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Patelle Jivalagian  
pateel.jivalagian@yale.edu

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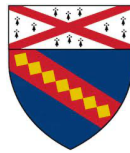
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**A First Look Into Cognitive Impairment in the Republic of Armenia:  
A Population with a History and Present Reality of Collective Trauma**



by

**Patelle (Pateel) Jivalagian**

Department of Social and Behavioral Sciences

Yale School of Public Health

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*A thesis submitted in partial fulfillment of the requirements  
for the degree of Master of Public Health.*

Primary Advisor: Joan Monin, PhD

Secondary Advisor: Becca Levy, PhD

## **Abstract**

The Republic of Armenia, a largely homogenous population burdened with a history of collective trauma, presents a unique opportunity to explore aging and cognition. The population survived a genocide in 1915 but, continues to face threats to existence today due to geopolitics. Studying the Armenian population can provide insight about the role of mental health in cognitive impairment. This study aimed to examine characteristics associated with cognitive impairment at mobile clinics across 6 provinces in Armenia and provided a first look into the national health profile of the likelihood of dementia progression in Armenia.

Participants consisted of 262 subsample of older adults who were screened for cognitive impairment. They also completed a Health Questionnaire including items about health behaviors and chronic health conditions. Statistical analysis was used to investigate the demographic trends of cognitive impairment and to test for significant associations.

The MoCA scores indicate the following levels of cognition in this population: 65.6% normal cognition, 27.5% mild cognitive status, 5.0% moderate cognitive status, and 1.9% severe cognitive status. The most common health behavior was poor sleeping quality. The most prevalent chronic conditions included history of heart disease, hypertension, history of COVID, and history of depression. All health behaviors and chronic health conditions were significantly associated with cognitive impairment.

This was the first study to investigate trends of cognitive impairment in an older Armenian adult subpopulation. It is recommended for future research to explore beyond descriptive information. Testing which risk factors are more and less predictive of cognitive status in a larger sample of older adults in Armenia is needed.

**Keywords: cognitive impairment, dementia, The Republic of Armenia, collective trauma**

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This thesis would not be possible without the work of the non-profit organization, Alzheimer's Care Armenia, who I was fortunate enough to work with before starting my graduate studies. This research would not exist without their team who collected data across villages and communities across Armenia.

To my ancestral homeland, Armenia, who still bleeds from historical wounds and faces injustice today while the world turns a blind eye - I want to say that I see you.

For my grandmother who is the daughter of Armenian Genocide survivors and who suffers from memory loss - you are the reason for my curiosity in this field.

Finally, I am thankful for the guidance of my parents and family who have taught me the power of education, inspire me with their diligence and shower me with unwavering support.



I am grateful for the opportunity to present the first ever research on cognitive impairment in the Republic of Armenia.

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## A First Look Into Cognitive Impairment in the Republic of Armenia

### **Introduction**

The Republic of Armenia, a largely homogenous population burdened with a history of collective trauma, presents a unique opportunity to explore aging and cognition. The Armenian people have endured many traumatic events throughout their long existence, first referenced in the 6th century BC, making it one of the oldest surviving civilizations in the world (Aintablian et al., 2018). Geographic, religious and societal isolation of the Armenian population over time contributes to the country's genetically continuous profile and makes this demographic ideal for public health research (Aintablian et al., 2018). Studying the Armenian population can advance knowledge regarding the role of mental health in cognitive impairment, a potential precursor to dementia, which is a significant public health problem in critical need of attention.

Aging populations have contributed to an increased number of dementia cases around the globe. The most common type of dementia is Alzheimer's Disease (AD), making up 65% of cases in the older population (Peng et al., 2016). AD is a progressive disease which means that cognition gradually worsens over time. According to the Alzheimer's Association, the most common symptom of AD is memory loss that disrupts daily life activities (Alzheimer's Association, 2022). Other symptoms include behavioral and psychological symptoms in dementia (BPSD) which are behavior, mood, perception, or thought disturbances which develop into anxiety, agitation, delusions and hallucination (Abraha et al., 2017).

Dementia is a growing public health problem that poses many health, social and economic challenges to society. According to the World Health Organization, dementia is the seventh leading cause of death and a major cause of disability for older adults [WHO]. There has been a 117% increase of global dementia cases from 1990-2016 (Grodstein et al., 2019). In 2019,

there were 57.4 million cases globally, and this number is expected to increase to 152.8 million cases by 2050 (GBD Dementia Forecasting Collaborators, 2022). Caregivers of persons living with dementia have higher rates of anxiety, depression, and worse quality of life compared to caregivers of other conditions (Centers for Disease Control and Prevention, 2019). From an economic perspective, the estimated global cost of dementia care is 1.6 to 2.4 trillion dollars by 2050 (Velandia et al., 2022). The U.S. projected cost of caring for Alzheimer's Disease and Related Diseases (ADRD) is 321 billion dollars for the year 2022 alone and is projected to reach 1 trillion by 2050 (Alzheimer's Association, 2022).

Incidence and prevalence of dementia increases with age, especially in low and middle income countries (Gao and Liu, 2021). The majority of individuals living with dementia live in low and middle income countries (LMICs) (World Alzheimer Report, 2015). That being said, dementia is still under-diagnosed and under-managed in these countries mainly due to the misconception that dementia related symptoms are a normal part of the aging process (World Alzheimer Report, 2016). This results in a lack of resources directed to dementia management including prevention, diagnosis, early intervention, and care. In contrast, there has been a decrease in prevalence of dementia in high income countries. In the United States, there has been a significant decrease in prevalence from 11.6% in 2000 to 8.8% in 2012 (Langa et al., 2017). It has been hypothesized that increased population brain health education and risk factor mitigation contribute to this improved trend. One community-based study finds that among incident mild cognitive impairment (MCI) cases, approximately 50% revert back to cognitively normal status (Angevaere et al., 2022). Thus, modifying known risk factors may help prevent dementia. Primary prevention is an important public health approach to adopt for dementia reduction. Further, if this leads to fewer dementia cases, then it is plausible that primary prevention will

have a large financial impact by offsetting care costs (Norton et al., 2014). It is vital to integrate dementia prevention programs and policies in health systems to maximize quality of life and population health especially for LMICs, many of which have not collected epidemiological data regarding dementia in their national health profiles. To date, and to our knowledge, there is no existing epidemiological record of cognitive impairment or dementia in the Republic of Armenia.

Armenia is a landlocked country that faces many political and geospatial threats. Historically, Armenia has suffered Genocide by the Ottoman Empire in 1915 (Dadrian, 1998). This history of attempts at extermination continues to trail Armenia as the country continues to face threats to its existence today. The six-week Second Artsakh War between Armenia and Azerbaijan over the Armenian-populated Republic of Artsakh, also known as Nagorno-Karabakh, in the fall of 2020 has caused massive unrest among the national population as well as the Armenian diaspora. Though the war officially ended, the issue remains unresolved, and the people continue to struggle with uncertainties of their personal and national safety (Welt & Bowen, 2021). About two years later, Armenia is now experiencing an ongoing 100+ day blockade of the Lachin Corridor, the only road of passage from Artsakh to Armenia. This Azerbaijan forced blockade prevents 120,000 people from access to food, electricity, and medical supplies and services. In geospatial terms, the Armenian population is also vulnerable to harm. The Ministry of Health's "Republic of Armenia (ROA) Emergency Medical Systems Strategy Draft" states that due to Armenia's geographical position and climate, there is an increased probability of disasters in the country. It is estimated that 80% of Armenians are at risk of experiencing a disaster-related catastrophic event (Chekijian et al., 2021). The combination of these factors make the Armenian population prone to increased exposure of psychological



trauma. Exposure to trauma is likely to develop into post-traumatic stress disorder which has a strong association with dementia risk (Günak et al., 2020). Given the unique profile and vulnerability, the Armenian population may be at moderate to high risk for experiencing cognitive impairment and dementia.

This paper examined demographic characteristics associated with cognitive impairment at mobile clinics across 6 provinces in Armenia and provided a first look into the national health profile of the likelihood of dementia progression in Armenia. Due to a history of collective trauma, we hypothesized that there may be higher levels of cognitive impairment in Armenia compared to other countries. We also hypothesized there would be higher levels of chronic health conditions, especially depression, among those with higher levels of cognitive impairment.

### **Research Design Methods**

This was a secondary analysis study of data that was collected and recorded by the non-profit organization, Alzheimer's Care Armenia (ACA). ACA partnered with the Armenian EyeCare Project and traveled to provinces across Armenia to set up mobile clinics and perform eye and cognitive screenings for adults. The ACA team also screened individuals in hospitals and clinics across Armenia. At the time of the initial screening, verbal consent was obtained. The screenings were performed in October 2022.

The sample consisted of 401 individuals from the Republic of Armenia. The age of participants who were screened ranged from 30 to 93 years of age as the primary goal of the mobile clinics was to provide health services to all underserved adult community members. The demographic of interest for this study was a subsample of older adults from 55 to 85 years old because the Montreal Cognitive Assessment (MoCA) scores are only validated for this subpopulation. Participants who were younger than 55 or older than 85 were removed from the

analysis.

This sample consists of people living in the following provinces: Aragatsotn, Ararat, Kotayk, Shirak and Tavush. Mobile clinics were not set up in eastern and southernmost provinces as they neighbor the armed conflict zones near Azerbaijan and posed a threat to the safety of health professionals.

### *Measures*

ACA collected demographic and general health information from those being screened. Primary care physicians administered the Montreal Cognitive Assessment (MoCA) to measure cognitive functioning. The MoCA instrument is translated and validated in Armenian. Participants completed the MoCA test in a paper format. ACA staff members later inputted the scores into digital records by hand.

The data includes a variety of variables including socio-demographic characteristics, health questionnaire measures, and cognitive functioning status.

Socio-demographic characteristics include age, sex, province location, education, weight and height. BMI was calculated using the height and weight values. Location includes the province in which the participant permanently resides. Education level measures 12 years of education.

The Health Questionnaire includes a self-reported history of the following: diabetes, smoking, alcohol use, high blood pressure/hypertension, head injury, depression, heart disease and COVID-19. The Health Questionnaire also includes hearing loss and sleep quality. Items on the Health Questionnaire were classified as either a respective health behavior or chronic health condition. All items of the Health Questionnaire were binary (yes/no).

MoCA scores are used to reflect cognitive functioning status and are corrected for education. The MoCA categories include normal cognition (score range of 26-30), mild cognitive impairment (18-25), moderate cognitive impairment (10-17), and severe cognitive impairment (below 10).

## **Data Analysis**

Statistical analysis was performed in R Studio (Version 4.2.2) to investigate the demographic trends of cognitive impairment across the Armenian population. Descriptive statistics such as frequencies and percentages were used for the categorical variables. Mean and standard deviations were calculated for continuous variables. Paired t-tests were used to test the association between cognitive impairment and each health behavior as well as each chronic health condition.

## **Results**

Initially, there were a total of 401 participants in the data set. After removing participants outside of the validated age range, the subsequent sample size was 262. The average age was approximately 66 years old and had a standard deviation of 7.88. Most of the participants were women (71.8%) and had less than or equal to 12 years of education (65.6%). The average height and weight for the participants were 1.62m (0.07 SD) and 75.8kg (15.5 SD), respectively. Majority of the sample were in overweight (30.9%) or obese (38.9%) BMI categories and only 26.3% of them were in the normal range. The participants were from Aragatsotn (14.1%), Ararat (29.0%), Kotayk (26.0%), Yerevan (19.1%), Shirak (3.4%), and Tavush (8.4%) provinces. In this sample, 65.6% of older adults had normal cognitive status, 27.5% mild cognitive status, 5.0%

moderate cognitive status, and 1.9% severe cognitive status (Figure 1).

Health behaviors and chronic health conditions were assessed, displayed in Figure 2 and 3, respectively. Figure 2 displays the health behaviors of smoking, alcohol use, poor sleeping quality and no listed behaviors with counts of 28, 17, 139 and 107, respectively. These events are not mutually exclusive. Across all cognitive statuses, poor sleeping quality was the most prominent. Next were participants with none of the listed health behaviors. Figure 3 shows the chronic health conditions of diabetes (68), blood pressure/hypertension (125), history of heart disease (137), history of depression (122), history of COVID-19 (123), history of head injury (35), hearing loss (85) and no chronic conditions (23). Approximately half of the participants had a history of depression (46.6%), history of COVID-19 (46.9%) or high blood pressure or hypertension (47.7%). Most participants had a history of heart disease, making up 52.3% of the sample. Of those with mild cognitive status, the most common chronic condition was history of heart disease (43). Most moderate cases presented with blood pressure or hypertension (9), which was the second most prevalent condition among the mild cases. The mild and moderate cases indicated high levels of history of depression leading to the third and second most common conditions (47%; 60%), respectively. Among the 5 participants with severe cognitive status, the most common comorbidities include hearing loss (4) and history of depression (3).

There were significant associations with cognitive impairment and smoking, alcohol use and poor sleep quality ( $p < 0.001$  for each). The respective mean differences were 25.92, 25.98, and 25.56. The following chronic health conditions had significant associations with cognitive impairment: history of heart disease, high blood pressure or hypertension, history of depression, history of head injury, diabetes, history of COVID-19, and hearing loss ( $p < 0.001$  for each). The mean difference of MoCA scores were 25.61, 25.64, 25.58, 25.94, 25.84, 25.55, and 25.78,

respectively.

## **Discussion**

This was the first study to investigate trends of cognitive impairment in an older Armenian adult subpopulation. The MoCA scores indicate the following levels of cognitive impairment in this population: 27.5% mild cognitive status, 5.0% moderate cognitive status, and 1.9% severe cognitive status. The MoCA test indicates that 18 is the cutoff score that distinguishes mild cognitive impairment from Alzheimer's Disease. Moderate and severe cognitive impairment levels qualify as Alzheimer's Disease if patients also present with loss of autonomy. That said, our sample presents with a 6.9% prevalence of probable AD. There is a 10.8% prevalence of Alzheimer's dementia in the U.S population age 65 and older (Alzheimer's Association, 2023). This difference in magnitude may be because our sample included a younger age group, 55-64, who are less likely to have dementia. This difference may also be attributable due to the population-based study design and increased access to screening in the U.S.. According to the European Academy of Neurology there are only 280 neurologists in Armenia, which equates to 9 specialists per 100,000 people. Iran, directly south of Armenia, has an AD prevalence of 2.3% (Navipour et al., 2019). A population-based study of The Republic of Georgia, north of Armenia, shows a 13.3% prevalence rate of mild cognitive impairment using the MoCA test. Both neighboring countries show lower rates of MCI and AD compared to the Armenian population.

The study indicated high numbers of chronic health conditions including history of heart disease, high blood pressure or hypertension and history of depression. All of which are significantly associated with cognitive impairment ( $p < 0.001$ ). Despite upward trends since the 1960s, cardiovascular disease (CVD) is still prevalent and the leading cause of death globally

(LaCroix et al., 2019). Studies show that high consumption of red meat is associated with higher risk of major chronic diseases, like coronary heart disease (Al-Shaar et al., 2020). High frequencies of heart disease in this sample may be attributable to the fact that meat-heavy diets are very common in Armenia.

Additionally, a recent study shows that meat products have the biggest contribution of lead, 47%, compared to other food groups (Pipoyan et al., 2023). Heavy metal contamination is known to be present in many regions near mines across Armenia but new research shows that even the nation capital which is far from mines also contains foods with alarming levels of lead (Pipoyan et al., 2023). Lead and other metals like cadmium and manganese are associated with impaired cognitive function and cognitive decline in adults (Bakulski et al., 2020). This environmental exposure may be a potential mechanism of increased neurotoxicity levels.

High frequencies of depression in this sample can be related to Armenia's history of Genocide and ongoing geopolitical instability. The Armenian population has one of the highest rates of depression out of any recorded country (Aintablian et al., 2018). Though there are no studies that investigate the relationship of depression and cognitive impairment in older adults in Armenia, existing literature shows that late-life depression and cognitive impairment is among the most common psychiatric syndromes among older adults (Wang et al., 2015). The country has experienced a host of natural and man-made humanitarian crises including the 1915 Armenian Genocide, the 1988 Spitak Earthquake, the 1988-1994 Artsakh War, 2020 Artsakh War (44 day War) and the 2022-2023 Blockade of the Lachin Corridor in Artsakh. Studies show transgenerational health effects of the 1915 Armenian Genocide illustrated by the transmission of genocide-related depression and anxiety among survivors (Movsisyan et al., 2022). The present day denial of this historical loss by perpetrators as well as the world may prevent healing and

perpetuate negative mental health outcomes for this population. Armenia also continues to face ongoing crises with neighboring countries along with violations to humanitarian ceasefires. Existing literature suggests that living in conflict zones is associated with increased anxiety, depression and PTSD (Movsisyan et al., 2022). Exposure to armed conflict and crises may have long-lasting impacts to physical and mental health, amplify pre-existing psychological conditions and prevent the establishment of protective services for the crisis-affected population (Bangpan et al., 2019). The high frequencies of depression may also be explained by the overwhelming number of female participants who are more likely to develop depression compared to males. Though the causal pathway remains unclear, recent meta-analyses show that depression is associated with increased risk of dementia (Linnemann & Lang, 2020).

### *Limitations*

Some limitations of this study include the self-reported nature of the health questionnaire variables and the lack of objective measurements to verify the responses. Also, the questions measuring participant health were vague and only yielded a binary response. Due to resource constraints, the mobile clinics were not able to visit all provinces in October 2022 to make for a fully representative sample of the population. There may be selection bias, as most of the mobile clinics were set up during the working day which is when women are out of the home.

## **Conclusion**

This paper is a first look into the demographic characteristics of factors related to cognitive impairment in the older population of The Republic of Armenia. It is recommended for future research to explore beyond descriptive information and start testing which risk factors are more and less predictive of cognitive status in a larger sample of older adults in Armenia. Using theoretical models (The Processing Resource Model of Memory Deficits in Cognitive Aging, Inhibitory Theory of Memory Deficits With Age, Disuse, Motivational, and Other Non Cognitive Theories, Socio Ecological Model of Alzheimer's Disease) that have been used to examine determinants of cognitive decline in other populations would benefit research on determinants of cognitive health in Armenia (Park et al., 2017). Finally, the Republic of Armenia presents a unique opportunity to learn about the role of mental health and its relationship to cognitive impairment and dementia in a homogenous population with a long history and present reality of trauma. It is necessary to consider the historical context of the population to best understand the complexities that contribute to the national dementia profile.



## Tables

Table 1. Demographic Characteristics of Mobile Cognitive Screenings in Armenian Population

	Cognitive Status No. (%)				Total N= 262 (100%)
	Normal Cognition N= 172 (65.6%)	Mild Impairment N= 72 (27.5%)	Moderate Impairment N= 13 (5.0%)	Severe Impairment N= 5 (1.9%)	
<b>Age (years)</b>					
55-64	107 (81.7)	23 (17.6)	1 (0.8)	0 (0.0)	131 (50.0)
65-74	56 (61.5)	29 (31.9)	4 (4.4)	2 (2.2)	91 (34.7)
75-85	9 (22.5)	20 (50.0)	8 (20.0)	3 (7.5)	40 (15.3)
					<b>Total</b> N= 262 (100%)
<b>Sex</b>					
Female	126 (67.0)	50 (26.6)	10 (5.3)	2 (1.1)	188 (71.8)
Male	46 (62.2)	22 (29.7)	3 (4.1)	3 (4.1)	74 (28.2)
					<b>Total</b> N= 262 (100%)
<b>Level of Education</b>					
≤ 12 years	101 (58.7)	56 (32.6)	10 (5.8)	5 (2.9)	172 (65.6)
> 12 years	71 (78.9)	16 (17.8)	3 (3.3)	0 (0)	90 (34.4)
					<b>Total</b> N= 262 (100%)
<b>Province</b>					
Aragatsotn	38 (63.3)	19 (31.7)	1 (1.7)	2 (3.3)	37 (14.1)
Ararat	87 (77.7)	17 (15.2)	7 (6.2)	1 (0.9)	76 (29.0)
Kotayk	80 (76.2)	22 (21.0)	3 (2.9)	0 (0)	68 (26.0)
Yerevan	36 (60.0)	18 (30.0)	5 (8.3)	1 (1.7)	50 (19.1)
Shirak	16 (64.0)	9 (36.0)	0 (0)	0 (0)	9 (3.4)
Tavush	29 (76.3)	6 (15.8)	2 (5.3)	1 (2.6)	22 (8.4)
					<b>Total</b> N= 262
<b>Height Range (m)</b>					
1.40 - 1.44	0 (0)	0 (0)	1 (100.0)	0 (0)	1 (0.38)

1.45 - 1.49	1 (33.3)	2 (66.7)	0 (0)	0 (0)	3 (1.14)
1.50 - 1.54	17 (50.0)	15 (44.1)	2 (5.9)	0 (0)	34 (12.09)
1.55 - 1.59	29 (65.9)	13 (29.5)	2 (4.5)	0 (0)	44 (16.8)
1.60 - 1.64	51 (68.9)	15 (20.3)	5 (6.8)	3 (4.1)	74 (28.2)
1.65 - 1.69	35 (76.1)	10 (21.7)	1 (2.2)	0 (0)	46 (17.6)
1.70 - 1.74	24 (60.0)	14 (35.0)	1 (2.5)	1 (2.5)	40 (15.3)
1.75 - 1.79	9 (90.0)	1 (10.0)	0 (0)	0 (0)	10 (3.8)
1.80 - 1.84	1 (100.00)	0 (0)	0 (0)	0 (0)	1 (0.38)
1.85 - 1.89	2 (10.00)	0 (0)	0 (0)	0 (0)	2 (0.76)
NA	3 (42.9)	2 (28.6)	1 (14.3)	1 (14.3)	7 (2.7)
					<b>Total</b>
<b>Weight (kg)</b>					<b>N = 262</b>
40 - 49	3 (37.5)	3 (37.5)	1 (12.5)	1 (12.5)	8 (3.1)
50 - 59	14 (48.3)	12 (41.4)	3 (10.3)	0 (0)	29 (11.1)
60 - 69	31 (64.6)	14 (29.2)	1 (2.1)	2 (4.2)	48 (18.3)
70 - 79	43 (62.3)	19 (27.5)	5 (7.2)	2 (2.9)	69 (26.3)
80 - 89	38 (70.4)	14 (25.9)	2 (3.7)	0 (0)	54 (20.6)
90 - 99	21 (77.8)	6 (22.2)	0 (0)	0 (0)	27 (10.3)
100 - 109	16 (94.1)	1 (5.9)	0 (0)	0 (0)	17 (6.5)
110 - 119	3 (75.0)	1 (25.0)	0 (0)	0 (0)	4 (1.5)
120 - 129	1 (50.0)	1 (25.0)	0 (0)	0 (0)	2 (0.8)
NA	2 (50.0)	1 (25.0)	1 (25.0)	0 (0)	4 (1.5)
					<b>Total</b>
<b>BMI categories (kg/m<sup>2</sup>)</b>					<b>N= 262</b>
Underweight (<18.5)	1 (50.0)	0 (0)	0 (0)	1 (0)	2 (0.8)
Healthy Weight (18.5-24.9)	42 (60.9)	21 (30.4)	5 (7.2)	1 (1.4)	69 (26.3)
Overweight (25.0-29.9)	51 (63.0)	25 (30.9)	3 (3.7)	2 (2.5)	81 (30.9)
Obese (≥ 30.0)	74 (72.5)	24 (23.5)	4 (3.9)	0 (0)	102 (38.9)
NA	4 (50.0)	2 (25.0)	1 (12.5)	1 (12.5)	8 (3.1)

a. Percentages may not add to 100% due to rounding.

Table 2. Health Behavior Characteristics by Cognitive Status

	Health Behaviors			
	No. (%) <sup>a,b</sup>			
	Smoking N= 28	Alcohol Use N= 17	Poor Sleep Quality N= 139	No Listed Behaviors N= 107
<b>Cognitive Status</b>				
Normal Cognition	17 (60.6)	10 (58.8)	87 (62.6)	75 (70.1)
Mild Impairment	11 (39.3)	7 (41.2)	43 (30.9)	23 (21.5)
Moderate Impairment	0 (0)	0 (5.3)	6 (4.3)	7 (6.5)
Severe Impairment	0 (0)	0 (0)	3 (2.2)	2 (1.9)

a. Percentages may not add to 100% due to rounding.

b. Note: Health behaviors are not mutually exclusive.

Table 3. Chronic Health Condition Characteristics by Cognitive Status

	Chronic Health Conditions							
	No. (%) <sup>a,b</sup>							
	Diabetes N= 68	Blood Pressure /Hyperten- sion N= 125	History of Heart Disease N= 137	History of Depression N= 122	History of COVID-19 N= 123	History of Head Injury N= 35	Hearing Loss N= 85	No Chronic Conditions N= 32
<b>Cognitive Status</b>								
Normal	44 (64.7)	77 (61.6)	84 (61.3)	75 (61.5)	89 (72.4)	17 (48.6)	38 (44.7)	23 (71.9)
Mild Impairment	20 (29.4)	37 (29.6)	43 (31.4)	36 (29.5)	30 (24.4)	15 (42.9)	35 (41.2)	7 (21.9)
Moderate Impairment	4 (5.9)	9 (7.2)	8 (5.8)	8 (6.6)	4 (3.3)	3 (8.6)	8 (9.4)	2 (6.3)
Severe Impairment	0 (0)	2 (1.6)	2 (1.5)	3 (2.5)	0 (0)	0 (0)	4 (4.7)	0 (0)

a. Percentages may not add to 100% due to rounding.

b. Note: Chronic health conditions are not mutually exclusive.

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