

The Effects of Multiple Chronic Conditions and Alzheimer's Disease on the Activities of  
Daily Living of the Geriatric Population within Residential Care Communities

by

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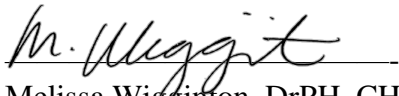
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## Abstract

The geriatric population is one of the fastest-growing subsets in the United States. They are prone to developing multiple chronic conditions, which impacts their ability to complete activities of daily living (ADLs). As the geriatric population continues to grow and live longer, many seniors seek out long-term care facilities, such as residential care communities (RCCs), to assist them in performing ADLs and regaining independence. This research study examines how multiple chronic conditions impact the number of ADLs an RCC resident needs help with and the required level of assistance. Additionally, this study examines how Alzheimer's Disease (AD) impacts how many ADLs a resident needs help performing and to what degree because AD is a neurodegenerative condition that impacts cognitive function. Data collected in 2018 by the Centers for Disease Control and Prevention (CDC) and the National Post-Acute and Long-Term Care Study (NPALS) was used. The six ADLs reviewed in this study were bathing, dressing, eating, toileting, transferring, and walking. A significant, weak positive correlation was found between the number of chronic conditions a resident has and the total number of ADLs by using a Spearman's Correlation test ( $\rho(800) = 0.176, p < 0.001$ ). An independent samples t-test found significant results showcasing that resident with AD ( $M ADLs = 4.115, SD = 1.9546$ ) needed help with one additional ADL than residents without AD ( $M ADLs = 3.032, SD = 1.993$ ) ( $t(800) = 7.638, p < 0.001$ ). Lastly, the final six questions used a Chi-Square Test of Independence to see if the level of assistance required to complete an ADL was dependent or independent of an AD diagnosis. A Bonferroni correction post hoc test supported the significant findings that the level of ADL assistance is dependent on an AD diagnosis. Overall, this study provides an insightful look into how multiple chronic conditions and AD can impact geriatric independence and their ability to complete activities of daily living in residential care communities. These findings can help support future healthcare policies to ensure all members of the geriatric population have the resources and support they need to live a better quality of life despite the limitations caused by having multiple chronic conditions.

*Key Words: geriatric, chronic conditions, Alzheimer's Disease, activities of daily living (ADLs), residential care communities (RCCs), National Post-Acute and Long-Term Care Study (NPALS)*

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## **Introduction**

### **An Aging Population**

The geriatric population within the United States (anyone over the age of 65) has been growing exponentially (Strausbaugh, 2001). As of 2019, 54.1 million Americans comprise the geriatric population, which is expected to grow to 80.8 million individuals by 2040 (Administration for Community Living, 2022). The rapid growth of this older population can be traced back to people born after World War II, known as the Baby Boomer population, and an increase in the average human life expectancy (Knickman & Snell, 2002). The last of the Baby Boomer population is set to reach the age of 65 by 2030, causing researchers to fear an age where Medicare dependency and long-term care facility demands are at a record-breaking high since the geriatric population relies on these services to a greater extent (Kaye et al., 2010; Mitzner et al., 2009).

The average human life expectancy in the United States has also increased steadily from 65.6 years in 1945 to 78.9 years in 2019 (Roser et al., 2019). Research has shown that by the year 2100, male and female average life expectancy will reach 89.5 and 92.5 years, respectively (Brunborg, 2012). These increases can be attributed to improvements in the standards of living, medical services, and medical technologies (Brunborg, 2012). Subsequently, the geriatric subset of the U.S. population is growing at an alarming rate without sufficient resources to care for them if they can no longer care for themselves.

Despite medical advancements, the geriatric population is prone to developing multiple chronic conditions, affecting their quality of life and independence, thus increasing the need for home or long-term healthcare (Mitzner et al., 2009). As people

continue to live longer, the complications they face in caring for themselves also increase. The geriatric population is at an increased risk of injury due to having various medications to combat their chronic conditions and functional (cognitive and sensory) impairments (Miller et al., 2000). These variables make this population prone to falling and showcase the need for assistance for everyday tasks and completing activities of daily living. Falls are the leading cause of death within the geriatric population, with 24% sustaining serious injuries and 6% sustaining fractures (Lee et al., 2013). In order to understand the impact that chronic conditions have on the geriatric population's ability to care for themselves and complete activities of daily living, a closer look needs to be taken to see how the number of chronic conditions a person has, affects their independence to complete these activities. Certain chronic conditions, such as Alzheimer's Disease, stroke, arthritis, and diabetes, can take a more considerable toll on an individual's independence; thus, this must be considered when researching the effects of chronic conditions with comorbidity and activity assistance (Gilmour & Jungwee, 2006).

### **Activities of Daily Living**

Activities of daily living are often used as predictors of health and function in older populations (Hopman-Rock et al., 2018). These activities can be classified based on being instrumental or physical activities (Knickman & Snell, 2002). Instrumental tasks (IADLs) include grocery shopping, cleaning, managing a household, and filing paperwork (Knickman & Snell, 2002). Physical activities regarding self-care are known as ADLs (Kaye et al., 2010). ADLs define routine tasks such as eating, bathing, toileting, and walking (Knickman & Snell, 2002).

Individuals can sometimes complete ADLs with an assistive tool to promote independence, such as a walker for mobility. ADLs, compared to IADLs, define geriatric independence and their direct ability to care for themselves. Performing ADLs and IADLs depends on cognitive, motor, and perceptual/sensory abilities (Mlinaca & Feng, 2016). IADL limitations typically occur due to cognitive impairments, whereas ADL limitations occur due to physical impairments (Mlinaca & Feng, 2016). Multiple chronic conditions can limit an individual's ability to complete ADLs due to the physical toll on the body.

Professionals can help the frail or disabled by assisting them with these activities in long-term care facilities (Knickman & Snell, 2002). Research has shown that the need for assistance increases with age, thus increasing the demand for long-term care (Gilmour & Jungwee, 2006). Long-term care can be classified based on its formality: informal or formal. Informal care consists of family or friend support, whereas formal care consists of private home care, assisted living, or nursing homes (Knickman & Snell, 2002). Both methods involve assisting in self-care tasks, such as activities of daily living.

### **Rehabilitation**

In long-term care facilities, ADL assessments are usually completed by physical, occupational, and speech therapists (Mlinaca & Feng, 2016). Therapy can help individuals struggling to complete their ADLs regain the skills and confidence needed to complete them without assistance. Rehabilitation facilities promote an environment to help individuals become stronger and more independent. A national sample has shown that the geriatric population accounts for 20% of individuals receiving rehabilitative care (Bean et al., 2019). Understanding that having access to rehabilitation services is a

driving factor in why the older population relies on long-term care facilities to get ADL help (Kaye et al., 2010). As a result, geriatric patients are likely to move to rehabilitation centers, nursing homes, or residential care communities (RCCs) based on the level of assistance they need.

### **Chronic Conditions and Alzheimer's Disease**

Chronic conditions are illnesses that cannot be cured but can be managed and treated (Gilmour & Jungwee, 2006). They can be any physical or mental condition that lasts more than one year, causing functional restrictions (Buttorff et al., 2017). Possible treatment options include diet, exercise, and medication changes, as most chronic conditions result from lifestyle factors (National Institute of Health (NIH), 2017). Gilmour and Jungwee (2006) found that common chronic conditions within the geriatric population included arthritis, heart disease, diabetes, urinary incontinence, and Alzheimer's Disease/other dementia. In 2017, The NIH and the National Institute of Aging (NIA) found that 85% of older adults had at least one chronic condition, and 60% had at least two. Individuals with multiple chronic conditions tend to have poorer health, use more health services, and spend more on healthcare (Buttorff et al., 2017). Therefore, the complexities associated with having multiple chronic conditions account for a large proportion of healthcare costs, including 80% of Medicare costs (Working Group on Health Outcomes for Older Persons with Multiple Chronic Conditions (WG), 2012). Individuals must pay for frequent office visits, inpatient visits, and prescriptions. The out-of-pocket expense for these patients ranges heavily based on the number of chronic conditions they have. Medication for these illnesses can have various side effects,

especially when treating multiple conditions simultaneously, such as the persistence and progression of the diseases (WG, 2012).

As people begin to age, the complications of these conditions can restrict their independence. Physical, social, and cognitive limitations can be brought on by having multiple chronic conditions and needing assistance with ADLs (Buttorff et al., 2017). There is also a relationship between decreased cognition and a decline in ADL functionality (Mlinaca & Feng, 2016). People with five or more conditions have more than double the number of limitations than those with fewer conditions (Buttorff et al., 2017). This demonstrates the challenges within this vulnerable population and their dependence on caregivers as chronic conditions increase. It also raises concerns as to which extent this population needs help and how to best supply it. The impact a single chronic disease has on ADL assistance compared to others varies due to its complexity and wide range of symptoms.

Conditions such as Alzheimer's Disease (AD) impact a patient's independence and ability to perform ADLs differently than others. Alzheimer's Disease is a debilitating condition that affects the mind as it is a neurodegenerative disorder that affects the cerebral cortex and hippocampus (Masters et al., 2015). An estimated 35.6 million people are affected by dementia globally, with Alzheimer's Disease being the most prevalent subtype comprising 65% of cases (Farina et al., 2013). The overall prevalence of the disease consists of 10-30% of the population above the age of 65 (Masters et al., 2015). People with AD depend on support to live a better quality of life as their health deteriorates over time. The disease further takes a toll on the caregiver, including signs of depression and physical, social, and financial burdens (Potkins, 2002). A survey

conducted in the United States found that 69% of caregivers help with one ADL and 98% with one IADL (Potkins, 2002). This explains why individuals with AD are great candidates for long-term care facilities.

One area of cognition that is affected in people with AD is executive functioning, thus increasing cognitive limitations within the population since AD progresses in various stages (Martyr & Clare, 2012). Executive functioning correlates to cognitive processes that control everyday actions, such as conducting ADLs. Supporting evidence has shown that even the earliest stages of AD can impact a person's executive functioning (Martyr & Clare, 2012). A diagnosis of Alzheimer's Disease requires evidence of impairment in everyday functioning. Although the ability to perform IADLs is affected earlier, there is still an impact on standard ADLs. Basic ADLs can become impaired in the moderate-to-severe stages of the disease. As cognitive impairment worsens, deterioration of these skills further complicates the emotional behavior of patients, inducing a feeling of depression and agitation (Potkin, 2002). In patients with multiple chronic conditions, the ability to complete ADLs may diminish earlier than the moderate-to-severe stages of AD.

### **Residential Care Communities**

Residential care communities (RCCs) provide housing for people who cannot live independently but generally do not require extensive skilled care provided by nursing homes (Khatutsky et al., 2016). RCCs are sometimes labeled as Assisted Living Facilities and can resemble retirement residences. Most RCCs offer assistance with ADLs, transportation, monitoring of basic health, incontinence care, and skilled nursing (Khatutsky et al., 2016). In 2010, nursing homes had 1,934,448 residents, whereas RCCs

had 733,300 residents (Khatutsky et al., 2016). In 2018, 918,700 people in the United States lived in RCCs; 7% of this population was under 65 years (Chaffrey et al., 2021). This rise in residents seen from 2010 to 2018 in RCCs shows that these communities will eventually become another form of long-term care as the senior population increases.

In 2018, the Centers for Disease Control and Prevention (CDC) and the National Post-Acute and Long-Term Care Study (NPALS) collected nationwide data on RCCs residents, their demographics, health history, etc. The survey found that 66% of individuals at RCCs suffer from more than one chronic condition, and nearly 50% of individuals suffer from two to three conditions (Chaffrey et al., 2021). In RCCs, 88% of residents also needed assistance completing more than one ADL (Chaffrey et al., 2021). The top 10 chronic conditions diagnosed among this population were high blood pressure, Alzheimer's Disease/dementia, depression, arthritis, diabetes, heart disease, osteoporosis, chronic obstructive pulmonary disease (COPD), stroke, and cancer (Chaffrey et al., 2021). Alzheimer's Disease and other dementias were diagnosed among 34% of residents (Chaffrey et al., 2021).

## **Conclusion**

As a part of the fastest-growing United States population, the geriatric community is prone to developing multiple chronic conditions, ultimately affecting their independence and quality of life. Despite medical advancements, individuals may need long-term care to get help to complete standard activities of daily living. Many healthcare costs are associated with treating multiple chronic conditions, including 80% of Medicare costs (WG, 2012). Research has shown that the ability to complete ADLs and IADLs can be affected due to the physical and cognitive side effects brought on by certain diseases.

Alzheimer's Disease is a chronic condition affecting millions of people nationwide and is prevalent in residential care communities (Chaffrey et al., 2021). Notably, 10 to 30% of the geriatric population has Alzheimer's Disease or other forms of dementia (Master et al., 2015). Alzheimer's Disease affects the patient and adds a fair amount of stress to the caretaker. The ability to complete ADLs can become impaired in various stages of AD depending on the effects of comorbidity.

### **Purpose of Study**

In a time when residential care communities are becoming synonymous with long-term care, this study aims to further analyze the data collected by the CDC and the National Post-Acute and Long-Term Care Study (NPALS). This study seeks to understand how multiple chronic conditions and Alzheimer's Disease (AD) affect geriatric RCC residents and the ADLs they can complete. This study hopes to better understand the impacts of having multiple chronic conditions and their limitations on geriatric independence.

This research study aims to examine the relationship between having multiple chronic conditions and the number of ADLs a resident needs assistance with performing. The study will also focus on the six ADLs recorded in the CDC and NPALS survey: bathing, dressing, eating, transferring, toileting, and walking. In addition, this study will examine if AD influences the number of ADLs an individual needs help with performing in conjunction with other chronic conditions. Lastly, the study will look at the level of assistance AD patients need to complete their ADLs to understand how AD limits patient mobility and independence. The results of this study will help to better understand the limitations and care dependence caused by Alzheimer's Disease. By conducting this



research, the hope is to recognize the impact of chronic conditions and the reliance on long-term care within this population.

### **Research Questions and Hypotheses**

There are eight research questions addressed in this study. The hypothesis for each question is listed below.

1. Is there a correlation between the number of multiple chronic conditions and the number of ADLs a resident needs assistance performing?

**Hypothesis:** A positive correlation exists between the number of chronic conditions an RCC resident has and the number of ADLs a resident needs assistance doing.

2. Is there a significant relationship between being diagnosed with Alzheimer's Disease and the number of ADLs an RCC resident needs help performing?

**Hypothesis:** Residents diagnosed with AD are more likely to need assistance with more ADLs than those who are not.

3. Is an Alzheimer's Disease diagnosis associated with the level of assistance needed for an RCC resident to bathe themselves compared to those without AD?

**Hypothesis:** The level of assistance needed for bathing depends on an AD diagnosis.

4. Is an Alzheimer's Disease diagnosis associated with the level of assistance needed for an RCC resident to dress themselves compared to those without AD?

**Hypothesis:** The level of assistance needed for dressing is dependent on an AD diagnosis.

5. Is an Alzheimer's Disease diagnosis associated with the level of assistance needed for an RCC resident to eat compared to those without AD?

**Hypothesis:** The level of assistance needed for eating is dependent on an AD diagnosis.

6. Is an Alzheimer's Disease diagnosis associated with the level of assistance needed for an RCC resident while using the toilet compared to those without AD?

**Hypothesis:** The level of assistance needed for toileting is dependent on an AD diagnosis.

7. Is an Alzheimer's Disease diagnosis associated with the level of assistance needed for an RCC resident to transfer themselves compared to those without AD?

**Hypothesis:** The level of assistance needed for transferring is dependent on an AD diagnosis.

8. Is an Alzheimer's Disease diagnosis associated with the level of assistance needed for an RCC resident to walk compared to those without AD?

**Hypothesis:** The level of assistance needed for walking is dependent on an AD diagnosis.

## **Method**

### **Design**

This study utilized a cross-sectional design to study the effects of multiple chronic conditions and Alzheimer's Disease on ADLs in the geriatric population living within RCCs. Secondary data was utilized from the Centers for Disease Control and Prevention (CDC) and the National Post-Acute and Long-Term Care Study (NPALS). The CDC and NPALS collected this data to study the patient demographics of RCCs nationwide. The data is collected every two years to maintain updated records, with the 2018 data being the most recent. NPALS also collects provider data while conducting the RCC resident research. NPALS used a survey to collect data from the RCC residents through mail, web, and computer-assisted telephone interviews (CATI) (CDC, 2018).

### **Procedures**

To be eligible to participate in the study, RCCs had to be licensed, registered, listed, certified, or otherwise regulated by the state (CDC, 2018). They also needed four or more licensed, registered, or certified beds, room and board with at least two meals a day, around-the-clock on-site supervision, and are required to help with personal care and other health services (CDC, 2018). Out of 43,770 RCCs, 2,090 were randomly selected within the 50 states and the District of Columbia (CDC, 2018). The eligibility of all the 2,090 RCCs could not be determined: 857 RCCs were eligible, 256 RCCs were not, and 977 RCCs could not be contacted, meaning their status was unknown (CDC, 2018). An eligibility rate was calculated by the number of known eligible RCCs divided by the total number of RCCs with known eligibility status based on the community (CDC, 2018). This rate helped determine if a proportion of RCCs with unknown eligibility were truly

eligible. An eligibility rate of 77% helped identify 752 previously unknown RCCs to qualify for this study (CDC, 2018). Any RCC that did not meet the selection criteria or were out of business were not considered for this study (CDC, 2018). A total of 1,609 RCCs were included in NPALS. Data collection occurred from July 2018 to February 2019 (CDC, 2018).

### **Survey Instruments**

For the RCC Resident survey, two residents were randomly selected from each RCC to participate in the resident questionnaire (CDC, 2018). The survey asked various questions regarding race, where residents lived before residing in an RCC, if they share a room at the RCC, medication usage, service usage, and the costs associated with living at an RCC (CDC, 2018). Residents were asked to select the option that best represented them, with many questions following a *YES/NO* format. The survey collected data on the number of diagnoses a resident has across 34 chronic conditions. Residents were shown a card titled “Conditions” by the surveyors.

The question asked: “As far as you know, has a doctor or other health professional ever diagnosed the resident with any of the following conditions.” Participants were then instructed to select all that applied and were asked if they had any other unlisted conditions. The following conditions were listed: alcohol abuse, Alzheimer’s Disease/other dementias, anemia, anxiety disorder, arthritis/rheumatoid arthritis, asthma, cancer/malignant neoplasm, cerebral palsy congestive heart failure, chronic obstructive pulmonary disease (COPD), depression, diabetes, epilepsy, glaucoma, gout, heart attack, heart disease, high blood pressure/hypertension, HIV/AIDS, Huntington’s Disease, kidney disease, macular degeneration, muscular dystrophy,

multiple sclerosis, obesity, osteoporosis, Parkinson's Disease, partial or total paralysis, pressure wounds/injuries, severe mental illnesses (schizophrenia, psychosis, bipolar disorder), spinal cord injury, stroke, and traumatic brain injuries (TBI), or none of the above.

Only data for 22 of these conditions was provided, which included Alzheimer's Disease/other dementias, anemia, anxiety disorder, arthritis/rheumatoid arthritis, asthma, cancer/malignant neoplasm, congestive heart failure, chronic obstructive pulmonary disease (COPD), depression, diabetes, glaucoma, gout, heart disease, high blood pressure/hypertension, kidney disease, macular degeneration, obesity, osteoporosis, Parkinson's Disease, severe mental illnesses (schizophrenia, psychosis, bipolar disorder), stroke, and traumatic brain injuries (TBI). All answers were recorded as *1= selected*, *2= not selected*, and *-9= missing*

The survey also recorded the level of assistance needed to perform the six ADLs: walking, bathing, feeding, toileting, transferring, and dressing. The level of assistance was addressed using a scale of 1 to 4: *1= needing help or supervision of another person*, *2= needing an assistive device*, *3= both options 1 and 2*, and *4= no assistance*. The survey asked: "Which types of assistance, if any, does the resident currently need to (do the ADL)? Does the resident need any help or supervision from another person, use an assistive device, both, or need no assistance?" Any missing data was recorded as *-9= missing*.

Resident responses were recoded to account for the number of chronic conditions a resident has: *1= selected* became *1=YES*, and *2= not selected* became *2=NO*. Every score of 1 (*1 = YES*) was added together to calculate the total number of chronic

condition diagnoses a resident had. To calculate the total number of ADLs a resident needed help completing, the level of assistance was recoded to account for any assistance versus none. A score of 1, 2, or 3 on the NPALS survey was recoded to 1 = YES, needing some level of assistance. A score of 4 on the survey was recoded as 2 = NO, not needing any assistance. Every score of 1 was then added together to calculate the total number of ADLs a resident needed help performing.

### **Participants**

The RCC resident survey was completed by 904 individuals across 419 RCCs, with a 28% response rate (CDC, 2018). This sample was meant to represent 918,730 RCC residents nationwide (CDC, 2018). For the purposes of this study, all RCC resident responses below 65 years had been excluded from the sample to focus solely on the geriatric population, which resulted in a final sample size of 829.

### **Dependent Variable and Independent Variables**

Each question in this study has a different set of dependent and independent variables. The first research question asks if the number of chronic conditions an individual is related to the number of ADLs they need assistance with performing. The dependent variable for this question is the number of chronic diseases. The independent variable is the number of ADLs, which is capped at 6. The number of chronic conditions is a continuous variable, whereas the number of ADLs is a scaled variable with limited values.

The second question examines the relationship between having an AD diagnosis and the number of ADLs an individual needs help with performing. The dependent variable is an AD diagnosis. This categorical variable will be coded to identify if a

resident has an AD diagnosis ( $I = YES$ ,  $2 = NO$ ). The independent variable in the second question is the same as the first: the number of ADLs an individual needs assistance to perform.

The third, fourth, fifth, sixth, seventh, and eighth questions follow a similar structure. Each of these questions examines how an AD diagnosis is associated with the level of assistance for the six ADLs recorded in the NPALS survey. The six ADLs are bathing, dressing, eating, transferring, toileting, and walking. The dependent variable is an AD diagnosis, which is a dichotomous variable. The independent variable is the level of assistance an individual needs with their ADLs. The level of assistance was recorded on a scale of 1 to 4: *1 = needing help or supervision of another person*, *2 = needing an assistive device*, *3 = both options 1 and 2*, *4 = no assistance*. This independent variable is ordinal.

### **Data Analysis**

All statistical tests were performed using SPSS Version 27.0.1.0. G\*Power Software, version 3.1.9.7, was used to calculate the sample size for each test. The minimum sample size is listed below for each statistical test that was utilized.

**Question One.** A Spearman's Correlation Test will be conducted to test the correlation between the number of chronic conditions an individual has and the number of ADLs they need assistance with performing. The Spearman's Test is a non-parametric test that can be used on ratio data to help determine an association between two variables. A medium effect size, an alpha level of 0.05, and a power of 95% were used to determine a minimum sample size through G\*Power. A minimum sample size of 138 was needed.

**Question Two.** An independent samples t-test will be used to determine if the number of ADLs differ among those with and without Alzheimer's Disease. An independent samples t-test will be used to compare the mean value of ADLs an individual needs help between both groups. The total number of ADLs an RCC resident could need help with is between 0 to 6. An effect size of 0.5, an alpha level of 0.05, and a power of 95% were used to determine the minimal sample size. G\*Power calculated a minimum sample size of 210, with at least 105 people in each group.

**Questions Three Through Eight.** The final questions in this study use the same test and dependent variable. The dependent variable is an AD diagnosis. The independent variable is the ADL, which will change per question. Question three will examine bathing help, question four will examine dressing help, and question five will examine feeding help. Question six will examine transferring help. Questions seven and eight will examine toileting and walking help, respectively. A Chi-Square Test of Independence will be used for all six tests. The Chi-Square Test will help determine if the level of assistance needed per ADL is dependent on an AD diagnosis. An effect size of 0.5, an alpha level of 0.05, and a power of 95% were used to determine a minimum sample size of 80 for a standard 2x2 Chi-Square Test. Since there are four levels of assistance being examined, a 2x4 Chi-Square Test must be used. An additional 80 participants would need to be added to meet a minimal sample size of 160. A Bonferroni correction will be used as a post hoc test to ensure that the results are truly significant. The p-value of 0.5 will be divided by six because there were six Chi-Square Tests conducted. The new p-value of 0.008 will be used to ensure true significance of the results.



## Results

### Resident Demographics

Secondary data from the CDC and NPALS survey was analyzed to evaluate the eight research questions in this study. Of the 829 participants, 231 (27.9%) were male, and 598 (72.1%) were female. The resident's ages ranged from 65 to 95 years old with most of the population being 80 years of age or older (Table 1). The majority of the residents (91.2%) reported their race as White (Table 1). Some survey participants did not completely fill out the questionnaire regarding the ADLs they needed assistance to perform, thus leading to variations in sample sizes. As a result, the sample size was reduced to 802 when comparing ADLs with chronic conditions. The sample size changed again when looking at each ADL individually during the Chi-Square tests. Many did not answer the level of assistance needed for each of the six ADLs.

Table 1  
*Demographics of RCC Residents*

	<i>N</i> (829)	Percentage
Sex		
Male	231	27.90%
Female	598	72.10%
Age		
65-69	41	4.90%
70-74	57	6.90%
75-79	87	10.60%
80-84	134	16.20%
85-89	214	25.80%
90-94	173	20.80%
95**	123	14.80%
Race		
White	756	91.20%
Black	31	3.70%
Hispanic	18	2.20%

Other (Asian, Pacific Islander, Native American, Native Alaskan, Native Hawaiian)	24	2.90%
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\*\*, No resident was over the age of 95.

Table 2  
*Chronic Conditions Among RCC Residents (N=805)*

Chronic Condition	Are They Diagnosed?	
	Yes	No
Anemia	331 (41.10%)	474 (58.90%)
Anxiety	70 (8.70%)	735 (91.30%)
Arthritis (Rheumatoid)	150 (18.60%)	655 (81.40%)
Asthma	18 (2.20%)	787 (97.80%)
Cancer	70 (8.70%)	735 (91.30%)
Congestive Heart Failure (CHF)	94 (11.70%)	711 (88.30%)
Chronic Bronchitis/ Emphysema (COPD)	93 (11.60%)	712 (88.40%)
Depression	220 (27.30%)	585 (72.70%)
Diabetes	143 (17.20%)	662 (82.20%)
Glaucoma	43 (5.30%)	762 (94.70%)
Gout	23 (2.90%)	782 (97.10%)
Heart Disease (Coronary or Ischemic)	134 (16.60%)	671 (83.40%)
High Blood Pressure/ Hypertension (HBP)	458 (56.90%)	347 (43.10%)
Kidney Disease	63 (7.80%)	742 (92.20%)
Macular Degeneration	57 (7.10%)	748 (92.90%)

Obesity	43 (5.30%)	762 (94.70%)
Osteoporosis	110 (13.70%)	695 (83.80%)
Parkinson's Disease	23 (2.90%)	782 (97.10%)
Severe Mental Illness (Schizophrenia, Psychosis, Bipolar Disorder)	44 (5.50%)	761 (94.50%)
Stroke	84 (10.40%)	721 (89.60%)
Traumatic Brain Injury (TBI)	7 (0.90%)	798 (99.10%)

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*\*\* Twenty-four residents did not respond to this portion of the survey. The N changed from 829 to 805.*

Twenty-four residents did not complete the section regarding which chronic conditions they were diagnosed with, which reduced the sample size to 805 individuals. High blood pressure and hypertension were the most prevalent chronic condition among the RCC residents with 458 (56.9%) residents reporting they were diagnosed with the condition (Table 2). Alzheimer's Disease (AD) was the second highest diagnosed condition among 41.1% of residents, accounting for 331 individuals (Table 2). Traumatic brain injuries were the least prevalent condition, with only 7 (0.9%) residents being diagnosed (Table 2). Anxiety, arthritis, depression, diabetes, heart disease, and osteoporosis were also found to be common conditions among the residents (Table 2).

Out of the 331 residents diagnosed with AD, nearly 75% were female (Table 3). The majority of Alzheimer's residents were within the 80 to 95 age range, with 92 residents aged between 85 to 89 years old (Table 3). Coronary and ischemic heart disease were the most common chronic condition among individuals with AD, with nearly 57% being diagnosed with heart disease (Table 4). Arthritis and depression were also common among this group (Table 4).

Table 3

*Demographics of RCC Resident with Alzheimer's Disease*

	<i>N</i> (331)	Percentage
Sex		
Male	83	25.08%
Female	248	74.92%
Age		
65-69	12	3.63%
70-74	16	4.83%
75-79	32	9.67%
80-84	61	18.43%
85-89	92	27.80%
90-94	69	20.85%
95**	49	14.80%
Race		
White	296	89.43%
Black	13	3.93%
Hispanic	9	2.72%
Other (Asian, Pacific Islander, Native American, Native Alaskan, Native Hawaiian)	13	3.93%

\*\**. No resident was over the age of 95.*

Table 4

*Chronic Conditions Among Residents with Alzheimer's Disease*

Chronic Condition	Do They Have Alzheimer's Disease	
	Yes	No
Anemia	28 (8.46%)	303 (91.54%)
Anxiety	69 (20.85%)	262 (79.15%)
Arthritis (Rheumatoid)	76 (22.96%)	255 (77.04%)
Asthma	6 (1.81%)	325 (98.19%)
Cancer	27 (8.16%)	304 (91.84%)

Congestive Heart Failure (CHF)	40 (12.08%)	291 (87.92%)
Chronic Bronchitis/ Emphysema (COPD)	29 (8.76%)	302 (91.24%)
Depression	97 (29.30%)	234 (70.70%)
Diabetes	53 (16.01%)	278 (83.99%)
Glaucoma	16 (4.83%)	315 (95.17%)
Gout	6 (1.81%)	325 (98.19%)
Heart Disease (Coronary or Ischemic)	188 (56.80%)	143 (43.20%)
High Blood Pressure/ Hypertension (HBP)	49 (14.80%)	282 (85.20%)
Kidney Disease	21 (6.34%)	310 (93.66%)
Macular Degeneration	19 (5.74%)	312 (94.26%)
Obesity	16 (4.83%)	315 (95.17%)
Osteoporosis	45 (13.60%)	286 (86.40%)
Parkinson's Disease	9 (2.72%)	322 (97.28%)
Severe Mental Illness (Schizophrenia, Psychosis, Bipolar Disorder)	18 (5.44%)	313 (94.56%)
Stroke	29 (8.76%)	302 (91.24%)
Traumatic Brain Injury (TBI)	3 (0.91%)	328 (99.09%)

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## Major Findings

A Spearman's Correlation Test, Independent Samples t-Test, and Chi-Square Test of Independence were used to test the eight research questions. A Spearman's Correlation Test was conducted to determine if there was a correlation between the number of chronic conditions a resident has and the total number of ADLs they needed assistance to perform. A weak positive correlation was found between the two variables ( $\rho(800) =$

0.176,  $p < 0.001$ ); however the results still indicate a significant relationship between the two variables (Table 5). As the number of chronic conditions an individual has increased, so does the number of ADLs they need assistance with performing.

Table 5

*A Spearman's Correlation Test on the Total Number of ADLs a RCC Resident Needs Assistance within Regards to the Total Number of Chronic Condition Diagnosed*

		Total Assistance Needed	Total Chronic Conditions
Total Assistance Needed	Correlation Coefficient	1000	.176**
	Sig. (2-Tailed)	.	<.001
	N	811	802
Total Chronic Conditions	Correlation Coefficient	.176**	1000
	Sig. (2-Tailed)	<.001	.
	N	802	805

\*\**. Correlation is significant at 0.01 level (2-tailed).*

An independent samples t-test was used to examine the quality of ADL assistance an individual needs when comparing those diagnosed with AD to those who were not diagnosed. When comparing the two groups, the mean number of ADLs that required assistance was significantly higher for individuals with AD ( $M = 4.115$ ,  $SD = 1.9546$ ) compared to those without AD ( $M = 3.032$ ,  $SD = 1.993$ ) (Table 6). A significant difference was found between both groups ( $t(800) = 7.638$ ,  $p < 0.001$ ), implying that individuals with AD need help with more ADLs than those without the condition (Table 6).

Table 6

*Independent Samples t-Test Examining the Influence of Alzheimer's Disease on the Total Number of ADL Assistance an RCC Resident Needs*

<i>Alzheimer's Diagnosis</i>	Group Statistics				t-Test for Equality of Means**			
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Std. Error Mean</i>	<i>t(800)</i>	<i>α (2- tailed)</i>	<i>Mean Dif.</i>	<i>Std. Error Dif.</i>
Yes	330	4.115	1.954	0.0175	7.638	<.001	1.083	0.142
No	472	3.032	1.993	0.0917				

*\*\*.* Equal Variances Assumed

The final six questions were analyzed using a Chi-Square Test of Independence to see if the level of assistance for each ADL (bathing, dressing, eating, toileting, transferring, and walking) was dependent of AD. The questions were set to determine if ADL assistance was independent of an AD diagnosis. A significant relationship was found between each of the six ADLs and an Alzheimer's Diagnosis (Table 7). The post hoc Bonferroni correction ensured that these results were significant, with a required p-value of less than 0.008. Thus, the level of ADL assistance was found to be associated with AD.

Of the 800 individuals that needed help with bathing, 218 (66.06%) individuals with AD needed help or supervision from another person in comparison to the 291 (61.91%) individuals without AD (Table 7). Nearly 27% of individuals without AD did not need any assistance, showcasing a significant relationship on the dependence of ADL support ( $\chi^2(3) = 43.33, p < 0.001$ ) (Table 7). From dressing assistance, no one strictly used an assistive device, changing the degrees of freedom to 2. The Chi-Square test found a significant relationship between the dependence on dressing assistance for those with Alzheimer's Disease ( $\chi^2(2) = 46.533, p < 0.001$ ) (Table 7).

Most residents did not need assistance with eating, regardless of an AD diagnosis (Table 7). A total of 802 residents responded to this question. Nearly 40% of individuals with AD needed assistance, whereas nearly 20% of individuals without AD needed assistance with eating (Table 7). Once again, a significant association was found between individuals with AD and the level of aid they need ( $\chi^2 (3) = 56.725, p < 0.001$ ) (Table 7).

The total number of residents who responded to the toileting ADL questions, regardless of AD diagnosis, was 801. For toileting assistance, 46.06% (152) of residents with AD needed help or supervision compared to 26.54% (125) of residents without AD (Table 7). Nearly 60% (281) of individuals without AD did not need any assistance (Table 7). There was a significant relationship found for this test as well ( $\chi^2 (3) = 58.125, p < 0.001$ ) (Table 7).

A significant relationship was also found between the final two ADLs, transferring and walking (Table 7). The Chi-Square test found that there was an association between AD and needing help performing ADLs, such as transferring ( $\chi^2 (3) = 35.948, p < 0.001$ ) (Table 7). Of the 800 residents who needed help with transferring, nearly 28% (91) of individuals with AD needed help or supervision, whereas only 18% (85) of individuals without AD needed help or supervision (Table 7). More than 50% (248) of residents without AD did not need help with transfers (Table 7). A significant association was found between AD and the level of assistance needed for walking ( $\chi^2 (3) = 17.585, p < 0.001$ ) (Table 7). Nearly 75% (245) of residents with AD needed some form of assistance when walking. Almost 72% (338) of residents without AD also required some form of assistance to walk (Table 7).



Table 7

*Chi-Square Test Cross-tabulation Table: Does an Alzheimer's Disease Diagnosis Influence the Level of Assistance Needed for Each ADL?*

<i>ADL</i>	<i>Level of Assistance</i>	<i>Alzheimer's Diagnosis</i>		<i>Chi-Square</i>	<i>Significance (2-sided)</i>
		Yes	No		
Bathing (N=800)	Needs Help or Supervision from Another Person (1)	218 (66.06%)	291 (61.91%)	43.33	< .001
	Use of an Assistive Device (2)	4 (1.21%)	7 (1.49%)		
	Both (1) and (2)	71(21.51%)	45 (9.57%)		
	Needs No Assistance	37 (11.21%)	127 (27.02%)		
	Total	330	470		
Dressing (N=799)	Needs Help or Supervision from Another Person (1)	224 (67.88%)	232 (49.47%)	46.533	< .001
	Use of an Assistive Device (2)	0 (0.00%)	0 (0.00%)		
	Both (1) and (2)	24 (7.27%)	13 (2.77%)		
	Needs No Assistance	82 (24.85%)	224 (47.76%)		
	Total	330	469		
Eating (N=802)	Needs Help or Supervision from Another Person (1)	123 (37.27%)	74 (15.68%)	56.725	< .001
	Use of an Assistive Device (2)	1 (0.30%)	8 (1.69%)		
	Both (1) and (2)	14 (4.24%)	10 (2.12%)		
	Needs No Assistance	192 (64.00%)	380 (80.51%)		
	Total	330	472		

Toileting (N=801)	Needs Help or Supervision from Another Person (1)	152 (46.06%)	125 (26.54%)	58.125	< .001
	Use of an Assistive Device (2)	16 (4.85%)	23 (4.88%)		
	Both (1) and (2)	48 (14.55%)	42 (8.92%)		
	Needs No Assistance	109 (33.03%)	281 (59.66%)		
	Total	330	471		
Transferring (N=800)	Needs Help or Supervision from Another Person (1)	91 (27.66%)	85 (18.05%)	35.948	< .001
	Use of an Assistive Device (2)	43(13.07%)	77(16.35%)		
	Both (1) and (2)	79 (24.01%)	61 (12.95%)		
	Needs No Assistance	116 (35.26%)	248 (52.65%)		
	Total	329	471		
Walking (N=739)	Needs Help of Supervision from Another Person (1)	44 (13.50%)	46 (9.85%)	17.585	< .001
	Use of an Assistive Device (2)	117 (35.89%)	218 (46.68%)		
	Both (1) and (2)	84 (25.77%)	74 (15.85%)		
	Needs No Assistance	81(24.85%)	129 (27.62%)		
	Total	326	467		

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*\*\*.* N varies due to resident survey completion. Not every resident answered each question.

## **Discussion**

### **Summary of Major Findings**

The resident demographics provided an insightful look into the composition of geriatric residents and the most prevalent conditions present at an RCC. Nearly 72% of residents at an RCC were women compared to 28% of men (Table 1). These findings are congruent with previous research surrounding long-term care facility demographics. A 2010 study found that nearly 67% of institutional care residents were female, comprising most of the population (Kaye et al., 2010).

The majority of residents also identified their race as White (91.20%). The lack of diversity in these findings concludes that these results cannot be extrapolated to encompass the entire U.S. population. The lack of diversity at RCCs may correlate with previous findings on how people of color and minorities struggle to access care and resources, like long-term care facilities (Richardson & Norris, 2010). The inability to access resources is directly related to one's social determinants of health (Richardson & Norris, 2010). As a result, minority groups may receive differential access to health information, health promotion, and prevention activities, leading to different qualities of life (Richardson & Norris, 2010). It should also be acknowledged that the chronic conditions people experience are impacted by one's race and culture (White et al., 2020). Since nearly 91% of residents identified themselves as White, the trends documented regarding common chronic conditions and ADL assistance are more tailored toward a white population.

When looking at the demographics of Alzheimer's residents, a similar trend was found where nearly 75% of residents diagnosed were women, and 25% were men (Table

3). Previous research has shown that two-thirds of clinically diagnosed cases of dementia and AD are women, supporting the trends observed in this study (Beam et al., 2018). The rationale behind women having incident rates of AD is explained through a consistent pattern of women living longer than men, past the age of 80 (Beam et al., 2018). This pattern is observed in this study, with a majority of residents being women and over the age of 80. Even individuals diagnosed with AD were primarily over the age of 80.

Differences were also found among the most common chronic condition diagnosed among residents as a whole and AD residents. While high blood pressure and hypertension were common among all residents, coronary and ischemic heart disease were more common among Alzheimer's patients. Heart disease is one of the most common chronic conditions in the United States and is one of the leading causes of death (CDC, 2022). This explains why heart disease, including high blood pressure and hypertension, were the most common chronic condition among residents.

Previous research has found that cardiovascular risk factors, such as strokes, coronary heart disease, atrial fibrillation, and hypertension, are closely related to the development of AD (Santiago & Potashkin, 2021). Strokes caused by cardiovascular disease can occlude blood vessels in the brain, leading to risks of cognitive decline and AD (Santiago & Potashkin, 2021). Most cardiovascular risk factors have been known to increase the risk of cognitive impairment and dementia (Santiago & Potashkin, 2021). These findings further explain why heart disease was a common chronic condition found among general residents and those with AD.

The first research question was focused on observing a correlation between the number of chronic conditions an individual has and the number of ADLs they need help

performing. A Spearman's Correlation test found a significant, positive relationship between the total number of chronic conditions and ADLs a resident had or needed assistance with, although the association was weak. This finding demonstrates that as the number of chronic conditions increases for RCC residents, the number of ADLs they need assistance performing would also increase. The number of chronic conditions was capped at 22, and the number of ADLs was capped at 6 in the survey used by the CDC and NPALS. The limited frequency of the variables may have contributed to the weak positive correlation. The results of this test support previous research that found a relationship between individuals with multiple chronic conditions also needing assistance with multiple ADLs (Buttorff et al., 2017).

The second research question examined if the mean number of ADLs that required assistance differed between those with and without AD. An independent samples t-test was used to compare the mean number of ADLs an individual needed help to perform in conjunction with an AD diagnosis. Residents with AD were more likely to need assistance with more ADLs than those without AD. On average, residents with AD needed help with four ADLs, and those without AD only needed help with three (Table 6). These results support previous findings that explain that the disruption of executive functioning in AD patients leads to declining skills and abilities to perform ADLs (Martyr & Clare, 2012). Executive functioning is disrupted through the progression of Alzheimer's disease and age, explaining why cognitive status and the later stages of AD can also influence ADL performance (Martyr & Clare, 2012). Since a majority of the AD population in the RCC community are over the age of 80, there could be a possibility that these residents have a more heightened stage of AD, influencing the number of ADLs

they need support to perform. Overall, residents with AD living in RCCs are more likely to need help completing more ADLs, as suggested by other studies (Potkin, 2002).

The final six research questions examined the relationship between Alzheimer's disease and the level of assistance provided to complete ADLs compared to those without AD. A Chi-Square Test of Independence was used to examine these questions and see if the level of ADL assistance was dependent on an Alzheimer's Disease diagnosis. A significant relationship was found between the level of assistance needed for all six ADLs (bathing, dressing, eating, toileting, transferring, and walking) and having Alzheimer's Disease (Table 7). Research has shown that patients with AD are more likely to grow dependent on a caregiver to assist with physical and instrumental activities of daily living (Potkin, 2002).

It is important to note that when it came to dressing assistance, zero percent of residents strictly used a device to help them. It is unclear if this finding is true as devices exist to support self-dressing, such as a Hip Kit (Koester et al., 2018). These kits include sock-aide, leg-lifters, and dressing sticks/grabbers (Koester et al., 2018). It is unclear which tools the CDC and NPALS accounted for in their research. These tools are common in rehabilitative settings to help patients regain independence and are usually used during occupational therapy sessions (Koester et al., 2018). Nonetheless, the results of these six questions support previous findings and showcase that individuals living in RCCs with AD are more likely to require a greater level of assistance than those without AD.

## **Study Limitations**

This study had several limitations, which could be attributed to the methods used for data collection and the population surveyed. Since this was a cross-sectional study, all the data collected was from one given period, limiting the scope of this study. All data were self-reported by RCC residents, suggesting the presence of response bias. Residents may have abstained from answering truthfully, either by accident or on purpose. There is a possibility that residents may not have selected all the chronic conditions they are diagnosed with or been truthful about the level of assistance they need to complete ADLs.

The survey only examined 22 chronic conditions and six ADLs. The cap on these variables led to limited continuous and scale variables, thus limiting the scope of this study. As a result, a Spearman's Correlation test was used instead of a Pearson's Correlation test to see if there was a correlation between the number of chronic conditions a resident had and the number of ADLs they needed help performing even though a Pearson's Correlation test is stronger. The limitations present here may have led to the weak, positive correlation showcased by the Spearman's Correlation test.

Additionally, the survey did not ask about the progression of certain chronic conditions, such as Alzheimer's Disease. Previous research has shown how the progression of AD leads to decreased executive functioning and the ability to perform ADLs (Martyr & Clare, 2012). Having this information would have been helpful in correctly interpreting how the disease impacts ADL performance and the required assistance needed within the RCC population.

An independent samples t-test could not be used to compare the average level of assistance required to complete ADLs between residents with and without AD because of how data was collected. The scale used in the study could not be recoded and combined to calculate a mean level of assistance to compare residents with and without an AD diagnosis. Specifically, the variable was recorded as *1= needing help or supervision of another person*, *2= needing an assistive device*, *3= both options 1 and 2*, and *4= no assistance*. Given these options, a chi-square test of independence had to be used instead to see if the level of assistance required per ADL was dependent on an AD diagnosis. There was no way to determine which level of assistance was significantly relevant to residents with AD.

A prominent limitation came from the diversity of the population. Only two residents from each RCC were randomly selected to participate in this study. On average, RCCs ranged in capacity from 4 to 582 licensed beds, with most having 38 licensed beds (Harris-Kojetin et al., 2013). Two residents from the 1,609 RCCs surveyed in this study do not provide an accurate representation of the patients who live in these facilities. As a result, nearly 91% of RCC residents who completed the survey identified as White, ultimately skewing these results (Table 1). The lack of representation present can possibly lead to a type II error.

In fact, previous research has shown that the development of chronic conditions and the quality of care they receive are influenced by race and the social determinants of health within their community (White et al., 2020). The results of this study only showcase how chronic conditions and Alzheimer's Disease affect ADL performance in a



majority white population. This study is not inclusive of other races and the chronic conditions endemic to them.

Future studies should look at the annual income of residents and their ability to pay for services provided by an RCC. A study like this can help illuminate why there is a larger white population than people of color residing at RCCs. Historically, oppressed and underrepresented groups in the United States have had poorer health outcomes due to their inability to pay for essential health care services. (White et al., 2020). Previous studies have found that minority populations experience racial biases when asking for medical assistance, resulting in a lack of physician trust and avoiding medical care (Hasmann et al., 2013).

### **Public Health Implications**

Future public health policies should focus on ensuring people have affordable and equal access to long-term care facilities, especially in an era where people are living longer and space in long-term care facilities is becoming limited (Kaye et al., 2010; Mitzner et al., 2009). These advancements will help people of color and patients affected by Alzheimer's Disease. This research has shown that individuals with AD likely need extensive support from caregivers (Potkins, 2002). As the progression of AD moves to its last stages, the burden on a caregiver can increase. It is important to have adequate facilities to support the patient and the caregiver.

As the geriatric population grows more rapidly, so will the demand for long-term care. Unfortunately, there is a possibility that minority ethnic groups may not be able to access these resources. The lack to afford care can cause additional chronic conditions to develop, further impacting patient independence and their ability to perform ADLs.

Individuals from poor socioeconomic backgrounds are already disadvantaged because they cannot prioritize their health due to a lack of insurance and provider biases (Richardson & Norris, 2010). If practices like these continue, it will be possible to see disparities in health outcomes among individuals in disadvantaged communities and those who have access to affordable healthcare and long-term care (Richardson & Norris, 2010).

Although healthcare legislation is a complicated and bipartisan issue, future policies should help bridge the gap between race, income, and healthcare access. These policies can help ensure people get the correct treatment they need, prolonging their independence and ability to perform ADLs without assistance. Individuals may be able to afford rehabilitation services with better affordable healthcare coverage, such as physical and occupational therapy, which can help promote independence and facilitate ADL performance (Mlinaca & Feng, 2016).

## **Conclusion**

Overall, this study provided an insightful look into how multiple chronic conditions and Alzheimer's Disease can impact geriatric independence and their ability to complete activities of daily living in Residential Care Communities. A significant relationship was found for each research question studied. As the number of chronic conditions increases, so will the number of ADLs a resident needs help performing. Residents with Alzheimer's Disease are likely to need more assistance with their ADLs, a finding supported by existing literature. This research study also helped conclude that the level of assistance required to complete ADLs depends on having an Alzheimer's Disease diagnosis. Hopefully, future policy recommendations can help limit the burden multiple

chronic conditions and AD have on geriatric residents of RCCs and other long-term care facilities. There is still much to learn about how the progression of certain conditions, like AD, can impact ADL performance. Future policies should be tailored to ensure everyone can get the help they need, regardless of socioeconomic status and race, to support a better quality of life for all individuals.

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## Appendix

Table 1

*Demographics of RCC Residents*

		<i>N</i> (829)	Percentage
Sex			
	Male	231	27.90%
	Female	598	72.10%
Age			
	65-69	41	4.90%
	70-74	57	6.90%
	75-79	87	10.60%
	80-84	134	16.20%
	85-89	214	25.80%
	90-94	173	20.80%
	95**	123	14.80%
Race			
	White	756	91.20%
	Black	31	3.70%
	Hispanic	18	2.20%
	Other (Asian, Pacific Islander, Native American, Native Alaskan, Native Hawaiian	24	2.90%

\*\**. No resident was over the age of 95.*

Table 2

*Chronic Conditions Among RCC Residents (N=805)*

Chronic Condition	Are They Diagnosed?	
	Yes	No
Anemia	331 (41.10%)	474 (58.90%)
Anxiety	70 (8.70%)	735 (91.30%)
Arthritis (Rheumatoid)	150 (18.60%)	655 (81.40%)
Asthma	18 (2.20%)	787 (97.80%)



Cancer	70 (8.70%)	735 (91.30%)
Congestive Heart Failure (CHF)	94 (11.70%)	711 (88.30%)
Chronic Bronchitis/ Emphysema (COPD)	93 (11.60%)	712 (88.40%)
Depression	220 (27.30%)	585 (72.70%)
Diabetes	143 (17.20%)	662 (82.20%)
Glaucoma	43 (5.30%)	762 (94.70%)
Gout	23 (2.90%)	782 (97.10%)
Heart Disease (Coronary or Ischemic)	134 (16.60%)	671 (83.40%)
High Blood Pressure/ Hypertension (HBP)	458 (56.90%)	347 (43.10%)
Kidney Disease	63 (7.80%)	742 (92.20%)
Macular Degeneration	57 (7.10%)	748 (92.90%)
Obesity	43 (5.30%)	762 (94.70%)
Osteoporosis	110 (13.70%)	695 (83.80%)
Parkinson's Disease	23 (2.90%)	782 (97.10%)
Severe Mental Illness (Schizophrenia, Psychosis, Bipolar Disorder)	44 (5.50%)	761 (94.50%)
Stroke	84 (10.40%)	721 (89.60%)
Traumatic Brain Injury (TBI)	7 (0.90%)	798 (99.10%)

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*\*\* Twenty-four residents did not respond to this portion of the survey. The N changed from 829 to 805.*

Table 3

*Demographics of RCC Resident with Alzheimer's Disease*

	<i>N</i> (331)	Percentage
Sex		
Male	83	25.08%
Female	248	74.92%
Age		
65-69	12	3.63%
70-74	16	4.83%
75-79	32	9.67%
80-84	61	18.43%
85-89	92	27.80%
90-94	69	20.85%
95**	49	14.80%
Race		
White	296	89.43%
Black	13	3.93%
Hispanic	9	2.72%
Other (Asian, Pacific Islander, Native American, Native Alaskan, Native Hawaiian	13	3.93%

\*\**. No resident was over the age of 95.*

Table 4

*Chronic Conditions Among Residents with Alzheimer's Disease*

Chronic Condition	Do They Have Alzheimer's Disease	
	Yes	No
Anemia	28 (8.46%)	303 (91.54%)
Anxiety	69 (20.85%)	262 (79.15%)
Arthritis (Rheumatoid)	76 (22.96%)	255 (77.04%)
Asthma	6 (1.81%)	325 (98.19%)
Cancer	27 (8.16%)	304 (91.84%)

Congestive Heart Failure (CHF)	40 (12.08%)	291 (87.92%)
Chronic Bronchitis/ Emphysema (COPD)	29 (8.76%)	302 (91.24%)
Depression	97 (29.30%)	234 (70.70%)
Diabetes	53 (16.01%)	278 (83.99%)
Glaucoma	16 (4.83%)	315 (95.17%)
Gout	6 (1.81%)	325 (98.19%)
Heart Disease (Coronary or Ischemic)	188 (56.80%)	143 (43.20%)
High Blood Pressure/ Hypertension (HBP)	49 (14.80%)	282 (85.20%)
Kidney Disease	21 (6.34%)	310 (93.66%)
Macular Degeneration	19 (5.74%)	312 (94.26%)
Obesity	16 (4.83%)	315 (95.17%)
Osteoporosis	45 (13.60%)	286 (86.40%)
Parkinson's Disease	9 (2.72%)	322 (97.28%)
Severe Mental Illness (Schizophrenia, Psychosis, Bipolar Disorder)	18 (5.44%)	313 (94.56%)
Stroke	29 (8.76%)	302 (91.24%)
Traumatic Brain Injury (TBI)	3 (0.91%)	328 (99.09%)

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Table 5

*A Spearman's Correlation Test on the Total Number of ADLs a RCC Resident Needs Assistance within Regards to the Total Number of Chronic Condition Diagnosed*

		Total Assistance Needed	Total Chronic Conditions
Total Assistance Needed	Correlation Coefficient	1000	.176**
	Sig. (2-Tailed)	.	<.001
	N	811	802
Total Chronic Conditions	Correlation Coefficient	.176**	1000
	Sig. (2-Tailed)	<.001	.
	N	802	805

\*\*. Correlation is significant at 0.01 level (2-tailed).

Table 6

*Independent Samples t-Test Examining the Influence of Alzheimer's Disease on the Total Number of ADL Assistance an RCC Resident Needs*

Group Statistics					t-Test for Equality of Means**			
<i>Alzheimer's Diagnosis</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Std. Error Mean</i>	<i>t(800)</i>	<i>α (2-tailed)</i>	<i>Mean Dif.</i>	<i>Std. Error Dif.</i>
Yes	330	4.115	1.954	0.0175	7.638	<.001	1.083	0.142
No	472	3.032	1.993	0.0917				

\*\*. Equal Variances Assumed

Table 7

*Chi-Square Test Cross-tabulation Table: Does an Alzheimer's Disease Diagnosis Influence the Level of Assistance Needed for Each ADL?*

ADL	Level of Assistance	Alzheimer's Diagnosis		Chi-Square	Significance (2-sided)
		Yes	No		
Bathing (N=800)	Needs Help or Supervision from Another Person (1)	218 (66.06%)	291 (61.91%)	43.33	< .001
	Use of an Assistive Device (2)	4 (1.21%)	7 (1.49%)		
	Both (1) and (2)	71(21.51%)	45 (9.57%)		
	Needs No Assistance	37 (11.21%)	127 (27.02%)		
	Total	330	470		
Dressing (N=799)	Needs Help or Supervision from Another Person (1)	224 (67.88%)	232 (49.47%)	46.533	< .001
	Use of an Assistive Device (2)	0 (0.00%)	0 (0.00%)		
	Both (1) and (2)	24 (7.27%)	13 (2.77%)		
	Needs No Assistance	82 (24.85%)	224 (47.76%)		
	Total	330	469		
Eating (N=802)	Needs Help or Supervision from Another Person (1)	123 (37.27%)	74 (15.68%)	56.725	< .001
	Use of an Assistive Device (2)	1 (0.30%)	8 (1.69%)		
	Both (1) and (2)	14 (4.24%)	10 (2.12%)		
	Needs No Assistance	192 (64.00%)	380 (80.51%)		
	Total	330	472		

Toileting (N=801)	Needs Help or Supervision from Another Person (1)	152 (46.06%)	125 (26.54%)	58.125	< .001
	Use of an Assistive Device (2)	16 (4.85%)	23 (4.88%)		
	Both (1) and (2)	48 (14.55%)	42 (8.92%)		
	Needs No Assistance	109 (33.03%)	281 (59.66%)		
	Total	330	471		
Transferring (N=800)	Needs Help or Supervision from Another Person (1)	91 (27.66%)	85 (18.05%)	35.948	< .001
	Use of an Assistive Device (2)	43(13.07%)	77(16.35%)		
	Both (1) and (2)	79 (24.01%)	61 (12.95%)		
	Needs No Assistance	116 (35.26%)	248 (52.65%)		
	Total	329	471		
Walking (N=739)	Needs Help of Supervision from Another Person (1)	44 (13.50%)	46 (9.85%)	17.585	< .001
	Use of an Assistive Device (2)	117 (35.89%)	218 (46.68%)		
	Both (1) and (2)	84 (25.77%)	74 (15.85%)		
	Needs No Assistance	81(24.85%)	129 (27.62%)		
	Total	326	467		

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*\*\*.* N varies due to resident survey completion. Not every resident answered each question.