Regular Article

The Process of Using Participatory Action Research when Trying out an ICT Solution in Home-Based Rehabilitation

International Journal of Qualitative Methods
Volume 21: 1–8

DOI: 10.1177/16094069221084791
journals.sagepub.com/home/ijq
SAGE

Anneli Nyman[1], Stina Rutberg[1], Margareta Lilja[1], and Gunilla Isaksson[1]

Abstract

This article describes the process of using PAR and discusses the strengths and challenges of adopting it as a methodology. With a pilot project "the rehabilitation journey" as a showcase, we share experiences of how we co-created knowledge and illustrate the actions taken and participants' involvement in the process. This pilot project aimed to explore how ICT solutions can create new ways to deliver home-based rehabilitation that meet the needs of the organization, rehabilitation professionals, and older persons. Our experience is that using PAR as a research method had several strengths. Our project stemmed from demographic and epidemiological trends in society viewed as a "real life problem" experienced on different levels in the organization of home-based rehabilitation. At the same time, PAR was a challenging research method to use, as it was time-consuming and required the commitment and contribution over time of the different participants involved. There were also specific challenges that had to be considered regarding routines and regulations, as the pilot project was conducted in a health care context. This article aspires to offer methodological guidelines by using a six-step method to illustrate a PAR process. We propose that these guidelines can act as a tool to guide researchers in carrying out PAR.

Keywords

action research, methods in qualitative inquiry, PAR - participatory, action research, mixed methods, community based research

Introduction

This paper describes experiences associated with the process of using participatory action research (PAR) in a pilot project when trying out an ICT solution in home-based rehabilitation. According to Freire (1993), action can range from the rising of critical consciousness among individuals and communities about a shared concern to changes in practices. Further, Freire argues that the central tenet of PAR is that it begins with a real-life problem or need(s), rather than with the researcher's perception of those problems. This pilot project was designed as a response to concerns accentuated by social services, responsible for community-based healthcare, in a municipality in northern Sweden. The rehabilitation professionals and stakeholders in social services experienced growing challenges in practice to uphold quality in home-based rehabilitation, for example, continuity in intervention delivery and follow-ups. Further, they experienced challenges to provide accessibility to service, especially when older persons were living in rural areas, which involves time-consuming travels. They stressed the need to develop new working methods in home-based rehabilitation as an urgent and essential issue, which formed the basis for this pilot project. The rehabilitation services provided are mostly home-based, that is, delivered in the person's home through physical meetings with the focus on supporting the person to regain, retain, or gain independence in activities of daily living (ADL) according to goals set by the person.

[1]Department of Health, Education and Technology, Luleå University of Technology, Sweden

Corresponding Author:
Anneli Nyman, Department of Health, Education and Technology, Luleå University of Technology, Porson, Luleå 971 87, Sweden.
Email: anneli.nyman@ltu.se

Given the demographic and epidemiological trends with an aging population that is living longer and with disability, society is obligated to respond by preparing health systems to address these trends. To manage future healthcare demands, rehabilitation is proposed as a key health strategy (Stucki et al., 2018). As more of the health services in Sweden are provided through the municipality (Regeringskansliet, 2018), rehabilitation in the person's home must be stressed. Home-based rehabilitation makes it possible to focus the rehabilitation on daily activities in the persons own home environment and surroundings (Wottrich et al., 2007). Rehabilitation is described in a brief definition as *"the health strategy that aims to enable people with health conditions experiencing or likely to experience disability to achieve and maintain optimal functioning in interaction with the environment"* (Stucki et al., 2007; p.282). Rehabilitation services are commonly provided by a multiprofessional team, including occupational therapists and physiotherapists, to support persons in regaining abilities or compensating for loss of abilities, promoting independence and an active and social life in home and society (Joseph & Robinson, 2020). In Sweden, organizations in community-based health- and social care are in the beginning of a transition towards accessible care that is close to citizens. Emphasized in this care is the development of e-health to provide services (Regeringskansliet, 2018). Thus, new working solutions and methods need to be developed to effectively deliver rehabilitation.

In this pilot project, working solutions, including the use of information and communication technologies (ICTs), was designed to meet the need to develop effective working methods. This is congruent with research that proposes ICT as a promising tool in interventions to support older persons (Arthanat, et al., 2019; Vollenbroek-Hutten, et al., 2017). An ICT-supported service is much more than just a technological tool. Rather, it is a service that combines technical tools with the purposes for which they are used and implemented in practice (Vollenbroek-Hutten et al., 2017). Research suggests that ICTs, for example, may improve older people's access to health care services and open to new working methods (Keränen, et al., 2017). This implies that implementing ICT-supported services also involves changing habits and routines within social services (i.e., for the organization, rehabilitation professionals, and older persons), and building on new knowledge and experiences.

PAR was used in this pilot project as PAR emphasizes the connection of research with action in a real-world setting, resulting in the cogeneration of knowledge between researchers and participants. It values experimental knowledge that can be used to address real-life problems and achieve positive social change (Park, 1999; Reason & Bradbury, 2008). Hence, PAR encompasses three central constructs: participation, action, and research (Greenwood & Levin, 2007), usually incorporating a variety of methodologies and methods. PAR typically involves a group of researchers' collaborating with members of an organization or community in decision making in all research phases and action processes to better understand and enhance organizational or community functions through shared participatory research (Brydon-Miller et al., 2011; Denzin & Lincoln, 2011). Using PAR, researchers seek to fully include participants as collaborators throughout the research project, generating both knowledge and action in coproduction (Reason & Bradbury, 2008). More specifically, in this pilot project, participants from social services in the municipality (see Table 1) were involved in identifying issues and participating in the process of shared dialogue and reflection to understand the issues of concern. This shared process was critical to further address actions needed to develop effective working methods in home-based rehabilitation.

Purpose of This Paper

In this paper, we describe the process of using PAR and discuss the strengths and challenges of adopting it as a methodology. To illustrate, we use the pilot project "*the rehabilitation journey"* as a showcase. This pilot project aimed to explore how ICT solutions can create new ways to deliver rehabilitation that meet the needs of the organization, rehabilitation professionals, and older persons.

Methodology

To address the purpose and provide a description of the process when using PAR, we applied a methodological approach involving six steps. This methodological approach has been described when developing and evaluating community-based services through participatory action research (Taylor et al., 2004). According to Taylor et al. (2004) methodological approaches to PAR are multidimensional, but generally involve these six steps. Even though these steps are presented separately, the process should be considered iterative, rather than linear. The six steps are (1) delineating the problem; (2) choosing action; (3) design and assessment; (4) engagement in action; (5) data collection; and (6) reflective knowledge.

Design of the Pilot Project – "The Rehabilitation Journey"

The pilot project employed a PAR design and lasted over a period of eight months. Different members involved in the rehabilitation process in the municipality (Table 1) were included and encouraged to identify needs, plan and try out solutions in their practice setting as well as make necessary changes during the project. Using this method promoted the inclusion of different actors from social services in the municipality as co-researchers in different phases of the project, including identifying and prioritizing the problem of importance to research, generating, and analyzing data and disseminating results to inform change.

Table 1. Illustration of Actions Taken and Participant Involvement in the Six Steps of the PAR Method.

The Six Steps of PAR	Actions	Participant Involvement
Step 1: Delineating the problem	Workshop	Stakeholders responsible for rehabilitation, rehabilitation professionals and all researchers
Step 2: Choosing action	Seminar – choosing ICT solution	All researchers
	Workshop – test of ICT solution	Stakeholders responsible for rehabilitation, rehabilitation professionals and all researchers
	Stakeholder consultation – presentation and discussion of ICT solution	Key stakeholders and researchers (GI, SR)
Step 3: Design and assessment	Workshop – choosing approach for data collection and procedures	Stakeholders for rehabilitation, rehabilitation professionals and all researchers
Step 4: Engaging in action	Trying out the ICT solution	Rehabilitation professionals and older persons
	Workshops (three occasions)	Rehabilitation professionals and all researchers
Step 5: Data collection	Fieldnotes	Researcher (GI, SR)
	Interviews with older persons	Researcher (GI, SR) and older persons
Step 6: Reflexive knowledge	Workshop	Stakeholders responsible for rehabilitation, rehabilitation professionals and all researchers
	Seminar – presentation of and reflections on results	Stakeholders responsible for rehabilitation, rehabilitation professionals, researchers (GI, SR) and invited rehabilitation professionals from the municipality

Note. Key stakeholders: Head of the elderly health and medical care sector, IT director. Stakeholders responsible for rehabilitation: two rehabilitation managers. Rehabilitation professionals: three occupational therapists (OTs) and three physiotherapists (PTs). Researchers: professor in occupational therapy (GI), associate professor in physiotherapy (SR), associate professor in computer science (JH), and professor in computer science (KS). Older persons: three women and two men.

Study Setting

The pilot project was carried out in a middle-sized municipality with an area of 2000 square kilometers and 78 000 residents in the northern part of Sweden. In this municipality, rehabilitation is organized as a unit under social services led by rehabilitation managers. The professions with the primary responsibility for rehabilitation are occupational therapists and physiotherapists, who work on a team in collaboration with case managers, nurses, and home care staff in designated areas within the municipality. The pilot project included researchers and participants with different levels of expertise and responsibilities regarding social services and rehabilitation in the municipality as well as those in need of rehabilitation, that is, key stakeholders, stakeholders responsible for rehabilitation, rehabilitation professionals, and older persons in need of rehabilitation. The action taken and participant involvement are summarized in Table 1.

Setting the Scene

An initial meeting was held between the project coordinators (researchers GI and SR) and key stakeholders (head of the elderly health and medical care sector and IT director) from the municipality. An overall problematic situation was described by the key stakeholders concerning the increased responsibility for home-based rehabilitation and the growing proportion of older people with rehabilitation needs in their homes. They described an urgent need to find new effective working solutions and methods to deliver home-based rehabilitation. Moreover, it was important to increase the productivity and quality of the service to meet the standards set by the government and the local authorities. During this meeting, the key stakeholders and researchers discussed how rehabilitation was organized at present and the value of co-generating knowledge and coproducing actions to develop new working solutions, including ICT, in the home-based rehabilitation context. Built upon this discussion, an agreement was made to initiate the pilot project "the rehabilitation journey" in a specific geographical area in the municipality.

The Process of Using Participatory Action Research

Below, we present the process of PAR using the pilot project as a showcase. The actions taken and participant involvement are illustrated in Table 1 and further explained under headings following the six steps described by Taylor, et al., (2004).

Step 1. Delineating the problem

Workshop . Step one began with a workshop to outline the problems and needs regarding organizational concerns related to growing challenges to uphold quality in home-based rehabilitation. The workshop consisted of stakeholders responsible for rehabilitation, rehabilitation professionals, and researchers (see Table 1). Different problems were identified in relation to effectively delivering and upholding quality in home-based rehabilitation. Long travel distances means that a great deal of time was spent scheduling home visits and traveling to older persons' homes. A lack of logistics, working

solutions, and methods affected possibilities to deliver rehabilitation to an extent that met the older persons' needs. Another problem was a lack of support for family caregivers and home-help staff. The discussions reflected frustration about the limited possibilities to deliver a high-quality service in practice to meet the needs of older persons in their homes. From the discussions, the following requests were prioritized by the stakeholders responsible for rehabilitation and the rehabilitation professionals: (i) provide a more time-efficient way to deliver home-based rehabilitation using ICT, (ii) develop and try out new working methods using ICT to successfully provide home-based rehabilitation, and (iii) provide solutions using ICT to support family caregivers and home-help staff. The discussion continued with an emphasis on trying out different ICT solutions. Here, the researchers had the role of facilitators as well as experts when discussing new possible working methods with ICT solutions. At this point, many ethical issues arose related to difficulties in handling information in a secure way when trying out ICT solutions in a health care context. Consequently, many of the needs identified could not be managed within this project, and a shared decision was made to use an ICT solution for interaction and communication in real time but not record any data. Based on the discussions and decisions made in this first step, the researchers (GI, SR) completed an ethical application that was approved by the regional ethical review board Umeå (Dnr: 2016/292-31).

Step 2 Choosing action steps

In the pilot project, this step included three actions: a seminar, a workshop, and consultation with stakeholders.

Seminar – Choosing an ICT Solution. Step two began with a seminar where the researchers (see Table 1) discussed potential ICT solutions that could meet the identified problems to effectively deliver and uphold quality in home-based rehabilitation and prioritized requests identified in step one. From this discussion, the researchers chose to suggest an existing tool for communication and interaction in real time with audio and video. From earlier discussions, it was important that the tool was user-friendly and easy to implement in existing organizations in a sustainable way. Therefore, it was decided within the research group to try out Skype as the solution for communication and interaction. Tablets were identified as the tool on which to install Skype.

Workshop – Test of the ICT Solution. A workshop was held with stakeholders for rehabilitation and rehabilitation professionals (see Table 1) where the researchers presented and discussed the solution. Tablets on which Skype was installed were provided through the pilot project, and the rehabilitation professionals tried the solution during the workshop. This created opportunities to discuss how the ICT solution could be used in different situations in practice. It was agreed upon that Skype would enable the potential for communication and interaction when, for example, providing instructions, giving advice, implementing follow-ups, and monitoring change.

Stakeholders' Consultation – Presentation and Discussion of the ICT Solution. The researchers presented the chosen ICT solution for the key stakeholders (see Table 1). The possibility to try out the solution as well as the sustainability after the project were discussed. More specifically, possibilities and challenges for social services to provide ICT support to rehabilitation professionals were emphasized. During this consultation, it was agreed upon how to facilitate knowledge dissemination and report the results of the pilot project.

Step 3 Design and assessment

Workshop – Choosing an Approach for Data Collection and Procedures. During this workshop, the stakeholders for rehabilitation and rehabilitation professionals together with the researchers (see Table 1) discussed and chose the research design and approach to data collection. Different ideas were discussed regarding when, how, and with whom the ICT solution could be tried out. In these discussions, benefits and challenges were identified from the perspective of the rehabilitation professional's and their ideas of how to meet older person's needs. Different approaches were discussed on how to generate data to: (i) document the PAR process, (ii) to evaluate how the ICT solution is experienced by the rehabilitation professionals and the older persons, and (iii) how the ICT solution contribute to new working methods in home-based rehabilitation. During these discussions, the importance of documenting field notes was discussed. Furthermore, individual interviews were decided upon in favor of focus groups based on the experience of the rehabilitation professionals concerning older persons' various needs and challenges. The rehabilitation professionals contacted potential participants (older persons eligible for rehabilitation) and gave them orally and written information about the project. Those who were interested in trying out ICT as a new solution in home-based rehabilitation and provided their informed consent were included in the pilot project.

Step 4 Engaging in action

In the pilot project, engaging in action involved both trying out the ICT solution with the older persons and workshops with the researchers and the rehabilitation professionals.

Trying Out the ICT Solution. Five older persons, three women, and two men, were enrolled in the project. Initially, responsible rehabilitation professionals interviewed and observed the older persons in their home, and a plan for rehabilitation was established. A tablet with Skype installed was provided to the older persons, and they were given instructions and could try Skype with the rehabilitation professionals. Together, they

agreed upon what rehabilitation intervention would be tried out as an ICT solution. For example, Skype was used to provide instructions, give advice, and follow up on how the rehabilitation plan was proceeding. Using Skype enabled communication and interaction between the rehabilitation professionals and the older persons in their home environment as they were performing tasks and doing exercises. This also enabled the rehabilitation professionals to communicate and interact with relatives and home helpers involved in older persons' rehabilitation.

Workshops – Experiences of Using Skype. During the period of trying out the ICT solution in practice, workshops with the researchers and the rehabilitation professionals were held on three different occasions (see Table 1). The discussions focused on the experiences of using Skype for communication and interaction with the older persons in the rehabilitation process. These discussions were important to capture experiences, benefits, and challenges from the perspective of rehabilitation professionals and older persons during the rehabilitation process. In addition, to generate ideas on how the ICT solution could be further adopted to be more user-friendly, that is, to meet the needs of all users (rehabilitation professionals and older persons). In these discussions, questions and ideas were shared among the rehabilitation professionals and the researchers, building on the discussions between the rehabilitation professionals and the older persons during the process of trying out the ICT solution.

The identified benefits with the ICT solution from the perspective of the rehabilitation professionals were associated with more continual rehabilitation, more efficient time use, reduced emission related to travels, and higher quality of service provided. In addition, the rehabilitation process became more effective, as the rehabilitation professionals could show the older person different technical aids and other adaptations and answer questions before the home visit.

Improved quality in the rehabilitation was associated with, for example, the potential to do more frequent follow-ups to revise or make changes in an exercise program or a renewed instruction that normally would have required a home visit and longer waiting time. In this sense, it was possible to provide more time to each patient, as less time was spent on travel. An experience expressed by a PT was the possibility of involving home helpers in older persons' rehabilitation. The PT instructed the home helper to give contracture prophylaxis for the first time. Using Skype, the PT was able to show and explain in more detail how and why the exercise should be performed in contrast to how the home helper usually could only follow instructions on a paper. Another experience expressed by an OT was how to instruct and assist a home helper in adjusting problems with an older person's wheelchair. These examples illustrate how collaboration can be developed, resulting in more effective use of time and rapid response to issues and problems that can occur in practice.

Identified challenges with the ICT solution from the perspective of the rehabilitation professionals were associated with the technology and usability of the ICT solution. A general problem was the internet connection, and the transmission of pictures and voice was interrupted or was of bad quality. In addition, challenges were related to how to position the tablet to capture a situation. For example, when the tablet was close enough for the older person to see the rehabilitation staff, he or she could not see the older person's arms or legs and make necessary corrections in the program. Another example was coaching rising from a chair when there were problems with the older person's being either too close or not close enough to see the instructions.

Step 5 Data collection

In the pilot project, data collection involved both field notes and interviews with older persons.

Field Notes. During the entire pilot project, the researchers (GI, SR) generated data by documenting field notes at all workshops and seminars to note identified problems, reflections, ideas, and experiences of trying out the ICT solution. The field notes were highlighted and discussed with the participants included in the different steps.

Interviews with the Five Older Persons. The researchers (GI, SR) performed interviews with the older persons in their home environment after the rehabilitation period to capture their experiences of working with the rehabilitation professionals to try out the ICT solution. The interviews were conducted in a manner to capture their stories and experienced benefits and challenges with trying out the ICT solution in their rehabilitation.

The identified benefits and challenges of using the ICT solution from the perspective of the older persons were associated with usability. Positive aspects were related to the ability to see each other, which created a sense of presence when communicating and receiving instructions and/or examples of solutions, such as technical aids or adaptation in the home environment. Using the ICT solution created opportunities for the older persons to show problematic situations related to daily activities in the home environment as well as outdoors.

Furthermore, the continuity and close follow-ups during the rehabilitation process created a feeling of safety. Difficulties that were expressed were related to handling the technique, which was experienced as stressful. For example, some older persons had problems turning on the tablet or starting the Skype app. They pressed the button either too long or not long enough to be able to start the program. In these cases, support was needed from either a relative or a home helper. It became evident that the ICT solution was not user-friendly for all.

Step 6 Reflexive knowledge

In the pilot project, this step included a workshop and a seminar.

Workshop. The identified possibilities and challenges during the workshops in step four (during the period of trying out the ICT) were again highlighted and discussed between the researchers, rehabilitation professionals, and stakeholders responsible for rehabilitation (see Table 1). Ideas were generated for further development of how ICT solution can support home-based rehabilitation services. Ideas for solutions were built upon the rehabilitation professionals' experiences of identified challenges in the project, such as being able to connect the tablet to an external camera or the television and to use a stand for better positioning of the tablet. Furthermore, new ideas were generated, such as voice control of the tablet and the development of digital video material for instructions for the older persons, relatives, and home helpers involved in the rehabilitation. Another idea involved developing a platform for virtual environments to illustrate, for example, adaptations that can be made in the person's home. Yet, another idea was recording different exercises or activity performances in the older persons' environments to enable the rehabilitation professionals to monitor their progress and take part in how problems occur. Being able to transfer photo and video material and store data in an ethically secure way was another idea mentioned. In addition, new questions emerged: Should a digital home visit have the same fee as a physical home visit? What kind of technical support can be offered within the social services in the municipality? Who is responsible for supporting the technical solution?

Seminar – Presentation of and Reflections on Results. The stakeholders responsible for rehabilitation invited the researchers (GI, SR) and rehabilitation professionals working in social services in the municipality (approximately 40 persons in total) to the seminar. Initially, the researchers presented the process of using PAR and the results from the pilot project *"the rehabilitation journey"*. Then, the seminar was opened for discussions on using new working solutions, including ICT, within home-based rehabilitation. The discussions focused on the results from the project and identified benefits and challenges. Furthermore, the discussions continued with the ideas and challenges that were identified in the last workshop with the rehabilitation professionals (step 6).

Methodological Insights

A fundamental premise of PAR is that it embraces the concerns experienced by a group, community, or organization (Freire, 1993; Park, 1999; Reason & Bradbury, 2008). Our experience is that using PAR as a research method in the pilot project had several strengths, as our project stemmed from demographic and epidemiological trends in society viewed as a "real life problem" experienced on different levels in the organization of home-based rehabilitation. At the same time, PAR was a challenging research method to use, as it was time-consuming and required the commitment and contribution over time of the different participants involved. There were also specific challenges that had to be considered regarding routines and regulations, as the pilot project was conducted in a health care context. Our methodological insights will be further discussed below in relation to the methodological approach applied.

Strengths and Challenges of Adopting Participatory Action Research

Delineating the Problem. A strength of using PAR when delineating the problem was that it was opened for knowledge translation from different areas of expertise and, therefore, enabled equitable relationships between participants and researchers. As such, PAR promoted the inclusion of participants as collaborators and co-researchers in the identification of a problem that mattered to those involved and their community (cf. Reason & Bradbury, 2008). This approach made it possible to immediately discuss potential ICT solutions built on a common process of decision making. During these discussions, the voice of the rehabilitation professionals became especially important to capture "the real-life problems" they experienced. However, the strength of capturing real-life problems also became a challenge as the project had to consider routines and regulations within the organization as well as ethical issues. These challenges influenced the decisions that had to be made, as the project was situated in a healthcare context.

Choosing Action Steps

The collaboration of individuals with diverse knowledge, skills, and expertise is described as a strength in PAR, as it fosters the sharing of knowledge development (MacDonald, 2012). A strength of this step was the group constellation, including researchers from different scientific fields and professionals from different disciplines and diverse levels in the organization. Furthermore, the collaboration in the group in the forms of seminar, workshop, and stakeholder consulting contributed in a positive way to the actions chosen. As such, a common action plan, timeframe, and dissemination plan could be established where knowledge translation was built on a broad understanding from diverse areas of expertise and responsibilities. For example, including key stakeholders in the discussion at this step made it clear that there could be problems related to ICT services because the social services IT department could not provide support to the rehabilitation professionals during the pilot project. This kind of information had to be handled; in this case, it led to the assignment of responsibility to the researchers when it came to supporting the ICT solutions.

Design and Assessment

The researchers' role in PAR is to become an intimate knower and participant within the community, joining as a partner by assuming various roles (Park, 1999). In this pilot project, the researchers took on different roles; among others, they acted as meeting facilitators responsible for supporting the ICT solution and choosing the research design and approach to data collection. During this step, it was important to discuss different methodological choices. The researchers' knowledge of different research designs and methods together with the professionals' knowledge of working with older persons in home-based rehabilitation generated insightful knowledge on how to proceed. Even though the researchers took a leading role regarding methodological choices and data collection, the rehabilitation professionals had great influence on knowledge generation when engaging in action and trying out the ICT solution. Hereby, they shared experiences and gave voice to the older persons' experiences. This approach is in line with Fletcher et al. (2015) arguments that collaborators should have a voice and that researchers do not have complete power over data interpretation.

Engaging in Action

Engaging in action was challenging because it was time-consuming. At the same time, it was a valuable process. A strength of this step was the fact that it continued over an extended period of trying out the ICT solution and engaging in continual dialogues of sharing experiences during workshops. In this sense, problems and challenges were discussed, and new ideas were generated. The process of using PAR provided opportunities for empowerment and learning for all participants involved. By being engaged in discourses with researchers, the rehabilitation professionals became critical and reflective of their own practice, which created new insights and knowledge generation that informed action (cf. Savin-Baden & Wimpenny, 2007). As described by MacDonald (2012), learning by doing strengthens the participants' belief in their abilities and resources. This was especially apparent with the older persons when learning to handle an ICT solution. However, some of the identified difficulties, from the perspectives of both the rehabilitation professionals and the older persons, could not be resolved during the pilot project. Therefore, an important insight during this step was to keep thorough documentation for further knowledge generation and dissemination.

Data Collection

Combining field notes and interviews in this pilot project was an important way to capture the voices of both the rehabilitation professionals and the older persons. The field notes were especially important for generating data when trying out and sharing the experiences of using the ICT solution. Furthermore, interviews with older persons were an essential part of generating knowledge on whether the ICT solution worked in a satisfactory manner. Although PAR seeks to fully include all participants as co-researchers (Reason & Bradbury, 2008), research highlights difficulties in involving all participants in all phases (Canlas & Karpudewan, 2020). Our experiences from the pilot project are that different participant voices were more important at different parts of the project. As the pilot project focused on new working methods, the rehabilitation professionals had a central role and were co-researchers throughout the project. It can be considered a weakness that older persons were not involved as co-researchers from the beginning of the project. Therefore, PAR was not utilized to its full potential. Not involving older persons as co-researchers is also highlighted and criticized in a review evaluating PAR with older adults (Corrado et al., 2020). Nevertheless, we consider them active contributors to the research and knowledge generation, even though they did not participate in all steps (cf. Mc Donalds, 2012).

Reflexive Knowledge

The final step in the PAR process should stimulate a reflection—action—reflection cycle (Freire, 1993) in which ongoing understanding of new problems and action to address those problems is facilitated by the generation of knowledge (Park, 1999). The researchers, rehabilitation professionals, and stakeholders responsible for rehabilitation reflected on the action process and the knowledge generated during the whole pilot project. We consider the process of translation and presentation of knowledge in a broader context through the final seminar as a strength, as it created space for new ideas and thoughts on continued implementation of new working methods in home-based rehabilitation. A challenge identified for further implementation was that changes needed to be made within the organization to support the new working methods that were tried out in the pilot project. This illustrates the importance of including leaders within an organization and gaining the stakeholder perspective to ensure ongoing action and change (cf. Fletcher et al., 2015).

Conclusion

To conclude, PAR is an established method; however, it has been argued that PAR studies do not articulate or fail to explicitly demonstrate the methodology used in the processes (Canlas & Karpudewan, 2020), and we agree with this critique. The intention with this paper is, therefore, to share experiences of how we co-created knowledge during the pilot project and illustrate the actions taken and participants' involvement in the process through the six steps described by Taylor et al. (2004). We provide a description of how the six steps can be used as methodological guidelines to describe a PAR process. We propose that these guidelines can act as a tool to guide researchers in carrying out PAR.

Acknowledgments

The authors would like to thank Luleå University of Technology for supporting this work. Furthermore, we are grateful to all professionals, researchers and older adults contributing to the results being presented and discussed in this paper.

Declaration of conflict of interests

The authors confirm that there is no conflict of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study received funding from Luleå University of Technology.

ORCID iD

Anneli Nyman https://orcid.org/0000-0003-0467-4857

References

Arthanat, S., Vroman, K. G., Lysack, C., & Grizzetti, J. (2019). Multi-stakeholder perspectives on information communication technology training for older adults: Implications for teaching and learning. *Disability and Rehabilitation: Assistive Technology*, *14*(5), 453–461. https://doi.org/10.1080/17483107.2018.1493752

Brydon-Miller, M., Kral, M., Maguire, P., & Noffke, S. (2011). In N.K. Denzin, & Y.S. Lincoln (Eds), The SAGE handbook of qualitative research (4th ed. pp. 387–400). *Jazz and the banyan tree: Roots and riffs on participatory action research*: Sage.

Canlas, I. P., & Karpudewan, M. (2020). Blending the principles of participatory action research approach and elements of grounded theory in a disaster risk reduction education case study. *International Journal of Qualitative Methods*, *19*, 1609406920958964. https://doi.org/10.1177/1609406920958964.

Corrado, A. M., Benjamin-Thomas, T. E., McGrath, C., Hand, C., & Laliberte Rudman, D. (2020). Participatory action research with older adults: a critical interpretive synthesis. *The Gerontologist*, *60*(5), e413–e427.

Denzin, N. K., & Lincoln, Y. S. (2011). Introduction: The discipline and practice of qualitative research *In the Sage handbook of qualitative research* (pp. 1–20). Sage.

Fletcher, A.J., MacPhee, M., & Dickson, G. (2015). Doing participatory action research in a multicase study: A methodological example. *International Journal of Qualitative Methods*, *14*(5), 1–9. https://doi.org/10.1177/1609406915621405

Freire, P. (1993). *Pedagogy of the oppressed*. Penguin Books.

Greenwood, D. J., & Levin, M. (2007). *Introduction to action research: Social research for social change* (2nd ed.). Sage.

Joseph, M. A., & Robinson, M. (2020). *Fundamentals of clinical rehabilitation counseling* (1st ed.). Cognella Inc.

Keränen, N. S., Kangas, M., Immonen, M., Similä, H., Enwald, H., Korpelainen, R., & Jämsä, T. (2017). Use of information and communication technologies among older people with and without frailty: a population-based survey. *Journal of Medical Internet Research*, *19*(2), Article e5507. https://doi.org/10.2196/jmir.55079

MacDonald, C. (2012). Understanding participatory action research: A qualitative research methodology option. *The Canadian Journal of Action Research*, *13*(2), 34–50. https://doi.org/10.33524/cjar.v13i2.37

Park, P. (1999). People, knowledge, and change in participatory research. *Management Learning*, *30*(2), 141–157. https://doi.org/10.1177/1350507699302003

Reason, P., & Bradbury, H (2008). The Sage handbook of action research. *Introduction participative inquiry and practice* (2nd ed. pp. 1–10): Sage.

Regeringskansliet. (2018 20 september). *God och nära vård–En primärvårdsreform (Good and close care - A primary care reform). Delbetänkande (SOU 2018:39) Norstedts Juridik*. Socialdepartementet (ministry of social affairs). Available from: https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2018/06/sou-201839/

Savin-Baden, M., & Wimpenny, K. (2007). Exploring and implementing participatory action research. *Journal of Geography in Higher Education*, *31*(2), 331–343. https://doi.org/10.1080/03098260601065136

Stucki, G., Bickenbach, J., Gutenbrunner, C., & Melvin, J. (2018). Rehabilitation: The health strategy of the 21st century. *Journal of Rehabilitation Medicine*, *50*(4), 309–316. https://doi.org/10.2340/16501977-2200

Stucki, G., Cieza, A., & Melvin, J. (2007). The international classification of functioning, disability and health: A unifying model for the conceptual description of the rehabilitation strategy. *Journal of Rehabilitation Medicine*, *39*(4), 279–285. https://doi.org/10.2340/16501977-0041

Taylor, R. R., Braveman, B., & Hammel, J. (2004). Developing and evaluating community-based services through participatory action research: Two case examples. *American Journal of Occupational Therapy*, *58*(1), 73–82. https://doi.org/10.5014/ajot.58.1.73

Vollenbroek-Hutten, M., Jansen-Kosterink, S., Tabak, M., Feletti, L. C., Zia, G., N'dja, A., Hermens, H., & Consortium, SPRINTT (2017). Possibilities of ICT-supported services in the clinical management of older adults. *Aging Clinical and Experimental Research*, *29*(1), 49–57. https://doi.org/10.1007/s40520-016-0711-6

Wottrich, A. W., von Koch, L., & Tham, K. (2007). The meaning of rehabilitation in the home environment after acute stroke from the perspective of a multiprofessional team. *Physical Therapy*, *87*(6), 778–788. https://doi.org/10.2522/ptj.20060152