

Absenteeism due to Dementia and its Growing Economic Consequences in Slovenia in the Period 2015-2019

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ABSTRACT

Dementia has been the subject of numerous medical and anthropological studies for more than two decades. This serious neurodegenerative disease that mainly affects the elderly can occur also in people who are still employed which is associated with the impairment of their ability to work and consequently with costs. The aim of our study was to display the economic consequences due to health absenteeism related to dementia in Slovenia in the period from 2015 to 2019. The methodology of direct and indirect costs was used. We limited ourselves to show the indirect cost-health absenteeism due to dementia, which includes loss of goods, services, early retirement, and premature death. The Database on temporary absence from work was used as data source and International Classification of Diseases as the source of the diagnoses. The cost of absenteeism due to dementia amounted to 11% of all calculated indirect costs in the period 2015–2019. All indirect costs amounted to 0.025% of health expenditures. These costs are greatly underestimated due to various data limitations which we faced and due to many cases of undetected disease. The findings are in line with those from some other countries. The rapid diagnosis and treatment of dementia, changes in lifestyle, as well as the encouragement of employers of affected persons to keep them as long as possible active proved to be absolutely necessary in the light of maintenance of quality of life of patients and the reduction of costs.

Key words: *absenteeism, dementia, costs, Slovenia*

Introduction

In recent decades, the number of people living with one or more chronic diseases has increased dramatically, affecting all sectors of society, particularly the labour market. Such an increase of people with chronic diseases combined with the aging of working population affects income levels and job opportunities, careers, social inclusion and working conditions¹. An international study conducted by the Harvard School of Public Health ten years ago estimated that in the USA, in the following 19 years, there would be a \$47-trillion loss of output due to chronic diseases, mental diseases and their impacts on healthcare and social security services, absenteeism and reduced productivity, persistent disability and reduction of income for the families involved². Dementia is a relatively common neurodegenerative disorder, which mainly affects the elderly. It is defined as a progressive syndrome with the impairment of two or

more higher cortical functions, which disables patients to normally perform their daily activities³.

Despite medicine, anthropology has a special contribution to make to the research on dementia. The 'anthropological' awareness of dementia as a social and cultural phenomenon adds an important dimension to scientific efforts to understand it in terms of its neuropathology. Most societies, Western and non-Western, appear able to accommodate mild dementia as part of the ageing process but, in one form or another, to exclude those whose dementia is marked. What varies between cultures are the definitions of mild and marked dementia and the thresholds separating them. These definitions and thresholds do not necessarily correspond to clinical diagnoses. The transition from 'normal' to 'abnormal' depends on many factors: economic, social, emotional, psychological and cultural⁴.

However, dementia does not occur only in the elderly. Early-onset dementia is a neurologic syndrome that affects behavior and cognition of patients younger than 65 years of age^{5,6}. There is quite a bit of terminological confusion in this area. In the past the term “presenile dementia” was used widely in the published literature. This term is no longer favoured and the terms “young-onset dementia”, “younger-onset dementia”, and “younger people with dementia” are now commonly used⁷. In the international scientific literature the term »early-onset dementia« is frequently used as well. Although frequently misdiagnosed, a systematic approach, reliant upon attainment of a detailed medical history, a collateral history, neuropsychological testing, laboratory studies, and neuroimaging, may facilitate earlier and more accurate diagnosis of dementia with subsequent intervention. The differential diagnosis of young-onset dementia is extensive and includes early-onset forms of adult neurodegenerative conditions including Alzheimer's disease, vascular dementia, frontotemporal dementia, Lewy body dementias, Huntington's disease, and prion disease. Late-onset forms of childhood neurodegenerative conditions may also present as young-onset dementia and include mitochondrial disorders, lysosomal storage disorders, and leukodystrophies. Potentially reversible etiologies including inflammatory disorders, infectious diseases, toxic/metabolic abnormalities, transient epileptic amnesia, obstructive sleep apnea, and normal pressure hydrocephalus also represent important differential diagnostic considerations in early-onset dementia⁵. In addition to this, dementia can be preceded by mild cognitive impairment, whose prevalence is 3–22% in people aged 65 or older and can also be diagnosed before aged 65 in a portion of the population where-in it progresses into dementia in 5–10% of cases per year⁸.

Thus, there is a portion of working people that may experience difficulties with work-related activities, or have a reduced work ability, due to young-onset dementia or mild cognitive impairment; worldwide, it is in fact estimated that 10% of the 35.6 million people living with dementia are aged under 65⁶. Some workers with young-onset dementia or mild cognitive impairment continue to work, thanks to the adjustments to their activities made by companies, whereas others have to quit because of impaired performance. Symptoms of cognitive decline are in fact frequently first noticed by caregivers or relevant others—employed people, co-workers, clients, and employers may notice the presence of cognitive difficulties because they interfere with an individual's ability to work, expressed as being easily distracted by background noise, poor memory, and inability to perform multi-tasking activities^{9–11}.

In Slovenia, a European Member State with approximately 2 million inhabitants, health absenteeism is a serious social, health and economic problem. In 2010, it was estimated that on average between 38,000 and 40,000 employees in the public and private sectors were absent from work every day due to health reasons, including chronic and mental diseases. Six percent of gross domestic product (GDP) per year were lost due to the consequences

of health absenteeism. This meant about 10 to 11 million lost working days per year¹².

Taking into consideration the trends towards increasing working age coupled with increase in the prevalence of neurological conditions associated with dementia and cognitive decline, also due to early diagnostic ability, it is reasonable to expect a rise in the presence of people with early-onset dementia or mild cognitive impairment in the labor force^{13–17}. Patients with early-onset dementia have an increased likelihood to leave their job due to the impact of symptoms on the ability to work, as well as due to the workplace's inability to adapt to the person's needs. Such a phenomenon has implications both for employees and employers, as well as for those working independently⁶. Investing in healthcare and welfare policies for the working age population will therefore increasingly become an imperative to guarantee the sustainability of social security systems¹⁸. The rate of labour market participation of people over 55 years old in Europe is estimated to rise by 14.8% in 2060¹⁹. Based on this evidence, the labour market participation of people with chronic diseases is becoming an essential issue to deal with, considering the reduction in labour supply, the shortage of skilled workforce and the pressure on the pension systems caused by the considerable ageing of the labour force¹.

The aim of the present study was to assess health absenteeism due to the diagnosis of dementia in Slovenia in the period from 2015 to 2019 and to show the economic consequences due to this indirect cost, which is mainly reflected in the labour environment.

Methods

Research on the cost of the disease shows the economic burden of the analysed disease. With the help of such research, it is possible to assess the economic impact of a disease, in our case dementia, on the health system or society as a whole²⁰. Calculating the cost of dementia includes direct costs, like healthcare costs and paid personal care costs, and indirect costs, such as costs of the informal care provided by family members, reduced productivity for caregivers, and a diminished quality of life. In the present analysis the mentioned methodology of direct and indirect costs was used. We limited ourselves to show the indirect cost, namely, absenteeism due to dementia, and showed the economic impact, especially on the labour environment. Indirect costs represent a loss, ie goods and services that are not produced on the market, as a result of disability due to the illness, early retirement or even premature death. Pain, suffering, economic dependence and social isolation of the individual, which are difficult to evaluate and can only be obtained through surveys, are also part of the indirect costs²⁰. The estimated cost of absenteeism due to dementia was calculated for the time-frame of one year, for the period 2015–2019.

The choice of methodology is strongly linked to the availability of data. As the data source on the number of

days and the number of cases of absenteeism due to dementia, we used the Database on temporary absence from work, named the IVZ3 Database, available at the Slovenian National Institute of Public Health (NIJZ). In the IVZ3 Database, data regarding the absenteeism are collected directly from health care providers, ie personal physicians who refer their patients to the sick leave due to illness or care. All records are based on an individual level and allow the identification of people with dementia through diagnoses. The used data were anonymized and therefore the consent of the Commission for Medical Ethics of the Republic of Slovenia was not required. The analysis also included subjects who benefited from sick leave because of care for another person diagnosed with dementia, in the period 2015–2019. The estimated costs of salary compensation due to absenteeism were based on the average gross salary in Slovenia²¹. The Health Insurance Institute of Slovenia was the source of financial data.

The cost of absenteeism due to dementia was calculated according to the diagnoses related to dementia from the International Classification of Diseases – ICD 10^{22, 23}. The set of diagnoses taken into account in the analysis of the cost of absenteeism due to dementia is shown in Table 1.

Results

The calculated cost of absenteeism due to dementia amounted to 101.958 EUR in the period 2015–2019, which means 11% of all calculated indirect costs for the study period. All indirect costs in the studied period amounted to 914.525 EUR or 0.025% of all health expenditures. It should be noted that the assessment is greatly underestimated, due to different errors and approximation factors in the calculation system. Errors are mainly related to the coding of diseases according to the ICD-10 and the error rate has not yet been estimated. A certain degree of stigmatization in the field of dementia is reflected in the data as well. Figure 1 shows the estimated cost of absenteeism due to dementia by years and in the period 2015–2019, according to the total estimated burden of dementia by years and for the study period in Slovenia.

The cost of absenteeism due to dementia is increasing over the years in the study period 2015–2019 in Slovenia which is shown in Figure 2. Significant increases were observed in 2017 and in 2018, however, the biggest increase was observed in 2019.

Discussion and Conclusion

While the cost related to dementia in the elderly has been widely studied, the cost related to early-onset dementia, present in individuals who are economically productive and socially active, is largely unknown²⁴. Therefore, the aim of the present research was to assess health absenteeism due to the diagnosis of dementia in Slovenia in the period from 2015 to 2019 and to emphasize absenteeism due to dementia, when the person is still employed, as

TABLE 1
THE SET OF DIAGNOSES TAKEN INTO ACCOUNT IN THE CALCULATION OF THE COST OF ABSENTEEISM DUE TO DEMENTIA

| MAIN DIAGNOSES (basic reasons) | ICD-10 |
|--------------------------------|---|
| F00 | Dementia in Alzheimer's disease |
| F00.0 | Dementia in Alzheimer's disease with early onset |
| F00.1 | Dementia in Alzheimer's disease with late onset |
| F00.2 | Dementia in Alzheimer's disease, atypical or mixed type |
| F00.9 | Dementia in Alzheimer's disease, unspecified |
| F01 | Vascular dementia |
| F01.0 | Vascular dementia of acute onset |
| F01.1 | Multi-infarct dementia |
| F01.2 | Subcortical vascular dementia |
| F01.3 | Mixed cortical and subcortical vascular dementia |
| F01.8 | Other vascular dementia |
| F01.9 | Vascular dementia, unspecified |
| F02 | Dementia in other diseases classified elsewhere |
| F02.0 | Dementia in Pick's disease |
| F02.1 | Dementia in Creutzfeldt-Jakob disease |
| F02.2 | Dementia in Huntington's disease |
| F02.3 | Dementia in Parkinson's disease |
| F02.4 | Dementia in human immunodeficiency virus [HIV] disease |
| F02.8 | Dementia in other specified diseases classified elsewhere |
| F03 | Unspecified dementia |
| | Other degenerative diseases of the nervous system |
| G30 | Alzheimer's disease |
| G30.0 | Alzheimer's disease with early onset |
| G30.1 | Alzheimer's disease with late onset |
| G30.8 | Other Alzheimer's disease |
| G30.9 | Alzheimer's disease, unspecified |

Source: ICD 10, 2005

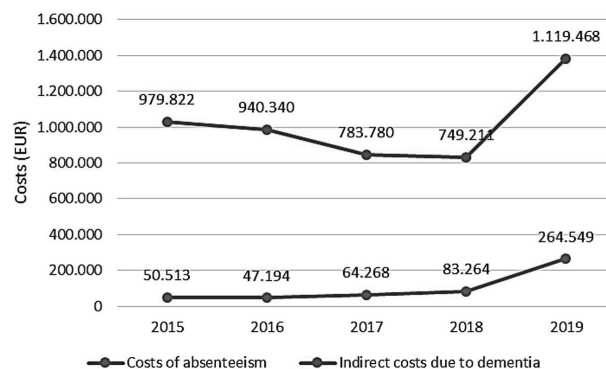


Fig. 1. Estimated cost of absenteeism due to dementia by years and in the period 2015–2019, according to the total indirect estimated burden of dementia by years and for the studied period in Slovenia.

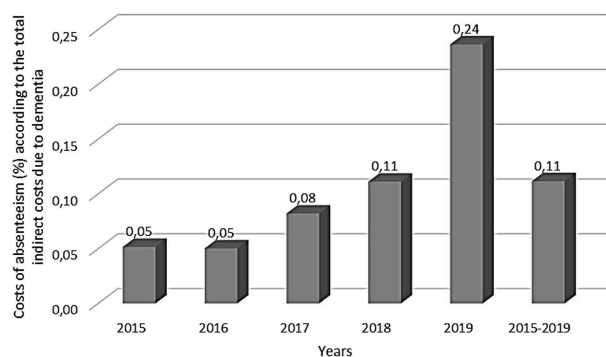


Fig. 2. The increase of the cost of absenteeism due to dementia in the period 2015-2019 in Slovenia.

well as to show the consequences of this indirect cost, especially in the labour environment. The calculated cost of absenteeism due to dementia was high in the period 2015–2019, but still greatly underestimated, both due to various data limitations and due to undetected disease.

Kandiah studied the economic burden of community dwelling early-onset dementia in relation to late onset dementia and cost of early-onset dementia based on etiology²⁴. The study confirmed that patients with early-onset dementia have a high economic burden. Furthermore, patients with frontotemporal dementia have the highest cost followed by vascular dementia and Alzheimer's disease. In his prospective cross-sectional study of 255 patients attending a tertiary neurology center, data on economic burden, clinical features, and caregiver burden were collected using structured financial questionnaire, standard cognitive and neuropsychiatric measures, and Zarit caregiver burden scale. Cost components were grouped into those relating to direct medical costs, direct non-medical costs, and those related to indirect costs. The mean age at symptom onset in the early-onset dementia cohort was 57.0 (standard deviation 5.1). The median annual cost for patients with early-onset dementia was almost twice that of late onset dementia (USD 15,815 versus USD 8,396)²⁴.

In United Kingdom, there were over 40,000 people with dementia under the age of 65 in 2014. Eighteen per cent of people diagnosed with dementia under the age of 65 continued to work after the diagnosis of dementia. The Centre for Economics and Business estimated that the average person diagnosed with dementia while still at work, will continue with their job for at least nine years. The early retirement of those diagnosed with dementia cost English businesses £627 million a year²⁵. However, with a timely diagnosis, and the right support, many people with dementia are able to continue working and choose to do so. In addition, some, especially those with early-on-

set dementia, have financial commitments, such as mortgages or family dependants, and need to stay in paid employment for as long as they are able²⁵.

As mentioned, the cost of absenteeism in Slovenia in the period 2015–2019 that we calculated is greatly underestimated due to the underdetection of the disease and due to data limitations. However, in the scientific literature it is possible to observe that some other authors described their calculations as underestimated as well. Authors from United States (US) synthesized findings from studies of costs of Alzheimer's Disease and related dementias in the US that were published between January 2006 and February 2017 to highlight major sources of variation in costs, identify knowledge gaps and briefly outline directions for future research and implications for policy and program planning. They explained that the economic burden of Alzheimer's Disease and related dementias was maybe underestimated because many components such as direct non-medical costs for home safety modifications and adult day care services and indirect costs due to the adverse impact of Alzheimer's Disease and related dementias on caregivers' health and productivity were not included in cost estimates²⁶. However, they did not focus on early-onset dementia.

Dementia is a progressive condition and over time it increasingly impairs a person's ability to work. As this happens, affected subjects may need support to help them remain at work²⁵. The actions of employers in maintaining the health of employees with dementia is crucial²⁷. They can adjust the labour environment by taking care of the employee's recreation, providing an ergonomically designed workplace, implementing preventive measures in the field of health or adjusting the working hours of people with dementia, especially when the affected employee is in the early stage of dementia. Last but not least, work in later life has positive financial effects on the economy, companies and the individual to whom it brings additional benefits²⁸.

The costs of health absenteeism related to dementia in Slovenia in the period from 2015 to 2019 were growing. They are greatly underestimated due to various data limitations and many cases of undetected disease. Awareness of dementia is extremely important, as rapid recognition of signs of dementia and subsequent diagnosis, allow early and appropriate treatment and changes in lifestyle, which significantly contribute to a better quality of life of the patient, relatives or guardians. It is also necessary to encourage both employers and relatives of patients with dementia to keep them in the initial phase of dementia active for as long as possible in both, the labour and home environment. This will reflect in the higher quality of life of affected persons as well as in the economical benefits.

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APSENTIZAM ZBOG DEMENCIJE I NJEGOVE SVE VEĆE EKONOMSKE POSLJEDICE U SLOVENIJI U RAZDOBLJU 2015.-2019.

SAŽETAK

Demencija je više od dva desetljeća predmet brojnih medicinskih i antropoloških istraživanja. Ova ozbiljna neurodegenerativna bolest koja uglavnom pogađa starije osobe može se pojaviti i kod osoba koje su još uvijek zaposlene, što je povezano s oštećenjem njihove radne sposobnosti, a time i troškovima. Cilj našeg istraživanja bio je prikazati ekonomske posljedice zdravstvenih izostanaka vezanih uz demenciju u Sloveniji u razdoblju od 2015. do 2019. godine. Korištena je metodologija izravnih i neizravnih troškova. Ograničili smo se na prikaz neizravnih troškova, zdravstvenih izostanaka s posla zbog demencije koja uključuje gubitak dobara, usluga, prijevremeno umirovljenje i preranu smrt. Kao izvor podataka korištena je Baza podataka o privremenoj odsutnosti s posla, a kao izvor dijagnoza Međunarodna klasifikacija bolesti. Trošak izostanaka zbog demencije iznosio je 11% svih obračunatih neizravnih troškova u razdoblju 2015.-2019. Svi neizravni troškovi iznosili su 0,025% zdravstvenih izdataka. Ovi troškovi su uvelike podcijenjeni zbog raznih ograničenja podataka s kojima smo se susreli i zbog mnogih slučajeva neotkrivenih bolesti. Nalazi su u skladu s onima iz nekih drugih zemalja. Brza dijagnoza i liječenje demencije, promjena načina života, kao i poticanje poslodavaca oboljelih osoba da ih što duže zadrže aktivnima, pokazali su se prijeko potrebnim u svjetlu održavanja kvalitete života pacijenata i smanjenja troškova.

