Changes in prevalence of loneliness over time in institutional settings, and associated factors

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Abstract

Objectives: The aim of this study was to examine changes in the prevalence of loneliness over time from 2011 to 2017 in long-term care facilities; and its related factors.

Material and methods: Repeated cross-sectional studies exploring loneliness and its associated factors among residents in long-term care facilities were conducted in Helsinki, Finland in 2011 (N=4966) and 2017 (N=3767). Residents in temporary respite care or with severe cognitive impairment, and those unable or refusing to respond to the loneliness item were excluded. The total number of participants in this analysis was 1563 in 2011, and 1367 in 2017. In both samples, we used the same loneliness measurement by asking "Do you suffer from loneliness?" (never/sometimes/often or always). When comparing the samples in order to reduce the effect of confounding between them, we used propensity score matching. A multivariable logistic regression model explored the relationship between various characteristics and loneliness.

Results: Loneliness showed no change in prevalence over time: propensity score-adjusted loneliness was 36% in 2011 and 2017. In the multivariate logistic regression model, feeling depressed was the only independent characteristic associated with loneliness. Of the respondents who did not feel depressed, 24% suffered from loneliness at least sometimes. Among the respondents who felt depressed, the respective figure was 55%.

Conclusion: Loneliness is common in institutional settings. It remained stable, and not decreased over time. Because loneliness impairs the well-being, quality of life and health of residents, it needs to be addressed. Screening loneliness and developing interventions to alleviate it, is essential.

Keywords: Loneliness, long-term care, temporal trend, depression, aged

1. Introduction

Because of the various adverse health outcomes associated with it, loneliness among older people has been a topic of increasing interest. Loneliness is associated with poor health and cognitive decline (Cacioppo & Hawkley, 2009), depression (Luanaigh & Lawlor, 2008), disability, increased mortality (Tilvis, Routasalo, Karppinen, Strandberg, & Pitkälä 2012; Drageset, Eide, Kirkevold, & Ranhoff, 2013), and increased use of health services (Gerst-Emerson & Jayawardhana, 2015). In western Europe the prevalence of "always lonely" is approximately 10% and "sometimes lonely" 20–30% (Victor, 2012). Levels of reported loneliness are lower in the Nordic countries than in southern and eastern Europe (Yang & Victor, 2011). Whereas media and public debate suggest that older people's loneliness is increasing (Dykstra, 2009), loneliness trends have actually shown no change over time (Honigh-de Vlaming, Haveman-Nies, Bos-Oude Groeniger, de Groot, & van 't Veer, 2014; Dahlberg, Agahi, & Lennartsson, 2018), and among community-dwelling older people, even a decreasing trend (Dykstra, 2009; Eloranta, Arve, Isoaho, Lehtonen, & Viitanen, 2015; Karppinen, 2019).

Loneliness increases the risk of admission to long-term care facilities (Tilvis, Pitkälä, Jolkkonen, & Strandberg, 2000; Hanratty, Stow, Collingridge Moore, Valtorta, & Matthews, 2018). Surprisingly, its prevalence may be even higher in long-term care facilities than in community care (Savikko, Routasalo, Tilvis, Strandberg, & Pitkälä, 2005; Victor, 2012). Loneliness emerges especially when a person has difficulties adapting to a new life situation (Savikko et al., 2005). In long-term care facilities, residents have described severe experiences of loneliness, and lonely older people have even felt invisible in these settings (Jansson, Karisto, & Pitkälä, 2019). Depressive symptoms (Prieto-Flores, Fernandez-Mayoralas, Forjaz, Rojo-Perez, & Martinez-Martin, 2011; Drageset, Espehaug, & Kirkevold, 2012), poor self-rated health, disability and mobility problems have been reported as being associated with loneliness among institutional residents. The risk of mortality has been significantly higher among the 'lonely' than among the 'not lonely' residents of

institutions (Jansson et al., 2017).

The number of studies exploring loneliness in long term care facilities is still low, especially considering how the prevalence of loneliness has changed over time in these settings (Victor, 2012). A review found only five published prevalence studies of loneliness in nursing homes (Victor, 2012). The prevalence of loneliness in these studies varied between 37% and 72%. According to the review, these studies suffered from small sample sizes and a high proportion of residents unable to participate. In the most recent studies, loneliness in long-term care facilities varied between 29% and 59% (Bekhet & Zauszniewski, 2012; Nyqvist, Cattan, Andersson, Forsman, & Gustafson, 2013; Swedish National, 2016; Nyqvist, Cattan, Conradsson, Näsman, & Gustafsson, 2017; Trybusińska & Saracen, 2019). One study among the oldest residents, with a small sample size, found that loneliness remained stable over ten years in an institutional setting (Nyqvist et al., 2017). Obviously, the prevalence of loneliness varied widely between societies, study populations, and also according to research design and the way in which loneliness was measured (Jansson et al., 2019).

About 4–6% of older people (65+) reside in long-term care facilities in Europe (Briggs, Robinson, Martin, & O'Neill, 2012). Loneliness has a significant impact on satisfaction with care (Kajonius & Kazemi, 2016). Thus, we need to understand it better in order to forecast the care needs of institutionalized older people. Exploring loneliness and its associated factors in long-term care facilities is essential for developing care practices, because loneliness harms the well-being, quality of life and health of residents (Drageset, Kirkevold, & Espehaug, 2011; Drageset et al., 2013). The aim of this study is to examine changes in the prevalence of loneliness and its related factors over time from 2011 to 2017 in institutional settings in Helsinki.

2. Material and methods

2.1. *Settings and data collection*

The repeated cross-sectional studies explored the well-being, health, nutritional status and medication of residents in nursing homes and assisted living facilities in Helsinki in 2011 (N=4966) and 2017 (N=3767) (Saarela et al., 2017; Roitto et al., 2019). The questions on well-being also inquired about loneliness. Both nursing homes and assisted living facilities in Finland offer 24-hour personal assistance. Assisted living facilities are more homelike than nursing homes. Nursing home beds have been replaced by beds in assisted living facilities during the last decade in Finland. Residents may live in their own single apartments with a kitchenette and bathroom, or in group homes. To varying degrees, they can use common spaces such as clubrooms, gyms, dining rooms, hobby rooms, and TV lounges. The staff include a manager, registered and assistant nurses, physiotherapists and/or occupational therapists, social instructors, and assisting staff. Facilities have weekly social programs, including music and facilitated games.

The data were collected using the same instruments at both time points in 2011 and 2017. Of the residents, those in temporary respite care (10%) were excluded. Residents with severe cognitive impairment, and those unable or refusing to respond to the item concerning loneliness were also excluded. The total number of participants in this analysis after exclusion in 2011 was 1563, and in 2017, 1367. The data were collected by registered nurses, who received thorough training to assess and interview the residents in their own wards. In each ward, the nurses used a structured questionnaire to conduct detailed interviews and assessments.

Demographic data (gender, age, education in years), medical diagnoses and medications were retrieved from medical records. Loneliness was elicited by a single question: Do you suffer from loneliness (never/sometimes/often or always)? Activities of daily living (ADL) were assessed using the Clinical Dementia Rating (CDR) of the "Personal care" item (Hughes et al. 1982). The cognitive stage was evaluated by CDR of the "Memory" item. CDRs of Memory class 3

(severe impairment) were excluded. Comorbidities were evaluated using the Charlson Comorbidity Index (CCI), which describes both the number and severity of a person's comorbidities (Charlson, Pompei, Ales, & MacKenzie, 1987). Nutritional status was assessed using the Mini-Nutritional Assessment (MNA) (Guigoz, Lauque, & Vellas, 2002), which is an 18-item tool used to assess nutritional risk. The psychological well-being (PWB) score in turn served to examine the participants' PWB (Routasalo, Pitkälä, Kautiainen, & Tilvis, 2009).

2.2. *Statistical analyses*

Data were presented as means with standard deviation (SD) and as counts with percentages. We made statistical comparisons between two cross-sectional samples (respondents living in long-term care facilities 2011 and 2017) using a chi-square test or t test for continuous variables and Pearson's chi-square for categorical variables. Bootstrap-based analysis of variance (ANOVA) assessed differences in characteristics between loneliness groups. We used the bootstrap (5000 replications) method when the theoretical distribution of the test statistics was unknown or in the case of violation of the assumptions (e.g. non-normality). To reduce the effect of confounding due to differences in baseline demographic and clinical characteristics between cohorts with and without loneliness, we used propensity score matching. Propensity scores were generated for each participant to reflect the conditional probability of receiving residents in 2011 and 2017. The propensity score was computed using a multivariate logistic regression model. Age, sex, living in a nursing home, widowhood, education, needing assistance in personal care, dementia, cancer, depression and number of medications were used as covariates in the model. Furthermore, we used a multivariable logistic regression model to explore the relationship between various characteristics and loneliness. The normality of variables was evaluated using the Shapiro–Wilk W test. We used the Stata 16.0 (StataCorp LP; College Station, Texas, USA) statistical package for the analysis.

2.3. *Ethics*

This study was conducted according to the Declaration of Helsinki guidelines, with the option of withdrawing at any time. All the residents gave their informed consent. In cases of moderate dementia, the residents' closest proxy gave consent. Those with moderate – severe dementia and having no proxy to give informed consent were not recruited. The protocol was approved by the Helsinki University Hospital's ethics committee (HUS 105/13/03/01/2011, HUS 2042/2016) and the respective committee of Helsinki city (HEL 2016-014303).

3. Results

3.1. Characteristics of the participants

Table 1 presents the characteristics of the participants in 2011 and 2017. The residents' mean age was 84 in 2011 and 83 in 2017, and three in four were women. The proportion of widowers had decreased from 54% to 47%, and the educational level of the residents had increased. In this sample, the level of need for assistance had slightly decreased over time. According to the Charlson comorbidity index, the morbidity of the residents had decreased. The proportions of those suffering from dementia and cancer had increased, and the mean number of medications had also increased over time. Nutritional status had improved from 2011 to 2017. The number of those suffering from stroke and feeling depressed at least sometimes, and the psychological well-being score showed no significant change over time.

Table 1. Characteristics of participants in 2011 and 2017

Characteristics	2011 N=1563	2017 N=1367	*P*-value
Women, n (%)	1186 (76)	974 (71)	0.005
Mean age (SD) [1]	84 (8)	83 (9)	0.002
Living in nursing home	748 (48)	394 (29)	<0.001
Widowed, n (%)	825 (54)	637 (47)	<0.001
Education <8 years, n (%)	683 (50)	519 (42)	<0.001
Needing assistance in personal care [2] n (%)			0.010
0–1 Independent; Independent, but needs prompting	220 (14)	208 (16)	
2 Needs some assistance with personal care	503 (33)	494 (37)	
3 Needs much assistance with personal care	803 (53)	632 (47)	
Mean Charlson comorbidity index [3] (SD)	2.4 (1.5)	2.1 (1.4)	<0.001
Dementia, n (%)	1036 (67)	969 (71)	0.014
Stroke, n (%)	436 (28)	340 (25)	0.052
Cancer, n (%)	145 (9)	175 (13)	0.003
Feeling depressed at least sometimes, n (%)	609 (41)	510 (39)	0.38
Mean number of medications (SD)	8.5 (3.7)	9.8 (3.6)	<0.001
Mini-Nutritional Assessment, [4] n (%)			<0.001
Malnourished	281 (18)	126 (10)	
At risk of malnourishment	1040 (67)	797 (64)	
Normal nutritional status	237 (15)	330 (26)	
Psychological well-being score [5]	0.70 (0.24)	0.71 (0.24)	0.27
Loneliness, sometimes or always	579 (37)	493 (36)	0.58

[1] Standard deviation; [2] Hughes et al. 1982; [3] Charlson et al. 1987; [4] Guigoz et al. 2002; [5] Tilvis et al. 2000

3.2. Loneliness among the participants

Of the respondents, 37% suffered from loneliness at least sometimes in 2011, and 36% in 2017. In 2011, the proportion of 'always lonely' was 9% and in 2017, 8%. Propensity score-adjusted loneliness was 36% (95% CI 34–39) in 2011, and 36% (95% CI 34–39) in 2017.

3.3. Factors associated with loneliness

We then combined the 2011 and 2017 samples to explore the associates of loneliness. In the multivariate logistic regression model, feeling depressed was the only independent characteristic associated with loneliness (OR 4.10, 95% CI 3.43−4.89, p <0.001) (see Table 2). Of the respondents who did not feel depressed, 24% suffered from loneliness at least sometimes. Among the respondents who felt depressed, the respective figure was 55% (p <0.001).

Table 2. Variables associated with loneliness

Variable	Odds ratio	Confidence intervals (95 % CI)	*P* value
Male gender	1.00	0.80–1.24	0.97
Age	1.00	0.99–1.01	0.93
Residing in nursing home (vs. assisted living facility)	1.13	0.94–1.37	0.19
Widowed	1.17	0.96–1.42	0.12
Education <8 years	0.88	0.74–1.05	0.16
Needing assistance with personal care			
Needs some assistance with personal care	1.24	0.94–1.64	0.14
Needs much assistance with personal care	1.22	0.92–1.60	0.16
Dementia	1.05	0.87–1.28	0.61
Cancer	1.02	0.89–1.18	0.76
Number of medications	1.01	0.99–1.04	0.34
Feeling depressed	4.10	3.43–4.89	<0.001

4. Discussion

This study suggested that there was no change in the prevalence of loneliness over time in cross-sectional samples in 2011 and 2017 from nursing homes and assisted living facilities in Helsinki, Finland. Propensity score-adjusted loneliness was 36% at both time points. When both samples were combined in a multivariate logistic regression model, feeling depressed was the only independent variable associated with loneliness. Of the respondents who did not feel depressed, 24% suffered from loneliness at least sometimes. Among the respondents who felt depressed, the respective figure was 55%.

To the best of our knowledge, this is one of the few studies to explore trends in loneliness in institutional settings. Its strengths are its large sample size and the use of valid instruments and trained nurses to thoroughly assess the participants. Another strength is that we used a propensity score to adjust residents' characteristics when comparing loneliness at two time points. The residents' characteristics changed significantly over time, and this propensity score allowed us to adjust loneliness according to these characteristics.

One limitation of the study is that of the original sample, we could include only 31% in 2011 and 36% in 2017. We had to exclude those with severe cognitive impairment who could not reliably answer the item about loneliness. The question "Do you suffer from loneliness?" requires the respondents to understand the concept of loneliness and describe their experiences. Our samples were much larger than those in prior studies (Victor, 2012). However, the selection of residents means that our participants were younger, had less often dementia and severe cognitive decline and better nutritional, functional and health status than the background population in these settings (Roitto et al., 2019). Another limitation is the cross-sectional nature of our study, which meant that we could not determine the causal relationship between loneliness and depression, for example. A third limitation in our study is the lack of data concerning residents' social relationships. However, the frequency of social contacts is not necessarily associated with the residents' experiences of

loneliness in long-term care (Drageset et al., 2011; Prieto-Flores et al., 2011).

In both the 2011 and 2017 cross-sectional samples using a multivariate logistic regression propensity score, adjusted loneliness was 36%. Our figure falls between the respective figures of previous studies (Victor, 2012; Bekhet & Zauszniewski, 2012; Nyqvist et al., 2013; Swedish National, 2016; Nyqvist et al., 2017; Trybusińska & Saracen, 2019). However, comparing the prevalence rates of these studies was difficult due to their different assessment methods and varying resident characteristics. The variability of the assessment method poses a question for future geriatric research: How can we coherently identify and measure such a complex subjective concept in different societies, cultural environments and populations? In summary, loneliness is common among residents in institutional settings.

Trends in loneliness among community-dwelling older people have shown no change over time (Honigh-de Vlaming et al., 2014; Nyqvist et al., 2017; Dahlberg et al., 2018), or a decreasing trend in prevalence over time (Dykstra, 2009; Eloranta et al., 2015; Karppinen, 2019). To our knowledge, only one previous study has explored the trajectory of loneliness in long-term care facilities (Nyqvist et al., 2017). In this Swedish study, the prevalence of loneliness in institutional settings varied between 52% and 61% over 10 years (Nyqvist et al., 2017). However, its number of participants was relatively small, and it compared about 100 residents at each time point. Moreover, these figures were not adjusted for the residents' characteristics at each time point, and the Swedish study compared certain age groups of the oldest residents, making comparison with our study difficult. Several characteristics differed between the cohorts in our study, the latter cohort being more educated, less widowed, somewhat less dependent and malnourished, and having less comorbidities. This shows that our sample was selected due to excluding CDR 3, as the actual change in these settings is because the latter cohort was more dependent (Roitto et al., 2019). The propensity score-adjusted analyses took these changes into account.

Previous studies have mainly examined the factors associated with loneliness in

bivariate analyses, which means that background characteristics highly intertwined with loneliness have not been adjusted for in the analyses. Functional dependence, gender, and marital status have been associated with loneliness in some studies, although the findings are contradictory (Prieto-Flores et al., 2011; Bekhet & Zauszniewski, 2012; Tse, Leung, & Ho, 2012; Drageset et al., 2011). In our multivariate analysis, feeling depressed was the only characteristic significantly associated with loneliness. The association of depressive symptoms with loneliness has been shown in previous studies in institutional settings (Prieto-Flores et al., 2011; Nyqvist et al., 2013). Loneliness has been also a significant risk indicator for depression (Jongenelis et al., 2004), depressive symptoms and anxiety (Bekhet & Zauszniewski, 2012). However, loneliness is not the same thing as depression and vice versa: only half of those feeling depressed suffered from loneliness. In a recent study, experiences of loneliness in long-term care facilities were dependent on meaningless time, and a feeling of waiting. Respondents felt invisible, even bystanders in their own lives (Jansson et al., 2019). Feeling depressed, experiencing loneliness and meaningless in life (Larsson, Edberg, Bolmsjö, & Rämgård, 2018) may give rise to existential suffering (Kissane, 2012) and existential loneliness (Larsson et al., 2018; Bolmsjö, Tengland, & Rämgård, 2019) in institutions.

5. Conclusions

Loneliness is prevalent in institutional settings and has not decreased over time. As loneliness is a significant predictor of satisfaction with care (Kajonius & Kazemi, 2016) and has an impact on mortality and on care needs in institutional settings (Drageset et al., 2013; Jansson et al., 2017), it needs to be addressed among long-term care residents.

Conflicts of interest

None.

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