

Prevalence of Alzheimer's Disease in Retirement Homes and Homes with a Special Regime in the Czech Republic

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Abstract: Alzheimer's disease (AD) and its growing prevalence is an important issue both today and in the future. An important aspect concerning the management of the disease is having a sufficient capacity of accommodation facilities and professional inpatient care. The aim of this work is to determine the prevalence of patients with Alzheimer's disease in Retirement Homes (RH) and in Homes with a Special Regime (HSR) in the Czech Republic. For this purpose, a questionnaire survey was conducted for RH and HSR directors. The prevalence rate of the disease was found to be different for each type of home. The prevalence of AD in retirement homes was found to be 16%, while the prevalence in homes with special regime is 78%. This difference reflects the main purpose of the facilities, but at the same time points to insufficient capacities in both type of homes. Based on our calculations, we estimate that in Czech Republic, in 2020 there are about 21,000 people with Alzheimer's disease in both types of homes. Some 162,000 people with dementia/AD stay at home, putting a lot of pressure on families who have an AD relative in their midst and take care of them at home.

Keywords: Alzheimer's disease; prevalence; capacities; inpatient social services; Czech Republic

JEL Classification: I10; I11; I13

1. Introduction

Alzheimer's disease is an incurable neuro-degenerative brain disease in which irreversible cell destruction and damage occurs. Alzheimer's disease is also the most common cause of dementia. A patient suffering from Alzheimer's disease gradually loses cognitive functions such as memory, speech, clear thinking and problem-solving abilities. These patients lose the ability to perform daily activities such as cooking, getting dressed, washing and have to rely on the help from others. Patients at this stage may be aggressive or confused and require care and supervision. As the disease progresses, the disease also attacks other parts of the brain and inability to perform basic body functions such as walking or swallowing. At this stage, the patient is bedridden and requires continuous care. (Alzheimer's Association Report 2019).

Alzheimer's disease lasts an average of 7–10 years from the first symptoms of the disease to the patient's death. However, the course of the disease varies by the individual. Some patients can live with the disease for up to 15 years, others only 3 years (Jiráček 2008).

The issues surrounding Alzheimer's disease are becoming increasingly important, as the prevalence of this incurable disease continues to increase. The number of people with dementia/Alzheimer's disease in the Czech Republic is now estimated to be between 143,000 (Alzheimer Europe 2013) and 153,000 (Mátl et al. 2016). These estimates are based on epidemiological studies. In 2019, the Ministry of Health (2019) published data from the UZIS database in which 102,000 people with dementia and 62,000 people with Alzheimer's disease were diagnosed in the Czech Republic. Furthermore, the report of the Ministry of Health of the Czech Republic adds that up to 75% of patients may be under-diagnosed.

According to estimates, the number of patients with dementia could increase to 383 thousand by 2050 (Mátl et al. 2016). Válková et al. (2010) take a more positive attitude, which reports the prognosis for 2050 as having 227,000 affected dementia patients. The Ministry of Health (2019) states that by 2030 there can be up to 90,000 people with Alzheimer's disease.

A very important aspect to consider is where these people are and what care they receive. Therefore, the main aim of the article is to look at the prevalence of patients with Alzheimer's disease in retirement homes and in homes with special regime. This is important mainly because of the unsustainability of home care, which in most cases cannot be permanent and needs to be replaced with professional care over time (homes with special regime etc.), which may not be available due to the increasing prevalence of patients (Mátl et al. 2016).

This high prevalence of AD worldwide has already had a high economic impact, but it will have an even greater impact in the future. Every year, the number of cases of Alzheimer's disease is increasing by 7.7 million worldwide each year, and not only Czech society should prepare for this and adapt capacities in retirement homes and homes with special regimes (WHO 2012).

In-patient social services and direct care are now the most expensive part of the direct cost of overall care for Alzheimer's patients, and thus the prevalence of clients with this disease in homes with special regimes and retirement homes is a good indicator and predictor of economic aspects of the disease (Tomášková 2019).

This work contributes to mapping the prevalence of patients with Alzheimer's disease across individual regions of the Czech Republic. The research question is: What is the prevalence rate of AD in RH and HSR by region and overall in the Czech Republic?

2. Methodology

Quantitative research covers retirement homes (RH) and homes with a special regime (HSR). These services have a different purpose and target group and are defined in the Social Services Act (2206).

According to this Act, in a retirement home (§49), *"residential services are provided to persons who have reduced self-sufficiency mainly because of their age, whose situation requires regular assistance from another natural person."* In a home with a special regime (§50) *"residential services shall be provided to persons who have reduced self-sufficiency due to chronic mental illness or substance abuse and to persons with age, Alzheimer's dementia and other types of dementia who have reduced self-sufficiency due to those illnesses whose situation requires regular assistance from another natural person. The regime in these facilities for the provision of social services is adapted to the specific needs of these persons."*

According to our findings, based on data from individual regions (from their regional networks) in the Czech Republic, there are 417 RH and 310 HSR with a total capacity of 32,121 beds in RH and 20,351 beds in HSR. Information on the number of homes and their capacities/beds is available on the websites of regions and individual homes. Data verifying the capacity of the facilities and researching the prevalence of Alzheimer's patients were collected through phone calls, email interviews and face-to-face interviews. The data were collected through a questionnaire survey. The questionnaire consisted of five questions and took about 5 minutes. The data was collected from August 2019 to January 2020.

For a representative result, it was necessary to reach at least 5 RH and 5 HSR questionnaires from each region and cover at least 10% of homes. These results were achieved, and the research is applicable to the whole of the Czech Republic. The research includes 81 RH (99 addressed) out of 417 total (Table 1) and 83 HSR (94 addressed) out of 310 (Table 2). This means, that 19% of the retirement homes and 27% of homes with special regime were involved in the research.

Table 1. Coverage of research in Retirement Homes (RH) by region.

Region	Total homes by region	Homes addressed	Homes involved in the research	Research coverage
South Bohemia	27	7	6	22%
South Moravia	40	5	5	13%
Karlovy Vary	12	7	6	50%
Hradec Králové	34	8	6	18%
Liberec	13	7	5	38%
Moravian-Silesian	37	6	5	14%
Olomouc	25	7	5	20%
Pardubice	19	6	5	26%
Plzeň	23	5	5	22%
Prague	34	13	8	24%
Central Bohemian	61	5	5	8%
Ústí nad Labem	32	5	5	16%
Vysočina	30	12	10	33%
Zlín	30	6	5	17%
TOTAL	417	99	81	19%

Table 2. Coverage of research in Homes with a Special Regime (HSR) by region.

Region	Total homes by region	Homes addressed	Homes involved in the research	Research coverage
South Bohemia	21	6	5	24%
South Moravia	42	5	5	12%
Karlovy Vary	11	5	5	45%
Hradec Králové	12	9	7	58%
Liberec	13	7	6	46%
Moravian-Silesian	39	5	5	13%
Olomouc	13	8	6	46%
Pardubice	12	5	5	42%
Plzeň	15	5	5	33%
Prague	19	8	5	26%
Central Bohemian	42	5	5	12%
Ústí nad Labem	33	6	6	18%
Vysočina	18	14	13	72%
Zlín	20	6	5	25%
TOTAL	310	94	83	27%

Tables 3 and 4 show the total capacities for each type of facility and region, compared to the capacities from which the data are obtained. In terms of capacities, 19% of all RH and 24% of HSR are covered throughout the country.

Table 3. Beds in Retirement Homes (RH) and research coverage by region.

Region	Total capacity by region	Capacities of homes involved in research	Research coverage
South Bohemia	2,281	472	21%
South Moravia	2,202	236	11%
Karlovy Vary	696	370	53%
Hradec Králové	2,386	358	15%
Liberec	1,170	397	34%
Moravian-Silesian	3,318	326	10%
Olomouc	2,403	505	21%
Pardubice	1,679	484	29%
Plzeň	1,660	315	19%
Prague	3,074	633	21%
Central Bohemian	4,610	368	8%
Ústí nad Labem	2,730	346	13%
Vysočina	1,951	829	42%
Zlín	1,961	401	20%
TOTAL	32,121	6,040	19%

Table 4. Coverage of research in Homes with a Special Regime (HSR) by region.

	Total capacity by region	Capacities of homes involved in research	Research coverage
South Bohemian	1,349	191	14%
South Moravian	3,098	413	13%
Karlovy Vary	716	280	39%
Hradec Králové	574	367	64%
Liberec	911	341	37%
Moravian-Silesian	2,734	297	11%
Olomouc	725	220	30%
Pardubice	794	622	78%
Plzeň	1,020	258	25%
Prague	1,289	398	31%
Central Bohemian	2,705	307	11%
Ústí nad Labem	1,907	537	28%
Vysočina	847	530	63%
Zlín	1,682	167	10%
TOTAL	20,351	4928	24%

3. Results

The research focuses on prevalence of Alzheimer's Disease in Retirement Homes (RH) and Homes with a Special Regime (HSR) and it covers all regions of the Czech Republic. The research suggests that prevalence rates differ significantly in RH and HSR. It is on average 78% in HSR and 16% in RH (Table 5). The variability of the results of individual regions is relatively high. The lowest proportion of Alzheimer's Disease in RH is in the Moravian-Silesian Region (4%) and the highest in the Central Bohemian Region (30%). The lowest proportion of AD in HSR is found in the Pardubice Region (58%) and the highest in Prague (97%).

Table 5. Average estimate of the prevalence of Alzheimer's disease.

Region	Capacities of homes involved in research		Prevalence of Alzheimer's disease in %	
	Retirement Homes	Homes with a Special Regime	Retirement Homes	Homes with a Special Regime
South Bohemia	472	191	23%	88%
South Moravian	236	413	6%	73%
Karlovy Vary	370	280	15%	77%
Hradec Králové	358	367	17%	90%
Liberec	397	341	17%	63%
Moravian-Silesian	326	297	4%	60%
Olomouc	505	220	9%	89%
Pardubice	484	622	8%	58%
Plzeň	315	258	10%	82%
Prague	633	398	19%	97%
Central Bohemian	368	307	30%	85%
Ústí nad Labem	346	537	28%	62%
Vysočina	829	530	20%	80%
Zlín	401	167	9%	77%
Total sum	6,040	4,928	16%	78%

3.1. Limitations

A factor that may misrepresent the data obtained could be the unwillingness to communicate the real disease rate data at Retirement Homes, where patients with Alzheimer's disease should not be placed at all by law. However, after face-to-face interviews with home managers, we believe that this factor will have little effect on the end results.

Another limitation of our methodology is the fact that the words "dementia" and "Alzheimer's disease" are often considered synonymous, and therefore it is difficult to strictly separate Alzheimer's disease from dementia. It is therefore possible that even when we specifically asked about the occurrence of Alzheimer's disease, the interviewee did not necessarily know exactly how many people in their facility had dementia and how many had Alzheimer's disease.

4. Discussion

The observed prevalence rate of AD by our methodology is lower than expected in both RH and HSR. Compared to the study by Hana Vaňková (2013), which declares about 70% prevalence rate in Retirement Homes and 90% prevalence rate in Homes with a Special Regime, our results surprisingly point to 16% prevalence rate in RH and 78% in HSR. Compared to the mentioned study, the sample used here is more than ten times larger. The study by Hana Vaňková includes 626 persons from HSR

and 351 from RH, whereas this study included a sample of 6,040 beds from RH and 4,928 beds from HSR.

Table 6. Comparing the prevalence of Alzheimer's disease in DS and DZR, according to Vaňková's 2014 study and the results of our study.

	Retirement homes	Nursing homes
Vaňková (2013)	70%	90%
Research according to our study	16%	78%

5. Conclusions

Research on the prevalence of AD showed a 78% prevalence rate in Homes with a Special Regime and a 16% prevalence in Retirement homes. For the Czech Republic, this may represent 5,139 clients in RH and 15,784 in HSR (Table 7), which in total makes up 20,921 people with Alzheimer's who are staying in social homes.

Table 7. Estimated number of clients with AD at social homes in the Czech Republic.

	Retirement Homes	Homes with a Special Regime
Total capacities in the Czech Republic	32,121	20,351
Prevalence of Alzheimer's disease	16%	78%
Estimated number of clients with AD	5,139	15,874

According to studies presented by the Czech Alzheimer Society (Mátl et al. 2016), an estimated 183,000 people will suffer from dementia/Alzheimer's disease in 2020. According to the results of our study, approximately 21,000 patients are in Retirement homes and Homes with a Special Regime. When these two figures are subtracted, we get 162,000 patients in the Czech Republic who are suffering from dementia/Alzheimer's today, but who are not placed in any type of Social home.

Where are the remaining 162,000 patients suffering from dementia/Alzheimer's disease? These people are still at home, which puts a lot of pressure on families who have an AD relative in their circle and take care of them at home. Furthermore, where will be these patients placed when their condition inevitably worsens?

RH and HSR capacities are almost 100% filled and waiting lists are long. 61,000 applicants are waiting for placement in Retirement homes and 22,000 are waiting for placement in Homes with a Special Regime (Novák 2018). These figures indicate an insufficient bed capacity of these Social homes. Despite the possibility of duplicate records, when one person is simultaneously on the waiting list for multiple social homes, these numbers are alarming.

Acknowledgements: This conference paper was carried out under the auspices of the project TAČR, TL01000300.

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