

Original article

## Role of Life Habits as a Construct in Dementia Prevention

Ivana Stanić <sup>1\*</sup>; Silvija Hinek <sup>2</sup>; Josip Ivanda <sup>2</sup>

<sup>1</sup> University North, Republic of Croatia; Osijek-Baranja County

<sup>2</sup> Nursing home Đakovo, Republic of Croatia

# co-editor of the manuscript: s. lecturer Mirna Sabljar, PhD; the Academy of Arts and Culture in Osijek, University of Osijek, Croatia

\*Corresponding author: Ivana Stanić, ivana.stanic@obz.hr

### Abstract

**Introduction:** For over three decades, Europe has been viewed as a continent of the elderly. However, despite the fact that the Republic of Croatia is a part of Europe, it is only nowadays that we have come to face this problem in the form of a large – and rapidly growing – elderly population. Since age is the main risk factor for the onset of dementia, a further increase in the number of patients is expected. Consequently, the need for new insights in the field of constructs that contribute to the prevention of dementia is implied in the context of reducing the number of patients. This research aimed at gaining insight into life habits of individuals using homes for the elderly and infirm, which habits have been shown by previous research as contributory to dementia prevention or mitigation.

**Materials and Methods:** This research was conducted using an appropriate sample of 443 users of decentralized homes for the elderly and infirm in Osijek-Baranja County.

**Results:** The obtained research data was divided into four categories: physical activity, cognitive activity, consumption of tobacco products, and alcohol and diet. The results showed that physical and cognitive activities are the least represented in everyday lives of users of homes for the elderly and infirm.

**Conclusion:** Based on research results, the importance and role of physical activity and maintenance of cognitive skill will be emphasised with an aim of achieving better quality aging, especially in terms of dementia prevention in the elderly.

(Stanić I; Hinek S; Ivanda J. Role of Life Habits as a Construct in Dementia Prevention. SEEMEDJ 2021; 5(1); 135-144)

Received: Sep 17, 2020; revised version accepted: Feb 10, 2021; published: Apr 28, 2021

KEYWORDS: aging, dementia, healthy lifestyle

## Introduction

Dementia describes a group of complex disorders that change and interfere with normal brain activities and result in disorders of various cognitive functions. One of the most common degenerative nervous system diseases from the dementia group is Alzheimer's disease. The disease is characterized by a progressive course, and in individuals older than 65 it is the most frequent cause of dementia (2). Care for the elderly suffering from dementia, given the specific behavioural and psychological symptoms and physical illnesses, requires specific medical interventions and imposes a heavy burden of care. Because of that, it is important to choose appropriate medical institutions that are able to cope with various care needs of individuals suffering from dementia (3). The incidence of Alzheimer's dementia is increasingly gaining the scale of a global health crisis and represents a substantial economic burden on society as a whole (4). Since there are no specialized institutions for taking care of individuals suffering from various forms of dementia in the Republic of Croatia, it is necessary to focus on dementia prevention in order to reduce the number of individuals affected. A significant number of attempts in terms of therapeutic treatment have not been satisfactory, possibly because the treatment starts too late and at advanced stages of the disease, with highly developed pathology. Research is focused on treatment, while prevention is neglected (5). Therefore, an alternative strategy in the fight against dementia can be the prevention of various changeable factors, which also includes adequate control of comorbidities and lifestyle changes with avoidance of harmful habits (6).

Comprehensive clinical and epidemiological evidence points towards a close connection between dementia and heart disease, and due to their increased incidence and coexistence, they demand more attention because they represent a threat to public health (7). Alzheimer's disease is linked to smoking tobacco products since the risk of dementia is increased in the population of active smokers (8).

Type 2 diabetes, repeated head traumas, obesity, high blood pressure and social interactions are also changeable risk factors for dementia development. With early detection and measures for prevention of the aforementioned factors, it could potentially be possible to effectively prevent the development of Alzheimer's disease (2). Adequate diet in combination with physical activity also represents a therapeutic potential in terms of prevention and delaying the onset of symptoms (4). Research has confirmed that there are protective factors that contribute to dementia prevention or reduce its severity, for example, a higher level of education, intellectual activity, diet rich in unsaturated fatty acids, physical activity and moderate alcohol consumption (9).

The theoretical and practical findings referred to above are the source from which the purpose of this research emerged. This research aims at getting an insight into life habits of users of homes for the elderly and infirm for which previous research has shown to contribute to dementia prevention or mitigation. Three hypotheses have been set: a) The elderly do not recognize the importance of physical activity as one of the factors contributing to dementia prevention or mitigation; b) The elderly do not recognize the importance of maintaining cognitive activities as one of the factors contributing to dementia prevention or mitigation and c) The elderly do not recognize the importance of avoiding alcohol and tobacco products consumption as factors contributing to dementia prevention or mitigation.

## Materials and Methods

The primary purpose and aim of this research is to determine which physical activities, cognitive activities and substances directly affect the life of the elderly, but at the same time contribute to development of dementia. For achieving the aforementioned goal, it was necessary to collect data and carry out the primary research process. The data was collected via an anonymous questionnaire designed by the authors. This research was conducted on an appropriate sample of 443 users of decentralized homes for

the elderly and infirm in Osijek-Baranja County. The questionnaire created by the authors for the purposes of this research was used by interviewing users in person, by interviewers.

#### *Statistical analysis*

Analyses of the collected data were performed using the statistical program IBM SPSS Statistics

23 for social sciences. In order to examine the correlation between the variables included in this study, Pearson correlation coefficients were calculated. The respective correlation coefficients, together with their significance, are shown in the results.

**Table 1. Socio-demographic characteristics of research participants**

	N (%)
<b>Participants' gender</b>	
Female	317 (71.6%)
Male	126 (28.4%)
<b>Participants' age</b>	
Under 50	3 (0.7%)
51-60	8 (1.8%)
61-70	29 (6.5%)
71-80	169 (38.2%)
81-90	207 (46.8%)
91-100	27 (6%)
<b>Qualifications</b>	
No elementary education	86 (19.4%)
Elementary education	151 (34.1%)
Secondary education	151 (34.1%)
Specialist training	40 (9%)
Higher education	14 (3.2%)
Doctorate	1 (0.2%)
<b>Time spent in a home or homes for the elderly and infirm</b>	
Less than 1 year	52 (11.7%)
1-5 years	211 (47.6%)
6-10 years	120 (27.1%)
Over 10 years	60 (13.5%)

Source: authors

## Results

### *Socio-demographic data*

This research included 443 participants who are users of homes for the elderly and infirm in Osijek-Baranja County. In terms of gender, 317 (71.6%) were women and 126 (28.4%) were men. Regarding age, 3 participants (0.7%) were under 50 years of age, 8 (1.8%) were between 51 and 60 years, 29 (6.5%) were between 61 and 70 years, 169 (38.2%) were between 71 and 80 years, 207 (46.8%) were between 81 and 90 and 27 (6%) were between 91 and 100 years of age. Regarding qualifications, 86 (19.4%) of the participants have not finished elementary school, 151 (34.1%) have completed their elementary education and the same number (151, i.e., 34.1%) have completed their secondary education, 40 (9%) have finished specialist training, 14 (3.2%) have higher education degrees and only one participant (0.2%) has a doctorate. Since all participants were users of homes for the elderly and infirm, they differed by time spent in homes; 52 (11.7%) participants had lived in a home less than one year, 211 (47.6%)

participants had lived in a home between 1 and 5 years, 120 (27.1%) participants had lived in a home between 6 and 10 years, and 60 (13.5%) had lived in a home for over 10 years (Table 1).

### *Physical activity*

Table 2 presents data regarding physical activity of participants. When asked: "How often do you exercise?", as many as 168 participants (37.9 %) answered "never", 160 participants (36.1%) answered "occasionally", 76 participants (17.2%) answered "regularly", and only 39 participants (8.8%) answered "often". When asked: "How often do you take walks in nature?", 74 participants (16.7%) answered "never", 168 participants (37.9%) reported that they do it "occasionally", 117 participants (26.4%) answered "regularly", and 84 participants (19%) answered that they often take walks in nature. Furthermore, as many as 148 (33.4%) of participants never use stairs instead of an elevator, 112 participants (25.3%) occasionally use stairs, 83 participants (18.7%) use stairs regularly, and 100 participants (22.6%) frequently use stairs instead of an elevator...

**Table 2. Descriptive data for physical activity parameters**

	N (%)
<b><i>How often do you exercise?</i></b>	
Never	168 (37.9%)
Occasionally	160 (36.1%)
Regularly	76 (17.2%)
Often	39 (8.8%)
<b><i>How often do you take walks in nature?</i></b>	
Never	74 (16.7%)
Occasionally	168 (37.9%)
Regularly	117 (26.4%)
Often	84 (19%)
<b><i>How often do you use stairs instead of an elevator?</i></b>	
Never	148 (33.4%)
Occasionally	112 (25.3%)
Regularly	83 (18.7%)
Often	100 (22.6%)

Source: authors

### Cognitive activity

Table 3 presents data regarding cognitive activity of participants. Namely, when asked: "How often do you solve crosswords, do puzzles or play memory games?", as many as 258 participants (58.2%) answered "never", 60 participants (13.5%) answered "occasionally", 62 participants (14%) answered "regularly", and 63 participants (14.2%) answered "often". Furthermore, when asked: "How often do you

play chess?", 318 participants (71.8%) answered "never", 48 participants (10.8%) answered "occasionally", 34 participants (7.7%) answered "regularly" and 43 (9.7%) answered "often". When asked: "How often do your read books, magazines, newspapers?", 156 participants (35.2%) answered "never", 117 participants (26.4%) answered "occasionally", 82 participants (18.5%) answered "regularly", and 88 (19.9%) answered that they often read books, magazines and newspapers.

**Table 3. Descriptive data for cognitive activity parameters**

	N (%)
<b><i>How often do you solve crosswords, do puzzles or play memory games?</i></b>	
Never	258 (58.2%)
Occasionally	60 (13.5%)
Regularly	62 (14%)
Often	63 (14.2%)
<b><i>How often do you play chess?</i></b>	
Never	318 (71.8%)
Occasionally	48 (10.8%)
Regularly	34 (7.7%)
Often	43 (9.7%)
<b><i>How often do your read books, magazines, newspapers?</i></b>	
Never	156 (35.2%)
Occasionally	117 (26.4%)
Regularly	82 (18.5%)
Often	88 (19.9%)

Source: authors

### Consumption of alcohol and tobacco products

Table 4 presents data that show that 312 participants (70.4%) never consume tobacco products, 30 participants (6.8%) consume them occasionally, 44 participants (9.9%) consume

them regularly, and 57 participants (12.9%) consume them often. Furthermore, from Table 4 we see that 295 participants (66.6%) never consume alcohol, 76 participants (17.2%) consume it occasionally, 26 participants (5.9%) consume it regularly, and 46 participants (10.4%) consume it often.

**Table 4. Descriptive data for consumption of tobacco products and alcohol parameters**

	N (%)
<b><i>How often do you consume tobacco products?</i></b>	
Never	312 (70.4%)
Occasionally	30 (6.8%)
Regularly	44 (9.9%)
Often	57 (12.9%)
<b><i>How often do you consume alcohol?</i></b>	
Never	295 (66.6%)
Occasionally	76 (17.2%)
Regularly	26 (5.9%)
Often	46 (10.4%)

Source: authors

**Diet**

Table 5 shows data regarding the participants' diet. Salads, fresh fruit and vegetables are never consumed by 13 participants (2.9%), 90 participants (20.3%) eat them occasionally, 260 participants (58.7%) eat them regularly, and 78 participants (17.6%) often eat salads and fresh fruit and vegetables. Two participants did not provide an answer to this question. Regarding fish, olive oil, nuts and eggs, 43 participants

(9.7%) never consume them, 161 participants (36.3%) consume them occasionally, 192 participants (43.3%) consume them regularly, and 47 participants (10.6%) consume them often. When asked: "How often do you consume bakery products, sweets and salty foods?", 54 participants (12.2%) answered "never", 172 participants (38.8%) answered "occasionally", 145 participants (32.7%) answered "regularly", and 72 participants (16.3%) answered they consume these products often..

**Table 5. Descriptive data for dietary parameters**

	N (%)
<b><i>How often do you consume tobacco products?</i></b>	
Never	312 (70.4%)
Occasionally	30 (6.8%)
Regularly	44 (9.9%)
Often	57 (12.9%)
<b><i>How often do you consume fish, olive oil, nuts, eggs?</i></b>	
Never	43 (9.7%)
Occasionally	161 (36.3%)
Regularly	192 (43.3%)
Often	47 (10.6%)
<b><i>How often do you consume bakery products, sweets and salty foods?</i></b>	
Never	54 (12.2%)
Occasionally	172 (38.8%)
Regularly	145 (32.7%)
Often	72 (16.3%)

Source: authors

### Correlation between variables

Table 6 shows significant negative and insignificant correlations between the variables "How often do you walk in nature?" and "Time spent in a home or homes for the elderly and infirm" ( $r = -0.11$ ;  $p = 0.027$ ) and variables "How

often do you consume tobacco products?" and "Time spent in a home or homes for the elderly and infirm" ( $r = -0.10$ ;  $p = 0.029$ ). Other parameters of physical and cognitive activity did not prove to be significantly correlated to the length of stay in a home or homes for the elderly and infirm, nor did alcohol consumption and eating habits.

**Table 6. Review of correlations of variables**

	<i>Time spent at a home or homes for the elderly and infirm</i>
How often do you exercise?	-0.04
<b>How often do you take walks in</b>	<b>-0.11*</b>
How often do you solve crossword	-0.04
How often do you play chess?	-0.09
How often do you read books,	-0.06
<b>How often do you consume tobacco</b>	<b>-0.10*</b>
How often do you consume alcohol?	-0.08
How often do you eat salads, fresh	-0.01
How often do you consume fish, olive	-0.06
How often do you consume bakery	0.05
How often do you climb the stairs	-0.09
How often do you use medications?	0.06

Note: \* $p < 0.05$ ; \*\* $p < 0.01$  (significant correlations are written in bold)

Source: authors

## Discussion

The obtained research data was divided into four categories: physical activity, cognitive activity, consumption of tobacco products, and alcohol and diet. The results showed that physical and cognitive activities are the least represented in everyday lives of users of homes for the elderly and infirm, i.e., that the elderly do not recognize the significance of physical and cognitive activities as important factors that contribute to dementia prevention or mitigation, which confirms hypothesis a) and hypothesis b). Positive aspects are that the majority of participants do not consume tobacco products or alcohol, which rejects hypothesis 3, considering that the elderly do recognize the importance of avoiding the consumption of tobacco products and alcohol as important factors that contribute to dementia prevention or

mitigation. Furthermore, diet differs when it comes to individual items so the participants in most cases consume fresh fruit and vegetables, but they rarely consume fish, olive oil, nuts and eggs. Furthermore, in showing the correlations between the variables, the results showed that there is a significant, but only slightly significant, correlation between the variables related to the frequency of taking walks in nature and consuming tobacco products with the time spent in a home. Namely, the longer the time spent in a home or homes for the elderly and infirm, the less frequently the users take walks in nature and consume tobacco products.

Previous research has shown that non-pharmacological interventions could have a significant role in prevention, but also in the progression of dementia (10). Research was mostly focused on the treatment of dementia, while prevention was neglected (5), but lately,

due to the increasing number of affected individuals, dementia is becoming a public health problem and a larger number of researchers focus on detecting risk and protective factors in dementia prevention. According to Mimica, we cannot protect ourselves completely against dementia, but if simple recommendations are adopted, the risk of developing dementia can be reduced by one third (11).

In a research conducted by Farina et al. based on six observed studies, it was concluded that physical activity has a positive effect on increase in cognitive functions in the case of dementia (10). Du et al. conducted a research on 869 participants suffering from Alzheimer's disease. Their results also showed positive effects of physical activity on cognitive functions of patients (12). The fact that an active lifestyle is one of the predictors of dementia prevention or mitigation was also confirmed by a research conducted by Rolland et al. (13). They claimed that in the future, prevention of Alzheimer's disease could be based on precisely determined rules regarding management of life habits that include physical activity, cognitive activity and diet (13). Focusing on the principle that physical activity contributes to dementia prevention, Sondell et al. conducted a research in 16 homes for the elderly and infirm in order to observe how exercise programs for the users should be created. Their results showed that group, monitored and individual programs of functional training are the most effective for dementia prevention and that it is very important to motivate users of homes for the elderly and infirm to participate in such programs (14). Furthermore, Rege et al. conducted a study that examined 164 epidemiological, longitudinal, cross-sectional, intervention and randomized controlled studies. Results of this overview confirmed therapeutic potential of physical activity in combination with diet as an important protective factor in dementia prevention (4). According to Kornhuber, a healthy lifestyle with daily activities performed outdoors, Mediterranean diet and reduced consumption of alcohol significantly reduce the risk of dementia, in which context the results showed that

cognitively stimulating activities protect even more than physical activities (5). The fact that cognitive engagement, regular physical activity, Mediterranean diet and the consumption of omega-3 fatty acids are important protective factors in dementia prevention was confirmed by a study conducted by Barak and Aizenberg (15). Furthermore, most users come to institutional care when they become dependent on the help and care of others due to their health condition, which reduces their mobility, but research conducted by Močnik et al. (17) shows that even mobile users are not aware of the importance of physical activity and its effects on health in old age and that 71% of respondents do not participate in any physical activity in homes for the elderly and infirm (17). This is why the emphasis should be on motivating and informing users about healthy lifestyles and encouraging lifestyle changes. In addition, literature shows that smoking is significantly linked to an increased risk of Alzheimer's disease. Namely, smoking-related cerebral oxidative stress is a potential mechanism that promotes the pathophysiology of Alzheimer's disease and increases the risk of developing this disease (16). Finally, all conducted studies indicate that dementia prevention is possible. Namely, physical and cognitive activity, Mediterranean diet and reduced consumption of alcohol and tobacco are key protective factors in the fight against this disease.

The results of this research raise the question about the reason why the elderly have life habits shown in the results. Why is it the case that the majority of the elderly do not recognize the importance of physical and cognitive activity as protective factors in dementia prevention? Since all the participants live in homes for the elderly and infirm, the results of this research place a challenge in front of experts employed at those institutions, but also in front of other stakeholders, such as political and public authorities that can contribute to the creation of strategies and programs for dementia prevention. The elderly need to be educated and provided with information on the importance of changing life habits with an aim of dementia prevention. It is also important to note

that, given that the participants were users of homes for the elderly and infirm, where alcohol and tobacco consumption is prohibited, it is possible that this policy influenced the research results and the rejection of hypothesis 3. Namely, the results show that a significant majority of participants never consume alcohol and tobacco products and that the frequency of consumption of tobacco products decreases as time spent at a home increases, which could be the result of obeying house rules of a home they reside in. Furthermore, regarding diet in homes for the elderly and infirm, users receive already prepared meals and cannot choose their menus. Because of that, diet standards in institutions should be harmonized based on the nutrients needed for providing the highest possible level of protective factors for dementia prevention. Cooperation between public authorities and homes for the elderly and infirm with an aim of dementia prevention will give results over a certain period, and we could use a longitudinal research in order to examine the extent to which life habits of the users have changed.

Upon consolidation of author's research and the mentioned previous research, it can be concluded that physical activities, cognitive activities and substances that directly affect the lives of the elderly are imperative in terms of life habits that as a construct have a role in dementia prevention. On the other hand, we can say that

the research has brought to light significant segments of risky behaviour of users that are of crucial importance, and as such can contribute to dementia process. Staff communication in the process of everyday interaction with users must be given primacy, through training with a view of improving the users' quality of life. Communication also has a role of transferring information, instructing and activating users; consequently, emphasis has to be on educated staff that plays a daily role in the lives of users of homes for the elderly and infirm. Acknowledging the fact that the elderly have a higher risk of developing some type of dementia, it has been confirmed that dementia prevention is possible and necessary in preserving the quality of life of the elderly. Obtained research results can give a special contribution to future research by the authors, at which occasion initial and new discoveries will be compared, after allowing some time for guidelines to be given to the elderly through direct communication with experts.

**Acknowledgement.** None.

### Disclosure

**Funding.** No specific funding was received for this study.

**Competing interests.** None to declare.

## References

1. World Health Organization. Dementia. <http://www.euro.who.int/en/health-topics/noncommunicable-diseases/mental-health/areas-of-work/dementia> (12.01.2020).
2. Borovečki F. Early diagnosis of Alzheimer's disease. *Medicus* 2019; 28 (suppl 1): 23-26.
3. Hattori H. Role of geriatric hospitals for dementia care in the community. *Psychogeriatrics*. 2012; 12 (suppl 2):124-126.
4. Rege SD, Geetha T, Broderick TL, Babu JR. Can Diet and Physical Activity Limit Alzheimer's Disease Risk? *Curr Alzheimer Res*. 2017; 14 (suppl 1):76-93.

5. Kornhuber HH. Prevention of dementia (including Alzheimer's disease). *Gesundheitswesen*. 2004; 66 (suppl 5):346-351.
6. Edwards III GA, Gamez N, Escobedo GJR, Calderon O, Moreno-Gonzalez I. Modifiable Risk Factors for Alzheimer's Disease. *Front Aging Neuroscience*. 2019; 11 (suppl 146):1-18.
7. Yang M, Li C, Zhang Y, Ren J. Interrelationship between Alzheimer's disease and cardiac dysfunction: the brain-heart continuum? *Acta Biochim Biophys Sin* 2020; 52(suppl 1): 1-8.
8. Reitz C, den Heijer T, van Duijn C, Hofman A., Breteler MMB. Relation between smoking and risk of dementia and Alzheimer disease. *Neurology*. 2007; 69 (suppl 10):998-1005.

9. Mayeux R, Stern Y. Epidemiology of Alzheimer Disease. Cold Spring Harbor Perspectives in Medicine. 2012; 2 (suppl 8):10.
10. Farina N, Rusted J, Tabet N. The effect of exercise interventions on cognitive outcome in Alzheimer's disease: a systematic review. Psychogeriatrics. 2014; 26 (suppl 1):9-18.
11. Mimica N. Is the prevention of dementia possible? In: Abstracts of the 2th Alzheimer's educational conference Edukal, Zagreb, 2016. p. 12. Croatian Alzheimer's Association, Zagreb, Croatia.
12. Du Z, Li Y, Li J, Zhou C, Li F, Yang X. Physical activity can improve cognition in patients with Alzheimer's disease: a systematic review and meta-analysis of randomized controlled trials. Clin Interv Aging 2018; 4 (suppl 13):1593-1603.
13. Rolland Y, Abellan van Kan G, Vellas B. Physical activity and Alzheimer's disease: from prevention to therapeutic perspectives. J Am Med Dir Assoc. 2008; 9 (suppl 6):390-405.
14. Sondell A, Rosendahl E, Gustafson Y, Lindelof N, Littbrand H. The Applicability of a High-Intensity Functional Exercise Program Among Older People With Dementia Living in Nursing Homes. J Geriatr Phys Ther. 2019; 42 (suppl 4):16-24.
15. Durazzo TC, Mattsson N, Weiner MW. Smoking and increased Alzheimer's disease risk: A review of potential mechanisms. Alzheimers dementia 2014; 10 (suppl 3):122-145.
16. Barak Y, Aizenberg D. Is dementia preventable? Focus on Alzheimer's disease. Exp Rev Neuroth 2010; 10 (suppl 11):1689-1698.
17. Močnik A, Neuberg M, Canjuga I. Physical activity of elderly people accommodated in residential institutions. Technical J 2015; 9 (suppl 1):112-119..

---

#### Author contribution.

Author contribution. Acquisition of data: Stanić I; Hinek S; Ivanda J  
 Administrative, technical or logistic support: Stanić I; Hinek S; Ivanda J  
 Analysis and interpretation of data: Stanić I; Hinek S; Ivanda J  
 Critical revision of the article for important intellectual content: Stanić I; Hinek S; Ivanda J  
 Drafting of the article: Stanić I; Hinek S; Ivanda J  
 Final approval of the article: Stanić I; Hinek S; Ivanda J  
 Guarantor of the study: Stanić I; Hinek S; Ivanda J  
 Provision of study materials or patients: Stanić I; Hinek S; Ivanda J  
 Statistical expertise (statistical analysis of data): Stanić I; Hinek S; Ivanda J