

LONELINESS IN NURSING HOMES AND ASSISTED LIVING FACILITIES: PREVALENCE, ASSOCIATED FACTORS AND PROGNOSIS

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Abstract: *Background:* Loneliness is common among older people and implies poor prognosis. Still only few studies have explored loneliness, its prevalence and associates in nursing homes and assisted living facilities. *Objectives:* The purpose of this study was to examine the prevalence, associated factors and prognosis of loneliness among older people in institutional settings. *Design and settings:* A cross-sectional study with 3.6-year follow-up for mortality was conducted in nursing homes and assisted living facilities (N = 61) in Helsinki, Finland in 2011. *Participants:* Participants of the study were all residents (N = 4966) in nursing homes and assisted living facilities. The original participation rate was 72%. We excluded residents with dementia diagnoses, with severe dementia on the Clinical Dementia Rating Scale (CDR), non-responders and participants with no reliable information on mortality. The total number of participants in this analysis was 2072. *Measurements:* We asked the residents about loneliness with the question “Do you suffer from loneliness?” Respondents evaluated their own health (self-rated health; SRH). The CDR, Psychological well-being Score (PWB) and Mini-Nutritional Assessment (MNA) served to assess the residents. We collected the mortality data from central registers. *Results:* Of the residents, 9% stated that they suffered from loneliness often or always, and 26%, sometimes. Loneliness was associated with poor SRH, disability, mobility problems, higher cognitive function, depression and poor PWB. The risk for mortality was significantly higher among the “sometimes lonely” (HR 1.19; 95% CI 1.05 to 1.35) and for the “always lonely” (HR 1.28; 95% CI 1.06 to 1.55) than among the “not lonely” residents (p for linearity < 0.001 adjusted for age, sex and comorbidities). *Conclusions:* Loneliness has severe consequences in institutional settings and therefore deserves more attention in nursing home care and research. Developing interventions to alleviate residents’ loneliness in order to improve their general well-being is important.

Key words: Loneliness, nursing home, assisted living facilities, psychological well-being, mortality.

Introduction

Loneliness has been defined as a subjective, distressing feeling which has been shown to be associated with decreased quality of life and impaired health (1). Peplau and Perlman (2) defined loneliness as a psychological state that results from discrepancies between one’s own expectations and one’s actual relationships. Thus, people may feel lonely even if they are surrounded by other people (3). Researchers also describe a social pain of loneliness, which signals a weakening of one’s social connections and motivates a person to maintain and improve social connections for the sake of one’s health, well-being and survival (4).

Loneliness is common among older people (3, 5). In older community-dwelling populations, its prevalence varies: about 20% to 40% of older people report feeling lonely, with 5% to 9% of these reporting feelings of intensive or painful loneliness (6-10). Researchers have suggested that people in institutional settings are more likely to feel lonely than those living in their own homes (7, 10). To our knowledge, however, few studies have explored the prevalence of loneliness in nursing homes. One study found that 56% of Norwegian nursing home residents without cognitive impairment reported feeling lonely

sometimes or often (11).

Loneliness associates with older age (8, 12), widowhood, disability (3, 8) and poor subjective health (3). However, most research has explored the factors associated with loneliness mainly among community-dwelling people so factors associated with loneliness in nursing homes or assisted living facilities remain largely unknown (7, 13).

Loneliness is a predictor a number of negative health outcomes such as cognitive decline (14, 15) and depression (5, 16). Loneliness can also lead to increased use of health services (17), early admission to nursing home (12, 18) and increased mortality (19-21).

In recent decades, gerontological and geriatric research has focused on loneliness in old age. Nursing home residents are known to be at risk for loneliness (13), yet the characteristics, prevalence or prognosis of loneliness in institutional settings remains largely unknown. Thus, the aim of this study is to explore the prevalence, associated factors and prognosis of loneliness among older people in institutional settings.

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Methods

This study is part of a large, cross-sectional study exploring the nutrition, drug use, functioning and well-being of all residents in nursing homes and assisted living facilities in Helsinki 2011. The Helsinki University Hospital ethics committee approved the study protocol. The detailed methods have been published elsewhere (22, 23). We thoroughly trained nurses to assess and interview the residents in their own wards. In each ward, nurses used a structured questionnaire to conduct detailed interviews and assessments, and retrieved information from medical records concerning their patients' medical diagnoses and medications.

Subjects

We collected data on all long-term care residents in nursing homes and assisted living facilities ($n = 61$) in Helsinki in 2011. Altogether 4966 residents were in these institutional settings at the time of assessment. Of them, 517 were in temporarily respite care and thus excluded. We excluded an additional 1261 residents because they were unable to provide their informed consent due to dementia and because they had no proxy nearby or they refused. Thus, the original data included 3188 residents (72% response rate). The present study excluded also residents suffering from severe dementia and thus unable to provide a reliable response regarding their feelings of loneliness ($n = 936$) (Clinical Dementia Rating scale, memory item = 3) (24), residents with no available mortality data ($n = 25$), those not responding to the item on loneliness ($n = 94$), and those with no data on their psychological well-being ($n = 61$). Thus, the total number of participants in the present study was 2072.

The study included residents of both nursing homes and assisted living facilities. Both types of facilities provide round-the-clock care with a registered nurse in charge of a ward. However, the environment in assisted living units is more home-like than in traditional nursing homes.

Measures

Some of the data was retrieved or confirmed from medical records whereas some was acquired from structured interviews (e.g. loneliness, psychological well-being). We used measures which have been validated in frail older populations. We retrieved the patients' demographic data (gender, age, education, marital status), medical diagnoses and current medications from their medical records. The Charlson comorbidity index served to describe the burden of comorbidities (25). We also retrieved from the patients' medical records the number of medications they regularly used as well as the length of time they had resided in an institutional setting.

We inquired about the residents' loneliness with the question "Do you suffer from loneliness?" (seldom or never/sometimes/often or always). This question has been used in our studies since 1989, and has proven to be easy for older people to

understand and answer (1). It also shows prognostic validity (20).

We invited respondents to evaluate their own health (self-rated health) with four options (healthy/quite healthy/quite unhealthy/unhealthy). The items "memory" and "personal care" on the Clinical Dementia Rating scale's (CDR) served to evaluate cognition and dependency in patients' activities of daily living (24). This study classified memory as an original CDR "memory" item (0 = no cognitive impairment, 0.5 = possible cognitive impairment, 1 = mild cognitive impairment, 2 = moderate cognitive impairment). Dependence in activities of daily living was classified respectively (0-0.5 = independent; 1 = independent, but needs prompting; 2 = needs assistance with dressing and hygiene; 3 = needs considerable assistance with personal care).

The assessing nurse answered about residents' mobility limitations inside and/or outside with the questions "Is the resident able to move inside?" and "Is the resident able to move outside?" (Response options: "yes", "no, he/she needs a stick or a walker", "no, she/he needs other person's help", "no, he/she is unable to walk"). A response of "yes" or "no, he/she needs a stick or a walker" classified the patient as independent. Vision indicated the ability to read normal text with or without glasses, and we defined hearing as the ability to hear normal discussion with or without a hearing aid.

The psychological well-being (PWB) score, used in previous studies (3, 14) since 1989, served to examine the patients' PWB. The PWB score shows high acceptable test-retest reliability (26) and prognostic validity (27). Modified items of the PWB score used in this study were 1 life satisfaction (yes/no), 2 feeling needed (yes/no), 3 having plans for the future (yes/no), 4 having zest for life (yes/no), and 5 feeling depressed (seldom or never/sometimes/often or always). The score was calculated from the following questions where each item represents 0 ("no" for items 1-4, "often or always" for item 5), 0.5 ("sometimes" for item 5) or 1 ("yes" for items 1-4, "seldom or never" for item 5). We then divided the sum of each patient's responses by the number of questions he or she answered. Thus, a score of 1 represented the highest level of well-being, and 0, the poorest. The content validity of the PWB score represents well the key areas with the dimensions of the WHOQOL-Bref (28) and its concurrent validity has been verified with the RAND-36 instrument (29).

The Mini Nutritional Assessment (MNA) served to assess institutionalized older people's nutritional status. The MNA provides a maximum score of 30 points and can classify an older individual as well-nourished/normal (> 23.5 points), at risk for malnutrition (17-23.5 points), and malnourished (< 17 points) (30). We retrieved the mortality data from central registers on 15 April 2015.

Statistical Analyses

Summary statistics appear as means with standard deviations (SD) or as medians with interquartile ranges (IQRs). We used

Table 1
Characteristics of residents divided according to their loneliness

	Not lonely N = 1349	Sometimes lonely N = 536	Often or always lonely N = 187	p Crude
Women, n (%)	1009 (75)	399 (74)	150 (80)	0.25
Mean age (SD*)	84 (8)	84 (8)	84 (8)	0.84
Marital status, n (%)				0.13
Unmarried	234 (17)	90 (17)	34 (18)	
Widowed	693 (51)	272 (51)	108 (58)	
Divorced	209 (15)	77 (14)	28 (15)	
Married/Partnership	200 (15)	88 (16)	15 (8)	
Education < 8 years, n (%)	590 (44)	225 (42)	99 (53)	0.023
Resided in institution, median (IQR†)	1.8 (0.6, 4.0)	1.7 (0.7, 3.8)	1.8 (0.6, 4.4)	0.96
Mean Charlson comorbidity index ‡ (SD)	2.3 (1.5)	2.3 (1.6)	2.3 (1.6)	0.93
Self-rated health, n (%)				p < 0.001
Healthy	315 (24)	71 (14)	22 (12)	
Quite healthy	724 (55)	272 (53)	83 (46)	
Somewhat unhealthy	238 (18)	151 (29)	56 (31)	
Unhealthy	37 (3)	23 (4)	19 (11)	
Cognitive impairment, n (%)				0.034
No cognitive impairment	290 (22)	89 (17)	36 (19)	
Possible cognitive impairment	274 (21)	104 (20)	51 (28)	
Mild cognitive impairment	378 (29)	178 (34)	49 (26)	
Moderate cognitive impairment	380 (29)	157 (30)	49 (26)	
Dependence in activities of daily living,§ n (%)				0.006
Independent	107 (8)	25 (5)	13 (7)	
Independent, but needs prompting	182 (14)	57 (11)	19 (10)	
Needs assistance with dressing and hygiene	488 (37)	187 (35)	58 (31)	
Needs much assistance with personal care	553 (42)	262 (49)	95 (51)	
Independence in mobility, n (%)				
Inside	825 (62)	280 (42)	93 (51)	< 0.001
Outside	416 (31)	122 (23)	41 (22)	< 0.001
Vision good enough to be able to read, n (%)	1080 (82)	410 (78)	131 (73)	0.006
Good enough to hear normal speech, n (%)	1194 (90)	472 (89)	159 (86)	0.31
Dementia, n (%)	816 (60)	341 (64)	110 (59)	0.72
Stroke, n (%)	350 (26)	146 (27)	56 (30)	0.81
Depression, n (%)	261 (19)	136 (25)	69 (37)	< 0.001
Parkinson's disease, n (%)	71 (5)	40 (7)	12 (6)	0.48
Cancer, n (%)	131 (10)	44 (8)	11 (6)	0.47
Mean number of medications (SD)	8.9 (3.7)	8.7 (3.9)	9.1 (3.7)	0.45
Mini-Nutritional Assessment, n (%)				< 0.001
Malnourished	179 (13)	95 (18)	43 (23)	
At risk for malnourishment	856 (64)	361 (67)	124 (66)	
Normal nutritional status	307 (23)	79 (15)	20 (11)	

* Standard deviation; † Interquartile range; ‡ Charlson et al. 1987; § Hughes et al. 1982; || Guigoz et al. 2002

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analysis of variance (ANOVA), the chi-square test or the Fisher-Freeman-Halton exact test to perform the statistical comparisons. When adjusting for confounding factors, we applied analysis of covariance (ANCOVA). We used the bootstrap method (10 000 replications) when the theoretical distribution of the test statistics was unknown or in cases involving a violation of the basic assumptions (e.g., non-normality). The Cox Proportional Hazard Model served to estimate adjusted risk for mortality. Stata 14.1, StataCorp LP (College Station, TX, USA) statistical package served to perform the analyses.

Results

Residents' mean age was 84 years, and 75% were women. The median time the participants had resided in institutions was 1.8 years. Of the respondents, 9% ($n = 187$) felt lonely often or always ("always lonely"), and 26% ($n = 536$), sometimes ("sometimes lonely"). About half of the respondents were widows. The group "not lonely", "sometimes lonely" and "always lonely" did not differ significantly with respect to age, sex, marital status or time spent in an institution. Moreover, neither the Charlson comorbidity index nor the mean number of medications differed significantly between the groups. The proportions of those suffering from dementia, stroke, Parkinson disease or cancer were also similar between the groups (Table 1).

Low education (< 8 years) was most common in the "always lonely" group ($p = 0.023$). Self-rated health associated with loneliness ($p < 0.001$). Those who suffered from loneliness often or always more often evaluated their health as unhealthy or quite unhealthy. The "always lonely" group suffered less often from cognitive impairment than did the other two groups ($p = 0.034$).

Suffering from loneliness associated with higher dependency in activities of daily living ($p = 0.006$). Residents not suffering from loneliness were more independent in mobility both inside and outside than were the other two groups. Vision impairment associated with loneliness, but impairment in hearing did not. According to the MNA, the "always lonely" group suffered malnutrition more often than did the other two groups ($p < 0.001$).

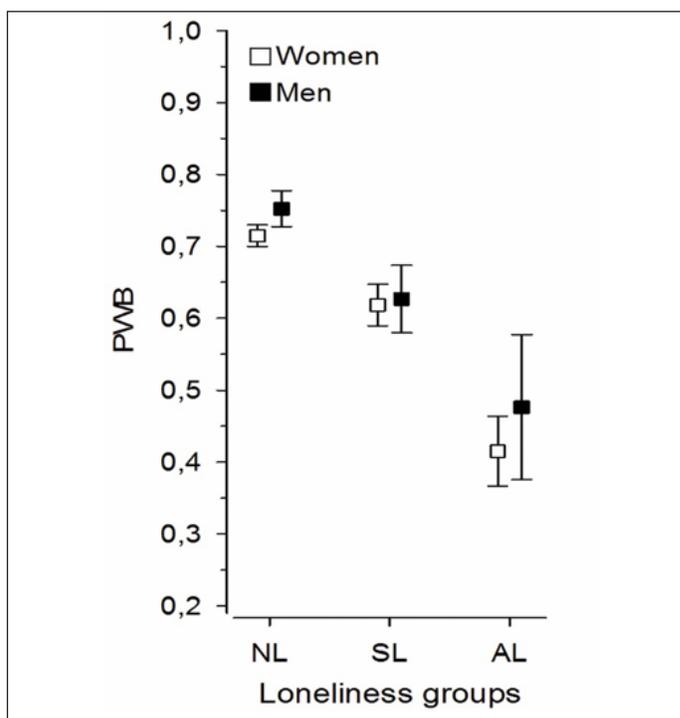
A diagnosis of depression also associated with loneliness ($p < 0.001$). Of the "not lonely" residents, 19% suffered from depression, whereas in the "sometimes lonely" group, the respective proportion was 25%, and in the "always lonely" group, 37% suffered from depression.

The PWB score associated with loneliness among both men and women ($p \leq 0.001$) (Figure 1). Among men, the PWB in the "not lonely" group was 0.75 (95% CI 0.72 to 0.78), in the "sometimes lonely" group, 0.63 (95% CI 0.58 to 0.67), and in the "always lonely" group, 0.48 (0.38 to 0.58) (p for linearity < 0.001 , adjusted for age and the Charlson comorbidity index). The respective figures among women were 0.72 (95% CI 0.70

to 0.73) in the "not lonely" group, 0.62 (95% CI 0.59 to 0.65) in the "sometimes lonely" group, and 0.42 (95% CI 0.37 to 0.46) in the "always lonely" group (p for linearity < 0.001 , adjusted for age and the Charlson comorbidity index). The PWB in the "not lonely" group was higher among men than among women ($p = 0.011$).

Figure 1

Psychological well-being and loneliness among women and men



Loneliness associated with mortality during the 3.6-year follow-up. Of the "not lonely" group, 57% died, whereas the respective figures in the "sometimes lonely" group was 65%, and in the "always lonely" group, 68% ($p < 0.001$). After controlling for age and the Charlson comorbidity index, the mortality risk among the lonely residents was significantly higher. The risk for mortality was significantly higher among the "sometimes lonely" (HR 1.19; 95% CI 1.05-1.35) and the "always lonely" group (HR 1.28; 95% CI 1.06-1.55) than among the "not lonely" residents (p for linearity < 0.001 adjusted for age, sex and comorbidities). Figure 2 illustrates the mortality risk separately for men and women.

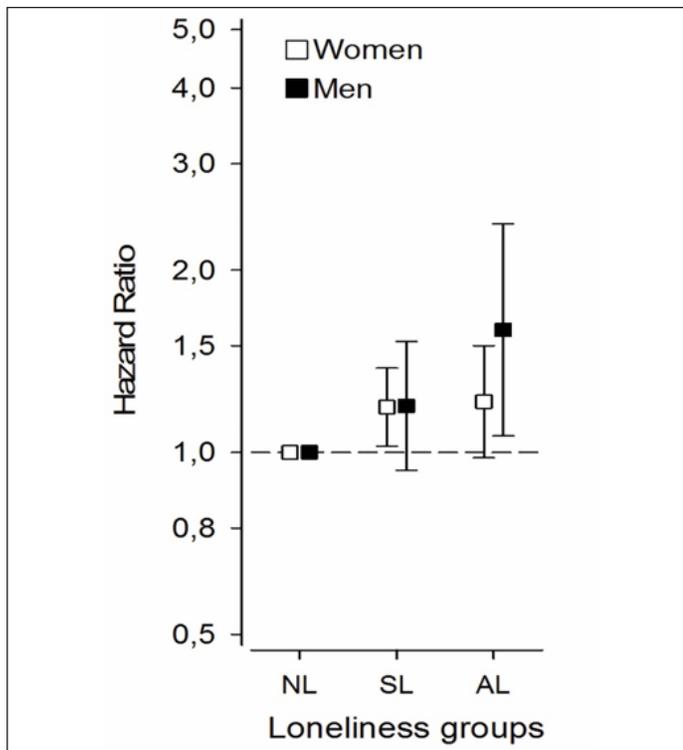
Discussion

Of the residents in institutional settings, 9% suffered from loneliness often or always, and 26% sometimes. In these nursing homes and assisted living facilities in Helsinki, Finland, loneliness associated with poor self-rated health, dependency in ADL and mobility, higher cognitive function,

depression, and poor psychological well-being. Even though loneliness did not associate with age or comorbidities, it did predict higher mortality.

Figure 2

Hazard ratios for mortality in men and women among “not lonely”, “sometimes lonely” and “always lonely” groups (adjusted for age and comorbidities)



To the best of our knowledge, this is the first study to explore loneliness in nursing home settings with a large, representative sample. The strength of this study is its large sample size, its representativeness of institutional settings in Finland, its use of valid instruments to thoroughly assess participants and its complete follow-up of mortality. Study also has several limitations. We had to exclude 35% of residents from the original sample due to non-response or severe cognitive impairment, as we could not consider their responses reliable. Because loneliness is subjective, it may be hard to know how people with severe dementia suffer from loneliness. Another limitation is the cross-sectional nature of the study. For these reasons, we cannot draw conclusions about the causal relationships of background factors and loneliness. Furthermore, we do not know whether these people have been admitted to nursing home with loneliness or if they have become lonely in the nursing home.

Loneliness has been mostly examined among community-dwelling older people (13). According to our study the differences between not-lonely and lonely residents seem to be distinct compared with differences of respective groups living

in the community. Whereas lonely community-dwelling older people differ from the “not lonely” people in respect to higher age, female gender and widowhood (7), our institutionalized residents did not show such differences. Among both community-dwelling and institutional samples loneliness was associated with poor SRH, dependence in ADL and poor vision.

Although nursing homes and assisted living facilities provide care and social support for older people, recent studies have suggested that loneliness may be even more common among older people living in institutional settings than among those living at home (7, 10, 13). Our study does not unequivocally support this hypothesis, since about 35% suffer from loneliness at least sometimes, whereas the corresponding figure among community-dwelling older people in Finland is 39% (7). Among “always lonely” older people, the prevalence in our study was 9%, and among community-dwelling older people, 5-12% (7, 31).

Few studies have examined the prevalence of loneliness in institutional settings. A Norwegian study found that 56% of nursing home residents without cognitive impairment reported loneliness sometimes or often (11). This figure is higher than the proportion in our study, even among only those without cognitive impairment. In our study the respective prevalence of loneliness among older people without cognitive impairment was 33%. The higher proportion in the Norwegian study compared to ours may be due to cultural differences or variations in the questions inquiring about loneliness. In our study, we asked “Do you suffer from loneliness?” whereas the Norwegian study inquired “Do you sometimes feel lonely?” The expression “suffering from loneliness” is so strong that the respondents presumably had to take a clear position in response to a question. Unlike in our sample, loneliness among the Norwegian nursing home residents did not associate with education or functional status. The Norwegian sample was considerably smaller, however, and may therefore suffer from low power.

Our study suggests that loneliness associates with impaired psychological well-being in nursing home settings. A higher level of loneliness associates with a lower level of PWB in a stepwise manner. This finding is in line with the findings of previous studies of community-dwelling older people (1) and those in institutional settings (16). The latter study suggested that a sense of coherence and depressive symptoms associated with loneliness among residents in nursing homes.

Surprisingly, as with community-dwelling lonely people, lonely residents in institutional care were also more likely to die than were “not lonely” group. Thus, as with in previous studies, loneliness appears to be an independent risk factor for mortality even during one’s last years of life in institutional settings (21, 32).

Although loneliness associates with poor well-being and mortality, the alleviation of loneliness in institutional settings has been little studied (33). A few randomized controlled trials

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have examined interventions to alleviate loneliness. Living dogs and robotic animals successfully alleviated loneliness in older patients living in long-term care facilities (34, 35). In addition, researchers have tested internet training and cognitive intervention among nursing home residents, though with less promising findings (36, 37). Even though the robots and dog companionship interventions may have proved beneficial for some residents, they clearly do not work for all. One possibility is a group rehabilitation model known as “Circle of friends”, which in a randomized controlled trial improved lonely older people’s well-being, health and cognition (17, 38, 39). Consequently, Circle of Friends has been actively promoted in Finnish communities and assisted living facilities. The main elements of Circle of Friends include closed-group dynamics, target-oriented work and enhancing the communication among its participants (40). The main idea is to help residents to develop meaningful relationships and communication with their peers.

Conclusion

Loneliness is common in institutional settings and associates with poor self-rated health and psychological well-being as well as increased mortality. Therefore, loneliness in nursing homes should receive more attention. Namely, it should be assessed and taken into consideration in the care and support of nursing home residents. Staff in nursing homes should receive training on identifying lonely older residents and supporting them. New interventions should aim to help residents to develop meaningful relationships and communication with their peers, family members and nurses.

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Ethical Standard: The Helsinki University Hospital ethics committee approved the study protocol. All potential participants were provided with information about the study. Written informed consent was obtained from all participants.

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