

# Mixed Study on the Impact of a Technology-Based Retirement Preparation Program: Tech-Retired. Protocol Study

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## Abstract

**Background:** Despite the increase in the older-adults' population and recognizing retirement as one of the most changeable life stages, most Spanish people do not perform a retirement preparation program. The adaptation and preparation for retirement are needed to ensure adequate active and healthy aging. **Objectives:** The study aims to know about the experience with the retirement process of a retired people's group and understand the impact on their quality-of-life and behavior change of a Personalized Retirement Preparation Program using technological devices. **Participants:** People retired who have enjoyed paid employment and have never done a preparation program for retirement. **Methods:** The present study is a mixed design consisting of a Participatory-Action-Research and a quasi-experimental study. The qualitative tools used were semi-structured individual, group interviews, and field diary, and the quantitative tools were the sociodemographic variables sheet and the EuroQol-5D-5 L scale. **Action plan development:** It was developed with 26 participants divided into three groups, during five presentational sessions, and using technological resources. **Data analysis:** It consists of the comparison pre-post action plan along with analysis of the interview transcriptions with a parallel convergent analysis between qualitative and quantitative data. **Ethics:** The Research Ethics Committee of Galicia has approved the protocol.

## Keywords

older adults, retirement, quality-of-life, technology, occupational therapy, mixed-methods

## Contributions to the Current Understanding

This study aims to contribute to the social transformation related to the retirement process and how it influences retired people's lives to break down the myths and prejudices associated with old age, closely related to the beginning of retirement. It consists of implementing a mixed-methods study that included a Participatory-Action-Research (PAR) in conjunction with a quasi-experimental study. It is also focused on an Occupational Therapy (OT) perspective using Information and Communication Technologies (ICT).

Previous work in the field focuses on implementing Preparation Retirement Programs previously defined by researchers and professionals. In this case, these programs refer to a PAR action plan, designed by the stakeholders (retired people) accompanied by an OT professional, and based on the myths and prejudices associated with old age that influence the positive assumption of the retired process to the social transformation addressed.

## Background

Life expectancy is increasing, contributing to the population's progressive aging, especially in European countries and Japan. It represents a social challenge of today's society, where the prevalence of people retired is on a steep rise (Abellán & Pujol, 2015; Moulaert & Biggs, 2013; Scobie et al., 2015).

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According to the Spanish National Institute of Statistics (2019), life expectancy is about 83 years. The average retirement age is around 60, which means that older people will live over 20 years in a stage without any associated work routine as childhood and adolescence routine.

In response to the increase in older people and life expectancy, the European Union declares 2012 as the European Year of Active Ageing and Intergenerational Solidarity. The main objective was to raise awareness of the aging population and convey that aging is not a problem but that older people must remain active in society (Tymowski, 2015).

Active aging is a process that encompasses health, participation, safety, and lifelong learning (the four pillars of active aging), promoting the attainment of a good quality-of-life as people age. To this end, active aging promotes independence, personal autonomy, and interdependence; it is based on individuals' rights rather than on their own needs and supports individual responsibility (World Health Organization [WHO], 2015).

However, the ageism perspective implemented in our society influences how older people age. Ageism is "*the stereotyping and discrimination against individuals or groups based on their age*" (WHO, 2020). Stereotypes of aging are assumptions and generalizations about how older adults should behave and what they are likely to do, without regard for unique individual circumstances (Dionigi, 2015). These terms are usually linked to a negative view of old age. These aging stereotypes can be internalized and then become self-stereotypes, even influencing the older person's cognitive and physical health (Levy, 2003) and his/her occupational performance (Moser et al., 2011).

Retirement can be understood as an actual event in a person's life since it implies a different lifestyle. From the OT's perspective, retirement is a process that involves the transition from daily life activities. Specifically, this transition is from work routine to another stage of life. Thus, people apply different adaptation mechanisms to adjust to a new routine in that change, generating changes in their roles (Jonsson et al., 2001; Pettican & Prior, 2011). According to Christiansen (1999), participation in daily life activities contributes to building an occupational identity. Therefore, in this case, the occupational identity varies when a person retired.

Retirement is also a continuous process that identified desires, needs, and a development plan, which is the essence of proper retirement planning. Retirement and retirement planning are influenced by social, political, and personal factors (Bracken-Scally et al., 2016; Holt et al., 2016; Muratore & Kaa, 2015; Vinet & Zhedanov, 2011).

In this process, different phases are distinguished. The Trans-Theoretical Model (TTM) Prochaska and DiClemente (1982) on behavior change focuses on people's process during retirement preparation. The following stages are distinguished: pre-contemplation, contemplation, preparation, action, and maintenance (Leandro et al., 2013).

At first, the person is unaware of or not interested in Preparation for Retirement (PfR), so they have no intention of changing their behavior (pre-contemplation). Then, the people

become aware of the possible difficulties they will have to face; they do not assimilate the need to change so that this stage can last for a long time (contemplation). After this stage, it is a period when the person begins to consider different ideas for the near future but does not feel ready to carry them out (preparation). Finally, the person puts these plans into practice (action), and once they consolidate all the achievements, the preparation is over, keeping in mind not to stop making these plans (maintenance) (Leandro et al., 2013).

The Personalized-Retirement-Preparation-Programs (PRPP), according to the Democratic Union of Pensioners and Retirees of Spain (1990), address health-related issues in terms of prevention, life hygiene and mental health, nutrition and dietetics, financial matters, family and social relations, and life as a couple, spiritual realities, time organization, and information on the evolution of the living environment, among other topics.

On the other hand, it is worth noting Atchley's phases of adaptation to retirement. The first stage is early retirement, characterized by the imagination with high expectations of an ambitious nature and a view to the future about the retirement stage. Retirement is conceived as a liberation and euphoria stage or a continuation of leisure activities carried out in the past and a time of rest. After these stages, there comes a period of disenchantment because the person is not living what he/she had planned, causing a low state of mind. The reorientation stage arises when the person tends to situate him or herself in more realistic terms. Finally, the people reach a stage of stability when they assume a more realistic vision, considering both the possibilities and limitations of a social and economic nature and those related to retirement (Atchley, 1975; Muratore & Kaa, 2015; Wiseman & Whiteford, 2009; Yeung & Zhou, 2017).

In this way, the main idea of the PfR is to provide information or training for people close to retirement to assume their new role positively; it benefits those concerned and society in general, improving the person's physical, psychological, and social health. To achieve this, it is necessary to willingness, motivation, and time (Cohen-Mansfield & Regev, 2018; Dovie, 2018; Griffin et al., 2012; Vinet & Zhedanov, 2011).

## Phenomenological Study

Previous work in the field consists of different PRPP for people working and in the age of young-older-adults. As Leandro-França et al. (2016) mentioned, this PRPP's purpose is to smooth their transition to retirement and subsequent adjustment. For example, Leandro-França et al. (2016) studied people between 20 and 60 years of age. They assessed the effectiveness of a brief intervention in retirement planning and compared the subjects' behavior before and after the intervention. They also focus on the TTM. These authors also conducted qualitative research examining the effects of three PRPP (based on the TTM). The sample consisted of twenty staff members (53-67 years old) randomly assigned to one of the three PRPP.

Finally, a previous study developed from an OT perspective concluded the need to implement PRPP after conducting a phenomenological survey of 13 retired people (Miranda-Duro et al., 2017).

## Objectives and Justification

As aforementioned, PRPP are focused on prevention, life hygiene, and financial matters, among other aspects. However, retirement is closely linked to old age and is in our society considered the moment that determines when a person is older. Ageism, including myths and prejudices about old age, influences their ability to accept or positively assimilate what it means to be retired. Therefore, after reviewing the literature and previous studies, the main problem is the influence of old age myths and prejudices in the Pfr.

Thus, the present study's main objective is to know about the experience of retired people with the retirement process and to understand the impact of a PRPP using technological devices. The impact is particularly based on the quality-of-life and behavior towards Pfr. Retired people designed the PRPP, after identifying their problems and needs in the retirement process, together with an OT professional's guide.

Revising the literature, a PAR seems to be the best option to carry out a PRPP for retired people. A PAR encompasses political, economic, social, or health factors with a social transformation purpose. In this case, it is based on retired people's perspectives and their behavior defined by TTM.

Thus, the **first step of the study** corresponds to the first specific objective, which aims to understand retired people's perception of their retirement process and look for solutions to the previously identified needs and problems. For this reason, in this case, the stakeholders, who are retired people, talked about their experiences. They also included a descriptive and comparative quantitative analysis to understand better their quality-of-life and their possible behavior change defined by TTM before and after the action plan.

Then, when the stakeholders identified the needs and problems related to their retirement process and how it had influenced their daily living, placed in both the qualitative and quantitative approaches, the action plan could be designed.

Thus, the **second step of the study** corresponds to the second specific objective, which is the action plan's design. The action plan is the PRPP, which was jointly designed between the stakeholders and an OT professional since it is considered necessary the accompaniment of a professional who addresses and attends the action plan following the results obtained related to their experiences, the quality-of-life and the behavior adopted regarding retirement defined by TTM.

Besides, regarding the quasi-experimental study, technology had been introduced, as no other experience has been found that makes use of it. A PRPP with the use of technology was carried out.

The **third step of the study** corresponds to the third specific objective: the interpretation of the program's impact, jointly developed by the stakeholders and the OT professional, and

know the stakeholders' opinion about their behavior change defined by TTM, and about the action plan developed.

## Explanation and Justification of the Method

The present study's approach is a mixed methods research (Poth & Onwuegbuzie, 2015), following the recommendations of Leandro-França et al., 2016. These authors reflect a future research area to conduct mixed or combined studies to assess PRPP.

### Explanation of a Qualitative Approach

Mainly, the study is a PAR approach, which corresponds to the qualitative method of the study. According to the PAR terminology and conceptualization, it is important to define what refers to participation and action (Benjamin-Thomas et al., 2018). In the present study, participants were active agents in the entire research process from the moment they enter the study. The participation consists of their decision, needs, and what they want to address in the action plan. Through this method, participants were aware of the changes in their lives after retirement and what options they must physically, psychologically, and socially active. The participants must be empowered to made changes in their lives through the action plan. It links to the TTM and PAR's approach. Also, ICT encourages the participants' commitment to the study, which adds an innovation aspect to this research.

The authors have used four phases to implement the PAR approach (Baum et al., 2006; Kindon et al., 2007; Pain et al., 2012).

The first phase corresponds to the first step of the study, which consists of identifying a thematic concern and approach to the problem. According to Benjamin-Thomas et al. (2018), the first PAR principle includes the situatedness and identification of the stated research "problem," explained in the sections *Background* and *Phenomenological Study*.

The second phase corresponds to the action plan and the second step of the study. To know the real needs of the stakeholders, the researchers carried out semi-structured individual interviews with each participant and use quantitative tools as sociodemographic variables record sheet and the EQ-5D-5 L scale (EQ-5D-5 L) to know about the quality-of-life status of the participants and the behavior adopted to retirement process before and after the implementation of the action plan. Thus, this stage included the participants' real needs to create an action plan that allows a response to their needs, leading to the social transformation of retirements' perspectives. PAR is the best option to be based on the theory of the TTM, and the adaptation process of Atchley since people themselves were the agents of change.

In the individual interview, the participants identified the issues related to retirement. The purpose was to understand the participants and determine what aspects were needed to address the action plan.

The third phase was the development of the action plan and collection of data on its implementation. This phase corresponds to the second step of the study. The authors used the action plan to know retired people's perception of the transition from working life to retirement and how they influenced the participant's daily life. Regarding participatory methods employed, the authors used techniques such as brainstorming, consensus-building, and visual strategies (Baum et al., 2006).

The fourth phase was the results' interpretation, which helps to develop the action plan. It corresponds to the third step of the study, where the comparison between objectives and results determined the level of social change and the need to address new objectives.

In this phase, a semi-structured group interview was carried out to know the participants' perception of the action plan upon completion. The use of a field journal helps to collect observations through the whole research process.

### Explanation of the Quantitative Approach

The quantitative approach was a complementary method to the qualitative approach based on a quasi-experimental study without a control group. It corresponded to descriptive and comparative analysis, focusing on quality-of-life and the behavior changes defined by TTM, both measured before and after the action plan (Polgar & Thomas, 2014).

The quantitative data was used to design the action plan based on quality-of-life, changes in behavior defined by TTM, and the participants' sociodemographic data. Also, through the quantitative research data, conclusions on how the action plan was designed jointly with the participants impacted participants' lives. Likewise, this type of approach helps to understand if the quantitative tools' data correspond to the participants' speeches.

The quantitative methods to collect data used were:

**Sociodemographic variables record sheet.** The authors used it at the first step of the study. The variables included were sex, gender, marital status, type of retirement, profession, length of working life, diseases or health problems, the retired person's time, the experience with technology, and the stage the person is in as far as PfR is concerned, according to the TTM.

**EQ-5D-5 L.** The authors used it to measure the variable of quality-of-life at the first and third step of the study. This tool allows exploring the perception of each participant about their health status and quality-of-life. It evaluates four elements. The first element consists of a descriptive system about five dimensions: mobility, personal care, daily activities, pain/discomfort, and anxiety/depression. The person chooses between (1) absence of problems, (2) presence of some problems, (3) presence of moderate problems, (4) presence of severe problems, and (5) total inability to do something or presence of extreme problems. Each participant indicates the level that best reflects his/her state for each dimension, describing by five digits that take values from 1 to 5, where state 11111

**Table 1.** Schedule of the Study Period.

Study Phases	Date (Year 2017)
Ethics committee approval	January 17
Contact with the institution and request of approval by the director	February
Presentation of the project in the institution	March 6 to 10
The first step of the study	March 13 to 24
The second step of the study (action plan)	March 28 to May 10
The third step of the study (included data analysis)	May 10 to June 15

considered a priori the best state of health and 55555 the worst state of health. The second element is a visual analog scale in which the person indicated in a rule of 0 or worse health, to 100 or better health. Finally, the third and fourth elements (the EQ-5D Index and the Severity Index, respectively) are two indexes calculated from the scores given in the descriptive system (Reenen et al., 2019).

### Sampling/Recruitment

Table 1 describes the different phases of the study with the corresponding dates.

### Selection of Participants

The participants consisted of retired people (for 10 years maximum). They regularly attend the institution selected for recruitment. There were exclude who present cognitive and psychological alterations that may interfere in the interview, who have not had paid employment and have completed PRPP previously.

### Scope of the Study

To recruit the participants, a social institution attended by retired people was selected to facilitate access to retired people. It is an institution where retired people can carry out different activities. It corresponds to the metropolitan area of A Coruña and Ferrol (Spain). It has 878 retired or unemployed people, 607 at the office in A Coruña and 271 at Ferrol's office.

The institution needed to have the disposal of computers and a place to do it. In both areas selected in the present study, classrooms with computers facilitated the action plan implementation.

### Sample Size

The qualitative study's design conditioned the size of the sample. Theoretical saturation was the determination of the sample size. A total of 31 participants agreed to participate and completed the first step of the study, although 26 met the inclusion criteria.

**Table 2.** Semistructured Individual Interview Guide.

Block I: Pre-retirement stage	
(1)	What was your profession until you retired, and what does it mean to you?
(2)	What was your life like before you retired, what activities did you carry out, and with whom did you carry out these activities?
(3)	Did you ever consider when you would retire, and how?
Block II: Time of retirement	
(4)	When you retired, how did you access retirement?
(5)	How did you experience the moment of change from working life to retirement?
(6)	How do you see the need to prepare for retirement?
Block III: Current life	
(7)	What changes have you noticed in your life after retirement? How have they affected you?
(8)	How is your health after retirement?
(9)	What is a typical day like for you today? How do you spend your leisure time?
(10)	Tell me, how do you feel about the activities you would like to do? What problems have you identified to do these activities?
Block IV: Expectations for the future	
(11)	Can you describe your expectations about this stage of your life?
(12)	What plans did you have after you retired?
(13)	What projects you have in mind?
Block V: Final thoughts	
(14)	Now that we are finishing up and after conducting this interview, could you describe what retirement has meant to you?

## Data Handling/Analysis

### *The First Step of the Study*

Each of the 31, who agreed to participate, completed the first step of the study, approximately 1 hr. In this step, participants must cover EQ-5D-5 L, the sociodemographic variable sheet, and they did an individual interview (Table 2).

### *The Second Step of the Study: The Action Plan*

Once the interviews finished, the authors identified five people who did not meet the inclusion criteria, leaving 26 participants divided into three groups, considering their respective schedules and preferences. The action plan about the PRPP was divided into five presentational sessions with about 1 hr. Table 3 explains the dates used for each presentational session. All sessions followed the same pattern with an initial phase (remembering the previous session), intermediate (development of an activity), and final (final reflection). This structure encourages participants to participate actively and recognize the issues addressed.

*Session 1.* In the first session, the authors provide information about adaptation for the retirement process defined by Atchley

**Table 3.** Plan Action's Schedule.

Group (Schedule)	Session: Date (Year 2017)
Group 1 (since 12:00 to 13:00 h)	Session 1: March 28 Session 2: April 18 Session 3: April 25 Session 4: May 2 Session 5: May 9
Group 2 (since 16:00 to 17:00 h)	Session 1: April 3 Session 2: April 19 Session 3: April 25 Session 4: May 3 Session 5: May 10
Group 3 (since 10:00 to 11:00 h)	Session 1: April 5 Session 2: April 20 Session 3: April 26 Session 4: May 4 Session 5: May 11

and information about PFR from the TTM. In the end, through multimedia material and the use of the computer, participants reflected and reasoned on the stereotypes associated with old age.

*Session 2.* It consisted of exploring different resources available and created for retired people after brainstorming on aspects related to the transition from working life to retirement.

*Sessions 3 and 4.* Both sessions focused on presenting different technological resources and devices to prevent other physical and cognitive aspects of aging, such as promoting healthy life. For example, tools for the daily routine organization, tools for understanding the foods that we should or should not eat, activity bracelets to monitor physical activity.

*Session 5.* In this session, participants review all information obtained in the other sessions. The authors gave the participants a brief explanation about the purpose of the study, which focuses on adaptation to retirement, considered one of the stages in which a person suffers the most changes.

### *The Third Step of the Study*

After the five sessions with the three groups, the authors carried out group interviews (Table 4) to determine the action plan's perceptions. Besides, the authors administrated the EQ-5D-5 L scale, as mentioned above.

### *Qualitative Data Analysis*

For the qualitative analysis, it was necessary to record the individual and group interviews conducted before and after the action plan and subsequent transcription. These transcriptions were an accurate and detailed description of the participants' speeches. These transcriptions and the notes from the field

**Table 4.** Group Interview Guide.

General aspects	
(1)	What do you remember that we have done in these weeks?
(2)	What do you think of the activities we have carried out?
(3)	What did you find most interesting, what less so, and why?
(4)	Do you think there could have been other activities, which ones?
Perceptions about the action plan	
(5)	Did the authors consider your needs?
(6)	Has it aroused your interest? How?
(7)	Has it been useful for you to participate in these activities, what have you learned, and what changes have they made in your life?
Perceptions about technology	
(8)	What advantages do you think computer-based activities bring?
(9)	What do you think about technology? What uses do you think it has?
Final perceptions	
(10)	Could you describe to me how you felt throughout the action plan?
(11)	Do you have any suggestions or possible changes for future action plans, which ones?
(12)	What has it meant to you to have carried out these activities?

journal were the qualitative data collected to analyze. This analysis has an inductive approach, being a thematic analysis of discourse. The thematic analysis consisted of a “*method for identifying, analyzing, and reporting patterns (themes) within data*” (Braun & Clarke, 2005, p. 79). According to Braun and Clarke (2005, p. 80), “*a theme captures something important about the data concerning the research question and represents some level of patterned response or meaning within the data set.*” Three of the authors used the triangulation method to contrast data analysis to individually analyze them.

The authors used qualitative data to identify participants’ needs and issues about the retirement process. The analysis of these data helped to carry out the action plan with an active engagement between participants and researchers, respecting the PAR method.

### Quantitative Data Analysis

The authors carried out a descriptive analysis of the variables included in the study. Quantitative variables were expressed as mean and standard deviation, while qualitative variables were absolute value and percentage.

The researchers used quantitative data to compare the values obtained from the tests before and after the action plan and draw the participants’ sociodemographic view.

### Mixed-Methods Data Analysis

This study used the triangulation technique by combining qualitative and quantitative methods and discourse analysis.

Regarding handling disagreements in the research, the researchers analyzed separately, reaching a consensus after discussing the final categories. Besides, the field diary was in the analysis process as the interview transcriptions. Both methods (qualitative and quantitative) used to make a joint analysis of the results, noting any discrepancies or similarities between the data obtained as a convergent parallel design (Snelson, 2016). Qualitative data used to know about the participants’ situation and develop an action plan as PFR programs. Quantitative data used to assess this effectiveness with the test values comparison before and after. Also, incongruences between the participant’s speeches and the test’s values were tested (i.e., quality-of-life identifying in the tests and what participants say in the different interviews and the study).

## Ethics

### Ethics Committee Authorization

The first phase to comply with the ethical-legal aspects was requested the study’s approval is relevant by an Ethics Committee.

### Institution Authorization

The second phase included prior authorization from the director of the institution to conduct the study.

### Participant’s Consent

The third phase has corresponded to the process of recruitment of participants. Each participant was offered detailed and individualized information, orally and in writing. For this purpose, the authors gave the participant an Information Sheet. Once the person understood what it meant to participate in the study, they agreed to sign the Informed Consent Document.

### Confidentiality and Privacy

The fourth phase concerns the recording and transcription of participants’ speeches, such as obtaining the scales’ data. The researchers protected all this information collected by compliance with Organic Law 3/2018 of 5th December on the Protection of Personal Data governed by Spanish law. To ensure the confidentiality and privacy of the participants, each participant had an alphanumeric code. The authors had overseen keeping information, getting rid of the interviews’ recordings and transcriptions when the study finished.

### Other Ethical Issues

The researchers based their practice on the Standards of Good Clinical Practice and the ethical principles for research with human subjects outlined in the 1964 “Declaration of Helsinki of the World Medical Association.”

## Rigor

### Consistency

The authors met the consistency with the triangulation of the data through analysis by three different researchers and the uses of both methodological approaches (qualitative and quantitative).

### Confirmability

The methodology was well described, and it was followed during study development. The individual and group interviews were recorded in audio and transcribed for data analysis. The sociodemographic characteristics were described to put the study in context.

### Credibility

To ensure the study's credibility, the researchers used a diary field, transcript textual, and detailed the interviews, and used the triangulation in the data analysis through triangulation.

### Transferability

The study scope was described and the participants' inclusion and exclusion criteria and characteristics for transferability.

## Conclusion and Implications

This study shows the importance of developing PRPP focused on the negative view of old age since it influences people's health, especially their perceived health.

Through implementing a PAR, relevant information can be obtained about how this vision has caused a social change in retired people. It is because retired people are the stakeholders, and the agents of changing themselves, who have created their own action plan based on PfR and the TTM.

Besides, retirement is becoming more important due to the increase in the number of older people in our population. Therefore, it is intended to show that due to this social change suffered by the people, a transformation of the society's perspective must be made.

Future research could be adding a control group to determine the action plan's impact, which duration must be longer, and is needed more sample. Also, it is essential to include interviews done with professionals, retired organizations, and enterprises.

### Authors' Note

The study is registered in ClinicalTrials DataBase NCT04422704. The ethical committee approved the study protocol of the Galician Health system (code 2016/576).

### Declaration of Conflicting Interests


The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.


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