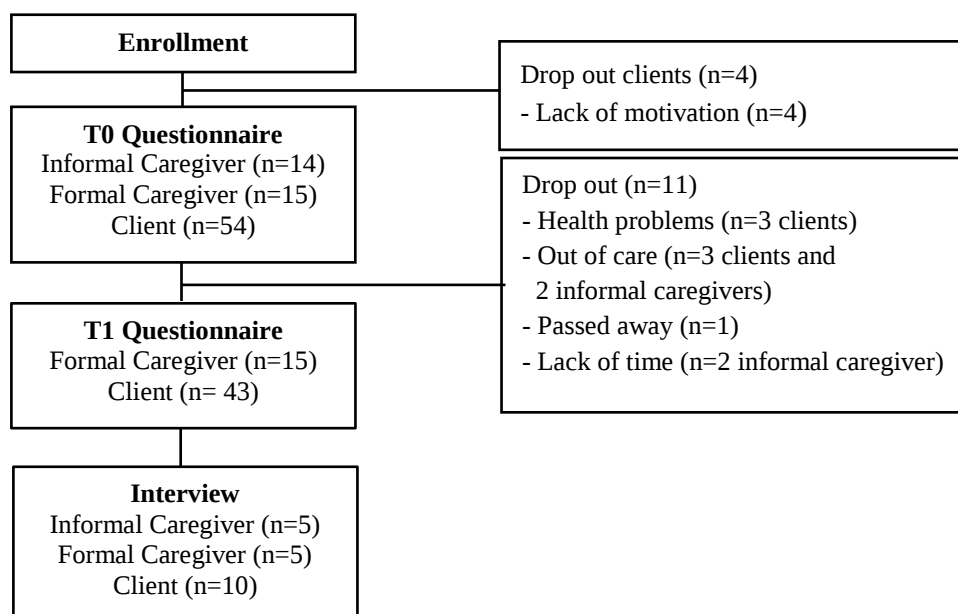


Figure 4, Flowchart participants

Demographic information at baseline for participants is summarized in table 1. Most of the clients who participated in this study lived together with the partner. Only one informal caregiver used HELMA. The mean age of the clients was 79.5, the informal caregivers was 64.0 and the formal caregivers was 31.0. Most of the participants were female. Technologies mostly used by clients were a computer and/or a laptop. Fifty-four percent of the clients indicated that they do not use a computer or laptop, and 43% did not have a technology (laptop, computer, tablet an, smartphone) at all. Half of the clients did not have access to the internet. In contrast, all formal caregivers had 1 or more technologies and all had access to the internet at home or at work.

The mean MMSE score of clients was 23.2, indicating mild cognitive impairments. The mean Katz ADL score of clients was 2.3, indicating a partial dependency of care.

Table 1, Results of study population by Age, Gender and use of technology

Type	Clients (n=54)	Formal Caregiver (n=15)	Informal Caregiver (n=14)
Mean age in years (SD)	79.5 (9.1)	31 (11.2)	64 (11.2)
Gender, n (%)			
Male	20 (37)	1 (7)	5 (36)
Female	34 (63)	14 (93)	9 (64)
Missing	—	—	—
Retired, n (%)			
Yes	48 (89)	—	8 (57)
No	6 (11)	—	6 (43)
MMSE, mean (SD)	23.2 (7.2)	—	—
ADL Katz, mean (SD)	2.3 (1.2)	—	—
Use of technology, n (%)			
Computer/laptop	25 (46)	15 (100)	13 (93)
Tablet	11 (20)	8 (53)	8 (57)
Smartphone	6 (11)	15 (100)	6 (43)
None of above mentioned	23 (43)	0 (0)	0 (0)

Access to internet, n (%)	27 (50)	15 (100)	13 (93)
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Usability

The System Usability Scale was completed from the perspective of the formal caregivers. The SUS was not filled in by any client or informal caregiver, because they have not used HELMA by themselves.

The mean SUS score is 72.2 (see figure 3), indicating “good” usability of HELMA. However, large variations in scores existed with a lowest value of 50 and highest score of 92.5 (a 42.5-point range). Table 2 shows the average scores on each specific question of the SUS, with on average a high score for question 3 and 7.

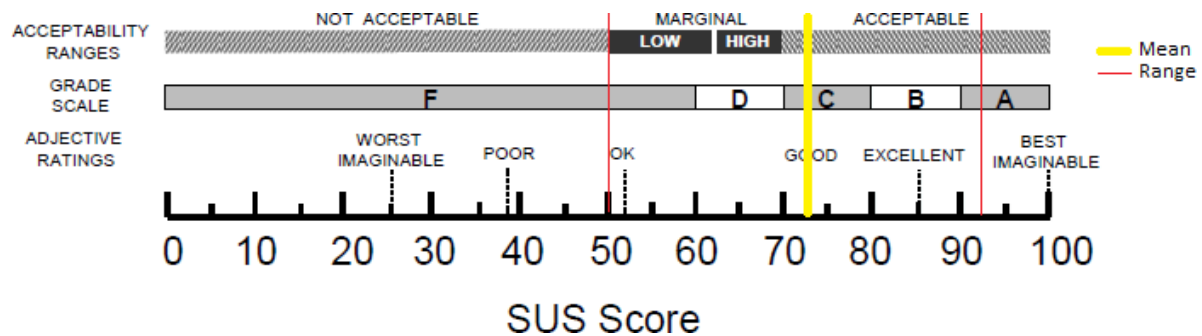


Figure 5, System Usability Scale

Table 2, Results of the SUS Questionnaire formal caregivers (n= 15)

Item	Mean score (Range 1-5)*
1. I think that I would like to use HELMA frequently	3.4
2. I found HELMA unnecessary complex	1.9
3. I thought HELMA was easy to use	4.3
4. I think that I would need help to be able to use HELMA	2.1
5. I found the various functions in HELMA were well integrated	3.1
6. I thought there was too much inconsistency in HELMA	2.5
7. I would imagine that most people would learn to use HELMA very quickly	4.1
8. I found HELMA very cumbersome/difficult to use	1.9
9. I felt very confident using HELMA	3.9
10. I needed to learn a lot of things before I could get going with HELMA	1.7

* Scores on a Likert scale from 1 (totally disagree), to 5 (totally agree).

Actual use of HELMA

HELMA was filled in from 51 different client accounts and 28 formal caregiver accounts. 43 clients (80%) used HELMA at least four weeks. The log data of all participants are used to analyze the results of actual use. Mean duration for each session was 1.6 minutes for clients and 3.3 minutes for formal caregivers. The week overview is used by 21 formal caregivers and month overview by 11. The results of number of login, duration for filling in HELMA and the viewing the weekly or monthly overview for (in)formal caregivers can be found in table 3.

Table 3, Actual use participants

User	Total users (n)	Number of login (min-max)	Mean duration for each session in minutes	Answer general question with 'good' (%)
Clients				
Log in HELMA at least once	51	8 (4-24)	1.6	7 (71)
Use at least 4 weeks	43	9 (4-24)	1.6	290 (72)
Formal caregivers				
Log in HELMA at least once	28	11 (1-48)	3.3	
Week overview	21	6 (1-16)	-	
Month overview	11	3 (1-9)	-	

Perceived Usefulness and Ease of Use

Ten clients, five formal caregivers and five informal caregivers were interviewed to gain insight in the Ease of Use, Perceived Usefulness, Facilitating Conditions, Behavioural Intention to Use, Attitude, Trust and Job Compatibility of HELMA.

Most of the informal caregivers (80%) have not used HELMA. Therefore, they were excluded.

Perceived Usefulness

The first reactions about HELMA were overall, positive (100%). Four clients couldn't answer the question due to severe cognitive impairments.

Three clients (30%) did not feel that HELMA provided any more insight in health status. However, they had problems with understanding the function and content of HELMA. For example, one client said: *'I don't know what the program does'*(C6).

All formal caregivers and 30% of clients were positive about one of the main aims of HELMA, being providing insight in the health status of clients. All formal caregivers were positive about the usefulness as they said that HELMA provided them a good and clear overview about the needs at a distance. As an example, a formal caregiver said: *'you look at the overview of HELMA and you can see how the client was feeling in the past weeks'*(FC2). Most formal caregivers (60 %) were positive about the second aim, being improving the quality of care because the service gave information about the health status to other (in)formal caregivers. Two formal caregivers (40%) were negative about this, as an example, a formal caregiver said: *'in the future. Currently not, because we were very busy with it. However, if people are independent and can use it by themselves the quality of care will improve'*(FC3).

Furthermore, there are several advantages and disadvantages mentioned. Three clients stated that HELMA gave more information about health status, because other questions than the routine questions were asked. In addition, two formal caregivers stated that the use of HELMA increased their digital skills. However, formal caregivers (80%) stated the decision tree design as a disadvantage because this design gives limited questions when the client stated to be feeling good. In this way, formal caregivers mentioned that the first question did not cover all the domains. All of the other advantages and disadvantages are mentioned once, and can be found in table 4.

Table 4, Perceived Usefulness participants

Topic	Clients	Formal caregivers
First reaction (n)		
Positive	6	5
Neutral	0	0
Negative	0	0
Added value		
<i>Insight health status (n)</i>		
Positive	3	5
Neutral	2	0
Negative	3	0

<i>Higher quality of care (n)</i>		
Positive	4	3
Neutral	4	0
Negative	1	2
Advantages (n)		
Personalized, better targeted care	1	1
Improved social contact	1	
Create time to think about the clients' health status	1	1
Feel useful because of participating in this study		1
Gain digital skills		2
Client reassurance		1
Decreases demand of care		1
Gives more freedom to client		1
Insight of patterns in health status		1
Create new ways of communicating		1
Disadvantages (n)		
Time consuming, lack of digital skills client		1
Impersonalized care	1	1
Lack of historic Information	1	
Limited questions for the client when they feel good		4
Limited questions to reflect health status for all domains		4
Multiple interpretable questions		1
Stressful to the client		1

Ease of Use

All participants (both clients and formal caregivers) were positive about the Ease of Use of HELMA. They experienced the questions of HELMA as simple, interesting and clear, but it was impossible for the clients to work with the service by themselves. They needed guidance from their formal or informal caregivers.

Table 5, Ease of Use participants

Topic	Clients	Formal caregivers
Ease of Use (n)		
Positive	9	5
Neutral	0	0
Negative	0	0
Questions clear (n)		
Positive	7	5
Neutral	0	0
Negative	0	0
Overview clear (n)		
Positive	-	4
Neutral	-	0
Negative	-	0

Facilitating Conditions

All participants were positive about the quality of instruction about how to use HELMA (see table 6). However, most clients indicated that they did not have the skills to use HELMA by themselves. Only one client indicated that he would have been able to use it himself, if explained properly. Caregivers' digital skills to use the services are present. All formal caregivers were positive about the support of the management in the use of HELMA.

Table 6, Facilitating Conditions participants

	Positive	Neutral	Negative	Missing
Clients (n)				
Quality of instruction	8	0	0	2
Digital skills client are present	1	0	7	2
Formal caregivers (n)				
Quality of instruction	5	0	0	0
Digital skills caregiver are present	5	0	0	0
Support management	5	0	0	0

Behavioral Intention to Use and Attitude

Most of the participants were willing to continue using HELMA in the future (50% clients and 60% caregivers). Two of the formal caregivers didn't have the intention to continue using HELMA, because they thought it would be too stressful for the client.

Most clients' Attitude towards willingness to learn and to use a new technology were negative, because it is too difficult to learn this with the current age, health status or digital skill. For example, one client said: *'No, I do not want to learn that anymore. I am 89 years old. I cannot learn that anymore'* (C3). However, all participants stated that they would recommend HELMA to others. Most of them (60% clients and caregivers) were positive about using new technologies that support efficient and effective healthcare.

Table 7, Behavioral Intention to Use and Attitude participants

Topics	Positive	Neutral	Negative	Missing
Clients (n)				
Behavioral Intention to continue Using	5	0	3	2
Attitude				
- Willingness to learn	2	0	4	4
- Willingness to use new technology	3	1	6	0
- Recommendation to others	9	1	0	0
- Use new technology in homecare	6	2	0	2
Formal caregiver (n)				
Behavioral Intention to continue Using	3	0	2	0
Attitude				
- Willingness to use new technology	3	1	1	0
- Recommendation to others	5	0	0	0
- Use new technology in homecare	3	1	1	0
- Fear of incorrectness of outcome	1	0	0	4

Trust

The result of the table 8 shows that participants Trust HELMA and that there were no privacy issues. All clients were willing to share data among others. However, one client stated *'it depends on which informal caregiver the data is shared with'* (C7).

Table 8, Trust participants

Topics	Positive	Neutral	Negative	Missing
Clients (n)				
Privacy	9	0	0	1

Sharing data	10	0	0	0
Formal caregivers (n)				
Privacy	10	0	0	0

Job Compatibility of formal caregivers

All of the formal caregivers thought that HELMA fits into current care, because HELMA helps with collecting information about different aspects with help of four domains (see table 9). The time it takes to fill in HELMA didn't not influence the workload of the formal caregivers. Only one formal caregiver thought that HELMA increased its workload because clients could not use it independently. Two formal caregivers stated that a link with the current health record system was important for increasing the Ease of Use of HELMA in the future.

Table 9, Job Compatibility of formal caregivers

Topics	Positive	Neutral	Negative	Missing
Content of HELMA fits into current care (n)	5	0	0	0
HELMA fits in the current worktime (n)	4	0	1	0

Improvement points HELMA

All of the formal caregivers mentioned some important points for improving HELMA. This can be found in table 10.

In terms of Ease of Use of HELMA it is recommended to change the website name for login. Other important recommendations are adding the adaptability of font size and providing a speak function for a better Ease of Use for the clients. Using a standard protocol will help the caregivers to structurally use and to remember using HELMA.

Table 10, Improvements based on interviews

Topics (n)	Count
Questionnaire content	
- You can sleep well, but you can have several nightmares. Add question about this	1
- Merge questions 3 and 8 (see appendix 1), make one question	1
- Merge question 11 to 15 (see appendix 1), make one question	1
- Add 'except caregiver' on the question: Did someone come to visit you today?	1
- Add 'housekeeping' on the question: Have you been physically active today (walking, cycling, etc.)?	1
Usability issues	
- Adaptability/ flexibility size of font	1
- Add question 'do you feel safe in your environment?'	1
- Provide speak function for a better Ease of Use for the clients	1
- More response possibilities in answering the questions for main domains	2
- Open textbox option	2
- Changing website name for login, it must be easy to use	1
Other	
- Additional instruction about the use of HELMA	1

Discussion and recommendations

The aim of this study was to evaluate the Perceived Usefulness, Ease of Use and Actual Use of HELMA. Results of the study showed that HELMA is a useful supplement in the current care for older adults with cognitive impairment. Most participants (60 % formal caregivers, 40% clients) indicated that HELMA improved the quality of care. Besides, formal caregivers indicated that HELMA provides useful insight in the health status of clients at a distance, even when they are not with a client. This gives them more information about the client before the home visit, also improving the quality of the care. These results are in line with those of previous studies who indicated that the use of eHealth in the home setting is successful at supporting clients with cognitive impairment and their caregivers by earlier detection of needs [9, 13, 26-29]. Such an identification of individual needs is the basis for a tailored intervention, which is important in light of the current demographic changes. Tailored and personalized interventions can improve the quality of care and enable older adults to live at home more independently for a longer period of time [27, 58, 59].

Most of the clients (80%) used HELMA according to protocol, for a minimum of 4 weeks. One interesting finding is that most of those clients (72%) indicated that they were feeling good, despite the fact that they have many health problems and receive home care. This result is in line with a recent study indicating that concealing the memory problems and presenting a hardfront to the world are a common phenomenon in people with CI [60-62]. Although in some cases, the collected information of the client cannot be interpreted as objective data, it provides signals for formal caregivers to address the change in answers given over time. It can thus be suggested that HELMA fits the need of frequent health monitoring to detect the changes of health in absence of informal caregivers and to detect when clients try to conceal their disability. These results corroborate the ideas of Nolte (2014) [62], who suggested that participants responded to questions even when they did not understand the questions and that information from (in)formal caregivers is important to address to be able to check the answers given by the clients. This underlines the importance of including different perspectives in the health status of clients as was implemented in HELMA. These different perspectives give a better insight in how the clients is feeling compared with the opinion of the formal caregiver and highlights differences in answers given by the client and his/her formal caregiver.

All participants were positive about the Ease of Use of HELMA, however none of the clients used HELMA by themselves. The use of HELMA was very difficult for the clients, as most of them didn't use a computer or laptop at home. These results are in accordance with studies indicating that a small number of older people over the age of 65 in Europe own a laptop or computer [63-65]. In addition, sixty percent of the clients in our study were not willing to use a new technology by themselves, because they thought that they wouldn't be able to learn it anymore and most of them indicated a lack of digital skills. Computer literacy is a major barrier in other studies as well where e-health is being used independently by older people [34, 66-75]. This e-health literacy calls for eHealth literacy interventions aiming at improving older clients' ability to access and use eHealth applications, such as HELMA [76, 77]. eHealth literacy refers to the "*set of skills and knowledge that are essential for productive interactions with technology-based health tools*" [78]. This should be taken into account when developing and implementing e-health services in this population, especially when they have cognitive impairments. It also highlights the importance of a user-centered design approach as suggested by van Gemert-Pijnen (2011) [35]. In our study, clients did not use HELMA, despite the user-centered design approach. One explanation for this might be that we involved them in the development of the content of HELMA, and not in the technology choices, as we expected them to be able to use a computer. In the future, this e-health literacy should be tested at forehand before implementing such new technologies. We recommend to focus on this e-health literacy in the implementation of HELMA by the clients and (in)formal caregivers to enable clients to make better use of HELMA in the future. This is in line with the literature, as a significant result found by Ellis and Allaire that a higher computer knowledge was associated with less computer anxiety and higher

computer interest [73]. In addition, higher involvement of informal caregivers in the implementation of HELMA can motivate the client to use HELMA.

Despite the negative attitude towards learning new technologies, clients were positive towards using new technologies by formal caregivers in homecare. In addition, most of the participants were willing to continue using HELMA in the future (50% clients and 60% caregivers). All participants (all formal caregivers and 90% clients) would recommend HELMA to others since it gives information about the clients' needs. This indicates that the clients have a positive Attitude towards using HELMA in their home care, but with guidance of (in)formal caregivers. However, the negative attitude towards the willingness to learn and the willingness to use HELMA independently is important to take into account when implementing HELMA into daily practice of (in)formal caregivers. Many studies show that training adapted to the learning needs of older clients has a positive impact on attitude towards technology [65, 72, 79-81]. Besides, persuasive elements should be used to support and motivate the users. The persuasive system Design model (PSD-model) [82] and the Fogg Behavior Model (FBM) [83] can be used to develop a more persuasive eHealth design, because in terms of PSD, computers are seen as interactive technologies that can motivate and influence the client [84]. One of the persuasive elements is tailoring and research showed that tailoring as an intervention strategy is effective in health interventions [85-87] and gives knowledge about how the individual factors influence the health outcomes [88-91]. In this perspective, it should be beneficial that HELMA tailors its content to the clients' reading skills, technology experience, health literacy, age and health issues. Besides, to be successful in the future, the burden on the formal caregivers should not be increased too much, but should be supporting their care for the client. Increased burden has influence on higher illnesses in formal caregivers [92, 93]. Therefore, the interaction with the technology should be as minimal as possible, so that clients can use HELMA by themselves. Different studies showed that other ways of interacting with these technologies increased the acceptance of eHealth services in low literacy people [94-96]. For example, a combination of text-to-speech or using touchscreens might be useful to integrate in HELMA to enable clients to use HELMA by themselves.

Strengths, limitations and future study

A strength of this study is that three different evaluating methods are used. In addition, a representative sample of clients (54) in home care was used. Furthermore, HELMA was evaluated from different perspectives, namely clients and (in) formal caregivers. Caregivers play a crucial role in the success of the implementation of health monitoring. They have the digital skills and ability to learn to use HELMA rapidly [97].

A limitation is that the clients with high level of digital skills are underrepresented in this study. Clients in this study with lack of digital skill have generally less health literacy. The literature shows that older people with less health literacy are less willing to participate in a study that uses questionnaires and are found to be less likely to use health information [98]. In a few years, the expectation is that the older people have more experience with use of internet, computer, smartphone and tablet. Future study is important, because this might allow older clients to use HELMA properly by themselves and might enhance positive results on HELMA. However, the fact is the number of older people with cognitive impairments is rising and this will be influence the possibility of computer use.

Conclusion

Overall, the use of HELMA seems a useful option for providing eHealth monitoring for the detection of clients' needs for their caregivers. Clients with CI and formal caregivers are generally open minded towards using new e-Health technologies in home care. However, clients lack the digital skills needed to use HELMA by themselves. More attention to different implementation strategies is needed to increase the eHealth literacy of clients with CI, to improve independent use of HELMA in the future.

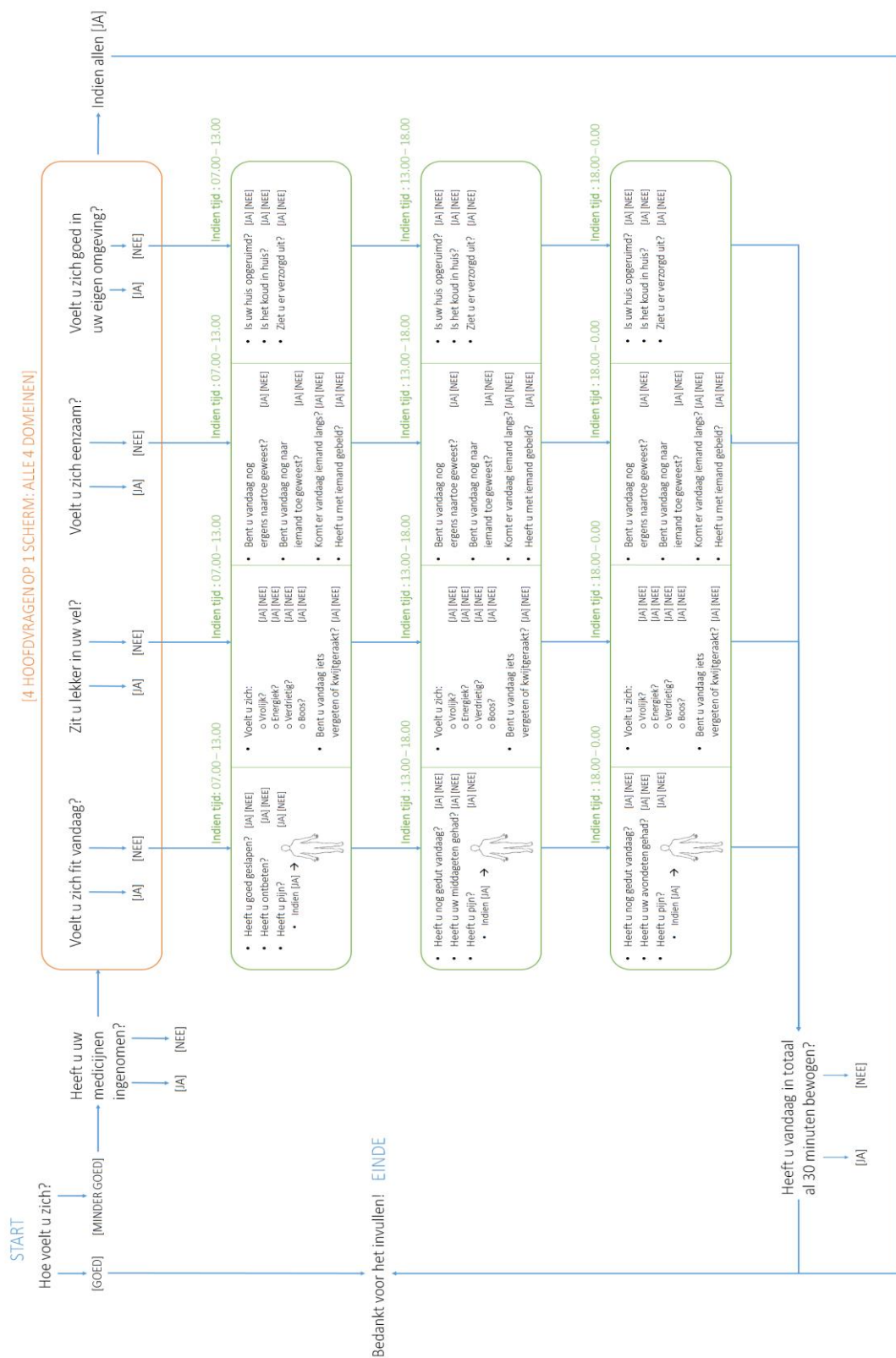
Acknowledgements

We would like to thank the (in) formal caregivers and clients of TriviumMeulenbeltZorg for participating in the development of HELMA and the actual study. Furthermore, the Roessingh Research and Development for the development of HELMA. This work was partly funded by the H2020 program (PHC-20-2014) within the IN LIFE project (grant no. 643442).

Decision Tree HELMA

Voorwaarden:

- Om 11.00 wordt een melding gegeven voor het invullen van de vragenlijst. Indien de gebruiker niet heeft gereageerd → geef om 17.00 opnieuw een melding.
- De gebruiker mag de vragenlijst meerdere keren per dag invullen, maar maximaal 1x per dagdeel (ochtend/middag/avond). 's Nachts (0.00 – 7.00) kan de gebruiker de vragenlijst niet invullen.



Questions HELMA (afternoon)

Algemene gezondheid

1. Hoe voelt u zich?
2. Heeft u uw medicijnen ingenomen?

Fysiek

3. Voelt u zich lichamelijk fit vandaag?
4. Heeft u vandaag nog gerust in de stoel, op de bank of in bed?
5. Heeft u uw middageten gehad?
6. Heeft u pijn?
7. Waar heeft u pijn?
8. Bent u vandaag lichamelijk actief geweest (buiten wandelen, fietsen, etc.)?

Mentaal

9. Zit u lekker in uw vel?
10. Voelt u zich vrolijk?
11. Voelt u zich energiek?
12. Voelt u zich verdrietig?
13. Voelt u zich angstig?
14. Voelt u zich boos?
15. Bent u vandaag iets vergeten of kwijtgeraakt?

Sociaal

16. Voelt u zich eenzaam?
17. Bent u vandaag ergens naartoe geweest (winkel, huisarts, etc.)?
18. Bent u vandaag naar iemand toegeweest (familie, vrienden, etc.)?
19. Is er vandaag iemand langs gekomen?
20. Heeft u vandaag met iemand digitaal contact gehad (bellen, mailen, chatten, etc.)?

Omgeving

21. Voelt u zich goed in uw eigen omgeving?
22. Vindt u dat u er verzorgd uitziet?
23. Vindt u het koud in huis?
24. Vindt u uw huis opgeruimd en schoon?

Appendix 2, Interview client, formal and informal caregiver



UNIVERSITEIT TWENTE.

Interview Cliënt

Nameting HELMA

Inleiding

- We zullen u vragen gaan stellen naar aanleiding van het gebruik van HELMA. Ik zal dit gesprek opnemen met audio zodat de gegevens later kunnen worden uitgewerkt en geen belangrijke informatie wordt gemist.
- Er zijn geen goede en foute antwoorden. Het gaat om uw mening en ervaring!

Naam cliënt: _____

Naam afnemer: _____

Datum van invullen: _____

System Usability Scale

Invullen indien de geïnterviewde geheel zelfstandig de vragen in de HELMA applicatie heeft ingevuld in de computer. Niet van toepassing wanneer de zorgverlener heeft opgenoemd en het antwoord heeft aangeklikt.

Geef voor iedere stelling aan in welke mate u met hiermee eens of oneens bent door het hokje met nummer aan te kruisen. Wat het beste past bij uw mening over het gebruik van HELMA.

	Sterk mee oneens				Sterk mee eens
1. Ik denk dat ik HELMA vaker wil gebruiken	1	2	3	4	5
2. Ik vond HELMA onnodig ingewikkeld	1	2	3	4	5
3. Ik vond HELMA makkelijk in gebruik	1	2	3	4	5
4. Ik had hulp nodig om HELMA te kunnen gebruiken	1	2	3	4	5
5.	1	2	3	4	5
6. Ik vond de verschillende functies van HELMA goed geïntegreerd	1	2	3	4	5
7. Ik vond dat er teveel tegenstrijdigheden in HELMA zaten	1	2	3	4	5
8. Ik kan me voorstellen dat de meeste mensen snel leren hoe ze HELMA moeten gebruiken	1	2	3	4	5
9. Ik vond HELMA erg omslachtig/lastig in gebruik	1	2	3	4	5
10. Ik voelde me erg zelfverzekerd tijdens het gebruik van HELMA	1	2	3	4	5
11. Ik moest nog veel leren voordat ik HELMA kon gebruiken	1	2	3	4	5

Interview

Perceived usefulness

- Waarom bent u HELMA gaan gebruiken?
- Wat vindt u over het algemeen van HELMA?
- Had het gebruik van HELMA meerwaarde voor u? (vraag 5 uit project)
 - Zo ja, wat was deze meerwaarde?
- Wat vindt u het meest positieve aan HELMA?
- Wat vindt u het meest negatieve van HELMA?
- Wanneer u in HELMA aangeeft dat u zich goed voelt, gaat dan op alle domeinen, 1)fysiek 2)mentaal 3)sociaal 4) omgeving, goed met u?
- Krijgt u door HELMA inzicht in uw gezondheidssituatie?
 - Waarom wel/niet?
- Refereren naar vraag HELMA “Kunt u aangeven in welke mate HELMA uw algemene gezondheid en welbevinden heeft beïnvloedt? (Schaal van 5 van Marit, vraag 4)
- Denkt u dat uw mantelzorger of zorgverlener u door HELMA betere zorg kan verlenen?

Ease of use

- Toen u HELMA voor het eerst gebruikte, lukte dat dan direct?
 - Had u hulp nodig?
 - Zo ja, waarmee?
- Vond u het makkelijk of moeilijk om HELMA te gebruiken?
 - Waarom wel/niet?
- Welke onderdelen vond u lastig om te gebruiken?
- Waren er nog belemmeringen bij het gebruik van HELMA?
- Wat zou er verbeterd kunnen worden aan HELMA? (vraag 6 uit project)

Social influence (belangrijke anderen adviseren om Helma te gebruiken (waarneming hiervan))

- Wie heeft u aangeraden HELMA te gaan gebruiken?
- Zullen er nog andere mensen om u heen zijn die het gebruik van HELMA zullen aanraden?
 - Waarom?
 - Welke mensen zijn dit?
 - Kunt u een aantal voorbeelden noemen?
 - Hecht u waarde aan de mening van deze mensen?
- Vindt u dat de zorgverlener/mantelzorger behulpzaam is bij het gebruik van HELMA?
 - Waarom?
 - Welke zorgverlener?

Facilitation conditions

- Heeft u thuis een computer, laptop, tablet of telefoon met internet waarop u Helma zou kunnen gebruiken?
 - Zo ja, een computer, laptop, tablet of telefoon?
 - Heeft u dit gebruikt voor HELMA?
 - Zo nee, waarom niet?
- Hoe heeft u de uitleg over het gebruik van HELMA ervaren?
- Heeft u voldoende computervaardigheden om HELMA zelfstandig te gebruiken?
- Is er een contactpersoon waar u met vragen over het gebruik van HELMA terecht kon?
- Had u genoeg tijd om HELMA in te vullen?
 - Duurde het invullen lang of niet?
- Hoe vaak per week vult u HELMA in?

- Zou u het vaker of minder vaak willen invullen?
- Hoe vaak dan?

Behavioral intention to use

- U heeft aangegeven dat u HELMA wel/niet zou willen blijven gebruiken in de komende periode (zie vraag 8 van de vragenlijst). Kunt u uitleggen waarom wel/niet?

Attitude (TAM)

- Wat is uw mening over dat er steeds meer technologieën in de thuiszorg gebruikt worden?
- Probeert u graag nieuwe technologieën uit?
- Zou u HELMA aanbevelen aan anderen/vrienden of familie?
 - Zo ja, waarom en voor wie zou dit bruikbaar kunnen zijn?
 - Zo nee, wat moeten wij anders doen zodat u het wel zou aanbevelen?

Trust

- Refereren naar vraag HELMA: was u bezorgd over de privacy van uw persoonlijke gegevens wanneer u HELMA gebruikte?
 - Zo ja, waarom?
- Wat vindt u ervan dat zorgverleners en mantelzorgers kunnen zien wat u invult in HELMA?

Overige vraag (Satisfactie)

- Welk cijfer op een schaal van 1-10 zou u HELMA geven? (vraag 7 uit project)

Afsluiting en dankwoord

Dit waren alle vragen van dit interview (inclusief voor project inlife vragenlijsten).
Heeft u nog vragen of aanvullingen?

Interview Zorgverlener

HELMA

Inleiding

- We zullen u vragen gaan stellen naar aanleiding van het gebruik van HELMA. Ik zal dit gesprek opnemen met audio zodat de gegevens later kunnen worden uitgewerkt en geen belangrijke informatie wordt gemist.
- Er zijn geen goede en foute antwoorden. Het gaat om uw mening en ervaring!

Naam zorgverlener: _____

Naam afnemer: _____

Datum van invullen: _____

System Usability Scale

Geef voor iedere stelling aan in welke mate u met hiermee eens of oneens bent door het hokje met nummer aan te kruizen. Wat het beste past bij uw mening over het gebruik van HELMA.

	Sterk mee oneens				Sterk mee eens
12. Ik denk dat ik HELMA vaker wil gebruiken	☐	☐	☐	☐	☐
	1	2	3	4	5
13. Ik vond HELMA onnodig ingewikkeld	☐	☐	☐	☐	☐
	1	2	3	4	5
14. Ik vond HELMA makkelijk in gebruik	☐	☐	☐	☐	☐
	1	2	3	4	5
15. Ik had hulp nodig om HELMA te kunnen gebruiken	☐	☐	☐	☐	☐
16.	1	2	3	4	5
17. Ik vond de verschillende functies van HELMA goed geïntegreerd	☐	☐	☐	☐	☐
	1	2	3	4	5
18. Ik vond dat er teveel tegenstrijdigheden in HELMA zaten	☐	☐	☐	☐	☐
	1	2	3	4	5
19. Ik kan me voorstellen dat de meeste mensen snel leren hoe ze HELMA moeten gebruiken	☐	☐	☐	☐	☐
	1	2	3	4	5
20. Ik vond HELMA erg omslachtig/lastig in gebruik	☐	☐	☐	☐	☐
	1	2	3	4	5
21. Ik voelde me erg zelfverzekerd tijdens het gebruik van HELMA	☐	☐	☐	☐	☐
	1	2	3	4	5
22. Ik moest nog veel leren voordat ik HELMA kon gebruiken	☐	☐	☐	☐	☐
	1	2	3	4	5

Interview

Perceived usefulness

- Waarom bent u HELMA gaan gebruiken?
- Wat vindt u over het algemeen van HELMA?
- Had het gebruik van HELMA meerwaarde voor u?
 - Zo ja, wat was deze meerwaarde?
- Wat ziet u als voordelen van HELMA voor uw cliënten?
- Wat ziet u als voordelen van HELMA voor u als zorgverlener?
- Wat ziet u als nadelen van HELMA voor uw cliënten?
- Wat ziet u als nadelen van HELMA voor u als zorgverlener?
- Geeft HELMA extra inzicht in de gezondheidssituatie van uw cliënt?
 - Waarom wel/niet?
- Kunt u aangeven in welke mate HELMA de algemene gezondheid en welbevinden van de cliënten heeft beïnvloedt?

1 Heel veel	2	3	4	5 Helemaal niet

- Denkt u dat u door HELMA betere zorg kan verlenen?
- Geeft HELMA voldoende informatie over de 4 domeinen(1. Fysiek, 2. Mentaal, 3. Sociaal en 4. Omgeving)?
- We doorlopen nu de vragen per domein (zie bijlage)

Domein Fysiek

- Wat vind u van de vragen?
- Zijn er vragen die u mist of die overbodig zijn?
- Zijn er vragen die u anders zou formuleren?

Domein Mentaal

- Wat vind u van de vragen?
- Zijn er vragen die u mist of die overbodig zijn?
- Zijn er vragen die u anders zou formuleren?

Domein Sociaal

- Wat vind u van de vragen?
- Zijn er vragen die u mist of die overbodig zijn?
- Zijn er vragen die u anders zou formuleren?

Domein Omgeving

- Wat vind u van de vragen?
- Zijn er vragen die u mist of die overbodig zijn?
- Zijn er vragen die u anders zou formuleren?

Ease of use

- Toen u HELMA voor het eerst gebruikte, lukte dat toen direct?
 - Had u hulp nodig?
 - Zo ja, waarmee?
- Vond u het makkelijk of moeilijk om HELMA te gebruiken?
 - Waarom makkelijk/moeilijk?
- Waren er nog belemmeringen bij het gebruik van HELMA?
 - Zo ja, wat voor belemmeringen?
- Wat zou er verbeterd kunnen worden aan HELMA?

Social influence (belangrijke anderen adviseren om Helma te gebruiken (waarneming hiervan))

- Maken de collega's waar u mee samenwerkt gebruik van HELMA?
 - Welke invloed heeft dit op uw eigen gebruik van HELMA?
- Vindt u dat de organisatie behulpzaam is bij het gebruik van HELMA?
 - Waarom wel/niet?
 - Welke persoon vanuit TMZ was behulpzaam?

Facilitation conditions

- Hoe heeft u de uitleg over het gebruik van HELMA ervaren?
- Heeft u voldoende computervaardigheden om HELMA zelfstandig te gebruiken?
- Is er een contactpersoon waar u terecht kan met vragen over het gebruik van HELMA?
 - Is deze contactpersoon makkelijk bereikbaar?
- Is HELMA makkelijk toe te passen in de zorgverlening van uw cliënten?
 - Waarom wel/niet?
- Denkt u dat uw cliënten HELMA makkelijk thuis kunnen gebruiken?
 - Waarom wel/niet?
- Wat vond u van de tijd die u had om HELMA in te vullen?
 - Duurde het invullen lang of niet?
 - Waar heeft u HELMA ingevuld (bij de cliënt of op kantoor)?
 - Heeft HELMA invloed op uw werkdruk?
- Hoe vaak per week vult u HELMA in per cliënt?
 - Zou u het vaker of minder vaak willen invullen?
 - Hoe vaak dan?

Behavioral intention to use

- Bent u van plan om HELMA in de komende periode te blijven gebruiken?
 - Waarom wel/niet?

Attitude (TAM)

- Wat vindt u ervan dat er steeds meer technologieën in de thuiszorg gebruikt worden?
- Probeert u graag nieuwe technologieën uit?
- Zou u het gebruik van HELMA aanbevelen aan andere collega's?
 - Zo ja, waarom en voor wie zou dit bruikbaar kunnen zijn?
 - Zo nee, wat moeten wij anders doen zodat u het wel zou aanbevelen?

Trust

- Vindt u dat HELMA de privacy van uw cliënten voldoende waarborgt?
 - Zo nee, waarom niet?

Bewijs

- Hoe belangrijk vindt u het dat er bewijs is dat HELMA meerwaarde heeft voor u deze gaat toepassen tijdens uw zorgverlening?

Job relevance

- Sluit HELMA goed aan bij de huidige manier van zorgverlening waardoor u dit in de praktijk goed zou kunnen gebruiken?
 - Waarom wel/niet?

Overige vraag (Satisfactie)

- Welk cijfer op een schaal van 1-10 zou u HELMA geven?

Afsluiting en dankwoord

Dit waren alle vragen van dit interview.

Heeft u nog vragen of aanvullingen?

Interview Mantelzorger

HELMA

Inleiding

- We zullen u vragen gaan stellen naar aanleiding van het gebruik van HELMA. Ik zal dit gesprek opnemen met audio zodat de gegevens later kunnen worden uitgewerkt en geen belangrijke informatie wordt gemist.
- Er zijn geen goede en foute antwoorden. Het gaat om uw mening en ervaring!

Toestemmingsverklaring

Onderzoek naar het gebruik van technologie, tevredenheid met de technologie en de kwaliteit van de zorg binnen Trivium Meulenbelt Zorg.

Ik verklaar hiermee dat ik op voor mij duidelijke wijze, mondeling ben ingelicht over de aard en doel van dit onderzoek. Mijn vragen zijn naar tevredenheid beantwoord.

Ik stem geheel vrijwillig in met deelname aan dit onderzoek. Ik behoud daarbij het recht deze instemming weer in te trekken zonder dat ik daarvoor een reden hoeft op te geven. Ik geef mijn instemming in het vertrouwen, dat een intrekking van mijn instemming geen nadelige invloed zal hebben op mijn behandeling.

Ik stem ermee in dat mijn gegevens anoniem en op vertrouwelijke wijze worden gebruikt en opgeslagen.

Ik stem ermee in dat mijn gegevens anoniem gebruikt mogen worden voor medisch-wetenschappelijke doeleinden.

Naam :
Adres :
Woonplaats :

Datum :

Handtekening mantelzorger:

Datum :

Naam afnemer:

Handtekening afnemer:

Naam mantelzorger: _____

Naam afnemer: _____

Datum van invullen: _____

Algemeen

1. Wat is uw relatie tot de cliënt?

2. Wat is uw leeftijd?

3. Wat is uw geslacht?

- ☐ Man
- ☐ Vrouw

4. Tot welke van de volgende technologieën heeft u thuis of op het werk toegang (kruis alle opties aan die van toepassing zijn)

- ☐ Geen technologie
- ☐ Computer (PC)
- ☐ Laptop
- ☐ Tablet
- ☐ Smartphone
- ☐ Mobiele telefoon (zonder internet)
- ☐ Anders, namelijk:

5. Geef hieronder aan hoe vaak u deze technologieën gebruikt:

Computer of laptop

- ☐ Meerdere keren per dag
- ☐ Dagelijks
- ☐ Eens in de zoveel dagen
- ☐ Alleen wanneer dit nodig is

Tablet

- ☐ Meerdere keren per dag
- ☐ Dagelijks
- ☐ Eens in de zoveel dagen
- ☐ Alleen wanneer dit nodig is

Smartphone

- ☐ Meerdere keren per dag
- ☐ Dagelijks
- ☐ Eens in de zoveel dagen
- ☐ Alleen wanneer dit nodig is

Mobiele telefoon

- ☐ Meerdere keren per dag
- ☐ Dagelijks
- ☐ Eens in de zoveel dagen
- ☐ Alleen wanneer dit nodig is

Internet

- ☐ Meerdere keren per dag
- ☐ Dagelijks
- ☐ Eens in de zoveel dagen
- ☐ Alleen wanneer dit nodig is

6. Heeft u HELMA ingevuld

- ☐ Ja (ga naar interview versie A)
- ☐ Nee (ga naar interview versie B)

System Usability Scale

Geef voor iedere stelling aan in welke mate u met hiermee eens of oneens bent door het hokje met nummer aan te kruizen. Wat het beste past bij uw mening over het gebruik van HELMA.

Invullen indien de geïnterviewde HELMA heeft gebruikt.

	Sterk mee oneens				Sterk mee
eens					
23. Ik denk dat ik HELMA vaker wil gebruiken	☐	☐	☐	☐	☐
	1	2	3	4	5
24. Ik vond HELMA onnodig ingewikkeld	☐	☐	☐	☐	☐
	1	2	3	4	5
25. Ik vond HELMA makkelijk in gebruik	☐	☐	☐	☐	☐
	1	2	3	4	5
26. Ik had hulp nodig om HELMA te gebruiken	☐	☐	☐	☐	☐
27.	1	2	3	4	5
28. Ik vond de verschillende functies van HELMA goed geïntegreerd	☐	☐	☐	☐	☐
	1	2	3	4	5
29. Ik vond dat er teveel tegenstrijdigheden in HELMA zaten	☐	☐	☐	☐	☐
	1	2	3	4	5
30. Ik kan me voorstellen dat de meeste mensen snel leren hoe ze HELMA moeten gebruiken	☐	☐	☐	☐	☐
	1	2	3	4	5
31. Ik vond HELMA erg omslachtig/lastig in gebruik	☐	☐	☐	☐	☐
	1	2	3	4	5
32. Ik voelde me erg zelfverzekerd tijdens het gebruik van HELMA	☐	☐	☐	☐	☐
	1	2	3	4	5
33. Ik moest nog veel leren voordat ik HELMA kon gebruiken	☐	☐	☐	☐	☐
	1	2	3	4	5

Interview versie A

Perceived usefulness

- Waarom bent u HELMA gaan gebruiken?
- Wat vindt u over het algemeen van HELMA?
- Had het gebruik van HELMA meerwaarde voor u?
 - Zo ja, wat was deze meerwaarde?
- Wat ziet u als voordelen van HELMA voor de persoon waar u mantelzorg aan verleent?
- Wat ziet u als voordelen van HELMA voor u als mantelzorger?
- Wat ziet u als nadelen van HELMA voor de persoon waar u mantelzorg aan verleent?
- Wat ziet u als nadelen van HELMA voor u als mantelzorger?
- Geeft HELMA extra inzicht in de gezondheidssituatie van de persoon waar u mantelzorg aan verleent?
 - Waarom wel/niet?
- Kunt u aangeven in welke mate HELMA de algemene gezondheid en welbevinden van de persoon waar u mantelzorg aan verleent heeft beïnvloedt?

1 Heel veel	2	3	4	5 Helemaal niet

Ease of use

- Toen u HELMA voor het eerst gebruikte, lukte dat toen direct?
 - Had u hulp nodig?
 - Zo ja, waarmee?
- Vond u het makkelijk of moeilijk om HELMA te gebruiken?
 - Waarom makkelijk/moeilijk?
- Waren er nog belemmeringen bij het gebruik van HELMA?
 - Zo ja, wat voor belemmeringen?
- Wat zou er verbeterd kunnen worden aan HELMA?

Social influence (belangrijke anderen adviseren om Helma te gebruiken (waarneming hiervan))

- Maken de zorgverleners en de persoon waar u mantelzorg aan verleent gebruik van HELMA?
 - Welke invloed heeft dit op uw eigen gebruik van HELMA?
- Vindt u dat TMZ het gebruik van HELMA ondersteunt?
 - Waarom wel/niet?
 - Welke persoon vanuit TMZ was behulpzaam?

Facilitation conditions

- Hoe heeft u de uitleg over het gebruik van HELMA ervaren?
- Heeft u voldoende computervaardigheden om HELMA zelfstandig te gebruiken?
- Is er een contactpersoon waar u terecht kan met vragen over het gebruik van HELMA?
 - Is deze contactpersoon makkelijk bereikbaar?
- Denkt u dat de persoon waar u mantelzorg aan verleent HELMA makkelijk thuis kan gebruiken?
 - Waarom wel/niet?
- Wat vond u van de tijd die u had om HELMA in te vullen?
 - Duurde het invullen lang of niet?
 - Waar heeft u HELMA ingevuld?

- Heeft HELMA invloed op uw werkdruk?
- Hoe vaak per week vult u HELMA in?
 - Zou u het vaker of minder vaak willen invullen?
 - Hoe vaak dan?

Behavioral intention to use

- Bent u van plan om HELMA in de komende periode te blijven gebruiken?
 - Waarom wel/niet?

Attitude (TAM)

- Wat vindt u ervan dat er steeds meer technologieën in de thuiszorg gebruikt worden?
- Probeert u graag nieuwe technologieën uit?
- Zou u het gebruik van HELMA aanbevelen aan andere mantelzorgers?
 - Zo ja, waarom en voor wie zou dit bruikbaar kunnen zijn?
 - Zo nee, wat moeten wij anders doen zodat u het wel zou aanbevelen?

Trust

- Vindt u dat HELMA de privacy van de persoon waar u mantelzorg aan verleent voldoende waarborgt?
 - Zo nee, waarom niet?

Bewijs

- Hoe belangrijk vindt u het dat er bewijs is dat HELMA meerwaarde heeft voor u deze gaat gebruiken bij de persoon waar u mantelzorg aan verleent?

Job relevance

- Sluit HELMA goed aan bij de huidige manier van zorgverlening als mantelzorger waardoor u dit in de praktijk goed zou kunnen gebruiken?
 - Waarom wel/niet?

Overige vraag (Satisfactie)

- Welk cijfer op een schaal van 1-10 zou u HELMA geven?

Afsluiting en dankwoord

Dit waren alle vragen van dit interview.

Heeft u nog vragen of aanvullingen?

Interview versie B

Perceived usefulness

- Wat vindt u van HELMA?
- Heeft het gebruik van HELMA door de persoon waar u mantelzorg aan verleent en/of zorgverlener meerwaarde (positieve e negatieve punten) voor u als mantelzorger?
 - Zo ja, wat was deze meerwaarde?
- Heeft u 1 of meerdere keren ingelogd om te bekijken wat in HELMA is ingevuld?
 - Zo ja, geeft HELMA extra inzicht in de gezondheidssituatie van de persoon waar u mantelzorg aan verleent? Waarom wel/niet?
 - Zo niet, waarom?

Ease of use

- Toen u uitleg kreeg over HELMA vond u het makkelijk of moeilijk om HELMA te gebruiken?
 - Waarom makkelijk/moeilijk?
- Denkt u dat de persoon waar u mantelzorg aan verleent HELMA makkelijk thuis kan gebruiken?
 - Waarom wel/niet?

Social influence (belangrijke anderen adviseren om Helma te gebruiken (waarneming hiervan))

- Maken de zorgverleners en de persoon waar u mantelzorg aan verleent gebruik van HELMA?
 - Welke invloed heeft dit op uw eigen gebruik van HELMA?
- Vindt u dat TMZ het gebruik van HELMA ondersteunt?
 - Waarom wel/niet?
 - Welke persoon vanuit TMZ was behulpzaam?

Facilitation conditions

- Hoe heeft u de uitleg over het gebruik van HELMA ervaren?
- Heeft u voldoende computervaardigheden om HELMA zelfstandig te gebruiken?
- Is er een contactpersoon waar u terecht kan met vragen over het gebruik van HELMA?
 - Is deze contactpersoon makkelijk bereikbaar?

Behavioral intention to use

- Bent u van plan om HELMA in de komende periode te gebruiken?
 - Waarom wel/niet?
 - Zo ja, alleen om naar informatie te kijken of om ook zelf in te vullen?

Attitude (TAM)

- Wat vindt u ervan dat er steeds meer technologieën in de thuiszorg gebruikt worden?
- Probeert u graag nieuwe technologieën uit?
- Zou u het gebruik van HELMA aanbevelen aan andere mantelzorgers?
 - Zo ja, waarom en voor wie zou dit bruikbaar kunnen zijn?
 - Zo nee, wat moeten wij anders doen zodat u het wel zou aanbevelen?

Trust

- Vindt u dat HELMA de privacy van de persoon waar u mantelzorg aan verleent voldoende waarborgt?
 - Zo nee, waarom niet?

Bewijs

- Hoe belangrijk vindt u het dat er bewijs is dat HELMA meerwaarde heeft voor u deze gaat gebruiken bij de persoon waar u mantelzorg aan verleent?

Job relevance

- Sluit HELMA goed aan bij de huidige manier van zorgverlening als mantelzorger waardoor u dit in de praktijk goed zou kunnen gebruiken?
 - Waarom wel/niet?

Overige vraag (Satisfactie)

- Welk cijfer op een schaal van 1-10 zou u HELMA geven?

Afsluiting en dankwoord

Dit waren alle vragen van dit interview.

Heeft u nog vragen of aanvullingen?

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