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Examining the Association of Intergenerational Relationships and Living Arrangement on Depression Prevalence in Home Health and Hospice Patients Age 65 and Older

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ABSTRACT

EXAMINING THE ASSOCIATION OF INTERGENERATIONAL RELATIONSHIPS AND

LIVING ARRANGEMENT ON DEPRESSION PREVALENCE IN HOME HEALTH AND

HOSPICE PATIENTS AGE 65 AND OLDER, NATIONAL HOME AND HOSPICE CARE

SURVEY, 2007

By

LAUREN ELIZABETH HAYDE

INTRODUCTION: Geriatric depression affects millions of aging adults aged 65 and older every year and is not a normal part of aging. Relationship with family members and living arrangements are among independent predictors for geriatric depression (Venkatachalam et al., 2018). Elderly suffering from depression have higher in-patient health care costs than non-depressed elderly patients (Katon, 2003). To improve quality of life among the rapidly expanding aging population and alleviate health care costs through the development of cost-effective prevention methods, further understanding of predictors for geriatric depression is needed.

AIM: To examine the effect of living arrangement and intergenerational relationships on depression prevalence among elderly home health and hospice patients.

METHODS: A cross sectional study was performed using data from the 2007 National Home and Hospice Care Survey. Logistic regression analysis was conducted to examine the association between the independent variables of interest and depression

in elderly home health and hospice patients.

RESULTS: Living with others was determined to be a protective factor against depression in elderly home health and hospice patients. Those who lived alone reported 1.9 times the adjusted odds of having depression than those who lived with others. Participants who had a non-family member caregiver had greater depression prevalence than those who had a family member caregiver. This study did not find that intergenerational relationships were a protective factor against depression in elderly home health and hospice patients.

DISCUSSION: Due to the increased odds of depression in elderly who live alone versus those who live with others, it may be beneficial to further explore low-cost preventative and treatment measures that involve greater interaction with others such as weekly classes and group events. Additionally, it should be stressed to both health care providers and adults age 65 and older that depression is not a normal part of aging.

KEY WORDS: depression, elderly, intergenerational relationships

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B.S., BRENAU UNIVERSITY

A Thesis Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment
of the
Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA
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APPROVAL PAGE

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Acknowledgments

First and foremost, I would like to thank God for giving me the strength and encouragement throughout this entire journey. 2 Corinthians 3:5 "Not that we are competent in ourselves to claim anything for ourselves, but our competence comes from God." My research would not have been possible without the guidance of Dr. Richard Rothenberg and Dr. Kim Ramsey-White. Their support and encouragement have been invaluable throughout the duration of my graduate studies. Additionally, I would like to express heartfelt gratitude to my husband, Daniel, for his unwavering love and confidence in me. I would also like to express appreciation to my beautiful daughters, Keslie and Caitlyn, for providing me with motivation to pursue my dreams. Last, but certainly not least, I would like to thank my parents for always believing in me and supporting me in everything that I do.

Author's Statement Page

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Lauren Elizabeth Hayde

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1. Introduction

1.1 Background

Geriatric depression affects millions of aging adults annually and is the most common mental health disorder among the elderly (Venkatachalem et al., 2018). Even though depression is common among elderly, it is important to stress that depression is not a normal part of aging, rather depression is a serious public health concern. Geriatric depression often goes unnoticed and underdiagnosed by health care professionals (Venkatachalem et al., 2018). Prevalence and risk factors of geriatric depression have been studied sufficiently; however, there is a lack in knowledge on prevention measures for geriatric depression. The lack of preventative knowledge on geriatric depression creates negative implications on elderly persons' quality of life as well as serious economic burden on society.

Relationship with family members and living arrangements are among the independent predictors for geriatric depression (Venkatachalam et al., 2018). The roles of intergenerational relationships and living arrangement on depression prevalence in home health and hospice patients age 65 and older have never been directly compared. In this paper, I aim to discover how living arrangement and caregiver relationship have an impact on depression frequency among elderly home health and hospice patients. If living with others can be positively correlated with lower depression rates among elderly, it will be beneficial to further explore low-cost preventative measures such as intergenerational care facilities (i.e. combining nursing homes and childcare facilities).

1.2 Aims

To examine the effect of intergenerational relationships and living arrangement on depression prevalence in home health and hospice patients aged 65 and older this research aims to achieve the following:

1. To determine if living with others lowers depression prevalence in elderly home health and hospice patients.

    Alternate Hypothesis: Elderly home health and hospice participants who live with others will have lower rates of depression than patients who live alone.

2. To examine whether the relationship of the caregiver to elderly patients has an impact on depression prevalence.

    Alternate Hypothesis: Patients with a caregiver who is a family member or friend will have lower rates of depression than patients who have no familial or friendly relationship with their caregiver.

3. To determine if intergenerational relationships reduce depression prevalence among elderly home health and hospice patients.

    Alternate Hypothesis: Intergenerational relationships will reduce depression rates among elderly home health and hospice patients when compared to patients living alone and patients living with a caregiver who is in the same generation as the patient.

This analysis utilized secondary data from the National Home and Hospice Care Survey, 2007. The response variable of focus is depression. The explanatory variables

of focus are living arrangement and intergenerational relationship. Due to using a

secondary data source, intergenerational relationship was determined by using the

relationship of the patient's caregiver to the patient. Logistic regression analysis was

used to measure and explore the relationship between the explanatory variables and

the response variable of interest.

2. Review of the Literature

2.1 Prevalence and Etiology of Depression in the Elderly

The aging population is growing at a rapid pace and expected to reach over 1.6 billion by 2050 (He, Goodkind, & Kowal, 2016). Depression is less prevalent among the aging population when compared to the younger adult population; however, depressed elderly adults are more likely to commit suicide than depressed younger adults (Djernes, 2006; Venkatachalem et al., 2018; Fiske, Wetherell & Gatz, 2009). Nearly 5% of adults age 50 or older reported major depressive episode in 2016 (National Institute of Mental Health, 2017). Depression is more prevalent in elderly women than elderly men; however, this could be due to men being less willing to reveal symptoms of depression to health care providers (Venkatachalem et al., 2018). Geriatric depression can be caused by a combination of biological, social, and psychological factors such as worsening cognitive function, disease comorbidities, lack of social interaction, and physical functioning decline due to age or illness (Venkatachalem et al., 2018).

2.2 Costs Associated with Depression in the Elderly

Quality of life. Few studies have examined the association between quality of life among depressed elderly individuals, possibly due to the misconception that depression is a normal occurrence in aging adults. Elderly who are depressed are more likely to have less quality of life satisfaction than elderly who are not depressed (Lin et al., 2014; Doraiswamy et al., 2002). Quality of life among elderly depressed patients is influenced by multiple variables such as medical comorbidities, depression, sex, and age (Doraiswamy et al., 2002). Female elderly who are depressed are more likely than men to report lower quality of life (Doraiswamy et al., 2002). Depression has been proven to

be positively correlated with chronic diseases, such as diabetes, cardiovascular disease, and hypertension (Lee et al., 2018). The increase in chronic disease comorbidities is likely to lessen the quality of life experienced by depressed elderly individuals (Lee et al., 2018; Doraiswamy et al., 2002).

Healthcare costs. Elderly who are depressed utilize emergency room visits and are hospitalized more frequently and for a longer duration of time than their non-depressed counterparts (Himelhoch et al., 2004). Due to longer hospitalizations and more frequent health care visits, elderly suffering from depression have in-patient costs between 47% and 51% higher than non-depressed elderly patients (Katon, 2003). Surprisingly, a study that examined the association between healthcare costs and depression found that depressed elderly enrolled in Medicare have greater costs in every cost category with the exception of specialized mental health care (Unutzer et al., 2009). The lack of increase in mental health care costs by depressed elderly patients shows that health care providers may not be recognizing, diagnosing, treating, or referring patients with depression to mental health care specialists or that patients may not view their depression as a serious health condition.

2.3 Attempts to Solve

In order to reduce healthcare costs, it is vital to discover cost-effective preventative and treatment methods to reduce the prevalence of depression among the aging population. Currently, research performed on elderly depression is focused on treatment of depression, rather than prevention. Treatment methods are often costlier and more time consuming than prevention methods. Many of the depression treatments offered to the elderly population are the same as those offered to the working age population,

although elderly adults have higher depression relapse rates than working age adults (Mitchell & Subramaniam, 2005).

Psychotherapeutic interventions. Cognitive behavioral therapy and electroconvulsive therapy are among the many psychotherapeutic interventions used to treat elderly depression. Cognitive behavioral therapy may not be equally efficacious in treating depression among elderly adults as it is in working age adults; however cognitive behavioral therapy is still an effective treatment method for depression in the elderly population (Kishita & Laidlaw, 2017; Jayasekara et al., 2015). Electroconvulsive therapy is the most effective treatment method for severe depression and is commonly used in patients who are unable or unwilling to take antidepressants; however, participants are unable to undergo electroconvulsive therapy if they have a deteriorating physical condition, which limits the amount of depressed elderly able to seek electroconvulsive treatment (Taylor, 2014).

Pharmacotherapy. Antidepressants are an effective treatment method for elderly depression; however, due to potential pharmaceutical drug interactions and multiple medical comorbidities, they pose the greatest risks for adverse outcomes (Kok & Reynolds III, 2017). Additionally, antidepressant efficacy has been shown to decrease as age increases, potentially due to the increase of medical comorbid conditions that occur with increase aged (Tedeschini et al., 2011; Calati et al., 2013).

Activity scheduling. Activity scheduling involves generating enjoyable activities for elderly to participate in and is commonly practiced in nursing homes and assisted living communities. Previous studies have suggested that engaging in physical and leisure activities can reduce the prevalence of depression in the elderly community (Lee

et al., 2018). Activity scheduling is a very promising preventative and treatment method for elderly depression as it increases social interactions, increases critical thinking, and provides daily goals and tasks. A meta-analysis performed by Cuijpers, van Straten, and Warmerdam (2007) found that activity scheduling is equally effective as cognitive behavioral therapy in treating depression among the elderly population.

Intergenerational Care Facilities. Intergenerational care facilities (facilities that care for small children and the elderly) are a relatively new development; therefore, little research has been performed on them. A small, qualitative study performed on an intergenerational care facility in rural Vermont determined that elderly reported a primarily positive attitude towards interacting with children (Chamberlain, Fetterman, & Maher, 2006). Through facilitation of meaningful engagement between generations, intergenerational care facilities offer mutual benefits to both the aging generation and the youth generation. Intergenerational care facilities offer aging adults the opportunity to help others, develop meaningful connections, and give them something positive to look forward to (Skropeta, Colvin, & Sladen, 2014). Relationship with family members is a known independent predictor for the development of geriatric depression (Venkatachalam et al., 2018). Therefore, intergenerational care facilities may be especially beneficial to aging adults who are unable to frequently spend time their own children and grandchildren, because it would give them the opportunity to develop an emotional bond in a 'proxy' grandchild-grandparent relationship.

2.4 Barriers to Treatment

Patient barriers. The greatest barrier to depression treatment in elderly adults is the inability to identify the need for help due to the perception that depression symptoms

are normal (Wuthrich & Frei, 2015). Perceived stigma has been associated with non-adherence and discontinuation of depression treatment (Sirey et al., 2001). Sociocultural influences such as norms, preferences, and beliefs, have an impact on patient perceptions of healthcare treatment and willingness to participant in depression treatment (Wuthrich & Frei, 2015; Sirey et al., 2001). Elderly minorities face barriers to treatment on all levels of the socioecological model and are far less likely than their white counterparts to receive any depression treatment (Ell, 2006). Inadequate drug coverage which includes high prescription drug costs may discourage the aging population from getting prescribed antidepressants (Wuthrich & Frei, 2015; Sirey et al., 2001). Additionally, ability to access treatment remains a significant barrier to receiving depression treatment among the elderly population (Ell, 2006).

Physician barriers. Primary care physician attitudes towards depression may hinder depression treatment and lead to the dismissal of depression among elderly patients due to the misconception that depression is a normal part of aging (Ell, 2006). Depressive symptoms are less noticeable by physicians when compared to physical conditions; therefore, physicians are more likely to focus on and treat physical conditions than depression (Ell, 2006). Many health care settings rely solely on physician and caregiver observation in diagnosing depression; however, medical caregivers and physicians may lack depression training which can lead to under-diagnosis of depression (Ell, 2006).

3. Methods and Procedures

3.1 Study Design and Sample

This study was performed using data from the 2007 National Home and Hospice Care Survey. The National Home and Hospice Care Survey uses a stratified two-stage probability design to survey current home health patients and hospice discharges nationally. Sample variables were collected through patient medical records and/or a survey performed by the patient and health care facility staff at patient discharge or patient death.

3.2 Variables

For the purpose of this research, depression rates in only those aged 65 and older were analyzed. Categorical key variables used from this study include: depression, living arrangement, sex, race, level of cognitive functioning, and relationship of caregiver. Participant data was only analyzed if age was equal to or greater than 65 at the time of the survey. In order to determine if intergenerational relationships were associated with depression in participants, depression prevalence was compared between participants who reported living with their spouse and participants who reported living with their child. For the purpose of this study, it was assumed that spouses were in the same generation as the participant and children were in a different generation than the participant (intergenerational).

3.3 Statistical Analysis

The dataset was transformed by using conditional processing in SAS 9.4. Formats were already included with the data set when downloaded into SAS; however, additional formats were created in order to increase readability in report. Frequency procedure was

performed to determine the frequency distribution of variables. Descriptive statistical analysis was conducted to detail median average age of data participants as well as average number of home health and hospice patients over age 65 suffering from depression. The Kolmogorov-Smirnov test was used to determine distribution normality for age because sample size was greater than 2000. The results from the Kolmogorov-Smirnov test (p-value <0.010) determined that the distribution of age was not normal; therefore, median value of age was analyzed rather than mean value. Wilcoxon Ranked Sum was used to analyze the median age of depressed versus non-depressed participants because the data is non-parametric and does not meet the required assumptions for the paired t test. Chi-square (χ^2) analysis was used to assess the strength of the association between categorical variables. Initially, crude odds ratios and confidence intervals were calculated to analyze the association between elderly depression and specific variables of interest (caregiver relationship, who the participant lives with, intergenerational relationship, and level of cognitive function), then multivariate logistic regression analyses were performed to calculate odds ratios adjusting for covariates.

3.4 Ethical Considerations

The National Home and Hospice Care Survey, 2007 dataset was approved by the Georgia State University's Institutional Review Board. This dataset does not contain any documentation or information that could be used to identify individual research participants.

4. Results

4.1 Demographic Characteristics of Sample Based on Exposure

Table 4.1 Characteristics of elderly home health and hospice patients age 65 and older

based on living arrangement, National Home and Hospice Care Survey, 2007

Participant Characteristics	Living Alone N=1181 N (%) = 36.98	Living with Others N=2013 N (%) = 63.02	Total N=3194	P-value
Age, years				
Median (IQR)	82 (65.0-100.0)	80 (65.0-100.0)	80.50 (65.0-100.0)	<0.0001[C]
Sex				
Male	274 (23.20)[B]	768 (38.15)	848 (32.62)	<0.0001[A]
Female	907 (76.80)	1245 (61.85)	1753 (67.38)	
Race				
White	1026 (86.88)[B]	1745 (86.69)[B]	2771 (86.76)[B]	0.555[A]
Black	134 (11.35)[B]	221 (10.98)[B]	355 (11.11)[B]	
Other	21 (1.78)[B]	47 (2.33)[B]	68 (2.13)[B]	
Level of Cognitive Functioning				
No Cognitive Impairment	604 (51.45)[B]	906 (45.60)[B]	1510 (47.77)[B]	<0.0001[A]
Occasional Reminders	327 (27.85)[B]	510 (25.67)[B]	837 (26.48)[B]	
Some Assistance Required	180 (15.33)[B]	311 (15.65)[B]	491 (15.53)[B]	
Routine Assistance Required	56 (4.77)[B]	219 (11.02)[B]	275 (8.70)[B]	
Severe Cognitive Impairment	7 (0.60)[B]	41 (2.06)[B]	48 (1.52)[B]	
Missing	7	26	33	
Relationship of Caregiver				
Spouse	10 (1.29)	838 (45.94)	848 (32.60)	<0.0001[A]
Child	473 (60.88)	619 (33.94)	1092 (41.98)	
Parent	2 (0.26)	13 (0.71)	15 (0.58)	
Other Family	128 (16.47)	158 (8.66)	286 (11.00)	
Unrelated	164 (21.11)	196 (10.75)	360 (13.84)	
Missing	404	189	593	
Depression				
Yes	21 (12.50)	26 (7.12)	47 (8.82)	0.042[A]
No	147 (87.50)	339 (92.88)	486 (91.18)	
Missing	609	1459	2693	

**Abbreviations: IQR, interquartile range
A. χ^2
B. Column percent
C. Wilcoxon Rank Sum
D. Row percent

This study's primary exposure variable was living arrangement. 1181 participants

reported living alone (37.0%) and 2013 participants reported living with others (63.0%).

Based on p-values, the following variables were deemed to be significantly associated

with living arrangement in participants: age, sex, level of cognitive functioning,

relationship of caregiver, and depression.

4.2 Association of Descriptive Variables and Elderly Hospice Depression

Table 4.2 Characteristics of living arrangement in home health and hospice patients aged

65 and older by sociodemographic variables, National Home and Hospice Care Survey,

2007

Participant Characteristics	Depressed N=48 N (%) = 8.96	Not Depressed N=488 N (%) = 91.04	Total N=536	P-value
Age, years				
Median (IQR)	80 (65.0-95.0)	82 (65.0-100.0)	80.50 (65.0-100.0)	0.061[C]
Sex				
Male	12 (25.00)[B]	173 (35.45)	185 (34.51)	0.146[A]
Female	36 (75.00)	315 (64.55)	351 (65.49)	
Race				
White	45 (93.75)[B]	437 (89.55)[B]	482 (89.93)[B]	0.518[A]
Black	3 (6.25)[B]	41 (8.40)[B]	44 (8.21)[B]	
Other	0	10 (2.05)[B]	10 (1.87)[B]	
Level of Cognitive Functioning	12 (6.12)[D]	184 (93.88)[D]	196 (37.26)[B]	0.049[A]
No Cognitive Impairment	14 (8.70)[D]	147 (91.30)[D]	161 (30.61)[B]	
Occasional Reminders	8 (8.79)[D]	83 (91.21)[D]	91 (17.30)[B]	
Some Assistance Required	11 (18.33)[D]	49 (81.76)[D]	60 (11.41)[B]	
Routine Assistance Required	3 (16.67)[B]	15 (83.33)[B]	18 (3.42)[B]	
Severe Cognitive Impairment	0	10	10	
Missing				
Relationship of Caregiver				
Spouse	7 (4.70)[D]	142 (95.30)[D]	149 (31.91)[B]	0.047[A]
Child	24 (11.54)[D]	184 (88.46)[D]	208 (44.54)[B]	
Parent	1 (50.00)[D]	1 (50.00)[D]	2 (0.43)[B]	
Other Family	4 (8.89)[D]	41 (91.11)[D]	45 (9.64)[B]	
Unrelated	8 (12.70)[D]	55 (87.30)[D]	63 (13.49)[B]	
Missing	4	65	69	
Living Arrangement				
Alone	21 (12.50)[D]	147 (87.50)[D]	168 (31.52)[B]	0.042[A]
With Others	26 (7.12)[D]	339 (92.88)[D]	365 (68.48)[B]	
Missing	1	2	3	

**Abbreviations: IQR, interquartile range
  A. χ^2
  B. Column percent
  C. Wilcoxon Rank Sum
  D. Row percent

Table 4.3 Multivariable Model for the Association between Depression and Living Arrangement in Adults Age 65 and Older, National Home and Hospice Care Survey, 2007

Participant Characteristic	Odds Ratio for Depression		95% Adjusted Confidence Limits
	Crude	Adjusted	
Living Alone	1.86	1.90[++]	1.139, 4.139[++]
Non-Family Caregiver	0.673	1.24[++]	1.019, 1.506[++]
Same Generation Caregiver	0.378	0.349[++]	0.118, 1.030[++]

[++]adjusted for age and level of cognitive function

4.2.4 Living arrangement and depression. 7.1% of hospice participants over age 65 who lived with others reported depression; however, 12.5% of hospice participants over age 65 who live alone reported depression. The depression frequency in all elderly patients surveyed was 8.82%. In this study, those who lived alone reported 1.9 times the adjusted odds of having depression than those who lived with others, with 95% confidence the true odds ratio lies in the range 1.1 to 4.1. Living arrangement was determined to be a significant variable associated with depression in hospice participants age 65 and older (p-value = 0.042)**.**

4.2.5 Relationship of caregiver and depression. Participants who reported a spouse as their caregiver reported the lowest depression frequency (4.7%), while participants who reported an unrelated caregiver reported the highest frequency of depression (12.7%). Depression frequency in participants who lived with parents was not considered due to low sample (n=2). Relationship of caregiver was determined to be a significant variable associated with depression in hospice participants age 65 and older (p-value = 0.047).

4.2.6 Intergenerational relationship and depression. Based on the results of this study, participants who reported living with a spouse had lower odds of depression than participants who reported living with a child (adjusted OR = 0.35), with 95% confidence that the true odds lay between 0.12 and 1.0.

4.2.3 Level of cognitive function and depression. Level of cognitive functioning was deemed to be a confounding variable; therefore, it was adjusted for when calculating adjusted odds ratios. Participants who required routine assistance had the highest prevalence of depression (18.3%), while participants who reported no cognitive impairment had the lowest prevalence of depression (6.1%). In this study, those who had lower levels of cognitive functioning reported 1.6 times the odds of having depression than those who reported higher levels of cognitive functioning, with 95% confidence the true odds ratio lies in the range 1.2, 2.1.

4.2.1 Age and Depression. 47 hospice and home health participants over the age of 65 answered 'yes' to suffering from depression in the 2007 National Home and Hospice Care Survey. The median age of participants over 65 in hospice care was 80.50 years old. The median age of participants who reported depression was 80 years old and the median age of participants who did not report depression was 82 years old. Based on the p-value (0.061), the association of age with depression in hospice patients age 65 and older was of borderline significance ; however, age was significantly associated with living arrangement (p-value = <0.0001).

4.2.2 Sex, Race, and Depression. Female participants made up 75% of total participants who reported that they have depression. White participants made up 89.9% of participants and black participants made up8.2% of participants. 6.3% of participants

who reported depression were black and 93.8% were white. Race was determined to not be a significant variable associated with depression in hospice patients age 65 and older (p-value = 0.518).

5. Discussion and Conclusion

5.1 Discussion of Research Questions

Aim 1. To determine if living with others lowers depression prevalence in elderly home health and hospice patients. In this study, those who lived alone reported 1.9 times the adjusted odds of having depression than those who lived with others, with 95% confidence the true odds ratio lies in the range 1.1 to 4.1. Additionally, those who live alone have an increased depression prevalence compared to those who live with others. Therefore, based on the results of this study, it can be concluded that living with others is indeed a protective factor against depression in elderly home health and hospice patients.

Aim 2. To examine whether the relationship of the caregiver to elderly patients has an impact on depression prevalence. Yes, based on the results of this study elderly participants with a caregiver who was a family member had lower odds of depression compared to those who did not have a family member as a caregiver. Additionally, those with an unrelated caregiver showed the highest depression prevalence (12.7); therefore, having a family member as a care giver appears to be a protective factor against depression in elderly home health and hospice patients.

4. **Aim 3. To determine if intergenerational relationships reduce depression prevalence among elderly home health and hospice patients**. Participants who reported living with a spouse had lower adjusted odds of depression than participants who reported living with a child (OR = 0.35), with 95% confidence that the true odds lay between 0.118 and 1.03. Therefore, based on the results of this study, living with

a spouse is protective against depression compared to living with a child among elderly home health and hospice patients.

5.2 Study Strengths and Limitations

Many of the randomized controlled trials exclude frail or elderly adults; therefore, data on depression treatment in the elderly population is extremely limited. Data collected on home health and hospice patients was gathered through medical records; therefore, there is a reduced possibility of response bias. The data from this survey is greater than 10 years old and may not be completely generalizable to the current elderly population.

Because there was no designated variable for intergenerational relationships in the National Home and Hospice Care Survey, the 2007 database and the analysis of the relationship of the participant's caregiver may not be reflective of the length of time the participant spends in engaging in intergenerational relationships. In future analyses examining intergenerational relationships it will be beneficial to specifically include variables that measure the length of time participants spend engaging with others in various generations. Ideally, in future studies, I recommend to specifically examine the time spent and relationship between grandparents, grandchildren, and non-related youth in order to measure intergenerational relationships in their entirety to determine if these relationships (or lack of relationships) impact the prevalence of depression in the aging population.

5.3 Conclusion

Depression is a severe public health concern, especially regarding the aging population. Due to the increased odds of depression in elderly who live alone versus those who live with others, it may be beneficial to further explore low-cost preventative

and treatment measures that involve greater interaction with others such as weekly classes and group events. Additionally, it should be stressed to both health care providers and adults age 65 and older that depression is not a normal part of aging. Elderly home health and hospice patients should be encouraged to live with others and if possible, have a willing family member take on the role of primary caregiver. Taking steps to lessen depression prevalence in the elderly population may substantially reduce healthcare costs and significantly increase the quality of life experienced by elderly individuals.

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