



Using Interpretative Phenomenological Analysis in Human-Computer Interaction Research

**The
Phenomenology
of Qualitative
Research**

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Abstract



The desire to maintain an independent lifestyle is one shared by an increasing number of older adults as well as persons with disabilities. Family and friends, also known as informal caregivers, play an integral role in helping their loved ones maintain independence. Remote monitoring technologies (RMTs) can be used to sense, record, and communicate a person's daily activities. However, an understanding is limited of the informal caregiver's needs and perceptions of RMTs used in an in-home setting.

The purpose of our study is to explore how informal caregivers perceive RMTs and their use for monitoring and supporting their care recipients who choose to live independently.

Today we will describe how interpretative phenomenological analysis (IPA) will be used to analyze the data collected from interviews conducted with informal caregivers about their unique caregiving tasks, perceived use of existing RMTs, and concerns about RMT adoption and use.



Human-Computer Interaction

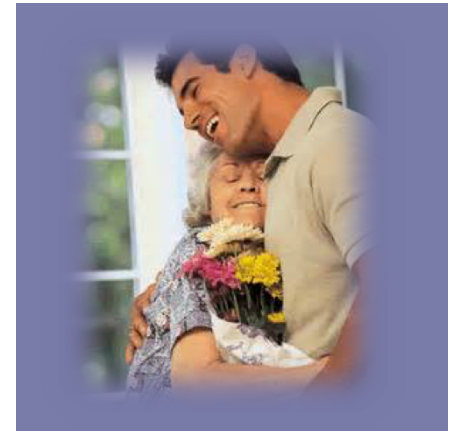


- “HCI is a discipline concerned with the design, evaluation, and implementation of interactive computing systems for human use and with the study of a major phenomena surrounding them.”

- Source: Association of Computing Machinery (ACM) SIGCHI



Informal caregivers are family members who are unpaid to provide various levels of care (e.g., monitoring, shopping, bathing, and companionship) for their family members (e.g., parent, spouse, sibling, aunt, uncle, etc.)(Ohio Department of Aging, n.d.)



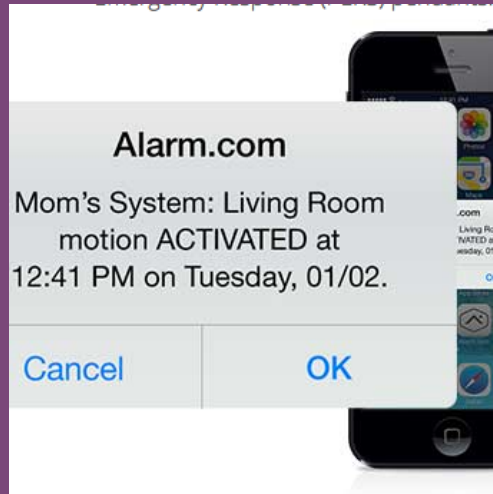


Remote monitoring technologies (RMTs) are

technologies that can sense, record, and communicate various activities and data.



Personal Emergency Response Pendants



Mobile Emergency Alert



Wearable Sensors



Floor Mat with Sensor



Remote Video Monitoring



Context – Why Study Informal Caregivers and Technology?



- In 2014 there were approximately 40 million Americans who provided unpaid care to an adult.
- By 2020, 117 million Americans are expected to need assistance.
- Millions of caregivers are under age 50 and are comfortable using technology.
- There is a need for user-centered design so that technology innovations meet the needs of this population of caregivers and their care recipients.



Source: AARP (2016).



Review of the Literature




- Acceptance and use of technology:
 - in general (Barnard, Bradley, Hodgson, & Lloyd, 2013; Burnett, Mitzner, Charness, & Rogers, 2011; Leung, et al., 2012; Mitzner et al., 2010).
 - to support persons with dementia and their caregivers (Hwang, et al., 2015; Rosenberg, Kottorp, & Nygard, 2012; Topo, 2009).
- Healthcare providers' perceptions of technologies for monitoring older adults within institutional settings (Tiberio, Rogers, Mitzner, & Kemp, 2013; Thompson & Thielke, 2009; Lee & Day, 2014).
- Trends in family caregiving (Wolff, Mulcahy, Huang, Roth, Covinsky, & Kasper, 2017).
- Design of specific technologies used to care for the elderly (Michaud et al., 2007; Wada, Ikeda, Inoue, & Uehara, 2010; Zsiga et al., 2013).
- Understanding of how caregivers are using technology, what functionality is most useful, and barriers to use (AARP, 2016).



Research Gap

- How informal caregivers can use RMTs to monitor and support the health, safety, and well-being of their care recipients in an in-home setting is limited. The informal caregiver's voice is underrepresented or not included at all (Jaschinski & Allouch, 2017).





+ How do informal caregivers
make sense of RMTs in their
caregiving roles?

+ Research Questions



1

What problems are expressed by informal caregivers regarding the current way they monitor and support their care recipients?

2

How do informal caregivers perceive the features and applications of existing RMTs for monitoring and supporting their care recipients?

3

What do informal caregivers perceive as benefits and risks of using RMTs to monitor and support their care recipients?

4

What are the needs of informal caregivers relative to their adoption and use of RMTs?



Research Design



- Qualitative phenomenological study (Finlay, 2011)
- **Methods:** Survey followed by semi-structured interviews.
 - Survey used to gather basic information, identify interview participants, and develop the interview guide.
 - Interviews used to gain an in-depth understanding of the caregivers and their perceptions about and use of RMTs.
- **Data Analysis:** Descriptive statistics to analyze results of questionnaire and interpretative phenomenological analysis (Smith, Flowers, & Larkin, 2009) for the interviews.
- **Participants and Setting:** Informal caregivers of one or more adult family members (e.g., elderly parent, adult child with a disability) who live(s) at home.



Interpretative Phenomenological Analysis (IPA)



- Examines how people “make sense of major life experiences” (Smith, et al., 2009, p. 1).
- Phenomenology (understanding of the experience), hermeneutics (interpretation of the experience), and idiography (attention to detail/particulars).
- Small purposeful and homogeneous sample.
- “The effectiveness of the IPA study is judged by the light it sheds within the broader context” (Smith, et al., 2009, p. 51).



Survey Results – Respondents



- To date, 25 people completed the survey
- 84% female; 12% male; 4% other
- 68% of caregivers are age 50 or older
- 21% White; 16% Hispanic/Latin/Spanish
- 60% work full time
- 48% care for mother; 28% for father; 20% mother-in-law; 16% husband
- 40% of care recipients are age 80-89; 24% are age 70-79; 24% are age 90+
- 44% live in same residence; 16% live less than 5 miles away; 20% live 6-15 miles away
- 48% are the primary caregiver; 28% have a formal caregiver
- 80% provide care/assistance on a daily basis
- 72% currently do not use RMTs



Types of Care Performed on a Regular Basis



Frequency table

Choices	Absolute frequency	Relative frequency by choice	Relative frequency	Adjusted relative frequency
Check-in phone calls	17	16.19%	68%	68%
Reminders (e.g., to take medication, eat, etc.)	14	13.33%	56%	56%
Assistance with activities of daily living (e.g., shopping, food preparation, bathing)	17	16.19%	68%	68%
Companionship	21	20%	84%	84%
Healthcare advocate	17	16.19%	68%	68%
General keeping tabs on care recipient	17	16.19%	68%	68%
Other (please specify):	2	1.9%	8%	8%
Sum:	105	100%	-	-
Not answered:	0	-	0%	-

Total answered: 25



Methods of Communication



Frequency table

Choices	Absolute frequency	Relative frequency by choice	Relative frequency	Adjusted relative frequency
In person	24	37.5%	96%	96%
Phone (landline)	12	18.75%	48%	48%
Phone (cellular)	12	18.75%	48%	48%
Email	3	4.69%	12%	12%
Text message	9	14.06%	36%	36%
Computer, Tablet, and/or Smartphone Apps (e.g., Facetime, Skype, Facebook, Instagram)	4	6.25%	16%	16%
Sum:	64	100%	-	-
Not answered:	0	-	0%	-

Total answered: 25

+ Familiarity with RMTs



Frequency table

Choices	Absolute frequency	Relative frequency by choice	Relative frequency	Adjusted relative frequency
In-home medical/emergency alert devices that plug into a land-line telephone jack.	11	18.33%	44%	44%
Mobile medical/emergency alert pendants that are worn around the neck with a lanyard or clipped to a belt.	16	26.67%	64%	64%
Wrist-worn sensors (bracelet) that track small changes in daily routines.	6	10%	24%	24%
Smartphone apps that can track symptoms and medications.	6	10%	24%	24%
Apps that integrate with wearable wristbands and watches that can remotely monitor heart rate, sleep, and activity levels.	6	10%	24%	24%
Smartwatch features and apps that help with reminders and calendar monitoring.	5	8.33%	20%	20%
Telepresence robots that display the image of a remote user who is operating the robot using a personal computer. This remote user can view the care recipient's surroundings.	2	3.33%	8%	8%
I am not familiar with these types of technologies.	8	13.33%	32%	32%
Sum:	60	100%	-	-
Not answered:	0	-	0%	-

Total answered: 25

+ Users of RMTs



Frequency table

Choices	Absolute frequency	Relative frequency by choice	Relative frequency	Adjusted relative frequency
In-home medical/emergency alert devices that plug into a land-line telephone jack.	8	28.57%	32%	36.36%
Mobile medical/emergency alert pendants that are worn around the neck with a lanyard or clipped to a belt.	5	17.86%	20%	22.73%
Wrist-worn sensors (bracelet) that track small changes in daily routines.	1	3.57%	4%	4.55%
Smartphone apps that can track symptoms and medications.	2	7.14%	8%	9.09%
I do not use these types of technologies.	11	39.29%	44%	50%
Other (e.g., List here other apps or devices that you are aware of that can be used to remotely monitor symptoms, vital signs, activity levels, sleep patterns, etc.):	1	3.57%	4%	4.55%
Sum:	28	100%	-	-
Not answered:	3	-	12%	-

Total answered: 22



Interview Guide



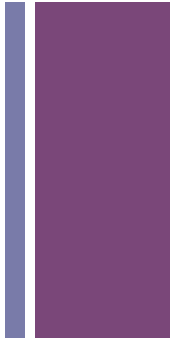
■ Part 1: Life as an Informal Caregiver

- Tell me about your caregiving relationship (e.g., for whom you care, how did the caregiving relationship come to be, etc.).
- Regarding your caregiving relationship, what is a typical *day-in-the-life* like? What happens? How do you assist your care recipient? What kinds of tasks do you perform? Perhaps there is a specific day that you can walk me through.
- What do you like best about being a caregiver?
- What do you like least about being a caregiver?
- If you had a magic wand, what would you change about your caregiving experience?

■ Part 2: Perceptions and Use of RMTs

- Tell me about the device(s) you use to monitor your loved one.
- Why did you choose to use this device? What was the process like of buying it? How did you introduce it to your loved one?
- What do you like best about the device? What do you like least?
- What difficulties might you have helping your care recipient adopt and use RMTs?
- When you think about the future and these types of technologies might help support informal caregivers in their role, what gives you a sense of hope? What makes you concerned or worried?
- What else would you like to share with me that I haven't asked?

+ Pilot Test



- Tested audio informed consent, interview guide, and transcription process.
- Reading through the informed consent can be tedious but worked well. Took about 10 minutes.
- Interview guide was helpful but needed to be revised to include more common terms and language (e.g., “your mom” vs. your “care recipient” “your device” vs. “remote monitoring technology,” etc.).
- Used rev.com for transcription. Easy, fast, and efficient. Cost is \$1 per audio minute.



Transcript Analysis (Smith et al., 2009)



- **Step 1:** Reading and re-reading
- **Step 2:** Initial noting – “exploratory commenting”
- **Step 3:** Developing emergent themes
- **Step 4:** Searching for connections across emergent themes
- **Step 5:** Moving to the next case
- **Step 6:** Looking for patterns across cases



Rationale for Video Monitor



Sometimes I go over and I'd see he's not shaving properly, and he was immaculate as a professional. He had designer suits, he had the most amazing, to give you an example, this is he, if you can see (shows a photo).

Interviewer: Oh, my. Yes, I see him.

Interviewee: With his car.

Interviewer: Wow.

Interviewee: This is he.

Interviewer: Oh, so handsome.

Interviewee: Yes. Then that was a year before Alzheimer's.



I'm showing you that to show that he dressed very professionally and immaculately. Sometimes the carers I go over and they'd have an old fleece on him. I'd say just because he's Alzheimer's please respect how he dressed. You've got the best of clothes in the wardrobe. I am not happy with that, you need to take it off. This is where this started, that I need to be able to monitor without feeling of having to go over every single day, twice or three times a day, and paying a mint for carers.



Rationale for Emergency Response Pendant



Well there are a lot of companies who do it so it was a referral, and also the price seemed right. And the fact that she lives at my brother's house and there's people in and out all the time, however if they're traveling or we're traveling ... And actually I think it makes her more independent, because she can go in the shower or wherever, I know that she doesn't have to have someone sitting there waiting while she showers just in case she falls. Or that we can all be out during the day and she can be home alone.

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