



Universidade de
Aveiro
2022

**RITA SILVA
CARVALHO**

**INSTRUMENTOS DE AVALIAÇÃO DA SOLIDÃO EM
ADULTOS IDOSOS EM PORTUGAL: UMA SCOPING
REVIEW**

**INSTRUMENTS FOR ASSESSING LONELINESS IN
OLDER PEOPLE IN PORTUGAL: A SCOPING
REVIEW**



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Dissertação apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Gerontologia Aplicada, realizada sob a orientação científica da Prof^a Doutora Liliana Xavier Marques de Sousa, Professora Associada c/ Agregação do Departamento de Educação e Psicologia da Universidade de Aveiro, e coorientação do Prof. Doutor João Paulo de Almeida Tavares, Professor Adjunto da Escola Superior de Saúde da Universidade de Aveiro.

Dedico este trabalho à minha mãe, a minha estrela guia.

o júri

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palavras-chave

envelhecimento, adultos mais velhos, instrumentos, escalas, solidão, Portugal

resumo

A solidão é considerada um problema de saúde pública que tem vindo a aumentar em todo o mundo e que afeta muitos adultos mais velhos. A pandemia de COVID-19, veio ampliar os preocupantes níveis de solidão. A natureza subjetiva da solidão coloca desafios na sua avaliação. Avaliar a solidão com instrumentos validados torna-se crucial para a caracterização, diagnóstico e intervenção adequada, a nível individual e comunitário. **Objetivo:** Mapear os instrumentos validados para a população idosa Portuguesa (65+ anos) que avaliem a solidão, identificar e analisar as suas propriedades psicométricas e contextos onde são utilizados. **Método:** Foi realizada uma *scoping review* conduzida de acordo com a metodologia de *Joanna Briggs Institute* e preparada usando o PRISMA-ScR. Foram incluídos estudos com pessoas idosas (65+ anos), em que a solidão foi avaliada ou abordada por meio de instrumentos validados em Portugal. A identificação dos estudos foi realizada em sete bases de dados. A base de dados utilizada para a literatura cinzenta foi o RCAAP. Os dados foram extraídos e analisados de forma descritiva através de um instrumento desenvolvido e alinhado com o objetivo e questão de investigação. Os resultados são apresentados de forma descritiva. **Resultados:** Foram identificados 78 estudos, dos quais 24 foram incluídos nesta *scoping review*. Quatro estudos validaram três escalas para a população idosa portuguesa (ULS-16, ULS-6 e SELSA-S), com resultados que suportam a sua validade e confiabilidade. Vinte estudos avaliaram a solidão em adultos idosos portugueses, reportando essencialmente dados de validade convergente e divergente. Seis estudos utilizaram outros instrumentos como a UCLA-R e a ULS-3, sem dados de adaptação e validação identificados para a população idosa portuguesa. **Conclusão:** Foram identificados três instrumentos válidos e confiáveis para avaliar a solidão das pessoas idosas portuguesas, em especial, a UCLA Loneliness Scale (16 items) que apresentou propriedades psicométricas mais robustas e adequadas. Os instrumentos identificados justificam mais estudos psicométricos, e estudos metodológicos para traduzir, adaptar e validar outros instrumentos que avaliem a solidão e possam ser utilizados em pessoas idosas portuguesas.

keywords

aging, older adults, instruments, scales, loneliness, Portugal

abstract

Loneliness is a public health problem that has been increasing worldwide and affecting many older adults. The COVID-19 pandemic has increased the worrying levels of loneliness. The subjective nature of loneliness challenges its assessment. Assessing loneliness with validated instruments becomes crucial to characterize, diagnosis, and plan adequate interventions, at individual and community levels. **Objective:** To map the validated instruments for the Portuguese older population (65+ years) that assess loneliness; identify and analyze their psychometric properties and the contexts where they are used. **Method:** A *scoping review* was performed according to the JBI methodology and prepared using the PRISMA-ScR. Studies with older people (65+ years) were included, where loneliness was assessed or addressed using validated instruments in Portugal. The identification of studies was performed in seven databases. The database used for the gray literature was the RCAAP. Data were extracted and analyzed descriptively through an instrument developed and aligned with the objective and research question. The results are presented in a descriptive way. **Results: 78 studies were identified, of which 24 were included in this *scoping review*.** Four studies validated three instruments for the Portuguese older population (ULS-16, ULS-6 and SELSA-S), with results that support their validity and reliability. Twenty studies assess loneliness in Portuguese older adults, essentially reporting convergent and divergent validity data. Six studies used other instruments such as the UCLA-R and the ULS-3, without adaptation and validation data reported for the Portuguese older population. **Conclusion:** Three valid and reliable instruments were identified to assess the loneliness of Portuguese older people, in particular, the UCLA Loneliness Scale (16 items) which presented more robust and adequate psychometric properties. The instruments identified justify more psychometric, and methodological studies to translate, adapt and validate other instruments that assess loneliness in Portuguese older people.

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List of acronyms

CEL – Campaign to Ende Loneliness

COVID-19 – Coronavirus Disease 2019

ELSA – English Longitudinal Study of Ageing

FSI – Fertility Synthetic Index

ILC-Brazil – International Longevity Centre Brazil

INE – Instituto Nacional de Estatística

JBI – Joanna Briggs Institute

NASEM – National Academies of Sciences, Engineering and Medicine

PRISMA-ScR – Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping review

SELSA – Social an Emotional Loneliness Scale for Adults

UCLA/ULS – UCLA Loneliness Scale

UN – United States

WHO – World Health Organization

1. Introduction

The older population has been increasing worldwide, and Portugal is no exception. According to National Institute of Statistics (Instituto Nacional de Estatística [INE], 2021a), in the last decade, Portugal has registered an increase of 20.6% in the older population (≥ 65 years old).

On March 11, 2020, the World Health Organization (WHO) declared the COVID-19 a pandemic, causing great concern all over the world. All age groups were affected, but there was a greater impact on older people, since their common health comorbidities made them more vulnerable to detrimental effects of the infection. To prevent the spread of coronavirus, health strategies such as quarantine and social distance were implemented to all the population, with special attention to the older group. With these restrictions, limited social interactions led to lack of social support and feelings of loneliness. Some studies have reported higher levels of loneliness during the COVID-19 pandemic, which is a big issue particularly for older adults, since loneliness is associated to depression and worse physical and mental health (Kasar & Karaman, 2021).

In Portugal, the fourth most aged country in the world (21.1% of the population is ≥ 65 years old, according to INE, 2021a), loneliness among older adults needs to be addressed as a key issue. Therefore, there is a need to evaluate loneliness in older adults in Portugal. Assessing loneliness with validate instruments is crucial to the early diagnosis and adequate intervention, as well as for community characterization and intervention, to minimize the detrimental consequences of loneliness (Kuznier et al., 2016). To adequately assess loneliness, it is essential to use reliable instrument, validate for the specific population and context. Thus, this study was structured to identify and analyse the instruments validated for the older Portuguese population and provide guidance for researchers and practitioners for the selection of the best instrument to measure loneliness.

It was decided to carry out a *scoping review*, adopting the principles recommended by the *Joanna Briggs Institute* (JBI) (Peters et al., 2020), using the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping review (PRISMA-ScR) (Page et al., 2021). A *scoping review* can be defined as a form of knowledge synthesis that addresses an exploratory research question, with the aim of mapping key concepts, types of evidence and research gaps, in relation to a particular area or field,

through the systematic research, selection, and synthesis of existing knowledge (Levac et al., 2010). The following research questions were defined for this *scoping review*: 1) What are the validated instruments for Portugal that assess loneliness in the older individuals? 2) What are the psychometric properties of those instruments? 3) In which contexts were the loneliness assessment instruments used? The objective of this scoping review was to map the instruments validated for the Portuguese older population (≥ 65 years old) that assess loneliness and to identify and analyze their psychometric properties and contexts where they have been used.

1.1. Aging in Portugal

Aging is a universal process we all go throughout the life cycle. Human aging is a complex, multidetermined process, meaning we all age differently depending on diverse internal and external factors, such as genetic constitution, environmental influences, and lifestyle. The concept of aging is usually associated with the increased number of years of life (chronological perspective); despite the number of years being a good indicator, aging is a biological, psychological, and social phenomenon and not just a sum of years. Thus, aging comprises inter and intra-individual variability; i.e., there are different aging patterns among individuals of the same chronological age, and in the different functions of the same individual (physiological, psychological, social) (Lima, 2010). Over the last few decades, there has been a continuous increase in the number of older people, which has transformed the most developed societies into aging societies (Cabral & Ferreira, 2013). The population aging has been considered one of the biggest challenges experienced by current societies. The European Commission (2020) states that in 2070, 30% of the European population will be aged 65 or over; the share of people aged 80 or over is expected to double to 13%. In 2019, Portugal was the second country of Europe with the highest aging index (Pordata, 2021a) (Table 1).

Table 1

Europe's oldest populations in 2019

Country	Age groups		Aging Index
	Population <15 years old	Population ≥ 65 years old	
Italy	13.1 %	23.1 %	176.6
Portugal	13.6 %	22.0 %	161.3
Germany	13.6 %	21.6 %	158.6
Greece	14.3 %	22.1 %	155.0
Bulgaria	14.4 %	21.5 %	149.3

Note. Data from PORDATA, update in 2021

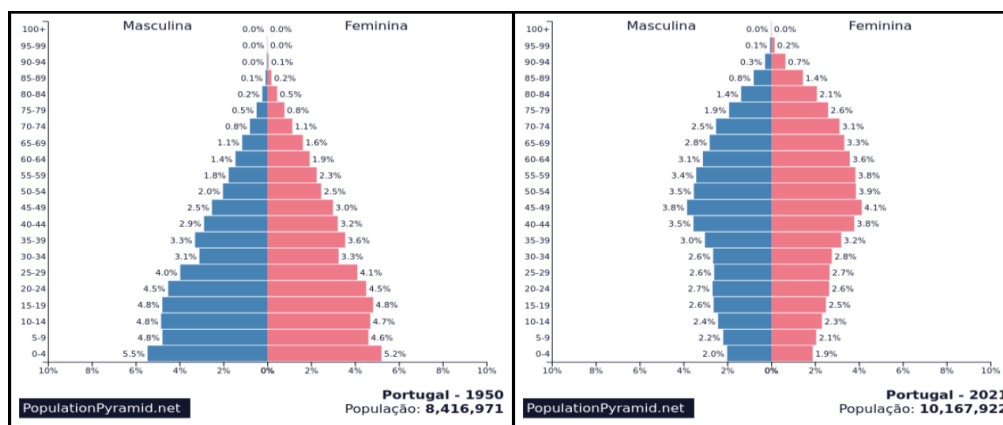
During the last decades, Portugal witnessed the modernization of social and economic conditions, that improved the living conditions and the access to health care, resulting in the increasing of the aging population. In our country, during the 1970s, in some regions, the population aging was already evident; in 2001 it became clear at the national level, since for the first time, the percentage of older people (≥ 65 years old;

16.4%) exceed the percentage of young people (< 15 years old; 16%) (Moreira, 2020). According to provisional data from the Portuguese “Censos 2021”, between 2011 and 2021 there was a decrease in the population in all age groups, except for the older population group (≥ 65 years old) which had an increase of 20.6%. In 2021, the percentage of older population represented 23.4% while the percentage of young people was 12.9%. In 2021, the population aging index was 182 (INE, 2021a).

The population aging has evolved rapidly in Portugal, due to the continuous decline in fertility together with the increase in life expectancy. While in 1960, each woman of childbearing age had an average of 3.2 children, in 2019 it did not exceed 1.4 children, what makes Portugal one of the countries with the lowest fertility in the European Union. In addition, while in 1960 the average life expectancy at birth was around 64 years, fifty-eight years later this value was situated at 81 years (Moreira, 2020). This process is reflected in the profile of the demographic pyramids (Figure 1), where over the years there has been a narrowing of the base of the age pyramid (reduction in the young population), as a result of low birth rates; and the widening of the top of the pyramid (increase in the proportion of older people), due to the increase in average life expectancy.

Figure 1

Age pyramid Portugal 1950-2021



Note. Reprinted from www.PopulationPyramid.net, 2019. Copyright 2021

Despite the rates of mortality due to Coronavirus disease (COVID-19), the INE estimates that the demographic aging will continue to increase (INE, 2021b). Three main factors make Portugal one of the more aged countries in Europe and world: 1) Increased life expectancy (at birth and at 65 years old); 2) Lower fertility rates; 3) Migratory

movements. In Portugal, life expectancy at birth and at 65 years old has increased to a historically unheard level (Cabral et al., 2013). In 1970, life expectancy at birth was 64.0 years for men and 70.3 for women. In 2019 these values stood at 78.1 years for men and 83.7 for women (Pordata, 2021b). In 1970, while a 65-year-old man could expect to live an average of more 12.2 years, and a woman 14.6 years, in 2019, the average life expectancy at 65 years old increased to 17.8 years for men and 21.1 years for women (Pordata, 2021c). Portugal's fertility rate is one of the lowest in the European Union and in the world (Cabral et al., 2013; Moreira, 2020). In more developed countries, 2.1 children are considered the minimum value for generation replacement. In Portugal, 1981 was the last year with a fertility ratio the threshold (2.13 children). In 2020, the Fertility Synthetic Index (FSI) was 1.4 children per woman. The general fertility rate followed the same trend as the FSI, recording the value of 37.21 live births per thousand women of childbearing age (15 to 49 years old) in 2020 (INE, 2021c). Migratory movements are an engine with different impacts on the national territory (Moreira, 2020). The increase in emigration between 2011 and 2014, involved the exit of the population of childbearing and working age, and was not compensated by the entry of immigrants. In addition to inducing a decrease in births, it led to an increase in the aging population. In sum, without immigrants, the natural decline of the population resulting from low fertility and the increase in average life expectancy will lead to a real decrease in the population and the accentuated aging of the native population in Portugal (Oliveira, 2021). According to provisional data from the “Censos 2021”, 555 299 people of foreign nationalities resided in Portugal, which represented 5.4% of the total population, a higher percentage than the 3.7% verified in 2011. In the last decade, the foreign population grew about 40.6%; even though, the country has recorded a population decline of 2.1% (INE, 2021a).

With the emigration of the younger population and the decrease in fertility rates, the older population in Portugal has become more vulnerable to loneliness. An indicator is that many started living alone. There has been an increase in the number of one-person households of individuals aged ≥ 65 years old, which in 2020 represented around 57% of the total of this type of family. In the European context, Portugal was the second country with higher percentage of one-old adult households, after Croatia. The incomes of this age group are generally low, with fragile informal networks, since the intergenerational support is at geographical distance. These are some of the factors that make older individuals more

vulnerable to social isolation and loneliness in Portugal (Moreira, 2020). The aging of the population is an important achievement of societies, demanding better strategies to guarantee good living conditions, independence, dignity, and quality of life.

1.2. Healthy Ageing: the current paradigm

In 1948, WHO defined health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 2006, p.1). Since then, the demographics and the nature of diseases have changed. In 1948, acute illnesses were the main burden. With the improvement of public health measures, disease patterns have changed and the number of people living with chronic illnesses for long time has increased. Aging with chronic illnesses has become the norm, and chronic diseases are responsible for the majority of health expenditures, putting pressure on the sustainability of health systems. In this context, the WHO definition becomes impracticable, because ‘complete’ is neither operational nor measurable. In addition, it minimizes the human capacity to autonomously cope with life's ever-changing physical, emotional, and social challenges and to function with fulfilment and a sense of well-being with a chronic illness or disability (Huber et al., 2011).

The exponential increase in the older population is a major achievement, and a challenge. Since 2002, two international policy instruments have guided action on aging: *The Active Ageing: a policy framework* and the *Political declaration and Madrid international plan of action on ageing*. And, more recently, the Healthy Aging Decade 2021-2030.

In 2002, the WHO adopted a proactive and positive approach to dealing with the risk of disease, recommending preventive interventions, and proposed the active aging framework. This paradigm is grounded in improving the quality of the years of life gained, creating opportunities for each person, as they get older, to be an agent of their own health, participation, and security (three pillars of active aging). More recently, the International Longevity Centre Brazil (ILC-Brazil, 2015) added a fourth pillar to active aging: lifelong learning. The active aging policy has as a major goal, to maintain autonomy and independence of older adults, as well as increasing healthy life expectancy and quality of life. The term “active” refers to the continuous participation in social, economic, cultural,

spiritual, and civic life, meaning it goes beyond being physically and professionally active. The *Active Ageing: a policy framework* was developed by WHO's Ageing and Life Course Program as a contribution to the Second United Nations World Assembly on Ageing, held in April 2002, in Madrid, Spain. In January 2002, an expert group meeting was convened at the WHO Centre for Health Development in Kobe, Japan, with 29 participants from 21 countries. Detailed comments and recommendations from this meeting, as well as those received through the previous consultation process, were compiled to complete the final version. Together with the United Nations (UN) Plan of Action on Ageing, this framework provides a roadmap for designing multisectoral active ageing policies which will enhance health and participation among ageing populations while ensuring that older people have adequate security, protection, and care. Each person is a unique and singular being with an unrepeatably life story (Fonseca, 2005). Thus, it is essential to prepare each person, throughout life, to deal in a balanced way with all the changes, including those attached to aging (Witter, 2006). The promotion of healthy lifestyles aims to support people in preventing diseases and improving the management of existing ones.

The Healthy Aging Decade 2021-2030 it is the second action plan of the WHO Global strategy on ageing and health, building on the United Nations Madrid International Plan of Action on Ageing and aligned with the UN Agenda 2030 on Sustainable Development and the Sustainable Development Goals. The UN Decade of Healthy Ageing (2021-2030) is a global collaboration, aligned with the last ten years of the Sustainable Development Goals, that brings together governments, civil society, international agencies, professionals, academia, media, and private sector to improve the lives of older people, their families, and the communities in which they live. This proposal was endorsed by the 73rd World Health Assembly on 3 August 2020. It was welcomed by the UN General Assembly on 14 December 2020 (Resolution 75/131), leading to the proclamation of a UN Decade of Healthy Ageing (2021-2030).

The term healthy ageing is often used to identify a disease-free state that distinguishes healthy from unhealthy individuals. However, this definition needs to be thought, since some people may have one or more health conditions, yet with little influence on their ability to function. Therefore, WHO considers Healthy Aging in a holistic sense, based on life course and functional perspectives. They define it as the process of developing and maintaining the functional ability that enables wellbeing in older

age. Functional ability comprises the health-related attributes that enable people to be and to do what they have reason to value. It is made up of the individual intrinsic capacity, relevant environmental characteristics, and the interactions between them (WHO, 2015). Intrinsic capacity is determined by various factors such as underlying physiological and psychological changes, health behaviour and the presence or absence of disease, being strongly influenced by the environments in which individuals have lived throughout their lives (WHO, 2020). Numerous actions to promote Healthy Ageing have been identified, but they all have one main goal: promote functional ability. This can be achieved by supporting the building and maintenance of intrinsic capacity and by allowing those with a decrease in their functional capacity to do the things they value. The five key domains of functional ability are to meet their basic needs; to learn, grow and make decisions; to be mobile; to contribute; and to build and maintain relationships (WHO, 2015). The ability to build and maintain relationships central to older adult's well-being. Social relations are an important component of Healthy Ageing because when they are positive, they can yield resources, such as trust and social support. Moreover, when older people faced declining capacity, they may find it harder to maintain social networks. Since the prevalence of loneliness among older people are widespread (0-34% of older people in China, Europe, Latin America, and the United States of America are lonely) (WHO, 2021), it is important to identify people at risk (WHO, 2015).

1.3. Feeling of Loneliness

The concept of loneliness was not addressed by social scientists until the mid-20th century. Since the 1970s there has been increasing work demonstrating loneliness as an important concept and relevant psychosocial condition. According to de Jong Gierveld et al. (2006) the oldest publication about loneliness is “Über die Einsamkeit” [About loneliness] (Zimmermann, 1785-1786). However, the efforts to conceptualize loneliness began in the 1950s with the publication "Loneliness" by Fromm-Reichmann (1959). This author stated that loneliness is “a painful frightening experience that people will do practically everything to avoid it” (Fromm-Reichmann, 1959, p.1). An important milestone was the publication of Weiss (1973), entitled “Loneliness: The experience of emotional and social isolation”, that emphasise loneliness as a subjective experience. In the same decade, research was fostered by the publication of a simple and reliable instrument to

assess the subjective feelings of loneliness: the UCLA Loneliness Scale (Russell et al., 1978). Although in 1785-1786 Zimmerman reported two types of loneliness (positive and negative), it is mainly the view of being a negative experience that is nowadays used in theories and research. Loneliness, as a negative experience, has been widely studied over the years, producing several definitions (table 2).

Table 2

Conceptualization and definition of loneliness

Year	Author(s)	Definition
1953	Sullivan	“Is the exceedingly unpleasant and driving experience connected with inadequate discharge of the need for human intimacy, for interpersonal intimacy” (p.290)
1959	Fromm-Reichmann	“Is a state of thought in which a person ardently desires that interpersonal relationships in their future life can be excluded from the sphere of expectation or imagination.”
1969	Lopata	“Is a sentiment felt by a person (...) [experiencing] a wish for a form or level of interaction different from one presently experienced” (pp.249-250)
1973	Weiss	“Is caused not by being without some definite needed relationship or set of relationships. (...) Loneliness appears always to be a response to the absence of some particular type of relationship or, more accurately, a response to the absence of some particular relational provision” (p.17)
1976	Gordon	“Is a feeling of deprivation caused by the lack of certain kinds of human contact: the feeling that someone is missing. And since one has to have had some expectations of what it was that would be in this empty space, loneliness can further be characterized as the sense of deprivation that comes when certain expected human relationships are absent” (p.26)
1978	Sermat	“Is an experienced discrepancy between the kinds of interpersonal relationships the individual perceives himself as having at the time, and the kinds of relationships he would like to have, either in terms of his past experience or some ideal state that he has actually never experienced” (p.274)
1978	de Jong Gierveld	“The experiencing of a lag between realized and desired interpersonal relationships as disagreeable or unacceptable, particularly when the person perceives a personal inability to realize the desired interpersonal relationships within a reasonable period of time” (p.221)
1980	Leiderman	“Refers to an affective state in which the individual is aware of the feeling of being apart from others, along with the experience of a vague need for other individuals” (p.387)
1980	Sadler and Johnson	“Is an experience involving a total and often acute feeling that constitutes a distinct form of self-awareness signaling a break in the basic network of the relational reality of self-world” (p.39)
1981	Perlman and Peplau	“Is the unpleasant experience that occurs when a person’s network of social relations is deficient in some important way, either quantitatively or qualitatively” (p.31)
1982	Young	“I define loneliness as the absence or perceived absence of satisfying social relationships, accompanied by symptoms of psychological distress that are

		related to the actual or perceived absence. (...) Therefore, loneliness can be viewed in part as a response to the absence of important social reinforcements” (p.380)
1982	Flanders	“Is an adaptive feedback mechanism for bringing the individual from a current lack stress state to a more optimal range of human contact in quantity or form. “Lack stress” means too little of a given input, human contact in this instance” (p.170)
1982	Derlega and Margulis	“Loneliness is caused by the absence of an appropriate social partner who could assist in achieving important other-contingent goals, and the continuing desire for such social contacts” (p.155)
1991	Paúl	“It is an emotional condition, inherent to the biological disposition, which causes a tendency to maintain proximity to others and avoid isolation, increasing the sense of security and personal identity.” (p.108)
2000	Neto	“Painful experience that one has when social relationships are not adequate, (...) when there is a discrepancy between the type of social relationships we want and the type of social relationships we have.”
2004	Egea et al.	“Loneliness is seen as a natural consequence of the life course” (p.109)
2006	Victor and Boldy	“Very personal and subjective feeling for which there are no observable signs or symptoms”

Note. From: Peplau, L. & Perlman, D. (1982). The Measurement of Loneliness. In L. Peplau & D. Perlman (Eds.), Loneliness: A sourcebook of current theory, research and therapy (pp. 1-18) and other sources

Overall, there seem to be three points of agreement in the conceptualization of loneliness. First, loneliness results from the perception of a discrepancy between a person’s desired and the actual network of relationships. It is not only about having few social contacts, but about the perception that the relationships are not satisfying. Second, loneliness is a subjective experience; i.e., it is not synonymous of social isolation. People can be alone without being lonely, or lonely in a crowd. Third, the experience of loneliness is unpleasant and distressing (Baarck et al., 2021; Guerra et al. 2021).

The comprehensive understanding of loneliness has been depicted as follow (Harvey & Walsh, 2016): i) social need, focusing the necessity for contact throughout life (Fromm-Reichmann, 1959; Sullivan, 1953); ii) cognitive approach, based on the recognition that loneliness is experienced when a person perceives that his/her social involvement is less than wanted in quantity and quality (Flanders, 1982; Sadler & Johnson, 1980); iii) existential approach, focused on the human condition and on an awareness of one’s own mortality (Young, 1982). Current literature reports that loneliness needs to be understood grounded in the lived experience. This was already reported in 1973 by Weiss, who argued that definitions do not sufficiently reflect the phenomenon of loneliness because are centred on potential causes rather than the actual experience of being lonely (McKennaPlumley et al., 2020). Weiss (1973) states that loneliness is a natural

phenomenon, a (personal) feeling that may arise at certain moments in life and affect anyone, regardless of gender, age or other socio-demographic characteristics. He makes the distinction between emotional loneliness and social loneliness. The emotional results from the lack of a close and intimate attachment to another person, and is often experienced by people who have recently been divorced, widowed, or ended a dating relationship. The social loneliness is associated to the lack of a social network in which the person is part of a group, sharing interests and activities. This last type is commonly experienced by individuals who have recently moved to a new social environment (such as a new city, or job) (Russell et al., 1984).

Loneliness precipitating events comprise two types of changes that can trigger loneliness (Perlman & Peplau, 1982): changes in the person's actual social relations that lead to relationships falling below an optimal level; and changes in the person's social needs or desires. Thus, loneliness is triggered by a change in actual social relations, or in the person's needs or desires for relationships. Predisposing and maintaining factors is what prompt individuals to feel lonely or to persist in remaining lonely over time. A variety of personal and situational factors increase an individual's vulnerability to loneliness: personal characteristics; and cultural and situational factors. Loneliness is affected by the match between the individual's needs, desires or skills, and the features of the social environment.

Although an increase body of research is centring loneliness, there is relatively few works focused on the lived experience of loneliness: how loneliness feels and what makes up experiences of loneliness. In fact, phenomena that might appear to describe loneliness are distinct from the actual experience (McKennaPlumley et al., 2020). Social isolation and loneliness represent distinct although often related phenomena. Social isolation typically refers to the objective lack of (or limited) social contact with others, and it is marked by an individual having few social network ties, having infrequent social contact or living alone. Markers of social isolation objectively and quantitatively establish a lack of social contact and network size. Loneliness refers to perceiving social isolation or the subjective feeling of being lonely (Perlman & Peplau, 1998, p. 571). Often, society links loneliness and social isolation to living alone. Although, the presence of a vast social network does not necessarily mean the existence of close relationships or the absence of loneliness, living alone is not synonymous of being alone or loneliness. Not everyone who lives alone feels

isolated, although most isolated people live alone (Sousa et al., 2004). Living alone refers simply to people living in separate households. Being alone is time spent alone (Harvey & Walsh, 2016). Zilboorg (1938) as cited in Perlman and Peplau (1982) distinguished being lonely from being lonesome mentioning that being lonesome is a “normal” and “transient state of mind” resulting from missing somebody.

The “positive loneliness” reported by Zimmerman currently refers more often to solitude, that is a state of voluntary aloneness, during which personality development and creative activity may take place (Galanaki, 2004). Solitude and loneliness should not be explained in similar ways. Solitude describes the act of being alone voluntarily, which involves the objective condition of being away from others and the possibility of pleasant and positive feelings about the situation (Baarck et al, 2021). Solitude is enjoyed by people, and it leads to creativity, and self-fulfilment. It is often considered as an essential component for spirituality and self-growth (Tiwari, 2013).

1.4. Loneliness in numbers

Loneliness is a public health concern, increasing in society (Holt-Lunstad et al., 2015). Gardiner et al. (2020) report that evidence from several countries on the prevalence of loneliness amongst community-dwelling older adults is concerning high. Across Australia, Northern Europe and North America, the prevalence of severe loneliness is estimated between 5 and 10%, in Southern Europe rates of 10–18% are reported and studies from Asia have reported around 25-30% (Gardiner et al., 2020).

A systematic review that presents pooled estimates of loneliness amongst older adults living in high income countries (Chawla et al., 2021), suggests that approximately 1 in 4 older adults experience some degree of loneliness; around 1 in 12 experience severe loneliness; and 1 in 4 experience moderate loneliness. The pooled prevalence estimate of loneliness was 28.5%. In twenty-nine studies reporting loneliness severity, the pooled prevalence was 25.9% for moderate and 7.9% for severe. The results evidenced that the prevalence of loneliness is lowest in northern European countries and higher in Mediterranean countries (e.g., Portugal and Italy) and Eastern Europe (Chawla et al., 2021).

In relation to older people living in care homes, the evidence on loneliness is limited (Gardiner et al., 2020). Some results indicate that around 61% may be moderately lonely and 35% severely lonely (Gardiner et al., 2020). The findings suggest that loneliness is a significant problem amongst older people living in aged care facilities at least comparable to, if not greater, than amongst community-dwelling older adults (Victor et al., 2005 as cited in Gardiner et al., 2020). Paúl and Ribeiro (2009) studied loneliness on a sample of 1266 Portuguese aged ≥ 50 years living in the community, and found that 4.6% felt lonely all the time and 11.7% felt loneliness frequently.

Living alone has been a key indicator for loneliness, showing significant correlations. In the absence of studies using loneliness measures, that is a key indicator. In Portugal, in 2011, around 12% of the resident population and 60% of the older population live alone (400 964) or in the exclusive company of older people (804 577), reflecting a phenomenon whose dimension has increased by 28% between 2001 and 2011 (INE, 2012). More recently, PORDATA data showed that, in 2020, there were 852 800 single-person households, with 57.1% representing single-person households of people aged 65 or over. In the provisional data of "Censos 2021", it states that there are 1 027 924 single-person households, but there are still no data for older people (Pordata, 2021d).

1.5. COVID-19 and levels of loneliness

The COVID-19 pandemic was pronounced by the WHO on March 11, 2020. As COVID-19 is highly infectious and can be fatal, the protection for populations worldwide was to maintain social distance (Lonergan & Chalmers, 2020). Several authors expressed concerns due to the COVID-19 lockdowns and/or quarantine regarding loneliness in older adults (Dickerson, 2020; Hiremath et al., 2020; Roy et al., 2020; Wang et al., 2017; Zandifar & Badrfam, 2020, as cited in Faustino et al., 2020). In May 2020, European Commission Vice-President Dubravka Šuica stated that the COVID-19 pandemic:

“has highlighted a massive challenge in the form of loneliness. Social distancing has become the norm, the biting feeling of loneliness has been an unwelcome companion to far too many Europeans. [...] This is not a new phenomenon, yet it is

now revealed as never before and has significant social, economic and health implications that deserve our attention” (Šuica, 2020).

Containment measures (such as enforced isolation, social distancing, lockdowns) have prompted a new wave of public discussions on the unintended effects of such measures. In combination with economic consequences, they appear to have aggravated loneliness, social withdrawal, and mental health (DeMontis, & Richard, 2021; Koyanagi & Santini, 2021; McDonald, 2021; Mullins & Hodgins, 2021; Santini & Koyanagi, 2021; Taylor, 2020; Welle, 2020, as cited in Baarck et al., 2021). People who are in quarantine can develop feelings of loneliness (Xiang et al., 2020) and it is expected that feelings of loneliness may arise in some people due to the social distancing measures, with a potential impact on mental health (Faustino et al., 2020). This pandemic highlighted the problem of loneliness in our societies. Data from “Eurofound’s surveys European Quality of Life and Living, working and COVID-19” show that, in 2016, about 12% of European Union citizens felt lonely more than half of the time. The COVID-19 pandemic has magnified this, because in the first months of the COVID outbreak, this percentage doubled to around 25% (Baarck et al., 2021).

In European Union, the social distancing measures, lead to an increase in the prevalence of loneliness of more than 22 percentage points compared with levels observed in 2016, in people who lived alone. In comparison, the incidence of loneliness among those living with a partner and/or child increased by 9 percentage over the same period. In terms of geographical distribution, before the pandemic, loneliness was lowest in northern Europe, with around 6% of people indicating that they felt lonely more than half of the time; while western, southern, and eastern Europe exhibited higher levels of loneliness. This picture changed following the COVID-19 outbreak, with all regions reporting loneliness levels of between 22% and 26% (Baarck et al, 2021).

Although COVID-19 has reached the entire population worldwide, it was the older people who have suffered most, since they are more vulnerable to the virus, mainly due to comorbidities (Luchetti et al., 2020; Pai & Vella, 2021). This pandemic has had a substantial impact on loneliness in the general adult population and the overall levels of loneliness and associated distress (mental health symptoms, sleep problems) in the adult population are significant during this pandemic. Loneliness levels have increased since the start of the pandemic (Heidinger & Richter, 2020; Lee et al., 2020). Nevertheless,

loneliness did not emerge as a result of COVID-19; loneliness was known to be a significant public health issue prior to COVID-19 (Lim et al., 2020).

1.6. Aging, loneliness, and health

Some evidence suggests that loneliness levels follow a U-trajectory over an individual's lifetime, with those aged under 25 years and those over 65 years demonstrating the highest level of loneliness; low levels occur during family formation and working age (Harvey & Walsh, 2016; Victor & Yang, 2012). Loneliness is more often associated with older age because of age-related losses and decreasing health, which are linked to the loss of social contact (Harvey & Walsh, 2016).

The social observer Rowntree made direct connection between older age and loneliness in 1947 when he described loneliness as “a distressing feature of old age” and stated that “all who have done welfare work among the elderly have found it the most common, if not the most imponderable of the ills from which the aged suffer” (Rowntree, 1947 as cited in Harvey & Walsh, 2016, p.8). The association between loneliness and aging is often made in our culture (Freitas, 2011) because there are personal and social factors that make older adults more vulnerable, like living alone, limited family relations or support, disruptive life events (such as losing the partner), bereavement, illness and poor health and functional disability, sensory deprivation (such as hearing loss), and retirement (Donovan & Blazer, 2020). Loneliness among older individuals is major public health concerns because it has profound adverse effects on physical and mental health (National Academies of Sciences, Engineering, and Medicine [NASEM], 2020). Overall, evidence suggests that lonely older adults face substantial increased health risks of premature mortality (equal to smoking and obesity), developing dementia, artery disease or stroke. From a public policy perspective, it is worth underlining that, when poor health and loneliness are associated, there is an increased rate of hospital admissions, longer length of hospitalisation, higher numbers of visits to physicians (Baarck et al, 2021).

Risk factors for loneliness are varied. Some are individual factors, that include age (risk increases with age), lower education levels, and low income; as well as poor physical (such as chronic disease and geriatric syndromes and impairments) and mental (for example anxiety, depression, cognitive function, and dementia) health. In relation to social and cultural factors, these include social support (individuals who have difficult or

unfulfilling relationships, are single, or caregivers, are more likely to experience loneliness); human-animal interactions (interactions with animals can promote social interactions and participation); disruptive life events (bereavement, illness or poor health, and retirement could lead to feelings of loneliness); and religious and spiritual participation (active involvement in a religious organization can be a source of social support, that may help ease feelings of loneliness).

About the environmental factors, there are, for example, the issue of transportation (driving cessation has been associated with a decrease in social engagement and an increase in social isolation and feelings of loneliness), the impact of housing or geographic location (regardless of where or in what type of housing a person lives, the degree of social isolation or loneliness an individual experiences can be affected by whether he or she feels safe in his or her community), low population density in a rural location, and impoverished neighbourhoods. There are also some groups that are more vulnerable, namely immigrants and LGBT+ persons (Harvey & Walsh, 2016; NASEM, 2020).

The relationship between loneliness and risk factors can be considered bi-directional: loneliness may increase the chances of developing a chronic health condition, while a chronic health condition may contribute to loneliness by interfering with the quality, quantity, or structure of relationships or by worsening pathophysiological processes (NASEM, 2020). Geriatric syndromes and impairments may increase feelings of loneliness as a result of the associated embarrassment and stigma or because of associated deficits in communication, limited functional abilities, or impaired mobility (NASEM, 2020).

Research on protective factors is limited. Overall, it is assumed that protective factors are “inverse” of the risk factors (Grenade & Boldy, 2008). The main protective factors are: having higher levels of education, having friends, in particular a best friend or a confidant, having a pet; a stable social network, and increasing use of information and communication technology (Grenade & Boldy, 2008; Harvey & Walsh, 2016; Teater et al., 2021).

1.7. Assessment of loneliness

Assessing loneliness with validate instruments is crucial to characterize, (early) diagnosis and appropriate intervention, at individual and community levels (Kuznier et al., 2016). First mentions to the need of assessment remount to 1960s, when three doctoral thesis (unpublished) emphasized the importance to develop measures to assess individual differences in loneliness (Bradley, 1969; Eddy, 1961; Sisenwein, 1964). In 1979, six unidimensional loneliness measures (not published) were developed (Table 3).

Table 3

Not published unidimensional loneliness measures

Year	Author	Number of Items	Response format	Observations
1961	Eddy	24	Q-sort format	Items describing different intensities of loneliness
1964	Sisenwein (built upon Eddy, 1961)	75	4-point rating scale	Items describing different intensities of loneliness
1969	Bradley	38	6-point Likert scale	Statements includes both negatively worded (lonely) and positively worded (nonlonely)
1979	Ellison and Paloutzian <i>Abbreviated Loneliness Scale</i>	7	4-point rating scale	Statements includes both negatively worded (lonely) and positively worded (nonlonely)
1979	Young	18	4 response options (scored 0 to 3)	Measure of chronic or long-term loneliness
1979	Rubenstein and Shaver	8	Different formats for each item (varies with 4- to 7-point response scales)	Explicit self-labelling questions

Note. From Russell, D. (1982). The Measurement of Loneliness. In L. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy* (pp. 81-104)

The subjective nature of loneliness poses challenges for its measurements (Harvey & Walsh, 2016). For instance, some scales (e.g. de Jong Gierveld Loneliness Scale) exclude the use of the words “lonely”, or “loneliness”, because it would result in underreporting, since lonely carry a stigma (de Jong Gierveld et al., 2006). Two main methods have been used to assess loneliness: i) self-rating scales where respondents report the frequency of loneliness in a single-item question (such as “Do you ever feel lonely?”); and ii) validated loneliness scales that measure the intensity of loneliness rather than the

frequency. Where self-rating scales are used, responses are recorded on an ordinal scale with usually three or four response options. The number of response options and the label descriptors vary; some studies use “lonely vs not lonely”, whereas others use up to four response options “never, sometimes, often, always” (Gardier et al., 2020). Regarding validated scales, some are unidimensional (for example, UCLA measures how lonely a person is), while others are multidimensional (for instance, SELSA measures how lonely a person is and what kind of loneliness s/he is experiencing). Qualitative measures have also been used mostly through open-ended questionnaires (Rubenstein & Shaver, 1982) to explore the language individuals use to describe: how loneliness feels, reasons, causes or reactions (Harvey & Walsh, 2016).

We performed a literature search on existing scales, and the following measures of loneliness were found: Belcher Extended Loneliness (Belcher, 1973), The NYU Loneliness Scale (Rubenstein & Shaver, 1982), Differential Loneliness Scale (Schmidt & Semat, 1983), Loneliness Rating Scale (Scalise et al., 1984), Russel Emotional and Social Loneliness Scale (Russel et al., 1984), Wittenberg Emotional Versus Social Loneliness Scale (Wittenberg, 1986), Emotional/Social Loneliness Inventory (Vicenzi & Grabosky, 1987), Rasch-Type Loneliness Scale (and related subscales) (de Jong Gierveld & van Tilburg 1990), Emotional and Social Loneliness Scale (van Tilburg & de Jong Gierveld, 1999), Campaign to End Loneliness Measurement Tool (Campaign to End Loneliness [CEL], 2014). The new light shone on the healthcare system by the COVID-19 pandemic demonstrated a need for change in how loneliness is addressed. This shift required healthcare facilities to optimize their workflow for tackling loneliness. Thus, in May 2022, a new instrument (ALONE scale) was created for clinical use (Deol et al., 2022).

In 2018, the UCLA remained the most commonly used unidimensional loneliness scale across the world (Xu et al., 2018). The UCLA has since then been revised several times, and shorter versions have been introduced for situations where 20 questions is too much, such as telephone surveys (Table 4).

In 1976, Russell and his colleagues sought to create a psychometrically adequate, easily administered, and generally available scale that would serve as a stimulus for empirical research on loneliness. In 1978, the UCLA Loneliness Scale was launched (Russell et al., 1978), based on 25 items from the Sisenwein’s loneliness measure. The response format asked individuals to rate how frequently they felt lonely, from “never” to

“often” on a 4-point Likert scale. This initial set of items was administered to two groups of young adults. Based on item-total correlations, the final scale was developed, consisted of 20 items formulated in the negative direction (Russell, 1982). In 1980, the UCLA was revised to include half positively worded items and half negatively as a means of counteracting possible response bias (Russell et al., 1980). In 1996, UCLA was revised for the third time to correct some issues in the wording of items that emerged in research with older populations (Russell, 1996). This population had difficulties responding to items that included “double negatives” (e.g., responding “never” to items such as “I am no longer close to anyone”). Therefore, Russel (1996), in the third version, reworded the items to include the prefix “How often do you feel...” with participants responding on a four-point scale from “never” to “always.” As previously mentioned, several short forms of UCLA have been developed, with the concern of reducing the size and time of application. Some of the shortened versions are (table 4): ULS-4, ULS-8, ULS-6, RULS-8, ULS-3.

Russel et al. (1980), developed a 4-item survey version consisting of two positively worded and two negatively worded items. Hays and DiMatteo (1987) and Neto (1992) used exploratory factor analysis (EFA) to develop a unidimensional model of eight and six items, respectively. Roberts and Seeley (1993) developed a measure of loneliness with eight items, with the objective of developing a brief measure suitable for use with adolescent which could be included in community or school-based epidemiologic surveys with little increase in response burden. Hughes et al. (2004) developed a three-item version by selecting the highest loading items on the first factor of a three-factor solution on the original 20-item measure. The purpose of this three-item short-form was to easily include it in a telephone-based survey.

Table 4

Versions of UCLA Loneliness Scale

Author/s; Year	Country	Instrument	Items	Reliability
Russell et al., 1978	USA	UCLA Loneliness Scale (1 st version)	20	$\alpha = 0.96$
Russell et al., 1980	USA	R-UCLA (version 2)	20	$\alpha = 0.94$
Russell, 1996	USA	UCLA Loneliness Scale (version 3)	20	$\alpha = 0.89$
Russell et al., 1980	USA	ULS-4	4	$\alpha = 0.75$
Hays and DiMatteo, 1987	USA	ULS-8	8	$\alpha = 0.84$
Neto, 1992	Portugal	ULS-6	6	$\alpha = 0.77$
Roberts et al., 1993	USA	RULS-8	8	$\alpha = 0.78$
Hughes et al., 2004	USA	ULS-3	3	$\alpha = 0.73$

The differentiation between social and emotional isolation described by Weiss (1973), led DiTommaso and Spinner, in 1997, to develop a multidimensional measurement instrument: the Social and Emotional Loneliness Scale for Adults (SELSA). The SELSA is a 37-item self-report measure of emotional loneliness (family emotional loneliness and romantic emotional loneliness) and social loneliness, validated on college students. Subsequently, DiTommaso et al. (2004) created a reduced version, the SELSA-S, composed of 15 items, in 7-dimensional Likert-type scale (1: disagree to 7: completely agree), that contains three subscales: social loneliness, emotional loneliness and romantic loneliness. This version arose from the need for a shorter measure in clinical and research settings, psychometrically sound and multidimensional. In addition, a shorter version of SELSA similar in length to the most use loneliness measure, the unidimensional UCLA, would encourage investigators to use a multidimensional approach. The SELSA-S has been completed by several samples, including armed forces personnel, psychiatric patients, and university students (DiTommaso et al., 2004). Each subscale of SELSA-S is composed of five items; social loneliness measures the extent to which one feels part of a social group and relationships with friends; family loneliness assesses feelings regarding family relationships; romantic loneliness measures if the individuals feel that they have a close or intimate relationship with another person/s or partner.

The de Jong Gierveld Loneliness Scale was developed in 1985, in the Netherlands, based on Weiss's theory (1973), therefore involving social loneliness (the number of friends or relationships someone has is smaller than desired) and emotional loneliness (missing intimacy from relations or friends). The scale comprises 11 questions, six on emotional loneliness, and five on social loneliness. It can be administered by face-to-face interviews or self-fulfilled. The responses are dichotomous, and scale total score ranges from 0 to 11. The total score can be categorized as: not lonely (0–2), moderate loneliness (3–8), severe loneliness (9–10), and very severe loneliness (11). This scale was piloted and used extensively before a shorter six question version was created in 2006 for use in larger surveys (de Jong Gierveld & Van Tilburg, 2006). The six-item scale comprises three statements on 'emotional loneliness' and three on 'social loneliness'. This scale is widely used across Europe, well-tested and evaluated for use in several languages and countries.

Single-item question, or self-report measures, are ways of directly asking the individual how lonely they feel. According to the CEL (2014) there are many variants, and

they suggest three that come from different studies and use slightly different wording. The first is from Joseph Sheldon (1948) where he asks people: Are you very lonely; lonely at times; never lonely. The second is currently used in English Longitudinal Study of Ageing (ELSA): How often do you feel lonely? Hardly ever or never; some of the time; often. The third is adapted from the Centre for Epidemiologic Studies Depression Scale, a commonly used screening questionnaire for depression that contains 20 questions, that includes one question about loneliness: During the past week, have you felt lonely: rarely or none of the time (e.g. less than 1 day); Some or a little of the time (e.g. 1-2 days); Occasionally or a moderate amount of time (e.g. 3-4 days); All of the time (e.g. 5-7 days). Single and self-report questions are the most used measure. Some research suggests that these questions are more appropriate with an older age group, particularly those experiencing cognitive decline or having difficulty communicating (Holmen et al., 1992 as cited in CEL, 2014; Pinquart & Sorenson, 2001).

In fact, there is not a commonly accepted standardised measure of loneliness, with agreed cut-offs corresponding to certain degrees or type of loneliness. The main difference is whether loneliness is researched directly, by explicitly mentioning the term ‘lonely’ or ‘loneliness’; or indirectly, by surveying the situation using a range of multiple indicators that never employ the terms ‘lonely’ or ‘loneliness’ but detect satisfaction or dissatisfaction with social relationships (European Commission, 2021).

A preliminary search of JBI Database of Systematic Reviews and Implementation Reports, the Cochrane Library and MEDLINE was conducted, and no *scoping review* (published or in progress) related to instruments validated for Portuguese population that assess loneliness were identified. This *scoping review* aimed to identify the instruments validated for the older Portuguese population and will provide guidance for researchers and practitioners for the selection of the best instrument to measure loneliness. This mapping will explore relevant information to help develop knowledge, identify possible gaps, and inform systematic reviews. This scoping review aims to map the instruments validated for the Portuguese older population (≥ 65 years old) that assess loneliness; and to identify their psychometric properties and contexts where they have been used.

2. Methods

To assess loneliness in older adults it is vital to use credible validated instruments. This scoping review was conducted according to JBI methodology (Peters et al., 2020). Our previously published protocol (Carvalho et al., 2021) used guidance from Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Review (PRISMA-ScR) (Page et al., 2021).

2.1 Review questions

To define the research question, the Population, Concept and Context (PCC) strategy was used (Peters et al., 2020): P, older adults aged ≥ 65 years; C, loneliness assessment instruments; C, Portugal, including but not limited to the community, intermediate care, long-term care, or acute care. The following research questions were defined: 1) What are the validated instruments for Portugal that assess loneliness in the older adults? 2) What are the psychometric properties of those instruments? 3) In which contexts were the loneliness assessment instruments used?

2.3.1 Search strategy

At this stage, we defined the search strategy with the descriptors, databases, and eligibility criteria. The search strategy aimed to locate published and unpublished studies. An initial search of MEDLINE (PubMed) and Scopus was undertaken to identify articles on the topic. The title, abstract, and keywords were analysed to find the text words that were used to build a good search strategy (Table 5).

Table 5

Search strategy

Population	<i>elder* OR ag*ing OR old* people OR old* person OR old* adult OR senior* OR pensioner* OR retire* OR old age OR late* life</i>
Concept	<i>loneliness OR lonely measure* OR scale* OR test* OR instrument* OR questionnaire* OR assessment* OR inventor*</i>
Context	<i>portug*</i>

All searches were carried out using the “advanced search” and with use of Boolean operators, to refine and identify studies aligned with our objective. The final search was carried out in October 2021. The search strategy was adapted to each database. The identification of published studies was conducted in the following electronic databases: SciELO, PsycInfo, Scopus, MEDLINE (PubMed), MedicLatina (EBSCO), Nursing & Allied Health Collection: Comprehensive (EBSCO) and CINAHL (EBSCO). The source of unpublished studies/grey literature was RCAAP (Open Access Scientific Repositories of Portugal), through the research integrator of the libraries of the University of Aveiro. An analysis of the reference lists of the included studies was carried out, to identify additional relevant studies.

The selection of studies required post hoc inclusion and exclusion criteria, which related to the specific content of the research question. The inclusion criteria were: comprising Portuguese population aged ≥ 65 years old; studies focusing on the development or psychometric evaluation of instruments, including cultural, linguistic adaptation and/or translation; studies reporting standardized measurement instruments with validation data for that sample; publications which can be read by the research team (Portuguese, English, and Spanish); studies published after 1978. This time limit was adopted because the UCLA loneliness scale was launched that year (Russell et al., 1978). The exclusion criteria were: studies not involving Portuguese population; studies where the sample only comprises participants <65 years old; studies not assessing loneliness; studies reporting non-standardized measures; protocols, letters, commentaries, books, poster, and conferences abstracts.

2.3.2 Source of evidence screening and selection

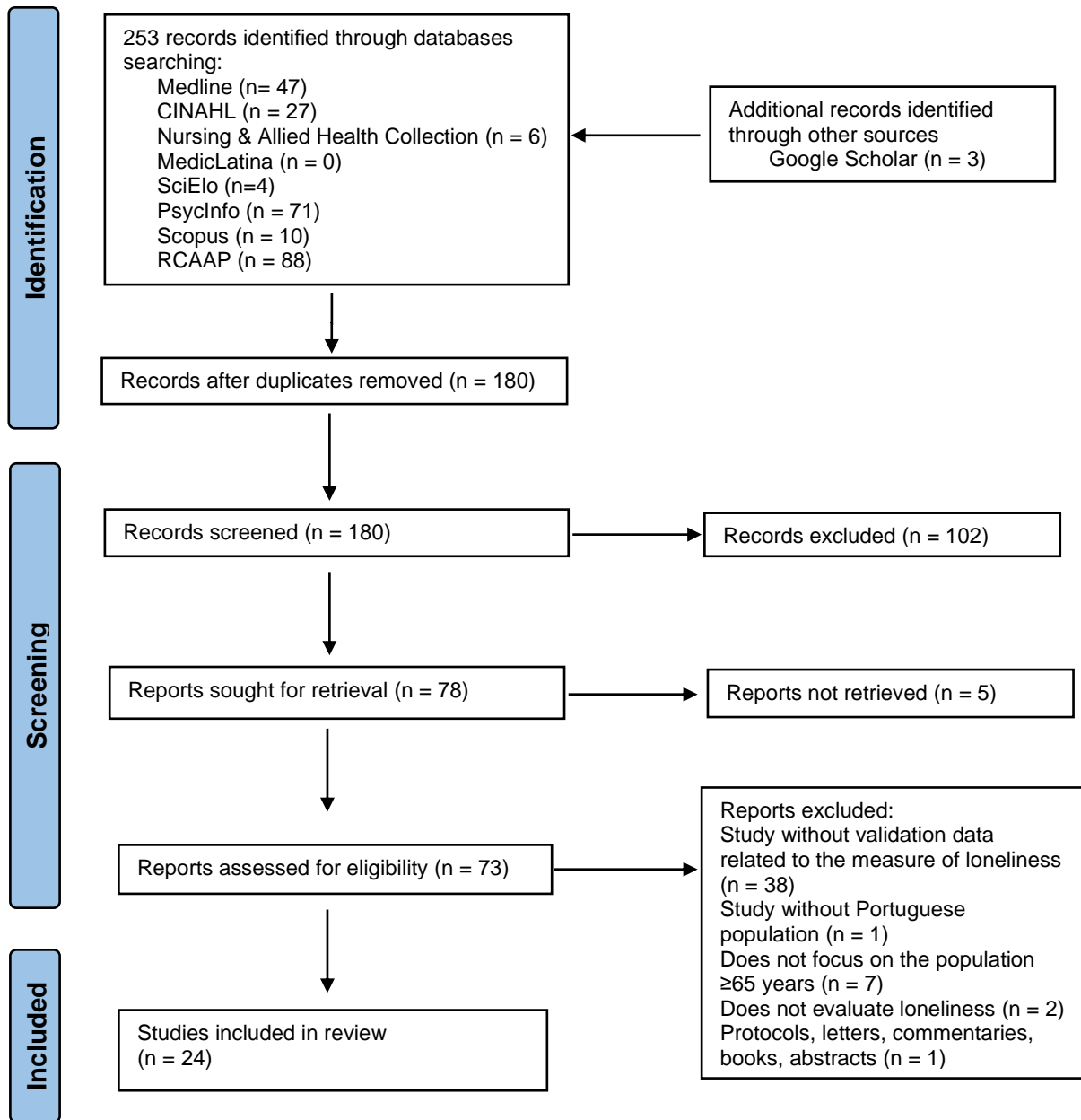
Following the search, all identified citations were collated into a spreadsheet (Excel version 2203) and duplicates were removed. Then, titles and abstracts were analysed by two independent reviewers (RC and LS) for assessment against the inclusion criteria. Doubts were solved in discussion with JT. For the publications that remained after the search in titles and abstracts, the full article was retrieved and assessed against the inclusion criteria. Full text studies that did not meet the inclusion criteria were excluded.

Any disagreements were resolved through discussion between RC and LS, and in case consensus was not reached, the disagreements were resolved with a third reviewer (JT).

The survey of studies was performed according to the flowchart of identification, selection, and inclusion of studies, PRISMA-ScR (Figure 2). The initial search retrieved 253 publications and after removing the duplicates, 177 remained. Then, through references checking three articles were included. At this stage there were a total of 180 articles. The title of the 180 articles found was analysed, excluding studies that did not meet the inclusion criteria; after reading the title and abstract, 78 articles remained. In total, 73 articles were retrieved for full-text assessment, because we were unable to access five articles. After screening these full-text articles, 49 were excluded (Fig. 2; annex 7.1). In this scoping review 24 papers were included.

Figure 2

Flowchart of identification, selection, and inclusion of studies – PRISMA-ScR



Note. From: Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D, Shamseer, L., Tetzlaff, J.M., Akl, A.E., Brennan, S., Chou, R., Glanville, J., Grimshaw, J.M., Hróbjartsson, A., Lalu, M.M., Li, T., Loder, E.W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, 372. <https://doi.org/10.1136/bmj.n71>

2.3.3 Data extraction and analysis

Data were extracted by RC considering two types: i) articles validating measures that assess loneliness in Portuguese older people; and ii) articles using instruments that assess loneliness in a sample of older Portuguese adult and reporting data on the instrument's psychometric properties. The data extraction for articles validating measures included (Table 6): 1st author, year of publication, instrument title and/or abbreviation, type of study (development and validation; translation, adaptation, and validation; validation to a new population), item generation, sample and context, administration method, description of items, quotation and interpretation, reliability, and validity. The data extracted for articles using instruments that assess loneliness comprise (Table 7): 1st author, year, objectives, type of study, population/sample, instrument, context, main results, reliability, and validity. The draft data extraction tool was modified and revised as necessary during the process of extracting. Any disagreements that arose between the candidate and supervisors (independent judges) were resolved through discussion. Data analysis follows a descriptive form to map the evidence according to the review questions; the main findings are addressed through a narrative review.

3. Results

Overview of selected studies

In total, 78 records were retrieved, of which 24 full texts were included in this scoping review. Four articles aimed to validate instruments that assess loneliness in older Portuguese adults (table 6); were published between 2009 and 2019, and include SELSA-S (Fernandes & Neto, 2009), ULS-16 (Pocinho et al. 2010; Faustino et al., 2019) and ULS-6 (Neto, 2014). Twenty studies assessed loneliness in a sample of Portuguese older people and presented validation data (table 7); were published between 2004 and 2021, and used ULS-16 (Pocinho et al., 2010), SELSA-S (Fernandes & Neto, 2009), UCLA-R (Neto, 1989), ULS-3 (Hughes et al., 2004) and the Loneliness Questionnaire (Rokach & Brock, 1998).

3.1. Validations of loneliness instruments for older Portuguese adults

The four articles validated two instruments: SELSA-S (Fernandes & Neto, 2009) and two versions of UCLA: 16-items (Pocinho et al., 2010; Faustino et al. in 2019); and 6-items (Neto, 2014) (Table 6).

Table 6*Validations of loneliness instruments for the Portuguese older people*

1st Author Year	Instrument	Type of study	Item generation	Sample and context	Administration method	Description of items	Quotation and interpretation	Reliability	Validity
Fernandes 2009	SELSA-S	Translation, adaptation and validation.	Based on SELSA-S of DiTommaso et al., 2004 (15-items). Principal component, with varimax rotation.	N=179 residing in villages; 57.5% women; M=72.45 years; SD=7.67.	Interview.	12 items, 3 subscales: social loneliness (6 items), family loneliness (4 items), romantic loneliness (2 items).	7-point Likert scale (1: strongly disagree to 7=strongly agree); total score: 7 to 84 points.	Internal consistency (Cronbach α): Total: 0.82; Social: 0.71; Family: 0.92; Romantic: 0.75.	Construct validity: EFA Principal component analysis three factor model (social, family, romantic). Total variance explained: 53.31%. Convergent validity: social & UCLA-R: $r = 0.61$ ($p < .01$); family & UCLA-R: $r = 0.49$ ($p < .01$); romantic & UCLA-R: $r = 0.38$ ($p < .01$).
Pocinho* 2010	UCLA Loneliness Scale-16.	Translation, adaptation and validation.	Based on the 1 st version of UCLA (Russell et al. 1978) (20 items). Principal components analysis shows 4 items with no significant correlation with the 1 st factor.	N=660 persons living in community; 60% women; ages from 64 to 74 years.	Interview.	16 items; two subscales: social isolation (11 items); affinities (5 items).	4-point Likert scale (1=never to 4=often); total score: 16 to 64 points. Cuff-off > 32; higher scores mean greater feeling of loneliness.	Internal consistency (Cronbach α): Total: 0.905; Social isolation: 0.867; Affinities: 0.806. Inter-rater reliability: High correlations between inter-rater (3), showing no significant differences between the means; ranging from 0.832 to 0.966 ($p > .05$).	Construct validity: EFA Principal component analysis with two factor model (social isolation and affinities). Total variance explained: 51 %. Discriminative function analysis with Chi-squared Automatic Interaction Detector and Measures of central tendency (determination of Cut-off >32).
Neto 2014	ULS-6	Validation in a new population	Based on ULS-6 of Neto, 1992 (6 items).	N=1154 persons living in community; 60.5% women; M=71.26 years, SD=6.66).	Interview.	Items are indicators of perceived social isolation 6-item (one factor); 5 items worded in a negative direction.	4-point Likert scale (1=never to 4=often); total score: 4 to 16 points.	Internal consistency (Cronbach α): 0.82. Correct item-total correlations from 0.45 to 0.60. Interitem correlation coefficient (mean): 0.42; Intraclass coefficient: 0.43.	Construct validity: CFA. One factor model: $\chi^2 = 38.73$ ($df = 9$) $\chi^2/df = 4.30$ GFI=0.99; NFI=0.98; CFI=0.99; IFI=0.99; AGFI=0.97; RMSEA=0.05. Concurrent validity: $r = -0.66$, $p < .001$ with self-esteem; $r = -0.43$, $p < .001$ with

									SWL; $r = -0.56$, $p < .001$ with positive affect; $r = 0.47$, $p < .001$ with negative affect; $r = 0.92$, $p < .001$ with UCLA-R; $r = 0.74$, $p < .001$ with single self-report.
Faustino 2019	UCLA Loneliness Scale-16	Translation adaptation and validation.	Based on Pocinho et al., 2010 (16 items). Combining classical measurement theory methods with the Rasch Model based on the item response theory. Maximum likelihood method with Promax-rotated solution.	N=154 persons living in institution; 59.1% women; M=78.80 years, SD=8.58.	Interview.	16 items, two subscales: social isolation (12 items) and affinities (4 items).	4-point Likert scale; total score from 16 to 64 points.	Internal consistency (Cronbach α): Total: 0.930. Corrected item-total correlations ranging from 0.51 to 0.73. Social isolation (Cronbach α): 0.920. Corrected item-total correlations from 0.56 to 0.76. Affinities (Cronbach α): 0.824; corrected item-total correlations from 0.54 to 0.74. Rasch model: Social isolation, item separation reliability: 0.91. Pearson separation reliability = 0.78. Affinities, item separation reliability: 0.76. Pearson separation reliability: 0.67:	Construct validity: EFA Two factor-model (social isolation and affinities), 57.51% of the variance. Discriminant validity (ANOVA): ULS-16 differentiate between individuals with higher vs. lower social isolation (PANT): $F(1, 152) = 1.88$, $p < .029$. Convergent validity: social isolation & MSPSS: between -0.353 and -0.480 ($p < .01$). Affinities & MSPSS between: -0.309 and -0.439 ($p < .01$). Divergent validity: social isolation & IADL: -0.083 ($p < .01$). Affinities & IADL: 0.026 ($p < .01$).

* Some data from the article by Pocinho et al. (2010) were taken from Pocinho's doctoral dissertation (2007).

** GFI: goodness of fit index; NFI: normed fit index; CFI: comparative fit index; IFI: incremental fit index; AGFI: adjusted goodness of fit index; RMSEA: Root mean square error of approximation; SWL, satisfaction with life; MSPSS, multidimensional Scale of Perceived Social Support; IADL, The Lawton Brody Instrumental Activities of Daily Living; PANT, Practitioner Assessment of Network Type

Fernandes and Neto (2009) report the validation of the SELSA-S (15 items) for the Portuguese population, addressing two groups: students and older adults. For the older adults, validity was tested through construct and convergent validity. Construct validity was performed using an exploratory factor analysis, through principal component analysis with varimax rotation comprising the 15 items. As in the original English (Canadian) version, a three factors model was obtained (social, romantic, and family loneliness). However, one item (I feel lonely when I'm with my family) does not saturate in any of the factors; and two items (I wish I had a more satisfying romantic relationship; I have an unmet need for a close romantic relationship) were cross-loading. Therefore, these three items were excluded in the Portuguese version. A second principal component analysis was performed with varimax rotation for the remaining 12 items. The total explained variance is 53.31% (social: 26.58%; romantic: 15.58%; family: 11.15%). Results from the convergent validity showed a positive moderate significant correlation between SELSA-S Social Subscale and UCLA-R ($r = 0.61$; $p < .01$) and SELSA-S Family Subscale and UCLA-R ($r = 0.49$; $p < .01$); a positive weak significant correlation between SELSA-S Romantic Subscale and UCLA-R ($r = 0.38$; $p < .01$). Internal consistency was assessed through the Cronbach's Alpha for global (0.82) and subscales: social (0.71), family (0.92), and romantic (0.75). Response options on this scale range from 1 "totally disagree" to 7 "totally agree", with a neutral "indifferent" response option. The higher the score, the greater loneliness.

ULS-16 items were first validated by Pocinho et al. (2010) based on Russel et al. (1978) for community dwelling older adults. Faustino et al. (2019) validated the version of Pocinho et al. (2010) for institutionalized older adults, by combining the classical measurement theory methods with the Rasch Model.

Pocinho et al. (2010) used the principal components analysis with initial matrix and varimax rotation with normalization (approximate total variance of 51%). This study comprised a sample of 600 older community dwelling adults (60% women). Data collection was carried out by interview, scored on a 4-points Likert scale from 1 (never) to 4 (often); total score ranging from 16 to 64 points. Internal consistency (reliability) was assessed using Cronbach's alpha ($\alpha = 0.905$). Pocinho et al. (2010) showed inter-rater reliability (three raters), ranging from 0.832 to 0.966 ($p > 0.05$). Discriminative function analysis was performed (analysis of variance through ANOVA) after used the Chi-squared

Automatic Interaction Detector. The results of this hierarchical model (that included the variables: family relationship/support, polymedication, age, family typology, and recent losses) with the measures of central tendency was used to determine the cut-off of the ULS-16 (> 32 , with higher scores suggesting higher feelings of loneliness) in the Portuguese population.

Faustino et al. (2019) used maximum likelihood method with promax-rotated solution with an approximate total variance of 57.51%. This study comprised a sample of 154 institutionalized older adults (59.1% women). Data collection was carried out by interview. Internal consistency (Cronbach's alpha) was assessed: $\alpha = 0.930$. Faustino et al. (2019) assessed correct item-total correlations reliability ranging from 0.51 to 0.73. It was performed discriminant, convergent and divergent validity. The discriminant validity was assessed with social isolation subscale (PANT) and the convergent validity was assessed with Multidimensional Scale of Perceived Social Support (MSPSS) with significant results, that support the validation of the ULS-16 ((PANT): $F(1, 152) = 1.88, p < 0.029$; Social isolation and MSPSS between -0.353 and -0.480 ($p < 0.01$); Affinities and MSPSS between -0.309 and -0.439 ($p < 0.01$). The divergent validity was assessed with the Lawton Brody Instrumental Activities of Daily Living (IADL) showing no significant Pearson correlations (social isolation and IADL = -0.083; affinities and IADL = 0.026).

Both studies performed exploratory factor analysis and obtained a two-factor model (social isolation and affinities), with 16 items. However, the items by factor are different. In Pocinho et al. (2010) the item for 9 "Sente-se completamente só?" (Do you feel completely alone?) is in the subscale affinities; and items 4 "Sente-se como se ninguém o compreendesse?" (Do you feel like no one understands you) and 11 "As suas relações sociais são superficiais?" (Are your social relationships superficial?) integrated the subscale social isolation. In the Faustino model, the item 9 integrated the subscale social isolation and item 4 and 11 integrated the subscale affinities. Faustino et al. (2019) consider that these differences may be related to different characteristics of the sample (community dwelling versus institutionalized).

The ULS-6 is an abbreviated form of the UCLA Loneliness Scale, developed by Neto (1992), with a sample of Portuguese adolescents. The items were selected based on an exploratory factor analysis, in which 6 items had a substantial load on the first factor. Respondents answer in a 4-points Likert scale from 1 (never) to 4 (often). Total score

ranges from 4 to 16 points, with higher scores indicating more loneliness. The study by Neto (2014) aimed to obtain new empirical evidence of the psychometric properties of the ULS-6 in the older population. In the validation process, the test of dimensionality (hypothesized one factor structure) was performed with confirmatory factor analysis. The results showed a good adjustment model ($\chi^2 = 38.73$ (df = 9); $\chi^2/df = 4.30$; GFI=0.99; NFI=0.98; CFI=0.99; IFI=0.99; AGFI=0.97; RMSEA=0.05). Neto (2014) used other criterion-related validity through the correlation of ULS-6 and other scales. Negative and significant correlation was found between ULS-6 and self-esteem ($r = -0.66$, $p < 0.001$), ULS-6 and Satisfaction with Life Scale ($r = -0.43$, $p < 0.001$), ULS-6 and positive affect ($r = -0.56$, $p < 0.001$). The correlation between ULS-6 and negative affect was positive and significant ($r = 0.47$, $p < 0.001$). A very strong correlation ($r = 0.92$, $p < 0.001$) and a strong correlation ($r = 0.74$, $p < 0.001$) was verified between ULS-6 and UCLAR-R (long version with 18 items) and a single self-report (“Do you ever feel lonely?”). To test the reliability of the ULS-6 was used the Cronbach’s alpha ($\alpha = 0.82$), corrected item-total correlations ranged from 0.45 to 0.60, interitem correlation coefficient (0.42), and intraclass coefficient (0.43), demonstrating a sufficient level of homogeneity. These values confirm the internal consistency of the ULS-6. ULS-6 comprises five items worded negatively and one item positively. To reduce response bias, the word “lonely” never appears.

Fernandes and Neto (2009), Pocinho et al. (2010) and Faustino et al. (2019) carried out the translation, adaptation, and validation. Neto (2014) (ULS-6 instrument) used the translation and adaptation previously performed to adolescents. In three studies (Fernandes & Neto, 2009; Pocinho et al., 2010; Neto, 2014), the target population were community-dwelling older adults (total of 1993 participants), while in one study (Faustino et al. 2019) the target was institutionalized older adults (154 participants). Therefore, only the ULS-16 was validated for the institutional context. The number of items per instrument was 12 for SELSA-S, 16 for ULS-16, and 6 for ULS-6. One domain emerged in all instruments: social isolation. In addition, the SELSA-S includes domains of family loneliness and romantic loneliness, and UCLA includes affinities.

Reliability was tested in all studies with the Cronbach’s alpha to assess the internal consistency (ranging from 0.82 to 0.93). Cronbach’s alphas suggested good internal consistency ($\alpha = 0.8-0.9$) in the study by Fernandes and Neto (2009) (SELSA-S) and in Neto (2014) (ULS-6), both with 0.82. Regarding the studies by Pocinho et al. (2010)

(ULS-16) and Faustino et al. (2019) the results suggest excellent internal consistency ($\alpha > 0.9$), with values of 0.905 and 0.930, respectively. Two studies (Neto, 2009; Faustino et al., 2019) report additional reliability test through the correct item-total correlations, being that Neto report results on interitem and intraclass coefficients and Faustino used a Rasch Model based on the item response theory. One study (Pocinho et al., 2010) reported additional reliability test through the inter-rater. Construct validity (exploratory factory analysis in SELSA-S and ULS-16 (with a total of variance explained $\geq 50\%$) and confirmatory factor analysis in the ULS-6), convergent validity or discriminate validity were performed in the four studies.

3.2. Studies assessing loneliness in older Portuguese adults presenting validation data

Overview of the selected studies

The purpose of these studies are focused on examine the feelings of loneliness felt by the Portuguese older population, whether in a community or institutional context. Details of the psychometric quality assessment of the instruments are presented in table 7.

Table 7*Studies assessing loneliness in Portuguese older people presenting validation data*

1st Author Year	Objectives (concept)	Type of study	Population/sample	Instrument	Context	Main results	Reliability	Validity
Rokach 2004	Examine differences in the experience of loneliness for older adults who were born and raised in different cultures.	Observational.	N=141 from Canada and Portugal; aged 60-83 (M=66.2); 105 Portuguese (M=65.85 years).	Loneliness Questionnaire (86 items, Rokach & Brock, 1998).	Community and institutional.	Cultural background affects how older adults elderly cope with loneliness; particularly their use of reflection and acceptance, distancing and denial, and religion and faith.	Internal consistency: K-R $\alpha = 0.94$ Subscales: K-R(1) $\alpha = 0.89$ K-R(2) $\alpha = 0.74$ K-R(3) $\alpha = 0.60$ K-R(4) $\alpha = 0.55$ K-R(5) $\alpha = 0.70$ K-R(6) $\alpha = 0.55$	Principal components factor analysis with varimax rotation (6 factors). Variance: Reflection and Acceptance (F1): 14%; Self-Development and Understanding (F2): 5%; Social Support Network (F3): 4%; Distancing and Denial (F4): 3%; Religion and Faith (F5): 3%; Increased activity (F6): 3%. MANCOVA $F = 1.07$.
Rokach 2005	Examine the influence of age and culture on the perceived causes of loneliness.	Observational.	N=1347 from Canada and Portugal; 84 Portuguese, 60-83 years (M=67.57, SD=5.58).	Loneliness questionnaire (30-item), based on Rokach (1989).	Institutional.	Culture and age significantly affect the causes of loneliness. Canadians (comparing with the Portuguese), had significantly higher scores on all five subscales of the Loneliness Questionnaire	Internal consistency: K-R $\alpha = 0.95$ Subscales: K-R(1) $\alpha = 0.88$ K-R(2) $\alpha = 0.89$ K-R(3) $\alpha = 0.83$ K-R(4) $\alpha = 0.77$ K-R(5) $\alpha = 0.84$	Not described
Fernandes 2007	Assess the level of subjective loneliness felt by the older adults; verify differences between older people living in a community and non-community village.	Observational.	N=179, 57.5% women, aged 60-92 years (M=72.45 SD=7.67)	SELSA-S UCLA-R (Neto, 1989).	Community.	Sociodemographics variables, health and anthropometrics, influence the level of subjective perception of loneliness.	Internal consistency (Cronbach α): social: 0.71; family: 0.92; romantic: 0.75.	Exploratory Factor Analysis with varimax rotation. UCLA-R & Social loneliness $r = 0.605$, $p > .01$; UCLA-R & Family loneliness; $r = 0.487$, $p > .01$; UCLA-R & Romantic loneliness: $r = 0.278$, $p > .01$.
Fontinha 2010	Analyse the relationship between death perspectives, social support and loneliness in late life.	Observational.	N=117; 70.9% women; aged 65-92 years (M=76.36 SD=7.15)	UCLA-R (Neto, 1989).	Community and institutional.	Women had higher values on the UCLA-R. Negative association between the Perspective of Death as a natural end and Loneliness and a positive relationship between Social Support and Loneliness.	Internal consistency (Cronbach α): 0.875.	UCLA & perspective of death as something natural: $r = -0.14$; $p < .05$ UCLA & life beyond reward: $r = 0.21$, $p < .05$; UCLA & death with indifference: $r = -0.20$, $p < .05$; UCLA & social support: $r = 0.37$; $p < .05$; $r = 0.43$; $p < .05$ t-student = 2.13, $p = .0035$ Full scale of death prospects and UCLA: $F = 3.139$, $p = 0.079$

Caldas 2012	Analyze sociodemographic variables and the cognitive functioning, and psychopathological and emotional variables.	Observational.	N=631, 75.8% women; aged 60-100 years (M= 80.13 SD=7.39).	ULS-16; Pocinho, Farate, & Dias, 2010.	Institutional.	Predictors of cognitive functioning were VFF and the predictors of the VSF were gender and cognitive functioning.	Internal consistency (Cronbach α): 0.91.	UCLA & phonemic fluency: $r=-0.06$ UCLA & semantic fluency: $r=-0.03$ UCLA & GAI: $r = -0.22, p < .01$ UCLA & GDS: $r = -0.37, p < .01$ FV & UCLA no relationship was found
Correia 2012	Compare the quality of life and feelings of loneliness of the older adults according living arrangements.	Observational.	N=106; 71.7% women; aged 65-96 years.	UCLA-R, Neto, 1989.	Community and institutional.	Feelings of loneliness are significantly present in this age group, especially in those living in institutions who show lower QoL.	Internal consistency (Cronbach α): 0.88.	Institutionalized and non-institutionalized $t=-4.77, p=0.10$ UCLA & socio-demographic variables (non-institutionalized): $F = 3.07, p=0.01$ UCLA & socio-demographic variables (institutionalized): $F = 6.36, p=0.00$ UCLA & QoL Physical component: $r = -0.49, p \leq 0.01$ Mental component: $r = -0.63, p \leq 0.01$
Rodrigues 2013	Understand if loneliness is independent from depression.	Observational.	N=84; 53.6% women; aged 65-90 years (M=74.49; SD=7.61).	ULS-16; Pocinho, Farate, & Dias, 2010.	Community and institutional.	People with loneliness but without depression. Loneliness feelings are higher as people age and women score higher in the loneliness.	Internal consistency (Cronbach α): 0.933.	UCLA & GDS: $X^2 = 27.421$ Phi=0.571 $p<0.0001$. UCLA and age: $X^2 = 12.15$ Phi=0.38 $p=0.002$.
Vicente 2014	Evolution of depression over two years in institutionalized older adults.	Observational.	N=83; 79.5% women; aged 60-100 years (M=79.51; SD=6.58).	ULS-16; Pocinho, Farate, & Dias, 2010.	Institutional.	Loneliness and anxiety contribute to the persistence of depressive symptoms. Loneliness as a risk factor for depression.	Internal consistency (Cronbach α): 0.89. Test-retest: $r=0.33, p<0.01$.	t -test = 1.65; $d = 0.2$; $r = 0.40, p=0.01$ UCLA & depression initial moment: $\chi^2 = -1.95, p=0.06$ (teste t). UCLA & depression evaluation: $\chi^2 = 4.95$ (ANOVA). UCLA associated to depression: $\chi^2 = 15.72, p<0.01$.
Santos 2015	Analyze the relationship between loneliness and mental health of institutionalized older people	Observational.	N=28, 64.3% women; aged 68-95 years.	UCLA-R, Neto, 1989.	Institutional.	Loneliness is associated with mental health problems in older adults and may contribute to anxiety and depression.	Internal consistency (Cronbach α): 0.872.	Spearman correlation UCLA & MHI-5: $r (28) = -0.611, p=0.001$. UCLA & MMSE: $r (28) = -0.284, p=0.143$.
Vieira 2015	Understand if loneliness and depression can be considered independent constructs.	Observational.	N=60, 76.7% women; aged 40-86 years (M=51.92; SD=10.23)	ULS-16; Pocinho, Farate, & Dias, 2010.	Community and institutional.	Although there is a statistically significant association between loneliness and depression, there are individuals without depression who have high levels of loneliness.	Internal consistency (Cronbach α): 0.939.	UCLA & GDS: $X^2 = 11.315$ Phi=0.434 $p<0.001$. UCLA and age: $X^2 = 3.609$ Phi=0.245 $p=0.165$.

Napoleão 2016	Analyse depressive symptoms and loneliness in institutionalized older adults.	Observational.	N=140 (N= 70 institutionalize, N=70 non-institutionalize), 74.3% women; aged 66-96 (M= 76.58; SD=6.10); 69 responded to UCLA.	ULS-16; Pocinho, Farate, & Dias, 2010.	Community and institutional.	Institutionalized older adults show more depressive symptoms and loneliness. No relationship between sleep and loneliness.	Internal consistency (Cronbach α): 0.910.	Pearson correlation Institutionalized: UCLA & II: $r = 0.01$; UCLA & QSTI: $r = 0.31$; UCLA & GDS: $r = 0.58, p < .01$. Non-institutionalized: UCLA & II: $r = -0.03$; UCLA & QSTI: $r = 0.08$; UCLA & GDS: $r = 0.58, p < .01$.
Galinha 2017	Analyze effects of singing group programme on participants' subjective and social well-being.	Experimental.	N=149; M=76.66 years (SD=8.79).	ULS-16; Pocinho, Farate, & Dias, 2010.	Institutional.	The program was associated the decrease of loneliness.	Internal consistency (Cronbach α): 0.69–0.88.	Mean differences (gl) t test/ χ^2 p: $t = 0.18; p = .857$, Time: ANOVA: $F = 5.46; p = .021; \eta^2 = .036$; Interaction group-time: ANOVA: $F = 0.22; p = .639; \eta^2 = .002$. SIGS & Loneliness: $\beta = -0.272, p = .015$.
Lopes 2018	Investigate loneliness rates in a city.	Observational.	N=64, 69.9% women; aged 60-70; M=75 years.	SELSA-S (Fernandes & Neto, 2009).	Community and institutional.	The age period from 60 to 70 years as particularly vulnerable to the emergence of loneliness.	Not described.	Pearson correlation Global loneliness & family loneliness: $r = 0.049, p < .05$. Satisfaction with relationships & family loneliness: $r = 0.022, p < .05$ Family loneliness & social loneliness: $r = 0.000, p < .05$. Family loneliness & romantic loneliness: $r = 0.046, p < .05$ Age & family loneliness: $r = 0.029; p < .05$ Age & global loneliness: $r = 0.007; p < .05$.
Rodrigues 2018	Analyse the relations between feelings of loneliness and depressive symptoms in the Portuguese older adults with and without emotional disorders.	Experimental.	N=734; 57.1% women; aged 60-94 years (M=72.34; SD=7.62).	ULS-16; Pocinho, Farate, & Dias, 2010.	Not described.	Moderating role of ICT use in the relation between loneliness and depressive symptoms in general population. In patients with emotional disturbances, the use of ICT only showed to be moderated regarding the affinity subscale.	Internal consistency (Cronbach α): total: 0.92; social isolation: 0.88; affinities: 0.85.	Pearson correlation General population: UCLA & GDS: $r = 0.573, p < .01$; UCLA & use of ICT: $r = -0.084, p < .05$; UCLA & attitude towards ICT: $r = -0.138, p < .01$. Patients with emotional disorders: UCLA & GDS: $r = 0.629, p < .01$; UCLA & use of ICT: $r = -0.072$; UCLA & attitude towards ICT: $r = -0.170$. T-test (general population): GP: $t(667) = 3.130, p = .002, \eta^2 = .014$; PWED: $t(63) = 3.205, p = .002, \eta^2 = .140$. ANOVA: GP: $F = 4.220, p = .015, \eta^2 = .013$ PWED: $F = .250, p = .779, \eta^2 = .008$.
Espírito	Explore optimism in	Observational.	N=66; 68.2% women;	ULS-16;	Institutional.	Institutionalized older	Internal	Pearson correlation

Santo 2018	institutionalized older adults and determine if it predicts emotional well-being.		aged 65-94 years (M=80.85; SD=7.49).	Pocinho, Farate, & Dias, 2010.		adults with low levels of optimism should be screened for loneliness and satisfaction with life.	consistency (Cronbach α): 0.97. Inter-rater: Cohen's d = 1.14.	UCLA & OS: $r=-0.34$, $p<.01$; UCLA & GAI: $r=0.24$; UCLA & GDS: $r=0.46$, $p<.001$; UCLA & SWLS: $r=0.40$, $p<.05$; UCLA & NA: $r=0.19$; UCLA & PA: $r=-0.40$, $p<.01$. ANOVA: $F = 3.65$; $p = .018$; $\eta^2 = .16$
Cruz 2019	Validate the Freiburg Mindfulness Inventory (FMI) for institutionalized older people.	Observational.	N=151; 70.2% women; M=81.76 years (SD=7.99).	ULS-16; Pocinho, Farate, & Dias, 2010.	Institutional.	FMI validation showed good psychometric properties.	Internal consistency (Cronbach α): 0.92.	Divergent validity: moderate negative and significant correlation between FMI and UCLA. Pearson correlation: UCLA & FMI: $r = -0.31$, $p<.01$; UCLA & SELFCS: $r = -0.12$, $p<.01$; UCLA & GAI: $r = 0.41$, $p<.05$; UCLA & GDS: $r = 0.53$, $p<.01$.
Silva 2019	Analyse the association between the feeling of loneliness and cognitive decline.	Observational.	N=72, 75% women; aged 64-96 years (M=80.96; SD=8.10).	ULS-16; Pocinho, Farate, & Dias, 2010.	Institutional.	No statistically significant association between loneliness and dementia.	Internal consistency (Cronbach α): 0.930.	Predictor model of loneliness is significant; explains 28.7% of the variability of UCLA ($F = 6,756$; $p = 0,011$; $R^2 = 0,287$). Linear regression UCLA & GDS: $\beta = 0,311$; $t = 2,103$; $p = 0,039$. UCLA & schooling: $\beta = 0,547$; $t = 1,990$; $p = 0,051$. UCLA & SWLS: $\beta = - 0,221$; $t = -1,799$; $p = 0,077$. UCLA & negative affectivity: $\beta = 0,207$; $t = 1,685$; $p = 0,097$.
Alarcão 2020	Examine gender inequalities in how community-dwelling older adults perceive their health status.	Observational.	N=920; 48.36% women; aged ≥ 65 years; M=74.34 years (SD=7.40).	ULS-16; Pocinho, Farate, & Dias, 2010.	Community and institutional	Indirect effects of cognitive function and loneliness feelings on self-perceived general health (SPGH) among older adults.	Internal consistency (Cronbach α): 0.89.	UCLA & SPGH: $r=0.272$, $p<0.001$. Indirect effects of UCLA on SPGH: Point estimate= 0.031, bootstrap 95% CI of 0.025 to 0.050, statistical significance at $p<0.05$.
Albert 2021	Explore the role of cultural and intergenerational belonging to identify protective and risk factors of loneliness.	Observational.	N=131; 51.9% women; aged 41-80 (M=56.08; SD=7.80). Spent M=31.71 years (SD=8.81) in Luxembourg and raised children in Luxembourg.	ULS-3, Hughes et al. 2004.	Community.	Importance of a sense of community and belonging for migrants' well-being. The feeling of not fitting in culturally might translate into intergenerational conflicts, which can have impact on the feeling of loneliness.	Internal consistency (Cronbach α): 0.76.	Correlations Age upon arrival in Luxembourg & loneliness: $r=0.29$, $p<.01$; Cultural belonging & loneliness: $r=-0.18$, $p<.05$. Cultural identity & loneliness: $r=0.21$, $p<.05$; Acculturation stress & loneliness: $r=0.33$, $p<.01$; Value consensus & loneliness: $r= -0.25$, $p<.01$; Family cohesion & loneliness: $r= -0.22$, $p<.05$; Family conflict & loneliness: $r= 0.50$,

								p<.01). Regression Effect of cultural identity conflict on loneliness: B=0.08; SE B=0.03, CI [0.02; 0.15].
Ribeiro-Gonçalves 2021	Assess levels of loneliness, as well as possible demographic and psychosocial predictors, in a population of older Portuguese gay men.	Observational.	N=110; aged 60-79 years (M=63.5 SD=3.41).	ULS-16; Pocinho, Farate, & Dias, 2010.	Community.	High levels of loneliness found among those with lower education levels. Low levels of family support, friends support and connectedness to the LGBT community were significant predictors of loneliness.	Internal consistency (Cronbach α): 0.92	Education level: F=4.812, p =0.030 (variance = 3.4%) Satisfaction with social support, family, and friend relationship satisfactions, LGBTCC, AtAS: F = 9.151, p <0.001 (variance = 29.9%) UCLA & Age: r=-0.025 UCLA & satisfaction with social support: r=-0.359, p<.01 UCLA & family relationship satisfaction: r=-0.454, p<0.01 UCLA & friend relationship satisfaction: r=-0.427, p<.01 UCLA & LGBTCC: r=-0.331, p<.01 UCLA & AtAS: r=-0.384, p<.01 UCLA & education level SE=1.824; β = - .207; t = -2.194, p<.05

* GAI: Geriatric Anxiety Inventory; GDS: Geriatric Depression Scale; FV: Verbal fluency; Qol: Quality of life; MHI-5: Mental Health Inventory Short form; MMSE: Mini Mental State Examination; II: Insomnia Index; QSTI: Questionnaire about Sleep in the Third Age; ICT: Information and Communication Technologies; OS: Optimism Scale; SWLS: Satisfaction with Life Scale; NA: Negative Affect; PA: Positive Affect

Regarding research design, participants, and settings, 18 (out of 20) studies are observational, while two (Galinha et al., 2017; Rodrigues, 2018) adopted an experimental approach. The number of participants included varied from 28 (Santos, 2015) to 920 (Alarcão et al., 2020) respondents, with a total of 3.943. All studies included people aged ≥ 60 ; however, two studies included persons aged less than that (Vieira, 2015; Albert, 2021). The minimum age was 40 years old (Vieira, 2015) and the maximum 100 (Caldas, 2012; Vicente et al., 2014) with average ages varying between 51.92 (Vieira, 2015) and 81.76 (Cruz, 2019) years old. All studies were conducted with Portuguese population: 19 with residents in Portugal, and one with Portuguese older adults living in Luxembourg (Albert, 2021). In relation with the context, eight studies were performed in institutional settings, eight had a mix of institutional and community dwelling older adult and three in the community setting. One study does not mention the context (Rodrigues, 2018).

These studies used five instruments to assess loneliness: ULS-16 (Pocinho et al., 2010) with 16 items, used in 12 studies; UCLA-R (Neto, 1989) with 20 items used in 3 studies; The Loneliness Questionnaire (Rokach & Brock, 1998) used in 2 studies, one with the 86 items and the other with 30 items; SELSA-S (Fernandes & Neto, 2009) with 12 items and ULS-3 (Hughes et al., 2004) with 3 items were used in one study each. There was a study (Fernandes, 2007) that used two loneliness instruments: SELSA-S and UCLA-R. To the best of our knowledge, of the twenty studies, fourteen used instruments with previous validity and reliability data for the Portuguese older population (SELSA-S, ULS-16 and ULS-6). These twenty studies produced data about the reliability and validity of the five instruments.

Construct validity and internal consistency were the two most frequently reported measurement properties. Construct validity was assessed through confirmatory, exploratory, divergent, and convergent analysis; and internal consistency through the Cronbach's alpha. All publications reported construct validity (convergent, divergent, or structural), except one (Rokach & Neto, 2005). The studies performed correlation, association, and mean differences analyses, which can contribute to providing information on the divergent and convergent validity of the instruments. Regarding the convergent validity, the most used were the correlations test between UCLA and other scales/variable. The main constructs were depressive symptomatology (through GDS), indicating that it was positively and significantly correlated with loneliness (Napoleão, 2016; Rodrigues,

2018; Espírito-Santo & Daniel, 2018; Cruz, 2019), with only one study showing a very low negative correlation (Caldas, 2012); and anxious symptoms (through Geriatric Anxiety Inventory [GAI]), indicating in two studies a positive correlation, very low (Espírito-Santo & Daniel, 2018) and moderate (Cruz, 2019); in another study the correlation has very low and negative (Caldas, 2012). Three studies reported results from the association between the loneliness and depressive symptomatology (Rodrigues, 2013; Vicente et al., 2014; Vieira, 2015).

Regarding internal consistency, one study (that used SELSA-S) did not report results (Lopes & Matos, 2018). The study that used two instruments (UCLA-R and SELSA-S) showed the internal consistency of the SELSA-S subscales (Social: $\alpha = 0.71$; Family: $\alpha = 0.92$; Romantic: $\alpha = 0.75$) (Fernandes, 2007). The two studies that used The Loneliness Questionnaire (Rokach et al., 2004; Rokach & Neto, 2005), used the Kuder-Richardson to measure the internal consistency reliability yielding an alpha value of 0.94 for the 86-item version, and an alpha value of 0.95 for the reduced version. The remaining seventeen studies reported internal consistent assessed by the Cronbach's alpha with values ranging from 0.690 to 0.979. One study using UCLA (Galinha et al., 2021) showed values between 0.69 and 0.88. The other eleven studies that use this instrument showed good internal reliability ($\alpha \geq 0.89$), as well as the three studies that used the UCLA-R ($\alpha \geq 0.872$). The study that used the ULS-3 showed an acceptable internal consistency ($\alpha = 0.76$).

4. Discussion

In this scoping review, three validated instruments for the older Portuguese adults, were identified to assess loneliness. To the best of our knowledge, this is the first scoping review to map the instruments and synthesized their psychometric properties.

Our findings showed the following instruments were validated to the older Portuguese population: SELSA-S (Fernandes & Neto, 2009); two versions of UCLA, ULS-16 (Pocinho et al., 2010; Faustino et al., 2019) and ULS-6 (Neto, 2014). Only one of the instruments (ULS-16, Faustino et al. 2019) was validated in the last five years. On the other hand, the SELSA-S was validated over ten years ago. It seems important to perform validations for the current older population, considering the evolving of communities and societies. Additionally, recent methods of validations, such as, rash analysis, confirmatory factor analysis and updates in methods (e.g. EFA) and feasibility has been suggested to assess the psychometric proprieties.

In this scoping review, UCLA, in particular ULS-16 shows good psychometric quality with preliminary evidence of reliability and validity, as a screening instrument to assess loneliness in older adults. Although there are two studies with UCLA in different contexts (community and institutional), testing in larger samples and different settings (such as health centers) is necessary to accumulate psychometric evidence and expand its use in research and clinical practice.

Regarding the ULS-6, it is necessary to consider that the items mainly reflect social loneliness, that is, a perception of the lack of a supportive social network. Therefore, if the aim is to assess other facets of loneliness (such as family and/or romantic loneliness) the use of another UCLA version is advised. There are several reduced versions of UCLA not validated to the older Portuguese population, namely ULS-3 (Hughes et al., 2004), ULS-4 (Russel et al., 1980) and ULS-8 (Hays & DiMatteo, 1987). The validation of these version would allow for more instruments available and make possible comparisons with populations from other countries.

The Jong Gierveld instrument is considered the most widely used, translated, and validate for several European countries, but still not validated to the older Portuguese population. This is an important instrument because it can be applied as a unidimensional loneliness scale; however, the items were developed with Weiss's (1973) distinction

between social and emotional loneliness. Thus, researchers can (depending on the research question) choose to use either the complete loneliness scale, or the emotional (six items) and social (five items) subscales (de Jong Gierveld & Van Tilburg, 2010). Although there are other instruments that are not validated for the Portuguese older population, the de Jong Gierveld scale seems to be one of the most relevant.

Another scale that would be relevant to validate, is the new ALONE scale (Deol et al., 2022). The large number of items of some scales makes them impractical for clinical use. Shorter versions are available, but the scales avoid directly asking participants about loneliness to minimize biasing patients' reporting. Clinicians created the 5-item ALONE scale to screen for loneliness in clinical settings. It seems relevant to validate this instrument for Portuguese older adults, because like screening programs for other diseases, wide-spread screening of at-risk older adults for loneliness could be followed by social prescribing of interventions could help minimize loneliness (Deol et al., 2022).

Content validity is a fundamental aspect of instrument validity and the basis of other validity properties. Before testing reliability and other types of validity of an instrument, it is critical to establish content validity following recommendations as part of a rigorous instrument development and validation process (Polit & Beck, 2006). However, few studies presented information on the translation and adaptation. Regarding construct validity, all used studies different techniques (convergent, divergent, and structural). In criterion validity, only Neto (2014), reported concurrent validity regarding ULS-6. Criterion validity is a fast way to validate data, and a highly appropriate way to validate personal attributes (i.e. depression, strengths and weaknesses) (Glen, 2015).

Regarding reliability, although the four validation articles have shown internal consistency values, it is important to associate other essential properties such as test-retest reliability, inter-rater and intra-rater reliability. However, none of the studies tested for test-retest and intra-rater. Only one tested for inter-rater reliability. These three tests are important to assess the agreement between measures. The test-retest reliability allows to assess the agreement between measures obtained by one evaluator that tests a same group of subjects at different times. The inter-rater reliability allows to assess the agreement between the measures obtained by two different evaluators that test the same group of subjects. Intra-rater reliability allows to assess the agreement between repeated measures

obtained by one evaluator in a same group of respondents (Chaparro-Rico & Cafolla, 2020).

In the four validation studies, the psychometric tests were performed with samples above 100 participants. Although there is no gold standard for sample size, the main recommendation is a 10 participants per item or higher in developing a new instrument or testing an existing instrument in a different population (Hair et al., 2019). In the studies by Fernandes and Neto (2009), Pocinho et al. (2010) and Neto (2014) there is a ratio of more than ten participants per item. In Faustino et al. (2019), the sample size ($n=154$) was slightly below the ratio 10:1. Nevertheless, the KMO was 0.909 and Sphericity test ($X^2 = 1408.26$, $p = 0.001$), that support the sample adequacy in the study.

Regarding the studies that assessed loneliness in Portuguese older adults presenting validation data, there were five instruments used in 20 studies. Fourteen studies used instruments validated for the Portuguese older population (namely SELSA-S or ULS-16). The others used the ULS-3 that is originally made for older adults but does not have an adaptation to Portuguese population; or use the UCLA-R that is validated to the general Portuguese population, but not specifically for the older population. The version for the general population was used and then carried out some validity analysis to assure the use with older adults. Nevertheless, validations are always recommended. It is important to adapt and validate these scales for the Portuguese older population, because UCLA-R is the most extensively used of the UCLA versions (Ausín et al., 2018) and the ULS-3 is the shortest version of UCLA that can be used for telephone survey (Hughes et al., 2004).

Ten of these studies used the ULS-16 (Pocinho et al., 2010), to assess loneliness in an institutional context. However, this validation was carried out in community context. In the validation process, specially, in factor analysis, the samples selection can generate different factor models (Gaskin et al., 2017). So, previously to the used of ULS-16 in the institutional context, it would be relevant to perform reliability and validity studies to ensure the consistency and the accuracy of ULS-16 in this population. Additionally, there is already a validated scale for this context (Faustino et al., 2019) that could be used in the assessment of loneliness in institutionalized older adults

Loneliness is a public health problem, particularly in older adults and specially in times of COVID-19 pandemic, and in a moment when protection measures are being alleviated. Understanding loneliness in Portuguese older adults, after two years of heavy

distancing measures due to the COVID-19 pandemic, demands instruments with good psychometric proprieties, that allows to delineate intervention priorities and guidelines.

5. Limitations and implication for future research

To our best knowledge, this is the first scoping review which identified and critically reflected on instruments used to assess loneliness of Portuguese older adults. However, some limitations should also be mentioned. There is a need for more in-depth research on the content and domains of instruments to assess loneliness among Portuguese older people, and more specifically, in clinical/hospital contexts. It is important to test and report essential reliability and validity properties as part of the instrument development and validation process using diverse samples in different contexts. Further, the COVID-19 pandemic has modified and accentuated feelings of loneliness, so it is recommended that in-depth interviews be carried out with the older adults to verify if the content of the loneliness instruments currently used matches this new perception of loneliness experienced by them.

6. Conclusion

Loneliness seems to be relevant for psychological and physical health. Therefore, it is necessary to have instruments that adequately assess the risk and level of loneliness in the older adults and that can be used in different contexts. The findings of this review provide directions for using reliable and valid instruments to assess loneliness in Portuguese older adults. Although further testing is warranted, the ULS-16 shows good psychometric quality with preliminary evidence of reliability and validity for assessing loneliness in Portuguese older people. Future testing of the instruments in different contexts are needed to accumulate psychometric evidence and expand its use in research and clinical practice. In addition, it would be important to translate and adapt other instruments.

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8. Appendix

8.1. Article exclusion table

N	Author(s)	Year	Title	Reason for exclusion
1	Almeida and Quintão	2012	<i>Depression and suicidal ideation in elderly institutionalized and non-institutionalized in Portugal</i>	A – Study without validation data related to the measure of loneliness
2	Martins et al	2014	<i>Abuse and maltreatment in the elderly</i>	A – Study without validation data related to the measure of loneliness
3	Eisenbeck et al	2021	<i>An international study on psychological coping during COVID-19: Towards a meaning-centered coping style</i>	A – Study without validation data related to the measure of loneliness
4	Madeira et al	2019	<i>Association between living setting and malnutrition among older adults: The PEN-3S study.</i>	A – Study without validation data related to the measure of loneliness
5	Madeira et al	2020	<i>Geriatric Assessment of the Portuguese Population Aged 65 and Over Living in the Community: The PEN-3S Study.</i>	A – Study without validation data related to the measure of loneliness
6	Santiago et al	2017	<i>Invalidation in Patients with Rheumatic Diseases: Clinical and Psychological Framework.</i>	A – Study without validation data related to the measure of loneliness
7	Madeira et al	2018	<i>Malnutrition among older adults living in Portuguese nursing homes: the PEN-3S study</i>	A – Study without validation data related to the measure of loneliness
9	Paúl et al	2006	<i>Psychological distress, loneliness and disability in old age</i>	B – Study without Portuguese population
11	Leite et al	2020	<i>Psychopathological Symptoms and Loneliness in Adult Internet Users: A Contemporary Public Health Concern</i>	C – Does not focus on the population ≥ 65 years
12	Campos et al	2017	<i>Suicide Ideation in Older Adults Recovering from Acute Conditions in a Clinical Recovery Facility</i>	A – Study without validation data related to the measure of loneliness
13	Laranjeira	2021	<i>The 'loneliness pandemic': implications for gerontological nursing</i>	E – Protocols, letters, commentaries, books, abstracts
14	Brandão et al	2018	<i>Threats to Health and Well-Being Perceived by Older People in Poland and Portugal.</i>	A – Study without validation data related to the measure of loneliness
15	Vaz and Gaspar	2011	<i>Depressão em idosos institucionalizados no distrito de Bragança</i>	A – Study without validation data related to the measure of loneliness
16	Duarte-Silva et al	2012	<i>Growing Older in Portugal: Gender Issues in Physical Health and Well-being</i>	D – Does not evaluate loneliness
17	Rocha-Vieira et al	2019	<i>Impact of loneliness in the elderly in health care: a cross-sectional study in an urban region of Portugal.</i>	A – Study without validation data related to the measure of loneliness
18	Heu et al	2019	<i>Lonely Alone or Lonely Together? A Cultural-Psychological Examination of Individualism-Collectivism and Loneliness in Five</i>	C – Does not focus on the population ≥ 65 years

			<i>European Countries.</i>	
19	Paúl and Ribeiro	2009	<i>Predicting loneliness in old people living in the community</i>	A – Study without validation data related to the measure of loneliness
20	Calha et al	2014	<i>Prevalence of loneliness and depression in the elderly population living in Portalegre historical area</i>	A – Study without validation data related to the measure of loneliness
21	Nunes	2021	<i>Solidão e Isolamento Social na População com 65 e mais anos do Concelho de São Vicente – Região Autónoma da Madeira</i>	A – Study without validation data related to the measure of loneliness
23	Figueiredo	2013	<i>A influência da solidão na afectividade e saúde na velhice</i>	A – Study without validation data related to the measure of loneliness
24	Lopes	2012	<i>Solidão e bem-estar subjetivo na terceira idade: estudo comparativo de idosos institucionalizados e não institucionalizados</i>	A – Study without validation data related to the measure of loneliness
27	Lourenço	2019	<i>Sentimentos de solidão e depressão em idosos institucionalizados</i>	A – Study without validation data related to the measure of loneliness
28	Gonçalves	2019	<i>O papel da memória autobiográfica e da solidão no envelhecimento bem-sucedido</i>	A – Study without validation data related to the measure of loneliness
29	Bento	2018	<i>Envelhecer em meio rural o caso da freguesia de Fajão</i>	A – Study without validation data related to the measure of loneliness
31	Pio	2018	<i>Dor psicológica numa amostra de doentes idosos em recuperação de doença aguda: correlatos e implicações clínicas</i>	A – Study without validation data related to the measure of loneliness
32	Mateus	2015	<i>Efeitos de um programa de envelhecimento ativo em sentimentos de idosos</i>	A – Study without validation data related to the measure of loneliness
34	Janeiro	2015	<i>A percepção sobre a solidão e qualidade de vida no envelhecimento: impacto de um projeto de animação sociocultural</i>	A – Study without validation data related to the measure of loneliness
35	Gomes	2015	<i>A influência do meio ecológico na experiência da solidão e no bem-estar subjetivo, numa amostra de adultos mais velhos</i>	A – Study without validation data related to the measure of loneliness
40	Santos	2014	<i>Hospitalização em pessoas idosas: impacto na qualidade de vida</i>	D – Does not evaluate loneliness
41	Dias	2013	<i>Solidão, depressão e qualidade de vida do idoso em diferentes contextos de vida: a perspectiva do próprio e do seu cuidador</i>	A – Study without validation data related to the measure of loneliness
44	Nascimento	2013	<i>Participação comunitária no âmbito do voluntariado para o idoso - um desafio para a enfermagem</i>	A – Study without validation data related to the measure of loneliness
45	Ascensão	2011	<i>Solidão, depressão e qualidade de vida no idoso: implementação de um programa de intervenção</i>	A – Study without validation data related to the measure of loneliness
48	Oliveira	2012	<i>Diferenças de género na vivência da viuvez na idade adulta avançada : depressão, mecanismos de defesa e satisfação com a vida</i>	A – Study without validation data related to the measure of loneliness

50	Teixeira	2010	<i>Solidão, depressão e qualidade de vida em idosos: um estudo avaliativo exploratório e implementação-piloto de um programa de intervenção</i>	A – Study without validation data related to the measure of loneliness
53	Galinha	2021	<i>The Role of Social and Physiological Variables on Older Adults' Cognitive Improvement after a Group Singing Intervention: The Sing4Health Randomized Controlled Trial</i>	A – Study without validation data related to the measure of loneliness
54	Castro and Amorim	2016	<i>Qualidade de vida e solidão em idosos residentes em lar</i>	A – Study without validation data related to the measure of loneliness
56	Ferreira-Alves et al	2014	<i>Loneliness in middle and old age: Demographics, perceived health, and social satisfaction as predictors</i>	A – Study without validation data related to the measure of loneliness
58	Rodrigues et al	2019	<i>Solidão no idoso institucionalizado com dependência Funcional</i>	A – Study without validation data related to the measure of loneliness
59	Faísca et al	2019	<i>Solidão e sintomatologia depressiva na velhice</i>	A – Study without validation data related to the measure of loneliness
63	Nogueira et al	2021	<i>Effects of restraining measures due to COVID-19: Pre-and post-lockdown cognitive status and mental health.</i>	A – Study without validation data related to the measure of loneliness
64	Alarcão et al	2019	<i>Gender differences in psychosocial determinants of self-perceived health among Portuguese older adults in nursing homes</i>	A – Study without validation data related to the measure of loneliness
65	López-Ramos et al	2018	<i>Psychometric properties and factor structure of the Satisfaction with Life Scale in an elderly Portuguese retirees students sample</i>	A – Study without validation data related to the measure of loneliness
66	Faustino et al	2020	<i>Exploring the impacts of COVID-19 related social distancing on loneliness, psychological needs and symptomatology</i>	C – Does not focus on the population ≥ 65 years
67	Ribeiro et al	2015	<i>Predictors of anxiety in centenarians: Health, economic factors, and loneliness</i>	A – Study without validation data related to the measure of loneliness
70	De Donder et al	2016	<i>Risk factors of severity of abuse against older women in the home setting: A multinational European study</i>	A – Study without validation data related to the measure of loneliness
74	Neto	2015	<i>Revisiting correlates of sociosexuality for men and women: The role of love relationships and psychological maladjustment</i>	C – Does not focus on the population ≥ 65 years
75	Neto et al.	2015	<i>Satisfaction with love life across the adult life span</i>	C – Does not focus on the population ≥ 65 years
76	Neto and Pinto	2013	<i>The satisfaction with sex life across the adult life span</i>	C – Does not focus on the population ≥ 65 years
77	Neto	2012	<i>Perceptions of love and sex across the adult life span</i>	C – Does not focus on the population ≥ 65 years