

Running head: PHYSICAL LIMITATIONS

The Relationship between Physical Limitations and Depressive Disorders in Adults

by

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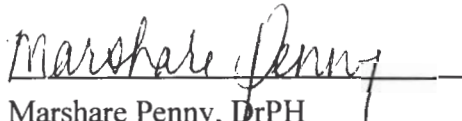
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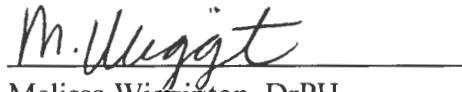
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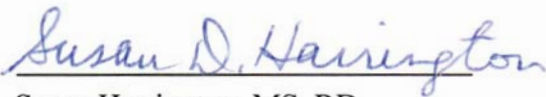
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PHYSICAL LIMITATIONS

Abstract

Depression has a potential impact on adults with physical limitations. The purpose of the study is to determine if adults with physical limitations have a higher chance of being diagnosed with a depressive disorder than persons who are not physically limited. A cross-sectional design was used to determine the relationship between physical limitation and depressive disorders in adults of the state of California. The study also looked to determine if having a physical limitation influences alcohol use in California adults. Survey responses from 21,034 California adults were used in the study, and a 10% random sample was run three times; the 10% random sample used in the analysis for this study includes 2,029 respondents. Self-reported data from the 2015 California Health Interview Survey (CHIS) was used to determine the relationship between having a physical limitation and depressive disorders, as well as the relationship between physical limitation and alcohol use. A significant relationship was found between physical limitation and depressive disorders. There is also a significant relationship between physical limitation and alcohol use. The result of this study suggests further studies to investigate other factors that may co-exist with physical limitation and the effects on an individual's risk of having a depressive disorder or use of alcohol.

Table of Contents

LIST OF TABLES II

CHAPTER 1 3

INTRODUCTION	3
STATEMENT OF THE PROBLEM	3
PURPOSE OF THE STUDY	4
RESEARCH QUESTIONS	5
HYPOTHESIS	5

CHAPTER 2 6

REVIEW OF LITERATURE	6
INTRODUCTION	6
CONCLUSION	15

CHAPTER 3 16

METHOD	16
DESIGN	16
PARTICIPANTS	17
PROCEDURES	17
DATA ANALYSIS	19
RESEARCH ETHICS	19

CHAPTER 4 21

RESEARCH FINDINGS	21
--------------------------	-----------

CHAPTER 5 23

DISCUSSION AND CONCLUSION	23
----------------------------------	-----------

REFERENCES 29

APPENDIX A: TABLES 39

CURRICULUM VITAE 42

PHYSICAL LIMITATIONS

List of Tables

Table 1. Demographic data for the subset of the 2015 CHIS data set.....	39
Table 2. Crosstabulation of physical limitations and depression in Last 30 Days.....	40
Table 3. Crosstabulation of physical limitations and binge drinking.....	40

Chapter 1

Introduction

Statement of the Problem

According to the World Health Organization (WHO) (2016) there are more than one billion people with some form of disability and between 110-190 million adults have significant complications functioning. Disability is an umbrella term that includes impairments, participation restrictions, and activity limitations, where any condition of the body or mind makes it difficult for an individual to do certain activities or interact with the environment around him/her (WHO, 2016; CDC, 2017). Impairments in a person's body structure or function; a limitation in activity due to difficulty seeing, hearing, or walking; and restrictions in participating in normal daily activity, such as working, engaging in social activities, or obtaining health services, all fall under the term disability (CDC, 2017). WHO (2017) describes encountering difficulties in performing a task or action as a physical limitation. The Centers for Disease Control and Prevention (CDC) (2017) conclude that disabilities can be related to developmental conditions, conditions that are present at birth, injury, or a chronic condition. The WHO (2016) adds that the rate of disabilities is increasing as the population is aging and chronic health conditions continue to increase.

Studies focusing on depressive symptoms indicate that people with physical limitations report more symptoms of depression than persons who are not physically limited (Caputo & Smith, 2013). The National Institute of Mental Health (NIMH) (2017) describes depression as a serious mood disorder that produces symptoms that affect how a person feels, thinks, and deals with daily activities. There are more than 300 million people of all ages who suffer from

PHYSICAL LIMITATIONS

depression, which contributes to the global burden of disease (WHO, 2017). These figures illustrate the potential impact depression has on individuals with physical limitations.

Purpose of the Study

One in every five adults has a disability in the United States, meaning 53 million adults live with a disability (CDC, 2015). The CDC (2015) reports that mobility limitation was the most common type of disability, followed by difficulty in thinking or challenges with memory, independent living, vision, and self-care. Statistics from the 2015 National Health Interview Survey show that 39.6 million adults aged 18 and over in the United States have difficulty in physical functioning (CDC, 2017). There are 77 million adults that have at least one complex activity limitation or difficulty performing basic actions (CDC, 2017). In Cornell University's 2012 Disability Status Report about 1.7 million of adults (ages 21-64) reported having a disability in California (Erickson et al., 2014).

About 43.8 million adults experience mental illness in a given year in the US, including major depression and dysthymic disorders (NAMI, 2017). Major depressive disorder affects over 16.1 million adults in America, while persistent depressive disorder (dysthymia) affects about 3.3 million American adults (ADAA, 2017). In California, severe mental illness occurs in an estimated 1.2 million adults, and prevalence increases with age (DHCS, 2017). Depressive disorders have significant effects on a person, their families, and society and can be due to factors ranging from biological to chronic diseases (NIMH, 2017).

Because both physical disability, or limitations, and depression have been linked, the purpose of this study is to determine if persons with physical limitations have a higher chance of being diagnosed with depression than persons who are not physically limited.

PHYSICAL LIMITATIONS

Research Questions

This study will answer the following questions:

1. Is there a relationship between physical limitations and depressive disorders in adults?
2. Does having a physical limitation influence an individual's alcohol use?

Hypothesis

In the first research question, it is hypothesized that adults with physical limitations are more likely to report a depressive disorder compared to those without a limitation. In the second research question, it is hypothesized that physical limitations influence a person's alcohol use.

Chapter 2

Review of Literature

Introduction

According to Caputo and Simon (2013), there has been a rise in physically limited adults in the United States. Having a physical limitation implies a limited capacity to meet the requirements of core familial, social, and occupational roles, and evidence links depression and poor physical health (Gayman et al., 2008). The inability to perform basic daily activities has also been known to induce stressful experiences (Pinto-Gouveia et al., 2015). Research by Brown (2017) shows that people with physical disabilities experience up to three times the number of depressive symptoms than the general population, in which greater functional limitation is associated with greater depressive symptoms.

Population estimates of functional limitation and physical disability with a host of secondary mental health complaints are concerning. Depressive symptoms are the most prevalent of these complaints (Brown, 2017). Mental health researchers have turned their attention to exploring the emotional impact of physical limitations and now consider physical limitations to be a major chronic stressor in adults (Caputo & Simon, 2013). Prior research presents evidence that physical disability is a risk factor for depressive symptoms (Gayman et al., 2008). Further, community-based and cross-sectional studies of adults suggest a relationship between physical limitations and depression. Other studies have determined that physically limited adults are at a heightened risk for depression due to the difficulty they have in performing activities of daily living and depending on others for social support. In other words, physical limitations are a stressor for individuals (Caputo & Simon, 2013).

PHYSICAL LIMITATIONS

Disability in the US

About 15% of the world's population has some form of disability, and rates continue to increase (WHO, 2016). According to the 2010 Census, there were approximately 56.7 million people with a disability in 2010 in the US (US Census Bureau, 2012). Data from the Behavioral Risk Factor Surveillance System shows that in 2013 approximately one in five adults reported any disability. According to the CDC (2014), more than 21 million adults age 18-64 have a disability in the U.S.; these individuals have a serious difficulty in hearing, seeing, concentrating, climbing stairs, or walking. The state-level prevalence of living with a disability varied from state to state; however, disability was generally higher in the south (Courtney-Long et al., 2015).

Furthermore, there were 9.4 million adults who reported having difficulty with at least one activity of daily living, including getting dressed, bathing, eating, and getting around inside the home. About 5 million of these individuals needed assistance from others to perform activities (US Census Bureau, 2012). There are also 15.5 million adults who reported having difficulties with one or more instrumental activities of daily living, such as using the phone, preparing meals, or performing housework (US Census Bureau, 2012). Having a disability can affect individuals differently; for example, those with a disability may be more vulnerable to other health conditions or engage in health risk behaviors, such as poor diet and physical inactivity (US Census Bureau, 2012).

Physical disabilities. Physical disability leads to increased health risks, increased burden of health care costs, and elevated mortality (Lin et al., 2012). The 2010 Census reports that about 30.6 million individuals used a wheelchair, cane, crutches or walkers or had difficulty walking or climbing stairs (US Census Bureau, 2012). There are also roughly 19.9 million people who have

PHYSICAL LIMITATIONS

trouble lifting and grasping objects, such as a bag of groceries or grasping a pencil (US Census Bureau, 2012).

The CDC (2014) states that physical activity benefits adults by reducing their risk of chronic diseases; however, nearly half of individuals with a disability are not physically active (CDC, 2014). Approximately 57% of individuals who have serious difficulty walking or climbing stairs do not get aerobic physical activity and are least likely to participate in physical activity (CDC, 2014). Individuals with disabilities are also more likely to report poorer overall health and less access to adequate healthcare compared to persons without a disability (CDC, 2017).

Vision and hearing impairments. Zambelli-Weiner and Friedman (2012) determined that vision impairment is an increasing problem that affects a number of adults in the United States. There were about 8.1 million people who reported having difficult seeing; with 2 million among this number identified as blind or unable to see (US Census Bureau, 2012).

In addition to vision impairment, hearing loss also impacts the physical, cognitive, and social function of adults (Goman & Lin, 2016). The 2010 Census reported an approximate 7.6 million individuals who have difficulty hearing (US Census Bureau, 2012). Goman and Lin (2016) conducted a study to estimate the number of people who have a hearing impairment in the United States. The study found that nearly one in four individuals age 12 years or older have hearing loss in at least one ear. The prevalence of hearing loss was also found to be higher among older individuals (Goman & Lin, 2016).

Depression in the US

The Centers for Disease Control and Prevention (CDC) (2014) states that depression is a serious illness with cognitive, mood, and physical symptoms, which is associated with impaired

PHYSICAL LIMITATIONS

functioning. It is a common, but serious, mood disorder that causes symptoms that affect an individual's feelings, thinking, and handling daily activities (NIMH, 2017). The WHO (2017) states that more than 300 million people of all ages are affected by depression globally.

Depression can become a serious health condition, especially with moderate to severe intensity, or when it is long lasting, and it may lead to suicide (WHO, 2017). The burden of depression has increased globally, and barriers to effective care are lacking in resources and trained health care providers (WHO, 2017). The social stigma associated with mental disorders and inaccurate assessments also pose as barriers to effective care (WHO, 2017).

According to the CDC (2016), more than one out of twenty Americans 12 years of age and older reported depression between 2009 and 2012. The Anxiety and Depression Association of America (ADAA) (2017) has determined that major depressive disorders affect more than 16.1 million adults in the US. Persistent depressive disorder, also known as dysthymia, affects about 3.3 million US adults (ADAA, 2017). In the US, the economic burden of depression includes workplace, direct, and suicide-related costs, which were estimated to be \$210.5 billion in 2010 (CDC, 2016). It is difficult to determine if depression is the result of a condition or is a contributing factor to a behavior or condition; however, depression has been associated with lower workplace productivity and higher risks of conditions or behaviors, including substance use disorders (CDC, 2016).

According to the National Institute of Mental Health (NIMH) (2017), research suggests that depression is caused by a combination of biological, environmental, psychological, and genetic factors. Depression can co-occur with and worsen conditions of serious medical illnesses, such as diabetes, cancer, or heart disease, in adults (NIMH, 2017). It can also be caused by

PHYSICAL LIMITATIONS

conditions that prevent individuals from pursuing valued activities (Jones et al., 2009). This suggests that depression may also co-occur with physical disabilities.

Depressive Disorders Among the Physically Limited

Adults with physical limitations have difficulties in performing activities of daily living, which interferes with an individual's ability to perform social roles, reduce community involvement, and limit social interaction (Caputo & Simon, 2013). The effects of these limited abilities can increase an individual's level of loneliness and decrease social integration (Caputo & Simon, 2013). Feelings that are more common among physically limited individuals, such as a low sense of control, perceived lack of social support, and low self-esteem, help to explain the association between physical limitation and depressive symptoms (Caputo & Simon, 2013). There is evidence that the depressive symptoms that stem from having a disability are greater than the disabling effect of depression alone. Individuals with limitations report more symptoms of depression than those who are not physically limited (Caputo & Simon, 2013).

A study conducted by Brown (2017) used data from a two-wave panel study of Miami-Dade County, Florida residents to examine the social determinants of mental health problems among individuals with and without physical disabilities. Brown (2017) found that disability-related stressors influence the effects of functional limitations. Findings indicate that greater functional limitation is linked with more feelings of stigmatization and discriminatory encounters that lead to psychological consequences. In the Caputo and Simon (2013) study, researchers used a representative sample of adults between the ages 25-74 to determine how physical limitations influences the well-being of adults. Findings from the study show that physical limitation was associated with lower levels of emotional well-being (Caputo & Simon, 2013). People who were physically limited experienced an increase in depressive symptoms compared to those who were

PHYSICAL LIMITATIONS

not physically limited. Physically limited individuals also experienced an increase in negative feelings and a decrease in positive emotions (Caputo & Simon, 2013).

An example of a condition that may cause limitations in physical functioning is rheumatoid arthritis, which is a disabling disease that causes pain and stiffness in joints (Pinto-Gouveia et al., 2015). Pinto-Gouveia et al. (2015) examined physical limitation, depression, and pain across the course of the rheumatoid arthritis disease by performing a 2-year study on depressive symptomology in people with progressive rheumatoid arthritis. According to research conducted by Pinto Gouveia and colleagues (2015), studies show that depression is more common in patients with rheumatoid arthritis than the general population. Results showed that as the disease progressed, there was an increase in depression as physical limitations increased (Pinto-Gouveia et al., 2015). Living with a disabling condition can lead to the inability to perform daily life routines and the loss of control over an individual's life (Pinto-Gouveia et al., 2015). Other research provided evidence that persons with rheumatoid arthritis have twice the rate of major depression compared to those without the condition (Pinto-Gouveia et al., 2015).

Depressive Disorders in the Vision and Hearing Impaired

Vision related issues are a common stressor in the aging population and can have adverse effects on the well-being and lives of adults (Bookwala & Lawson, 2011). Like physical limitations, vision impairment diminishes an individual's ability to carry out daily physical activities, like moving outdoors and public transportation, and other day-to-day functions, such as picking out clothes, using a telephone, and having social interactions (Bookwala & Lawson, 2011). People with physical disabilities encounter practical and social problems in their daily lives that, in turn, negatively impact their mental health (Bernabei et al., 2011). There is greater

PHYSICAL LIMITATIONS

difficulty in walking, climbing stairs, and socializing in adults who either have a visual impairment or face depression (Jones et al., 2009).

Previous studies have found that poor vision is related to lower life satisfaction and perceived well-being in older adults (Bookwala & Lawson, 2011). Findings from other studies have linked lower psychological health—specifically higher depressive symptomology—to poor vision, where higher levels of depressive symptoms occurred in individuals with poor vision compared to their peers who are not visually impaired (Bookwala & Lawson, 2011). Also, older adults who are vision impaired face difficulty walking, preparing meals, and other basic daily activities (Jones et al., 2009). Physical inactivity and loss of valued activities caused by visual impairment are some of the many factors that lead to depression in older adults (Jones et al., 2009).

A study conducted by Bookwala and Lawson (2011) explored the links between poor vision and depressive symptomology using indicators, such as activity restrictions and feelings of social isolation, in a representative sample of older adults. Results show that self-reported poor vision predicted higher depressive symptoms, greater physical limitations, and increased social isolation (Bookwala & Lawson, 2011). Chou and Chi (2004) state that hearing or vision impairments and depression are common in the aging population; however, there are few studies that have directly compared the influence of hearing loss and vision impairment on depression.

Jones and colleagues (2009) focused on the prevalence of depression among older adults with loss of vision, hypothesizing that the interaction between visual impairment and depressive symptoms would have a strong association, therefore affecting an individual's functioning and health. The results show that older adults with visual impairment who reported depressive symptoms have greater difficulties with activities of daily living, getting in and out of bed, and

PHYSICAL LIMITATIONS

socializing with family and friends (Jones et al., 2009). Furthermore, the study discovered that there is a strong association between depression, vision loss, and adverse health behaviors, such as smoking and physical inactivity, showing a link in depression and visual impairment (Jones et al., 2009).

A study by Bernabei et al. (2011) aimed to examine the association between vision and hearing impairment and depressive-anxiety symptoms in adults in Italy. According to Bernabei et al. (2011), the prevalence of vision and hearing impairments increase with age and has been associated with depression and anxiety. In a study of 584 adults ages 65 and older with recent vision loss, vision loss was a major risk factor for depression (Bernabei et al., 2011). The results of this study provide evidence that the prevalence of depressive symptoms is higher in adults who are vision impaired than those who are not vision impaired (Bernabei et al., 2011). Bernabei et al. (2011) also found that the occurrence of anxiety symptoms were higher in the hearing impaired group compared those who are not hearing impaired. The findings suggest that vision and hearing impairments can increase the likelihood of depressive and anxiety symptoms, especially in older adults (Bernabei et al., 2011).

Depressive Disorders and Alcohol Use

Alcohol use is frequently associated with depression (Satre et al., 2014). Drinking over the recommended limits is considered hazardous and can have a negative impact on individuals (Satre et al., 2014). According to Satre and associates (2014), there are a number of studies that show an association between depressive symptoms and heavy drinking. Clinical studies have found evidence that there is a relationship between depression and alcohol use (Satre et al., 2014). Other research supports that depression motivates an individual to drink in an effort to deal with negative effects, leading to alcohol use disorders (Connor, 2009). Connor et al. (2009)

PHYSICAL LIMITATIONS

explored previous adult studies on alcohol use disorders and depression and found a positive association between depression and alcohol use. Further, longitudinal studies determined that depressive symptoms predict a stronger increase of alcohol use over time (Connor et al., 2009).

Reports of the survey also determined that the percentage of adults with any mental illness who were binge alcohol users is higher than adults who did not have a mental health illness (HHS, 2012). This supports the idea that depressive disorders are associated to alcohol use in adults.

Physical Disability and Alcohol Use

Alcohol substance use disorders are maladaptive patterns of alcohol use that leads to clinical impairments (Beier et al., 2014). There are limited studies exploring the relationship between physical disabilities and alcohol use; however, Ebener and Smedema (2011) have found that substance use in individuals with physical disabilities is related to poorer health status, increase in medical complications, and impaired self-care activities. A study by Beier et al. (2014) provides evidence that people with multiple sclerosis are at risk for mental health disorders and are likely to use alcohol excessively. Multiple sclerosis is a progressive chronic disease of the central nervous system where visual disorders and mobility or walking issues are among some of its symptoms (MSAA, 2016). The study also suggests that alcohol consumption may be more common among people who are diagnosed with multiple sclerosis than the general population (Beier et al., 2014).

Ebener and Smedema (2011) add that those with physical disabilities who report symptoms of depression and anxiety use substances to cope with their psychological distress. This shows that people with disabilities may be at a greater risk for substance abuse disorders than those in the general population; however, there is less research that exists on the subject.

PHYSICAL LIMITATIONS

More research related to issues of disabilities and substance use disorders is warranted because little is understood about the factors that affect the quality of life among disabled persons with a substance abuse disorder (Ebener and Smedema, 2011).

Conclusion

Studies show that there is a relationship between depression and physical disabilities; however, few studies examine the relationship between physical disability and substance use. Although there is evidence in these relationships, gaps in knowledge still remain. This study intends to look further into these conditions in California to determine if persons with physical limitations have a higher chance of being diagnosed with depression than persons who are not physically limited. It will also examine whether or not physical limitations are associated with other elements of mental health, primarily alcohol use.

Chapter 3

Method

Design

The data used in this study was from the 2015 California Health Interview Survey (CHIS), which is conducted by the UCLA Center for Health Policy Research in collaboration with the Department of Health Care Services and the California Department of Public Health (UCLA, 2016). CHIS covers a wide array of health topics and is conducted on a continuous basis through a random-dial telephone survey (UCLA, 2012). It is the largest state health survey in the nation, providing statewide information on the overall population, including various racial and ethnic groups (UCLA, 2012). CHIS also provides city and legislative district information, as well as county-level information for a majority of its counties to help with priority setting, health planning, and offers a comparison of health outcomes (UCLA, 2012).

Data for the 2015 CHIS come from a cross-sectional study of California's non-institutionalized population living in households, which was collected as part of a 2-year cycle between May 2015 and February 2016 (UCLA, 2017). This survey provides data on special subgroups and samples of major racial/ethnic groups, sexual minorities, and other populations residing in California (UCLA, 2012). CHIS has a large sample that includes individuals from various ethnic groups to provide health-related information from large and small racial and ethnic populations. The survey is conducted in English, Spanish, Korean, Tagalog, Vietnamese, and Chinese—both Mandarin and Cantonese dialects—to ensure that California's diverse populations are represented (UCLA, 2012).

PHYSICAL LIMITATIONS

Participants

According to UCLA (2012), CHIS interviews thousands of California households that are selected each year using scientific sampling, from which a random number of adults (ages 18 and above), teenagers (ages 12-17), and/or children (11 years old and under) are asked to participate in each household in order to represent the state's diverse population. The target audience for this study is adults (18 years and older) in California, including all ethnic and racial populations, who participated in the 2015 CHIS.

Using G*Power Software, Version 3.1.9.2, a medium effect size of .3, an alpha level of .05, and a power of 80% was selected to estimate the minimum sample size of 88. The 2015 CHIS dataset has a sample of 21,034 California adults; due to the large size of the sample, a 10% random sample was pulled from the original sample (UCLA, 2015). This random sample was run three times to ensure consistency and reliability of the random sample. The outputs of each random sample are similar and represented the larger sample. The 10% random sample includes 2,029 respondents; therefore, the minimum sample size of 88 for this study was met.

Procedures

CHIS employs a dual-frame, multiple sample design using a random-digit-dial (RDD) sample including both landline and cellular service telephone numbers (UCLA, 2017). California's 58 counties were grouped into 44 geographic sampling strata, and 14 sub-strata were created within the Los Angeles and San Diego counties, as the two counties were the most populous (UCLA, 2017). Residential telephone numbers were selected within each geographic stratum from where one adult respondent (ages 18 and over) was randomly selected (UCLA, 2017). In the households with children (ages 11 and under) and/or adolescents (ages 12-17), one child and one adolescent of the randomly selected adult were also randomly selected (UCLA,

PHYSICAL LIMITATIONS

2017). The adults with sufficient knowledge about the child's health completed the child interview while adolescents were interviewed directly (UCLA, 2017). The RDD sample was designed to achieve the goal to complete adult interviews by using about 50% landline and 50% cellular phone numbers.

RTI International was responsible for data collection under contract with the UCLA Center for Health Policy Research. RTI International is a non-profit institute that specializes in designing and implementing large-scale surveys and provides development, technical services, and research to both government and commercial customers worldwide (UCLA, 2017). RTI staff interview one randomly selected adult from sampled households and used a computer-assisted telephone interviewing system (CATI) to administer interviews in all languages. Adult interviews took approximately 41 minutes, on average, to complete; however, non-English language interviews took longer (UCLA, 2017). The CHIS dataset is considered a sample that is representative of California's diverse population.

Dependent Variables

There are two dependent variables in this study. The dependent variable for the first research question is "depressive disorders," a constructed variable using the following 2015 CHIS variable, *Feel depressed in the past 30 days*. The response options included: "all of the time," "most of the time," "some of the time," "a little of the time," and "not at all." "Not at all" was recoded as "No" and all other responses ranging from "a little of the time" to "all of the time" were recoded as "Yes." Responses that include not ascertained, don't know, refused, inapplicable, or proxy skipped were excluded from the analysis.

The dependent variable for the second research question is "alcohol use." This is constructed using the following 2015 CHIS variable, *Binge drinking in past year (5+ drinks for*

PHYSICAL LIMITATIONS

Males and 4+ drinks for females). The responses included: “No binge drinking past year,” “once a year,” “less than monthly – more than once a year,” “less than weekly but more than monthly,” and “daily or weekly.” “No binge drinking past a year” was recoded as “No” and response options ranging from “once a year” to “daily or weekly” were recoded as “Yes.” Responses that include not ascertained, don’t know, refused, inapplicable, or proxy skipped were excluded from the analysis.

Independent Variables

The key independent variable included in both research questions is “physical limitation.” This variable was constructed using the following 2015 CHIS variable, *condition limits basic physical activity*, which is derived from the CHIS question: *Do you have a condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?* This variable has two response categories, which are “yes” and “no” responses; “refused” and “don’t know” were excluded from the analysis.

Data Analysis

Data in this study was analyzed using the Statistical Package for the Social Sciences (SPSS), Version 24. To determine whether or not there was a relationship between physical limitations and diagnosis of depressive disorders, a Chi-Square test of independence was performed. Furthermore, to determine if alcohol use was correlated with physical limitation, a Chi-Square test of independence was again performed.

Research Ethics

Respondents of CHIS provided consent to the survey screener (UCLA, 2012). The consent script read to participants included an introduction of the interviewer, survey sponsors, and UCLA, followed by an explanation of the importance and purpose of the survey (UCLA,

PHYSICAL LIMITATIONS

2012). Upon reading the consent script, the screener described the voluntary and confidential nature of the survey, as well as explained the respondent's right to skip questions and to end the interview at any time (UCLA, 2012). Lastly, the screener asked the respondent if he or she wished to participate in the survey, at which time the respondent provides his/her verbal consent to proceed with the survey (UCLA, 2012). This research study was approved by the Institutional Review Board (IRB) at California Baptist University under exempt status on September 19, 2017.

Chapter 4

Research Findings

The sample used in this study includes 2,029 adult respondents of the 2015 California Health Interview Survey (CHIS), which include 43.1% males and 56.9% females. The majority of respondents were White (Non-Hispanic) (59.6%), followed by Hispanic (23.5%). Most respondents were over the age of 50 years, with a median age of 55 years (See Table 1).

In the first research question, *is there a relationship between physical limitations and depressive disorders in adults*, it was hypothesized that the occurrence of a depressive disorder is higher among adults with a physical limitation. A Chi-Square test of independence was performed to determine if the occurrence of depressive disorders was associated with having a physical limitation. A significant association was found, $\chi^2 (1) = 69.65$, $p = .01$. The odds of a depressive disorder among those who had a physical limitation were 0.38 times that of those without a physical limitation (OR 0.38, 95% CI; .30-.48) (see Table 2). Findings suggest that there is a relationship between having a physical limitation and depressive disorders; however, those with a physical limitation were 62% less likely to be depressed than those who did not have a physical limitation.

In the second research question, *does having a physical limitation influence an individual's alcohol use*, it was hypothesized that physical limitations influence a person's alcohol use. A Chi-Square test of independence was performed to determine if there was an increase in alcohol use among individuals with physical limitations compared to those who were not physically limited. A significant association was found, $\chi^2 (1) = 30.19$, $p = .01$. Those with physical limitations had a higher risk of binge drinking compared to those who did not have a physical limitation (OR 1.98, 95% CI: 1.54-2.51) (see Table 3). These findings suggest that there

PHYSICAL LIMITATIONS

is an association between having a physical limitation and an individual's alcohol use, where the odds of alcohol consumption among those with a physical limitation was 1.98 times greater, or nearly twice as likely, compared to those who were not physically limited.

Discussion and Conclusion

The purpose of this study was to examine the relationship between physical limitation, depression, and alcohol use. The results from this study suggest that alcohol use is associated with having a physical limitation. Adults who had a physical limitation were more likely to have reported binge drinking compared to those who were not physically limited. Beier et al. (2014) suggests that individuals who are diagnosed with a condition that causes a physical limitation are more at risk for mental health disorders and substance use. The research by Beier and associates (2014) support the hypothesis that physical limitations influence a person's alcohol use and suggests that alcohol consumption may be more common among people who are diagnosed with a physical limitation, which is consistent with this study. Studies have also found that men who were diagnosed with a physical limitation used alcohol more frequently than women (Beier et al., 2014). Although other studies support the findings, the analysis performed primarily focused on physical limitation and alcohol use of a sample using California Health Interview Survey (CHIS) 2015 data. As mentioned in the literature review, there are limited studies that examine the association between physical limitation and alcohol use; further studies are needed to investigate the relationship.

It was also hypothesized in this study that the occurrence of a depressive disorder is higher among adults with a physical limitation. The results of the data analysis show that depressive symptoms were associated with physical limitation; however, respondents who reported to have a physical limitation were less likely to be depressed than those who did not have a physical limitation. These findings refute the researcher's hypothesis and contradict

PHYSICAL LIMITATIONS

Caputo and Simon's (2013) findings that persons with physical limitations report having more symptoms of depression than those who are not physically limited.

Brown (2017) further finds that having a greater functional limitation was related to more feelings of discriminatory encounters that then lead to depression. Benyamini and Lomranz (2007) finds participants with physical limitations reported less depressive symptoms when continuing daily activities or finding a replacement activity to satisfy not being able to perform activities due to a physical limitation. This means that participants who had to give up on activities, due to being physically limited, and did not find a replacement activity reported higher levels of depressive symptoms (Benyamini and Lomranz, 2007). The results from the literature support the findings of this study, showing that there is indeed a relationship between physical limitation and depressive symptoms; however, this study did not look further into the level of functionality limitation, the condition/type of physical limitation, or actions taken to address depressive symptoms. Additional studies to investigate other factors should be conducted to better understand the association between physical limitation and depression.

Public Health Implications

Health-related quality of life is a construct that is considered an indicator of a need for services or intervention outcome and assists in the assessment of physical and mental health (Brown et al., 2014). Brown et al. (2014) finds that physical activity is associated with better quality of life for persons with and without limitations and shows the importance for promoting physical activity, which can help prevent depressive symptoms or negative behaviors, such as alcohol use. This information is important to any health care initiatives that involve access to care for individuals who may have conditions that cause physical limitations and are suffering from depression or has an issue with alcohol use.

PHYSICAL LIMITATIONS

Furthermore, substance use and mental disorders, such as depression and alcohol use, have an effect on a person's health and are a financial burden for families, employers, and publicly funded health systems (SAMHSA, 2017). Studies like this can impact the development of public programs that serve persons with disabilities or physical limitations, as well as persons with substance abuse disorders (Brucker, 2007). Evidence-based interventions and services address risk factors to build emotional health and support preventing mental and substance use disorders (SAMHSA, 2017). Certainly, there are public programs that have been implemented under policy throughout the United States, such as Supplemental Security Income (SSI) and Social Security Disability Insurance that pay benefits to disabled adults who have limited income and resources; however, it is also important for public health professionals to understand how conditions can affect health behaviors, and how they can be addressed through local programs and initiatives that can target individuals in the community (SSA, 2018; Brucker, 2007).

Managed health care plans can partner with public health initiatives to improve the health of a person with complex conditions. The Behavioral Health Integration and Complex Care Initiative has partnered with a Southern California managed care plan to help providers improve the well being and health of the patients who have complex needs (BHIntegration, 2018). This initiative focuses on the coordination and integration of primary, specialty, addiction, and mental health care across and between treatment settings for individuals who have a medical condition or chronic medical condition and a mental health disorder and/or a substance use disorder (BHIntegration, 2018). Findings from this study illustrate the need to develop more initiatives to focus on the specific groups of people who are not only physically limited but are also experiencing depression or dealing with alcohol abuse.

PHYSICAL LIMITATIONS

The results from this study further imply that those who have a physical limitation may be at a lower risk for depressive symptoms, but have a higher risk of alcohol use. Future research could look into more specific physically limiting conditions, the levels of depression, and other types of substance use disorders to better understand the relationships.

Limitations of Study

Although the results of the study show a significant relationship between the physical limitation and alcohol use and depression, it is important to note the limitations of the study. For example, the responses to the 2015 CHIS were self-reported. There is a chance that many participants did not answer the questions honestly. For example, participants may respond to the survey questions with a socially desirable answer if they want to leave a more favorable impression on others (Crosby et al., 2006). If the participant believes that the surveyor might pass judgment on them for a behavior, participants may not be inclined to report alcohol use or occurrences of depressive symptom to the surveyor after just reporting having a physical limitation. Not reporting alcohol use or depression could be due to the participants' fear of being stigmatized; therefore, they may skip the question or not provide an honest answer.

This study does not investigate the specific conditions causing physical limitations and if having a specific physically limiting condition has an effect on a person's depression or alcohol use. For example, Pinto-Gouveia et al. (2015) studied individuals with rheumatoid arthritis and found that those individuals with the condition reported major depression at twice the rate of those without rheumatoid arthritis. Additionally, this study looked at having a condition generally described as a physical limitation, but did not specify a cause or condition, which could have produced a different outcome than what was found in this study. Since this study was primarily focused on the relationship between physical limitations and depression and alcohol

PHYSICAL LIMITATIONS

use, other variables that may affect a person's use of alcohol, such as gender, specific age group, socioeconomic status, or the respondent's ethnicity. Factors that could have affected a person's depression or alcohol use, for example socioeconomic status or having resources for adequate health care, were not explored in this study.

Furthermore, the response options for alcohol use and depression used for this study were categorical and were recoded; the study did not look at the original responses, which specified the frequency of depressive symptoms and alcohol use. The recoded variables indicate whether or not alcohol use and depression occurred for the participant, which were represented by response options of "yes" or "no." The study does not explore the frequency of depression or alcohol use. Perhaps knowing the frequency of alcohol use or occurrence of depressive symptoms may provide more accurate data to develop interventions addressing those issues.

In addition, a cross-sectional design was used in this study. The sample used is taken from the population in a point in time and is fixed, so that there is no comparison to show change from one point in time to another (Crosby et al., 2006); results from the 2015 CHIS may have decreased or increased over time. Also, people can change over time; for example, a person who had recently become physically limited may answer questions differently than a person who has been physically limited for years. It is important for researchers to consider changes over time in their studies prior to proposing or implementing programs.

Another limitation of using a cross-sectional design is that the questions in the survey may ask the respondents to estimate an occurrence of something over time (Crosby et al., 2006). For example, the 2015 CHIS asked the respondents about depression and binge drinking with the prompts, "*Feels depressed in the past 30 days*" and "*Binge drinking in the past year (5+ drinks for Males and 4+ drinks for females),*" which can lead to inaccurate self-reporting.

PHYSICAL LIMITATIONS

Respondent's recollection of depression or alcohol use occurring in the past may be an estimate, especially when the question is asking the number of times the respondent experienced depression or used alcohol. Also, if participants cannot remember whether depression or alcohol use within the timeframe of the question, they may not have answered the questions.

Lastly, one must consider the effects between two variables when conducting observational data analysis (Crosby et al., 2006). This study used the Chi-Square test of independence to analyze data, which shows that the two variables are related, but it does not necessarily mean that there is a causal effect from one variable to the other. Although a 10% random sample was analyzed, the sample used in the data analysis included more than 2,000 respondents and may have been too large of a sample, leading to a *Type I error* in which a significant association is found, but this difference is not real (Crosby et al., 2006).

Conclusion

Although there are several limitations to this study, researchers can begin to look further into the effects of physical limitation on depression and alcohol use to work towards preventing risk or providing appropriate care for these individuals. This study helps to shed light on the conditions that can co-exist, physical limitations and depression, or have a negative effect on behavior, physical limitations and alcohol use. Future research can help public health professionals recognize the relationship between these variables and get a better understanding of how individuals with physical limitations are at risk for alcohol use or depression. With this knowledge, professionals can better recommend solutions on how to take care of individuals who are physically limited.

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PHYSICAL LIMITATIONS

Appendix A: Tables

Table 1.

Demographic data for the subset of the 2015 CHIS data set (n= 2,029)

	n	%
Gender		
Male	874	43.1
Female	1,155	56.9
Race/Ethnicity		
White, Non-Hispanic	1,210	59.6
Hispanic	476	23.5
African American	109	5.4
American Indian/Alaska Native	14	0.7
Asian	154	7.6
Other/Two or More Races	66	3.3
Age		
18-29	281	13.9
30-39	217	10.7
40-49	235	11.6
50-59	360	17.8
60-69	440	21.7
70-79	287	14.1
80+	209	10.3

Note. N= 2,029; missing values excluded

PHYSICAL LIMITATIONS

Table 2.

Crosstabulation of physical limitations and depression in Last 30 Days (n= 2,029)

		Depressed		Adjusted OR (95% CI)
		No	Yes	
		N=1,620	N=396	
Physically Limited				
	Yes	338 (67.5%)	163 (32.5%)	0.38* (.30-.48)
	No	1,282 (84.6%)	234 (15.4%)	

Note. OR, odds ratio; CI, confidence interval. Chi-square test was used to assess the relationship between physical limitation and depression in last 30 days. * $p \leq .01$; missing values excluded.

PHYSICAL LIMITATIONS

Table 3.

Crosstabulation of physical limitations and binge drinking (n= 2,029)

		Binge Drinking		Adjusted OR (95% CI)
		No	Yes	
		N=1,437	N=592	
Physically Limited	Yes	410 (80.4%)	100 (19.6%)	1.96* (1.54-2.51)
	No	1,027 (67.6%)	492 (32.4%)	

Note. OR, odds ratio; CI, confidence interval. Chi-square test was used to assess the relationship between physical limitation and binge drinking. * $p \leq .01$; missing values excluded.

PHYSICAL LIMITATIONS

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PROFESSIONAL OBJECTIVE

Utilize my knowledge and experience to provide exceptional service to IEHP. A highly motivated, team-oriented individual who is looking to support the organization in its strive for success. Have the opportunity to thrive in the health care field by applying and developing my skills in an environment that will allow me to accomplish professional and personal growth.

RELEVANT SKILLS

- Experience in Access, proficient in Microsoft Word, PowerPoint, Outlook and Excel, Type 50 WPM, Internet Savvy
- Great communication skills, strong interpersonal & customer service skills
- Strong organizational skills, attention to detail, ability to multi-task and work efficiently and effectively in teams or independently
- Assist in the compilation, analysis, and reporting of data
- Quick to learn and adapt, resourceful, flexible, dedicated, reliable and strong discernment
- Customer centered and team oriented, understand and sensitive to cultural differences
- Welcomes feedback constructive to personal and professional growth

EDUCATION

Master of Public Health Candidate, Concentration: Health Policy and Administration

California Baptist University

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Aug. 2018

- GPA: 3.6

Bachelor of Science Degree in Health Care Administration, Minor in Business Administration

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WORK EXPERIENCE

Analyst I, Provider Network, Provider Services

Inland Empire Health Plan (IEHP)

Rancho Cucamonga, CA

Apr. 2016- Present

- Work closely with Ex. Director of Provider Services to analyze and develop project plans to include the scope, timeline and coordination of resources for projects completion.
- Assist in managing the Provider Network Expansion Program with a comprehensive understanding of all Program requirements, including funding availability.
- Assist in facilitating all Provider Incentive Programs, including those with IPAs and Providers.
- Knowledgeable of regulatory and IEHP requirements including IEHP policies and procedures, IPA reporting requirements related to delegation oversight and IPA delegated activities.
- Assist in developing, monitoring and maintaining a Quality Assurance Program to monitor IEHP Provider initiatives, incentives, programs and other activities to ensure successful outcomes in meeting deadlines and expectations.

PHYSICAL LIMITATIONS

- Develop, monitor, and maintain a detailed project plans that identify all required tasks, deliverables, and associated timelines. Define project success criteria, identify concerns; report and communicate project status to Management as appropriate.
- Manage changes to the project scope, project schedule, and project deliverables; identify and communicate potential risks associated with such changes. Create and maintain comprehensive project documentation, including communication documents such as Status Reports.

Training Coordinator, *Member Services*

Inland Empire Health Plan (IEHP) Rancho Cucamonga, CA Jan. 2015- Apr. 2016

- Provide exceptional support to Management, Trainers, Team Members, and new hire Member Services Representatives by upholding standards and ensuring delivery of quality assistance.
- Responsible for scheduling trainings, preparing training manuals and tools, updating training presentations and tools, system troubleshooting (CRM, CISCO, Verint, ADP, etc.), supply ordering and organization, and updating all performance tracking tools.
- Assist in project planning and coordinating of 7-week Member Services New MSR Trainings.
- Develop and update training materials and support tools, including training manuals, presentations, handouts, exercises, quizzes, etc.
- Assist in compiling data to analyze the productivity of the quality assurance Team.
- Exposure to Medi-Cal, Medi-Care, IEHP Programs, and IEHP departments and understand their roles in the coordination of our Member's care.
- Embody team culture to maintain effective working relationships and professional communication with staff; participation in the Morale Committee.
- Use Microsoft applications such as Word, PowerPoint, Outlook, and Excel on a daily basis.
- Protect Member's integrity with knowledge in HIPAA guidelines and PHI protocol.

Administrative Assistant, *Member Services*

Inland Empire Health Plan (IEHP) Rancho Cucamonga, CA April 2014- Jan. 2015

- Provide exceptional support to management and team members by upholding standards and ensuring delivery of quality assistance.
- Work independently and with team to coordinate and complete given projects and tasks.
- Exposure to Medi-Cal, Medicare, and QA & Training Team processes by projects given by management, meeting minutes, and attending Calibration meetings.
- Assist in developing new departmental processes to ensure success in adapting to changes and effectively communicate updates.
- Protect Members' integrity with knowledge in HIPAA guidelines and PHI protocol.
- Embody team culture to maintain effective working relationships and professional communication with staff; participation in the Morale Committee.
- Ability to operate Microsoft applications such as Word, PowerPoint, Outlook, Excel, and Access (basic).

INTERNSHIPS

PHYSICAL LIMITATIONS

Business Analyst Intern: Practice Transformation Department

Inland Empire Health Plan (IEHP) Rancho Cucamonga, CA Jan. 2017- Present

- Managed multiple complex projects.
- Data analyst and reporter of trends in the health of the target patient population.
- Communications person for information coming in from, and going out to external clients.

Clinical Care Extender Intern: Administrative Track, Marketing Department

Riverside Community Hospital Riverside, CA Jul. 2012-June 2013

- Assist and participate in hospital projects and events.
- Assist in developing communication between the patients and staff.
- Communicate information and current events with physicians and hospital staff.
- Perform office tasks and assist marketing manager in developing communication strategies with staff.
- Enhance and maintain quality patient care by delivering treatment in a friendly, helpful, and encouraging manner.
- Knowledge of privacy procedures and uphold patient confidentiality and integrity.
- Provide optimal care in assisting nursing staff; acted as a liaison for patients regarding their needs.
- Apply knowledge of health care practices to ensure hospital standards were met.

International Service Project: Helsinki Finland

California Baptist University Riverside, CA May 2013-June 2013

- Worked closely with a team from the university to study the culture of Finland college students.
- Administer World View Surveys to individuals to understand and be sensitive to cultural differences.
- Develop relationships and maintain rapport with others we worked alongside with; volunteer for community service.

REFERENCES AVAILABLE UPON REQUEST
