International Journal of Nursing Studies Advances 7 (2024) 100220

Contents lists available at ScienceDirect

International Journal of Nursing Studies Advances

journal homepage: www.sciencedirect.com/journal/international-journal-of-nursing-studies-advances

Acceptability and feasibility of a comprehensive fall prevention model for independent older adults: A qualitative evaluation

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ARTICLE INFO

Keywords:
Accidental falls
Aged
clinical trial
house calls
Nursing
Qualitative evaluation, Patient acceptance of healthcare, Feasibility study

ABSTRACT

Background: Falls amongst the elderly represent a global public health challenge because of their potential to cause illness, death, and reduce the autonomy of this group. They also impact the emotional, family, social and economic well-being of those involved. Various strategies to prevent falls have been reported in the literature, focusing mainly on addressing individual risk factors, and on the continuous assessment of the risk of falls in older people.

Objective: This study evaluated user satisfaction and acceptability of a comprehensive model, implemented in the community, to prevent falls amongst independent older adults aged 65 years and above. It sought to capture both the perceptions of the individuals who received the intervention and of the interventionists who implemented it. The study protocol was registered at ClinicalTrials.gov in November 2020 (ID: NCT04313062).

Design: Qualitative, exploratory study using a case study design. The evaluation of the intervention followed the recommendations proposed by the Medical Research Council for complex interventions. Methods and participants: In the period between April 2021 to April 2022, 11 semi-structured interviews were conducted with independent older adults between 65 and 80 years of age who participated in the implementation of the comprehensive model in Santiago, Chile. Data were also collected with eight interventionists through: three semi-structured interviews at the beginning of the intervention; and two focus groups with seven interventionists at the end of the implementation of the model. The team members undertook a content analysis of the data collected.

Results: Three themes emerged to account for the satisfaction and acceptability of the intervention with the model on the part of the participants and interventionists: (1) Previous experience of older persons and interventionists; (2) The older person-interventionist encounter and its context; and (3) Identification of facilitators, strengths and challenges for the implementation of the model. The results show a positive assessment of the model, highlighting the value of the social contact derived from the intervention by both participants and interventionists. Although the model involved an individual intervention, the participants' accounts indicate that it reached out to others, including family members and other elderly acquaintances. Moreover, the interventionists helped identify challenges in implementation and made recommendations to strengthen the model.

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https://doi.org/10.1016/j.ijnsa.2024.100220
Received 28 February 2024; Received in revised form 16 June 2024; Accepted 20 June 2024
Available online 22 June 2024

Conclusion: The evaluation of satisfaction and feasibility of implementing the model showed positive results that will nurture the next phase of development of this model, which involves scaling up the intervention.

What is already known

- Falls amongst the elderly are a major public health problem that needs to be addressed with comprehensive interventions to prevent them.
- Interventions for fall prevention are primarily designed to address risk factors like poor balance and mobility, poor vision, and polypharmacology
- Multidimensional interventions focused on the specific needs of each person are more effective than those that are not personalized.

What this paper adds

- An evaluation of the acceptability and feasibility of a complex intervention using a qualitative approach.
- Evidence from Latin America of an effective intervention for the prevention of falls in the elderly.
- The comprehensive model, which includes a community-based intervention for falls prevention, is feasible to implement and is acceptable to interventionists.

1. Background

Falls among older adults are a major public health problem worldwide. Globally, the highest fall-related mortality rates are in people over the age of 60. Those coping with disabilities due to falls, particularly older adults, are more likely to require long-term care and institutionalization, in addition to the associated emotional, family, social and economic costs of falls (Montero-odasso et al., 2022; World Health Organisation, 2018).

Developing countries, such as Chile, are currently in the final stages of the demographic transition to aging, which is associated with factors such as the country's greater socioeconomic, political and technological-scientific development. This has resulted in some repercussions, such as a higher proportion of adults over 65 years of age, who represent approximately 16.2% of the population (Instituto Nacioal de Estadística, 2018), and a life expectancy at birth of approximately 80 years (ECLAC, 2020). With this aging population, the challenge for all sectors of society is to ensure that this longevity is sustained with the best possible health status and ensuring quality of life, autonomy and independence (Martínez-Sanguinetti et al., 2021). In addition, avoiding or controlling functional limitations in older adults has a positive impact on important predictors of mortality, morbidity, disability and falls, which lead to functional limitations (Paranhos Amorim et al., 2022).

Numerous interventions have been developed to address public health issues related to fall prevention amongst the elderly (Bustamante-Troncoso et al., 2020; Tan et al., 2018). Interventions are primarily designed to address risk factors for falls, such as poor balance and mobility, poor vision, and polypharmacology (La Porta Et Al., 2022). Multifactorial interventions involve the assessment of known and modifiable risk factors and the implementation of specific interventions targeting each risk factor (Hopewell et al., 2018).

Previous studies have shown that various components of multidimensional interventions, such as strength and balance exercises, and home hazard modifications, are effective in mitigating risk factors and preventing falls. Multidimensional interventions are tailored to the unique needs of a given participant and, therefore, are more appealing than non-personalized interventions (Bustamante-Troncoso et al., 2020; Lee & Yu, 2020).

Falls amongst older persons represent a prevalent health problem, with an impact on morbimortality and the potential transition from independence to dependence, even conditioning the need for institutionalization of a person who was previously autonomous (Cho et al., 2019; Porta et al., 2022). An autonomous older adult is defined as a person whose physical, functional, mental and social characteristics are in accordance with her/his chronological age and who is capable of performing basic functional activities of daily living and those necessary to adapt to their environment (Senama, N.D.).

Falls in older adults do not have a single cause, but are the result of the interaction of factors (Cho et al., 2019). The health conditions most frequently associated with falls are: neurological, cardiac or other disabling conditions, side effects of medication, physical inactivity and loss of balance, as well as cognitive, visual, and mobility problems (La Porta et al., 2022).

Factors that most frequently result in falls include extrinsic factors, such as hazards in the physical environment, and intrinsic factors related to increased individual susceptibility and risk behaviors; most of these are potentially modifiable or manageable with preventive measures (Gama & Gómez-Conesa, 2008; Peel, 2011; WHO, 2007). Among the most relevant extrinsic factors are overcrowding inside the home and a lack of security in the building and its surroundings (Lee & Yu, 2020). These conditions are often aggravated by a lack of resources, determined by the socioeconomic condition of the family (Liu & Hu, 2022).

In this scenario, the most effective fall reduction programs are those that consider a multidimensional assessment of fall risk

including inspection of the environment and implementation of simple measures for environmental modification (Chan et al., 2021; Lee & Yu, 2020). In addition, the perception of risk, that is, the subjective belief of the probability (susceptibility) and negative consequences (severity) of suffering a fall, which is not usually considered at the time of contact with older adults in health facilities, plays a relevant role in falls prevention (Souza et al., 2022).

Preventing falls amongst the elderly requires a comprehensive approach (Hopewell et al., 2019). The most effective programs include a systematic assessment and evaluation of fall risk and the implementation of specific interventions, such as availability of exercise and environmental assessment programs as part of risk reduction strategies (Porta et al., 2022; Lee & Yu, 2020; Maggi et al., 2018).

Based on the above, we designed, implemented and evaluated a complex intervention aimed at the prevention of falls amongst independent older adults living in the community, through a two-arm randomized controlled trial with intervention and control groups, with the following objectives: (a) Develop the components of a comprehensive fall prevention model for independent older adults; (b) Implement the model amongst independent older adults living at home; and (c) Evaluate the effect of the model in terms of frequency of falls, management of risk factors and perception of falls risk, compared to the usual care older adults receive within Primary Healthcare settings (Marquez-Doren et al., 2023).

The comprehensive fall prevention model was based on two components: (1) multidimensional assessment of fall-related risk factors and (2) development of a consensus-based fall risk prevention plan. Both components were carried out through home visits and telephone follow-ups led by registered nurses previously trained in the model. In addition, an accident prevention kit was given to each participant (Marquez-Doren et al., 2023).

The methodological framework for the intervention was based on the guidelines for the development of complex interventions proposed by the Medical Research Council (MRC) (Craig et al., 2008). Exploring the acceptability of interventions ensures that these are relevant and appropriate not only to the targeted population, but also for healthcare professionals (Skivington et al., 2021).

This article describes the qualitative evaluation of the comprehensive fall prevention model regarding participants' satisfaction and acceptability of the intervention.

2. Methods

2.1. Study design

A qualitative, exploratory study was carried out using the case study methodology. This is characterized by an "intensive" approach to a particular experience (Creswell & Poth, 2017), as having participated in an intervention aimed at fall prevention. The case study allows the researcher to learn in detail about an experience using a variety of data collection strategies, including individual interviews and focus groups, which were carried out in this study. When using this perspective, it is essential that the case is defined clearly and in sufficient depth, as well as the context, in terms of sociocultural, territorial, and the characteristics of the participants and the researchers (Creswell & Poth, 2017; McGill et al., 2021; Skivington et al., 2021). This is described in extenso in the intervention protocol (Marquez-Doren et al., 2023), additional details of the intervention are described in appendix 1 and 2.

2.2. Setting

The study was conducted between April 2021 and April 2022 in the suburb of Renca, in Santiago, Chile. Renca is located in the northwestern part of Santiago and is considered a low-income dormitory suburb (Ilustre Municipalidad de Renca, n.d.). According to the 2017 Population Census, Renca had 147,151 inhabitants, with a projection to 2023 of 162,854. Of these, 18% corresponds to people aged 65 and above (Biblioteca del Congreso Nacional de Chile – BCN, 2023). The suburb has four Family Healthcare Centers, which cover the healthcare needs of 95% of its residents. The recruitment for the study was carried out in these healthcare facilities.

2.3. Sampling and recruitment

As the aim was to evaluate the satisfaction and acceptability of the intervention, a purposive sampling was used, which allowed reaching those participants who had experience with the subject under study (Streubert & Carpenter, 2011). For older individuals, the inclusion criteria included: being between 65 and 80 years of age, residing in the suburb of Renca and having participated in the intervention group during the entire period of its implementation (12 months). For the interventionists, the inclusion criteria considered: to be over 18 years of age; to be a nursing student in the last year of the program, or recently graduated; to have completed the training program to implement the intervention; to have implemented the intervention (home visits or telephone follow-ups).

For older individuals informed consent was obtained before the implementation of the intervention by nurse-interventionists. All 110 older people from the intervention group agreed to be contacted at the end of the intervention to participate in this study. Thirty people were invited to participate in the evaluation; three individuals did not want to be interviewed, three did not answer the phone call, and eight were on holidays. The final number of participants was determined by data saturation, understood as the moment when new codes cease to emerge. This occurred after conducting 11 interviews with older adults. In relation to the interventionists, consent was obtained prior to participation in the interviews/focus group. Three interventionists were interviewed at the beginning of the intervention, and two focus groups with seven interventionists were undertaken at the end of the 12-month implementation. A co-researcher, who had not been involved with the interventionists/participants during the intervention, invited them to be part of this study.

2.4. Data collection

Semi-structured interviews were conducted by a member of the research team with older adults at the end of the intervention in the period January to March 2022. The objective of the interviews was to qualitatively assess the participants' satisfaction with the intervention and to identify perceived facilitators and barriers to implementation of the consensus-based falls prevention plan. With the group of interventionists, the research team used two strategies to collect data: first, an initial evaluation of the intervention was carried out four months after its initiation to identify emerging difficulties in the implementation of the model, and to be able to address them. For this purpose, semi-structured interviews were conducted in April 2021 with a small group of interventionists, choosing those who had carried out the largest number of interventions.

As part of the final evaluation of the intervention, in April 2022, two focus groups were held to explore the interventionists' perception about (1) facilitators and barriers for the implementation of the intervention, (2) the different components of the model, (3) their level of satisfaction with their role, and (4) their opinion about the acceptability of the intervention by older adults (see appendix 3).

Both interviews and focus groups were audio-recorded (60 minutes average) with the prior authorization of the participants. The interviewers used a field notebook to record general impressions after conducting each interview. This helped them to give meaning and significance to their actions and also to make them aware of their influence and responsibility in understanding the participants' experiences (Liamputtong & Ezzy, 2005). The recordings were then transcribed before being analyzed. The recordings and transcriptions were stored in a secure folder for the exclusive use of the research team involved in the analysis.

2.5. Data analysis

Qualitative analysis was undertaken by four members of the team, all of them nursing faculty with experience in qualitative methodologies. The leading researcher oversaw the study and its analysis.

The transcripts were analyzed using the thematic content analysis technique (Braun & Clarke, 2006) with the support of Atlas.ti 9 software. Bi-monthly group sessions were held with three team members for the construction of a codebook that was refined during the analysis of the first four interviews. Since the objective of this study was to evaluate the intervention, the construction of the codebook was deductive and guided by the components of the model. However, the team left reflective space for other codes to emerge inductively and thus deepen the experience of the participants. The researchers used the codebook to analyze the transcripts individually, meeting regularly to triangulate the analysis and reach consensus on discrepancies. This exercise sought to increase methodological rigor and "minimize biases coming from the individual researcher" (Flick, 2017). The analysis process ensured compliance with the methodological rigor criteria of qualitative research as proposed by Streubert and Rinaldi Carpenter (2011): credibility, fidelity, confirmability and transferability.

2.6. Ethical considerations

The study protocol was prospectively registered at ClinicalTrials.gov in November 2020 (ID: NCT04313062). The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee of Pontificia Universidad Católica de Chile (ID: 19031801, date of approval: 20th December 2019). Informed consent was obtained from all participants involved in the study.

3. Results

A total of 20 individuals participated in the study, including 11 senior citizens who received the intervention (Table 1) and eight interventionists who implemented it (Table 2). Of the eight interventionists, two participated in both the initial and final evaluations.

Table 1
Sociodemographic characteristics of the participants of the study.

Code	Age*	Sex**	Lives with	Occupation
PM02	69	F	Husband, two sons and two grandchildren	Homemaker
PM05	70	F	Son, daughter-in-law and two grandchildren	Homemaker
PM06	74	F	Husband, son and daughter-in-law	Homemaker
PM07	79	F	Husband and son	Homemaker, and seller of cleaning products
PM08	69	F	Husband	Homemaker
PM10	73	F	Daughter, son-in-law and two grandchildren	Homemaker
PM11	72	M	Wife, son and one grandchild	Retired, and works sporadically in catering
PM16	75	F	Granddaughter	Homemaker
PM18	76	F	Daughter and grandchildren	Homemaker
PM24	71	F	Grandson	Homemaker
PM25	78	F	Daughter and one grand child	Homemaker

* Age in years
** F: Female, M: Male

In the following section, we describe the experience of participants in relation to the satisfaction and acceptability of the intervention. This is organized in three main categories: (3.1) Previous experiences of older people and interventionists; (3.2) The encounter between participants and interventionists; and (3.3) Satisfaction and acceptability of the intervention.

Given that participant satisfaction is based upon the encounter between participants and interventionists, the results are presented around it. Fig. 1 illustrates the configuration of the results in relation to the experience of participating in the fall prevention intervention.

3.1. Previous experiences of older people and interventionists

Both parties come to the intervention with previous life experiences and professional training that impact upon the relationship and shape the clinician-person encounter.

3.1.1. The experience of being an older person

Through their stories, participants described aspects of their daily lives, mentioning the composition of their families and their responsibilities around the home. They described a more extended presence in their homes and the performance of domestic tasks, compared to a time "before" marked by participation in the labor market:

> "I used to work in a department store... I was there for eight years [but] I've already worked a lot, so.... I also deserve a break. Sometimes you get bored at home, but you do one little thing here, another one there to fill the time" (PM14).

From their stories, the role and meaning of support networks emerged strongly. They highlighted the loneliness in which many of their peers live, which not only reduces opportunities for socialization, but also has an impact on the speed of response to emergency situations, such as home accidents. On the other hand, some of the participants also pointed out that they themselves have become the main support network of a third party, either another elderly person who lived alone, or an immediate family member.

> "A neighbor called me to tell me that she fell, she went to plug something in and got dizzy and fell over backwards. And she was alone." (PM24).

> "I am not afraid of dying, but I am afraid that something will happen to me while my granddaughter is here, because she's on medication and sometimes it's just the two of us here all day… That's what I worry about daily..." (PM16).

This category also includes the perception the interviewees regarding their autonomy level. Most of them reported feeling capable of independently performing tasks inside and outside their home for personal or family care. During the interviews, some associated their level of autonomy with maintaining healthy habits. Additionally, some of the interviewees, despite claiming to be independent in their daily tasks, shared reflections comparing what they could do "before", when they were young, and "now". These changes sometimes generated emotions of frustration or sadness, as they posed new limitations to the ability to care for oneself, others, and the household. An emerging challenge was learning to ask for and accept help from third parties.

> "I know how to get out of bed by myself, I bathe myself, I do my make-up by myself […] At 70 years old, everybody thinks I'm fine. […] I eat well; every Friday I eat vegetables...we eat a lot of legumes and fish" (PM08).

> "For me to give up standing on a chair has been complicated. Now, I prefer to wait for my son to come home from work or his wife […]. She tells me, "Don't worry, I'll help you". That has been difficult, but I have become aware that I should not do it […] I hate asking for help, the only thing I always tell my son is that I do not want to be a burden for anyone […] having to ask for help is hard, I am very independent" (PM05).

3.1.2. The previous experience of interventionists

As Table 2 shows, the nurse-interventionists were young and had limited professional experience, as this study comprised their first job. While all of them had clinical experience in working with older citizens obtained during the final year of their degree, plus the formal training provided by the project, they mentioned in the early evaluation of the study, that they sometimes struggled to manage

Table 2
Sociodemographic characteristics of the interventionists.

Code	Age*	Sex**	Occupation
M1	31	F	Registered Nurse
M2	26	F	Registered Nurse
M3	25	F	Registered Nurse
M4	24	F	Registered Nurse
M5	23	F	Registered Nurse
M6	23	F	Senior nursing student
M7	26	F	Senior nursing student
M8	25	F	Registered Nurse

* Age in years
** F: Female, M: Male

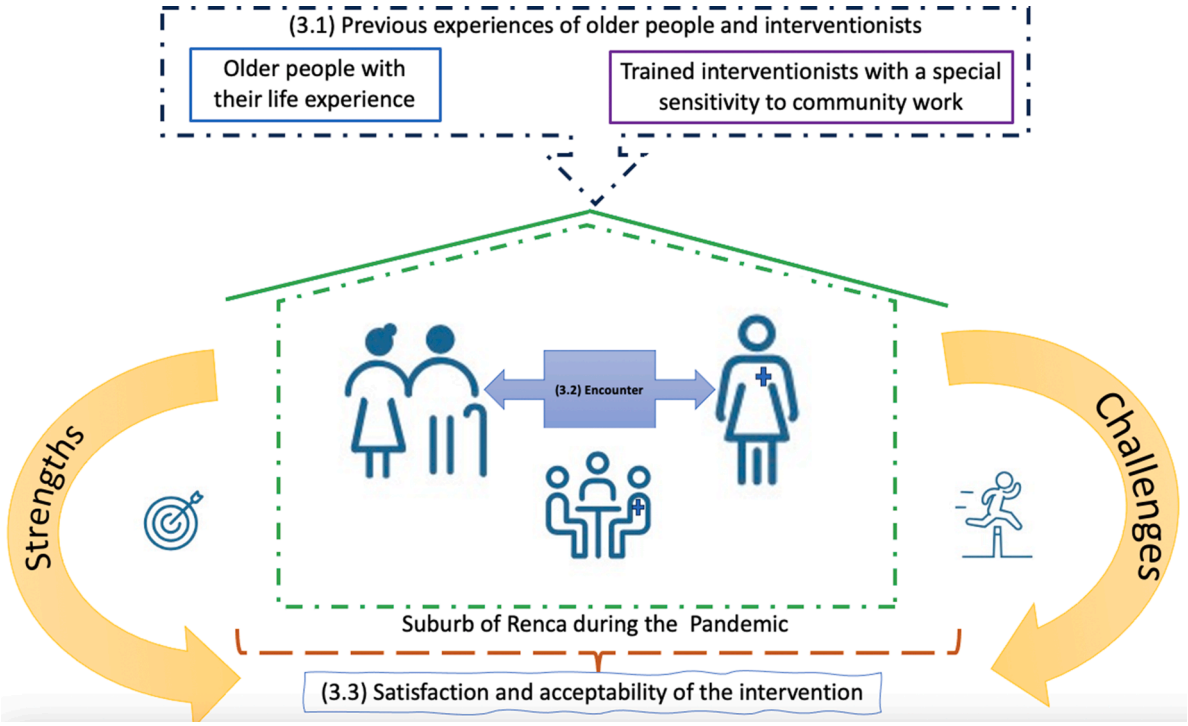

Fig. 1. The experience of participation in the comprehensive model for fall prevention.

the time and balance the requirements of the intervention.

> "It is my first job and I wanted it to be in a comfortable and safe space, led by professors whose approach to nursing I like [...] I have an academic certificate in Geriatric Nursing [...] and the project involves aspects that we covered in classes" (M1).

> "The first home visits were about learning to organize yourself, […] you have to obtain the informed consent, you should not confuse the documents for the control or intervention group, you have to carry out the functional evaluation of the elderly person, the interview..." (M2).

Additionally, the interventionists were willing to answer the participants' questions, regardless of which group the participant belonged to. This highlighted their professional and ethical duty to provide high-quality care. To carry out the intervention, the interventionists not only use the knowledge acquired in the study training, but also made use of the learnings gained during their training as nurses.

"Sometimes they asked me questions about having very high blood pressure, and it was because they had not taken their antihypertensive drugs the day before... So [to those in both the control and intervention groups], I told them that it was very important that they adhere to treatment; in my opinion, ethically, I could not let the person continue to worsen... in those cases I offered recommendations" (M2).

3.2. The encounter participant-interventionist

3.2.1. The encounter as an emerging bond

A central theme that all interviewees highlighted as a fundamental characteristic of the model was the development of a relational bond between the interventionist and the older person. The latter shared reflections on the socioemotional value of the intervention. For them the benefits of this model go beyond falls prevention, stressing an added value for social connection and integration. There was consensus in highlighting the genuine concern and caring treatment that the nurse-interventionists manifested throughout the telephone follow-up. Some participants highlighted the long-term nature of the relationship and the perception of having someone who attended to and cared for them. In these accounts, the comprehensive nature of the intervention emerged.

> "Knowing that there is a person who cares about you, who calls every month […], and you can tell them, "This week I had a doctor's appointment, I was feeling bad, I had this problem" and they always remembered to follow-up on that […] it was like feeling accompanied, even if it is only once a month […] The connection was great" (PM05).

The relationship established between nurse-interventionists and participants was also recognized by the former, emphasizing that they were able to build a bond of trust. Nurses mentioned that many people valued the home visit and the continuity of the

intervention, from which emerged the perception of being accompanied and that there is someone who cares.

> "Many people are grateful when you visit them; they even appreciate the opportunity to talk, to be heard… Having someone who knows their history makes them feel comfortable with the health professional and with the health system, so that also brings them closer to the Primary Healthcare Center. When I was a student, they told us that the trust in a relationship influences adherence to treatment, so the model is fantastic" (M3).

3.2.2. Strengths for the implementation of the PM ACTIVAS model

The participants pointed out that the comprehensive nature of the care provided as part of the intervention was a strength of the model, highlighting the value of the home visit as a key activity to identify risks and implement fall prevention measures based on reflection of the risk factors identified. Regarding the telephone follow-up, participants highlighted the continuity of care as a central element that added value to the intervention, as well as the concern of the nurses for their well-being. This was manifested through active listening and a friendly treatment.

> "I found it good because it emphasized that you must be very careful and that falls can have multiple reasons. All that was explained to us, and the nurses showed us pictures […]. And I had to identify what was bad or good." (PM24).

> "It is good that the same person calls you, that the same person is taking care of you […]; you feel closer to her. It would be different if another person calls all the time […] It would be more superficial and more detached" (PM02).

Regarding the prevention kit that each participant received during the home visit, most interviewees reported having installed the portable light, the shower grab rail and having used the non-slip rug pad.

> "[The portable light] I could install it on the wall and on the edge of the bedside table. And sometimes the power goes out, so it's very useful. There's more risk also of falling when there's low lighting. I was very grateful for that; my son will put it on the wall" (PM14).

From the perspective of nurse-interventionists the strengths of the model were related to the training provided prior to the implementation of the model and the usefulness of the interventionists' guide to solve doubts during the project implementation.

> "The training, the classes and the test, in addition to the two guidelines, seemed good to me, sufficient. I reviewed them to solve doubts" (M1).

3.2.3. Challenges for the implementation of the PM ACTIVAS model

The participants pointed out that the most important challenge in implementing the fall prevention plan was to ask for help and avoid climbing on unstable surfaces to reach objects at height.

> "It was very hard for me to stop standing on the chair to reach things, because I am very independent, I prefer to do things on my own […] and suddenly you cannot […] But after all that we talked about with the nurses, I realized that I am not 20 or 30 years old anymore, so I must think about my health, because if I fall, I could break my hip or a foot" (PM05).

For the interventionists the implementation of the model involved multiple challenges. During the first month of the intervention, it was challenging to complete the implementation in the 90 minutes allocated for each home visit. However, with practice, they became more skilled in conducting the interview.

> "I started to become more efficient, because I realized that in the questionnaire there were many questions that were similar, so, people start talking to you, and you already have multiple answers at once." (M2).

The second challenge involved the tension between allocating sufficient time for the risk assessment and allowing enough time to develop and discuss with the participant the prevention plan, which should be based on a mutual agreement. Initially, the interventionists questioned whether they were achieving the latter.

> "In the first home visits, sometimes the interview would go on for a long time and I would suddenly realize the time and tell the participant that we had to hurry because I had another visit. Then we would discuss the agreed plan but not in sufficient depth" (M1).

The third challenge was related to the interventionists' need to develop skills to motivate the older individuals to actively participate in the home visit and follow-up, and to implement the agreed-upon changes. This aspect was perceived as complex by nurses mainly when working with male participants who tended to agree to the intervention but did not implement the changes.

> "During the follow-up, I realized that those who said a "social yes" had not used any of the [fall prevention] kit components or had not implemented the agreed measures, because they did not see the risks... especially with men, there were very few who implemented actions" (M2).

Finally, the interventionists identified the need to incorporate in the training the content of "what to do in the event of a fall at home". They also suggested the incorporation of a "practical" training activity, such as a simulation or role playing, so that they can practice relational skills. These are deemed necessary to the problematization of risks.

> "I used to say: "Do you know how to get back up if you fall? Have they told you what to do?", "No" they would answer. And maybe that was missing from the training, which I felt that in the model wasn't covered" (M1).

> "[During training] There is a lot of theoretical content to carry out the interventions. Perhaps we could have discussed more examples and then devise strategies to change the behavior in that specific example" (M8).

3.3. Satisfaction and acceptability of the intervention

3.3.1. Satisfaction

For the older individuals, the fall prevention model meant experiencing a novel intervention that was relevant to their sociocultural reality and that responded to an unmet need. With respect to the novelty component of the intervention, participants distinguished clear differences in relation to other available programs, stating that they had not previously received a falls prevention intervention of these characteristics.

> "Before the nurse came, no, [in the Primary Health Center] they had never taught me anything about falls. No, only what the teachers taught us when I was doing gymnastics. But did they come to the house? No, they had never come" (PM08).

Regarding relevance, the accounts indicate that the interventionists were able to adapt the follow-up according to the emerging needs of the participants and that the recommendations they provided were not standard, but rather reflected a clear knowledge of the living conditions of the older individuals. Likewise, the participants highlighted in their narratives that the intervention encouraged them and their families to reflect on falls prevention.

> "I realized that I must be more careful because I have a cat that is very playful and sits everywhere and it's big, so I am more careful with it [...] sometimes I was careless when walking or I would leave things anywhere. But now I think that me or my husband could fall" (PM06).

> "The main gain was my health. Because I didn't fall, I always kept it in mind. I was also told about COVID prevention: about the mask, the gloves, everything you should do to take care of yourself. The richness is that they were aware of you, once a month they called you, they were not family, they were health professionals" (PM18).

3.3.2. Acceptability

Regarding the feasibility of implementing the consensus-based plan, the participants indicated that the agreed recommendations were achievable and that they were clearly defined and pertinent. They mentioned changes in their understanding of the risk of falls and a different attitude towards prevention. Also, they were able to transfer the learnings derived from the project, indicating they had become ambassadors of falls prevention in their own social network. This view is reinforced by the nurses who identified that community participation and an active support network of the older adults facilitated the accomplishment of the prevention plan.

> "The nurse gave me many instructions on how to be careful, for example, avoiding standing on a chair, to wearing comfortable shoes, not to wear flip-flops" (PM05).

> "I went to a friend's house for lunch and there was a little rug in front of the sink, right where you stand, and it moved around. I said to her: "This rug is so bad" […] "Why?", she said, "I have it there in case the floor gets wet". -"That's why; it's slippery, dangerous, you have to put some anti-slip rubber on it". And I had a little piece left from the project, so I gave it to her. She was happy!" (PM10).

> "People were more receptive [to participate and implement the plan] when they were active members within the community, in the activities of their Primary Healthcare Center or of their senior citizens' association... And the opposite happened with those who lacked support, [...] these people found it more difficult to incorporate the intervention" (M1).

The findings of the study also indicate that the interventionists were satisfied to have participated in the project because the model not only contributed to reducing the risk of falls, but also strengthened older individuals' overall well-being by providing regular telephone support and company.

Table 3
Analysis findings: categories and subcategories.

Category	Subcategory
3.1. Previous experiences of older people and interventionists	*3.1.1.* The experience of being an older person
	3.1.2. The previous experience of interventionists
3.2. The encounter between participants and interventionists	3.2.1. The encounter as an emerging bond
	3.2.2.Identification of strengths for the implementation of the PM ACTIVAS model
	3.2.3. Identification of challenges for the implementation of the PM ACTIVAS model
3.3. Satisfaction and acceptability of the intervention.	3.3.1. Satisfaction
	3.3.2. Acceptability

"The older adults told me: "The process was very pleasant", they were very grateful to the nurses who did the telephone follow up, the participants felt that nurses were truly concerned for their wellbeing" (M4).

The following table summarizes the main findings previously described (Table 3).

4. Discussion

Regarding the experience of being an older person, participants reported being in a process of transition, mediated by the tension between a pre-retirement life and their current life. Their narratives indicate that their social role has changed, moving from the public context to the home. There they report taking on household chores and caring for neighbors or relatives, leaving behind the role of provider. A constant concern of the interviewees is that of asking for help while at the same time maintaining their autonomy. The literature indicates that the transition to retirement is one of life's most complex (Kaplan, 2023), with at least a third of older people reporting difficulties in changing roles and incomes. This experience is diverse in nature and can involve a sense of grief and disconnection from one's social network and identity (Djukanović & Peterson, 2016). With respect to the tension between asking for help and the desire to maintain autonomy, the literature has indicated that autonomy in older people is important because it is strongly associated with longevity, mental health and good health perception (Sánchez-García et al., 2019). However, older people tend not to ask for help (Teo et al., 2022), which depends on multiple factors, such as the presence/ absence of a formal and informal support network, the perception of asking for help as a threat to independence, the presence/absence of symptoms of ageing, barriers to access services, and sociocultural beliefs.

With regard to the previous experiences of the nurse-interventionists, their own process of transition from being a student to a novice nurse stands out. From this process derives the perceived lack of time regarding the first home visit and the tensions between giving recommendations to participants to prevent falls and complying with the study protocol. This process has been explored previously, highlighting that the transition includes feelings of incompetence, pressure, frustration and unfamiliarity to progressively adapt to professional practice and discuss therapeutic arrangements with the patient, along with consulting with a more experienced colleague (Hampton et al., 2021; Reebals et al., 2022). This is in line with the findings of Ten Hoeve et al (2018), who reported that novice nurses face during their practice ethical challenges that they need to discuss with colleagues. Thus, novice nurses should work in safe environments that allow them to connect with mentors (ten Hoeve et al., 2018).

It should be noted that this intervention was implemented during the COVID-19 pandemic, a period marked by physical distancing and home confinement. In Chile, as elsewhere, this measure profoundly affected older adults, who were instructed by the authorities and society in general to remain in their homes and avoid contact with others (Armitage & Nellums, 2020; Sepulveda Loyola et al., 2020). Therefore, receiving regular telephone calls became for some participants the only social relationship they maintained during that period. This is supported by evidence indicating that the social restrictions imposed during the COVID-19 pandemic exposed older persons to feeling lonely. This is associated with the frailty syndrome in the elderly, which comprises a dynamic state of progressive decline of multisystemic physiological functions, constituting a significant predictor of falls (Carrasco Diaz & Araya, 2023).

A crucial finding of this study is the establishment of a relationship of trust between the health care professional and the user, which, as in this experience, is present in other studies (Hobden et al., 2022; Riviere et al., 2019). Genuine concern is basic to the establishment of a trusting relationship. This relationship acknowledges older people's appreciation of continuity of care and the feeling of being important to the health provider (Pérez- Rugosa et al., 2024). Similar results were obtained in an Australian study, where older people reported that being spoken to with respect was a crucial aspect in the relationship with nurses. Other relevant elements were to be asked about their own expectations and treatment goals; and to be involved in their own treatment related-decisions (Hobden et al., 2022). When high quality care is person-centered, it requires a transition from a paternalistic and expert model of patient care to a more participatory and user-driven model (Conroy et al., 2023). Although ageism is a problem associated with caregiving for older people (Araujo & Pedone, 2014), it is an absent element in the narratives of this study.

The senior citizens indicated that the relational bond developed with the nurse-interventionists added socioemotional value to the intervention, which coincides with the results reported by Pérez- Rugosa et al. (2024), who points out that the empathy and sensitivity of the nurse is a central element in the relationship.

While there are multiple reports in the literature on the effectiveness of single and multifactorial interventions for the prevention of falls (Cheng et al., 2018; Dautzenberg et al., 2021), in Chile, there is no strategy for assessing the risk of falls at home and how to address it. Within Primary Health Care there is a program to prolong the autonomy of people over 65 years of age called "More Independent Older People" (Ministerio de Salud de Chile, 2015). However, there is no fall prevention model exclusively focused on independent older citizens that, after assessing risks at home, proposes a consensus-based preventative plan. This public policy scenario is supported by the accounts of the study participants, who emphasized the novelty of the intervention, indicating that they had not previously received a similar service.

While this was an individual intervention, the accounts of participants indicate that the model reached out to others, such as family members, friends, and acquaintances. In a way, the participants became ambassadors for falls prevention with their social networks, which was well received by their contacts. This is supported in the literature, where the impact of peer-to-peer transmission of educational messages for falls prevention improves acceptance and facilitates the implementation of new practices. Peer participation also improves the transmission of the message, achieving greater perceived credibility and facilitating optimal commitment (Khong et al., 2015). This finding could be further explored in future research.

From the perspective of the older individuals who received the intervention, the results of the satisfaction and acceptability evaluation show a positive assessment of the model, highlighting the value of the social contact derived from the project. The

intervention had a profound meaning that went beyond the central objective of the project, which was the prevention of falls at home. Participants emphasized that in addition to learning how to prevent falls, they were able to socialize and establish a close bond with the interventionist in charge of the follow-up. This coincides with other studies which indicate that the trust a patient has in their caregiver increases when the same people meet regularly (Krityakierne et al., 2022). Likewise, when the professional-user relationship is established on the basis of essential attributes such as empathy, presence, contact, authenticity, trust and reciprocity (Allande-Cussó et al., 2022), the quality of care and the satisfaction of both parties improves (Molina-Mula & Gallo-estrada, 2020).

The interventionists also expressed their satisfaction with the project, referring that the model not only contributed to reducing the risk of falls, but also strengthened participants' overall wellbeing though the provision of regular telephone support. According to the updated guidelines of the MRC for the development and evaluation of complex interventions (Skivington et al., 2021), it is essential to go beyond evaluating the primary outcome of an intervention. Therefore, it is necessary to address broad questions that include the evaluation of the resources needed to implement the model, considering the human resources and the role of the context in this process. This study evaluated the perspective of the interventionists at the beginning and end of the implementation.

The evaluation of the satisfaction and acceptability of the model by interventionists helped to maintain the fidelity of the intervention and to identify early on critical points within the implementation that could impact the expected results (Bragstad et al., 2019; Robbins-Welty et al., 2018; Sandberg et al., 2014). In this sense, during the early evaluation of the intervention, the team identified challenges associated with time management during the home visit; the correct use of the fall prevention kit; and about the training program, highlighting opportunities for improvement.

The above highlights the relevance of using qualitative methodologies in the early evaluation of interventions. A design that incorporates qualitative and quantitative strategies in the evaluation stage enriches the evaluation process by seeking to answer questions that go beyond the effectiveness of the intervention (Skivington et al., 2021).

5. Limitations

The evaluation of the satisfaction did not consider differentiating the perspectives of the participants according to the level of adherence to the agreed-upon fall prevention plan. When this model is scaled up, it will be important to address this point.

From the perspective of the interventionists, and when considering their sociodemographic and training characteristics, it should be noted that the nurses in charge of implementing the intervention had a maximum of three years of professional experience, and thus are considered novices. Final year nursing students also participated as interventionists. These were included in the project since nursing training in Chile lasts five years, so these students are at the same level of competency as a graduated registered nurse in countries where training is shorter.

The professional experience of the interventionists may have impacted upon the type of challenges they reported during the early evaluation of the intervention. However, it should be noted that all of them participated in a training program, in addition to having a support guideline for frequent questions, and the supervision of a registered nurse with experience in community healthcare for the elderly who had worked in the same suburb where the study was carried out.

Finally, and as a contextual limitation, when this research project was designed, the COVID-19 pandemic had not yet begun, which became a challenge that the research team had to address in preparing to implement the model. The context of physical distance and social isolation secondary to the pandemic may have affected participants' level of satisfaction with the intervention.

6. Conclusions

This complex intervention that seeks to prevent falls at home amongst independent older citizens, proved in its implementation to be feasible and was accepted by both the interventionists and participants.

Among the strengths of the project, we highlight the therapeutic relationship developed between participants and nurse-interventionists throughout the implementation of the study. In addition, participants reported feeling satisfied, so much so that they became ambassadors for fall prevention with individuals who had not participated in the study.

Considering that the next phase of development of this model involves scaling up the intervention, these findings feed into the process of training the interventionists, as well as the adjustment that the intervention would require according to what is reported by the participants.

Given that the interventionists corresponded to recently graduated nurses and final-year nursing students, the study shows that the intervention is acceptable to this professional group and therefore offers indications of the potential acceptability that it would have in primary care centers, where nursing professionals oversee the implementation of promotional and preventative strategies for older citizens.

Funding sources

This research project was funded by the National Agency for Research and Development (ANID), 2019; Project ID: 19I10349.

CRediT authorship contribution statement

Francisca Marquez-Doren: Writing – original draft, Supervision, Methodology, Conceptualization. **Camila Lucchini-Raies:** Writing – original draft, Methodology, Conceptualization. **Claudia Alcayaga:** Validation, Methodology, Formal analysis,

Conceptualization. **Claudia Bustamante:** Validation, Supervision, Methodology, Formal analysis, Conceptualization. **Marcela González-Agüero:** Writing – original draft, Methodology, Investigation, Formal analysis.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

Acknowledgements

The authors would like to thank the project participants and the Municipality of Renca. We also acknowledge the support of the Research Directorate of the School of Nursing of the Pontificia Universidad Catolica de Chile.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.ijnsa.2024.100220.

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