

Review Article

Prevalence of Loneliness in Older Adults: A Scoping Review

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Received 4 April 2023; Revised 29 August 2023; Accepted 30 August 2023; Published 14 September 2023

Academic Editor: Qing-Wei Chen

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Objectives. To review the prevalence of loneliness (during/after COVID-19) in older people. **Design.** Scoping review using Medline and PsycInfo for worldwide prevalence estimates (white published literature search) and Google for prevalence data inside the Euregio Meuse-Rhine (grey literature). **Setting.** Worldwide prevalence estimates and a focus on the Euregio Meuse-Rhine. **Participants.** Papers published between 2016 and 2022 and a mean age of minimum of 65 years. **Measurements.** Prevalence estimates for older people. **Results.** The white literature search yielded 37 articles. Before the onset of the COVID-19 pandemic, loneliness estimates were the highest in Nigeria (46%) and the lowest in Australia (5%) (mean prevalence was 25.6%). Loneliness was reported to be higher in specific populations, for example, people living in specific communities such as senior housing communities or with impairments, than in the general population, with a mean prevalence estimate of 47.8%. During COVID-19, the prevalence of loneliness was higher than that before the pandemic: we observed a mean prevalence of 39.4%, in comparison to 25.6 before COVID-19. The grey literature search showed that, compared to Belgium and the Netherlands (13.5% and 36.5%, respectively), loneliness estimates were the lowest in Germany, with a mean prevalence of 7.7%. **Conclusion.** Large international differences in the prevalence of loneliness were observed between countries and populations studied. Several hypotheses could explain such differences, including sociocultural or historical-political characteristics. Without surprise, the pandemic and associated measures were linked to a higher level of loneliness. Furthermore, recommendations for addressing loneliness, including interventions, are discussed.

1. Introduction

Loneliness—the discrepancy between a person's desired and actual level of social contact—can impact people of all ages [1]. A study among the general population in the US showed that a high level of loneliness is observed among young adults (<30 years), middle age (50–60 years), and very old age (>80 years) [2]. In the literature, a U-shaped association between age and loneliness is often described where the highest level of loneliness is observed in adolescence/emerging adulthood and the oldest old [3, 4]. Moreover, loneliness is particularly marked in more vulnerable populations, such as those with chronic illnesses, impaired mobility, and declining economic resources (all of which are

associated with advanced age) [5]. The impact of the COVID-19 pandemic and associated precautionary measures, such as the restriction of contact, emphasized the importance of addressing loneliness in the specific population of older people.

We can distinguish two kinds of loneliness: (1) relational (or social) loneliness, which is associated with a small social network, and (2) emotional loneliness, resulting from the lack of an intimate relationship [1]. There is also a distinction to make between loneliness and social isolation: loneliness is a subjective feeling related to the unpleasant lack of relationships whereas social isolation is objectified by contact frequency and could be defined by an objective state of having minimal social contact with other individuals [1].

Therefore, loneliness can appear without social isolation: for example, “I have three professionals every day at my home and my daughter comes several times per week but despite that I feel lonely,” and social isolation does not lead automatically to loneliness: for example, “I’m alone all the week but my daughter comes the week end and this one visit is enough for me not to feel alone” [6].

Loneliness is linked with multiple negative consequences. Longitudinal studies show that loneliness is associated with depressive symptoms, sleep fragmentation, higher blood pressure, dysregulation of the autonomic nervous system (hypothalamic-pituitary-adrenocortical axis activity), cognitive decline, and even mortality [7, 8]. In a meta-analytic review, it was found that in lonely people across all age groups, the likelihood of death was 26% higher than that in people who did not feel lonely [9]. This was also observed in older adults specifically [1, 10]. These deleterious consequences could be explained by the observation that people who feel lonely are more likely to engage in detrimental health behaviors such as more smoking or less physical activity [1].

In view of its prevalence and consequences, loneliness is considered a public health concern [9]. The prevalence estimates vary with the year of measurement, the tool which is used to measure loneliness, the country or region where it has been measured, and also the population [1]. This raises the necessity to comprehensively map the prevalence of loneliness while taking these different elements into account, including the impact of COVID-19.

2. Methodology

2.1. Study Setting. This study took place within the euPrevent PROFILE project realized within the INTERREG Euregio Meuse-Rhine (EMR) program (The Interreg V-A Euregio Meuse-Rhine (EMR) program invests almost EUR 100 million in the development of the Interreg-region until 2020. This area stretches out from Leuven in the west to the borders of Cologne in the east and runs from Eindhoven in the north all the way down to the border of Luxemburg. Over 5.5 million people live in this cross-border region, where the best of three countries merge into a truly European culture. With the investment of EU funds in Interreg projects, the European Union directly invests in the economic development, innovation, territorial development, social inclusion, and education of this region) concerning the loneliness of older people. The EMR is a border region covering parts of Belgium, Germany, and the Netherlands, which contains 150 municipalities. A municipality refers to a town or a district that has a local government. It is estimated that nearly 20% of the inhabitants of the EMR are older than 65 years [11], and this number is expected to increase in the upcoming years. This project ran from September 2021 until August 2023. It focuses on preventing and combating loneliness in older people living in the EMR and increasing awareness of the effects of loneliness. Therefore, this scoping review aimed at examining the prevalence of loneliness. Both scientific literature and grey literature were included in order to have a global idea of

loneliness through the world and public data sources to analyze more specifically loneliness in the EMR (due to the place of our Interreg project, inside this region).

2.2. Search Strategy for the White Literature (All Countries Included)

2.2.1. Keywords. A pilot literature search was conducted to determine the most appropriate keywords. A keyword profile was then created based on three constructs: (1) loneliness has to be in the title (Lonel*alone*, lonesome*, solitude, social connectedness, perceived social isolation); (2) prevalence has to be in the title or the abstract (prevalence, high risk, frequency, incidence); (3) aging has to be in the title or in the abstract (old, older*, elder*, senior*, aged, ageing, aging). (Equation used (TI (Lonel* OR Alone* OR lonesome* OR Solitude OR “social connectedness” OR “perceived social isolation”) OR AB (Lonel* OR Alone* OR lonesome* OR Solitude OR “social connectedness” OR “perceived social isolation”)) AND (TI (Prevalence OR “high risk” OR Frequency OR incidence) OR AB (Prevalence OR “high risk” OR Frequency OR incidence)) AND (TI(Old OR Older* OR Elder* OR senior* OR Aged OR Ageing OR Aging) OR AB(Old OR Older* OR Elder* OR senior* OR Aged OR Ageing OR Aging))). The search was performed on Medline and PsycInfo by the OVID platform on January 14th, 2022

2.2.2. Inclusion Criteria. Inclusion criteria were as follows: (1) articles published between 2016 (The choice to include articles published since 2016 was made in order to have recent data. However, as some articles used very ancient data, we added the fourth criterion: data has to be collected in or after 2012.) and 2022 in peer-reviewed journals; (2) articles written in English, French, German, or Dutch; and (3) prevalence available for older people (at least 60 years old at the inclusion, with a mean age of a minimum of 65 years for the sample). If one article included people of all age categories, the prevalence had to be described by age groups; (4) data had to be collected in or after 2012.

Exclusion criteria were synthesized articles or systematic reviews.

2.2.3. Study Selection and Data Extraction. Abstracts were screened by two authors independently (S. Schroyen and S. Adam). In case of discrepancies, these were discussed, and a consensus was reached between the authors. Full texts were examined, and we extracted data such as type of population, age of the sample, number of participants, place of the study, year of data collection, measure of loneliness, and prevalence estimates. If some information was missing, we wrote to the authors of the article, and if no answers were obtained, we excluded the article ($n = 4$).

2.3. Search Strategy for the Grey Literature (Focused on Belgium, The Netherlands, and Germany). The research on the grey literature was performed in French, German, and

Dutch given that these are the main languages in the Euregio Meuse-Rhine, and the data are used in the context of the euPrevent PROFILE project. For the grey literature search, we only included results from Belgium, the Netherlands, and Germany whereas results from all over the world have been included in the white literature search. The same keywords and inclusion criteria were applied. Grey literature was searched by using Google turning the incognito mode on and examining the first five result pages.

3. Results

A total of 391 articles were identified. After screening the abstracts, 164 articles remain. After the screening of full texts, 37 articles were included (see Figure 1). Of the 126 articles excluded, six were excluded because of the languages, 97 were excluded because the sample was too young, 16 were excluded because data were collected before 2012, three were excluded from a hetero-assessment of loneliness, and 4 from a lack of information (e.g., the year of data collection or the number of participants). Of the 37 articles remaining, 19 refer to the general population before COVID-19 and well described in Table 1, 13 to specific populations before COVID-19 (Table 2), and 5 to the general population after COVID-19 (Table 3).

3.1. White Literature. As shown in Figure 2 and Table 1, before COVID-19, prevalence estimates of loneliness appeared to be the highest in China and Nigeria (35.3% and 46.0%, respectively) [12, 13]. A high level of loneliness (47.1%) was also observed in Sweden in a sample of the oldest old (85+ years old, based on one article) [14]. The lowest prevalence of loneliness was observed in Australia (5%), Korea (5.4%), and New Zealand (9.3%) [15–17]. As we can observe in Figure 2, in Europe, the lowest prevalence of loneliness is in the north.

In the following table, the prevalence of loneliness before COVID-19, among the general population, is described. For clearer visibility, data are sorted in ascending order of prevalence.

Concerning specific populations, five categories were formed post hoc (see Table 2): (1) specific communities (e.g., retirement village), (2) impairment/diseases, (3) nursing homes, (4) minorities, and (5) rural areas. Overall, prevalence estimates show to be higher as compared to the general population. In specific communities (retirement village in New Zealand, community in Nepal, and independent living sector of a senior housing community in the United States), the prevalence of loneliness varies from 37.4% to 85% [18–20].

The second group, referred to as impairment/diseases, includes people with visual impairment in Norway, HIV in the United States, noncommunicable diseases in India, mental care in the Netherlands, and treated in primary care in China: prevalence is 43.5%, 53.8%, 52.4%, 80%, and 26.2%, respectively [21–25].

Among residents of nursing homes, prevalence measured in Singapore, Norway, and China, ranged from 27.6% to 59.6% [26–28]. The ethnic minorities are only studied in one research (Chinese in Chicago) and show a prevalence of loneliness of 25.8% [29]. Only one study was conducted in a rural area in China and found a loneliness prevalence of 25% among older people.

In the following table, prevalence of loneliness before COVID-19, among specific population, is described. For clearer visibility, data are sorted in ascending order of prevalence.

Three studies reported prevalence data for all age categories [16, 17, 21]. Two of them include the general population (New Zealand and Korea, see Table 1): the first one, in New Zealand, indicates a lower prevalence estimate of loneliness with higher age [17]. Prevalence of loneliness was 22.6% for 18–30 years old, 14.7% for 31–45 years old, 13.8% for 46–60 years old 8.4% for 61–75 years old, and 10.2% for those who are 75 years and older. In comparison, the study in Korea showed a slightly higher prevalence of loneliness when younger ones are compared to older ones (4% for 15–29 years old, 2.6% for 30–44 years old, 3.4% for 45–59 years old, and 5.4% for 60–74 years old) [16]. The third study analyzed loneliness among a specific population (patients receiving mental healthcare, see Table 2) and shows a lower prevalence of loneliness when younger and older are compared (52.2% in 18–35 years old, 58% in 36–50 years old, 42% in 51–65 years old, and 43.4% in 66 years old and more) [21].

The prevalence of loneliness for older people during COVID-19 seems to be higher than before the pandemic (see Table 3): it varies from 22.0% to 59.3% according to studies [30–34]. One study shows a comparison during/after the pandemic, and an increase in loneliness is also observed [31].

In the following table, the prevalence of loneliness during/after COVID-19, among the general population, is described. For clearer visibility, data are sorted in ascending order of prevalence.

3.2. Grey Literature. A grey literature search was conducted to identify the prevalence of loneliness inside the EMR. Therefore, the comparison between Belgium, Netherlands, and Germany (see Table 4) shows that loneliness percentages were the lowest in Germany (between 7.5% and 7.9% for people aged 65 and older before COVID-19) [35, 36]. In Belgium, the prevalence of loneliness was between 12% and 15% in seniors over 65 years old [37], and in the Netherlands, the numbers showed to be even higher (between 32% and 41%) [38, 39]. During the pandemic, the prevalence of loneliness has been rising in each country (between 8.7% and 22.1% in Germany, between 20% and 22% in Belgium, and between 44% and 65% in the Netherlands) [36–38].

In the following table, the prevalence of loneliness in the Euregio (grey literature) among the general population is described. For clearer visibility, data are sorted in ascending order of prevalence.

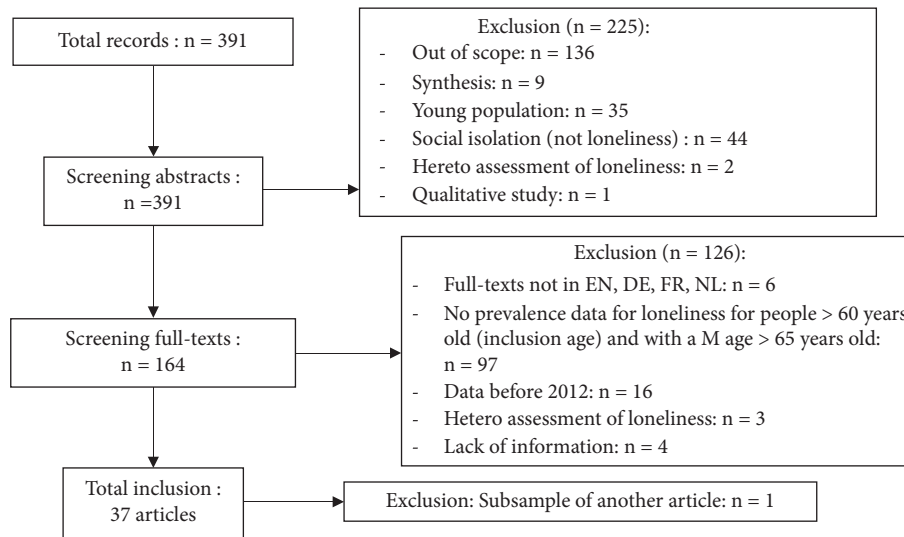


FIGURE 1: Flowchart of the review process.

4. Discussion

The objective of this scoping review was to provide an overview of the prevalence of loneliness during/after COVID-19 among older people, including specific populations, globally (white literature) and with a focus on inside the EMR (grey literature). In the context of the grey literature, it is important to note that the median age of the population living in Europe is the highest in the world (WHO, Strategy and Action plan 2012–2020).

The prevalence of loneliness among older people from the general population before COVID-19 is the highest in China and Nigeria (respectively 35.3% and 46%) [12, 13] and the lowest in Australia (5%) [15], Korea (5.4%) [16], and New Zealand (9.3%) [17]. In Europe, the lowest prevalence of loneliness is in the north: this observation is confirmed in a recent meta-analysis across 113 countries: more precisely, they found that for all adult age groups, including older adults, the prevalence of loneliness was the lowest in northern Europe and the highest in eastern Europe [40]. Across countries, levels of loneliness were globally higher when looking at specific populations, than looking at the general population, namely, varied between 25% and 85% depending on the subpopulation [20, 41]. One important finding is that the prevalence data of many other countries are lacking in the literature (mainly countries in South America and Africa). The heterogeneity observed between studies could be explained by the tools used to assess loneliness and the criteria, for example, the assessment of loneliness as a unidimensional or multidimensional construct, or a cutoff score depending on the scale or depending on the mean score of the sample. It could also be explained by the country, the population selected, the mean age, and the period of data recollection. All these differences make a comparison between studies hazardous. In order to explain differences between countries concerning the level of loneliness, several explanations can be found as for example, the social-cultural and historical-political characteristics

[42]: indeed, higher levels of loneliness are observed in countries where there is a social disengagement leading to a low level of trust in other people (observed in post-totalitarian countries). Other explanations could be demographic composition as gender differences in life expectancy [43] or cultural differences in relationship expectations: when living alone is unexpected (e.g., collectivist culture), people living alone are more likely to feel lonely (in comparison to people who live in a country where living alone is expected) [44].

During the COVID-19 pandemic, a lot of countries have taken lockdown measures; therefore, loneliness for older adults was a central preoccupation [45]. We observed that levels of loneliness were higher in studies who measured the prevalence of loneliness during the COVID-19 pandemic although still very heterogeneous between studies (variation from 23.4% to 59.28%) [30, 33]. The increase in loneliness is confirmed across age groups in general meta-analysis as well as the great heterogeneity between studies [46]. For older people more specifically, a greater vulnerability is observed [47]. Concerning the pandemic, one study showed that people who suffered from loneliness before the pandemic were also at higher risk of developing depression: in other words, loneliness was a risk factor for a deterioration of mental health during the period of COVID-19 [48]. Therefore, people who feel already lonely may be vulnerable to further detrimental consequences during a pandemic, such as COVID-19.

When analyzing the grey literature of countries that belong to the Euregio, the prevalence of loneliness is the lowest in Germany (between 7.5% and 7.9%) [35, 36] and the highest in the Netherlands (between 32% and 41%) [38, 39]. Concerning Belgium, we found a mean prevalence of 13.5% in the grey literature: nevertheless, it is important to note that another study observed that 22% of people in Belgium felt lonely in 2017 [49]. This last study was not included in our research as it is written in English (we only include research in French, Dutch, or German concerning the grey

TABLE 1: General population: prevalence of loneliness before COVID-19.

Authors and year of publication	Population	Location	Year(s) of collection	Age	Question asked or tool used (responses coded as “lonely” in the article)	N	Proportion lonely (%)
Freak-Poli et al. (2021)	Community dwelling	Australia	2010–2014	70+	“During the past week I feel lonely”: occasionally (3–5 days/week) or all of the time (5–7 days/week)	11.489	5
Kim et al. (2021)	Community dwelling	Korea	2019	15+: data indicated for 60–74	“How often do you feel lonely?": often vs. some of the time/hardly	315	5.4
Lay-Yee et al. (2022)	Community dwelling	New-Zealand	2017	18+: data indicated (1) 61–75; (2) 76+	UCLA (3 items): “often” or “very often” to any items (vs “never,” “rarely,” “sometimes”)	(1) 270 (2) 106	9.3 (1) 8.4 (2) 10.2
Gine-Garriga et al. (2021)	Community dwelling	Austria, Germany, Sweden, Spain, Italy, France, Denmark, Switzerland, Belgium, and Czech Republic	2013	65+	UCLA (3 items): fourth quartile (vs other quartiles)	35.196	10.3%
Huang et al. (2021)	Community dwelling	Taiwan	2015	65+	“Did you feel lonely in the last week?": sometimes or often (vs rarely or never)	4.588	10.5%
Domenech-Abella et al. (2017)	Community dwelling	Spain	2014–2015	50+: data indicated for 60–69 (1) and 70+ (2)	UCLA (3 items): cut-off ≥6	(1) 325 (2) 367	10.8% (1) 10.8% (2) 10.9%
Menec et al. (2020)	Community dwelling	Canada	2010–2015	45+: data indicated (1) 65–74; (2) 75+	“How often did you feel lonely?": all of the time” or “occasionally” (vs “some of the time” or “rarely or never”)	(1) 8.313 (2) 5.313	11.2% (1) 9.9% (2) 12.4%
Tan et al. (2019)	Community dwelling	Singapore	2012–2013	60+ (M age = 70)	Single question: “do you feel lonely?": “yes but mild to moderate intensity, infrequent or fleeting,” or “yes and severe, frequent or persistent” (vs “no”)	2.565	12.5%
Byeon (2021)	Community dwelling	South Korea	2015	60+ (M age = 68)	Subjective loneliness: often lonely, or mostly lonely (vs very rare or occasionally lonely)	1.558	14.9%
Rapolièné and Aartsen (2022)	Community dwelling	Europe (post-totalitarian-Albania, Bulgaria, Czechia, Estonia, Hungary, Lithuania, Poland, Russian Federation, Slovenia, Slovakia, Ukraine, Kosovo-other Belgium, Switzerland, Cyprus, Germany, Denmark, Spain, Finland, France, UK, Ireland, Iceland, Netherlands, Norway, Portugal, Sweden) and Israel	2012	65+	“Please tell me how much of the time during the past week you felt lonely?": “most of the time” or “all or almost all of the time” (vs “some of the time” or “none or almost none of the time”)	12.042	15.1%

TABLE 1: Continued.

Authors and year of publication	Population	Location	Year(s) of collection	Age	Question asked or tool used (responses coded as "lonely" in the article)	N	Proportion lonely (%)
D'Oleire Uquillas et al. (2018)	Community dwelling	United States	2013–2017	65+	UCLA (3 items): "sometimes" or "often" for one item (vs "rarely" or "never")	117	21%
McLay et al. (2021)	Community dwelling	New Zealand	2012	65+	Single question asking whether participants said or indicated that she/he feels lonely: "yes" (vs "no")	94,045	21.2%
Igbokwe et al. (2020)	Community dwelling	Nigeria	2019	60+ (M age = 71)	ULS (8 items), cut off = 24 (range 8–32)	1,099	21.8%
Shibata et al. (2021)	Community dwelling	Japan	2012–2013	65+	De Jong Gierveld loneliness scale (6 items): cut-off = 1	1,141	28.6%
Kim et al. (2022)	Community dwelling	Korea	2011–2012	60+ and spouses (M age = 73)	"I felt lonely as if I were left alone in the world" (sometimes/occasionally/ mostly)	1,724	29%
Sunwoo (2020)	Community dwelling	Czech Republic	2015	65+	UCLA-loneliness scale short version that consists of four indicators of survey questionnaire items (e.g., "feeling lonely and isolated") using three-point Likert-scale, 1 (hardly or never) to 3 (often)	2,129	29%
Ho et al. (2022)	Community dwelling	China	2019	60+ (M age = 70.8)	De Jong Gierveld loneliness scale (6 items), range 0–6, cut-off = 3	380	35.3%
Olawa and Idemudia (2020)	Community dwelling	Nigeria	2016	65+	Three-item loneliness scale: "hardly ever" (vs "some of the time" or "often")	406	46%
Nyqvist et al. (2017)	Community dwelling	Sweden	2010–2012	85+	"Do you ever feel lonely?": sometimes/often (vs seldom/never)	401	47.1%

TABLE 2: Specific populations: prevalence of loneliness before COVID-19.

Authors and year of publication	Population	Location	Year(s) of collection	Age	Question asked or tool used (responses coded as “lonely” in the article)	N	Proportion lonely (%)
<i>Specific communities</i>							
Boyd et al. (2021)	Residents of retirement village	New Zealand	2016–2018	60+ (M age = 81.3)	“Would you say you: “always feel lonely,” “often feel lonely,” “sometimes feel lonely” (vs “never feel lonely”)	578	37.4
Devkota et al. (2019)	Older people living in a community	Nepal	2018	60+: data indicated (1) 60–75 (2) 75+ M age nonindicated	UCLA (20 items)	(1) 95 (2) 29	59.0 (1) 52.6 (2) 65.5
Morlett Paredes et al. (2021)	Residents of the independent living sector of a senior housing community	United States	2018–2019	67+	UCLA (20 items): cut off ≥28	30	85
<i>Impairment/diseases</i>							
Zhong et al. (2018)	Older adults treated in primary care	China	2015–2016	65+	“How often do you feel lonely”: always/often/sometimes vs. seldom/never	774	26.2
Brunes et al. (2019)	Adults with visual impairment	Norway	2017	18+: data indicated for 66+	Three-Item Loneliness Scale (range 3–9): cut-off = 5	196	43.5
Grover et al. (2019)	Older patients with non-communicable diseases (diabetes mellitus and/or hypertension)	North India	2017–2018	60+: data indicated for (1) 70–79 and (2) 80+	UCLA: 20 items; 35–60: moderate to high loneliness	(1) 73 (2) 10	52.4 (1) 54.8 (2) 50
Mazonson et al. (2021)	Older adults living with HIV	United States	2017–2019	50+: data indicated 60+	Three-Item Loneliness Scale: cutoff ≥6	389	53.8
Schutter et al. (2022)	Older Psychiatric outpatients	Netherlands	2013–2018	60+ (M age = 76)	De Jong Gierveld Loneliness Scale: cutoff = 3	181	80
<i>Nursing homes</i>							
Zhao and Si (2021)	Older adults in nursing homes	China	2016	60+ (M age = 77.6)	“Do you feel lonely?”: “sometimes,” “often,” or “always” (vs “seldom” or “never”)	370	27.6
Drageset and Eide (2020)	Residents of nursing homes	Norway	2017–2018	65+	“Do you sometimes feel lonely?”: often or sometimes (vs rarely or never)	188	47
Chew (2022)	Nursing home residents	Singapore	2018	65+	UCLA (3 items): lonely (1–12)	57	59.6
<i>Minorities</i>							
Dong and Chen (2017)	Community-dwelling Chinese adults in Chicago	United States	2011–2013	60+ (M age = 72.5)	UCLA (3 items): sometimes or often for any items (vs hardly ever)	3159	25.8
<i>Rural area</i>							
Zhang et al. (2017)	Rural older adults	China	2017	60+ (M age = 69.7)	“I feel lonely”: “rarely,” “sometimes,” or “always” (vs “never”)	5514	25

TABLE 3: Prevalence of loneliness during/after COVID-19.

Authors and year of publication	Population	Location	Year(s) of collection	Age	Question asked or tool used (responses coded as “lonely” in the article)	N	Proportion lonely (%)
O’Shea et al. (2021)	Community dwelling	United States	April-May 2020	55+: data indicated for 65+	UCLA (3 items) cutoff scores ≥ 6	3774	23.4
Torres et al. (2022)	Community dwelling	Brazil	May-June 2020	50+: data indicated for 70+	“In the past 30 days, how often did you feel alone/lonely?”: “some of the time” or “often” (vs “hardly ever”)	943	28.7
Berger et al. (2021)	Community dwelling	Germany	May 2020	66–76	UCLA (3 items): cutoff scores ≥ 6	21077	29.3
Kucharska-Newton et al. (2021)	Community dwelling	United States	May–October 2020	78+	UCLA (3 items): cutoff scores > 4 (median value)	2984	56.3
Dziedzic et al. (2021)	Community dwelling	Poland	6–12 October 2020 (second wave COVID-19)	60+ (M age = 65.18)	UCLA (20 items): cutoff scores = 35	221	59.3

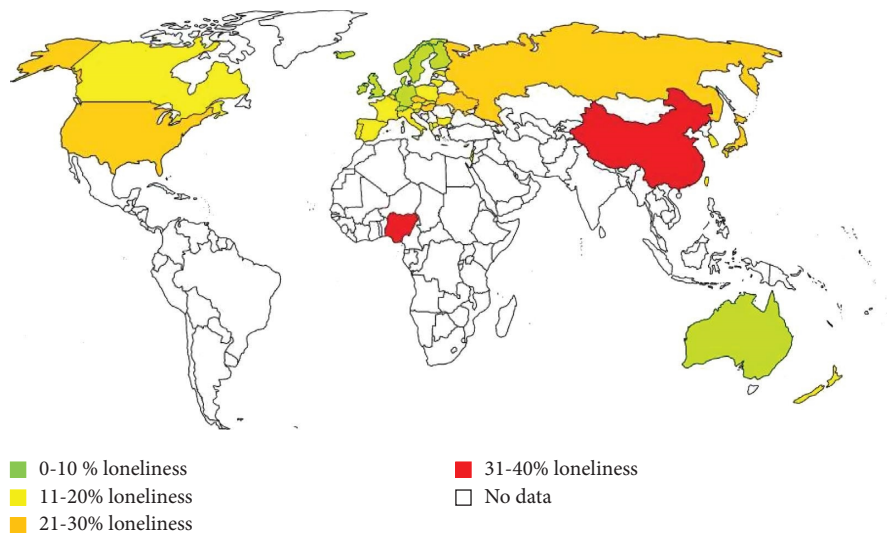


FIGURE 2: World map showing loneliness estimates including data between 2010 and 2019.

literature). However, even considering these higher numbers, the prevalence of loneliness in Belgium is still higher than the ones observed in Germany and lower in comparison to the Netherlands. Another study (not included as the number of participants is not indicated) nuanced our results as they observed that loneliness in the Netherlands increased after 2011 but was lower than in Belgium (in 2013, data indicated a level of loneliness of 22% in the Netherlands, 25% in Belgium, and 16.8% in Germany) [50]. In order to explain the differences between these three countries, we can look at the tools used to assess loneliness: in the Netherlands and Germany, the same scale is used (DjG scale) but not the same cutoff score (2.5 in Germany, whereas a cutoff score of

2 is used in the Netherlands); therefore, a higher estimate of loneliness in the Netherlands is logic (as a lower score, in comparison to Germany, is needed to be categorized as lonely). In Belgium, a single-question scale is used. Another methodological issue is that response rates vary across countries and that could be problematic if nonresponse is associated with loneliness [51]. Other hypotheses could be raised: individual characteristics of participants (as civil status, socio-economic level, institutionalization...), historical, cultural, and social characteristics of countries (such as ageism, solidarity between generations or social security systems, level of trust in other people, and rates of mobility and migration) [42, 49, 51].

TABLE 4: Prevalence of loneliness in the Euregio (grey literature).

Study	Population	Location	Year (s) of collection	Age	Question asked or tool used (responses coded as “lonely” in the article)	N	Proportion lonely (%)
Busschaert et al. (2020)	Community dwelling	Belgium	(1) 2017 (2) 23/09/2020 to 11/11/2020	60+, data indicated for (a) 65–69 (b) 70–84	“In the past month, how often have you felt lonely?”; “every day” or “several times a week” or “never”	(a) 470 (b) 1021	(1) (a) 12 (b) 15 (2) (a) 20 (b) 22
“Sociale samenhang & welzijn survey” (2019)	Community dwelling	Netherlands	2019	15+, data indicated for (1) 65–75, (2) 75+	De Jong Gierveld Loneliness Scale (6 items): cutoff value = 2	7298 in total (not available by age categories)	(1) 32.5 (2) 41.7
“Gezondheidsmonitor” (2020)	Community dwelling	Netherlands	2020: during COVID-19	18+, data indicated for (1) 65–74 (2) 75–84 (3) 85+	De Jong Gierveld Loneliness Scale (11 items): cutoff value = 3	539902 (not available by age categories)	(1) 44.6 (2) 53.6 (3) 65.9
Huxhold et al. (2019)	Community dwelling	Germany	2017	75–84	De Jong Gierveld loneliness scale (6 items): cut-off value = 2, 5	6262 (not available by age categories)	7.5
Huxhold and Tesch-Römer (2021)	Community dwelling	Germany	(1) 2017 (2) 2020: during COVID-19	46+, data indicated for (a) 66–75 (b) 76–90	De Jong Gierveld loneliness scale (6 items): cutoff value = 2, 5	(1) (a) 1581 (b) 1358 (2) (a) 1341 (b) 1152	(1) (a) 7.9 (b) 7.6 (2) (a) 13.5 (b) 11.9
Kaspar et al. (2022)	Community dwelling	Germany	2020: during COVID-19	45+, data indicated for (1) 80–84 (2) 85–89 (3) 90+	“How frequently did you feel lonely in the past week?”; “most of the time or “always, almost always” (vs. “never or almost never” or “sometimes”)	>10 000 (no exact number)	(1) 8.7 (2) 14.5 (3) 22.1

Considering the relatively high prevalence of loneliness in some countries, it is necessary to think about potential interventions. Broadly, interventions can emerge at four levels: individual, relationships, community, and societal [52]. At the individual level, meta-analysis identifies two successful strategies [53]: (1) improving social skills (e.g., improving conversation skills) and (2) addressing maladaptive social cognition through cognitive behavioral therapy (e.g., teaching people to identify automatic negative thoughts and regard them as hypotheses rather than facts). At the relationship/community level, we found, for example, some initiatives with the aim to bring social connections to people (for example weekly phone calls and home visits to lonely older adults) [52]. On the societal level, an example could be educational public awareness campaigns to increase awareness of loneliness and promote positive social behaviors (for instance, there is a week of loneliness/solidarity in Belgium and the Netherlands to sensitize the general population to this topic) [52]. From a global perspective, many interventions to reduce loneliness among older people have been developed, but we cannot develop a standardized approach suitable for everyone: interventions need to be individualized or adapted to specific groups, depending on the context, the population, or the degree of loneliness and individuals' needs [54, 55]. The suboptimal success of current approaches lies not in the interventions per se, but in the lack of integration and adjusting particular interventions to "the right person, at the right time" [54].

A strength of this scoping review is to include the older general population as well as older specific populations. Moreover, data before and after COVID-19 were observed. Nevertheless, there are missing data from a lot of countries. As we limit our research to papers published in English, French, Dutch, or German, it is possible that some relevant studies were omitted. Concerning the grey literature, we limit our search to countries inside the EMR.

5. Conclusion

Large differences in prevalence estimates are observed between countries and populations studied. Furthermore, data for South America and Africa are lacking. When focusing on the Euregio Meuse-Rhine, the lowest level of loneliness is observed in Germany (in comparison to Belgium and the Netherlands). Without surprise, the pandemic (and measures associated) increases the level of loneliness all around the world. In order to better compare countries, the use of a standardized measure would be a first step, preferably by using a validated instrument such as the Jong Gierveld Scale and also allowing to make a further distinction between social and emotional loneliness. Using standardized measurements and implementing routine monitoring will in turn enhance cross-country comparison, examine trends over time, and being able to better inform public policy on addressing loneliness (e.g., policy on household help to decrease loneliness, sensibilization of general population about loneliness, and focusing on individual factors linked to loneliness such as poverty). Also, a recommendation for future research would be to investigate cross-country

differences (as social-cultural or historical-political characteristics) in order to be able to better understand differences in reported loneliness. With a better comparison, we could be able to learn about each other more efficiently and to reduce the prevalence of loneliness. These analyses are needed to better understand the heterogeneity of loneliness that we can observe in our review and avoid erroneous and/or too hasty interpretations.

Data Availability

The search has been done in Medline and PsycInfo (14th January 2022). A keyword profile was then created based on three constructs: (1) loneliness has to be in the title (Lonel*alone*, lonesome*, solitude, social connectedness, perceived social isolation); (2) prevalence has to be in the title or the abstract (prevalence, high risk, frequency, incidence); (3) aging has to be in the title or the abstract (old, older*, elder*, senior*, aged, ageing, aging). All articles found on the search are available upon request (sarah.schroyen@uliege.be).

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

This work was supported by Interreg, project number EMR 147.

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