ABSTRACT

Social Isolation and Depression in Elderly Populations:

A Systematic Review

Grant Linnell

Director: Jeff Levin Ph. D., M.P.H.

As the population continues to age, more older adults are living alone or in assisted living facilities. Social isolation amongst the older population is emerging as one of the major issues facing the industrialized world. This thesis reviews the published literature since the beginning of the century relating social isolation to depression in older adult populations. In this thesis, twenty-six peer-reviewed research articles were reviewed and the results reveal that social isolation has significant negative impacts on the mental well-being of this population, specifically through increased rates of depression. Also, the review revealed that two specific components of social isolation, perceived isolation and social disconnectedness, negatively impact mental health in unique ways. It is concluded that while social interventions must take place in order to combat the issue, familial structure and support may be the most effective counter-measures.

APPROVED BY DIRECTOR OF HONORS THESIS:

_____

Dr. Jeff Levin, Institute for Studies of Religion

APPROVED BY THE HONORS PROGRAM:

_____

Dr. Elizabeth Corey, Director

DATE: _____

SOCIAL ISOLATION AND DEPRESSION IN ELDERLY POPULATIONS:

A SYSTEMATIC REVIEW

Submitted to the Faculty of

Baylor University

In Partial Fulfillment of the Requirements for the

Honors Program

By

Grant Linnell

Waco, Texas

May 2019

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

ACKNOWLEDGMENTS

I would like to express my special thanks to Dr. Jeff Levin who partnered with me and supported me through the completion of this thesis. I am appreciative for all of the time and effort you put into teaching me through this process and creating the final product.

I would also like to express my gratitude to Debra King and Dr. Matt Bradshaw who both contributed to the inspiration for this thesis.

Thank you also to all of my family and friends who have supported over the last two years through the thesis process.

CHAPTER ONE

Introduction

The impact of social factors on the health of a population goes beyond the immediate physical causes of disease or wellness. The social determinants of health point to the root, upstream sources that predict and shape the health of individuals. Research has shown that social isolation and depression are directly related. A lack of social support and social engagement has been shown to affect individuals through the neuroendocrine response system.

The population that seems to be at highest risk for these adverse effects is the elderly. Older adults often experience higher rates of depression depending on their social status. The following literature review aims to show that social isolation, which many older adults often encounter, has powerful consequences on their mental health and overall well-being. Through a summary of existing research studies relating to this topic, this thesis will attempt to highlight the evidence of this potentially etiological relationship. The shift in demographics toward a proportionately much larger elderly population in the United States accentuates the urgency and timeliness of this subject. Policymakers, healthcare professionals, and the American public must be aware moving forward of the social forces that impact the health of this aging population.

Specific Aims

Social forces play a direct role in determining the health of individuals within a population. The degree to which people are socially connected, through functions such as social support and social engagement, has been shown to have a significant impact on their mental health, specifically their chances of clinical depression. The main goal of this study is to review and advocate for research showing social isolation among elderly people to be an important risk factor for mental illness.

The objective of this study is to summarize results from a multitude of studies of different communities which document rates of depression as a function of the structure of social connectedness among older adults. Journal articles from the Year 2000 through the present are reviewed in this study.

The main hypothesis of this study is that lower levels of social support and social engagement in the population are associated with higher rates of depression. It is hoped that this study will bring attention to the under-investigated problem of mental health in aging adults, reduce societal stigma around depression, and highlight the strong force that social structures and inequality have on health.

Background

Social epidemiologists argue that health is a function of a myriad factors besides biological and health services variables (Marmot et al. 1999). Researchers define this area of study as: “the branch of epidemiology that studies the social distribution and social determinants of health” (Berkman et al. 2000). Originating with the work of Dr.

Sidney Kark and Dr. John Cassel in South Africa in the 1950s, their observations about a single population of the Zulu people changed the way that public health scientists have come to view the impact of social structure and organization on health (Ibrahim et al. 1980). Much of the early research on the interplay of social factors and health grew out of studies in a geographical area where social oppression was prevalent. This speaks to the relevance and importance of social epidemiology for documenting the effects of social inequities, including those that remain in the world today. Ample research supports the argument that social factors contribute to the distribution of health and illness, the onset of disease, and population health outcomes. Leading researchers in the field of social epidemiology make the case that inequality is a major contributor to the perpetuation of illness and disease within populations (Berkman et al. 2000, Amick et al. 1995).

Socioeconomic and other social factors that are related to the make-up of communities address phenomena that go beyond the simple demographic characteristics of individuals that have long been known to affect health. In order to more effectively improve the health of individuals and increase the overall well-being of a community, focus must be given to what are termed “upstream” factors, such as reducing poverty and social inequality (Berkman et al. 2000). Research on the social determinants of health can provide a holistic view of the interaction of the individual with the social and biological environments. Since a goal of medicine and healthcare is to ensure mental and physical well-being, healthcare professionals and policymakers must not only address the pathogen or immediate factor impacting a person’s health,

but also take a step back in search of a root cause. Research shows that various social determinants may be the key to this kind of inquiry. Incorporating social epidemiologic evidence into the thinking around current policy, medical care, and the health of populations could reshape and refocus the national debate on public health and healthcare in a positive way.

One of the most significant areas of research in social epidemiology is on the consequences of social isolation on the health of individuals. Evidence suggests a causal relationship between the social support and social engagement functions of social networks on the mental health of populations (Berkman et al. 2000). In this section, conceptual and theoretical material on this relationship is summarized. First, social support and social engagement are described, including how they are believed to relate to measures of overall well-being, specifically depression. Second, mechanisms and pathways by which these social structures and functions affect health are explored. Third, current and anticipated medical and social implications of these observations for the mental health of older adults is discussed.

Social support is typically divided into different subtypes, variously defined depending on the author. One prominent model distinguishes among emotional, instrumental, and appraisal support (House 1981). Emotional support refers to the love, care, and understanding that a person senses from others (Berkman et al. 2000). This kind of support is often provided by an intimate other, but also can be expanded to include close friends or other parts of a person's social network, such as one's church community. Instrumental support refers to the assistance with physical or everyday

needs that is often provided by way of a social network (House 1981). For the elderly, this often include tasks such as cooking, groceries, paying bills, or self-care, all of which require aid in completing, especially for those with physical or cognitive decline preventing their ability to be self-sufficient in those areas. Appraisal support is associated with help in decision-making through feedback or recommendation. Informational support refers to advice or any practical information that is necessary for any specific need or situation (Berkman et al. 2000).

For many older individuals, these types of of social support are often provided through close network ties, including close family or peers. According to the Centers for Disease Control and Prevention, as of 2014, 1.4 million Americans resided in nursing homes and long term care facilities (Rothwell et al. 2016). With so many older adults experiencing fluid living and social conditions, social support must be carefully documented and examined in order to better understand the health consequences of this substantial change in population demographics.

Studies of social relationships and health first appeared in the mental health literature. Suicide, one of the most well known and well studied results of depression and mental illness, has long been believed to be directly related to a lack of social support and connectedness (Durkheim 1957). A lack of social support, captured by concepts such as social isolation, is strongly implicated as a mental health risk (Kaplan et al. 1997, Langer and Michael 1960). Throughout this research, much of which has been cross-sectional, especially early on, it has been difficult to point to an explicitly etiological relationship between the two concepts (Kaplan et al. 1997). Still, multitudes

of studies show a clear inverse association between the extent of social support and the presence of a mental disorder, especially depression (Paykel 1994).

There also is strong support for emotional support, a function of social support, as a protective factor or mediator against life stressors on mental health. Those with better social support are less likely to suffer from depression after experiencing a traditional risk factor such as disease, low socioeconomic status, or the loss of a loved one (Marmot and Wilkinson 1999, Kessler and McLeod 1985). In particular, studies of mothers of young children show that strategies that are put in place to support and prevent social isolation among other adult peers have shown positive results in minimizing risks for subsequent mental illness (Marmot and Wilkinson 1999, Quinton et al. 1984). Complete prevention of all life events that could trigger mental illness, especially depression, is not possible, however this research indicates that there are opportunities for early prevention and intervention support strategies to limit the effects of certain life stressors on the mental health of a population.

While the contemporary world is more connected than ever before, so many people feel a sense of alienation. In order to understand the resulting social isolation and how it affects health, it is important to describe the intervening mechanisms by which such isolation occurs. Alienation results when limits on human autonomy, control, and collectivity are such strong forces that the only available response is to withhold effort and affect from society (Amick et al 1995). In other words, the normative response here is to withdraw from society. For so many people, alienation is not a voluntary or conscious effort, but rather a reaction and process of adaptation to

powerful and constraining social forces. Throughout history, humans have taken desperate measures searching for a sense of belonging, hoping and fighting to prevent being pushed outward to the margins of a society (Amick et al. 1995).

This pathway toward social isolation may best be prevented through heightened social engagement. This in turn is one of the positive ways that being integrated into social networks impacts on the health status of a population (Berkman et al. 2000). Through participation in social groups, such as friends, family, or church networks, life acquires a sense of reciprocity and the coherence necessary in order to live a fulfilling and meaningful life (through a better understanding of themselves and the world around them). Social engagement and participation have been shown to be related to the maintenance of cognitive function and a reduction in mortality in old age (Glass et al. 1999, Berkman et al. 2000). Also, social engagement is an important buffer and coping mechanism for life stressors (Berkman, et al. 2000). In these ways, social engagement may have the ability to physiologically protect or enhance health, as well as to provide individuals with a sense of meaning and identity that is desperately needed in order to maintain an overall state of physical and mental well-being.

These factors act directly and indirectly either to promote overall health or well-being or to perpetuate poor health outcomes. Unfortunately, too often the elderly in communities across the United States do not have the opportunity to be socially engaged due to socioeconomic disadvantages. Similar to other social factors, such social inequality, in general, disproportionately affects the social engagement of the poor, and thus in turn adversely affects the health of the poor (Berkman et al. 2000, Amick et al.

1995, Marmot et al. 1999), especially the elderly poor. When evaluating influences on the mental and physical health of a population, social engagement along with its various correlates and determinants is a strong predictor.

Nonetheless, there is a lack of clear evidence for an explicitly "etiological" relationship between lower levels of social support and social engagement and subsequent depression in populations (Marmot et al 1999). Studying this relationship in older populations could provide an opportunity to document longer-term effects of social isolation over time and thus, perhaps, evaluate evidence for cause and effect. Elderly adults mostly do not choose to live socially isolated lives, with a lack of embeddedness in social networks, and risk being further isolated or ostracized by a society that values individualism and productivity. Losing a spouse, family members, or close friends can result in a loss of the sorts of social supports that buffer or prevent depression for many older adults (Marmot et al 1999, Berkman et al. 2000). Due to physical disabilities that occur from wear and tear over a lifetime, many elderly men and women also experience a sharp decline in social engagement late in their adult life (Marmot et al. 1999, Berkman et al. 2000). These factors could contribute to the observed rise in depression rates among elderly adults (Marmot et al. 1999, Berkman et al. 2000, Tarlov et al. 2000). Individuals with otherwise good mental health may experience a decline in their psychological well-being following the steady withdrawal and loss of social relationships that occurs late in life. Further research is necessary in order to confirm this kind of relationship so that intervention methods can be strategically developed.

Studies have also consistently shown that a lack of social support and integration in social networks is predictive of morbidity and even mortality across nearly every major cause of death (Berkman et al. 2000, Cassel 1976, House et al. 1988). The deleterious effects of social isolation are not limited to mental illness, but also increase one's susceptibility to infectious and chronic disease of varying pathophysiological mechanisms and can adversely impact on multiple bodily and organ systems (Berkman et al. 2000, Cassel 1976). Host susceptibility to illness is heightened by the disruptions of one's social environment by processes including neuroendocrine function (House et al. 1988, Marmot et al. 1999). Social isolation and marginalization may thus be capable of explaining, in biomedical terms, the disproportionality of the incidence or prevalence of certain diseases in a population. Accordingly, reducing social isolation and increasing social support may be one of the most effective and efficient means of reducing the population burden of disease (Cassel 1976, Krieger 2001, Tarlov et al. 2000).

Not only may social support affect the onset of disease, but it also plays a major role in the recovery of an individual following the diagnosis of disease. The extent of an individual's receipt of social support and presence in social networks is inversely related to the prevalence and severity of disease and to the responsiveness to treatment (Tarlov et al. 2000). Those with greater amount of social support, including close family ties and friends, have shorter recovery periods, suffer less significant symptoms, and ultimately have better outcomes of disease (Berkman et al. 2000, Marmot et al. 1999, Tarlov et al. 2000).

For example, patients that were studied following a myocardial infarction or serious cardiovascular disease were more than twice as likely to die in the subsequent three-year timespan, if they were socially isolated (Ruberman et al. 1984, Tarlov et al. 2000). This finding is not an outlier, but rather a norm as far as research on medical outcomes of social isolation. Studies also show that disease outcomes following medical treatment can vary substantially depending on the degree of social support surrounding the patient (Tarlov et al. 2000).

The interconnectedness of mind and body is a prominent theme in research on bio-psychosocial factors in health, such as social support and engagement (Krieger 2001). In order to understand the pathways by which social isolation impacts the health of people, researchers must focus attention on internal biological responses to human interaction, including the stress response (Cassel 1974, Krieger 2001). The acute response to stress of the adrenal system, the "fight or flight" response, involves release of hormones such as epinephrine and norepinephrine. Although adaptive and effective in the short term, prolonged stressors put cumulative strain on the human body, which can lead to the break down of immune function and mental health (Marmot et al. 1999). This concept is known as allostatic load and is an effective model for understanding the biological mechanisms by which social conditions can "get under people's skin." A related concept is the hypothalamic-pituitary-adrenal (HPA) axis that leads to increased cortisol secretion. Cortisol is also believed to lead to decreased immune function and susceptibility to disease, and is shown to be higher among individuals with severe depression. Socially supportive relationships have been found to decrease the hormonal

response to stressors (Marmot et al. 1999, Seeman and McEwen 1996). Thus, from a neuroendocrine perspective, it is understandable how social support is indirectly related to depression and directly related to better physical health.

Social isolation can lead to depression in elderly adults by affecting chemical pathways in the brain. Chronic social isolation is a chronic mild stress that causes a variety of neurobehavioral changes in rats similar to those observed in adults with psychiatric disorders, including depression (Filipović et al. 2017). This kind of stressor can disrupt the redox homeostasis of an organism by causing oxidative and nitrosative stress possibly activating stressor-specific pathways (Filipović et al. 2017).

As the population continues to age, the mental health of the elderly will be one of the most pressing issues facing medical researchers and health professionals over the coming generations. The aging of the baby-boomer generation could fuel a 75 percent increase in the number of Americans aged 65 and older requiring nursing home care. The number of elderly in these units is projected to increase from 1.4 million in 2014 to 2.3 million in 2030 (Mather 2016). When living in the community, elderly people do not appear to be at as great of a risk of developing depression. Some estimates for major depression for those living in the community ranges from less than 1 percent to about 5 percent (Rothwell et al. 2016). However, those rates rise for older adults who require home healthcare to about 13.5 percent, and to 11.5 percent for hospitalized elderly patients (Rothwell et al. 2016). Disturbingly, in nursing home and other long-term care facilities, the rate for major depression for residents is approximately 40 percent or higher, with many cases being under- or misdiagnosed (Rothwell et al. 2016). These

numbers may seem shocking, but according to epidemiologic research on social isolation and depression, they make theoretical sense.

In 2014, over a quarter of women aged 65 to 74 years old lived alone. This number increases to 42 percent from ages 75 to 84, and increases again over half (to 56 percent) among women aged 85 and older (Mather 2016). Among elders, economic inequality is also extremely prevalent, which further exacerbates health problems. As of 2014, 18 percent of Latinos and 19 percent of Blacks lived in poverty, more than twice the rate of Whites (Mather 2016). Inequality has been show to perpetuate through worse overall health and health outcomes. Due to social and economic inequality, the mental and physical health of elderly minorities is disproportionately affected.

According to the Population Reference Bureau, over the next 40 years, the total number of Americans ages 65 and older is projected to increase from 46 million to 98 million by 2060. This is a rise from 15 percent of the total population to 24 percent (Mather 2016). This increase will put an unprecedented burden on the infrastructure of the U.S. healthcare, social, and economic systems. In order for the care for these aging adults not to be compromised, it is the responsibility of the next generation of researchers and medical providers to find new ways to ensure the highest possible quality of life for the elderly throughout their life course. Social epidemiologic evidence suggests that in order to meet the health needs of this population, greater focus must be placed on ameliorating those social factors present in the lives of the elderly population that lead to worse mental and physical health.

Methodology

The next chapter contains the results of a systematic literature review of recent peer-reviewed literature pertaining to the relationship of social isolation and depression. Throughout these studies, social isolation is assessed through measures of two primary functions, social support and social engagement, described earlier. Depression and related outcomes are assessed through measures of general depressive symptoms, and through items in studies of self-esteem and overall psychological well-being in later life.

Studies used for this research were found using online search engines, including NLM's PubMed and Google Scholar. Resources obtained through the Baylor University libraries were used as well, including PsychInfo, Social Science Research Network, and Web of Science. Research was done using keyword searches. For example, the keyword searches employed when finding data includes strings such as "social isolation and depression and elderly"; "perceived isolation and depression in elderly"; "social connectedness and depression in elderly"; and "social support and mental health of elderly." Variations in terms used to search for pertinent studies is due to the complex nature of the independent variable being measured, social isolation, and to differences in the search engines employed.

The terms "social disconnectedness" and "perceived isolation" have been used to differentiate between the objective and subjective experience of social isolation (Cornwell and Waite 2009). Social disconnectedness is an objective measure, defined as a lack of contact with others, including friends and family. Perceived isolation is the

subjective experience of a lack of support, which includes feelings of loneliness, measured using various subjective scales and interview questions. The systematic review takes into account these distinct experiences of social isolation when determining an association with depression in elderly adult populations.

This literature review includes studies that provide insight into the impact of social networks and social isolation among older adults from different populations and different living situations. The review includes English-language population studies published after January 1, 2000, and up through February, 2019, for a total of twenty-seven studies. Accordingly, the review provides a comprehensive and up-to-date overview of current research on this subject the 21st Century.

In Chapter Two, a summary is provided of the results of this systematic review. Also included is a table presenting selected parameters of each study, including the relationship between the independent variables, whether perceived isolation or social disconnectedness, and the dependent variable, depression, as well as a brief narrative summary of the study. This section also features a more involved narrative, summary overview, and discussion on the results of the review. In Chapter 3, a discussion is provided of the meaning and significance of these findings, as well as the implications of these findings for the future of healthcare and social policy.

Supplementing this literature review are selected findings from the final term project that I completed with Dr. Matt Bradshaw in the Spring 2018 semester in Population Health (SOC 3372). This project was completed using data from the *Religion, Aging, and Health Survey, 2001, 2004*, obtained through the Inter-University Consortium

of Political and Social Research (Krause 2005). This survey was conducted by Neal Krause of the University of Michigan School of Public Health. Dr. Bradshaw analyzed questions on the survey relating to social connectedness, social support, and social engagement, including about one's church congregation. These questions addressed each of the different types of social support, including: emotional, instrumental, appraisal, and informational. These were analyzed in relation to multiple mental health outcomes, including depressive symptoms, self-esteem, optimism, and death anxiety.

CHAPTER TWO

Results

The way humans interact with others as well as with their own environment is known to change and adapt over a lifetime. Elderly adults are likely to view themselves differently currently than they did at earlier stages in their life. They also have different and specific physical, spiritual, emotional, and mental needs pertaining to their current life stage, just as others do, whether children, adolescents, or young adults. When these needs are unmet, it is possible that the mental well-being of this population could be at an elevated risk of deterioration (Blazer 2005). This review summarizes recent scientific studies of one specific social environmental risk, namely social isolation, and its direct and indirect impact on the mental health of the elderly population, specifically in terms of the presence of depressive symptoms.

Summary

The studies reviewed in this thesis include English-language population studies of social isolation and depression in older adults published in peer-reviewed journals since 2000 (see Table 1). There were a total of 26 studies; 13 (50%) were conducted in the U.S.; 10 (38.5%) had sample sizes of at least 1000 respondents; 20 (76.9%) included a measure of social disconnectedness (“SD” in the table), 25 (96.1%) included a measure of perceived isolation (“PI”), and 20 (77%) assessed both; and 23 (88.5%) reported

positive findings, such that greater levels of social isolation were associated with more depression. In every study, both male and female respondents were present (not included in Table 1). Overall, the relationship was strongly positive, and these studies implicate social isolation, of both types, as a consistent risk factor for depression for older adults.

The next section of this chapter provides a narrative overview and interpretation of these findings. Detail is provided on individual studies and salient themes across this literature are identified and discussed.

Overview of Findings

Not everyone has the same experience of "aloneness" or "isolation." As defined in Chapter One, social isolation is most commonly considered to be present when someone lives alone, has less than monthly contact with friends or family, and does not belong to a social group (Singer 2019). Only a small percentage of the socially isolated population chooses this environment as a desired lifestyle. Most have been forced into this living situation by factors beyond their control. People living in these situations are more likely to experience feelings of isolation and loneliness. To describe these feelings, terms such as "social disconnectedness" and "perceived isolation" have been proposed (Cornwell and Waite 2009). Social disconnectedness is an objective measure that is defined simply as the lack of contact with others. By contrast, perceived isolation is the subjective experience of a lack of support. Loneliness is comparable to this, as people experience subjective isolation often when objectively isolated, but also even when in

the presence of others.

Loneliness is described as the unpleasant subjective states of sensing a discrepancy between the desired amount of companionship and that which is available from the person's environment (Blazer 2002). As one might imagine, the experience of loneliness is often a function of characteristics of a person's social environment and network, but is not always directly related to objective social isolation. In certain depression measures, such as the CES-D, loneliness and depressive symptoms are conflated, as they include items about feelings of loneliness (Radloff 1977). Although loneliness and depression are intuitively related, use of such measures makes it more difficult to parse the empirical evidence supporting a relationship between these two emotional states.

In old age, it is believed there is a unidirectional association of high levels of loneliness with the subsequent deterioration of social networks. This is potentially explained by the Evolutionary Theory of Loneliness, which posits that people maintain selfish behavior when they have feelings of loneliness, subsequently harming their long-term social environment (Cacioppo and Cacioppo 2018). According to this theory, it is possible that among older adults, there could be an increasing prevalence of social isolation within a population, but not increasing feelings of loneliness. However, it is likely for a population with a high prevalence of loneliness to also have a higher likelihood of social isolation. Therefore, it is possible that the subjective feeling of perceived isolation could lead to objective social disconnectedness by way of this pathway. Also, apart from individual emotional factors such as feelings of loneliness,

social isolation is also induced by environmental factors such as inability to participate in social activities (Toepoel 2013, Domènech-Abella et al. 2019). Additionally, there is a lack of evidence indicating that increased feelings of loneliness are related to a decrease in psychosocial well-being. This is understood from the observation that as adults age, they do better overall with regard to self-acceptance and satisfaction (Domènech-Abella et al. 2017).

In a number of studies across different elderly populations, experiencing loneliness has been found to be associated with a higher likelihood of suffering from major depressive disorder (MDD) (Tiikkainen and Heikkinen 2005, Domènech-Abella et al. 2019, Sanitini, et al. 2016). Feelings of loneliness and depressive symptoms are bi-directional in nature (Routasalo et al. 2006), both affecting one another, but the relationship is stronger with loneliness as the origin (Luo et al. 2012, Domènech-Abella et al. 2019). Additionally, the relationship between social isolation and the likelihood of subsequent of MDD is also direct, but in a unidirectional manner. Loneliness is also unidirectional in increasing the likelihood of the deterioration of social integration (Domènech-Abella et al. 2019), aligning with the Evolutionary Theory of Loneliness. This itself is a risk factor for depression for the elderly, as less than one friendship interaction per month is associated with a two-fold increase in the likelihood of having depression (Werner-Seidler et al. 2017).

These studies show that these two factors, one subjective, and the other objective, each act in a distinct way. It is also observed in this study that these factors act in association with one another synergistically to increase depressive symptoms in

the older and elderly adult population. Additionally, in a national survey of 2287 Australian seniors, social network factors were analyzed to measure their association with mental health (Levula, et al. 2015). Social isolation had the greatest impact on worsening mental health, specifically depressive symptoms. Social isolation was measured using questions, such as, “I often need help from other people but cannot get it,” “I have no one to lean on in time of trouble,” “I do not have anyone that I can confide in,” and “I often feel very lonely, and people do not come to visit me as often as I would like.” This measure clearly includes both subjective and objective components. Interestingly, across all three life stages that were measured in this study, social isolation had the most significant association with mental health.

Cacioppo and Hughes (2006) found loneliness to be a specific independent risk factor for depressive symptoms in a national cross-sectional study of older and elderly adults aged 54 or older. In the two surveys that were studied, the results supported each other, finding loneliness to be the most significant predictor of depressive symptoms, significantly above and beyond variance explained by demographic factors, marital status, and individual psychosocial variables, such as perceived stress. This association between loneliness and depressive symptoms was found to be significantly stronger among men than women. In a separate study, higher levels of spousal support, less strain from spouse, and better social network integration were found to be protective against depressive symptoms in men (Santini et al. 2016). Also, social support has been found to be a significant and unique predictor of depressive symptoms with a sizeable effect, although it was smaller compared to the effect of loneliness when

measured as an individual factor (Cacioppo and Hughes 2006, Santini et al. 2016). A possible explanation for this finding is the Evolutionary Theory of Loneliness discussed earlier that proposes that feelings of loneliness have a subsequent effect on a person's long-term social network and environment. Therefore, although feelings of loneliness are the originating factor predicting depressive symptoms, social isolation may be a contributing factor as well in some cases.

This same finding aligns with data from the National Social Life, Health, and Aging Project, where Cornwell and Waite (2009) found that both social disconnectedness and and perceived isolation have distinct associations with mental health, specifically depression, among older adults. The researchers of this study believed the positive association between social disconnectedness and depression may operate in part through the stronger association of perceived isolation and depression.

Perceived social support is essential during periods of life filled with increased anxiety for elderly adults. In a study of bereaved older adults (Jacobson et al. 2017), depressive symptoms were measured immediately after bereavement, then at 18 months and 48 months after bereavement. Perceived emotional social support was measured using two questions aimed at identifying the individuals subjective state of social support: "On the whole, how much do your friends make you feel loved and cared for?" and "How much are your friends and relatives willing to listen when you need to talk about your worries and problems?" Perceived emotional support significantly mediated the relationship between the immediate anxiety symptoms after bereavement and later depressive symptoms. Less emotional social support significantly

predicted later depressive symptoms. This study indicates the potential risk of perceived isolation leading to an increase in depressive symptoms within a particular vulnerable, yet common, elderly population.

Both perceived isolation and social disconnectedness are especially prevalent in situations where people find themselves in new and unknown environments. In a study of 230 Korean-American older adults living in Florida (Jang et al. 2005), the association between levels of acculturation and rates of depression was measured. Low acculturation was found to be associated with higher rates of depression. The researchers believed that this relationship was likely due to both the lack of creating social networks (i.e., social disconnectedness) and low perceived social support (i.e., perceived isolation), each of which is associated with an increase in depressive symptoms in the elderly. On the other hand, in a 2004 cross-sectional study of 25 elderly home health patients, who were either White or African-American and ranged in age from 75 to 98, found that measures of social support, such as having Meals on Wheels, a home health nurse, or a home health aide, were not significantly related to depression (Loughlin 2004). The relationship between these objective measures of social support and depression shows that increasing social connectedness through these types of means may not be effective without a complementary decrease in perceived isolation.

This conclusion is further supported with data for older adults from the National Survey of American Life, which assessed the levels of subjective and objective social isolation and their impact on depressive symptoms (Taylor et al. 2018). Interestingly, objective social isolation, which was created by combining frequency of contact with

family members and friends, was unrelated to depressive symptoms. However, subjective social isolation, created by combining both subjective family and friend closeness, was significantly associated with more depressive symptoms.

It is well understood that loneliness is a risk factor that is especially problematic for elderly residents of independent living facilities (Adams et al. 2004) or nursing homes (Fessman and Lester 2000), or those who are hospitalized (Giuli et al. 2012). These living conditions affect perceived emotional support, perceived instrumental support, and the size and diversity of social networks, which are all known to have significant protective effects against depression (Santini et al. 2015). In a 2004 study of older adults aged 60-98 residing in two age-segregated independent living facilities, loneliness scores explained about 8% of the unique variance in depression scores suggesting that it is an independent risk factor. Besides loneliness, depression was predicted by being older, number of chronic health conditions, grieving a recent loss, fewer neighbor visitors, less participation in organized social activities, and less church attendance. These other predictors are also indirectly related to social isolation due to social withdrawal and a decrease in social networking (Adams et al. 2004).

In a study of elderly nursing home residents, social relationships with other residents had a much stronger negative association with depression and loneliness than social relationships and visits from people outside of the nursing home (Fessman and Lester 2000). Also, over half of hospitalized socially isolated elderly patients are likely to perceive their mental health as poor and are more likely to suffer from depression (Giuli et al. 2012). Not only does social isolation within these types of living situations often

lead to psychological harm for the elderly, but it also leads to increased rates of re-hospitalization and re-institutionalization, causing a synergistic cycle, which further compounds depressive symptoms (Nicholson 2012).

Social disconnectedness and perceived isolation may also indirectly affect mental health by inhibiting or promoting respective physical, mental, or spiritual practices. For example, researchers have found that daily spiritual experiences (DSE) are positively associated with mental well-being, particularly among the elderly population (Park and Roh 2013). Using a sample of 200 elderly Korean Americans, researchers aimed to identify the relationship between social support, DSE, and depression. Both DSE and social support were inversely related to depression, and social support was found to mediate between DSE and depression (Park and Roh 2013). These findings suggest that it may be possible to reduce depression within this population by facilitating connection with social networks. A cross-cultural study found that reminiscence may also be used as an effective mediator against depression caused by social isolation and loneliness in the elderly adult population (Cappeliez 2004). Social support has also been linked to proactive coping through a positive association and to depression through a negative association, as well as indirectly to depression through proactive coping, as coping has been found to be an effective protective measure against depression (Greenglass et al. 2006).

This trend is not isolated to the U.S., but has been observed in other societies which historically have relied on strong familial bonds to ease the aging process for elders. For example, qualitative interviews were conducted with 20 nursing home social

care practitioners working in services for elderly adults of different ethnic groups in London (McCrae et al. 2004). They attributed the high rates of depression within the populations to social isolation from the decline in size and quality of social and family networks. The authors observed that this was increasingly true among ethnic minority groups that have adopted a more Westernized lifestyle. According to one respondent, the manager of an African-Caribbean day centre, "In our culture it seems to be the case of children moving out and leaving parents; the strong family connection simply isn't there any more… a lot of older people are just left isolated and they are not coping well."

Interventions in the Western world targeting social isolation in the elderly have been largely ineffective (Findlay 2003). This has serious implications, as the association of both objective and subjective social isolation with depression has continued in the developed world with an increasing prevalence of older people living alone (Findlay 2003). In Japan, for example, a randomized trial examined the effect of a social isolation prevention program on depression in an elderly population. The project aimed to prevent social isolation by improving community knowledge and networking with other participants. This program was found to have no significant effect on depressive symptoms, but instead the researchers found that programs are only effective when they utilize existing community resources and are tailor-made to the specific needs of the individual (Saito et al. 2012). This mirrors the recommendations from researchers who analyzed data from the Irish Longitudinal Study on Ageing, concluding that interventions aimed at increasing relationship quality and strengthening existing social

network structures, focused specifically on reducing feelings of loneliness, would be most effective in preventing depressive symptoms in older adults (Santini et al. 2016). It appears due to the nature of these issues, creating a specific intervention strategy to successfully decrease social isolation and subsequently decrease depressive symptoms among the older adult population is difficult and complex (Findlay 2003).

One possibility does exist, however, for which promising preliminary results are available. Findings from original research conducted by Dr. Matt Bradshaw as a part of his class, Population Health (SOC 3372), in the Spring 2018 semester, showed that individuals who attend church at least some of the time have lower levels of depression, and higher levels of life satisfaction, optimism, and self-esteem compared with those who never attend (see Figure 1). Among church attendees, when subjective measures of social connection at church were taken into account, such as: “Don’t feel loved by church members,” “Don’t discuss problems with church members,” and “Don’t feel like church is concerned with well-being,” negative associations were found with each outcome, excluding depression. These findings suggest that the benefits derived from the social connections which accrue from attending church have significant protective effects against depression. Encouraging church-based support may be a promising means to reduce the impact of social isolation on depression in older adults.

Conclusions

Modern medicine has concentrated its focus on the biological risk factors of mental health problems. Yet in an influential textbook on late life depression, social

support was listed as a moderator of treatment response to pharmaceutical antidepressant therapies (Roose & Sackeim 2004). While biological vulnerability to depression cannot be ignored, there is mounting research indicating that social factors are protective against lower-level or sub-clinical depression, especially in late life, when cognitive dysfunction and physical illness are held constant (Blazer 2002). These findings are both empirically and intuitively linked. As we have noted, studies indicate this observation—that social isolation may be a causal factor in depression among elderly adults—holds true across multiple populations.

Some researchers have theorized that less social relationships are needed for adults as they age (Carstensen et al. 1999). Instead, according to this belief, older adults begin to rely more on close relationships and are in need of less social stimulation in order to maintain good mental health. However, the studies reviewed here depict a different narrative for adults as they age. Recent literature indicates that social factors are just as protective against depression, maybe even more so, later in life. For example, as we have seen, social support increases DSE, coping, and reminiscence for elderly adults, all of which are associated with increased depressive symptoms. The experience of objective and subjective social isolation have synergistic effects on depression in the elderly, and this relationship seems to be bidirectional. This in turn can lead to a cycle of further propagation of symptoms and emotional distress.

Overall, this review indicates that despite the significant association of objective social isolation (social disconnectedness) and depression, the subjective feelings of social isolation (perceived isolation and loneliness) are stronger predictors of depression

in the elderly population. Therefore, social interventions must be developed which take this into account and minimize subjective feelings of social isolation in order to best protect against the increasing rates of depression among the elderly population.

Table 1: Studies of Social Isolation and Depression in Older Adults, Since 2000

Author	**Location**	**N**	**Measures (SD, PI, Both)**	**Results (+, -)**	**Summary**
Adams, Sanders, Auth (2004)	North-eastern U.S.	234	PI	+	Loneliness scores explained about 8% of the unique variance in depression scores among older adults aged 60-98, residing in two age-segregated independent living facilities.
Blazer (2005)	U.S.	N/A	Both	+	Editorial review of previous literature finding that psychological and social factors are more protective in late life compared to mid-life. Clear relationship indicated, but pathway unknown.
Cacioppo, Hughes (2006)	U.S.	2193	PI	+	Results of a national cross-sectional study completed by telephone interview, as well as a 3-year longitudinal study, examining the possible causal influences between loneliness and depression in older adults. Findings suggest that loneliness and depressive symptomatology can act synergistically to diminish well-being.
Cappeliez, O'Rourke, Chaudhury (2004)	Australia, New Zealand, Canada, U.S.	420	Both	+	Reminiscence was found to be an effective mediator against depression due to social isolation and loneliness in the elderly.
Cornwell, Waite (2009)	U.S.	2910	Both	+	Using population-based data from the National Social Life, Health, and Aging Project, both social disconnectedness and perceived isolation have distinct associations with mental health among older adults, but the association between social disconnectedness and depression may operate through the strong association of perceived isolation and depression.

Domènech-Abella, Mundó, Haro, Rubio-Valera (2019)	Ireland	5066	Both	+	The association between loneliness and higher likelihood of depression two years later is bidirectional but stronger with loneliness as origin. The association between social isolation and the likelihood of depression was unidirectional.
Domènech-Abella, Lara, Rubio-Valera, Olaya, Moneta, Rico-Uribe, Haro (2017)	Spain	3535	Both	+	Feelings of loneliness were more prevalent in those who were divorced or widowed, living in a rural setting, with a lower frequency of social interactions and smaller social network, and with major depression.
Fessman, Lester (2000)	U.S.	170	PI	+	In a study of about 170 nursing home residents, social relationships with other residents had a much stronger negative association with depression and loneliness than social relationships and visits from people outside of the nursing home.
Findlay (2003)	Multiple developed countries	N/A	Both	+	Review of the empirical literature over the last 20 years on the effectiveness of interventions targeting social isolation in the elderly. There is a lack of evidence for interventions reducing depression.
Giuli, Spazzafumo, Sirolla, Abbatecola, Lattanzio, Postacchini (2012)	Italy	580	Both	+	Women were more likely to perceive themselves as socially isolated. Socially isolated subjects perceived their mental health “poor” in 55.9% of cases and “fair” in 32.4%.

Greenglass, Fiksenbaum, Eaton (2006)	Canada	224	Both	+	In community-residing older adults attending various community centers offering programs for seniors, social support was directly related to proactive coping (positive) and to depression (negative). Also, social support was indirectly related to depression through proactive coping.
Jacobson, Lord, Newman (2017)	U.S. (Detroit)	250	PI	+	Results found that low perceived emotional social support may be a mechanism by which anxiety symptoms predict depressive symptoms 48 months later for bereaved older individuals.
Jang, Kim, Chiriboga (2005)	U.S. (Florida)	230	Both	+	Low acculturation in older Korean-Americans was associated with higher rates of depression. This was likely due to a lack of creating social networks and to low perceived support.
Levula, Harré, Wilson (2015)	Australia	2287	Both	+	Among seniors, social isolation had the greatest impact on mental health, followed by social connection, and social trust.
Loughlin (2004)	U.S. (Chicago)	25	Both	None	In a sample of homebound elderly adults, chronic medical conditions limiting functional abilities predicted depression. No participant reported lack of social support as a cause of depression.

Luo, Hawkley, Waite, Cacioppo (2012)	U.S.	2101	PI	+	Loneliness both affected and was affected by depressive symptoms, and indicated that loneliness is a risk factor for morbidity and mortality.
McCrae, Murray, Banerjee, Huxley, Bhugra, Tylee, Macdonald (2005)	United Kingdom	N/A	Both	+	Qualitative study with nursing home social workers who attributed the high rate of depression among residents to the effects of social isolation.
Nicholson (2012)	U.S.	N/A	Both	+	Literature review showing that social isolation leads to psychological harm, including depression, and to increased rates of re-hospitalization and re-institutionalization.
Park, Roh (2013)	U.S. (New York)	200	Both	+	Among elderly Korean immigrants living in New York City, social support was inversely related with depression and mediated between daily spiritual experiences and depression. Possible to alleviate depression by facilitating social networks.
Routasalo, Savikko, Tilvis, Strandberg, Pitkälä (2006)	Finland	4113	Both	+	In a survey of elderly Finnish adults, the most powerful predictors of loneliness were living alone, depression, and unfulfilled expectations of contacts with friends. This indicates a positive bilateral relationship between depression and loneliness.

Saito, Kai, Takizawa (2012)	Japan	63	Both	None	Using a randomized trial, this study examined the effect of a social isolation prevention program on depression and subjective well-being. The program was found to have no significant effect on depressive symptoms.
Santini, Fiori, Feeney, Tyrovolas, Haro, Koyanagi (2016)	Ireland	6105	Both	+	Among adults over age 50, higher levels of spousal support, less strain from spouse, and better social network integration were protective against depressive symptoms in men. Social support from friends and children was protective against depressive symptoms in both genders. Loneliness was a significant mediator in the majority of these associations.
Santini, Koyanagi, Tyrovolas, Mason, Haro (2015)	International	N/A	Both	N/A	Fifty-one studies were included in this review. The strongest and most consistent findings were significant protective effects of perceived emotional support, perceived instrumental support, and large, diverse social networks against depression.
Taylor, Taylor, Nguyen, Chatters (2018)	U.S.	1439	SD, PI	None, +	Data on older adults from the National Survey of American Life were used to assess levels of subjective and objective social isolation and their impact on depressive symptoms. Objective social isolation was unrelated to depressive symptoms, while subjective social isolation was associated with more depressive symptoms.
Tiikkainen, Heikkinen (2005)	Finland	340	Both	+	Loneliness and depression closely related in a five-year follow-up longitudinal study done in Finland. Residents were 85 at the time of the follow-up. The relationship was significantly stronger in men.

Werner-Seidler, Afzali, Chapman, Sunderland,Slade (2017)	Australia	8841	SD	+	In a national mental health survey data, less than one friendship interaction per month was associated with a two-fold increased likelihood of having depression.

Figure 1: Religious Attendance, Church Relationships, and Mental Health among Older US Adults from the *Religion, Aging, and Health Survey, 2001, 2004*

Religious Attendance, Church Relationships, and Mental Health among Older US Adults

	Depression	Life Satisfaction	Optimism	Self-Esteem
Ever Attend Church (Compared with Never)	-0.136**	0.201***	0.239***	0.166***
Among Attenders				
Don't Feel Loved by Church Members	n.s.	-0.180*	-0.162***	-0.105*
Don't Discuss Problems with Church Members	n.s.	-0.087+	-0.073*	-0.080**
Don't Feel Like Church is Concerned with Well-Being	n.s.	-0.191**	-0.179***	-0.145***

+p<.10; *p<.05; **p<.01; ***p<.001

CHAPTER THREE

Discussion

Summary of Study Results

To restate, it was hypothesized that research studies would support the commonly held belief that social isolation in the elderly can have powerful consequences on their mental health and overall well-being, specifically through higher levels of depression. The results of this systematic literature review, comprised of English-language population studies published since 2000, support this belief. In doing so, this thesis offers evidence for a possibly etiologic relationship between social isolation and depression in the elderly. This would be consistent with current understandings of social factors in health.

Social determinants influence the overall health of individuals and populations, including the incidence of acute illness and chronic disease, physical and mental. This effect can be direct: for instance, unsanitary living conditions could result in an individual contracting an infection. But, more often, social determinants affect health indirectly, through the mediation of other factors. For example, lack of transportation, health illiteracy, and the neighborhood in which one resides all have significant impacts on health status and susceptibility to disease. The concept focused on in this thesis, social isolation—including both perceived isolation and social disconnectedness—may result from multiple underlying factors. These include physical factors, such as living in a

nursing home; emotional factors, including the recent loss of loved one; or spiritual factors, as seen in those elderly people unable to participate in daily spiritual life the same way they could when they were younger.

The elderly adult population is at a significant risk for experiencing the social conditions leading to isolation and loneliness. Social isolation, in turn, as we have seen, can have consequences for one's health, including an increase in depressive symptoms among nearly all populations groups. This is especially so among older adults. The literature review presented here also revealed that both components of social isolation—perceived isolation and social disconnectedness—have significant impacts on the mental health in the elderly populations, with perceived isolation being the stronger predictor of depression.

Depression is not only a debilitating illness by itself, but those suffering from social isolation and depression are in poorer overall health and are more likely to suffer from common illnesses, such as diabetes and heart disease, than those who are not socially isolated. Since depression and other mental illnesses are on the rise in the elderly population (Mather 2016, IOM 2010), as the elderly population in the U.S. and developing world continues to grow, careful consideration must be given to determining the most effective and ethical way to address this challenge. Focusing on the more upstream social determinants of social isolation, and of health in general, may be a useful starting point.

Implications and Suggestions

Over a year ago, I had the opportunity to be a part of a Social Innovation Collaborative program at Baylor University. Through this program, I volunteered and conducted research for Meals on Wheels in Waco, an organization that provides meals and friendship to elderly individuals, who are often homebound. I was able to visit the homes of many elderly people in the Waco community, engaging with them and asking them questions about their emotional and spiritual well-being as a part of the research data we were collecting. These questions sparked fascinating conversations that revealed to me the strength, resilience, and faith that many of these individuals carried with them each day. I listened to some as they told tragic stories of the ways they coped with their children dying before them, while at the same time thanking God for His faithfulness in their life.

One common theme throughout the conversations I had with these individuals was that they had an overwhelming feeling of isolation, loneliness, and uselessness. Many expressed the desire to solely live the rest of their days without being a burden to others, not wanting any else to help take care of their needs. This notion that elderly adults are a burden to families, communities, and society as a whole is ingrained within the mindset of many Americans. This program was one that inspired me to complete this thesis project in order to further understand how the social circumstances of this population group can have detrimental effects on their health, and to prepare me as a future physician to advocate for the care of some of our society's most marginalized people.

In the U.S., despite the fact that the majority (93.5%) of elderly adults aged 65 and older live in the community (IOM 2010), nearly 29% of the 46 million community-dwelling elderly aged 65 and older live alone. These numbers are expected to grow according to current projections of the elderly population (IOM 2010). Nearly half of the community-dwelling oldest old (85 years and older) live alone (The Elderly Living Alone n.d.), and these folks are lonelier than age-matched individuals living with others despite reporting comparable social interaction frequency and personal network adequacy (Henderson et al. 1986). In fact, among the elderly, living alone is one of the most powerful predictors of loneliness (Routasalo et al. 2006). In order to best address the issue of social isolation among the elderly, addressing the living situation in this population would be the first priority. However, social, cultural, and economic barriers prevent a feasible and easy solution to this issue. Those living with family naturally suffer from the least amount of social isolation and subsequent depression (Fessman and Lester 2000), but many American families do not have elderly members live in-home with them (2019). This issue primarily effects elderly women, as about 70% of elderly people living alone are female. Women are also more likely to perceive themselves as socially isolated, as well as to perceive their mental health as poor (Giuli et al. 2012).

This phenomenon manifests in other marginalized communities. For example, immigrants are at a higher risk for depression due to a lack of social networks and thus low levels of social support (Jang et al. 2005). Also, those living in poverty and those who are less financially comfortable are more likely to be living alone and have social

isolation forced upon them (Stepler 2016). One possible cause for this is an absence of the kind of familial support that more affluent elderly individuals are able to access. Instead of being placed in a nursing home or living with or near family, those in poverty may commonly find themselves living alone with little or no outside support.

According to US census data from 2015 to 2016, individuals aged 65 and older had the distinction of being the only population segment to experience a significant increase in the number of individuals in poverty, with 367,000 more older Americans in poverty in 2016 (Edwards 2017). As the baby boomer generation continues to age, more and more elderly individuals will be living alone and in poverty. As suggested in the present review, these factors can be expected to have significant negative impacts on the psychological well-being of this growing portion of the population.

Despite the search for practical interventions to counteract social isolation and its adverse effects on elderly populations, evidence to date has yet to support their effectiveness (Findlay 2003, Saito et al. 2012). Because of this lack of evaluative evidence, it is difficult to replicate the results of successful interventions. Accordingly, it is essential that future programs aimed at reducing social isolation in the elderly build in evaluation component at the inception of program planning (Findlay 2003). It is also important that these studies features be well documented so that respective interventions can be reproducible, as well as widely disseminated to diverse populations with a variety of living situations.

One recent review pointed out that social isolation reduction strategies, such as one-to-one or group interventions, seem to be less efficient in reducing social isolation

than preventive strategies such as neighborhood or structural interventions (Domènech-Abella et al. 2019). Similar trends have been observed in other settings, including nursing homes, where social relationships with other residents had a much stronger protective effect against depression and loneliness than social relationships and visits from people outside of the nursing home (Fessman and Lester 2000). This underscores the importance of creating relationships, support, and connectedness through existing structures, whether through a neighborhood, nursing home community, or familial support network. Efforts to combat the issue after the fact have been shown to less effective in reducing social isolation than efforts to prevent it before it endangers mental health.

Social support, specifically in the form of perceived support, can be a mediator between internal factors such as proactive coping and daily spiritual experiences and negative outcomes such as depression. A proactive elderly individual is more likely to perceive daily activities as a positive challenge to be undertaken in order to achieve independence rather than as a negative challenge or threat—they may be opportunities to employ one's skills and abilities in order to live a better life (Greenglass et al. 2006).

The finding that qualitative aspects of social interactions are more predictive of loneliness than quantitative aspects is a robust finding in studies of older adults (e.g., Cacioppo et al. 2000; Hawkley et al. 2003). At the same time, any friendship interactions have been shown to decrease the likelihood of having depression by nearly two-fold (Werner-Seidler et al. 2017). Overall, a lower frequency of social interactions and smaller social networks are associated with higher rates of major depression in elderly

populations (Domènech-Abella et al. 2017).

Despite these challenges and barriers, almost 90% of elderly people living alone express a keen desire to maintain their independence (IOM 2010). Many fear the lack of autonomy and the burden of being too dependent on others and thus desire to live alone, despite the social isolation that they face (IOM 2010). Combating the stigma of dependence on others in old age is essential in order to make intervention programs effective. Moreover, the stigma associated with isolation and mental illness must also be addressed in order to create an emotional space in which the needs of older adults can be identified and addressed in an effective and compassionate manner.

Conclusions

This thesis has shown that the issue of social isolation among elderly adults in the U.S. is widespread and on the rise. A summary of the current literature identified a significant positive relationship between social isolation and depression in this population. This occurs especially in circumstances where individuals experience subjective feelings of perceived isolation.

Policies to address or solve this challenging problem have not yet been developed, nor programmatic strategies effectively implemented to date. Reasons include the nuanced nature of the problem, which is deeply affected by social-structural factors and by psychological stigmas. In the future, preventive measures should be taken to facilitate the formation of supportive relationships for elderly individuals with their own peers, with family members, and with younger individuals. If this could be

achieved, fewer elderly adults would live alone and the institutional norms in assisted living facilities would evolve to allow for more social interaction among those living there. Addressing this one social determinant of health not only promises to improve the health of elderly individuals, but also to elevate their overall quality of life.

BIBLIOGRAPHY

Adams, K. B., Sanders, S., & Auth, E. A. (2004). Loneliness and depression in independent living retirement communities: Risk and resilience factors. *Aging & Mental Health,8*(6), 475-485. doi:10.1080/13607860410001725054

Amick, Benjamin C., III, Sol Levine, Alvin R. Tarlov, and Diana Chapman Walsh. (Eds.). (1995). *Society and Health*. New York: Oxford University Press. 358 pp.

Berkman, Lisa F. and Ichiro Kawachi. (Eds.). (2000). *Social Epidemiology*. New York: Oxford University Press. 382 pp.

Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine,51*(6), 843 857. doi:10.1016/s0277-9536(00)00065-4

Blazer, D.G. (1994). Is depression more frequent in late life? An honest look at the evidence. *American Journal of Geriatric Psychiatry,* 2(3), 193-199.

Blazer, D. (2002a). Depression in late life (3rd ed). New York: Springer.

Blazer, D. G. (2005). Depression and social support in late life: A clear but not obvious relationship. *Aging & Mental Health,9*(6), 497-499. doi:10.1080/13607860500294266

Cacioppo, J.T., Cacioppo, S., (2018). Loneliness in the modern age: an evolutionary theory of loneliness (ETL). Adv. Exp. Soc. Psychol. 58, 127–197.

Cacioppo, J. T., Ernst, J. M., Burleson, M. H., McClintock, M. K., Malarkey, W. B., Hawkley, L.C., et al. (2000). Lonely traits and concomitant physiological processes: The MacArthursocial neuro- science studies. *International Journal of Psychophysiology, 35,* 143– 154.

Cacioppo, J. T., Hughes, M. E., Waite, L. J., Hawkley, L. C., & Thisted, R. A. (2006). Loneliness as a specific risk factor for depressive symptoms: Cross-sectional and longitudinal analyses. *Psychology and Aging,21*(1), 140-151. doi:10.1037/0882 7974.21.1.140

Cappeliez, P., O'Rourke, N., & Chaudhury, H. (2005). Functions of reminiscence and mental health in later life. *Aging & Mental Health,9*(4), 295-301. doi:10.1080/13607860500131427

Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psycholo- gist, 54,* 165–181.

Cornwell, E. Y., & Waite, L. J. (2009). Social disconnectedness, perceived isolation, and health among older adults. *Journal of Health and Social Behavior, 50*(1), 31-48. doi:http://dx.doi.org/10.1177/002214650905000103

Cassel, John. (1974). Psychosocial processes and "stress": Theoretical formulation. *International Journal of Health Services* 4:471-482.

Cassel, John. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology* 104:107-123.

Domènech-Abella, J., Mundó, J., Haro, J. M., & Rubio-Valera, M. (2019). Anxiety, depression, loneliness and social network in the elderly: Longitudinal associations from The Irish Longitudinal Study on Ageing (TILDA). *Journal of Affective Disorders,246*, 82-88. doi:10.1016/j.jad.2018.12.043

Domènech-Abella, J., Mundó, J., Lara, E., Moneta, M. V., Haro, J. M., & Olaya, B. (2017). The role of socio-economic status and neighborhood social capital on loneliness among older adults: Evidence from the Sant Boi Aging Study. *Social Psychiatry and Psychiatric Epidemiology,52*(10), 1237-1246. doi:10.1007/s00127-017-14069

Domènech-Abella, J., Lara, E., Rubio-Valera, M., Olaya, B., Moneta, M. V., Rico-Uribe, L. A., Haro, J. M. (2017). Loneliness and depression in the elderly: The role of social network. *Social Psychiatry and Psychiatric Epidemiology,52*(4), 381-390. doi:10.1007/s00127-017-1339-3

Durkheim, E. (1957). Suicide. Glencoe, Ill., The Free Press

Edwards, A. (2017). Outlying Older Americans: The Puzzle of Increasing Poverty among those 65 and Older. Retrieved from https://www.census.gov/newsroom/blogs/randomsamplings/2017/09/outlying older_ameri.html

Fessman, N., & Lester, D. (2000). Loneliness and Depression among Elderly Nursing Home Patients. *The International Journal of Aging and Human Development,51*(2), 137-141. doi:10.2190/5vy9-n1vt-vbfx-50rg

Filipović, D., Todorović, N., Bernardi, R.E. et al. Brain Struct Funct (2017) 222: 1. https://doi.org/10.1007/s00429-016-1218-9

Findlay, R. A. (2003). Interventions to reduce social isolation amongst older people: Where is the evidence? *Ageing and Society,23*(05), 647-658. doi:10.1017/s0144686x03001296

Giuli, C., Spazzafumo, L., Sirolla, C., Abbatecola, A. M., Lattanzio, F., & Postacchini, D. (2012). Social isolation risk factors in older hospitalized individuals. *Archives of Gerontology and Geriatrics,55*(3), 580-585. doi:10.1016/j.archger.2012.01.011

Glass, T.A., Mendes de Leon, C.F., Marottoli, R., and Berkman, L.F. (1999). Population based study of social and productive activities as predictors of survival among elderly Americans. *Br Med J* 319:478-483

Greenglass, E., Fiksenbaum, L., & Eaton, J. (2006). The relationship between coping, social support, functional disability and depression in the elderly. *Anxiety, Stress & Coping,19*(1), 15-31. doi:10.1080/14659890500436430

House, J.S. (1981). *Work stress and social support.* Reading, MA: Addison-Wesley

House, James S., Karl R. Landis, and Debra Umberson. (1988). Social relationships and health. *Science* 241:540-545.

Ibrahim, Michel A., Berton H. Kaplan, Ralph C. Patrick, Cecil Slome, Herman A. Tyroler, and Robert N. Wilson. (1980). The legacy of John C. Cassel. *American Journal of Epidemiology* 112:1-7.

Information on Senior Citizens Living in America. (2019). Retrieved from https://www.ioaging.org/aging-in-america

IOM (Institute of Medicine). (2010). Providing Healthy and Safe Foods as We Age: Workshop Summary. Washington, DC: The National Academies Press.

Jacobson, N. C., Lord, K. A., & Newman, M. G. (2017). Perceived emotional social support in bereaved spouses mediates the relationship between anxiety and depression. *Journal of Affective Disorders,211*, 83-91. doi:10.1016/j.jad.2017.01.011

Jang, Y., Kim, G., & Chiriboga, D. (2005). Acculturation and manifestation of depressive symptoms among Korean-American older adults. *Aging & Mental Health,9*(6), 500-507. doi:10.1080/13607860500193021

Kaplan, Berton H., John C. Cassel, and Susan Gore. (1977). Social support and health. *Medical Care* 15(5, suppl.):47-58.

Kessler, R.C. and McLeod, J.D. (1985). Social support and mental health in community samples. In: *Social support and health,* (ed. S. Cohen and S.L. Syme), pp. 219-40. Academic Press, Orlando, FL.

Krause, N. (2005). Religion, Aging, and Health Survey, 2001, 2004 [United States]. *ICPSR Data Holdings*. doi:10.3886/icpsr03255

Krieger, Nancy. (2001). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology* 30:668-677.

Langer, T., and Michael, S. (1960). Life stress and Mental Health. New York, Free Press

Levula, A., Harré, M., & Wilson, A. (2017). The Association Between Social Network Factors with Depression and Anxiety at Different Life Stages. *Community Mental Health Journal,54*(6), 842-854. doi:10.1007/s10597-017-0195-7

Loughlin, A. (2004). Depression and Social Support: Effective Treatments for Homebound Elderly Adults. *Journal of Gerontological Nursing,30*(5), 11-15. doi:10.3928/0098-9134-20040501-05

Luo, Y., Hawkley, L. C., Waite, L. J., & Cacioppo, J. T. (2012). Loneliness, health, and mortality in old age: A national longitudinal study. *Social Science & Medicine,74*(6), 907-914. doi:10.1016/j.socscimed.2011.11.028

Marmot, Michael and Richard G. Wilkinson. (Eds.). (1999). *Social Determinants of Health*. New York: Oxford University Press. 279 pp.

Mather, M. (2016, January 13). Fact Sheet: Aging in the United States. Retrieved April 18, 2018, from https://www.prb.org/aging-unitedstates-fact-sheet/

Mccrae, N., Murray, J., Banerjee, S., Huxley, P., Bhugra, D., Tylee, A., & Macdonald, A. (2005). 'They're all depressed, aren't they?' A qualitative study of social care workers and depression in older adults. *Aging & Mental Health,9*(6), 508-516. doi:10.1080/13607860500193765

Nicholson, N. R. (2012). A Review of Social Isolation: An Important but Underassessed Condition in Older Adults. *The Journal of Primary Prevention,33*(2-3), 137-152. doi:10.1007/s10935-012-0271-2

Park, J., & Roh, S. (2013). Daily spiritual experiences, social support, and depression among elderly Korean immigrants. *Aging & Mental Health,17*(1), 102-108. doi:10.1080/13607863.2012.715138

Paykel, E.S. (1994). Life Events, social support and depression. *Acta Psychiat. Scans. Suppl.* 377, 50-8.

Quinton, D., Rutter, M. and Liddle, C. (1984). Institutional rearing, parenting difficulties and marital support. *Psychol. Med.* 14, 107-24.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1,* 385–401.

Raskind, M . A . (1992). Depression in the elderly. *Canadian Journal of Psychiatry, 37(Suppl.l),* the 4 - 6 .

Rothwell, H. J., Nathaniel, S., & Madans, J. H. (2016, May 04). National Center for Health Statistics. Retrieved April 18, 2018, from https://www.cdc.gov/nchs/nsltcp/index.htm

Routasalo, P. E., Savikko, N., Tilvis, R. S., Strandberg, T. E., & Pitkälä, K. H. (2006). Social Contacts and Their Relationship to Loneliness among Aged People – A Population-Based Study. *Gerontology,52*(3), 181-187. doi:10.1159/000091828

Roose, S., & Sackeim, H. (Eds.). (2004). Late-life depression. New York: Oxford University Press.

Ruberman, W., Weinblatt, E., Goldberg, J. D., et al. Psychosocial influences on mortality after myocardial infarction. *New Eng J Med* 1984; 311:552-559.

Saito, T., Kai, I., & Takizawa, A. (2012). Effects of a program to prevent social isolation on loneliness, depression, and subjective well-being of older adults: A randomized trial among older migrants in Japan. *Archives of Gerontology and Geriatrics,55*(3), 539-547. doi:10.1016/j.archger.2012.04.002

Santini, Z. I., Fiori, K. L., Feeney, J., Tyrovolas, S., Haro, J. M., & Koyanagi, A. (2016). Social relationships, loneliness, and mental health among older men and women in Ireland: A prospective community-based study. *Journal of Affective Disorders,204*, 59-69. doi:10.1016/j.jad.2016.06.032

Santini, Z. I., Koyanagi, A., Tyrovolas, S., Mason, C., & Haro, J. M. (2015). The association between social relationships and depression: A systematic review. *Journal of Affective Disorders,175*, 53-65. doi:10.1016/j.jad.2014.12.049

Seeman, T. and McEwen, B.S. (1996). Impact of social environment characteristics on neuroendocrine regulation. *Psychosom. Med.* 58, 459-71.

Singer, C. (2019). Health Effects of Social Isolation and Loneliness. Retrieved February 16, 2019, from https://www.aginglifecarejournal.org/health-effects-of-social isolation-and-loneliness/

Stepler, R. (2016, February 18). Well-being of older adults living alone. Retrieved from https://www.pewsocialtrends.org/2016/02/18/3-well-being-of-older-adults living-alone/

Suvillan, M. G. (2003, December 1). Watch for suicide risk factors in elderly patients: depression, social isolation. *OB GYN News*, *38*(23), 44.

Tarlov, Alvin R. and Robert St. Peter. (Eds.). (2000). *The Society and Population Health Reader. Vol. II: A State and Community Perspective*. New York: The New Press. 337 pp

Taylor, H. O., Taylor, R. J., Nguyen, A. W., & Chatters, L. (2018). Social Isolation, Depression, and Psychological Distress Among Older Adults. Journal of Aging and Health, 30(2), 229–246. https://doi.org/10.1177/0898264316673511

The Elderly Living Alone - Geriatrics. (n.d.). Retrieved from https://www.msdmanuals.com/professional/geriatrics/social-issues-in-the elderly/the-elderly-living-alone

Tiikkainen, P., & Heikkinen, R. (2005). Associations between loneliness, depressive symptoms and perceived togetherness in older people. *Aging & Mental Health,9*(6), 526-534. doi:10.1080/13607860500193138

Werner-Seidler, A., Afzali, M. H., Chapman, C., Sunderland, M., & Slade, T. (2017). The relationship between social support networks and depression in the 2007 National Survey of Mental Health and Well-being. *Social Psychiatry and Psychiatric Epidemiology,52*(12), 1463-1473. doi:10.1007/s00127-017-1440-7