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Pet Ownership and Health-Related Quality of Life Among Middle-Aged Adults

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This is to certify that the doctoral study by

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Walden University
2025

Abstract

Pet Ownership and Health-Related Quality of Life Among Middle-Aged Adults

by

Kristi Martin

MBA, Pacific Lutheran University, 2013

BA, Washington State University, 2006

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

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Abstract

Pet ownership continues to be part of modern society in the United States. Researchers have explored pet ownership's impact on chronic diseases and aging populations, but research on health-related quality of life is limited. Grounded in the socioecological model, this quantitative study analyzed data from the 2005-2006 National Health and Nutrition Examination Survey (N = 10,348) to investigate the impact of pet ownership on health-related quality of life among low-income adults aged 30-50 years. Chi-square tests were performed to analyze the associations between age, income, gender, and race with three health-related quality of life metrics. Results showed no statistically significant association for males, $X^2(4, N = 3{,}911) = 2.8$, $p = 0.6$, or females, $X^2(4, N = 3{,}911) = 1.5$, $p = 0.8$, from any racial group who owns a dog or cat. Among dog owners, no statistical relationship was found between health-related quality of life and the four racial groups: Hispanic $X^2(3.6, N = 2{,}005) = 2.8$, $p = 0.4$; Non-Hispanic White $X^2(3.6, N = 2{,}005) = 2.8$, $p = 0.4$; Non-Hispanic Black $X^2(2.5, N = 2{,}005) = 2.8$, $p = 0.6$; and other races including Multiracial $X^2(0.1, N = 2{,}005) = 2.8$, $p = 0.9$. No association was found between pet ownership and health-related quality of life among low-income, middle-aged adults who reported experiencing days of poor physical health $X^2(4, N = 2{,}005) = 5.6$, $p = 0.2$. The results indicated that pet ownership cannot be the singular focus of a public health improvement strategy. This study can contribute to positive social change by providing information for further research on the association between companion animals and individuals with chronic illnesses and other vulnerable populations.

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Dedication

To my mom, Karen Sheppard. You profoundly touched the lives of countless people (and animals) in your too-short time here on Earth. You were the first person to encourage your anxious and shy child to try hard things and pursue academic achievements. I miss you every day. Thank you for believing in my dreams and nurturing my love for animals. I'll see you at the beach.

Acknowledgments

I want to express my deepest appreciation to my doctoral committee, Dr. Banerjee and Dr. McNeal, for their constructive feedback and suggestions that enhanced the quality of my work. This dissertation reflects the unwavering support and love I received from my family and friends during this challenging academic pursuit. I owe extensive gratitude to my husband and family- thank you for everything. I would not have been able to pursue my doctorate and accomplish so many other projects simultaneously without my family providing encouragement, connection, and a steady supply of hot tea. I am very grateful to my friends who provided distractions and brunch when needed. Also, thanks to the many animals who have brought me unconditional love, a sense of peace, laughter, and companionship throughout my life.

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Section 1: Foundation of the Study and Literature Review

Introduction

In the United States, a recent study found that approximately 63 million homes have at least one dog, and 42 million homes have at least one cat (Scoresby et al., 2021). This high prevalence of pet ownership has encouraged researchers to study how companion animals may contribute to quality of life and well-being (Mueller et al., 2021). This quantitative study provides insights for public health practitioners on the association between pet ownership and health-related quality of life (HRQOL) among middle-aged adults. The findings will also contribute knowledge to public health organizations, healthcare providers, animal therapy organizations, and the general public regarding the potential health benefits of animal interactions and pet ownership in connection to health behaviors, quality of life, and overall well-being (Friedmann et al., 2022; Miyake et al., 2020; Mueller et al., 2021). Limited research exists on the impact of pet ownership on multiple factors, including physical capabilities, health, mental health status, and self-reported well-being. By filling this gap in research, public health professionals may be better equipped to evaluate how health-related quality of life, chronic illnesses, and well-being can be impacted by pet ownership among different age groups or individuals experiencing other social determinants of health, including socioeconomic status, race, and level of education.

Section 1 is an introduction to this quantitative study and provides a background on the topic of health-related quality of life and pet ownership among low-income, middle-aged adults. The problem statement and purpose of the study are provided in

addition to the research questions and hypotheses. The socioecological model (SEM) is defined as the theoretical model for this study in addition to the definitions, limitations, and significance of the study.

Background

For decades, pet ownership has been a significant aspect of society and domestic life. In the United States, approximately 63 million homes have at least one dog, and 42 million homes with at least one cat (Scoresby et al., 2021). The concept that interactions with animals can impact a person's physical and mental health has been well-documented. Surveys and interviews have been conducted with pet owners, individuals participating in pet therapy sessions within clinical environments, and individuals participating in non-clinical interventions using dogs, cats, and horses. These interactions have been studied among children and adults with autism, anxiety, and post-traumatic stress disorder to identify the impact these therapeutic interactions have on the individual's well-being and self-reported mental health status. Within the past few decades, researchers and public health practitioners have begun to shift focus to exploring the relationship between pet ownership and a person's overall wellness or quality of life.

While research has been performed to find correlations between interactions with animals and health benefits, the results are often contradictory or inconclusive. Researchers have reported that companion animals (dogs and cats) can provide emotional support, which has been associated as a protective factor for workplace burnout and emotional distress and aids in chronic pain management (Lass-Hennemann et al., 2020; Sipos et al., 2024). In contrast, the complexity of human-animal relationships and the

difficulty of controlling confounding variables may influence how pet ownership relates to well-being and further contribute to the varying results reported in existing research (Mueller et al., 2021). Researchers have also previously focused on pet ownership's association with aging, obesity, and the risk of zoonotic infections with conflicting results, which warrants further examination (Miyake et al., 2020; Mueller et al., 2021; Overgaauw et al., 2020). To expand the scope of research on the human-animal bond, HRQOL measures were incorporated into the 2005-2006 National Health and Nutrition Examination Survey (NHANES) by the Centers for Disease Control and Prevention (CDC). HRQOL is defined by the CDC as an individual's perceived health and well-being over a period of time. Components of well-being and HRQOL include physical well-being; economic status or financial stability; social well-being; development and activity; emotional well-being; psychological well-being; life satisfaction or sense of happiness in one's life; domain-specific satisfaction; and engaging activities and work (CDC, 2022).

Public health practitioners and policy-makers have focused on HRQOL measures and data collection to identify unmet population health needs, disparities, and social determinants of health. In 2000, HRQOL data points were included in the 1999-2000 NHANES survey. Pet ownership and animal interaction variables were added to the 2005-2006 NHANES, and this dataset was used for this study. Data from the pet ownership variables are not available in other years of NHANES.

This quantitative study is needed to examine the association between HRQOL and pet ownership using empirical evidence. By using NHANES data, this study evaluated

the relationship between HRQOL and other covariates, including age, gender, race, education, and income using quantifiable data. By examining HRQOL measures with additional covariates, this study fills a gap in research focused on physical health, mental health, and well-being among middle-aged adults.

Problem Statement

Extensive research on domestic animals' relationship with social determinants of health currently exists, but little research has been conducted on pet ownership's relationship with HRQOL measures (Scoresby et al., 2021). Researchers have previously focused on how interactions with animals impact physical health, including chronic disease risk, obesity, and levels of physical activity in children and adults (Dall et al., 2017; Friedmann et al., 2022; Miyake et al., 2020). The relationship between human and animal interactions or connections and mental health has also been extensively studied to find correlational relationships between interactions with animals and mental health disorders such as post-traumatic stress disorder, depression, and anxiety or self-attested mental health status. HRQOL measures involve both physical and mental health factors, and a gap in research exists when these factors are combined and evaluated among pet owners.

Knowledge Gap

This quantitative study, using SEM, provides insights to public health practitioners as to the association between pet ownership and HRQOL among middle-aged adults. The findings also contributed knowledge to public health organizations, healthcare providers, animal therapy organizations, and the public regarding the potential

health benefits of animal interactions and pet ownership concerning health behaviors, quality of life, and overall well-being. By filling a gap, public health professionals will be better equipped to understand how HRQOL, chronic illnesses, and well-being can be impacted by pet ownership.

This study can potentially impact positive social change in the United States by providing key information used for the development of additional research on the interactions between companion animals and individuals with chronic illnesses, mental health disorders, and aging populations. This is critical in improving the overall health of aging adults and other vulnerable populations in the United States as pet ownership has become increasingly popular within society and researchers strive to identify new approaches to improve public health and wellness, and the potential for expanding the utilization of HRQOL measures in research. Furthermore, this study provides connections between pet ownership and the SEM, which has not been widely examined using HRQOL data. By examining HRQOL data and pet ownership, researchers and public health practitioners can further explore the relationship between animal interactions, health behaviors, and current health status which contributes to growing knowledge and initiatives to improve public health outcomes.

Purpose of the Study

The purpose of this quantitative study was to examine the impact of pet ownership on HRQOL and individual and interpersonal behaviors of low-income, 30-50-year-old adults. Data from 2005-2006 NHANES were used to examine the association between health-related quality of life and pet ownership, with the confounding variables

of income, race, and gender. Results of this study may be used to inform policymakers on the relationship between companion animals and humans, and how this relationship can influence public health outcomes. Furthermore, this study contributed to the growing field of research on HRQOL and the importance of additional research devoted to this topic in addition to exploration of the connection between animals and humans to improve public health outcomes. By using the SEM as a framework this study was also able to provide recommendations for each of the influence levels which may also contribute to improved health and well-being for vulnerable populations.

Research Questions and Hypothesis

This study included three primary research questions focused on measuring the association between pet ownership and HRQOL. The following research questions, null hypotheses, and alternative hypotheses were evaluated in this study:

RQ 1: Is there an association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for race and gender?

$H_0$1: There is no statistically significant association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for race and gender.

H_a1: There is a statistically significant association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for race and gender.

RQ 2: What is the association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for level of income?

$H_0$2: There is no statistically significant association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for level of income.

H_a2: There is a statistically significant association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for level of income.

RQ 3: Is there a relationship between dog ownership and health-related quality of life when controlling for race?

$H_0$3: Dog ownership does not have a relationship with health-related quality of life when controlling for race.

H_a3: Dog ownership does have a relationship with health-related quality of life when controlling for race.

Theoretical Framework

The theories and/or concepts that ground this study include the SEM. The SEM provided alignment and structure for this quantitative study examining the relationship between pet ownership, HRQOL, and the SEM's levels of influence (individual, interpersonal, organizational, community, and public policy). According to the SEM, the interaction between the characteristics of the individual, the community, and the environment is what influences health (Kilanowski, 2017). The SEM served as the framework by which the variables age, gender, socioeconomic status, and race are examined among individuals living with a companion animal. This framework is discussed thoroughly in Section 2.

Nature of the Study

To address the research questions in this quantitative study, a nonexperimental, correlational research design using data collected by the 2005-2006 NHANES was conducted. Correlational research is designed to examine relationships between two or more variables. The key dependent variable was HRQOL, and the independent variables are pet ownership, income, education, age, race, and gender. Using the NHANES data, logistic regression and chi-square tests were conducted using SPSS v. 30 for data analysis. The use of existing NHANES data allows for the use of robust data from a large sample size at no cost to this study.

Search Strategy

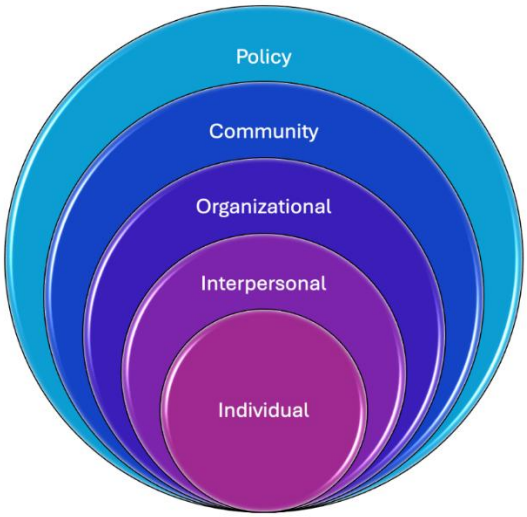
Most articles reviewed were published within the last five years and were identified through electronic database searches. The keywords searched included *pet ownership*, *animal interventions*, *companion animal ownership*, *pet ownership and chronic diseases*, *pets and obesity*, and *pets and health-related quality of life*. Peer-reviewed articles from PubMed, National Institute of Health, Walden Library, and Google Scholar were gathered from these database searches. Journals used for secondary research include the *Journal of Agromedicine, Frontiers in Public Health, Anthrozoos, International Journal of Environmental Research and Public Health, Scientific Reports, Human-Animal Interactions, Frontiers in Aging and Neuroscience,* and *Frontiers in Veterinary Science.*

Theoretical Foundation

The SEM is the theoretical model for this study. The SEM outlines the connection between multiple layers of influence on health and health behaviors (Figure 1). Urie Bronfenbrenner first developed the SEM in the 1970s and later formalized it as a conceptual model in the 1980s. The SEM states that health is affected by the interaction between the characteristics of the individual, the community, organizations, and the environment, including physical, social, and political components (Kilanowski, 2020).

Figure 1

Socioecological Model



Relating to the current study, the individual level reflects the attitudes and beliefs supporting pet ownership's health benefits. The interpersonal level includes the association with pet ownership and community structures or families. The organizational level describes pet ownership as social support, including animal-assisted interventions and therapies. The community level includes the connectedness between individuals and

families who own companion animals. The public policy level outlines policies related to pet ownership, health promotion, and improvement within public health.

The SEM provided alignment and structure for this quantitative study to examine the relationship between pet ownership and HRQOL. Researchers have used social interaction theories to explore the relationship between humans and companion animals (Hardie et al., 2023). The SEM served as the framework by which the variables age, gender, socioeconomic status, education, and race were examined among individuals living with a companion animal. Race, gender, and age are variables that align with the individual level; socioeconomic status aligns with the interpersonal level of the socio-ecological model.

Significance

This quantitative study is significant because it used the SEM to examine the associations between HRQOL and pet ownership and, therefore, adds to the limited existing research. By studying the covariates of age, gender, race, and income, this study provides additional research as to how social determinants of health influence HRQOL and overall well-being. By exploring HRQOL among middle-aged adults, the findings from this study can be used to initiate positive social change through public health education and awareness for this age group. As pet ownership is very popular in the United States, evaluating how interactions with companion animals influence HRQOL can expand public health awareness and policies aimed at improving health outcomes through the human-animal bond. Additionally, this study has the potential to influence

policy changes that impact the daily lives of middle-aged adults at home and in the workplace to promote health and improve well-being.

Summary

Section 1 includes an introduction to the study and a background on the research topic. The problem statement and three research questions and hypotheses are also provided. The SEM was introduced as the theoretical model for this quantitative, cross-sectional study. The dependent variable and covariates were defined. Additionally, the nature, scope, and limitations of the study were also discussed. Section 1 also includes the review and discussion of existing literature on pet ownership and HRQOL measures, as well as a more thorough overview of the SEM framework.

Literature Review

Introduction

The Literature Review section provides an examination and summaries of the existing literature relevant to HRQOL and pet ownership. Existing literature on pet ownership has primarily been focused on individuals with chronic diseases, limited physical activity, or examinations of cognitive functioning among pet owners. Researchers have studied HRQOL using national survey data to identify trends in disease prevalence and mental and physical health outcomes.

HRQOL

The CDC developed HRQOL and healthy days measures to examine and measure the American population's well-being and quality of life. HRQOL is defined as an individual’s determination of general health and the value of days of physical health,

mental health, and activity limitation (CDC, 2000). Additionally, well-being has been associated with culture, religion, social isolation, and an individual's values. HRQOL has also been measured within multiple theoretical frameworks with implications at the individual and social levels. Physical and mental health perceptions, physical functioning, social support, and socioeconomic status occur at the individual level (CDC, 2000). At the community level, HRQOL includes resources, policies, and practices that influence health within a population.

Healthy Days Measures

Researchers have measured HRQOL in many capacities, including chronic disease management, physical limitations among people with disabilities, mental health, and health policy development. HRQOL has become a significant health outcome that researchers and public health practitioners have used for health surveillance, the development of service needs, and intervention outcomes. To measure HRQOL, the health days measures were developed and included in the Behavioral Risk Factor Surveillance System. The healthy days measures consist of four questions (CDC, 2022):

- Would you say that, in general, your health is excellent, very good, good, fair or poor?
- Now thinking about your physical health, which includes physical illness and injury, how many days during the past 30 days was your physical health not good?

- Now thinking about your mental health, which includes stress, depression, and problems with emotions, how many days during the past 30 days was your mental health not good?
- During the past 30 days, approximately how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

Within the past two decades, healthy days measures have been used to identify health disparities, track population trends, and inform policies and organizational formations within population health (CDC, 2000). In 2000, the Healthy Days Measures were added to the National Health and Nutrition Examination Survey (NHANES).

National Health and Nutrition Examination Survey

NHANES is a national health survey conducted by the CDC which collects data on the health of children and adults in the United States. Annually, the NHANES survey gathers data from approximately 5,000 individuals from the United States about their health, diet, and social and economic qualities (CDC, 2024). Currently, NHANES is the only national survey including laboratory tests in the collected datasets. Results of the NHANES survey have been used in various population and public health strategies and initiatives to improve health outcomes or study behaviors related to smoking, obesity, disease prevention, and chronic disease prevalence. The 2005-2006 NHANES survey codebook includes data on housing characteristics such as the presence of animals living in the home and demographic information such as the respondents' age, gender, and race.

Researchers have used data from the NHANES survey to study the relationship between pet ownership or interaction with animals, specific diseases or mental health disorders, and the health status of children and geriatric populations. Friedmann et al. (2020) studied pet ownership and its association with cognitive and physical functions and psychological status. These researchers found that frequent contact (multiple times a week) with pets was associated with better cognitive status than those who did not own or had no regular contact with pets independent of age. Specifically, dog owners were found to have higher rates of daily physical expenditure, while cat owners experienced greater cognitive functioning. The authors reported that when controlling for the participant's age, pet ownership significantly impacts adults' physical and cognitive functioning and the maintenance of health status over extended periods.

Similarly, Gergen et al. (2018) and Ji et al. (2022) used the NHANES data and studied dog and cat ownership versus incidence of asthma. Gergen et al. focused on asthma morbidity in the United States population using 2005-2006 NHANES data, while Ji et al. examined asthma occurrence in pediatrics research from 27 countries and 60 research studies. Gergen et al. found the rate of allergen sensitization was very similar for dogs at 12.1% (*SE* = 0.64) and cats 12.4% (*SE* = 0.67). Furthermore, pet allergen sensitization varied by sociodemographic factors, including lower sensitization rates among females, adults ≥ 60 years of age, and those with lower levels of education. The authors reported that the combination of asthma, pet exposure, and pet sensitivity results in considerable excess asthma morbidity and increased asthma occurrence in children (Gergen et al., 2018; Ji et al., 2022).

Pet ownership's relationship to sleep disorders and quality has been an under-researched topic in modern sleep medicine (Chin et al., 2024; Medlin & Wisnieski, 2023). Researchers Medlin and Wisnieski studied dog and cat ownership, sleep quality outcomes, and sleep disorders using 2005-2006 NHANES data. The researchers identified the confounders of gender, race/ethnicity, income, age, and body mass index. They performed multivariable logistic regression models to examine the association between pet ownership and sleep quality outcomes. The confounding variables of body mass index, age, and race were controlled in the analysis. They stated that existing research studies on pet ownership and pet owners' sleep quality offered conflicting results, and therefore, additional research was warranted. Furthermore, pet ownership might harm sleep quality, and different sleep quality outcomes were associated with cat ownership versus dog ownership (Medlin & Wisnieski, 2023).

Results from Current HRQOL Research

HRQOL and Pet Ownership

Researchers have examined the relationship between HRQOL and pet ownership regarding specific health outcomes or risk prevention. Mueller et al. (2021) studied demographic and contextual variables and the relationship between social determinants of health and health status among adults in the United States who own a pet and those who do not. They found differences between pet owners and non-pet owners on indicators of health outcomes while controlling for covariate and moderating variables, including family composition, employment status, and housing type and location. Furthermore, the authors stated that human-animal relationships are complex, and controlling for

confounding variables can impact the degree to which pet ownership predicts physical and mental health and well-being (Mueller et al., 2021). This study is important as it provides quantitative data on pet ownership among adults in the United States, including data on moderating factors and mental and physical health outcomes.

Obesity and the relationship with pet ownership have been a popular topic among researchers for the past few decades, with a robust focus on the influence of the human-animal connection (Barroso et al., 2021; Miyake et al., 2020). The study by Miyake et al. studied pet ownership as a protective factor against obesity, and the researchers found that limited research positively connected pet ownership to obesity among adults who own a dog or cat. The authors reviewed 21 articles from 1992-2019, and the meta-analysis confirmed that many of the studies listed in the articles did not adequately explore the levels of physical activity needed to impact obesity risk, and additional prospective studies will be necessary. Additionally, researchers have recommended including pet ownership as a health promotion tool, which may expand cardiovascular disease and obesity prevention, mitigation, and treatment strategies (Barroso et al., 2021; Miyake et al., 2020).

Physical activity and sedentary behaviors among pet owners have been topics that have provided global attention and research (Barroso et al., 2021; Dall et al., 2017; Goh et al., 2020; Koohsari et al., 2020). Koohsari et al. investigated the relationship between dog ownership and sedentary behavior among adults, utilizing accelerometer devices to collect quantitative data on physical activity levels. No significant differences in the duration of sedentary periods and moderate, vigorous, and moderate-to-vigorous-intensity

physical activity were reported between dog owners and non-owners (Koohsari et al., 2020). The authors also found that sedentary behaviors are an emerging health risk factor, and owning a dog was associated with several types of sedentary behaviors, including brief and extended sedentary periods. This research is important because the focus was on sedentary behaviors among middle-aged adults as opposed to physical activity, which has been more commonly studied and associated with pet ownership.

Using population data, Goh et al. (2020) examined pet ownership's relationship with mental health, physical activity levels, and atopy among distinct demographic subgroups in Southeast Asia. Interestingly, these researchers found that the association between pet ownership and physical activity levels may be influenced by the type of pet and the level of engagement with pets. The authors also reported that pet owners aged 41–50 years ($\beta = 4.0$, 95% *CI*: 0.930 to 6.98; $p = 0.010$) and 51–64 years ($\beta = 5.8$, 95% *CI*: 1.25 to 10.3; $p = 0.012$) exhibited higher emotional well-being scores than non-pet owners. The results of this study identified associations with pet ownership specific to some subgroups, illustrating their heterogeneity and complex interactions with sociodemographic factors, pet types, and caregiver role involvements (Dall et al., 2017; Goh et al., 2020).

HRQOL and Social Support

The roles of caregivers and social support were identified as additional factors that impact the relationship between pet ownership and physical and mental health (Goh et al., 2020; Martins et al., 2023). Hardie et al. (2023) studied social support and positive functioning in pet owners using social support theory, attachment, and social exchange

theories among dog and cat owners. Age, education, relationship status, and COVID-19 restrictions significantly predicted life satisfaction ($R2 = 0.193$, $F(9,229) = 5.768$, $p < 0.001$), and age and relationship status significantly predicted psychological well-being ($R2 = 0.153$, $F(9,229) = 4.353$, $p < 0.001$).

Researchers have also reported that having more pets significantly predicts greater psychological well-being and social support (Hardie et al., 2023; Martins et al., 2023). Furthermore, perceived pet support positively predicted life satisfaction when perceived emotional closeness with a pet was low among the sample group. Attachment to pets was identified as a moderating factor in the study on post-traumatic stress among first responders who own companion animals by Lass-Hennemann et al. (2020). These findings indicate that pets may improve psychological functioning, and an additional examination of how pets serve as social support and the quality of the relationship between the pet and owner can help further increase our understanding of the relationship between pet ownership and health.

One Health

In addition to the SEM, public health practitioners and researchers have also used the One Health approach (Figure 2) to assess health and external factors such as animal interactions and the environment. The One Health approach states that people's health is closely connected to the health of animals and our shared environment (Centers for Disease Control and Prevention, 2024). The primary focus of the One Health approach includes zoonotic diseases and transmission, water contamination, and human and animal interactions. The CDC uses the One Health approach through collaboration with multiple

fields of public health and environmental expertise to control public health threats and to study how diseases spread among people, animals, plants, and the environment (Centers for Disease Control and Prevention, 2024). Public health researchers have used the One Health approach as a framework for studies on pet ownership and zoonotic infections, mental health, and access to healthcare for humans and animals among vulnerable populations (Overgaauw et al., 2020; Ramirez et al., 2022).

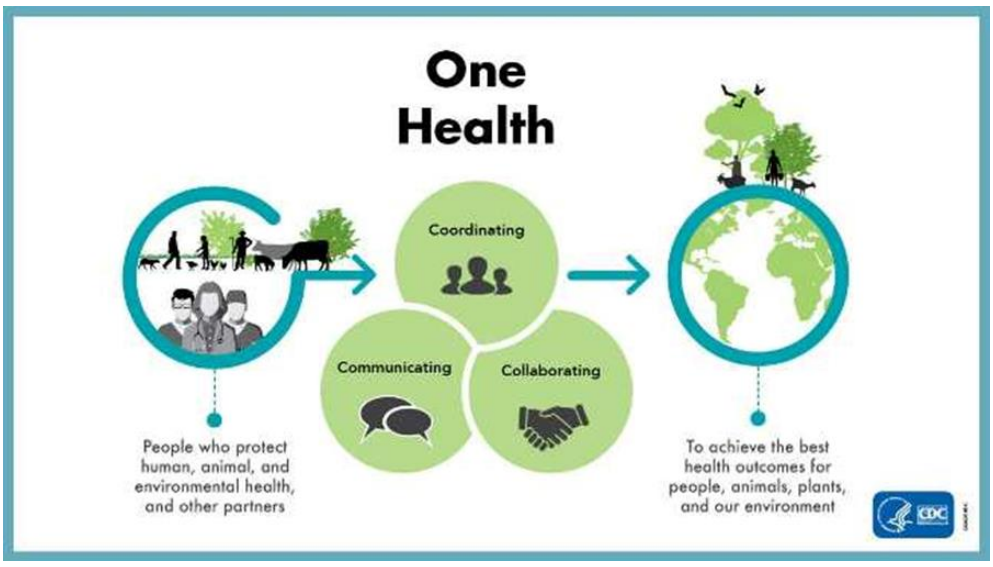
The One Health concept recognizes that public health is connected with animal health and the environment. Articles by Liguori et al. (2023) and Overgaauw et al. (2020) discussed the positive and negative aspects of the companion animal and human relationship, including zoonotic disease transmission, using the One Health perspective. These researchers stated that animal interactions can positively impact human health and well-being, but increased exotic or multiple pet ownership can significantly contribute to the risk of contracting zoonotic infections. These authors also stated that zooanthroponosis is an under-recognized research topic using the One Health perspective within veterinary sciences, epidemiology, and public health (Liguori et al., 2023; Overgaauw et al., 2020). Other vulnerable populations, such as homeless or unhoused individuals, have also been studied using the One Health framework.

Approximately 23% of all individuals experiencing homelessness in the United States also own pets (Kurkowski & Springer, 2024). Using the One Health approach, Ramirez et al. (2022) studied pet ownership's impact on healthcare-seeking behavior among persons experiencing homelessness with animals in Seattle. They found that homeless individuals placed a high value on the health of their pets, and pet ownership

among this population can be a barrier to accessing healthcare services. The authors recommended additional qualitative research on the reported health of pets compared to owners who are homeless, and public health agencies should evaluate how health facilities with the capacity to treat humans and animals within the same facility can impact health outcomes among homeless populations (Ramirez et al., 2022). Adults experiencing homelessness are a vulnerable population with an increased risk of physical and mental health issues or other public health challenges (Kurkowski & Springer, 2024; Ramirez et al., 2022; Scanlon et al., 2021).

Figure 2

One Health



Note. From Centers for Disease Control and Prevention (https://www.cdc.gov/one-health/about/index.html

Covariates

Age

Age is an important factor when studying populations and sample groups, and age significantly impacts healthcare needs, public policy, and research priorities (Centers for Disease Control and Prevention [CDC], 2024). In the articles by Friedmann et al. (2020), Gergen et al. (2018), Hardie et al. (2023), and McDonough et al. (2022) identified age as a covariate in the studies performed on pet ownership. In these studies, age groups, such as individuals older than 60, were used in comparative qualitative and quantitative data analysis of mental and physical functioning and cognitive capacity. McDonough et al. found that pet ownership, especially dog ownership, may enhance cognitive performance, and owning a pet can reduce one's brain age by up to 15 years. They also found that brain health and shape are positively associated with pet ownership, particularly dog ownership. The authors did not report statistically significant findings for multiple pet ownership concerning brain health. Still, the multivariate analysis did identify a relationship between multiple pet ownership, age, and cortical thickness of the brain.

Income

Income and employment status are external factors that public health practitioners and researchers have identified as having a significant connection to healthcare access and the quantity of services and resources. Income is a socioeconomic factor that researchers have also used to define sample groups and compare data, particularly from NHANES. Krittanawong et al. (2020) performed a multivariable analysis using data from 10,905 survey participants who identified as owning a pet and controlled for age, gender,

marital status, education, comorbidities, cigarette smoking, family income, working hours, sleeping duration, depression, and lipid profiles. The researchers found that pet owners were more likely to be white, educated, tobacco users, and work more than 35 hours per week. Mueller et al. (2021) identified income and employment status as critical covariates for their quantitative study. In this study, income and employment status were found to be moderating factors of adults' mental and physical health outcomes in the United States.

Race

Of the studies reviewed in this literature review, race was primarily mentioned as a covariate when the researchers used NHANES data. According to the CDC (2024), the NHANES survey oversamples from Asian, African American, and Hispanic groups as these populations may experience different health outcomes due to other social, environmental, and individual factors. Furthermore, racial groups have been used to compare other factors, such as income and the likelihood of owning a pet. Caucasian middle-aged adults, and rural or suburban residents are more likely to own pets than Black adults (Albright et al., 2022; Applebaum et al., 2020). Researchers also stated that discrepancies in income could explain racial discrepancies in pet ownership, as pets may be a significant expense for older adults with lower socioeconomic status.

Definitions

Gender: self-identification as male or female by NHANES respondent.

Health-related quality of life (HRQOL): an individual’s or group’s perceived physical and mental health over time (CDC, 2022).

Low income: annual household income and household size calculation related to the federal poverty measures in 2006. For a single individual, the poverty guideline is $9,800; a couple is $13,200; a three-person household is $16,600; and a household of four is $20,000 (Health and Human Services, 2006).

Middle-aged adult: individual aged 30–50 years old.

Pet ownership: presence of cats and/or dogs within an individual's household.

Race/Ethnicity: self-identification as Black, White, Asian, Latino or other race by NHANES respondent.

Assumptions, Scope, Limitations

For this study, HRQOL was used as the scale of measurement and will be used as the dependent variable. Another assumption is that pet owners have regular interactions with their pets, and these interactions could have an impact on their daily lives in some way. The 2005-2006 NHANES survey used pet ownership and age as demographic variables, so this assumption is necessary (Centers for Disease Control and Prevention, 2024). The assumption that all data collected through self-attestation is accurate was also essential to this study.

Summary

The major themes identified in the current literature include the concept that pet ownership and interaction with companion animals can impact an individual's health or well-being; dogs and cats may have different impacts on the physical or mental health of the owner; and additional research is needed to increase understanding of pet ownership's effect on psychological and physical health outcomes when moderating variables are

considered. Researchers have also reported varied findings on pet ownership's complex relationship with cognitive functioning and physical activity among adults. What remains to be studied is the relationship between HRQOL measures and pet ownership using other theoretical frameworks, such as the SEM, and how covariates influence this relationship among varying age or racial groups.

Section 2: Methods and Approach

Introduction

The purpose of this quantitative research study was to examine the relationship between pet ownership and HRQOL. In this section the dependent variable and the independent variables are defined, and sampling criteria are also established. This section provides a description of the research design and rationale, methodology, and data analysis plan. Threats to validity and ethical procedures are also discussed.

Research Design and Rationale

This research study was a cross-sectional, qualitative study conducted to examine the relationship between pet ownership and HRQOL. Specifically, this study focused on middle-aged adults aged 30–50 years. Data from the 2005-2006 NHANES survey were used, as this survey includes robust data collected from the United States population, including the health days measures, demographic information of respondents, and HRQOL data points as designed by the CDC (2022). The 2005-2006 NHANES survey included data from 10,348 individuals and was conducted between January 2005 and December 2006, which included responses from males (n = 5,080), females (n = 5,268), and individuals reporting a dog or cat lived in their home (n = 4,577; CDC, 2024).

For this study, dependent variables of HRQOL were measured using the responses to the health status questions created by the CDC to measure self-reported health status, number of unhealthy days, and frequency of inactive days related to physical or mental health. The primary independent variable was pet ownership of dogs or cats, and the moderating variables include age, race, gender, and income.

Methodology

Population

The population samples for this study were adults living in the United States who participated in the household interview and health evaluation portions of the 2005-2006 NHANES survey. NHANES is a stratified, multistage probability sample of the civilian noninstitutionalized American population (CDC, 2024). The household interview component was conducted by trained interviewers, and consent forms were provided to all eligible participants within the household. Following completion of the household interview, additional informed consent documents were provided to the eligible participants regarding the health examination. The health examination was performed at mobile evaluation centers with a physician, phlebotomist, dentists, and multiple medical technologists on site (CDC, 2024). A total of 10,348 individuals for all age groups participated in the 2005-2006 NHANES, and the sample population for this study was adults between 30–50 years old.

Sampling Procedures

The use of NHANES as a secondary data source was selected due to the reduced cost to obtain and the elimination of personal bias. NHANES is useful for studying the prevalence and changes in critical public health issues (Ale et al., 2024). Multi-stage complex sampling was used to define the sample from the secondary dataset for this study. Nonprobability sampling does not yield generalizable results for an entire population as the results can only apply to the sample participants (Stratton, 2023).

Eligibility Criteria

The population for this study was respondents of the 2005-2006 NHANES survey. The criteria for the sample include the age of the individual and those owning a pet. The individual must be between the ages of 30–50 years old and identified as owning a dog or cat at their home (n = 4,577).

Operationalization

HRQOL was measured in NHANES using four questions regarding perceived health status and activity limitations (CDC, 2022). These questions are called the Healthy Days measures. The healthy days measures have been administered to respondents aged 12 years or older as part of the annual NHANES survey (CDC, 2022). Using these four questions was a cost-effective method for measuring HRQOL as the dependent variable from a validated and ethical source of public health data. The four HRQOL questions were:

- Would you say that in general your health is excellent, very good, good, fair or poor?
- Now thinking about your physical health, which includes physical illness and injury, how many days during the past 30 days was your physical health not good?
- Now thinking about your mental health, which includes stress, depression, and problems with emotions, how many days during the past 30 days was your mental health not good?

- During the past 30 days, approximately how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation? (CDC, 2022)

The independent variables for this study were pet ownership, age, race, gender, and income, The NHANES variable codes from the demographic and current health status modules being used for this study were:

- HSD010: general health condition (excellent, very good, fair, poor)
- HSQ470: number of days physical health was not good
- HSQ490: number of inactive days due to physical or mental health
- HOQ250: do animals live or spend time in home
- HOQ260A: dog in house now
- HOQ260B: cat in house now
- RIAGENDR: gender
- RIDAGEYR: age at screening
- RIDRETH1: race/ethnicity
- INDHHINC: annual household income.

Data Analysis Plan

Survey data were downloaded from the NHANES website, and the 2005-2006 data files were stored as an Excel file and then imported into SPSS v. 30 for analysis. The data were screened for missing responses and filtered for responses in the desired age group of 30–50 years old. Within NHANES, a significant quantity of missing data was related to non-response, or not all respondents participated in all the assays, exams, or

questionnaires (Ale et al., 2024). NHANES variables HSQ470 (number of days physical health was not good) and HSQ49 (number of inactive days due to physical or mental health) were dichotomized to reflect the respondents 'experience with or without days of impacted health. Missing data were recoded to the number zero and excluded from quantitative analysis. Lastly, chi-square tests were performed for demographic characteristics and to test the hypotheses.

Threats to Validity

Internal validity refers to the structure of a study while external validity refers to the universality of the results (Cuncic, 2024). This cross-sectional survey allowed for the findings to be generalized among the sample population, therefore increasing external validity. In addition, data analysis was performed in a real-life setting and could be replicated. This quantitative study used non-random sampling, which may impact internal validity.

Ethical Procedures

Approval from the Walden University Internal Review Board was received (approval number 09-09-25-1152465). All data were stored on password-protected computers. The 2005-2006 NHANES survey was conducted on select households in the United States following the informed consent of all participants, and all interviews or medical examinations were conducted by trained interviewers and medical professionals.

Summary

This quantitative, cross-sectional survey study was conducted to examine the association between HRQOL and pet ownership among middle-aged adults. The

dependent variable for this study was HRQOL, which was measured using the healthy days measures of health status, number of unhealthy days, and activity limitations. The primary independent variable was pet ownership of dogs or cats, and the covariates were age, gender, race, and income. This section also included information on the research design and rationale, methodology, and threats to validity. Section 3 will discuss the results and findings of this study.

Section 3: Study Results and Findings

Introduction

The purpose of this study was to examine the relationship between HRQOL and pet ownership among middle-aged adults. Section 3 includes the data collection, analysis, and results of this study, including descriptive statistics and the findings. The following research questions, null hypotheses, and alternative hypotheses were evaluated in this study:

RQ 1: Is there an association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for race and gender?

$H_0$1: There is no statistically significant association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for race and gender.

H_a1: There is a statistically significant association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for race and gender.

RQ 2: What is the association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for level of income?

$H_0$2: There is no statistically significant association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for level of income.

H_a2: There is a statistically significant association between pet ownership and health-related quality of life among 30–50-year-old adults when controlling for level of income.

RQ 3: Is there a relationship between dog ownership and health-related quality of life when controlling for race?

$H_0 3$: Dog ownership does not have a relationship with health-related quality of life when controlling for race.

$H_a 3$: Dog ownership does have a relationship with health-related quality of life when controlling for race.

Data Collection

The 2005-2006 NHANES survey included data from 10,348 individuals in the United States and was conducted between January 2005 and December 2006. The 2005-2006 NHANES dataset was downloaded from the Centers for Disease Control and Prevention website. The NHANES dataset was converted from an XPT file to an Excel file using online conversion software. The Excel file was uploaded to SPSS v. 30 for variable categorization and analysis.

Study Results

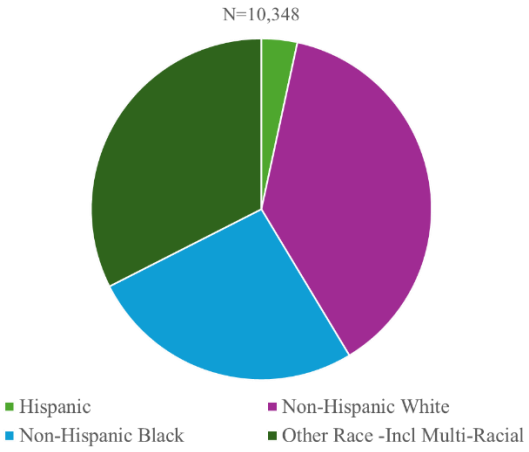
Descriptive Statistics

The 2005-2005 NHANES dataset includes responses from 10,348 adults and children in the United States. This survey included responses from 5,080 (49.1%) males and 5,268 (50.9%) females. Of these individuals, race was separated into four categories: Hispanic, non-Hispanic White, non-Hispanic Black, and other races, including multi-

racial (Figure 3). The ages of the respondents were grouped into five ranges. This study focused on middle-aged adults (30–50 years old), who were 17.2% of the sample population**.**

Figure 3

Race/Ethnicity (N = 10,348)



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Low-income status was defined using 2006 federal poverty levels. For a single individual, the 2006 poverty guideline was $9,800, a couple was $13,200, a three-person household was $16,600, and a household of four was $20,000 (Health and Human Services, 2006). For this study, household annual income data were grouped into four categories: low ($0-$19,999), mid ($20,000-$64,999), upper mid ($65,000-$74,999), and high ($75,000-$150,000; Table 1).

Table 1

Income Categories (N = 10,348)

	N	%
Low ($0-$19,999)	2287	22.1%
Mid ($20,000-$64,999)	4685	45.3%
Upper Mid ($65,000-$74,999)	557	5.4%
High ($75,000-$150,000)	2195	21.2%

Pet ownership was an eligibility criterion for this study, and of the 10,348 respondents, 3,911 (37.8%) indicated that an animal was in their home (Table 2). The 2005-2006 NHANES survey collected data on various animal species as pets, including dogs, cats, and other small animals such as rabbits. This study only focused on dogs and cats due to their popularity in the United States.

Table 2

Pet Ownership (N = 10,348)

	N	%
Yes	3911	37.8%
No	6328	61.2%
Missing	109	1.1%

The NHANES sample of 10,348 responses indicated that 768 (7.4%) of the respondents reported excellent general health condition (GHC), 1,943 (18.8%) reported very good GHC, and 2,514 (24.3%) reported good GHC. Out of the sample, 3,032 individuals (29.3%) did not answer this survey question (Table 3). When asked about days physical health was not good, 4,253 (41.1%) did not report any days of reduced activity within the prior 30-day period (Table 4).

Table 3

General Health Condition (N = 10,328)

	N	%
Excellent	768	7.4%
Very Good	1943	7.4%
Good	2514	24.3%
Fair	1028	9.9%
Poor	154	1.5%
Don't Know	1	0.0%

Table 4

Days Physical Health Not Good (N = 10,348)

	N	%
No	4253	41.1%
Yes	3051	29.5%

Furthermore, 5,212 (50.4%) individuals did not report any inactive days when their physical or mental health was not good within the 30 days prior to completing the NHANES survey (Table 5).

Table 5

Inactive Days Due to Physical or Mental Health (N = 10,348)

	N	%
No	5212	50.4%
Yes	2089	20.2%

Chi-Square Tests

Chi-square tests were performed to examine the relationship between HRQOL and the dependent variables: pet ownership, age, race, and income. While chi-square tests cannot be widely generalized, they can identify the existence of a relationship between variables. All missing data were excluded from chi-square tests, and a p-value < 0.05 indicated statistical significance.

The first chi-square test was performed to measure HRQOL among middle-aged pet owners when controlling for race and gender. Middle-aged adults (*n* = 1,261) reported positive GHC ranging from excellent (*n* = 125), very good (n = 358), good (*n* = 437), fair (*n* = 160), and poor (*n* = 20). Interestingly, pet owners reported higher GHC regardless of age. When GHC was tested among pet owners from different racial groups, no statistically significant relationship was found **(**Table 6). When controlling for gender, males had a p-value of 0.60 while females had a p-value of 0.80; therefore, a statistically significant relationship was not identified (Table 7).

Table 6

Chi-Square Test: General Health Condition, Pet Owner, Race/Ethnicity

Race Categories	p value
Hispanic	.791
Non-Hispanic White	.351
Non-Hispanic Black	.759
Other Race Incl Multiracial	.987

Table 7

Chi-Square Test: General Health Condition, Pet Owner, Gender

Gender	p value
Male	.599
Female	.827

Regarding pet owners who reported their "physical health was not good" within the prior 30 days of completing the survey, males ($p = 0.80$) had a substantially increased p-value when compared to females, who were found to have a statistically significant association ($p = 0.50$; Table 8). Interestingly, no other statistically significant p-values were found in any of the racial groups of pet owners when examined with the data of days physical health was not good (Table 9).

Table 8

Chi-Square Test: Number of Days Physical Health Not Good, Pet Owner, Gender

Gender	p value
Male	.760
Female	.045

Table 9

Chi-Square Test: Number of Days Physical Health Not Good, Pet Owner, Race/Ethnicity

Race Categories	p value
Hispanic	.134
Non-Hispanic White	.286
Non-Hispanic Black	.173
Other Race Incl Multiracial	.069

When gender and age were measured using the reported data on "days when physical health was not good", this chi-square test also did not find a statistically significant relationship among any of the racial groups (Table 10).

Table 10

Chi-Square Test: Number of Days Physical Health Not Good, Race/Ethnicity, Age

Race Categories	p value
Hispanic	.128
Non-Hispanic White	.216
Non-Hispanic Black	.294
Other Race Incl Multiracial	.238

HRQOL was also evaluated using data on the reported experience of "inactive days due to physical or mental health". The chi-square test did not find a statistically significant association between inactive days and pet ownership among Hispanic, White, and Black respondents; however, the Other Race Including Multiracial category had a p-value of 0.03, indicating a significant relationship (Table 11).

Table 11

Chi-Square Test: Inactive Days Due to Physical or Mental Health, Pet Owner, Race/Ethnicity

Race Categories	p value
Hispanic	.621
Non-Hispanic White	.739
Non-Hispanic Black	.179
Other Race Incl Multiracial	.029

Pet ownership (n = 2,720) was separated by gender, and the chi-square test did not identify a statistically significant association for males (p = 0.5). However, a statistically significant relationship was found among females (p = 0.04; Table 12). The chi-square tests examining HRQOL among middle-aged pet owners when race and gender were control variables did not find a statistically significant association. Therefore, the null hypothesis failed to be rejected for RQ1.

Table 12

Chi-Square Test: Inactive Days Due to Physical or Mental Health, Pet Owner, Gender

Gender	p value
Male	.525
Female	.043

Research question two focused on HRQOL among middle-aged pet owners when controlling for income. Of dog or cat owners (n = 4,567), 13.24% were low income (n = 605); 44.27% were mid-income (n = 2,022); 7.35% were upper-mid income (n = 336); and 31.88% were high income (n =1,456; Table 13). When GHC was measured among

the pet owners, no statistically significant association was found in any income category (Table 14). When age was evaluated along with GHC and income, similar results were found, and no statistically significant associations were identified (Table 15).

Table 13

Pet Owner and Income

	N	%
Low ($0-$19,999)	605	13.24%
Mid ($20,000-$64,999)	2022	44.27%
Upper Mid ($65,000-$74,999)	336	7.35%
High ($75,000-150,000)	1456	31.88%

Table 14

Chi-Square Test: General Health Condition, Pet Owner, Income

Income Categories	p value
Low ($0-$19,999)	.957
Mid ($20,000-$64,999)	.474
Upper Mid ($65,000-$74,999)	.266
High ($75,000-150,000)	.418

Table 15

Chi-Square Test: General Health Condition, Income, Age

Income Categories	p value
Low ($0-$19,999)	.703
Mid ($20,000-$64,999)	.980
Upper Mid ($65,000-$74,999)	.633
High ($75,000-150,000)	.418

Furthermore, when the "days physical health was not good" was measured among pet owners from all income categories, the resulting p-values were less than the GHC p-values, but the chi-square test p-values did not show evidence of a statistically significant relationship (Table 16). Of middle-aged adults who reported experiencing days their physical health was not good (n = 1,205), 6.55% were low income (n = 79); 18.42% were mid-income (n = 222); 3.15% were upper-mid income (n = 38); and 11.86% were high income (n = 143; Table 17). Similar to the chi-square test of age and GHC, the p-values for all age categories and income among respondents who reported days of impacted health did not yield evidence of statistically significant associations in any income category (Table 18).

Table 16

Chi-Square Test: Number of Days Physical Health Not Good, Pet Owner, Income

Income Categories	p value
Low ($0-$19,999)	.479
Mid ($20,000-$64,999)	.319
Upper Mid ($65,000-$74,999)	.274
High ($75,000-150,000)	.416

Table 17

Days Physical Health Not Good: Middle-Aged Adults and Income Categories

Income			Middle Adult 30-50
Low ($0-$19,999)	Days physical health not good	No	112
		Yes	79
Mid ($20,000-$64,999)	Days physical health not good	No	332
		Yes	222
Upper Mid ($65,000-$74,999)	Days physical health not good	No	54
		Yes	38
High ($75,000-150,000)	Days physical health not good	No	225
		Yes	143

Table 18

Chi-Square Test: Days Physical Health Not Good, Age, Income

Income Categories	p value
Low ($0-$19,999)	.229
Mid ($20,000-$64,999)	.239
Upper Mid ($65,000-$74,999)	.277
High ($75,000-150,000)	.802

In addition, the chi-square test was performed to evaluate the association between the experience of inactive days among pet owners from all income categories. The chi-square test found a significant association for the mid-income category only ($p = 0.02$), which was not anticipated (Table 19). As a result, no statistically significant association was found between multiple data analyses of HRQOL, pet ownership, and income. The null hypothesis failed to be rejected for RQ2.

Table 19

Chi-Square Test: Inactive Days Due to Physical or Mental Health, Pet Owner, Income

Income Categories	p value
Low ($0-$19,999)	.395
Mid ($20,000-$64,999)	.017
Upper Mid ($65,000-$74,999)	.964
High ($75,000-150,000)	.229

The third research question focused on dog ownership's association with HRQOL while controlling for race. Data from dog owners (n = 2,005) was evaluated with GHC status among the four racial categories. The chi-square tests did not indicate a statistically significant relationship among these variables and GHC (Table 20).

Table 20

Chi-Square Test: General Health Condition, Dog Owner, Race/Ethnicity

Race Categories	p value
Hispanic	.460
Non-Hispanic White	.460
Non-Hispanic Black	.644
Other Race Incl Multiracial	.999

When comparing the data of "days physical health is not good" among pet owners (cats and dogs) versus owners of dogs, the data yielded similar results from the prior chi-square test. All racial categories provided data on days physical health was impacted due to physical health, with 1,157 respondents reporting no impact. In addition, similar to the chi-square test for GHC, the evaluation among dog owners from all racial groups and the number of days of poor physical health did not find a statistically significant relationship

(Table 21). Survey participants were also asked to identify if they experienced “inactive days due to physical or mental health”, and 1,405 respondents from all race categories reported zero inactive days. As a result, the chi-square analysis did not find a significant relationship between inactive days and dog ownership when controlling for race (Table 22). Therefore, the null hypothesis failed to be rejected for RQ3.

Table 21

Chi-Square Test: Number of days physical health not good, Dog Owner, Race/Ethnicity

Race Categories	p value
Hispanic	.294
Non-Hispanic White	.365
Non-Hispanic Black	.265
Other Race Incl Multiracial	.482

Table 22

Chi-Square Test: Inactive Days Due to Physical or Mental Health, Dog Owner, Race/Ethnicity

Race Categories	p value
Hispanic	.955
Non-Hispanic White	.665
Non-Hispanic Black	.127
Other Race Incl Multiracial	.164

Summary

This quantitative study examined the relationship between HRQOL and pet ownership among middle-aged adults. This study utilized NHANES data to evaluate HRQOL among middle-aged adults, which was a gap in the existing literature. By including other social determinants of health (age, race, gender, and income) in the analysis, robust data were used to test the hypothesis. In the results of this study, GHC, "days physical health was not good", and inactive days were not related to pet ownership after controlling for other independent variables. Therefore, the null hypotheses can be accepted. Next, Section 4 outlines the study's limitations, professional practice applications, and implications for promoting positive social change.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

This quantitative study was conducted to examine the association between HRQOL and pet ownership among middle-aged adults. Using NHANES data, HRQOL was measured using the health days measures of health status, existence of unhealthy days, and activity limitations. The primary independent variable was pet ownership of dogs or cats, and the covariates were age, gender, race, and income. Descriptive statistics were used to summarize the dependent and independent variables. Chi-square tests were performed to measure the relationship between these variables and identify if a statistically significant relationship existed. The chi-square tests indicated that pet ownership was not associated with HRQOL among middle-aged adults.

Limitations of the Study

This cross-sectional study could not be used to demonstrate direct causal relationships, and the sample size cannot be generalized to the population of adults in the United States. The quality of missing data or lack of responses was also a limitation. Also, the data analysis method may have eliminated variables that were related to the potential results and could have possibly impacted the findings. This quantitative study used non-random sampling, which may have impacted internal validity.

Application for Professional Practice

The results from this study did not indicate that HRQOL is impacted by pet ownership among middle-aged adults. The evidence does not support the hypotheses. While quantitative research on HRQOL and pet ownership is minimal, other existing

literature offers evidence that pet ownership may have a significant relationship to other public health issues, such as chronic disease management, obesity, and overall wellness of older populations. As a result, additional research is warranted on pet ownership and the impact of animal interactions on the self-reported health and wellness of adults and children.

The use of qualitative studies to explore the relationship between HRQOL and pet ownership is another approach to increasing the field of knowledge on this topic. By using this study design, respondents can provide additional data such as anecdotal information about their lived experiences with a pet and their physical or mental health status. Researchers have used qualitative studies to examine the experiences of pet owners, resulting in significant findings related to the positive relationship between humans and companion animals. A qualitative study performed on other vulnerable populations, such as individuals with chronic diseases, homeless individuals, or minority groups within a geographic area can expand this growing field of research. This quantitative study using NHANES data reported that HRQOL was not significantly associated with pet ownership; however, future research among different populations or the use of other study methods to identify common themes may provide results that contradict the findings of this study.

Implications For Social Change

This study has the potential to impact positive social change by providing additional data on the connection between humans, companion animals, and health and a strong recommendation for future research. The results of this study provided key

information for the development of additional research on the interactions between companion animals and individuals with chronic illnesses, mental health disorders, and aging populations. Defining and measuring HRQOL is essential for increasing awareness and understanding of health and wellness. This is critical for improving the overall health of aging adults and other vulnerable populations in the United States.

Importantly, social change implications and policy changes should not solely focus on pet ownership or a singular social framework level. Policy changes and interventions to improve public health must occur at the individual, community, and societal levels (Pronk et al., 2020). By using a socioecological perspective, community health interventions should discuss how HRQOL is related to social determinants of health, such as age, gender, income, and race, which can influence health outcomes, and pet ownership may be included as a preventative factor for improved health outcomes (Appendix A). Furthermore, public health initiatives and policies should incorporate HRQOL measures in community health assessments and intervention plans to identify associations between wellness and risk factors associated with poor health outcomes among individuals, communities, and organizations. A policy brief aimed to inform public health practitioners on the importance of HRQOL and strategies to improve HRQOL measures was developed as a guide for future public health research and initiatives (Appendix B).

Changes to community health policies should address pet ownership among adults in connection with other social determinants of health (Appendix C). Social changes related to the bond between humans and animals may be initiated within society to

address social determinants of health, which are the circumstances in which individuals live, learn, work, play, pray, and age (Pronk et al., 2020). Increases in animal interactions, availability of pet therapy, or opportunities for individuals to live with a companion animal could be catalysts for social connection or interpersonal interaction, which have been linked to an increase in quality of life among vulnerable populations. To effectively address social determinants of health and health disparities, public health practitioners must collaborate with stakeholder groups or other organizations to combine efforts to eliminate disparities, achieve health equity, attain health literacy, and fortify physical, social, and economic environments (Pronk et al., 2020).

Conclusion

This study examined the relationship between pet ownership and HRQOL among middle-aged adults. Additional variables (age, race, gender, and income) were also assessed with the HRQOL measures. This study did not find a statistically significant association between pet ownership and HRQOL among middle-aged adults in the United States. Regardless, the findings from this study provide an important contribution to the literature, growing focus on HRQOL measurement and assessment and contributing to positive social change by addressing other factors related to health disparities and poor quality of life. Additional research on pet ownership's impact on HRQOL and wellness is needed to identify factors or themes related to positive health outcomes among individuals with chronic illnesses, disabilities, and other vulnerable populations.

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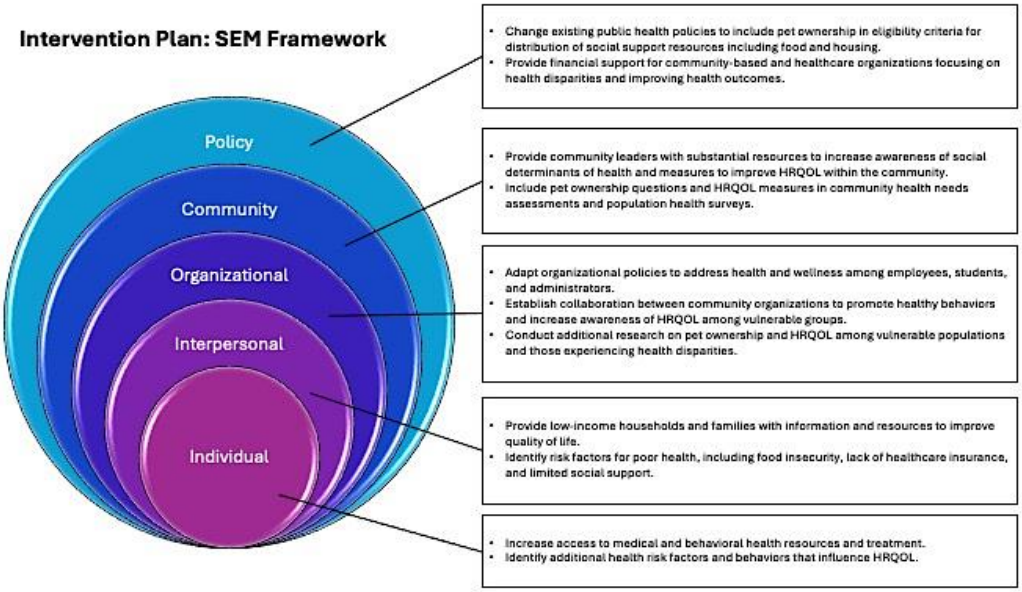
Appendix A: Intervention Plan SEM Framework



Appendix B: Policy Brief

Policy Brief:

Improving Health-Related Quality of Life Among American Adults

Executive Summary

Health-related quality of life (HRQOL) is an individual's or a group's perceived physical and mental health over time (Centers for Disease Control and Prevention, 2022). Within the last two decades, public health researchers have focused on HRQOL, and how social determinants of health impact HRQOL factors. While the focus on HRQOL and wellness has expanded in the United States, further work is needed to measure, evaluate, and address health and wellness to enhance health outcomes.

The primary strategies to improve health outcomes and increase understanding of HRQOL include addressing the relationship between health disparities and wellness, as well as implementing policy changes at the individual, community, and societal levels. Public health practitioners and researchers should continue to use the Centers for Disease Control's Healthy Days measures, which have been broadly used to identify health disparities, track population trends, and build broad coalitions around a measure of population health (Centers for Disease Control and Prevention, 2022). The need to align HRQOL measures with policies that address health disparities is a significant issue impacting adults' health nationwide.

Scope of Problem

Defining and measuring HRQOL is essential for increasing awareness and understanding of health and wellness gaps and opportunities to improve health outcomes. This is critical for improving the overall health of aging adults and other vulnerable populations in the United States. Public health organizations and institutions should be encouraged to implement HRQOL-focused research and strategies. Organizational leaders may not have the necessary tools and resources to develop and implement these new strategies.

Policy Recommendations

Policy changes and interventions to improve health must occur at the individual, community, and societal levels (Pronk et al., 2020). Physical and mental health perceptions, physical functioning, social support, and socioeconomic status occur at the individual level (Centers for Disease Control and Prevention, 2000). At the community level, HRQOL includes resources, policies, and practices that influence health within a population. Appropriate policy changes should incorporate this multi-level perspective when addressing HRQOL policies.

Organizational leaders should also explore collaborative partnerships to increase the reach of existing health and wellness programs and available fiscal resources, which can be used to implement new HRQOL interventions. Through partnerships, public health practitioners and leaders can gain valuable insight into the barriers to health within their communities and align strategies to address health disparities. By collaboratively

developing and implementing HRQOL-focused policies, adults and families in the United States can experience greater social and cultural connectedness, as well as improved health and well-being.

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Improving Health Related Quality of Life Among Middle-Aged Adults Who Own Pets

Health Related Quality of Life (HRQOL)

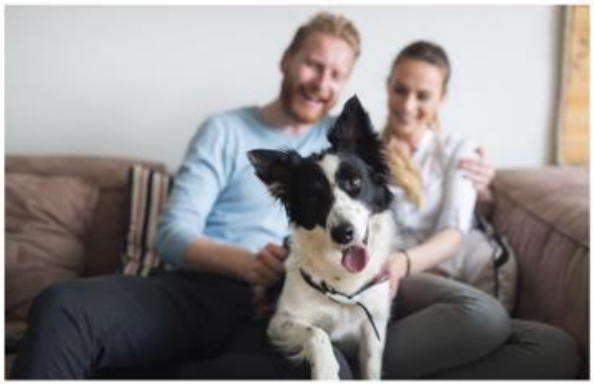
An individual's or group's perceived physical and mental health over time

(CDC, 2022)

Social Determinants of Health

Circumstances that influence the health of an individual: age, gender, race, income, employment, education

63 million homes have at least one dog, and 42 million homes with at least one cat
(Scoresby et al., 2021)



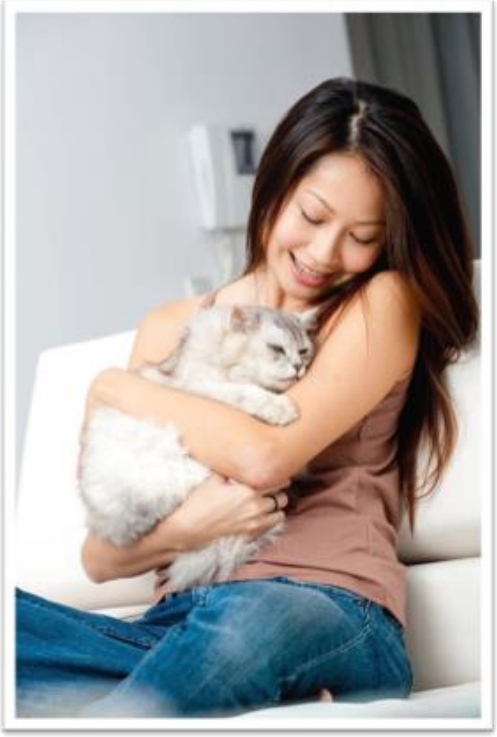
Interactions with companion animal may influence HRQOL and expand public health awareness and policies aimed at improving health outcomes through the human-animal bond

Dogs, cats, rabbits, guinea pigs, birds, and horses have all been used as therapeutic animals and researchers continue to explore the relationship between human physical and mental health and other species of companion animals

Appendix C: Fact Sheet

Methods for Improving HRQOL

- Additional research to develop and improve public health policies focused on social determinants of health
- Qualitative research on pet ownership's relationship with HRQOL and wellness
- Additional diverse population studies: racial groups, chronic diseases, pediatrics, older adults with co-morbidities
- Explore new methods for measuring impact of animal interactions on HRQOL



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