Summer 8-2023

The Impact of Social Determinants of Health and Acculturation on Quality of Life in Older Chinese American Adults with Chronic Pain: A Quantitative Study

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THE IMPACT OF SOCIAL DETERMINANTS OF HEALTH AND

ACCULTURATION ON QUALITY OF LIFE IN OLDER CHINESE AMERICAN

ADULTS WITH CHRONIC PAIN: A QUANTITATIVE STUDY

by

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A Dissertation
Submitted to the Graduate School,
the College of Nursing and Health Professions
and the School of Leadership and Advanced Nursing Practice
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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August 2023

Published by the Graduate School

ABSTRACT

Despite a rapid increase in the older Chinese American adult population, there are very few research studies examining the impact of social determinants of health and acculturation on the quality of life in older Chinese American adults. The purpose of the study was to determine the impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain. This quantitative, descriptive correlational study utilized Madeleine Leininger's Transcultural Theory as its theoretical framework. Two research questions guided this study: (1) Was there a difference in the quality of life in older Chinese American adults with chronic pain by acculturation and social determinants of health? (2) Was there a relationship between acculturation, social determinants of health, and quality of life in older Chinese American adults with chronic pain?

The three instruments that were used to collect data were the PRAPARE Screening Tool, Asian American Multidimensional Acculturation Scale, and the SF-12 Questionnaire. The study included 110 older Chinese American adults with chronic pain who lives in New York City. The findings of the study concluded social determinants of health statistically predicted quality of life, with a negative correlation meaning that as SDOH scores increased, the quality of life decreased, and vice versa. Acculturation was not found to be a major predictor of life satisfaction. By incorporating culturally appropriate approaches in healthcare delivery, it is possible to enhance patient satisfaction and improve the overall quality of life.

DEDICATION

This dissertation is dedicated to my amazing wife, Melanie, for understanding the effort and time it required to complete this incredible and arduous journey and agreeing to team up with me throughout this process. Thank you for supporting me with every degree I have earned through the years and the many sacrifices along the way. Without your love, support, and sacrifice, I could not have accomplished this milestone. I am genuinely grateful and thankful to have you by my side. To my parents, Ching Mo Lam and Yung Mei Wah, for instilling in me the meaning of hard work and for showing me by example how one can do hard things and achieve goals by pushing through even when the goals seem insurmountable. To my children, Gavin and Kayla, who witnessed my commitment to education throughout their upbringing and understood that while it holds immense significance in my life, our family has always remained the utmost priority in my heart. To my God, thank you for being the meaning and the guiding light of my life. To God be all the glory.

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LIST OF ABBREVIATIONS

AAMAS	Asian American Multidimensional Acculturation Scale
ANOVA	Analysis of Variance
BMI	Body Mass Index
CDC	Centers for Disease Control and Prevention
CINAHL	Cumulative Index to Nursing and Allied Health Complete
IBM	International Business Machines
IRB	Institutional Review Board
MCS	Mental Component Summary
NACHC	Nation Association of Community Health Center
NIH	The National Institutes of Health
NYC	New York City
PCS	Physical Component Summary
PINE	Population Study of Chinese Elderly
PRAPARE	Protocol for Responding to and Assessing Patients' Assets, Risk, and Experiences
QOL	Quality of Life
SD	Standard Deviation
SDOH	Social Determinants of Health
SPSS®	Statistical Package for the Social Sciences
WHO	World Health Organization

CHAPTER I – INTRODUCTION

The Administration for Community Living (2021a) estimates that the older adult population (age 65 and over) in the United States was 54.1 million in 2019. This number represented 16% of the U.S. population. The older American population in the U.S. has increased by 14.4 million (36%) since 2009, compared to an increase of 3% for the under-65 population. The older population is expected to continue to grow significantly in the future, as more than two-fifths (41%) of the "baby boom" generation is now aged 65 and older. The Administration for Community Living (2021b) expects the older American population to reach 80.8 million by 2040 (more than twice as many in 2000) and to reach 94.7 million in 2060.

According to The Administration for Community Living (2021a), the Asian American population aged 65 and older was 2,492,874 in 2019 and is projected to grow to 7.9 million by 2060. In 2019, Asian Americans made up 4.6% of the older population. By 2060, the percentage is projected to be 8%. According to Budiman (2021), the Chinese American population (the largest subgroup of Asian Americans) in 2019 was 5,300,000, consisting of approximately 689,000 older adults.

The social determinants of health (SDOH) are non-medical factors, including education, socioeconomic status, employment, access to health care, neighborhood, and social network, all of which can shape the conditions of daily life (Brown & Elliott, 2021). According to Hahn (2021), while the significance of social determinants of health has long been known, attention to SDOH in public health has grown quickly in recent years. The Consolidated Appropriations Act of 2021 includes three million dollars for the CDC to create an SDOH Pilot Program to finance SDOH Accelerator Plan (Hahn, 2021).

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According to National Institutes of Health (NIH, 2021), the 21st Century Cures Act passed in December 2016, approved a total of $1.5 billion over ten years for the All of US Research Program. The All of US Research Program is an NIH program that was initiated in 2016 to gather data on different SDOH information to better comprehend the relationship between social environmental factors and their influence on general health (NIH, 2021).

It is important for healthcare providers to be aware of the potential impact of social determinants of health and acculturation on older Chinese American adults with chronic pain. This can help to ensure that these individuals receive the support and care they need to manage their condition and improve their quality of life. These social determinants of health and their related inequities and disparities are effective predictors of morbidity and mortality. They can have a significant impact on the health and well-being of individuals, particularly older adults (Brown & Elliott, 2021). For Chinese American adults with chronic pain, social determinants such as access to healthcare, social support networks, and cultural factors can play a part in their quality of life.

According to Tsai et al. (2019), Chinese Americans have varied spoken dialects, immigration history, geographic settlement, and socioeconomic backgrounds. Chinese Americans have different experiences of acculturation, characterized as the process of adapting and adjusting to the customs and norms of a new culture while maintaining their own cultural identity. As they adapt to life in a new country, they may encounter challenges related to language barriers, discrimination, and difficulty accessing healthcare. These challenges can lead to increased stress, social isolation, and poor health outcomes and can negatively impact their quality of life (Tsai et al., 2019).

"The World Health Organization (WHO) defines quality of life (QOL) as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" (WHO, 2023, para. 1). According to the Centers for Disease Control (CDC, 2018), QOL is a broad multifaceted concept that consists of subjective assessments of positive and negative parts of life. Health is an important domain for the overall quality of life. However, other domains include housing, jobs, neighborhood, culture, values, and spirituality. These domains are related and interact with each other to affect a person's QOL (CDC, 2018).

Dahlhamer et al. (2018) assert that chronic pain is multifaceted, affecting a person's physical, mental, spiritual, and emotional health. When chronic pain is left unattended or inadequately addressed, it can give rise to a range of issues such as limitations in movement and daily tasks, reliance on opioids, feelings of anxiety and depression, diminished sense of well-being, and a decline in overall life satisfaction. Due to chronic pain, an adult's life can change from one of independence to one of dependence. This change is not an easy or welcome adjustment for most adults, as they have been independent for most of their lives (Dahlhamer et al., 2018).

According to Zelaya et al. (2020), approximately 20.4% of adults in the United States experienced chronic pain, while 7.4% reported chronic pain that significantly impacted their daily life or work activities within the last three months. Chronic pain is a significant public health issue affecting patients' lives and decreasing physical activity (Duenas et al., 2020). "Chronic pain is pain in one or more anatomic regions that persists or recurs for longer than three months and is associated with significant emotional

distress or significant functional disability (interference with activities of daily life and participation in social roles) and that cannot be better explained by another chronic pain condition" (Treede et al., 2019, p. 21).

Problem Statement

Despite a rapid increase in the older Chinese American adult population, there are very few research studies examining the impact of social determinants of health and acculturation on the quality of life in older Chinese American adults. While the association between Social Determinants of Health (SDOH), acculturation, and health outcomes are well known, studies exploring the impact of SDOH and acculturation on quality of life in older Chinese American adults with chronic pain are lacking. It is important to avoid simply looking at all Asians as a monolith, as there are major differences between the many Asian subgroups (Merschel, 2021).

In the context of older Chinese American adults with chronic pain, both social determinants of health and acculturation can have a significant impact on their quality of life. For instance, older Chinese American adults with chronic pain who have lower levels of education or income, or who lack access to adequate healthcare and social support networks, may have more difficulty managing their pain and may have a lower quality of life (Atkins & Mukhida, 2022). Additionally, those who are not well-acculturated to the dominant culture may face additional challenges, such as language barriers or discrimination, which can also impact their quality of life (Tsai et al., 2019).

Research Questions

The study aimed to determine the associations between SDOH, acculturation, and quality of life in older Chinese American adults with chronic pain. The research questions are:

1. Is there a difference in the quality of life in older Chinese American adults with chronic pain by acculturation and social determinants of health?

2. Is there a relationship between acculturation, social determinants of health, and quality of life in older Chinese American adults with chronic pain?

Purpose

The purpose of the study was to determine the impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain. This quantitative study considered both social determinants of health and acculturation when addressing the needs of older Chinese American adults with chronic pain. Developing a greater understanding of the role of acculturation and social determinants of health on the quality of life of this population is critical to achieving health equity and the promotion of health.

Theoretical Framework

This quantitative, descriptive correlational study utilized Madeleine Leininger's Transcultural Theory as its theoretical framework. Madeleine Leininger's Transcultural Theory is a middle-range theory that focuses on the significance of delivering culturally sensitive care to people of various cultures (Leininger, 1991). In 1991, The Transcultural Nursing Theory first appeared in Madeleine Leininger's book, Culture Care Diversity,

and Universality. The theory was developed further in her book Transcultural Nursing in 1995. See Figure 1 for the theoretical model.

Culture Care

Worldview

Cultural & Social Structure Dimensions

Kinship & Social Factors

Cultural Values, Beliefs & Lifeways

Political & Legal Factors

Environmental Context, Language & Ethnohistory

Religious & Philosophical Factors

Economic Factors

Influences

Technological Factors

Care Expressions Patterns & Practices

Educational Factors

Holistic Health / Illness / Death

Focus: Individuals, Families, Groups, Communities or Institutions in Diverse Life Contexts of

Generic (Folk) Care

Nursing Care Practices

Professional Care–Cure Practices

Transcultural Care Decisions & Actions

Culture Care Preservation/Maintenance
Culture Care Accommodation/Negotiation
Culture Care Repatterning/Restructuring

Code: ◄────► (Influencers)

Culturally Congruent Care for Health, Well-being **or** Dying
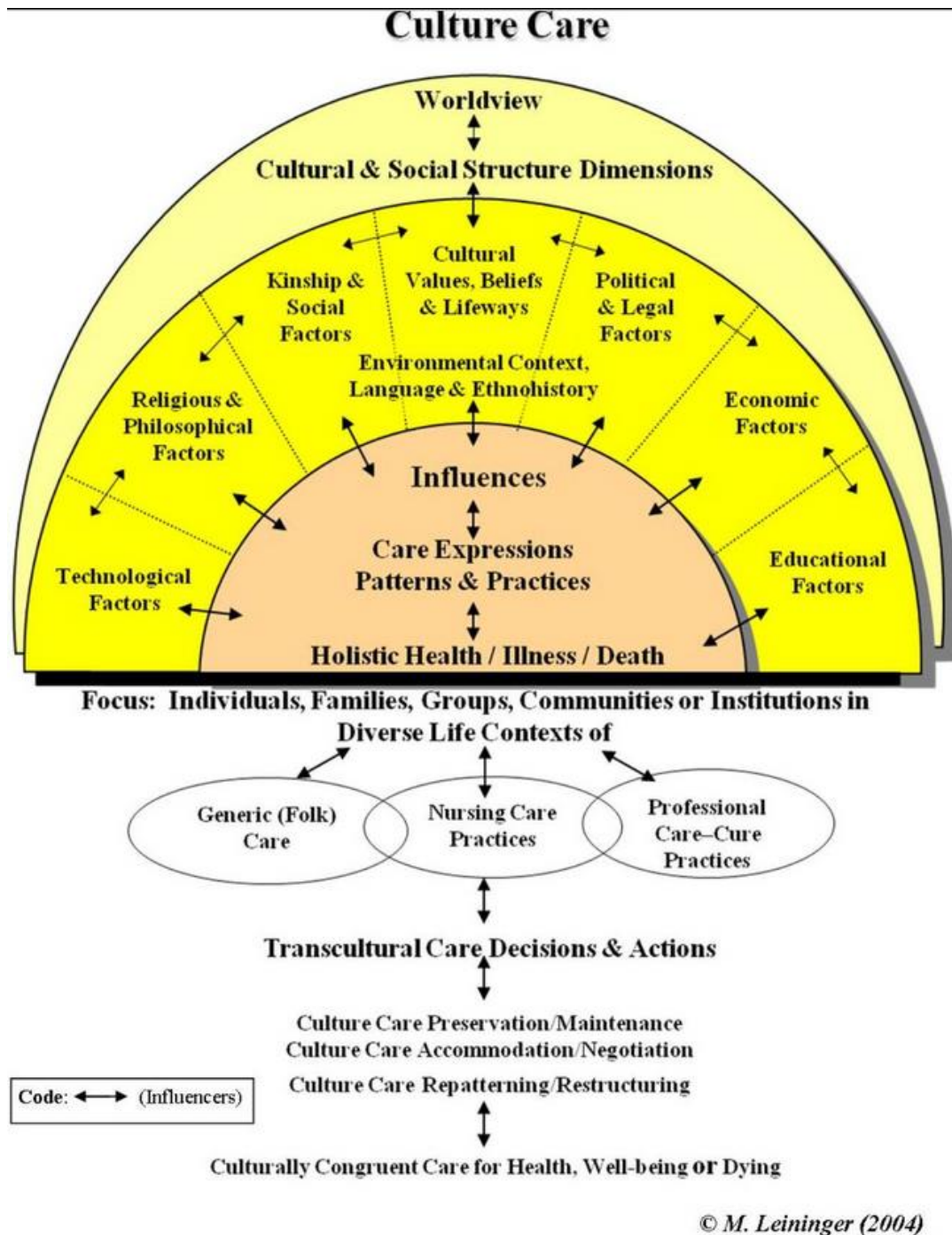
© M. Leininger (2004)

Figure 1. Madeleine Leininger's Transcultural Theory.

(Leininger, 2004).

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Transcultural nursing involves studying different cultures to comprehend both their similarities and differences within patient groups. Culture refers to a set of beliefs held by a specific group of people that are passed down from generation to generation. According to Leininger (1991), transcultural care addresses cultural dynamics that influence the relationship between the nurse and patient. This theory emphasizes the duty of nurses to understand the function of culture in the patient's health (Leininger, 1991). According to Madeleine Leininger (1991), there exist three nursing decisions and actions aimed at providing culturally compatible care for patients. These include cultural preservation or maintenance, cultural care repatterning or restructuring and cultural care accommodation or negotiation. Social determinants of health, acculturation, quality of life, and chronic pain are all factors that can impact the mode of nursing care decisions and actions in transcultural theory.

Cultural preservation or maintenance consists of considering those helpful, secondary, facilitative, or letting specialized practices and options that support persons of a specific ethnicity to preserve treatment values. The goal of preserving care value is to ensure that a patient's health is sustained, and that the patient recuperates from any illness (Yunani & Moses-Glorino, 2022). Social determinants of health can impact this mode of care by creating barriers to care and affecting the patient's overall health and well-being.

A patient with chronic pain may have limited access to conventional pain management treatments due to cost but may rely on traditional healing practices for relief. In such cases, care may involve preserving these practices and incorporating them into the care plan. Acculturation can also impact this mode of care by influencing the patients' cultural beliefs and practices. A patient may be struggling to maintain their

cultural heritage in a new cultural environment, and care may involve preserving their cultural identity to promote their quality of life.

Cultural care accommodation or negotiation is exemplified by its capacity to accommodate other cultures so that they can adjust or negotiate with healthcare professionals for a beneficial or adequate health outcome (Yunani & Moses-Glorino, 2022). Social determinants of health can impact this mode of care by creating obstacles to care, such as language barriers or cultural misunderstandings. A patient with chronic pain may have limited access to culturally appropriate pain management treatments due to language barriers, and care may involve using alternative forms of communication or translators to ensure that the patient's needs are being met. Acculturation can also impact this mode of care by affecting the patient's cultural beliefs and practices, and care may involve modifying the care plan to accommodate these changes.

Culture care repatterning or restructuring consists of assistive, secondary, facilitative, or letting specialized procedures and options that support people of a specific group in shifting their way of life into accepting new, varied, and helpful therapeutic care while taking their cultural values into consideration. These aspects add to the goal of the cultural nursing concept, which is to deliver health care consistent with ethnic practices, values, and beliefs (Yunani & Moses-Glorino, 2022).

Social determinants of health can impact this mode of care by creating barriers to care and affecting the patient's overall health and well-being. A patient with chronic pain may need to adopt new pain management practices in a new cultural environment. Conversely, care may involve educating the care provider about culturally appropriate pain management strategies. Acculturation can also impact this mode of care by affecting

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the patients' cultural beliefs and practices. Care may involve helping the patient to better understand Western medicine and find common ground between Eastern and Western medicine.

Definitions

The following terms are definitions for the study. A generalized definition is reported and a specific definition for the purpose of the study is identified.

- *Culture:* a comprehensive collection of commonly held beliefs, customs, values, tangible elements and behaviors that define and represent a particular group or society (Leininger, 1991).

For the purpose of this study: culture was self-identified as older Chinse American adults who have lived in the United States for five years or longer who read English or Chinese or can communicate in English, Cantonese, or Fujianese.

- *Social determinants of health:* contextual factors that go beyond medical influences such as economic conditions, occupational opportunities, educational opportunities, availability of healthcare, neighborhood, and social network, which can shape the conditions of daily life (Brown & Elliott, 2021).

For the purpose of this study: SDOH was measured by the PRAPARE Screening Tool.

- *Acculturation:* the process by which a group or an individual adapts and adjusts to a culture and values of a new society while preserving their own cultural identity (Tsai et al., 2019).

For the purpose of this study: the acculturation of Chinse American descent who live in the United States. Acculturation was measured by Asian American Multidimensional Acculturation Scale.

- *Quality of life:* an individual's subjective evaluation of the overall quality or satisfaction with his or her life

For the purpose of this study: quality of life was reported by using the SF-12 Questionnaire.

- *Chronic pain:* the presence of persistent or recurring pain in one or multiple anatomical regions that extends beyond a duration of three months (Treede et al., 2019).

For the purpose of this study: chronic pain is any physiological condition reported by the sample (e.g., back pain, arthritis, knee pain, hip pain, headaches, etc.). Since chronic pain is not one of the research variables, pain was not measured. However, only research participants with chronic pain will be included in the study.

Assumptions

The following are assumptions included within the study:

1. Quality of life in older Chinese American adults with chronic pain is impacted by social determinants of health and acculturation.
2. The research participants will answer all survey questions with honesty and accuracy.
3. The research participants will complete all survey questions.

Limitations

The sample population in this research study included older Chinese American adults who live in New York City, which may reduce generalizability for all older Chinese American adults in the United States. Although there is a significant older Chinese American adult population in New York City, it may not accurately reflect the overall older Chinese American adult population in the United States. The sample was mostly from the Chinatown area in New York City. In this sub-sample, acculturation is not necessary to adapt to the U.S. culture, therefore may present as a limitation for generalization. Research participants were selected largely from a Chinese American Planning Council's adult day care center and a Chinese American church. Research participants were also recruited from the households of friends and relatives who live in the New York City area. This sample of research participants may have the support and resources that the more isolated older Chinese American adults may not have, which may or may not affect their quality of life.

Delimitations

The study was conducted among a convenience sample of older Chinese American adults who live in New York City. The research participants included only older adults who are living in the community, as opposed to older adults who are living in a hospital, long-term care facility, or nursing home. For the research participants to complete the surveys, they were required to be able to read English or be able to communicate in English.

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Significance of the Study

This study can have several implications for both research and practice. Currently, there is a lack of research on how acculturation and social determinants of health affect the quality of life of older Chinese American adults with chronic pain. This study could contribute to the knowledge of how acculturation and social determinants of health influence the quality of life in older Chinese adults with chronic pain. It could provide insights into how these factors may differ between Chinese American older adults and other racial or ethnic groups. The findings could be utilized to inform future research on similar topics and to identify potential interventions that may be effective in improving the quality of life for this particular population.

Concerning practice, the results of this study could be utilized to inform the development of culturally sensitive interventions and policies aimed at improving the quality of life in older Chinese American adults with chronic pain. Health care providers and policy makers could utilize the findings to better understand the unique needs and challenges faced by this population and to design interventions that address these issues. Additionally, the study could help raise awareness about the importance of addressing acculturation and social determinants of health in the care of older Chinese American adults with chronic pain.

Summary

Social determinants of health are contextual factors (i.e., including educational opportunities, economic conditions, occupational opportunities, and healthcare accessibility) that can shape the conditions of daily life (Brown& Elliott, 2021). Acculturation is the process of adapting and adjusting to the customs and norms of a new

culture, while maintaining their own cultural identity (Tsai et al., 2019). These two factors may have a significant impact on the quality of life in older Chinese American adults with chronic pain. However, there is currently a lack of research on this important and pertinent topic. Developing a greater understanding and awareness of the role of acculturation and social determinants of health on the quality of life of this population is critical to achieving health equity and the promotion of health. Chapter II will explore further the summary of literature and research that substantiate this research study.

CHAPTER II – REVIEW OF LITERATURE

Introduction

The review of the literature was conducted to explore the variables in the research

study: social determinants of health, acculturation, quality of life, and older Chinese

American adults with chronic pain. The review was based on scholarly literature

including peer-reviewed articles and research articles cited in the ProQuest, Academic

Premier, CINAHL, PubMed, MEDLINE, and Google Scholar databases. The following

keywords were utilized for each search: social determinants of health of Chinese

Americans, social determinants of health in Asian Americans, social determinants of

health of older Chinese American adults, acculturation of Chinese Americans,

acculturation of Asian Americans, acculturation of older Chinese American adults,

quality of life in Chinse Americans, quality of life in older Chinese American adults,

quality of life in older Chinese Americans with chronic pain and older Chinese American

Adults with chronic pain.

Social Determinants of Health

The literature on the health status of older Chinese American adults has

established the impact of several social determinants, including education, social support

structure, socioeconomic status, unemployment, transport, healthcare access, housing,

and racial discrimination. The influence of multiple social determinants of health has

been identified as accounting for the disproportionately unfavorable health outcomes

among Chinese Americans. Tung et al. (2017) examined such disparities between Asian

Americans and other adults in diabetes screening and the role of social determinants of

health in observed differences. Using pooled cross-sectional data from multiple states,

they determined that Asian Americans were the least likely group to receive diabetes screening. The odds of disease screening were further worsened by such factors as lack of insurance coverage, lack of a college degree, low body mass index (BMI), and low household income (Tung et al., 2017).

While the study addressed an important relationship between health-seeking behavior and social determinants of health, its data lacked differentiation of Asian American participants into racial and ethnic subgroups such as Chinese or Vietnamese. Since the Asian American group is not homogenous, the generalization of diabetes screening behavior may limit the finding's representativeness. According to Misra et al. (2020), the risk of depression among Asian immigrants is higher among those with lower education levels, no health insurance cover, no employment, poor English language proficiency, and low social cohesion. Interestingly, the survey indicated a diminishing impact of socioeconomic status and access to healthcare on the health status of Asian Americans, with gender and education level having more influence (Misra et al., 2020). The role of community support in the health of older Chinese American adults was also reported by Mao et al. (2021), who quantitatively evaluated the impact of family reunification and the sense of community on the oral health of older Chinese American adults.

The investigation utilized data from the Population Study of Chinese Elderly (PINE) study in Chicago and measured the sense of community on a 12-point Likert-type scale and factor loading using such variables as emotional connection, community membership, and fulfillment (Mao et al., 2021). The results indicated higher oral health problems in respondents with a lower sense of community, an association that was

improved by family reunification status. In agreement with other literature on migrant communities' health, the study's findings underscore the role of family separation and reunification in psychological and physical health outcomes.

Perhaps the most dramatic demonstration of the implication of social determinants of health among older Chinese American adults is the disparities in outcomes observed following the COVID-19 pandemic. Empirical research on the issue suggests that longstanding inequality arising from various social determinants resulted in disproportionately severe infections and unfavorable outcomes among Chinese Americans. On this issue, Ma et al. (2021) utilized an intersectionality-informed approach to frame an insightful discussion on structural inequality and its role in the racially disproportionate impact of the COVID-19 pandemic, particularly among older Asian Americans.

Unlike other research on racial and ethnic inequalities, the report analyzes the manifestation of structural inequality in multiple societal dimensions, including research, public policy, immigration, access to care, and economic conditions. The most notable observations made by the authors include the high proportion of Asian subpopulations who work in frontline industries due to the inability to access other jobs, a situation that made them particularly vulnerable to COVID-19 infections (Ma et al., 2021). In addition, the implementation of restrictive immigration laws such as that of public charge limits the ability of many older Asian American adults to obtain essential health services, including COVID-19 testing and vaccinations.

In another study, Tsui et al. (2021) also identified unmet health-related social needs among Chinese American patients during the COVID-19 pandemic. Using a cross-

sectional survey utilizing a self-administered screening tool with a sample of 236 participants, the authors revealed the extent of social determinants in primary care services utilization (Tsui et al., 2021). The social determinants assessed included immigration status, job insecurity, housing instability, community cohesion, health insurance, transportation barriers, interpersonal violence, and food insecurity. Among these factors, the most common unmet needs during the pandemic included transport barriers, housing instability, and insufficient health insurance, all of which occurred more commonly with older respondent age.

The study's findings underscore the prominence of persistent social health determinants and demonstrate their implications on health outcomes. Not unlike other studies, the research poorly differentiate Asian American participants based on country of origin and age, highlighting yet another subtheme involving the generalization of the larger Asian American group in public health research. As evidenced by findings by other researchers, parallels to these narratives are evident throughout the literature on the health status of older Chinese American adults.

<div align="center">Acculturation</div>

With a rapidly increasing Chinese population in the United States, the role of acculturation in health outcomes and health-seeking behaviors has become ever more prominent. Accordingly, the subject has drawn a significant amount of research interest, distinguishing acculturation from other determinants of health in this population. Research on the subject has revealed that acculturation not only improves health-seeking behaviors and outcomes but also lessens the negative effect of other health determinants. For instance, Chen et al. (2022) demonstrated that acculturation reduced the negative

impact of perceived stress on the severity of symptoms of depression among older Chinese American adults.

The investigation entailed quantitative determination of the mediating effect of acculturation on the relationship between stress and depressive symptoms using data drawn from the large PINE study conducted in Chicago. The researchers found that depression was predicted by factors such as older age, low income, and higher subjective stress. However, older Chinese American adults who were more acculturated had lower levels of depression, despite the presence of perceived stress (Chen et al., 2022). The role of acculturation on health outcomes of older Chinese American adults was further assessed by Wang et al. (2021), who utilized a cross-sectional design with structured interviews and quantitative data analysis to evaluate the association. With a sample of 385 Chinese Americans aged above 55 years, the investigation found that respondents with high linguistic and lifestyle acculturation reported high self-rated health (Wang, 2021).

However, the association failed to show in participants with poor family cohesion, as indicated by strained relationships with family members. Besides supporting findings from other research on the role of family cohesion in the health outcomes of this population, the study also highlighted the importance of acculturation (Wang, 2021). Interestingly, acculturation has been shown to buffer the detrimental psychological impacts of strained family relationships in the population, as reported by Li et al. (2021). Measuring the association between family types and cognitive function among older Chinese immigrants, the authors found that the lowest cognitive status occurred in participants with a commanding-conflicted family type. However, the severity of

cognitive dysfunction demonstrated in this family type was lower among well-acculturated respondents. The findings highlight the role of acculturation in lessening the harmful effects of other health determinants.

While the impact of acculturation on most health outcomes in older Chinese American adults is largely positive, research on the relationship has revealed its mediation by multiple factors, the interaction of which can culminate in negative outcomes. For instance, Tsai et al. (2019) found that mainstream acculturation was accompanied by low self-stigma and poorer emotion expression among older Chinese Americans. The serial mediating roles of these factors resulted in a negative association between acculturation and overall quality of life among older Chinese breast cancer survivors (Tsai et al., 2019). The potential negative impact of acculturation on health outcomes was also highlighted by Xu et al. (2023), who reported that social exclusion comprises a significant form of racially motivated discrimination faced by older Chinese American adults. Such social exclusion tendencies were found to be associated with psychological stress and limitation in access to health services, economic opportunities, and neighborhood resources.

Consequently, the acculturation stress emerging from this situation mediates poor health outcomes through other determinants of health (Xu et al., 2023). Perhaps as a result of the adoption of unhealthy host-community behaviors, acculturation can also drive adverse outcomes in certain conditions. For example, a study by Ge et al. (2018) found that while acculturation was linked to fewer periodontal disorders in older Chinese immigrants, it was associated with a higher incidence of tooth disorders. These studies underscore the multifaceted nature of the relationship between acculturation and health

outcomes and highlight the need for further research to determine the cumulative

implication of the phenomenon on the health of older Chinese American adults.

<div align="center">Quality of Life</div>

An empirical gerontological investigation has provided insight into the

conceptualization of quality health and highlighted the factors that influence it among

older Chinese adults. Choi et al. (2022) reported that the most meaningful perceptions of

the quality of life among older Chinese adults were related to community, achievement of

personal and professional goals, and cultural attachments. The study utilized a qualitative

interpretive design based on phenomenology and lived experiences to explore the

subjective perceptions of well-being and quality of life from the perspective of older

Chinese adults. The most recurrent themes in the results included the attachment of value

to communal work and social support and personal growth and achievements in life

satisfaction among older Chinese adults (Choi et al., 2022).

While the study filled a void involving a subjective understanding of the quality

of life, its findings were congruent with notions established in preexisting literature,

particularly on the role of cultural values and family cohesion in life satisfaction in this

population. For instance, a 2018 study conducted by Chen et al. emphasized the role of

family relationships and acculturation in the quality of life among older Chinese

American adults. The authors conceptualized quality of life as a measure of one's

position to their goals and expectations in the context of cultural value systems.

This study used a quantitative approach to assess the associations among family

relationships, acculturation, and self-related quality of life using data from the Population

Study of Chinese Elderly (PINE) study, a large-sample (n=3,159) population research on

<div align="center">20</div>

older Chinese adults based in Chicago (Chen et al., 2018). The results indicated positive correlations between household size, positive relationships with children, and general health status with quality of life. However, strained relationships with family members were linked with poor self-reported quality of life. The association between family relationships and quality of life was mediated by acculturation, with the impact of family member relationships on life quality being higher among more acculturated individuals.

Besides the role of social capital, the perceptions of quality of life among older Chinese adults are also mediated by such factors as socioeconomic status, living arrangements, and health. Yang et al. (2020) quantitatively investigated how socioeconomic status and social capital affected health-related quality of life among older Chinese adults, as well as the influence of health risk behavior on this relationship. Based on a sample of 4,868 older Chinese adults (60 years and above) drawn from data from the 2018 China's Health-related Quality of Life Survey, the authors reported important factors in the quality of life in this population.

Specifically, they reported lower quality of life scores among elderly participants who reported such health risk behaviors as smoking, unhealthy diet consumption, physical inactivity, poor sleep, as well as alcohol drinking (Yang et al., 2020). In connection with the consensus in the wider literature on the topic, they also reported a negative association between social capital and health risk behaviors, with social and community involvement being linked to a better quality of life (Yang et al., 2020).

Similarly, the influence of social capital on quality of life through the form of interactions with family members was further reported by Xiong (2023), who empirically assessed levels and determinants of life satisfaction among the elderly in China. The

report was based on a quantitative analysis of key variables using data from the 2017 China General Social Survey and revealed significant causality of such factors as living with children and community involvement on happiness and life satisfaction among older Chinese adults (Xiong, 2023). Among elderly Chinese immigrants in the United States, living arrangements were also identified as an important factor in the quality of life (Kim et al., 2019).

Their cross-sectional survey investigated the role of both social capital and living arrangement in self-reported quality of life among elderly Chinese immigrants. The findings included better quality of life perception among participants living with a spouse and children, as well as those involved in community and political projects (Kim et al., 2019). Overall, the research on conceptualization and determinants of quality of life among older Chinese adults emphasizes the importance of socioeconomic and health-related factors in subjective life satisfaction.

While empirical research on chronic pain among older Chinese American adults in the United States is limited, the published studies highlight culture-specific nuances in pain perception and management, as well as associations between chronic pain and quality of life. In one study, Hadi et al. (2018) used quantitative analytic methods to assess the effect of chronic pain on the quality of life in a community-derived sample in North England. The study revealed that the most common forms of the condition were lower back pain and limb pain. In addition, patients with chronic pain had noticeably lower quality of life scores, with the condition negatively affecting such aspects as physical activity, professional performance, family relationships, social interactions, mood, and sleep quality (Hadi et al., 2018).

The implication of chronic pain on health-related quality of life was also explored by Kawai et al. (2017) using a cross-sectional survey of multicultural participants from Minnesota. They found a high incidence (32%) of neuropathic pain and associated depressive mood disorder. Further, the researcher found a significant positive association between longstanding pain and poor work productivity and physical activity, which culminated in diminished quality of life. These findings provide insight into how chronic pains drive mood disorders and poor quality of life.

The limited research on pain in acculturated, older Chinese American adults in the United States has highlighted similar associations with mental health disorders, as well as culture-bound variations in pain perception and self-management. A study conducted by Huang et al. (2021) explored the relationship between chronic pain and mood disorders among Asian Americans. The research revealed that chronic pain was present in 35.8% of Asian Americans (Huang et al., 2021). Moreover, the presence of longstanding pain was associated with a higher likelihood of mood disorders.

Kawi et al. (2019) reviewed the literature on scientific and traditional self-management practices for chronic pain among Asian immigrants and reported that self-management using a variety of traditional and modern methods is a common practice among Asian immigrants. In addition, the study revealed that the experience of pain in these communities is characterized by a high level of resilience, with low levels of dysfunction despite a high burden of chronic pain. These findings present an interesting pattern that potentially contrasts the experience of pain in Western communities, which requires further research on the association between chronic pain and quality of life among Asian Americans.

Li et al. (2021) conducted a cross-sectional study in China on the pervasiveness and characteristics of chronic pain in older adults who lives in the community. The study found that the incidence of pain and the levels of pain did not rise with age and did not change with gender. The study indicated that feet and leg pain was the most reported in both females and males. Additionally, easier access to assistance regarding medication and technical guidance for non-pharmaceutical treatment may be beneficial in improving the management of pain in the older adult population. The findings show that a better understanding of chronic pain in the community-dwelling older adult population is vital for the management of pain in China, as it has the largest older adult population in the world (Li et al., 2021).

In another study, Yang and Peng (2021) aimed to ascertain the characteristics of older adults with physical pain and the relationship between pain, health status, demographics, and medical services utilized by Chinese older adults. This cross-sectional study utilized data from a national survey from the China Health and Retirement longitudinal study that consisted of 20,284 males and females in China. The study revealed that physical pain is widespread amongst the older adult population. It also indicated the necessity for additional large-scale research studies with a focus on older adults who suffer from pain to provide evidence-based knowledge for medical providers as well as policymakers to improve how pain is managed (Yang & Peng, 2021).

To determine the associations between anxiety and depression with chronic pain and quality of life, Bai and Cheng (2022) conducted an observational cross-sectional study on older Chinese adults in rural China. It consisted of 244 participants who filled out questionnaires on anxiety, depression, pain, and quality of life. The study involved

the utilization of descriptive statistics as well as multiple linear regression analysis, and it concluded that pain and quality of life are highly related to symptoms of anxiety and depression in older adults in rural China. Therefore, according to the study, treating pain and quality of life issues may alleviate anxiety and depressive symptoms in older adults (Bai & Cheng, 2022).

Gaps in the Literature

Little research was found on research around acculturated older Chinese American adults in the United States. The lack of research on the association between pain and quality of life among older Chinese American adults in the United States represents an important gap in the literature. There is also a gap in the research on social determinants of health and the impact of pain management in acculturated older Chinse American adults. This lack of empiric studies is particularly significant since pain experiences and the implications on quality of life are mediated by multiple factors in this population, including culturally determined perceptions and group-specific determinants of health. Therefore, further research is needed to describe the implication of chronic pain and other determinants of health on the quality of life of older Chinese American adults.

Summary

The reviewed literature covered a wide range of themes in older Chinese American adults' health. The majority of the published studies utilized quantitative methods to assess associations between several variables that influence health behaviors and outcomes in this population. Among other themes, the findings comprise the conceptualization of the quality of health among older Chinese American adults, which emphasizes social participation and family support. In addition, the literature confirms

the role of several social determinants of health in disparate health outcomes in the population, including education, socioeconomic status, family cohesion, and acculturation. Importantly, the literature draws attention to nuanced experiences of chronic pain among Asian immigrants, although it falls short of exploring how these differences affect the relationship between pain and quality of life in these communities.

CHAPTER III – METHODOLOGY

Introduction

This chapter offers a description of the methodology for this research study. It covers the study's research design and approach that was utilized in this research study. Information will be provided on the setting, research sample, and the instruments that were utilized for the collection of data on social determinants of health, acculturation, pain, and quality of life. Additionally, this chapter will cover the data analysis, and how human participants were protected throughout this research study.

Research Design and Approach

This quantitative study utilized a descriptive correlational methodology to examine the impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain. This particular methodology is employed to ascertain the presence or absence of a relationship between variables. The PRAPARE Screening Tool (SDOH), Asian American Multidimensional Acculturation Scale (Acculturation), and the SF-12 Questionnaire (QOL) were used to collect data for the study. The theoretical frameworks of the Transcultural Nursing Theory by Madeleine Leininger provided the guiding principles for this study Leininger, 1991).

Setting and Sample

The sample consisted of 110 older Chinese Americans adults with chronic pain who lived in New York City. A power analysis was conducted to estimate the appropriate sample size necessary for the desired level of significance, targeted power, and effect sizes. The targeted power $(1 – \beta)$ is 0.8, and the significance level is set at 0.05 (α = 0.05). Along with the different effect sizes from small ($\delta = 0.02$), to medium ($\delta = 0.15$),

to large ($\delta = 0.35$), the sample sizes were calculated using G-Power ver. 3.1.9. Based on the results, a total of 109 participants were needed for the medium effect size.

Participants were selected via convenience and purposive sampling and met the following inclusion and exclusion criteria: (a) Chinese Americans who are 65 years old or older; (b) Participants must have chronic pain; (c) Participants must live in New York City (d) Participants must be able to understand or read English; (e) Participants must not be cognitively impaired; (f) Participants must be able to grant and sign informed consent.

<div align="center">Instrumentation and Materials</div>

Social determinants of health, acculturation, and quality of life are the three variables in this research study. The instruments that were used to measure these variables are discussed in this section. The three instruments are PRAPARE Screening Tool, Asian American Multidimensional Acculturation Scale, and the SF-12 Questionnaire (Chung et al., 2004; National Association of Community Health Centers [NACHC], 2023; Shah et al., 2020). Demographic data such as gender, age, and the existence of chronic pain were collected on the sample.

Social Determinants of Health

PRAPARE Screening Tool was utilized to assess the participants' social determinants of health. PRAPARE stands for "Protocol for Responding to and Assessing Patients' Assist, Risks, and Experiences" (NACHC, 2023, p. 1). The tool consists of 21 assessment questions in five main categories. The five categories are personal characteristics, family and home, availability of money and resources, social and emotional health, and personal safety. It consists of questions in the format of demographic information, multiple choice, yes/no checkboxes, and Likert-type questions.

A score of 0 or 1 is given per selection and the score is tallied up. The higher the score, the higher the risk the research participant has in one or more of the categories the tool is screening for. According to NACHC (2023), this tool proved to have high validity (0.935) and reliability with a Cronbach's Alpha of (0.86).

Acculturation

The Asian American Multidimensional Acculturation Scale (AAMAS) consists of 15 items and uses a 6-point Likert-type scale ranging from not very well (1 point) to very well (6 points). The AAMAS comprises four subscales, which look at different aspects of acculturation. The four subscales are language use, ethnic social relations, cultural practices, and cultural identification. The scores are added up to calculate the total acculturation score. The higher the total score, the more acculturated to the mainstream American culture the research participant is.

Chung et al. (2004) documented coefficient alphas ranging from 0.76 to 0.91, indicating strong reliability across three distinct studies for the three subscales of the scale. The study further demonstrated consistent results with two-week test-retest coefficients ranging from 0.75 to 0.89. Additionally, Chung et al. (2004) confirmed concurrent, criterion-associated, and discriminant validity of the subscales through comparisons with measures of acculturation, cultural identity, generational status, self-esteem and intergenerational conflict.

Quality of Life

The SF-12 questionnaire is a concise 12-item tool designed to evaluate health-related quality of life from the perspective of the healthcare recipient. It covers eight domains including physical functioning, general health, role functioning (physical),

vitality, bodily pain, role functioning (mental), mental health, and social functioning. Each domain is scored on a scale of 0 to 100, with higher scores indicating better self-reported health-related quality of life. The SF-12 exhibited strong internal consistency, with Cronbach's alpha values of 0.87 for the physical domains (PCS) and 0.86 for the mental domains (MCS), indicating reliability. Additionally, it demonstrated good and moderate test-retest validity, with intraclass correlation coefficients of 0.79 (PCS) and 0.59 (MCS). Shah and Brown (2020) confirm that the SF-12 is a reliable and valid tool for assessing health-related quality of life in the older population of the United States.

Demographics

Demographic data was collected using a demographic questionnaire. The data included age, gender, and existence of chronic pain. For the purpose of this study, chronic pain is pain in one or more anatomic regions that persists or recurs for longer than three months (Treede et al., 2019). Other demographic data was collected in the PRAPARE screening tool.

<center>Protection of Research Participants</center>

This research study was conducted in adherence to the ethical guidelines established by the Institutional Review Board (IRB) of The University of Southern Mississippi (Protocol # 23-0315). Permission letters were collected from all facilities where recruitment and data collection occur. When eligibility was established and before the interview/survey, important information such as the research study's main goals and expectations of the participants was clearly explained. Any questions and concerns about the research study and the consent form were addressed. Informed consent was collected to ensure confidentiality and the willingness of the participants to take part in the research

study. To protect the confidentiality of the participants' identities, a numerical code was assigned to each research participant.

Recruitment

The recruitment of research participants was completed within the New York City area. The researcher utilized convenience and purposive sampling. The researcher attended and recruited participants from weekly meetings/gatherings of the Chinese American Planning Council's senior day care center and a Chinese American church. The researcher contacted these organizations weekly to determine their schedules and the appropriate times and locations for recruitment and data collection. With permission, the researcher conducted presentations at these meetings/gatherings to inform potential research participants about the research study and the opportunity to participate in it. The researcher also recruited participants from families of friends and relatives that live in the New York City region. Phone calls were made to explain the purpose and the requirements of the study. A time and place were arranged with the interested parties at the end of these phone calls. All research participants who fully completed the surveys received a $10 Amazon gift card.

Data Collection

The research participants were given an informational packet and then proceeded to fill out the surveys at the time of recruitment. Participation was voluntary and non-participation was not penalized in any way by their organization or community. The surveys consisted of the SF-12 Questionnaire (Quality of life), Asian American Multidimensional Acculturation Scale (Acculturation), the PRAPARE Screening Tool (Social Determinants of Health), and a demographic survey. Some research participants

chose to schedule a time to fill out the survey at a later time and/or a more convenient location.

<div align="center">Data Analysis</div>

The aim of the study was to determine the associations between SDOH, acculturation, and quality of life in older Chinese American adults with chronic pain. Data from 110 participants were analyzed by utilizing IBM SPSS® version 24. Demographic data such as age and gender were analyzed utilizing a t-test. Analysis of Variance (ANOVA) and Multiple Linear Regression was utilized to analyze SODH, acculturation, and quality of life data. Data from 110 research participants were collected and analyzed by utilizing IBM SPSS® version 24. All collected data were examined by the researcher to ensure completion and consistency.

Research Questions

1. Is there a difference in the quality of life in older Chinese American adults with chronic pain by acculturation and social determinants of health?

ANOVA was performed to determine if there is a difference in the quality of life in older Chinse American adults with chronic pain by acculturation and social determinants of health. ANOVA is a statistical test that was utilized to calculate the difference between the means of multiple groups.

2. Is there a relationship between acculturation, social determinants of health, and quality of life in older Chinese American adults with chronic pain?

Multiple linear regression was performed to determine if there is a relationship between acculturation, social determinants of health, and quality of life in older Chinese American adults with chronic pain. The independent variables of the study are social

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determinants of health and acculturation. The dependent variable of the study is the quality of life of older Chinese adults with chronic pain. Regression was utilized to calculate the degree of correlation between multiple variables. Given the appropriate sample size derived from power analysis, the results from these analyses indicated the impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain.

Summary

Chapter III consisted of a discussion of the methodology that was utilized in this research study. Research participants of this study completed four standardized surveys and a demographic survey. At the conclusion of data collection, the researcher examined the surveys to confirm all surveys were fully completed. The researcher then analyzed the data by utilizing a t-test, ANOVA, and multiple linear regression. Chapter IV will discuss the outcomes of the conducted analyses on the quantitative data sets and research findings.

CHAPTER IV – PRESENTATION AND ANALYSIS OF DATA

Introduction

This quantitative correlational study sought to ascertain the effect of social

determinants of health (SDOH) and acculturation on quality of life in older Chinese

American adults with chronic pain. Data from 110 participants were analyzed by

utilizing IBM SPSS® version 24. When addressing the needs of older Chinese American

adults with chronic pain, this quantitative study included both social determinants of

health and acculturation. Understanding the influence of acculturation and

social determinants of health on the quality of life of this population is crucial to

achieving health equity and health promotion.

Sample Population

The study included 110 older Chinese Americans adults with chronic pain who

lived in New York City. The researcher recruited participants from the Chinese American

Planning Council's senior day care center and a Chinese American church. Research

participants were also recruited from the households of friends and relatives who live in

the New York City area. Table 1 summarizes the demographics of the participants, which

demonstrates that the genders were evenly distributed among the participants, with

slightly more females recruited (50.9%). The research participants' average mean age was

70.1 years (SD = 3.910).

Table 1

Demographic Characteristics

	n	%
Gender		
Female	56	50.9
Male	54	49.1
Age - Mean - Standard deviation	70.06	3.910

Assumption Analysis

The PRAPARE Screening Tool (SDOH), Asian American Multidimensional Acculturation Scale (Acculturation), and SF-12 Questionnaire (QOL) were utilized to collect data for the study. Quality of life was broken down into two scores as the dependent (outcome) variable: the Physical Component Summary (PCS) and the Mental Component Summary (MCS). Social determinants of health and acculturation were the independent variables.

To evaluate the quality of the results, the researcher evaluated the degree of deviation from these assumptions. The following seven assumptions were tested: i) observational independence; ii) a linear relationship between dependent and independent variables; iii) heteroscedastic variances; iv) no multicollinearity; v) no significant outliers, high leverage points, or highly influential points; vi) residuals (errors) should be roughly normally distributed; and vii) variance homogeneity. The results of these tests can be found in Appendix G.

Analysis Final Results

Descriptive Statistics

Table 2 shows the descriptive statistics for the study's primary variables. For measures of dispersion, the statistics offered are mean, standard deviation, and median. Most of the data had relatively small standard deviations, indicating that the results were effectively aggregated around the means. The exception was the acculturation standard deviation, which had a fairly large standard deviation. The kurtosis and skewness of the data were close to -1 and +1, indicating that the data came from a normally distributed population.

Table 2

Descriptive Statistics

Key Variable	n	Min	Max	M	SD
Quality of Life (Physical Scores)	110	21.690	61.630	42.514	8.296
Quality of Life (Mental Scores)	110	29.900	67.960	53.447	5.922
Social Determinants of Health	110	1.000	5.000	2.255	1.161
Acculturation	110	24.000	84.000	58.773	17.444

Research Question 1

The first study question investigated whether acculturation and social determinants of health affected the quality of life in older Chinese American adults with chronic pain. To assess the relationship between social determinants of health and quality of life (both PCS and MCS), a one-way ANOVA was utilized. Table 3 and Table 4 display the means, standard deviations, and ANOVA statistics. According to one-way

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ANOVA, there was a statistically significant difference between various levels of social determinants of health on quality of life (physical scores) ($F_{(4,105)} = 21.609$, $p < .001$). A Tukey post hoc test indicated significant differences between most of the levels, with only differences between levels 2 & 3, 2 & 5, 3 & 5, and 4 & 5 not being statistically different. The variations in the quality of life (mental scores) between the various levels of social determinants of health were also significant ($F_{(4,105)} = 9.057$, $p < .001$). Several levels were considerably different, except 1 & 2, 1 & 5, 3 & 4, 3 & 5, and 4 & 5 levels, which were not statistically different.

Table 3

Means, Standard Deviation, and One-Way Analysis Variance in Quality of Life (Social Determinants of Health)

	Social Determinants of Health						
	1	2	3	4	5	F(4, 105)	p
Quality of Life (Physical Scores)							
Mean	49.001	42.779	39.377	33.330	34.813	21.609	< .001
Standard Deviation	6.819	5.003	6.154	7.456	1.620		
Quality of Life (Mental Scores)							
Mean	54.758	56.810	50.021	49.866	47.957	9.057	< .001
Standard Deviation	4.810	4.360	6.305	5.782	5.889		

In terms of Acculturation categories, the means of the three conditions were unequal according to a one-way ANOVA for physical scores, $F_{(2, 107)} = 14.401$, $p < .001$, and mental scores $F_{(2, 107)} = 3.946$, $p = .022$. Pairwise comparisons of the means

using Tukey's Honestly significant difference procedure indicated two significant comparisons: participants in the 24 - 44 category (M = 39.453) reported worse quality of life significantly (p < .001) more than subjects in the 65 - 84 category (M = 46.435); the ones in the 45 - 64 category also experiencing worse (M = 38.435) quality of life than those in category 65 - 84 (46.435). The other comparisons were not significant.

Table 4

Means, Standard Deviation, and One-Way Analysis Variance In Quality of Life (Acculturation)

	Acculturation				
	24 - 44	45 - 64	65 - 84	F(2, 107)	p
Quality of Life (Physical Scores)				14.401	< .001
Mean	39.453	38.304	46.435		
Std. Deviation	7.390	7.136	7.609		
Quality of Life (Mental Scores)				3.946	.022
Mean	51.070	53.200	54.838		
Std. Deviation	6.980	5.378	5.254		

Research Question 2

The final question sought to ascertain the association between acculturation, social determinants of health, and quality of life in older Chinese American adults suffering from chronic pain. The relationship was established using a standard multiple

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linear regression with a =.05 (two-tailed) significance level. Quality of life was separated into two scores as the dependent (outcome) variable: the Physical Component Summary (PCS) and the Mental Component Summary (MCS). Social determinants of health and acculturation were the independent variables. Analyses were run to see if the assumptions of multicollinearity, outliers, normality, linearity, homoscedasticity, and residual independence were met; no notable violations were discovered.

The overall model of quality of life (physical scores) was significantly different in its ability to predict the quality of life, $F(2,107) = 41.012$, $p < .001$, $R^2 =.434$. According to the R^2 value, the linear combination of the independent variables explained approximately 43.4% of the variability in quality of life. Quality of life was statistically predicted by social determinants of health ($b = -4.501$, $p < .001$), with the negative coefficient suggesting that for every unit rise in SDOH scores, quality of life was reduced by 4.5 units (Table 5). Acculturation was not found to be a major predictor of quality of life.

Table 5

Regression Analysis Showing Impact of Acculturation and Social Determinants of Health

on Quality of Life (PCS)

	Unstandardized Coefficients		95% Confidence Interval for β		t	Sig.
			Lower	Upper		
	β	Std. Error	Bound	Bound		
(Constant)	51.440	3.878	43.753	59.126	13.266	< .001
Social Determinants of Health	-4.501	.680	-5.848	-3.153	-6.620	< .001
Acculturation	.021	.045	-.069	.110	.459	.647

The second model investigated the connection between health-related factors,

acculturation, and quality of life (MCS). Multiple regression was used to predict

the quality of life (MCS) from social determinants of health and acculturation. These

variables strongly predicted quality of life, $F(2, 107) = 9.876$, $p < .001$, $R^2 =.156$. Social

determinants of health significantly affected the quality of life (b = -1.886, p =.002) by

degrading it. Acculturation was not discovered to be a significant predictor of quality of

life (Table 6).

Table 6

Regression Analysis Showing Impact of Acculturation and Social Determinants of Health on Quality of Life (MCS)

| | Unstandardized Coefficients | | 95% Confidence Interval for β | | | |
| | | | Lower | Upper | | |
	β	Std. Error	Bound	Bound	t	Sig.
(Constant)	56.952	3.380	50.251	63.653	16.848	< .001
Social Determinants of Health	-1.886	.593	-3.061	-.711	-3.181	.002
Acculturation	.013	.039	-.065	.091	.322	.748

Summary

The purpose of this quantitative correlational study was to determine the impact of social determinants of health (SDOH) and acculturation on quality of life in older Chinese American adults with chronic pain. Understanding the impact of acculturation and social determinants of health on this population's quality of life is critical to achieving health equity and health promotion. Social determinants of health statistically predicted quality of life, with a negative correlation meaning that as SDOH scores increased, the quality of life decreased, and vice versa. Acculturation was not found to be a major predictor of life satisfaction. The study analysis findings will be presented, investigated, and assessed in Chapter V. The discussion will include an analysis of the

findings, an explanation of the project's limits, and a summary of the potential

ramifications and recommendations.

CHAPTER V – DISCUSSION, CONCLUSION, AND RECOMMENDATION

Despite the notable rise in the population of older Chinese Americans, there is a scarcity of research studies investigating how social determinants of health and the acculturation process affect the quality of life among this demographic. Although the correlation between Social Determinants of Health (SDOH), acculturation, and health outcomes is widely recognized, there is a dearth of studies examining the influence of SDOH and acculturation on the quality of life in older Chinese American adults dealing with chronic pain. The study aimed to determine the impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain.

Interpretation of the Findings

The primary objective of the first research question in this study was to examine the impact of acculturation and social determinants of health on the quality of life among older Chinese American adults dealing with chronic pain. The data analysis conducted for this research question yielded noteworthy findings. The analysis indicated a statistically significant difference in the quality of life, particularly in the physical component scores, based on varying levels of social determinants of health. This suggests that social determinants of health significantly influence the physical well-being and quality of life of older Chinese American adults with chronic pain. Furthermore, the analysis also revealed significant variations in the quality of life, specifically in the mental component scores, among different levels of social determinants of health. This implies that social determinants of health play a role not only in the physical aspects but also in the mental well-being of this population.

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Additionally, the analysis of the data unveiled further insights. It was observed that participants within the acculturation score range of 24-44 reported worse quality of life compared to individuals in the acculturation score range of 65-84. Moreover, the quality of life among participants in the acculturation range of 45-64 was also worse compared to those in the range of 65-84. Overall, the data analysis for the first research question revealed the significant influence of social determinants of health on both physical and mental aspects of quality of life among older Chinese American adults with chronic pain.

The findings from the first research question align with and are supported by several studies in the existing literature. Choi et al. (2022) conducted a study that reported the most meaningful aspects influencing the quality of life among older Chinese adults, including community, personal and professional goals, and cultural attachments. The findings of this current study indicate that the quality of life among older Chinese adults with chronic pain is low, which can be attributed to the factors mentioned by Choi et al. (2022).

Furthermore, Hadi et al. (2018) conducted a study that supports this current study's findings. Their research revealed that patients experiencing chronic pain tend to have a lower quality of life scores, as their chronic pain conditions negatively impact various aspects of their lives, such as physical activity, professional performance, family relationships, social interactions, mood, and sleep quality. These findings emphasize the detrimental effects of chronic pain on multiple dimensions of individuals' lives and highlight its impact on overall quality of life.

In addition, the study conducted by Kawai et al. (2017) further supports the findings of the first research question. Their research demonstrated a significant positive association between long-lasting pain and diminished work productivity and physical activity, ultimately resulting in a decline in quality of life. These findings shed light on the relationship between chronic pain, mood disorders, and reduced quality of life. Collectively, these studies provide valuable insights into the impact of chronic pain on the well-being of older Chinese adults and their overall quality of life. The findings highlight the significance of community, personal and professional goals, physical activity, work productivity, and mood disorders in understanding the complex interplay between social determinants of health, acculturation, and quality of life in this population.

The second research question examined the association between acculturation, social determinants of health (SDOH), and the quality of life in older Chinese American adults experiencing chronic pain. The findings of this research question yielded significant insights. The analysis revealed that social determinants of health played a crucial role in predicting quality of life. Specifically, the results indicated a negative coefficient, suggesting that for every unit increase in social determinants of health scores, the quality of life decreased by 4.5 units. This implies that higher levels of social determinants of health were associated with a reduction in the overall quality of life among older Chinese American adults with chronic pain. Acculturation was not a significant predictor of quality of life in this study. Acculturation refers to adapting and adjusting to the customs and norms of a new culture while retaining one's cultural identity (Tsai et al., 2019).

It is worth noting that these findings differ from studies such as the one conducted by Chen et al. (2022). Chen et al. (2020) demonstrated that acculturation played a role in mitigating the negative impact of perceived stress on the severity of depression symptoms among older Chinese American adults. However, in the present study, acculturation did not emerge as a significant predictor of quality of life among older Chinese American adults with chronic pain. These findings contribute to our understanding of the complex relationship between acculturation, social determinants of health, and quality of life in this population. While social determinants of health significantly impacted the quality of life, acculturation did not significantly predict the quality of life for older Chinese American adults with chronic pain. Further research is warranted to explore the nuanced dynamics between acculturation, social determinants of health, and quality of life in diverse populations.

Findings Concerning Theoretical Framework

Madeleine Leininger's transcultural theory can provide a valuable framework for understanding the study's findings regarding the impact of social determinants of health (SDOH) and acculturation on the quality of life in older Chinese American adults with chronic pain. Leininger's transcultural theory emphasizes the importance of cultural factors and diversity in healthcare (Leininger, 1991). According to this theory, individuals' cultural backgrounds, beliefs, values, and practices significantly influence their health and well-being. The theory recognizes that different cultures have distinct perspectives on health and illness, and healthcare should be tailored to meet the unique cultural needs of individuals (Leininger, 1991).

In the context of the study findings, the negative correlation between social determinants of health scores and quality of life aligns with Leininger's theory. The theory suggests that social determinants of health, encompassing various social and environmental factors, can significantly impact the well-being and quality of life of older Chinese American adults with chronic pain (Leininger, 1991). Factors such as socioeconomic status, education, access to healthcare, and social support networks, which SDOH encompasses, may contribute to a decline in quality of life when lacking or inadequate. The study also found that acculturation did not significantly predict life satisfaction among older Chinese American adults with chronic pain.

Leininger's theory emphasizes the importance of considering cultural factors in healthcare. In this case, it suggests that acculturation may not significantly influence life satisfaction in this population. This finding aligns with the notion that individuals' cultural identity and values play a crucial role in shaping their perceptions of life satisfaction, and acculturation may not necessarily be the primary factor driving these perceptions. Leininger's transcultural theory helps understand how cultural factors, including social determinants of health and acculturation, can impact the quality of life in older Chinese American adults with chronic pain. The theory emphasizes the need to consider cultural diversity, cultural beliefs, and the influence of social and environmental factors when addressing healthcare needs and improving the quality of life for individuals from different cultural backgrounds.

Implication for Social Change

The study's findings on the impact of social determinants of health and acculturation on the quality of life in older Chinese American adults with chronic pain

have several implications for social change. The study's identification of a negative correlation between social determinants of health scores and quality of life highlights the need for targeted interventions and policies to address social determinants of health in this population. Efforts should focus on improving access to healthcare, reducing health disparities, enhancing socioeconomic conditions, and fostering supportive social environments. Addressing these social determinants aims to improve the overall quality of life for older Chinese American adults with chronic pain.

The finding that acculturation was not a significant predictor of life satisfaction suggests the importance of culturally sensitive healthcare services. Healthcare professionals and providers should be trained to understand and respect the cultural values, beliefs, and preferences of older Chinese American adults with chronic pain. By incorporating culturally appropriate approaches in healthcare delivery, it is possible to enhance patient satisfaction and improve the overall quality of life.

The study's results can inform policy and advocacy efforts to improve the lives of older Chinese American adults with chronic pain. Policymakers should consider implementing policies that address social determinants of health, such as affordable housing, income support programs, and comprehensive healthcare coverage. Additionally, advocacy efforts can focus on raising awareness about the unique challenges faced by this population and advocating for policies that promote equity, access, and cultural competence in healthcare services. Recognizing the influence of social determinants of health, community-level interventions, and support systems should be established. Creating opportunities for social connections, building supportive networks, and providing community resources can positively impact the quality of life for

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older Chinese American adults with chronic pain. Community organizations, senior centers, and cultural groups can be crucial in fostering social support and engagement.

Recommendation for Action

This study contributed significantly to understanding how acculturation and social determinants of health impact the quality of life in older Chinese adults with chronic pain. By exploring these factors within the context of this specific population, the study findings shed light on their unique experiences and provided insights into potential differences compared to other racial or ethnic groups. Understanding the specific dynamics of acculturation and social determinants of health in the lives of Chinese American older adults with chronic pain can help healthcare professionals and researchers tailor interventions and strategies to meet their needs. By recognizing the cultural and social factors that influence their quality of life, appropriate interventions can be developed to improve their overall well-being.

The implications of this study extend beyond the realm of academia. The findings can inform healthcare providers, policymakers, and community organizations about the importance of considering acculturation and social determinants of health when designing programs and interventions to enhance the quality of life for older Chinese adults with chronic pain. This knowledge can contribute to developing culturally sensitive approaches and interventions that address this population's unique needs and challenges. Because the findings that acculturation was not a significant predictor of life satisfaction, it is essential to develop culturally tailored interventions that address the social determinants of health for this population. Interventions should consider the cultural values, beliefs, and preferences of older Chinese American adults with chronic pain. For

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example, programs targeting community engagement, social support networks, access to culturally appropriate healthcare, and health education can be developed to improve the quality of life in this population.

Collaboration among researchers, healthcare providers, policymakers, and community organizations are essential to address the social determinants of health and improve the quality of life for older Chinese American adults with chronic pain. Establishing partnerships with community leaders, healthcare organizations, and advocacy groups can facilitate the development and implementation of relevant, effective, and sustainable interventions. The study's findings also have policy implications for healthcare systems and policymakers. The results highlight the importance of considering social determinants of health in healthcare policies and interventions.

Advocacy efforts should focus on promoting policies that address health disparities, improve access to healthcare services, and enhance social and economic conditions for older Chinese American adults with chronic pain. In summary, this study contributed to existing knowledge, informed future research, and guided interventions and policies to improve the quality of life for older Chinese adults with chronic pain. By examining the influence of acculturation and social determinants of health in this population, the study offered valuable insights that can facilitate targeted approaches to promote their well-being and enhance their overall quality of life.

Recommendation for Future Research

The study's findings highlight the need for further research to explore the underlying mechanisms through which social determinants of health impact the quality of

life in this population. Continued research can inform evidence-based interventions and policies. Additionally, knowledge dissemination through publications, conferences, and workshops can raise awareness among healthcare professionals, policymakers, and the general public about addressing social determinants of health and promoting culturally sensitive care.

The findings of this study also served as a foundation for future research on similar topics. Researchers can build upon this study by investigating other cultural groups or comparing the experiences of older adults with chronic pain across different ethnic backgrounds. Expanding knowledge can help identify similarities, differences, and specific challenges various populations face, leading to the development of targeted interventions and policies.

The study's findings suggest that social determinants of health significantly predict the quality of life in this population. Further research could delve deeper into specific social determinants with the most significant impact. For example, exploring the role of socioeconomic status, education, social support networks, or neighborhood characteristics may provide valuable insights into which factors should be prioritized for intervention. Longitudinal studies could also help uncover the causal relationships between social determinants of health, acculturation, and quality of life. By following participants over an extended period, researchers can observe changes in social determinants, acculturation levels, and quality of life outcomes. This approach would provide a more comprehensive understanding of the dynamic nature of these factors and their impact on older Chinese American adults with chronic pain.

Conclusion

Among the themes explored in the literature, one notable focus was the conceptualization of health quality among older Chinese American adults, highlighting the significance of social participation and family support in maintaining well-being. Furthermore, the literature consistently identified several social determinants of health that contributed to disparate health outcomes among this population, including educational attainment, socioeconomic status, family cohesion, and acculturation. The literature also acknowledged the nuanced experiences of chronic pain among Asian immigrants. However, there was a notable gap in understanding how these distinct experiences influence the relationship between pain and quality of life within these communities.

While the literature provided valuable insights into the role of social determinants of health and their impact on health outcomes, it fell short in exploring the specific dynamics between chronic pain and quality of life in older Chinese American adults. This lack of research on the association between pain and quality of life among this population represented a significant gap in the existing literature. The absence of empirical studies was particularly noteworthy given that pain experiences and their effects on quality of life are influenced by various factors in this population, including culturally influenced perceptions and group-specific determinants of health.

Tsai et al. (2019) highlighted the diverse characteristics of Chinese Americans, including variations in spoken dialect, immigration history, geographic settlement, and socioeconomic background. This diversity contributes to different acculturation experiences, which involve adapting and integrating into a new culture while preserving

one's cultural identity. As Chinese Americans adjust to life in a foreign country, they may encounter various challenges, such as language barriers, discrimination, and limited access to healthcare services.

These challenges can harm their overall well-being and quality of life. The increased stress, social isolation, and difficulties in accessing healthcare services can contribute to poor health outcomes among Chinese Americans. Consequently, their quality of life may be negatively affected. The study emphasizes the importance of understanding these unique challenges and their impact on Chinese Americans' health and quality of life.

This study aimed to determine the impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain. The findings revealed that social determinants of health statistically predicted quality of life with a negative correlation. As SDOH scores increased, the quality of life decreased, and vice versa.

Acculturation was not found to be a significant predictor of life satisfaction. The findings of this study contributed to the noted gap in the literature. They provided evidence of the importance of addressing the specific dynamics of acculturation and social determinants of health in the lives of older Chinese American adults with chronic pain. The results can also help healthcare professionals and researchers tailor interventions and strategies to meet their needs.

PRAPARE

Protocol for Responding to and Assessing
Patients' Assets, Risks, and Experiences

PRAPARE®: Protocol for Responding to and Assessing Patient Assets, Risks, and Experiences
Paper Version of PRAPARE© for Implementation as of September 2, 2016

Personal Characteristics

1. Are you Hispanic or Latino?

Yes	No	I choose not to answer this question

2. Which race(s) are you? Check all that apply

Asian	Native Hawaiian
Pacific Islander	Black/African American
White	American Indian/Alaskan Native
Other (please write):	
I choose not to answer this question	

3. At any point in the past 2 years, has season or migrant farm work been your or your family's main source of income?

Yes	No	I choose not to answer this question

4. Have you been discharged from the armed forces of the United States?

Yes	No	I choose not to answer this question

5. What language are you most comfortable speaking?

Family & Home

6. How many family members, including yourself, do you currently live with? _____

I choose not to answer this question

7. What is your housing situation today?

I have housing
I do not have housing (staying with others, in a hotel, in a shelter, living outside on the street, on a beach, in a car, or in a park)
I choose not to answer this question

8. Are you worried about losing your housing?

Yes	No	I choose not to answer this question

9. What address do you live at?
   Street:_____
   City, State, Zip code: _____

Money & Resources

10. What is the highest level of school that you have finished?

Less than high school degree	High school diploma or GED
More than high school	I choose not to answer this question

11. What is your current work situation?

Unemployed	Part-time or temporary work	Full-time work
Otherwise unemployed but not seeking work (ex: student, retired, disabled, unpaid primary care giver) Please write:		
I choose not to answer this question		

12. What is your main insurance?

None/uninsured	Medicaid
CHIP Medicaid	Medicare
Other public insurance (not CHIP)	Other Public Insurance (CHIP)
Private Insurance	

13. During the past year, what was the total combined income for you and the family members you live with? This information will help us determine if you are eligible for any benefits.

_____

I choose not to answer this question

THE KRESGE FOUNDATION   KAISER PERMANENTE.   blue of california foundation

NATIONAL ASSOCIATION OF Community Health Centers   AAPCHO   OPCA Oregon Primary Care Association   Institute for Alternative Futures

PRAPARE®: Protocol for Responding to and Assessing Patient Assets, Risks, and Experiences
Paper Version of PRAPARE® for Implementation as of September 2, 2016

14. In the past year, have you or any family members you live with been **unable** to get any of the following when it was **really needed**? Check all that apply.

Yes	No	Food	Yes	No	Clothing
Yes	No	Utilities	Yes	No	Child Care
Yes	No	Medicine or Any Health Care (Medical, Dental, Mental Health, Vision)			
Yes	No	Phone	Yes	No	Other (please write):
	I choose not to answer this question				

15. Has lack of transportation kept you from medical appointments, meetings, work, or from getting things needed for daily living? Check all that apply.

Yes, it has kept me from medical appointments or
Yes, it has kept me from non-medical meetings, appointments, work, or from getting things that I need
No
I choose not to answer this question

Social and Emotional Health

16. How often do you see or talk to people that you care about and feel close to? (For example: talking to friends on the phone, visiting friends or family, going to church or club meetings)

Less than once a	1 or 2 times a week
3 to 5 times a week	5 or more times a
I choose not to answer this question	

17. Stress is when someone feels tense, nervous, anxious, or can't sleep at night because their mind is troubled. How stressed are you?

Not at all	A little bit
Somewhat	Quite a bit
Very much	I choose not to answer this question

Optional Additional Questions

18. In the past year, have you spent more than 2 nights in a row in a jail, prison, detention center, or juvenile correctional facility?

Yes	No	I choose not to answer this

19. Are you a refugee?

Yes	No	I choose not to answer this

20. Do you feel physically and emotionally safe where you currently live?

Yes	No	Unsure
I choose not to answer this question		

21. In the past year, have you been afraid of your partner or ex-partner?

Yes	No	Unsure
I have not had a partner in the past year		
I choose not to answer this question		

APPENDIX B – Asian American Multidimensional Acculturation Scale (AAMAS-EA)

The questions below are going to ask about your feelings toward Americans/American culture. Please indicate how these descriptions best represent your view on each item by using the scale from 1 (not very much), 2-5 (somewhat) to 6 (very much).

Cultural identity
1. How much do you identify with Americans?
2. How much do you feel you have in common with Americans?
3. How proud are you to be a part of America?
4. How much do you interact and associate with Americans?
5. How much would you like to interact and associate with Americans?
6. How negative do you feel about Americans?

Language
1. How well do you speak English?
2. How well do you understand English?
3. How well do you read and write in English?

Cultural knowledge
1. How knowledgeable are you about the culture and traditions of America?
2. How knowledgeable are you about the history of America?
3. How much do you actually practice the traditions and keep holidays of America?
4. How often do you listen to music or look at movies and magazines from America?

Food consumption
1. How much do you like the food of America?
2. How often do you actually eat the food of America?

Your Health and Well-Being

___

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. *Thank you for completing this survey!*

For each of the following questions, please mark an ⊠ in the one box that best describes your answer.

1. **In general, would you say your health is:**

Excellent	Very good	Good	Fair	Poor
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

2. **The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?**

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a <u>Moderate activity</u>, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐ 1	☐ 2.........	☐ 3
b Climbing <u>several</u> flights of stairs	☐ 1........	☐ 2.........	☐ 3

3. **During the** <u>past 4 weeks</u>**, how much of the time have you had any of the following problems with your work or other regular daily activities** <u>as a result of your physical health</u>**?**

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Accomplished less than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Were limited in the <u>kind</u> of work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

4. **During the** <u>past 4 weeks</u>**, how much of the time have you had any of the following problems with your work or other regular daily activities** <u>as a result of any emotional problems</u> **(such as feeling depressed or anxious)?**

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a <u>Accomplished less</u> than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Did work or other activities <u>less carefully than usual</u>	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

5. **During the** <u>past 4 weeks</u>**, how much did** <u>pain</u> **interfere with your normal work (including both work outside the home and housework)?**

Not at all	A little bit	Moderately	Quite a bit	Extremely
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

6. **These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks…**

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Have you felt calm and peaceful?	☐ 1 ...	☐ 2	☐ 3	☐ 4	☐ 5
b Did you have a lot of energy?	☐ 1 ...	☐ 2	☐ 3	☐ 4	☐ 5
c Have you felt downhearted and depressed?	☐ 1 ...	☐ 2	☐ 3	☐ 4	☐ 5

7. **During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?**

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Thank you for completing these questions!

APPENDIX D – Demographic Survey

Participant ID	Age	Gender	Chronic Pain (Yes or No)	Chinese American (Yes or No)	Lives in NYC (Yes or No)
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APPENDIX E – IRB Approval Letter

Office of Research Integrity

THE UNIVERSITY OF SOUTHERN MISSISSIPPI.

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NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI using the Incident form available in InfoEd.
- The period of approval is twelve months. If a project will exceed twelve months, a request should be submitted to ORI using the Renewal form available in InfoEd prior to the expiration date.

PROTOCOL NUMBER:	23-0315
PROJECT TITLE:	The impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain
SCHOOL/PROGRAM	Systems Leadership & Health Outcome
RESEARCHERS:	PI: Chi Lam
	Investigators: Lam, Chi~Cuellar, Norma~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Expedited Category
PERIOD OF APPROVAL:	20-Apr-2023 to 19-Apr-2024

Donald Sacco Jr.

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX F – Permission Emails

M Gmail

Letter of Permission
1 message

Peter Cheng <pcheng2@cpc-nyc.org>
To: "chilam5@gmail.com" <chilam5@gmail.com>

Tue, Apr 4, 2023 at 7:39 PM

To Whom It May Concern:

I give permission to Mr. Chi Lam to recruit participants and conduct research at CPC Nan Shan Senior Center for his study, "the impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain."

Mr. Lam will perform his activities at pre-approved date(s)/time. The senior center reserves the right to observe his actions at its pleasure.

Please feel free to contact me should you have any questions.

Best regards,
. . . .
Peter Cheng
Director
he/him/Peter

CPC Nan Shan Senior Center
133-14 41st Avenue, Flushing, NY 11355
T: 718-358-3030 x 770
F: 718-358-3167

www.cpc-nyc.org
Advancing Our CommUNITY

*** *CPC Community Centers are currently open with programs and services operating on a modified schedule and by appointment only. For more information on our updated guidelines, please visit www.cpc-nyc.org.*

M Gmail

Letter of Permission
1 message

Pastor Aaron Chan <pastoraaron@fbcflushing.org>
To: Chi Lam <chilam5@gmail.com>

Wed, Apr 5, 2023 at 1:29 PM

Dear Sir/Madam:

I give permission to Chi Lam to conduct and recruit for his research (The impact of social determinants of health and acculturation on quality of life in older Chinese American adults with chronic pain) at First Baptist Church of Flushing.

Please feel free to contact me if you have any questions.

Grace and Peace,

Rev. Aaron Chan
Pastor of English Ministry
First Baptist Church of Flushing

142-10 Sanford Avenue
Flushing, New York 11355
Phone: 718.539.6822 x 1011

APPENDIX G – Assumptions Testing
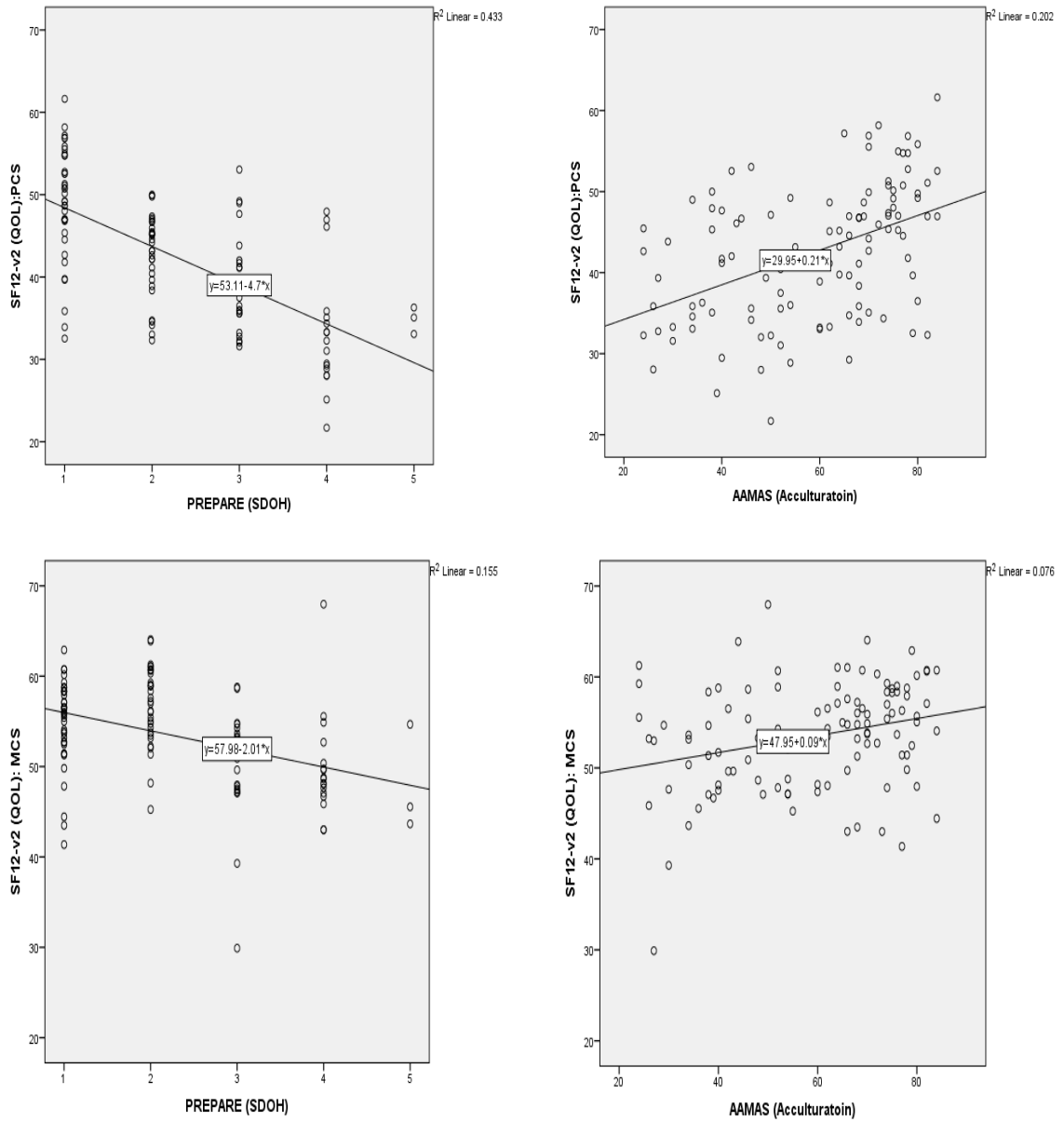
Figure A1. *Scatter Plots Showing the Linear Relationships Between Dependent and*

Independent Variables
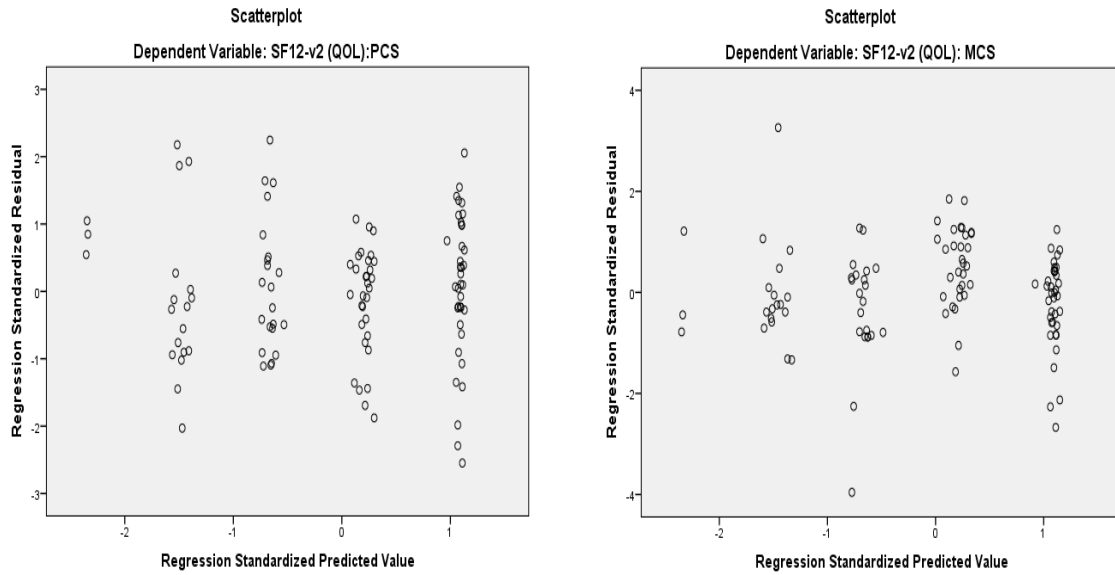
Figure A2. *Scatter Diagram of Standardized Residual and Standardized Predicted Values*

Table A1.

Collinearity Statistics

Independent Variables	Tolerance	VIF
Quality of Life (Physical Scores)		
Social Determinants of Health	.585	1.711
Acculturation	.585	1.711
Quality of Life (Mental Scores)		
Social Determinants of Health	.585	1.711
Acculturation	.585	1.711
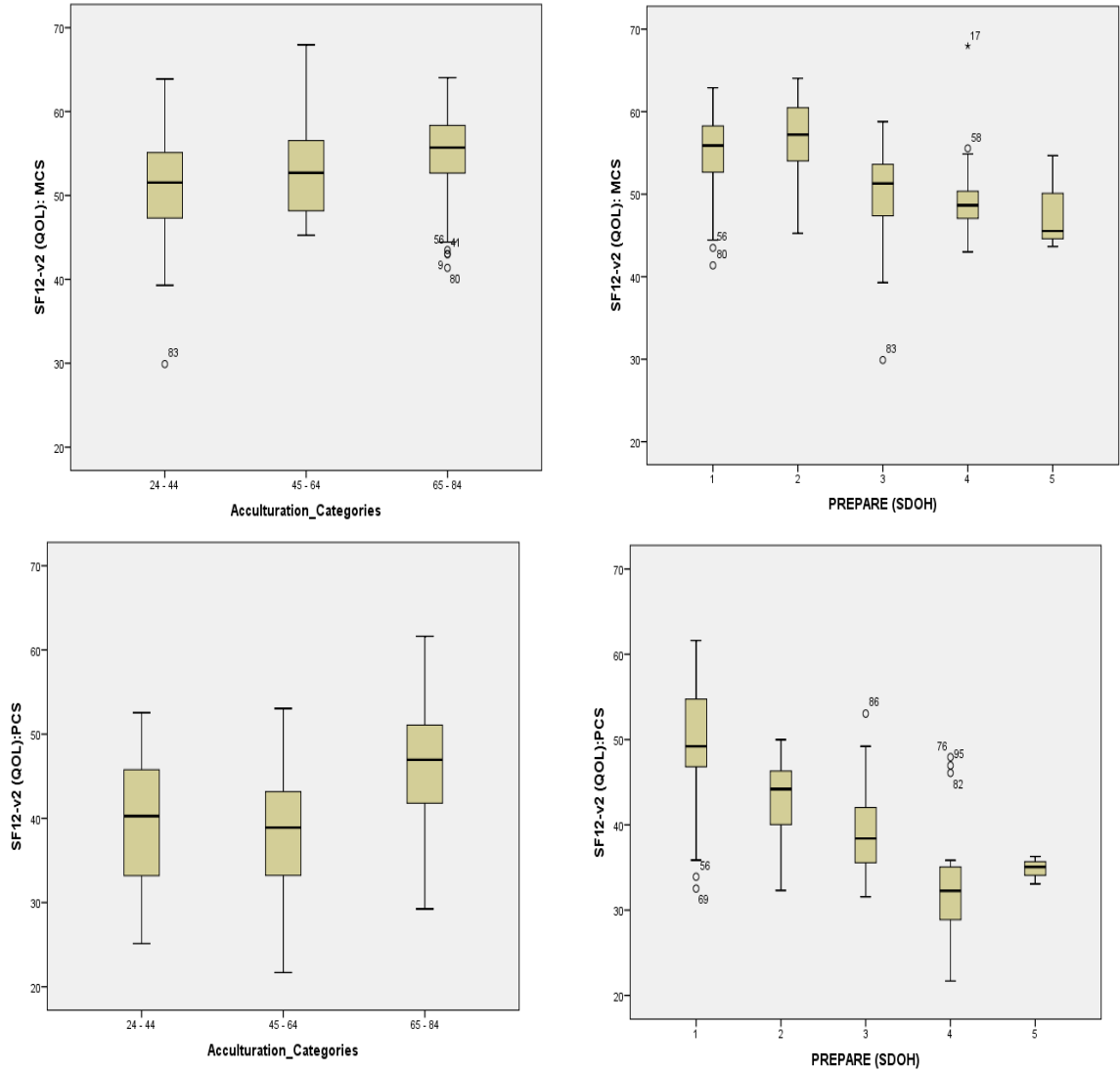
Figure A3. *Box Plots Showing the Distribution of Values*
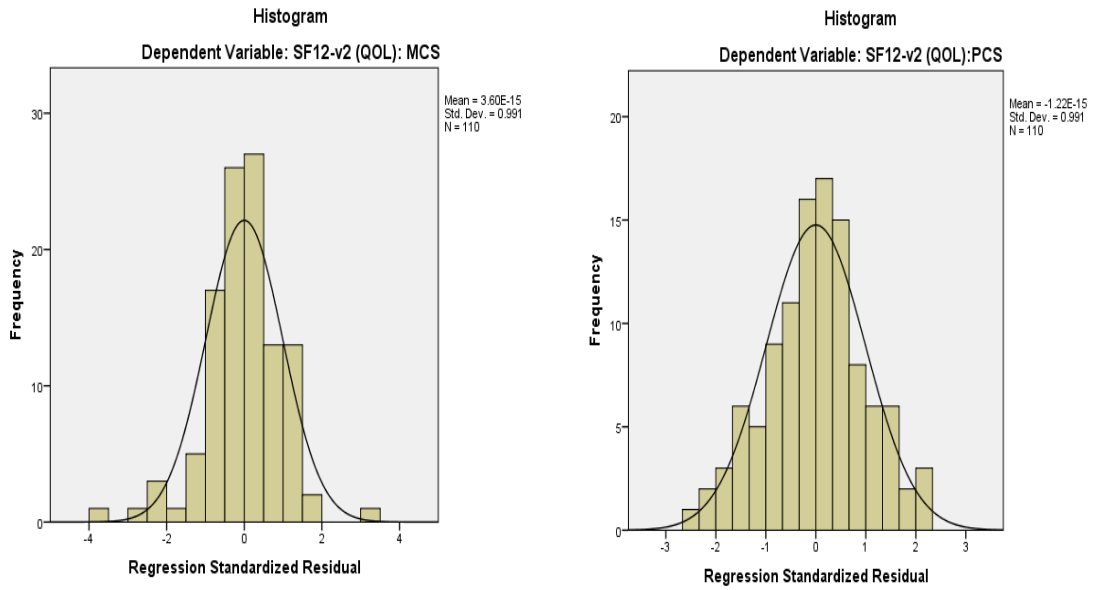
Figure A4. *Histogram Showing the Distribution of Standardized Residuals*

Table A2.

Levene's Test of Homogeneity of Variance

	Statistic	df1	df2	p
Quality of Life (Physical Scores)	0.758	3	103	0.520
Quality of Life (Mental Scores)	1.040	2	107	0.357

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