

# Perspectives of older adults with a chronic condition on functioning, social participation and health: a qualitative study

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## Research article

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# Abstract

## Background

Problems with mobility, functioning and social participation makes living independently difficult for frail older adults. Treatment adherence is a prerequisite for successfully continuing to live independently. The cause of non-compliance among older adults are multiple and complex. Insight into older adults' perspectives regarding their functioning is essential and an important factor for treatment adherence.

## Objectives

This study investigates the perspectives of older adults on their functioning, social participation and health, and the factors influencing these components.

## Method

We conducted a qualitative study about the older adult's perceived functioning, social participation and health. Fourteen home dwelling older adults suffering from chronic health issues were purposively selected.

Semi-structured interviews were conducted with open-ended questions.

Data were analysed following the Basic Logical Model of Abduction and the coding method of Creswell.

## Results

Assistive devices, their dwelling and living environment, professional and informal support, and medication are perceived as important determinants.

Attitude, social influence and personal effectiveness were found to be of influence whether or not a person will perform an activity, or choose to participate. A person's attitude is related to the significance the activity has to that person, the importance of the activity, personal wellbeing, their values and the desire for autonomy. Peers and children have a social influence on the level of activity of the older person. Traditions and in particular, religious activities, along with personal effectiveness are motivating factors for whether or not to perform an activity or to participate. Personal effectiveness is linked to the belief in their personal competencies and to the relationship between effort and result.

Finally, it appears that the type of coping strategy the older adult adopts, has an influence on his or her behavior. The older adults often used remarkable problem-focused strategies, which had a positive effect on their level of autonomy.

## Conclusion

Older adults have identified barriers and facilitators that influence their level of functioning and social participation. These findings help to create a framework for maintaining and increasing treatment

adherence. This conceptual framework may be helpful in facilitating occupational therapists and other healthcare professionals to detect determinants of treatment adherence.

## Introduction

Physically frail older adults experience problems with mobility, functioning and social participation. Despite these problems, they want to live at home for as long as possible. (1–3) Participation in activities and in social life, as well as an adapted living space are important for people to be able to stay in their homes for as long as possible. Occupational therapists play an important role in achieving this. (4–6)

Treatment adherence, including adherence to using assistive devices is a prerequisite for success. Non-compliance diminishes the effect of the therapeutic intervention which leads to poor health outcome. (7,8)

Treatment non-compliance is a common problem among older adults with chronic conditions. There are various, interplaying reasons for this. Person-related factors play a role, such as whether or not an activity is tailored made. Interventions on age-related issues, such as risk of falling, need to address patients' attitudes and beliefs, as well as their physical capacity. Insight into older adults' perceptions regarding their functioning and social participation is a precondition for client-centered advice and for successful treatment that strives for behavioral change. (9–11) Therefore health care professionals such as occupational therapists inform older adults on their health, stimulate their motivation and their competence to make health related decisions by increasing health literacy. This increases personal empowerment and greater autonomy for activities at home and for social and cultural participation. (12)

Behavioral change is necessary to improve treatment adherence. The TransTheoretical Model of Change (TTM) indicates that a sustainable change in behavior can be obtained by following a well-structured procedure. TTM consists of five stages, pre-contemplation, contemplation, preparation, action and maintenance. The approach should be adapted to the stage which the patient is functioning at. (13,14)

Occupational therapists work evidence and occupation based. Early pioneers in occupational therapy conceptualize 'occupation' as an active participation in self maintenance, work, leisure, play and rest. (15) Performing occupation based interventions means that the occupational therapist develops a holistic view of the client. The occupational therapist looks at all components of his client as described in the International Classification of Functioning, disability and health model (ICF-model) namely body functions and structures, activities, participation, environmental as well as personal factors and determines how they relate. (16,17) (Figure 1)

Stark (2015) developed a step-by-step treatment plan in order to achieve a high quality occupational therapy intervention. The developed treatment plan is based on data from interviews and observations with occupational therapists. (18) The voice of the older adults themselves are not included in the study of Stark. To increase the treatment effect, there is need for a complementary component that considers

the older adult's perspective regarding his functioning, social participation and health. This study adds to Starks model by adding the perspectives of the older adults.

## OBJECTIVE

This study investigates the perspectives of home dwelling older adults on their functioning, social participation and health, and on the factors influencing these capacities and health. These findings are used to develop a conceptual framework for supporting treatment adherence.

## Methods

### Design

In-depth interviews with home dwelling older adults were performed, using open-ended questions about their perceptions of their functioning, social participation, health and the factors that have an influence on these elements. The theoretical framework underpinning this study is the Basic Logical Model of Abduction. (19) The Basic Logical Model of Abduction emphasizes that research can be both inductive and deductive. Using abductive analysis, researchers are allowed to both emerge themes, patterns and categories from data (inductive) and rely on previous analytical categories obtained from previous theories (deductive). (20–21)

## Sample selection and participants

Older adults suffering from chronic health issues were identified through the networks of the primary healthcare professionals involved in this study. Respondents were informed by phone about the project and what would be expected from them. If they agreed to participate, an appointment was made for an interview face-to-face at their home. All participants gave their informed consent.

The sample consisted of people aged 65 or older, suffering from chronic health issues, home dwelling (alone or otherwise), and able to communicate in Dutch.

People diagnosed with dementia, irreversibly bedridden, or requiring palliative care were excluded.

Convenience sampling was used. We opted to strive for the greatest possible diversity and not for saturation. We set a minimum of 12 interviews. To capture major variations, we varied extremes in terms of age, level of mobility, residential situation and living situation. Because the initial selection didn't give sufficient information, we included two extra respondents. We included one extra respondent who lived in an assisted environment and one person who was confronted with an external inhibiting factor, the burden of a disabled child. (Table 1)

# Data collection

An interview guide was developed based on the components of the Canadian Model of Occupational Performance and Engagement and on the Canadian Occupational Performance Measure. (22,23) (Appendix 1: Interview Guide).

The interviews on average lasted 30 minutes. They were audiotaped and transcribed verbatim.

The questionnaire was pilot-tested. Based on these pilot interviews, adjustments were made to seek more meaningful answers. For instance with the question *'What facilitates you in doing these activities/in participating in these activities?'* was supplemented with in-depth questions that inquired about facilitating aspects of attitude, mental capacities, physical capacities and influence of environment.

# Data Analysis

The researcher performing the interviews also transcribed the audiotapes. The interviews were then analyzed by two people independently of one another. No software was used.

Data were analyzed following the methodology of Creswell (24). Creswell describes a systematic process for data encoding. During this process, statements are analyzed and categorized into meaningful clusters representing the investigated phenomenon. The different steps are data management, reading and taking notes, describing, classifying and interpreting and reporting, and visualizing. (Figure 2).

In the first step of data management, a structure for transcribing the interviews was created in the form of a template. Second, two researchers independently analyzed the text, made notes (short sentences, ideas or core concepts) and attributed initial codes to two of the interviews. Subsequently, the findings were discussed in detail in order to reach agreement on how to further analyze the other interviews. In the third step of 'category formation' the researchers divided the data into themes and text was organized into meaningful categories. One researcher analyzed the remaining twelve interviews based on the final analysis framework. The second researcher reviewed this analysis and discussed alternatives with the first researcher. If discussions did not end in consensus, a third researcher was consulted. In the final phase of the spiral the essence was captured in writing.

During the analysis process, subthemes were derived from the data. So we used abductive reasoning. By analyzing, we gradually discovered theoretical frameworks to operationalizing the ICF-components, concretely the Canadian Model of Occupational Performance (CMOP-e) of the Canadian Association of Occupational Therapists (25,26), of the Attitude - Social influence—Self-Efficacy Model (ASE-model) of de Vries (27) and the coping strategies of Moos (28). (Figure 3)

In the final step, the results were contextualized. When the results were reported, a distinction was made between the descriptive display of what the respondent indicated, the direct representation of the

respondent's perception when it concerns functioning and determinants of behavior, changes in behavior and coping strategies.

## Reflection on the role of the researchers

The research group consists of a multidisciplinary team, knowledgeable in the fields of sociology of health, occupational therapy, gerontology and family medicine. As a result, data analysis was influenced by these various academic and professional backgrounds.

## Ethical considerations

The study was approved by the Medical Ethics Committee of the University hospitals of KU Leuven, Belgium. We took considered ethical decisions based on the study of Casarett (29). (Appendix 2: Ethical considerations)

## Results

### Demographic characteristics

Fourteen older adults were interviewed (eight women and six men). Their age varied from 65 to 101 years old. Because we strived for maximum diversity, we included one respondent who was slightly younger (less than one-year difference), but who has severe mobility problems. This person met all the other selection criteria. All participants indicated they had chronic health problems which impacts their functioning. The number of indicated problems varied from one to three. (Table 1)

The analysis of what the older adult experienced is represented in three themes: their perceived level of activity and participation, their perceived health, and the factors they perceive as influencing their activity level and their participation.

### Perceived level of activity and participation

The 'activity and participation' theme was categorized into five subthemes: Basic Activities of Daily Living (BADL), Instrumental Activities of Daily Living (IADL), productivity, leisure activity and mobility.

Eleven respondents indicated being able to handle BADL on their own. All respondents indicated perceiving limitations regarding IADL, productivity, leisure activity and mobility.

Regarding BADL, three respondents indicated requiring assistance with dressing and undressing. The extent of help required varied, from completely dependent to needing help closing small zippers. About half the respondents (eight) said they had problems climbing stairs.

All older adults mentioned IADL problems. Nearly all respondents reported being able to prepare small snacks. Doing laundry, cleaning, running errands and working in the yard were most problematic. Three respondents reported performing only a few IADL activities. These respondents were older than 90 years old and two of them had profound visual impairment. The remaining limitations were mostly about strength, flexibility, endurance and balance. Strength refers to both a global reduction in strength as well as specific strength loss in the hand region. The reduction of flexibility was mostly on the level of the hands and wrists. Visual impairments greatly limited being active in the field of IADL.

*"In the kitchen, it's my wife who does everything. I can't do anything because I can't see it I can't feed the animals anymore either, my wife does that. My wife does the yard. To go outside I take my walking-frame, but last Sunday I took my cane. I should have used my walking frame." (91-year old man with visual impairment and mobility issues)*

One respondent had a part-time paid job. Two respondents gave informal care to or did chores for family members and friends, which varied from having a fixed schedule to sporadic services. One respondent wanted to be more productive, but saw no opportunities.

All respondents (n = 14) reported that the variety of pastime activities available to them had been reduced. This varied between a slight to a great reduction. The decrease included both outdoor activities as well as individual indoor activities, for example not being able to read a book.

All respondents reported a decrease in mobility. Six of the respondents used an ambulatory aid. All respondents had a decreased ability to travel long distances. Two respondents communicated being able to ride a bicycle but only with a bicycle adjusted to their needs. Five respondents still drove a car. Three respondents still went on holidays. One respondent traveled as he used to in the past. One respondent made large voyages, but only with a group. The third respondent indicated only travelling when it is comfortable. For example he preferred to pay more for comfortable transportation.

*"The large walks have been left behind. Up until about four years ago, those still went fine, despite my back. And cycling, mostly up and down, I don't like going straightforward all the time. It seems like it's more exhausting if I don't have variation." (75-year old man with lower back-pain)*

## Perceived health

Most of the older adults (n = 11) indicated being in good health, independent of the number of health issues they have, and the degree of the limitations they experienced. Three people rated their health more poorly. Two of these have severe mobility limitations. Both respondents wanted to stay active, despite their limitations. Nobody said their health was bad.

*'I'm generally good, it's just my walking that's less good, but otherwise I'm healthy. I never have exacerbations. I'm happy with what I can still do.'* (78-year old person using a walking aid)

# Factors older adults perceive as influencing their activity level and their participation

Categories that are mentioned as extrinsic factors that influence functioning are: assistive devices, the dwelling and living environment, professional and informal support and medication. These factors can be both facilitating as well as inhibiting.

The most used *assistive devices* pertained to mobility (n = 8). Kitchen devices are less often used (n = 2). Five respondents go outside with a walker or a rollator. One respondent utilized a cane outdoors. Two older adults used a stair-elevator. Three older adults were advised to use a cane, but refused to do so because of perceived stigma. The respondents stated that aids can facilitate one aspect of functioning, but also bring about new limitations in other areas. For example, a walking aid facilitates walking, but causes issues when trying to transport things or perform certain other actions while walking. Sometimes, specific kitchen devices were used for household tasks that require hand-strength, for example a bottle-opener with an elongated handle.

All respondents reported that their *dwelling and living environments* were adapted for them to function optimally. In two of the nine houses with more than one floor, a stair lift was installed. Two other older adults did not use the upper floors anymore, but did not find their home not adapted to their needs. All older adults who lived in an apartment made use of the elevator present in the building. One respondent recently moved to assisted living and said this facilitated mobility. The majority of the older adults indicated that the neighborhood was not suitably adjusted to moving around safely. Stairs, the type of terrain and support points in the neighborhood were indicated as important determinants for mobility.

The help from *professional services* were perceived as facilitating, but with certain limitations. The limitations had to do with frequency and time. For example, certain types of services were not provided on weekends. The professional services consisted of help at home or respite care. Examples of services at home are library at home, the garden service, meals on wheels and home care. Examples of respite care are day-care centers and a short stay. The respondents generally perceived *informal assistance* by family and neighbors as facilitating. The respondents also mentioned disadvantages. Informal caregivers, just like professionals, are not always available. Informal caregivers have their own needs and worries and that can interfere with the provided informal care.

*'Especially strength in my hands, that's what I perceive. When I need to turn the key, then I need to do that twice and twist, or if I need to open a jar, then I give it to the neighbor boy.'* (87-year old lady living alone)

Taking *medication* is perceived as normal. Older adults indicate that medication is not enough to alleviate all pain or discomforts, for example rheumatic pains. Despite optimal medication-intake, they still experience limitations. They also indicate that for certain afflictions, no suitable medication solutions are available yet.

# Perspectives on determinants of functioning, social participation and health

Characteristics of both attitude, social influence and self-effectiveness and the applied coping strategy determine the intention of whether or not to perform an activity or to achieve participation.

## Attitude

The attitude of the older adult towards their—possibly reduced—functioning was determined by one or more of the following categories: significance, necessity, wellbeing, conviction and desire for autonomy.

The care for a pet, a partner, a friend, a grandchild, their property and self-care were meaningful actions that motivated the older adult to remain active. Things that the older adult did not perceive as meaningful, did not motivate them to be active or to participate socially.

*'... I have trouble talking to other people, having a conversation, that's just not me ... my mother was like that as well. Everyone knew she didn't do chatting' (one hundred and one-year old woman living alone)*

Activities that normally are not performed by older adults because of bodily limitations, were still performed in extraordinary situations. Enjoying things you do was often mentioned in the frame of 'doing things together' and doing things that lie within the sphere of interests, like hobbies. Both increased their feeling of wellbeing.

Being convinced that a certain way of behaving contributed to better physical or mental health, or a certain mental attitude can lead to being active or to healthier active behavior.

*'I often tell myself exercise in the morning, every day. But some do nothing, I wonder how people with back pain can stay still for hours and don't take on an ergonomic position.'* (Seventy five-year old cohabitating man)

The desire for autonomy was the greatest motivation to staying active. All older adults expressed the wish to maximally maintain their privacy.

*'Get up, washing my intimates and my face, I've already washed my intimates when the nurses come to shower me. I want to wash my intimates myself.'* (one hundred and one-year old woman living alone)

## Social influence

The perceived social pressure and support that motivated being active or that influenced the frequency of participation, mainly consisted of the non-professional environment, more specifically the children and

peers (friends and acquaintances). The most important peer for this was the partner. Perceived social pressure and support was seldom coupled to the professional environment.

Traditions and religious activities were situations that older adults experienced as social norms and motivated them to active behavior. Weekly church services and leaving the house for family events were the most common examples. The importance the older adult placed on their (self) image was a self-enforced norm, but it was often strengthened by a societal norm.

*'I refuse to wear a hearing aid. I think it's a sign of old age.... My wife does everything in our household. Every two weeks the work woman comes. Everything else we do ourselves... I don't like that someone would think, I'm here with pensioners who neglect everything around them...'* (Ninety two-year old cohabitating man.)

Active behavior that was performed through mirroring was limited to peers. Active peers in the immediate environment motivated others to active behavior.

*'I think it's because you're still in your regular environment. You see people doing things and think 'I can do that too' and you do it too. Because should I get into a pensioner's home it'll be over quickly.'* (eighty-seven-year old cohabitating women)

## Self-efficacy

The belief in the self-effectiveness of the older adult was a determining factor of whether they came to activities and participated. The decision of whether to be active was determined by the balance between the effort and the result the effort provided. Most older adults could estimate how much effort they needed to exert to complete a certain action and how long they could maintain this.

*'Running I've thought of that, but why should I do that? I can walk just as well.'* (seventy-six-year old man living alone)

Eleven respondents adjusted their actions according to their insight into their own effectivity, but this was not the case for all older adults. Three older adults exceeded the limits of their comfort zone to still be able to perform certain actions.

*'When I wake up I think 'I hope I don't have pain today for a change'. Rheumatism, that sometimes takes two hours. And I think like 'If I didn't have pain I might miss it'... The laundry doesn't go as fluidly as it used to, where it used to take an hour I now take an hour and a half. It's the same with cleaning.'* (seventy-seven-year-old woman living alone)

## Coping strategies

Older adults used various coping strategies. Problem-focused coping strategies are often employed. Emotion-focused and appraisal-focused coping strategies are noted less often.

Older adults that employ *problem-oriented coping* strategies have a positive attitude, were more determined or that over the course of their life they had learned to solve problems on their own. To keep the stress under control older adults dealt with the problem actively. They looked for ergonomic solutions like sitting down whilst ironing, performing an action in phases, purchase multiple walking aids to utilize at various locations, or they purchased ergonomic products. Looking for social support with a partner, the neighbors or someone from the wider environment, such as the cashier, was often employed. Aside from that, older adults would anticipate possible issues like staying within the boundaries of back problems or working slower.

An *emotion-focused coping* strategy that was employed is seeking diversion, for example thinking of the grandchildren and meditation, like reading a prayer.

An *appraisal-focused coping* strategy that came to the fore as a comforting thought was humor.

*'Relativize through humor... we try and agree with each other as much as possible. What's changed is that instead of softly whispering to each other we now have to yell at each other.'* (ninety-one-year-old cohabitating man)

## Discussion And Conclusion

### Overall findings

Our study indicates the themes that need to be mapped in order to pursue treatment adherence with the physically vulnerable older adults. Assistive devices, their dwelling and living environment, professional and informal support, and medication were important perceived determinants of functioning, social participation and health. Attitude, social influence and personal effectiveness were found to be of influence on the level of functioning and social participation. Finally, it appeared that the type of coping strategy the older adult adopts, has an influence on his or her functional behavior and social participation.

Assistive devices, their dwelling and living environment, professional and informal support, and medication can be both facilitating and inhibiting functioning, social participation and health.

Our findings are consistent with those from research into influence of professional and informal support on level of activity and participation, and on adherence in the treatment. (7,8,11,30)

Attitude, social influence and personal effectiveness were found to be of influence on the level of activity and participation. A persons' attitude is related to the significance the activity has to that person, the importance of the activity, personal wellbeing, conviction and the desire for autonomy. Peers and children

have a social influence on the level of activity of the older person. Traditions and particularly religious activities, along with personal effectiveness are motivating factors for whether or not to perform an activity or to participate. Palominos (31) also states that patients' beliefs influence global impact on adherence to therapy and coping patterns. Personal effectiveness is linked to the belief in their personal competencies and to the relationship between effort and result. Recent work also demonstrated that the older adults' sense of self-confidence in assistive devices drives continued participation in a specific activity. (8,32)

Finally, it appeared that the type of coping strategy the older adult adopts, has an influence on his or her behavior. In our study the older adults often used remarkable problem-focused strategies, which had a positive effect on their level of activity and on participation. Our findings are consistent with those from research into other health behaviors where an influence of coping on preventive behavior and wellbeing has generally been found. (33,34)

## Conceptual framework

Treatment adherence is complex and has different determinants. The bridge between these determinants and treatment adherence is the older persons perspective on it. A conceptual framework that might serve as helpful tool for facilitating considering the older adult's perspective regarding his functioning, social participation and health has been developed from the findings of this study (Figure 4). The framework takes the TTM as basis.

In our study the older adults indicated being generally happy with their situation, independently of their level of functioning. 'Generally happy with the functioning level' and 'experience being in good health' are positive in the frame of perceived life quality, but not in the frame of treatment adherence. These older adults show no interest in the benefits of a higher level of functioning. Within the TTM these older adults are situated in the pre-contemplation phase. To take them to a higher level it is desirable to have a detailed knowledge of their level of functioning, participation and health (Figure 4 phase 1).

Subsequently, the healthcare professional must have an overview of the facilitating and limiting intrinsic and extrinsic factors that influence the older adult's functioning (Figure 4 phase 2). The factors that facilitate behavioral changes should dominate the limiting factors. For instance, 'wanting to mean something to others' could be the primary motivation to remain active despite physical limitations. Previous research shows that these factors must be incorporated in the goalsetting in order to improve to outcome of an intervention. (35)

The older adult who is already aware of his limitations is situated in the contemplation phase or in a higher phase. These persons can be gradually informed with regards to possible consequences and a suitable approach to their limitations. A gradual approach is essential to prevent resistance if they feel provoked or forced. The intrinsic and extrinsic factors (Figure 4 phase 3) play a key role in whether the change from intention (preparatory phase) to behavior (action phase) will take place. These factors

influence the treatment adherence. Therefore, facilitating factors need to be optimally utilized and inhibiting factors needs to be identified to be neutralized early in the process or, if possible, turned into facilitating factors.

The intention to achieve behavior and behavioral changes (contemplation phase) is jointly decided by the attitude, social norm and own effectivity. From the data-analysis we can deduce that the attitude of the older adult towards their—whether or not reduced—functioning and participation is determined by meaningfulness and the necessity of the action, the wellbeing, the conviction and the desire for autonomy. De Vries (27) claims that social influence can be categorized into three factors: The perceived social pressure, the social norm and modelling. Having insight in these factors assists to coach the older adult in preparing him (Figure 4 phase 4) to make effective behavioral changes. Having an overview of the coping strategies that the older adult employs facilitates this process.

Employing the environment, like peers as an example or caretakers that support the older adult, can help to give the new behavior a sustainable place in the life of the older adult (consolidation phase) (Figure 4 phase 5).

The findings of our study also align with the models of health literacy. Health literacy entails people's knowledge, motivation and competences to obtain, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life to maintain or improve quality of life during the life course. (12) Our conceptual framework must be an asset for improving older adult's empowerment and supports the healthcare professional in coaching the older adult to the last step of health literacy, applying health information in order to make decisions to maintain and improve health.

Using the conceptual model must provide a more detailed overview of and better insight in the various determinants that influence the functioning, participation and health of the older adult. The developed conceptual framework can be a valuable support to the occupational therapist and other caregivers that work closely with vulnerable older adults in order to prepare for better treatment adherence.

## **Strengths and limitations of this study**

This qualitative study gives insight into the factors that play a role in the functioning and participation levels of home dwelling older adults. The result is a list of factors that are framed and that need to be considered for the pursuit of treatment adherence with vulnerable older adults.

A limitation is the number of respondents. Although we strived for maximum diversity in our sample, we cannot assure that we didn't miss factors that has to be considered for the pursuit of treatment adherence.

The conceptual framework can be used to identify the factors that determine the level of functioning of a single older adult. The study limits itself to mapping the various factors that determine the level of

functioning in a framework. It would not be correct to extrapolate the respondents' individual perceptions linked at the inventoried factors to the level of functioning of the whole population of vulnerable older adults.

## **Implication of findings**

In this study, it is the older adult's target to perform daily routines and meaningful activities as independent as possible. Healthcare professionals should consider each individual's unique experiences. The conceptual framework presented in this paper provides components to consider in the process of the client's empowerment and anticipate to a potential lack of treatment adherence.

Future research needs to validate the conceptual framework and investigate its impact among other determinants on treatment adherence.

## **Declarations**

### **Competing interests**

All authors got no support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

## **Ethical approval**

The study was approved by the ethical committee of the University Hospital of Leuven, Belgium (S58057). Anonymity was assured by removing all participant information that could lead to identification from the transcripts.

## **Consent for publication**

Written informed consent for publication was obtained from all participants.

## **Authors occupation and background**

LDC: researcher, teacher, OT and Gerontologist

AD: researcher, teacher and Sociologist

LB: researcher, teacher, OT and Gerontologist

MV: researcher and GP

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## **Author contributions**

LDC was responsible for the study concept and design, interviewed the respondents, transcribed the interviews, analyzed and interpreted the transcription, and drafted the manuscript under supervision of the other authors.

AD contributed to the study concept and design, and conducted a critical revision of the manuscript.

LB contributed to the analysis and interpretation of the transcription as second independent researcher, and conducted a critical revision of the manuscript.

MV contributed to the ethical reflections and conducted a critical revision of the manuscript.

MG contributed to the study design and performed a critical revision of the manuscript.

BA contributed to the study design and performed a critical revision of the manuscript.

All people contributed to the work have been listed.

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## **Transparency declaration**

The lead author (the manuscript's guarantor) affirms that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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## Tables

Table 1: Demographic characteristics

Respondent	Gender	Age	Marital status	Reported health problems	Level of mobility	Residential situation	Living situation
1	female	87	widow	blood pressure, cardiac	restrictions on moving in- and outdoors	townhouse with stairs	living alone
2	male	89	widower	balance, vision	restrictions on moving in- and outdoors	townhouse with stairs	living alone
3	male	86	widower	memory	no restrictions on moving indoors; partial restrictions on moving outdoors	townhouse with stairs	living alone
4	female	101	widow	vision, falls, arthrosis	restrictions on moving in- and outdoors	townhouse with stairs	living alone (week); living with children (WE)
5	male	75	married	hernia	No restrictions on moving indoors; partial restrictions on moving outdoors	flat with elevator	living with wife
6	female	88	widow	normal aging diseases	no restrictions on moving indoors; no restrictions on moving outdoors	flat with elevator	living with partner
7	male	92	married	sleep, presbycusis, mobility	no restrictions on moving indoors; partial restrictions on moving outdoors	detached house with stairs	living with wife
8	male	91	married	vision (blind), arthrosis, mobility	restrictions on moving in- and outdoors	ground floor of townhouse	living with wife
9	female	78	widow	mobility	restrictions on moving in- and outdoors	townhouse with stairs/stairlift	living alone
10	female	64	widow	mobility, backache	restrictions on moving in- and outdoors	flat with elevator	living alone
11	female	81	widow	mobility, intestinal	No restrictions on moving indoors; partial restrictions on moving outdoors	townhouse with stairs	living alone
12	female	77	married	rheumatoid arthritis, osteoporosis,	restrictions on moving in- and outdoors	detached house with stairs/stairlift	living with husband

				dented vertebra			
13	female	67	married	arthrosis, heart rhythm, glaucoma	no restrictions on moving in- and outdoors	detached house with stairs	living with husband and sun with special needs
14	male	76	married	arthrosis, glaucoma	no restrictions on moving indoors; partial restrictions on moving outdoors	Assisted flat with elevator	living alone, separately from his wife

## Figures

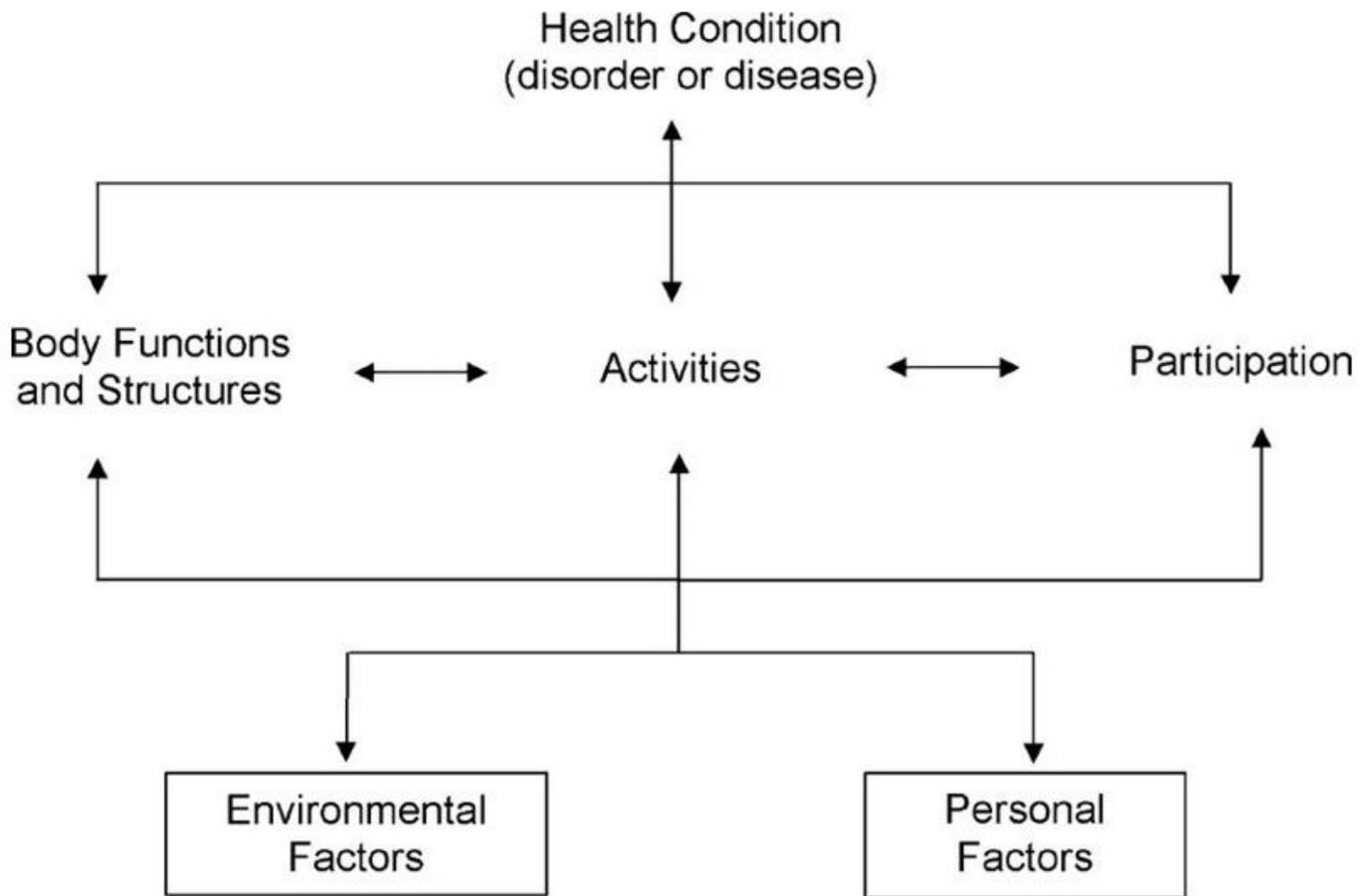


Figure 1

ICF-model (WHO, 2009)

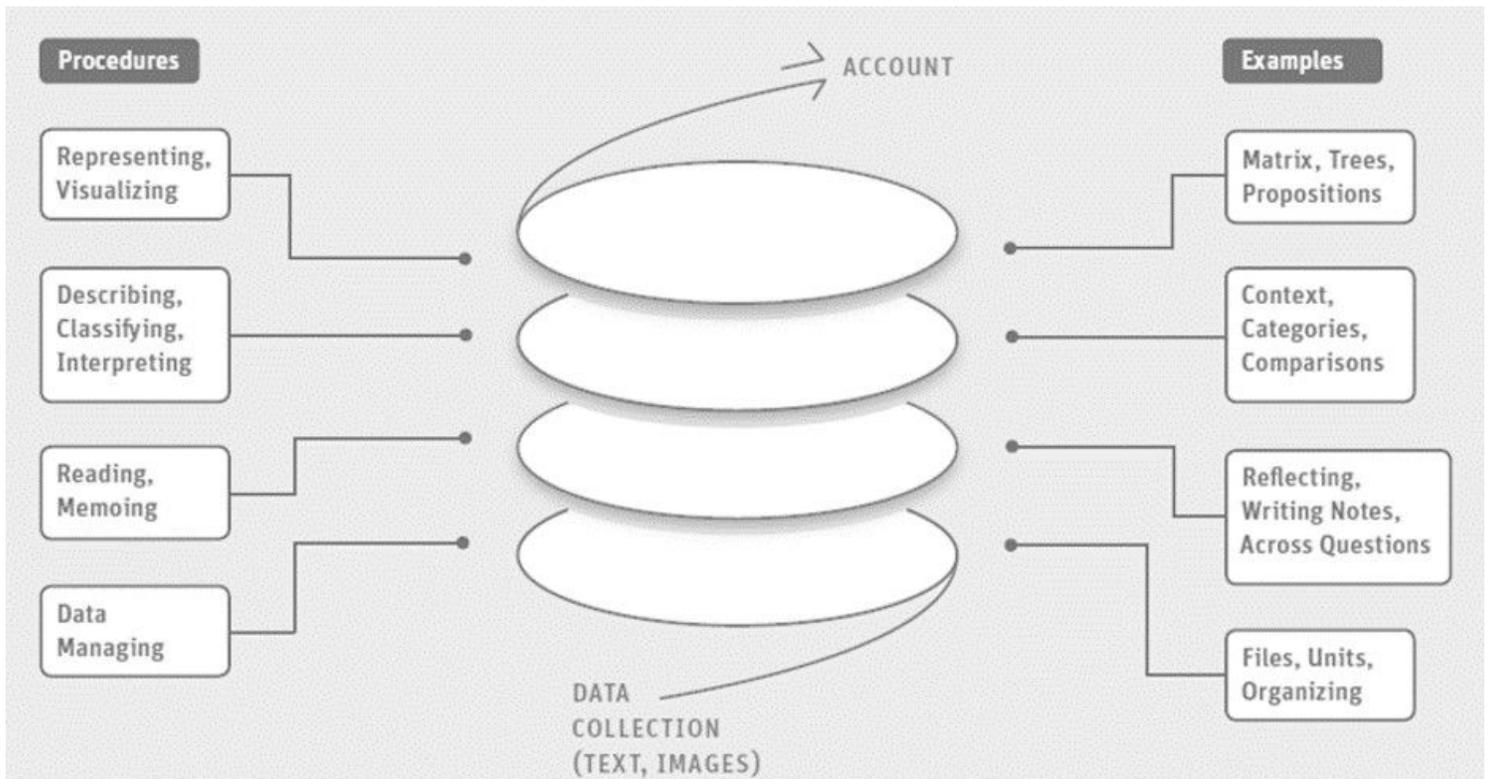


Figure 2

Data analysis process (Creswell et al., 2013)

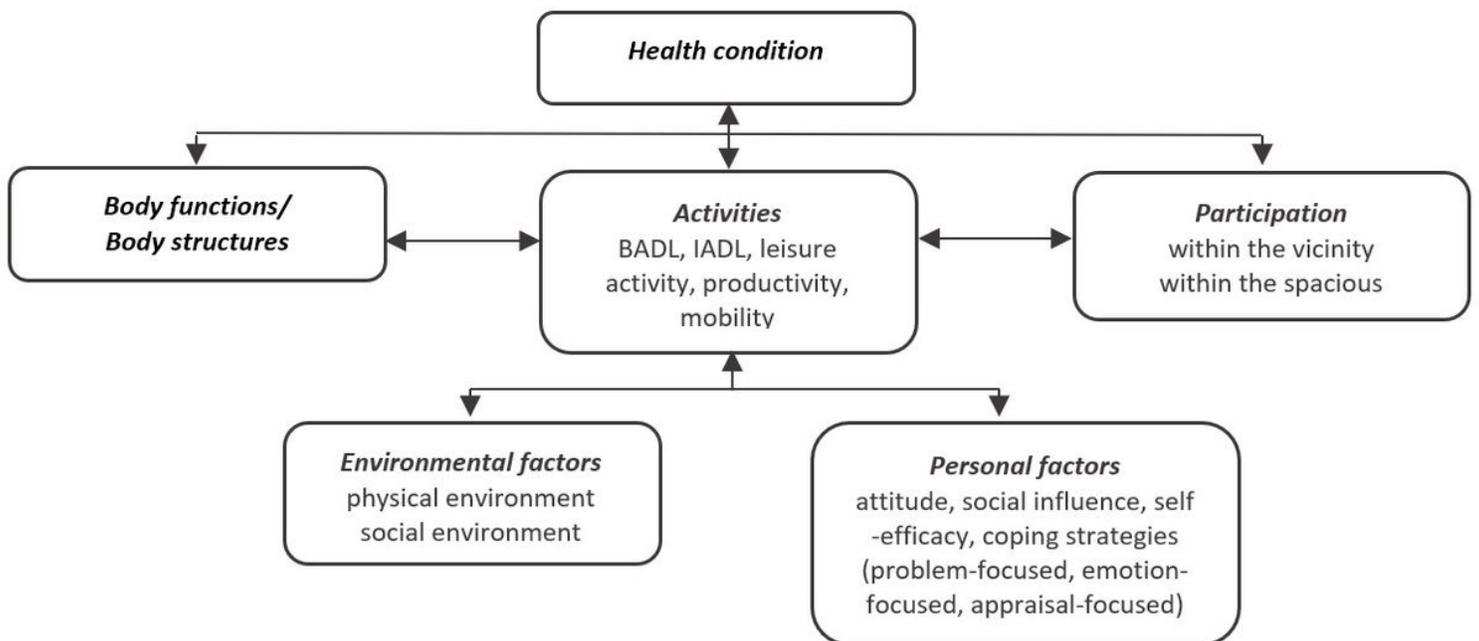
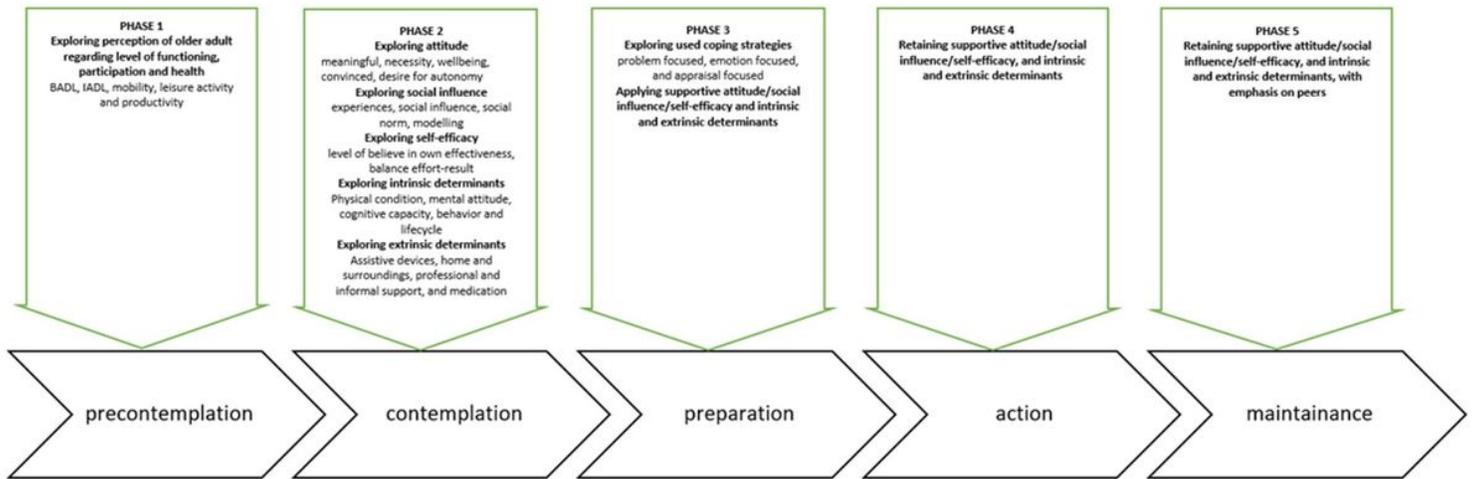


Figure 3

Analysis framework, based on ICF, CMOP-e and ASE-model



**Figure 4**

Conceptual model to determine factors influencing functionality, social participation and health

## Supplementary Files

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