



JAMDA

journal homepage: [www.jamda.com](http://www.jamda.com)

## Original Study

## Long-term Care Status in Centenarians and Younger Cohorts of Oldest Old in the Last 6 Years of Life: Trajectories and Potential Mechanisms

Paul Gellert PhD<sup>a,\*</sup>, Simon Eggert<sup>b</sup>, Christine Zwillich MAE<sup>c</sup>, Stefan Hörter PhD<sup>c</sup>, Adelheid Kuhlmeier PhD<sup>a</sup>, Dagmar Dräger PhD<sup>a</sup>

<sup>a</sup>Institute of Medical Sociology, Charité—Universitätsmedizin, Berlin, Germany

<sup>b</sup>ZQP—Center for Quality in Care, Berlin, Germany

<sup>c</sup>Institute for Health Care Research of the Knappschaft, Knappschaft, Bochum, Germany

## A B S T R A C T

**Keywords:**  
Centenarians  
nursing home

**Objectives:** A large proportion of the oldest old and centenarians live in long-term care facilities. Although there may be distinct care patterns in centenarians compared with other cohorts of oldest old, the exact development concerning prevalence, length of stay, and factors that are associated with long-term care status in the last years before death is unknown.

**Design:** Longitudinal analyses of health insurance data across 6 years before death.

**Setting and Participants:** In all, 1398 institutionalized and noninstitutionalized oldest old [deceased at 80–89 (octogenarians), 90–99 (nonagenarians), or over 100 years of age (centenarians)] from Germany were included. Long-term care status and transition from home care into long-term care over 6 years (34,740 person-quarters).

**Measurements:** Dementia, musculoskeletal diseases, multimorbidity, hospital admission, gender, and age at death were derived from administrative data and analyzed using binary generalized estimating equations.

**Results:** Although the initial level of long-term care (6 years before death) was higher among centenarians (65.1% vs 53.6% in nonagenarians; 36.2% in octogenarians), the rate of increase was stronger in the younger cohorts. Distinguishing between long-term care escapers, delayers, and survivors, the proportion of those who escaped, delayed, or survived the entire 6 years of observation in long-term care was 33.4%/40.4%/26.2% in centenarians, 45.0%/45.1%/9.9% in nonagenarians, and 62.7%/33.7%/3.6% in octogenarians. Age, hospital admissions, and dementia were positively associated with being in long-term care, whereas musculoskeletal disorders were negatively associated with long-term care. The association with dementia was significantly weaker in centenarians.

**Conclusions:** For centenarians, although they are more often in long-term care, the transition rate to long-term care progressed more slowly than the rates of the younger comparison cohorts of oldest old. The high proportion of long stays of centenarians in long-term care facilities require different concepts of long-term care.

© 2018 AMDA – The Society for Post-Acute and Long-Term Care Medicine.

This work was funded by Knappschaft, Germany.

S.H. and C.Z. are employees of Knappschaft. P.G., D.D., S.E., and A.K. declare no conflicts of interests.

\* Address correspondence to Paul Gellert, PhD, Charité—Universitätsmedizin Berlin, Institute of Medical Sociology and Rehabilitation Science, Ageing Research Group, Virchowweg 22, 10117 Berlin, Germany.

E-mail address: [paul.gellert@charite.de](mailto:paul.gellert@charite.de) (P. Gellert).

<https://doi.org/10.1016/j.jamda.2018.02.010>

1525-8610/© 2018 AMDA – The Society for Post-Acute and Long-Term Care Medicine.

The rising life expectancy and the multiplying number of oldest old and centenarians challenge the health care system, including long-term care facilities.<sup>1</sup> In 2014, almost 5 million older adults in the United States received services from home health agencies; there were about 1.4 million residents in long-term care facilities, of whom 42 percent were 85 years and older.<sup>2</sup> A study based on data from the Health and Retirement Study from the National Institute on Aging found the median length of stay in a long-term care facility to be

5 months, with variations ranging from 1 to 120 months between individuals.<sup>3</sup> The prevalence of long-term care in centenarians is high; a Portuguese study reported that 42% of centenarians were institutionalized.<sup>4</sup> This figure rises to 54% in a Canadian study,<sup>5</sup> 52% in an Australian,<sup>6</sup> and 49% in a German<sup>7</sup> centenarian study.

Factors that influence the decision for an older adult to enter a long-term care setting include age, hospital admissions, cognitive ability, musculoskeletal disorders, and comorbidities.<sup>7–10</sup> Hospital admissions are linked with long-term care; elderly patients often go to a long-term care facility after being discharged.<sup>8</sup> Conversely, long-term care residents commonly transfer to a hospital.<sup>11,12</sup> Further, it has been proposed that dementia and musculoskeletal disorders are indicators that differentiate between healthy and unhealthy centenarians, which may also be related with long-term care status.<sup>9</sup> A review of studies on the cognitive status of centenarians revealed a high prevalence of dementia, ranging between 10% and 64% across the studies; moreover, the same studies did not show physical and functional status to be closely related with dementia.<sup>10</sup> Recent findings by our own group, which were based on administrative data from 1121 German centenarians, confirm that both dementia and musculoskeletal disorders play an important role in long-term health care arrangements.<sup>7</sup> Although 85% of the centenarians in long-term care had a diagnosis of dementia and 67% had a diagnosis of musculoskeletal disorders, the prevalence of these diagnoses in those who received professional home care was significantly lower, at 41% and 56%, respectively. A Canadian study that compared morbidity clusters of centenarians found centenarians with physical and cognitive impairments were more likely to be in long-term care facilities than in home care.<sup>13</sup> Although the above-mentioned cross-sectional analyses highlight factors that are associated with being in long-term care, longitudinal and predictive analyses are needed to further describe the temporal factors related to long-term care status in the oldest old.

Our aim in this study was to describe the trajectories of the prevalence of long-term care in the oldest old and centenarians over the last years before death and to investigate their connection with age, gender, age-associated conditions, multimorbidity, and hospital admissions. Unique to this study, we analyzed the 72-month period before death in a cohort of oldest old individuals. Within this period, we defined 3 groups of oldest old; those who died between 80 and 89 years (octogenarians), those who died between 90 and 99 years (nonagenarians), and those who died at the age of 100 years or older (centenarians). We utilized administrative data that includes all insured individuals; thus, this study overcomes biases related to self-reporting or selection that are often existent in hard-to-reach populations. Although the proportion of very old people is steadily increasing in societies around the world, the specific long-term care trajectories of the oldest old compared with centenarians have not yet been investigated. The transition rate to long-term care before death, length of stay, needs of care, and factors associated with long-term care are largely understudied among the very old and may be distinctive in centenarians. This study contributes to the understanding of these patterns that can help inform long-term care researchers and practitioners overcome challenges and create new strategies of long-term care for the oldest old.

## Methods

### *Procedure and Participants*

This cohort study used routine data from 6 years prior till death on insured individuals from Knappschaft, a major health insurance company in Germany. Details about the study design have been published elsewhere.<sup>14</sup> All German citizens are insured within the compulsory health insurance system, which is based on the principle of solidarity.

Thus, differences in sociodemographic factors between insured individuals of different statutory health insurance companies are minor. Data from statutory health insurance companies contain complete information on all diagnoses and health care transactions within the system, that is, outpatient, inpatient, and long-term care cases. The local ethics committee approved the study (EA 4/014/17).

The sample contains a total of 1398 individuals from Germany. All insured individuals who died as centenarians between January 1, 2015, and December 31, 2015, were selected for the present study ( $n = 398$ ). To allow comparison across age-at-death groups, 2 random samples of insured nonagenarians (90–99 years at death; random sample of  $n = 500$  out of  $N = 9588$ ) and octogenarians (80–89 years at death; random sample of  $n = 500$  out of  $N = 19,746$ ) who died in the same period as the centenarian cohort were selected.

### *Measurements*

Using insurance information, institutionalized individuals have been identified and coded as “in long-term care,” which served as the primary outcome of this study. Moreover, we used the “transition from private home into long-term care facilities” as an additional outcome (for supplementary predictive analyses on the transition see [Appendix Table A1](#)). Finally, we transferred the wording “escapers,” “delayers,” and “survivors” established by the compression of morbidity literature<sup>15</sup> to the context of long-term care. Thereby, we classified those who spent the entirety of the 6 years in long-term care as “long-term care survivors”; those who moved to long-term care facilities within the 6-year time frame as “long-term care delayers”; and those who did not move to long-term care facility as “long-term care escapers.” Hospital admissions were also recorded and served as a covariate.

Age at death served as a grouping variable classifying individuals into 3 groups (centenarians, nonagenarians, or octogenarians). Time to death served as a time variable covering 25 quarters prior to death, ranging from the first quarter of the seventh year before death to the last fully survived quarter prior to death.

Dementia and musculoskeletal disorders were coded with dementia using ICD-10 codes for degenerative diseases of nervous system such as Alzheimer’s disease, vascular dementia, and mild cognitive impairment (for ICD-10 codes, see [Appendix Table A2](#)). Musculoskeletal diseases included conditions such as rheumatoid arthritis, gout, arthropathy, and osteoarthritis. Both inpatient and outpatient ICD-10 codes were used to identify each condition; diagnoses labeled “suspected” were excluded. To be included in the index, each diagnosis had to be documented at least twice in individual medical records. In addition, multimorbidity was defined by a quarterly value of comorbidity based on the Elixhauser comorbidity index and served as a covariate.<sup>16</sup>

### *Statistical Analyses*

To test the trajectories of long-term care over the period of 25 calendar quarters prior to death—differential in 3 groups with age-at-death as a centenarian, as a nonagenarian, or as an octogenarian—binary generalized estimating equations were specified, which allow for correlated data, that is, within-individual repeated measures. In total, 34,740 observations across 25 time points were nested in 1398 individuals. Binary long-term care (0 = no/1 = yes) was regressed on a linear time variable, dementia, musculoskeletal disorders, gender, multimorbidity, and hospital admissions. Time in calendar quarters was coded from 0 to 24 (24 = last fully survived quarter before death). In the supplementary analyses, we introduced time-lagged predictor variables (ie, dementia, musculoskeletal diseases, hospital admissions) where transition from private home into long-term care was regressed on the predictor variables 0, 1, 2, and 3

Download English Version:

<https://daneshyari.com/en/article/8695343>

Download Persian Version:

<https://daneshyari.com/article/8695343>

[Daneshyari.com](https://daneshyari.com)