TOPICAL ISSUE

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DEMENTIA THROUGH THE EYES OF SOCIETY: KNOWLEDGE, FEAR AND STIGMA PERCEIVED BY RESIDENTS OF YAKUTIA

Objective of the study: The study is devoted to studying the level of awareness of residents of the Republic of Sakha (Yakutia) about dementia.

Materials and methods of the study: As part of the Yakutia DeMind Project, anonymous online survey of 328 residents of Yakutia (81.7% women, 18.3% men) was conducted using Google Forms. The questionnaire included three sections: sociodemographic data, awareness of dementia and its social perception. Statistical analysis was performed in IBM SPSS Statistics 22.0.

Results: The findings revealed that 68% of respondents were able to distinguish between dementia and Alzheimer's disease, while 18.9% considered them synonymous. Additionally, 60% of participants acknowledged that dementia can occur at any age. The most frequently cited risk factors included traumatic brain injury (69.5%), low cognitive activity (68.3%), and heredity (67.7%). Particular attention was drawn to the level of stigmatization: 46% of respondents stated they would conceal their own dementia diagnosis, indicating a high level of self-stigmatization. A comparison between medical professionals (n = 174) and non-medical professionals (n = 154) showed significantly higher awareness among the first (72.4% believed in the possibility of prevention vs. 51.3%). However, even among medical professionals, 13.8% mistakenly regarded dementia as a natural part of aging.

Conclusion: The data highlight the high social relevance of dementia, not only as a clinical condition but also as one that elicits emotional and behavioral responses within society. These findings can serve as a foundation for developing research methodologies aimed at investigating dementia-related stigma, involving both individuals with dementia and their caregivers.

Keywords: dementia, Alzheimer's disease, stigma, awareness

Introduction. Dementia is one of the most relevant and rapidly growing public health challenges [13, 15]. According to the Global Burden of Disease Study, in 2019 there were 57.4 million people living with dementia worldwide; this number is projected to rise to 152.8 million by 2050 [12]. Over the past five years, the problem of cognitive impairment has become even more pressing due to the COVID-19 pandemic and the ability of the virus to exert a neurotropic effect [7, 16]. In the Republic of Sakha (Yakutia), over 4,000 patients with Alzheimer's disease are expected in the coming decades, against the backdrop of a high rate of underdiagnosis [1].

As reported by the Lancet Commission 2024, nearly half of dementia cases could potentially be prevented by addressing 14 modifiable risk factors, including hearing loss, hypertension, depression, physical inactivity, obesity, social isolation, air pollution, and elevated cholesterol levels etc. Effective prevention requires both individual lifestyle changes and governmental support, particularly aimed at socially vulnerable groups of population [11]. The social significance of cognitive impairment was also demonstrated in the domestic study "Eucalyptus", according to the results of which the risk increases in those living alone, those living in nursing homes, and widows and widowers [8].

At the same time, stigma surrounding dementia remains a major barrier: up to 36% of patients conceal their diagnosis, and two-thirds experience discrimination [10]. One of the key reasons of such attitude is a low level of public awareness, which exacerbates social isolation among affected individuals [3].

Given the aging population and the increasing prevalence of dementia, assessing public awareness is of critical importance. Lack of knowledge about risk factors, common misconception about transmissive character of the disease, and an underestimation of the social impact of dementia may contribute to stigmatization and delays in seeking medical care. Accordingly, the present study aims to assess the level of awareness among residents of the Republic of Sakha (Yakutia) regarding dementia, its causes, associated risks, and public perceptions of the condition.

Materials and Methods. This study was conducted as part of the *Yakutia DeMind Project*, which aims to assess public awareness of dementia. The research employed an anonymous online survey distributed via Google Forms. Data collection took place from March 30 to May 7, 2025. The survey link was disseminated through social media platforms, including messaging apps, regional community networks, and thematic groups, enabling broad participation from residents of the Republic of Sakha (Yakutia) across various age and social demographics. Participation in the survey was entirely voluntary.

The questionnaire consisted of three

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sections: 1) sociodemographic information (age, employment status, income); 2) knowledge of dementia (symptoms, risk factors, prevention); 3) Social perception (attitudes toward people with dementia, stigma, personal experience, and comparisons with other illnesses). The average time required to complete the survey was approximately 10 minutes.

A total of 328 individuals participated in the survey (18.3% male and 81.7% female). Most respondents were between 31 and 60 years old (30.8%) and resided in Yakutsk (76.8%). Higher education was reported by 65.5% of participants, and 5.5% held an academic degree. A detailed breakdown of respondents description is presented in Table 1.

Statistical Analysis. Data were analyzed using IBM SPSS Statistics version 22.0. Descriptive statistics included frequencies and percentages for categorical variables. Group comparisons of categorical data were performed using Pearson's chi-square test (χ^2). When the expected cell frequencies were less than 5 in more than 20% of the contingency table cells, Fisher's exact test was applied. Differences were considered statistically significant at a p-value of less than 0.05.

Results. The majority of participants (68.0%) were able to distinguish dementia from Alzheimer's disease, while 18.9% considered them synonymous, and 13.1% were unsure, which indicates the prevalence of incomplete or distorted perceptions.

A total of 74.5% of respondents identified memory decline as the primary symptom, whereas 12.5% believed it was not necessarily present. Approximately 60% were aware that dementia can develop at any age, while 39.9% perceived it solely as a disease of the elderly.

Most respondents (n = 205; 62.5%) believed that dementia can be prevented. Personal experience with the disease was also notable: 22.6% reported having someone with dementia in their immediate environment, and additional 17.7% suspected that someone they knew might be affected.

Responses regarding stigma were mixed. If a close relative were diagnosed with dementia, only 8.2% of participants would choose to conceal it from others, while 46.0% would prefer to keep their own diagnosis secret. This suggests a persistent level of self-stigmatization. 55.5% of respondents did not consider individuals with dementia to be dangerous, and 61.9% would not dismiss them from employment if their work capacity remained intact.

Most participants (64.3%) believed

Table 1

Respondents description

Feature	Male	Abs. (%)
Gender	Female	60 (18.3%)
	18-30 y.o.	268 (81.7%)
Age group	31-45 y.o.	76 (23.2%)
	46-60 y.o.	101 (30.8%)
	Over 60 y.o.	95 (29%)
	Yakutsk	56 (17.1%)
	Central districts	252 (76.8%)
Location	Western districts	55 (16.8%)
	Eastern districts	17 (5.2%)
	Arctic districts	4 (1.2%)
	Academic degree	0
	Higher education	18 (5.5%)
Education	Associate degree	215 (65.5%)
	Secondary education	67 (20.4%)
	Incomplete secondary education	27 (8.2%)
	High	1 (0.3%)
	Average	9 (2.7%)
Income level	Low	198 (60.4%)
	Undecided	97 (29.6%)
	Primarily intellectual work	24 (7.3%)
	Primarily physical work	170 (51.8%)
	Student	54 (16.5%)
Occupation	Pensioner	53 (16.2%)
	Unemployed	46 (14%)
	Безработный	5 (1.5%)

Table 2

Comparison of dementia awareness and perceptions between medical and non-medical respondents (only statistically significant differences shown)

	MPG (n = 174)	NMPG (n = 154)	Statistical values
Dementia is a brain disease or a natural part of aging			
- Brain disease	148 (85.1%)	126 (81.8%)	
- Natural aging	24 (13.8%)	16 (10.4%)	χ
- Undecided	2 (1.1%)	12 (7.8%)	
Dementia and Alzheimer's disease are:			
- Synonymous	26 (14.9%)	36 (23.4%)	
- Different conditions	137 (78.7%)	86 (55.8%)	χ
- Undecided	11 (6.3%)	32 (20.8%)	
Dementia is always accompanied by memory decline			
- Yes	134 (77.0%)	111 (72.1%)	
- No	26 (14.9%)	15 (9.7%)	χ
- Undecided	14 (8.0%)	28 (18.2%)	
Dementia occurs only in old age			
- Yes	56 (32.2%)	75 (48.7%)	χ
- No	118 (67.8%)	79 (51.3%)	
Dementia can be prevented			
- Yes	126 (72.4%)	79 (51.3%)	
- No	19 (10.9%)	25 (16.2%)	χ
- Undecided	29 (16.7%)	50 (32.5%)	
People with dementia should be treated in specialized institutions			
- Yes	44 (25.3%)	21 (13.6%)	
- No	104 (59.8%)	107 (69.5%)	χ
- Undecided	26 (14.9%)	26 (16.9%)	

Abbreviations: MPG – Medical Professionals Group; NMPG – Non-Medical Professionals Group.

that people with dementia should live at home with family members, whereas 19.8% preferred specialized care institutions.

Nearly all respondents (88.4%) agreed that early diagnosis of dementia can slow the disease progression.

When asked about perceptions of serious illnesses, cancer emerged as the most feared condition (41.8%), followed by dementia (28.4%), stroke (25.9%), and myocardial infarction (4.0%). These findings highlight the strong emotional response to neurodegenerative conditions, comparable to that elicited by cancer.

To analyze differences in awareness and perceptions of dementia, respondents were divided into two groups: medical professionals (MPG) and non-medical professionals (NMPG). NMPG participants were more likely to view dementia as a natural part of aging (7.8% vs. 1.1%) and were more often unsure about its distinction from Alzheimer's disease (20.8% vs. 6.3%). However, 13.8% of medical professionals also mistakenly regarded dementia as a normal aspect of aging.

MPG respondents were more optimistic about the possibility of prevention (72.4% vs. 51.3%) and more supportive of institutional care (25.3% vs. 13.6%).

A more detailed comparison is presented in Table 2.

Respondents with medical education placed greater emphasis on modifiable risk factors for dementia, which may be attributed to their professional knowledge (Fig. 1).

Discussion. The findings indicate that the population of Yakutia possesses a basic level of knowledge about dementia; however, significant gaps remain in understanding the nature of the disease, its symptoms, age-related features, and prevention strategies. Comparison between groups revealed that respondents with medical education more frequently provided accurate answers. Nevertheless, misconceptions persisted even among them—13.8% considered dementia to be a natural part of aging. This highlights the need to improve medical education. Importantly, the level of awareness observed in this study was substantially higher than that reported in international studies. According to the World Alzheimer Report 2024, 74% of medical professionals in low- and middle-income countries believe that dementia is part of normal aging [10].

Medical professionals were more likely to acknowledge the potential for dementia prevention (72.4% vs. 51.3%), which aligns with their knowledge of modifiable risk factors. They also more frequently
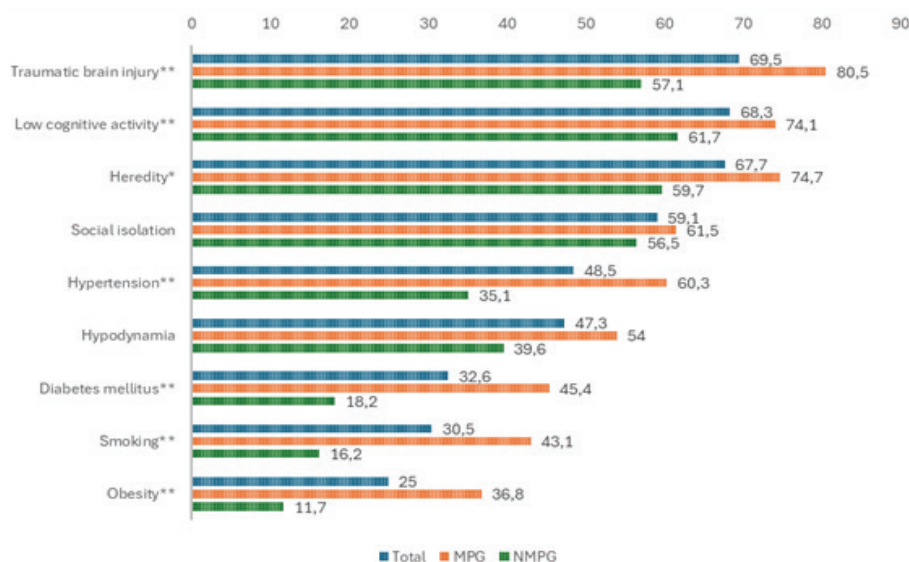
Dementia risk factors according to respondents MPG – Medical Professionals Group; NMPG – Non-Medical Professionals Group. *– statistically significant difference (p < 0.01); ** – statistically significant difference (p < 0.001)

favored care in specialized institutions, likely reflecting their understanding of the complexity of behavioral symptoms associated with dementia. This is consistent with the 2021 VCIOM (Russian Public Opinion Research Center) survey, in which most respondents expressed a preference for home care, although actual caregiving strategies may shift in real-life situations [4].

The non-medical group showed a higher level of uncertainty, underscoring the need for expanded public education efforts. Of particular concern is the high level of self-stigmatization: 46% of participants reported they would prefer to conceal a dementia diagnosis if it applied to themselves. This attitude was also observed among medical professionals, suggesting the depth of the issue. Studies from other countries have shown that stigma levels are influenced by gender, age, educational background, and language [14]. In the Russian Federation, several authors have reported that stigma creates barriers to accessing care, and propose revising terminology and focusing on social inclusion [3, 5, 6].

Finally, dementia is perceived as one of the most frightening diseases after cancer. This emotional perception may serve as a potential motivator for preventive behaviors and participation in cognitive screening. Of course, the issues of diagnostics, treatment and prevention of dementia and Alzheimer's disease in the 21st century will be addressed in a comprehensive manner using not only clinical data, but also taking into account genetics, epigenetics, and artificial intelligence

[9]. New application points for anti-dementia therapy are already known today [2, 17]. All this should radically change the social attitude towards dementia in the future.

Conclusion. The level of public awareness about dementia in the Republic of Sakha (Yakutia) remains insufficient, particularly in terms of symptoms, causes, and distinctions from Alzheimer's disease. This calls for the expansion of programs for raising awareness. Stigmatization of dementia is high across all groups, especially regarding one's own diagnosis, which may hinder early help-seeking behavior.

These findings underscore the significant social relevance of dementia—not only as a clinical condition but also as one that carries emotional and behavioral implications in societal perception. The results may serve as a foundation for developing methodologies to study stigma involving people living with dementia and their families.

The authors declare no conflict of interest.

References

1. Tappakhov AA, et al. Bolezn Al'tsgeimera v Respublike Sakha (Yakutiya): realii i ozhidaniya [Alzheimer's disease in the Republic of Sakha (Yakutia): realities and expectations]. Yakutskiy meditsinskiy zhurnal [Yakut Medical Journal]. 2023;84(4):88-91. doi:10.25789/YMJ.2023.84.21

2. Gromova DO. Novoe v terapii bolezni Al'cgejmera: adukanumab [New era of treatment of Alzheimer's disease: aducanumab]. Povedencheskaja nevrologija [Behavioral Neurology]. 2021;2:48-55. doi: 10.46393/2712-9675_2021_2_48_55

3. Fedotova NA, et al. Dementsiya. Izmenenie meditsinskoi terminologii v oblasti kognitivnykh rasstroistv, kak metod borby so stigmatizatsiei [Dementia. Changing medical terminology in the field of cognitive disorders as a method of combating stigmatization]. Klinicheskii vestnik FMBC im. A.I. Burnazyana [Clinical Bulletin of the Burnazyan Federal Medical Biophysical Center]. 2023;(2):38-41. doi:10.33266/2782-6430-2023-2-38-41

4. Den pozhilogo cheloveka: Analiticheskii obzor VTsIOM [Day of the elderly: An analytical review by VTsIOM]. [Internet]. 2025 [cited 2025 Jun 26]. Available from: https://wciom.ru/analytical-reviews/analiticheskii-obzor/den-pozhilogo-cheloveka-1

5. Bogolepova AN, Brovko EV, Gavrilova SI, et al. Dorozhnaya karta po okazaniyu pomoshchi patsientu s boleznyu Altsgeimera v Rossii v formate ekosistemy: tekushchie potrebnosti, barery i vozmozhnye resheniya (rezolyutsiya nauchno-prakticheskoi vstrechi ekspertov) [Roadmap for providing assistance to Alzheimer's patients in Russia in the ecosystem format: current needs, barriers and possible solutions (resolution of the scientific and practical meeting of experts)]. Zhurnal nevrologii i psikhiatrii imeni S.S. Korsakova [Korsakov Journal of Neurology and Psychiatry]. 2022;122(7):121-131. doi:10.17116/jnevro2022122071121

6. Mishenichev KS. Sotsialnaya inklyuziya lyudei s dementsiei: vozmozhnosti vnedreniya mezhdunarodnykh praktik [Social inclusion of people with dementia: opportunities for the introduction of international practices]. Sotsialnaya rabota: teoriya, metody, praktika [Social Work: Theory, Methods, Practice]. 2021;(3):71-87.

7. Ostroumova TM, Chernousov PA, Kuznetsov IV. Kognitivnye narushenija u pacientov, perenesshih COVID-19 [Cognitive impairment in patients after COVID-19]. Nevrologija, nejropsihiatrija, psihosomatika [Neurology, neuropsychiatry, psychosomatics]. 2021; 13(1):126-130. doi: 10.14412/2074-2711-2021-1-126-130

8. Mkhitaryan JeA, Vorobyeva NM, Tkacheva ON, et al. Rasprostranennost' kognitivnyh narushenij i ih associacija s social'no-jekonomicheskimi, demograficheskimi i antropometricheskimi faktorami i geriatricheskimi sindromami u lic starshe 65 let: dannye rossijskogo jepidemiologicheskogo issledovanija JeVKALIPT [The prevalence of cognitive impairment and their association with socioeconomic, demographic and anthropometric factors and geriatric syndromes in people over 65 years of age: data from the russian epidemiological study EVKALIPT]. Nevrologija, nejropsihiatrija, psihosomatika [Neurology, neuropsychiatry, psychosomatics]. 2022;14(3):44-53. doi: 10.14412/2074-2711-2022-3-44-53

9. Sirotko II, Volobuev AN, Romanchuk PI. Genetika i jepigenetika bolezni Al'cgejmera: novye kognitivnye tehnologii i nejrokommunikacii [Genetics and epigenetics of Alzheimer's disease: new cognitive technologies and neurocommunication]. Bjulleten' nauki i praktiki [Bulletin of Science and Practice]. 2021;7(2):89-111. doi: 10.33619/2414-2948/63/09

10. Alzheimer's Disease International. 2024. World Alzheimer Report 2024: Global changes in attitudes to dementia. London, England: Alzheimer's Disease International.

11. Livingston G, Huntley J, Liu KY, et al. Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission. Lancet. 2024;404(10452):572-628. doi:10.1016/S0140-6736(24)01296-0

12. GBD 2019 Dementia Forecasting Collaborators. Estimation of the global prevalence of dementia in 2019 and forecasted prevalence in 2050: an analysis for the Global Burden of Disease Study 2019. Lancet Public Health. 2022;7(2):e105-e125. doi:10.1016/S2468-2667(21)00249-8

13. Aranda M, Kremer I, Hinton L., et al. Impact of dementia: Health disparities, population trends, care interventions, and economic costs. J Am Geriatr Soc. 2021;69(7):1774-1783. doi: 10.1111/jgs.17345

14. Liang J, Jang Y, Aranda MP. Stigmatising beliefs about Alzheimer's disease: Findings from the Asian American Quality of Life Survey. Health Soc Care Community. 2021;29(5):1483-1490. doi:10.1111/hsc.13208

15. Pérez Palmer N, Trejo Ortega B, Joshi P. Cognitive Impairment in Older Adults: Epidemiology, Diagnosis, and Treatment. Psychiatr Clin North Am. 2022; 45(4): 639-661. doi: 10.1016/j.psc.2022.07.010.

16. Zhang Q, Botta R, Xu Y, et al. Risk of new-onset dementia following COVID-19 infection: a systematic review and meta-analysis. Age Ageing. 2025;54(3):afaf046. doi: 10.1093/ageing/afaf046.

17. Wu C, Fuh J. A 2025 update on treatment strategies for the Alzheimer's disease spectrum. J Chin Med Assoc. 2025;88(7):495-502. doi: 10.1097/JCMA.0000000000001252

SCIENTIFIC REVIEWS

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PROGNOSTIC BIOMARKERS OF RECOVERY FROM TRAUMATIC BRAIN INJURY: ASSESSMENT OF EFFECTIVENESS AND PROSPECTS OF APPLICATION

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Relevance. Traumatic brain injury is one of the leading causes of disability and mortality worldwide. Despite significant progress in treatment strategies, diagnosis and prediction of outcomes remain challenging. Biomarkers such as proteins, metabolites, and other biological molecules found in biological fluids are a valuable tool that can improve understanding of the pathophysiological processes in TBI and contribute to the development of promising therapeutic approaches. Materials and methods. A systematic literature search was conducted in the Web of Science, Scopus, PubMed (MEDLINE), and eLibrary databases.RU and Cochrane Database of Systematic Reviews, focusing on studies containing data on biomarkers associated with recovery from TBI. The entire cycle of search, selection and analysis of publications followed the principles of the PRISMA methodology. As a result, 57 studies meeting the established criteria were included in the analysis out of 4002 initial publications, after duplicates were removed and irrelevant articles were excluded. Results. Studies demonstrate that biomarkers such as GFAP, S-100b, UCH-L1, and others can significantly improve the diagnosis and prediction of outcomes in patients with TBI. They not only reflect the degree of damage to neurons, but also help to distinguish the stages of injury, as well as predict long-term neurological consequences. Conclusions. The results of the systematic review show that biomarkers have significant potential for clinical application, but further standardization of technologies for their detection and analysis is required. The development of new platforms, such as POC systems using electrochemical biosensors, can provide fast and reliable diagnosis at all stages of TBI treatment. For further in-depth study, it is necessary to combine the efforts of the interdisciplinary research community, which will create personalized treatment strategies and improve long-term outcomes for patients.

Keywords: traumatic brain injury, biomarkers of recovery, prognostic biomarkers, diagnosis