

## Selfcare and functionality of elderly people in residential care: a cross-sectional study

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### Abstract

**Background:** residential facilities for the elderly have emerged as a response to the increase of people with some level of dependency as a result of ageing and functional decline.

**Objectives:** characterize the level of dependence in terms of self-care and functionality of elderly people in residential facilities.

**Methodology:** observational, descriptive, exploratory and cross-sectional study. Health status, self-care dependency, gait, balance and physical and recreational activity were assessed.

**Results:** a total of 152 people were included, with multimorbidity and poly medication, moderate to high risk of falling, changes in balance when getting up and immediate standing. The most dependent self-care tasks were feeding, taking medication and grooming. Inability to walk and moderate to severe mobility problems were significant. Low level of physical activity.

**Conclusion:** multimorbidity, poly medication and dependency require complex interventions.

Rehabilitation can improve functional and self-care capabilities and mitigate the effects of ageing, which affect the autonomy. It is essential to change the care paradigm, favoring interventions centered on prevention, attenuation of functional decline, training and empowerment for self-care.

**Keywords:** self-care; rehabilitation nursing; mobility limitation; health of the elderly

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## Introduction

The increase in life expectancy associated with the decrease in birth rates in developed countries has resulted in an ageing population and an increase in the number of people with limitations, disabilities and chronic diseases, which means that health resources must adapt to new needs. Due to the increased burden of chronic disease, living longer doesn't always mean living better, as increased life expectancy is accompanied by more years with chronic disease (Jivraj et al., 2020), and therefore not necessarily more years with a healthy life, which can result in situations of disability and dependence, motivating the need to enter in Residential Structures for the Elderly (RSE).

In light of this reality, the aim of this study was to assess and characterise the functionality and self-care of the elderly population living permanently in RSE, in a Portuguese municipality, in order to get to know the reality of the local context, to provide an insight into the existing problem and data to promote reflection on nursing interventions that promote healthy ageing and as much autonomy as possible.

## Background

In Portugal, the number of elderly people has also been increasing. According to data from the National Statistics Institute (INE, 2023) in 2020 and compared to the numbers of the resident population in Portugal in 2021, it was found that in this period, the population aged 65 or over increased from 2,412,253 to 2,461,644 people. The ageing index (ratio of the elderly population to the young population, the quotient between the number of people aged 65 or over and the number of people aged between zero and 14) also increased from 175.6 in 2020 to 181.3 in 2021, which reflects the increase in the older population.

It is expected that the increased prevalence of chronic non-communicable diseases in elderly people, combined with the physiological effects of ageing, may affect their functionality and, due to psychological, mental and physical factors, their ability to carry out activities of daily living (ADL), leading to situations of dependency. The dependency ratio for the elderly in Portugal was 36.9 in 2021, an increase compared to the previous 10 years, when the dependency ratio was 28.7 in 2011 (PORDATA, 2023).

For a variety of reasons, elderly people may become temporarily, long-term or permanently dependent, needing help from others and even using different types of institutions to carry out different aspects of daily life. There can be several reasons for admission to an RSE, from financial or family reasons, a decline in functional capacity with a certain degree of dependency and the need for temporary or permanent assistance and support or to meet basic and instrumental care needs. In Portugal, between 2000 and 2021, RSE were the responses for the elderly that experienced the greatest growth (178%), with 90.4% of the existing places in mainland Portugal occupied in 2021. In 2023, the length of stay in this type of response was five years in 71% of

cases, but 9% of these people had already been in these institutions for 10 years or more (Ministério do Trabalho, Solidariedade e Segurança Social, 2023).

As nursing care is part of the service portfolio of these institutions, care planning should be based on an individualised assessment of functional capacity and self-care (Goes et al., 2020). Improving quality of life, achieving maximum independence and functionality, and implementing interventions to stimulate older people at the cognitive and motor levels, delaying functional decline, promoting gains and enabling adaptation to a new reality are fundamental to promoting active ageing, even when accompanied by the burden of chronic illness. In the field of rehabilitation, it is also essential to be able to carry out specific assessments and diagnoses to plan and implement personalised interventions that promote healthy transitions.

Considering the objectives to be achieved and the population context, the study was guided by the question: 'What is the level of dependency in terms of self-care and functionality of older people living in an RSE?'

## Methodology

To achieve the proposed objectives, an observational, descriptive, exploratory and cross-sectional study was carried out, for which six RSE were identified and contacted, sending them a request for permission to carry out the study and explaining the objectives and procedures to be carried out.

With the permission of the institutions, a non-probabilistic convenience sample of older people living in the identified institutions was selected. The inclusion criteria were: people aged 65 years or older living in the selected RSE, and the exclusion criteria were: people attending the institutions in a day centre or another type of regime.

Free and informed consent was also obtained from the people who agreed to participate in the study, particularly regarding its purpose and the tests to be carried out. Confidentiality was assured, as was the fact that there would be no harm if they refused to participate or if they wanted to withdraw at any time during the study.

Data collection took place between September 2022 and November 2022. The group responsible for collecting and processing the data took technical and organisational measures to guarantee the ethical principles applicable to the research, namely the anonymisation of all the data collected, so that it was not possible to identify whether the data collected belonged to an individual or an institution.

Data collection and measurement of the different variables was carried out using a form to identify and generally characterise the sample, which also included questions about physical activity, a form adapted to assess dependence in self-care: bathing; dressing and undressing; grooming; feeding; using the toilet; standing up; turning; transferring; walking; taking medication; in which the need for help or not was assessed (Duque, 2009). To assess the level of dependence in self-care, the elderly were considered dependent if they needed help with more than half of the activities assessed in each of the self-care activities. The Tinetti test (Petiz, 2002) was used to assess gait and balance.

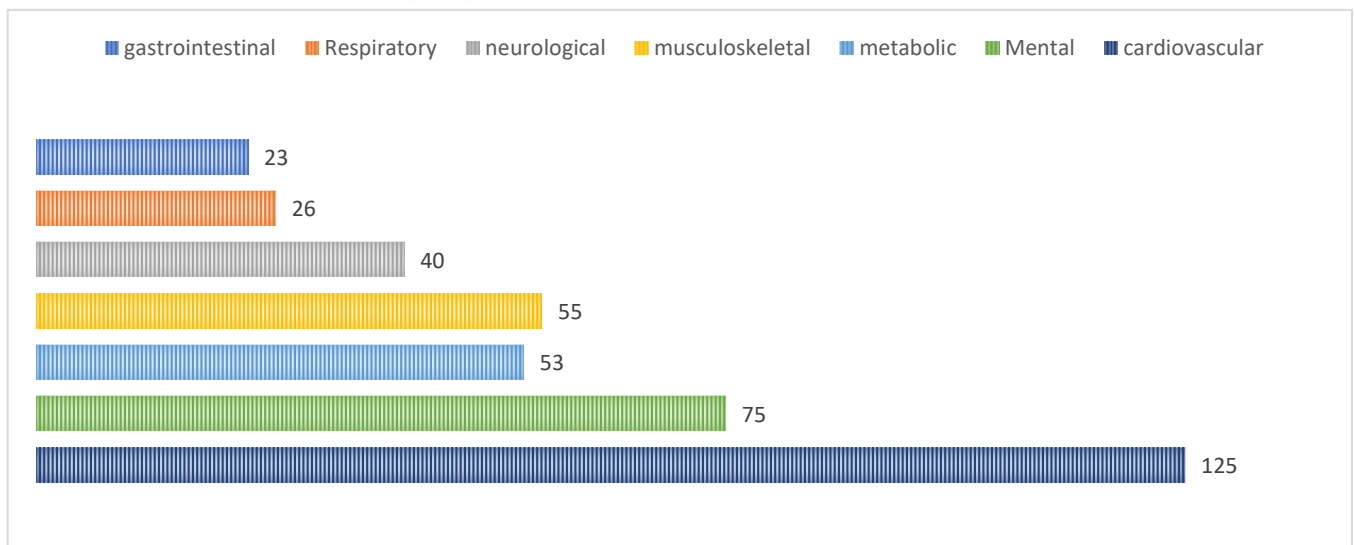
Data were processed using Microsoft Excel version 23.02, with analysis of sample characterisation and descriptive statistics.

## Results

The study sample consisted of 152 participants, of whom 113 (74.3%) were female and 39 (25.7%) were male. The mean age was 85.30 years, with a mode of 86 years and a range of 66 to 105 years.

On average, there was a prevalence of 4.90 chronic noncommunicable diseases per person, with a mode of four. Cardiovascular diseases (82.2%), psychiatric diseases (49.3%) and musculoskeletal diseases (36.1%) were the most prevalent (graph 1). Hypertension, dyslipidaemia and atrial fibrillation were the most prevalent cardiovascular diseases, with 40.8% of people having more than one of these conditions. The most prevalent mental illnesses were dementia, mood disorders and psychotic disorders, with 20% of people having more than one of these conditions.

Of those with musculoskeletal conditions, 74.54% had a rheumatic disease. Type II diabetes was the most common metabolic disease (98%).



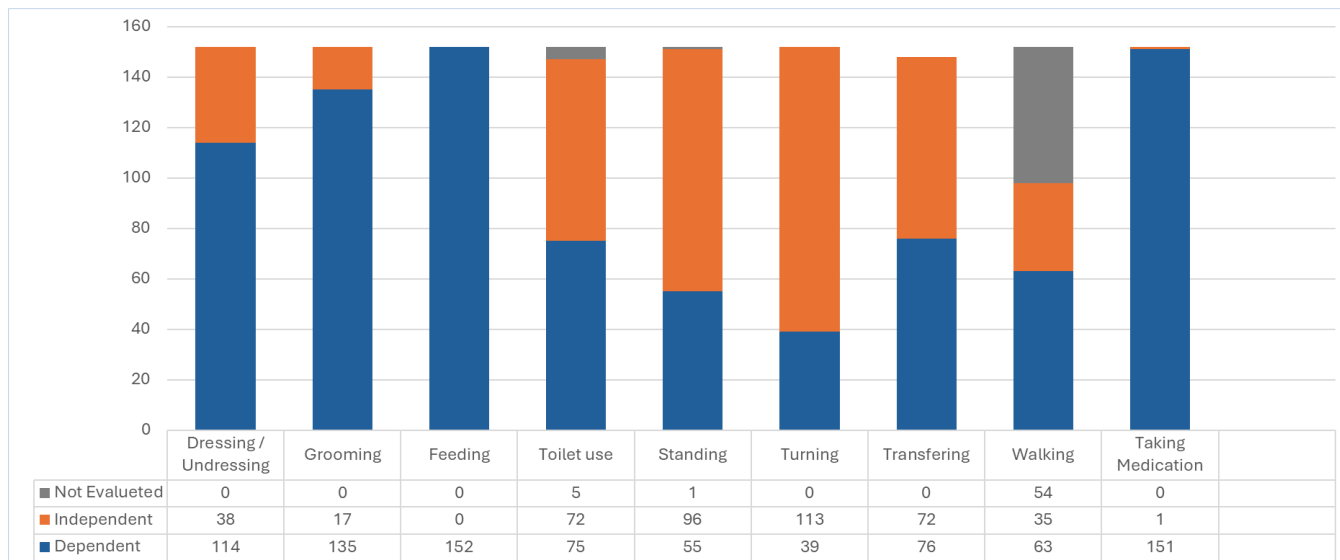
Graph 1 Prevalence of Chronic Noncommunicable Diseases

Analysing the clinical history, 21.05% of participants had a history of or had been diagnosed with an oncological pathology. In addition, 23.68% had a history of surgery and 8.55% had required hospitalisation in the six months prior to the study.

Considering the recent pandemic caused by the SARS-COV2 virus, it was found that 74.34% had been infected and of these, 8.8% had required hospitalisation.

It was also found that the study participants were polymedicated. On average, each elderly person was taking six medications, with a mode of seven and a range of zero to 12. The most common drugs used were antidepressants (63.81%), followed by antihypertensives (50.66%) and antidyslipidemics (48.03%).

Regarding the type of dependency in each of the specific self-care domains, the self-care activities with the highest percentage of dependent people were: feeding (100%), taking medication (98.68%) and grooming (88.81%). On the other hand, the self-care activities with the lowest percentage of dependent people were: turning (74.34%), standing (63.16%) and transferring (48.68%), as shown in the following graph (graph 2):



Graph 2 Independence/Dependence in Self-Care

Regarding the Tinetti test, 41.45% were unable to perform it due to high dependency and inability to stand and walk. In the cases where it was possible to perform the test, an analysis of the risk of falling showed that 34.87% had a high risk of falling, 23.03% had a moderate risk of falling and only 0.66% had a low risk of falling. Regarding balance, 7.86% had altered sitting balance, 69.67% had altered standing balance and 57.30% had altered immediate balance.

More than half of the participants (54%) said they were unable to walk and reported moderate to severe mobility problems.

In terms of physical activity, most elderly, 63.82%, reported no physical activity and only 36.18% reported some physical activity. Of these, 26.97% exercised once a week, 5.92% twice a week and 3.29% daily. Leisure activities were grouped into four main activities: leisure activities organised by the institution (9.21%), games (17.10%), handicrafts (13.81%) and watching television was mentioned by most of the elderly (66.45%).

Regarding visits from family and friends, 28.29% of the elderly reported having visitors. Of these, 6.58% had visits at least once a week, 9.87% at least once a month and 11.84% at least once a year. However, the vast majority (71.71%, 109 of the 152 participants) reported no visits from family or friends.

## Discussion

In Portugal, life expectancy at birth was estimated at 80.72 years for the three-year period 2019-2021 (INE, 2023). In this sample, the average age was 85.30 years, which is higher than the average life expectancy of the elderly population in general. Also, according to INE data (INE, 2023), and in line with the national trend, the population aged over 65 has also increased in the region where the study was carried out, with an ageing index much higher than that of the country (226.9 vs. 181.3). On the other hand, 92.8% of the users of the RSE in this

study were aged 75 or over, which is also higher than the national average for this population group, which is 86.3% (Ministério do Trabalho, Solidariedade e Segurança Social, 2023). This represents a much older population, with a greater predisposition to situations of reduced capacity, dependency and the presence of chronic non-communicable diseases.

The people included in this study had several chronic non-communicable diseases, with the majority suffering from four chronic diseases, mainly cardiovascular diseases, and in these cases a significant percentage (40.8%) suffered from more than one. The presence of chronic diseases among the participants in this study follows the national and international pattern. According to the Social Charter in its 2021 report (Ministério do Trabalho, Solidariedade e Segurança Social, 2021), more than 70% of people in these institutions had problems with the functioning of internal organs and apparatus.

It should be noted that multimorbidity is an important topic for future research, as the coexistence of several chronic conditions leads to complex needs and the involvement of several healthcare professionals. In Europe, the coexistence of several chronic conditions affected 50 million people in 2017, posing demanding challenges for health systems that were not prepared to meet the needs, as they were more disease-oriented and organised according to each medical speciality (Rijken et al., 2017), thus contributing to the fragmentation of care. At the same time, high multimorbidity at the European level has contributed to increased resource utilisation in primary healthcare, decreased functional capacity, lower perceived health status and poorer quality of life (Palladino et al., 2019).

As a consequence of multimorbidity, virtually all elderly participants in this study were polymedicated. These data are in line with other studies reporting that polymedication is common, especially in the elderly (Delara et al., 2022), predisposing to various adverse effects and an increased need for emergency department visits and hospitalisation (Doumat et al., 2023).

It was also found that the drugs with the highest consumption were in the antidepressant group, suggesting a high prevalence of depression among the participants. Indeed, depression in institutionalised elderly is frequent (Tan et al., 2023) and is associated with the occurrence of other pathophysiological processes, such as cardiovascular disease (Haigh et al., 2018), health status, self-care capacity (You et al., 2023) and frequency of family visits (Tan et al., 2023), factors that were largely present in the participants of this study, such as comorbidity and lack of visits from family and friends. On the other hand, depression and the use of antidepressants (albeit with a different causal mechanism) are competing factors for the risk of falling in older people (van Poelgeest et al., 2021).

When the risk of falling was assessed using the Tinetti test, it was also found that elderly people with a high/moderate risk of falling (57.9%) were the most dependent on self-care, while those who were more autonomous had a lower risk of falling (0.66%). The high prevalence of people with altered balance and gait led to functional limitations, such as sitting down and getting up from the toilet, bathing, getting out of bed, reaching for objects, going up and down stairs, which affected their autonomy. The high level of dependency was also reflected in the high percentage of people who were unable to walk and had significant difficulties with mobility. These results highlight the need to establish exercise programmes that include static and dynamic balance training and that improve walking ability, adapted individually according to identified needs.

Regarding the self-care domains, the results showed a high level of dependency, especially in what we might call basic self-care, and the activities in which older people were most dependent were those that required greater motor skills, as well as greater manual dexterity, muscle strength and cognitive abilities. It is therefore clear that there is a need to assess recovery potential, which is rarely deducible, as it depends on

assessing the factors that influence it and the person's abilities (Lourenço et al., 2021). This assessment is also essential for assessing rehabilitation potential and individualising intervention programmes.

In addition to the factors already mentioned for cognitive and functional decline, this study found a high prevalence of sedentary behaviour and very low compliance with physical activity recommendations for this age group. According to World Health Organization recommendations (2020), elderly people with chronic diseases should engage in at least 150 to 300 minutes of moderate-intensity aerobic physical activity, or at least 75 to 150 minutes of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity physical activity, during the week to achieve substantial health benefits. The same source also recommends, as part of weekly physical activity, multimodal activities that promote functional balance and strength training of moderate or higher intensity on three or more days of the week to increase functional capacity and prevent falls. Furthermore, the decline in functional capacity increases with a sedentary lifestyle and is more prevalent among institutionalised older people, leading to various consequences of inactivity (Fernandes et al., 2020). At the same time, physically active people have healthier ageing trajectories and a reduced risk of developing poorer physical and mental outcomes (Cunningham et al., 2020).

The type of occupation throughout life and leisure activities are factors that can influence quality of life. In this study, the elderly occupied their leisure time with some type of activity, the most reported being watching television. Although watching television is a leisure activity, it is sedentary and increases the risk of developing cognitive impairment (Chao & Chen, 2018), so there is a need to provide other types of activities that stimulate cognition and functional mobility.

This study shows that there are many elderly in residential care centres with different dependencies and complex health care needs. This finding motivates the need for a change in the care paradigm, focusing more on preventive measures that maintain and/or mitigate functional decline and prevent complications. As nursing care is one of the essential services for the functioning of these institutions, the results draw attention to the added value of the intervention of rehabilitation nurses, especially with regard to the assessment of functional capacity and self-care profile and autonomy potential, based on individual needs (Imaginário et al., 2019). This allows the establishment of training and capacity-building programmes in which physical activity and exercise, in a flexible and inclusive approach, appear as a therapeutic adjunct to rehabilitation objectives. Indeed, the practice of physical activity and/or exercise by elderly people can bring several benefits, such as mitigating age-related changes that limit the ability to perform physical activity, optimising age-related changes in body composition, promoting psychological and cognitive well-being, helping to manage chronic diseases, reducing the risk of physical deconditioning and increasing longevity (Liguori et al., 2022). However, despite the evidence, older people in residential care facilities do not associate physical exercise with improved mobility and functional independence, but rather associate physical exercise with high-intensity activities performed in a gym and aimed at young people rather than older people (Jeon et al., 2019). This highlights the need for greater investment and training of health professionals in this area to promote the adoption of motivational strategies that encourage people in RSE to engage in physical activity and/or exercise to improve their functionality and self-care skills.

Thus, in the context of this intervention, the specificities of this population, related to individual differences in response to exercise and physical activity, imply a differentiated assessment according to multimorbidity and health status, the presence of polymedication and functional status. Given the increasing prevalence of cardiovascular, metabolic and orthopaedic problems, it is necessary to adapt the assessment of capacity (fitness tests) and prescription (intensity and frequency) (Liguori et al., 2022) on an individual basis, considering clinical risk, symptoms, cognitive capacity, motivation and the combination of different training

methods adapted to existing limitations and proposed goals. In this context, rehabilitation nurses can make an important contribution to the safety and improvement of care for people living in RSE identifying conditions that facilitate or hinder rehabilitation process and planning strength, balance and coordination training programmes that are individually adapted to the person's abilities, thus increasing participation in the performance of activities related to self-care, functional recovery or functional adaptation to the existing health condition.

This study presents and details the health condition of people living in RSE. However, it has some limitations. The participants were indicated by the institutions, so not all residents may have been included, which may have influenced the profile drawn up, especially in terms of the different levels of dependency. On the other hand, the causes of dependency were not assessed, namely the presence of frailty and/or sarcopenia and nutritional status. Although several RSE were included, the results cannot be generalised and should be seen as indicators of a local reality, since all the institutions belong to the same municipality.

However, despite the limitations, this study can contribute to a better perception of health status, dependency and potential for self-care and improved functionality, and alert to the need to change the care paradigm. It also has implications for clinical practice and research, as there is a clear need for a better characterisation at national level of the functionality and rehabilitation potential of elderly people in RSE, in order to make highly complex interventions more efficient, so that they can meet the goals of active and healthy ageing.

## Conclusion

In the context studied, the elderly residents of the RSE had multiple comorbidities and polymedication, resulting in complex health care needs. There was also a high level of dependence on basic self-care and severe limitations in walking and mobility.

There was also a high prevalence of sedentary behaviour and very low adherence to international recommendations for physical activity and exercise and also several competing factors, some of which are modifiable, that may contribute to the decline in functional and cognitive capacity in people living in RSE.

The data from this study suggest that there is an urgent need to rethink the care paradigm for elderly people in RSE, providing the intervention of rehabilitation nurses to promote the improvement of functional capacity and self-care, to mitigate the effects of physical changes associated with ageing and the promotion of the elderly person's autonomy.

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