Depression and Social Support Among Older Japanese in Long-term Care

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Abstract

Not many studies have researched older Japanese living in Hawaii, even though they are the largest older ethnic group in Hawaii. Due to longer life expectancy and upcoming aging of the baby boomer population, more adults will utilize long-term care services such as nursing homes, Adult Day Care, and other types of services. Depression is a growing concern among older adults and studies found that it relates to lower quality of life (Wada et al., 2004), higher mortality rate (Takeshita et al., 2002), substance abuse (Culberson & Ziska, 2008), and suicide (NPA, 2014). In particular, it is difficult for older Japanese to be diagnosed and treated for depression due to mental health stigma from the Japanese culture.

This study examined the relationship between depression and social support in 69 older Japanese in long-term care settings. Convenience sampling was used to get data from retirement communities, care homes, nursing facilities and Adult Day Health Care programs. The results showed that social support significantly correlated with depression. The other factors that strongly correlated with depression in the population sampled were cognitive functioning and IADL. The data from this study can assist social workers and other healthcare professionals in creating better programs to help older Japanese and their families.

1. Introduction

1-1. Background

On average, Americans are living longer, and statistically, people in Hawaii are living longer than those in other states. After World War II, there was a spike in births from 1946 to 1964. This spike is now labeled as the "baby boomer" population. It has been predicted that by the year 2035, one out of three of individuals living in the State of Hawaii will be elderly (Executive Office on Aging, 2011). Additionally, it has been also found that among those who are older adults, the group of the oldest old, those who are age 85 and older, is expected to increase 12 times (1,157.5%) by 2035 due to aging population and longer life spans.

The largest older ethnic group is Japanese with 34.35% of adults over the age of 65, and 40% of adults over the age of 75, so my research will target this group (Hawaii Health Survey, 2010). However, there has not been much research on older Asian Americans, especially the older Japanese population in Hawaii. Consequently, although the focus of this study is older Japanese in Hawaii, the literature review will substitute studies from Japan about elderly Japanese or about elderly in general for variables to be studied that do not have literature directly related to the Japanese population in Hawaii.

Since the Hawaii baby boomer population in 2014 is now age 50-68, some are starting to enter the stages of needing more care and assistance with their tasks of daily living. A study by Kemper, Komisar, and Alecxih (2005) estimated that 79 percent of women and 58 percent of men over the age of 65 would need some type of long-term care assistance. With the growing needs of long-term care, the State of Hawaii initiated Act 224 to create a Long Term Care Commission in 2008 to find out what more needs to be done in Hawaii in preparation for the baby boomers.

The Hawaii Long Term Care Commission report (2012) concluded that Hawaii is not at all prepared for the future influx due to lack of long-term care supply and "catastrophic out-of-pocket costs" (p.14) for long-term care. Therefore, it is up to the State and community to find ways to finance and support long-term care in the next few years. Similarly, researchers in the field of gerontology should focus on community need and find out what works and what does not to develop and enhance long-term care programs to ensure a happy and healthy aging process.

So far, research shows that strong social support and morale are important to the aging population. Previous studies found that depression and lack of social support are linked to lower quality of life,

substance abuse, higher mortality rate, and high suicide rates (Wada et al., 2004; Culberson & Ziska, 2008; Takeshita et al., 2002; NPA, 2014). However, there have been few studies on depression among older adults in long-term-care in Hawaii.

Due to Hawaii's unique culture, population aging, and lack of data on this population, it is vital to discover factors associated with depression of older adults to aid in generation-appropriate, and culturally competent prevention and treatment. For these reasons listed above, I chose to focus this research study on depression and social support in older Japanese in long-term care in Hawaii.

1-2. Research Question

The research question for this study is "Is social support related to depression in older Japanese in long-term care?" The literature review will discuss what is known about the influence of Japanese culture on mental health stigma, negative consequences of depression, social support as a coping resource with older adults, and research already done in Hawaii related to the topic.

The data collected from this study examined the impact of social support on depression among older Japanese in long-term care using a questionnaire administered by surveyors. This study can assist social workers and other healthcare professionals in creating better programs to help older adults and their families by identifying the factors significant to well-being in the elderly population.

2. Literature Review

2-1. Japanese Culture and Mental Health Stigma

Culture is an important factor to consider when researching depression, because people of different cultures have varying levels of stigma towards mental health problems. Japan is one country that is known for their social stigma towards depression (Griffiths et al., 2006). Japan also has high elderly suicide rates related to depression. In 2013, 27,283 people committed suicide, with 11,034 of them age 60 or older (40.44%) (National Police Agency, 2014).

More than 60% of suicides in Japan were adults with a diagnosis of depression (Nakao & Takeuchi, 2006). To put this into perspective, the United States has an approximate rate of 12.03 suicides (American Foundation for Suicide Prevention, 2010) per 100,000 people (Central Intelligence Agency, 2014), while Japan has an approximate rate of 21.47 suicides (NPA, 2014) per 100,000 people (CIA, 2014).

A study was done comparing the values of Japanese elderly in Japan and Japanese American elderly and four values were common between both groups: "doryoku" - effort/exertion, "enryo" - caution/reserve, "gaman" - perseverance/patience, and "shikataganai" - It cannot be helped/Nothing can be done (Miyawaki, 2008). It is thought that the Japanese stigma towards mental health issues roots from the concept of "gaman", causing people to think of depression as a personal choice rather than something out of their control. "When Japanese experience depression, doctors say, they prefer to imagine something is wrong with their character rather than their heads, and a cultural impulse known as "gaman," or the will to endure, takes precedence over medical care" (French, 2002).

Recently, Japan appears to have started "normalizing" depression as displayed by the Japanese government's recognition of suicide rates and approval of the use of SSRIs in mental health treatment (Vickery, 2006). After many years of mental health stigma, in 2003, when Japan's annual suicide rate hit 30,000 suicides per year, the Japanese Government officially recognized the problem and announced, "Suicide has become a national epidemic" (Goldsmith, 2003). From this time forward, studies of depression, suicide, and the elderly in Japan started to turn their focus more towards effective interventions, many of which included components of social support (Oyama et al., 2004; Oyama et al., 2006)

Although America and other western countries do not have as much stigma towards mental health illness such as depression, it is still an issue (Griffiths et al., 2006). Studies in the United States show that depressed adults believe that their diagnosis would negatively affect employment and insurance coverage due to stigma (Roeloffs et al., 2003). Reports from both countries appeared to show that the issue with talking about depression stemmed from the depressed themselves (self-stigma), rather than actual prejudice and discrimination from the community.

2-2. Depression and Cognitive Functioning

There are no specific study findings on depression and cognitive functioning for older Japanese in Japan or in the State of Hawaii. However, there have been several studies conducted in the mainland U.S. that discuss the correlation between cognitive functioning and depressive symptoms. Cognitive functioning is not only correlated with depression, but also can make depression difficult to diagnose in elderly populations.

According to Zastrow and Kirst-Ashman, depression is common in elderly – it is considered the "common cold of mental disorders for older persons" (Zastrow, Kirst-Ashman, 2013, p 648). Although it is a common problem, it is not something that should be swept under the rug. Unfortunately, depression is difficult to diagnose in older persons, especially those with degenerative cognitive or physical diseases or those on many medications. "Depression in the elderly is also frequently confused with the effects of multiple illnesses and the medicines used to treat them" (WebMD, 2012).

Those with degenerative diseases such as Alzheimer's or Parkinson's can also be difficult to assess due to physical and/or mental inabilities to ask for help or give clear answers to questions. "In the final stage of this disease (Alzheimer's), individuals lose the ability to respond to their environment, to carry on a conversation and, eventually, to control movement" (Alzheimer's Association, 2012). Most research on depression has been done with elderly with higher levels of cognitive functioning.

Byers and Yaffe (2011) summarized recent research in the area of depression and dementia, and found that data was inconsistent, although several longitudinal studies suggested depression as a risk factor for the development of dementia in later life. The authors question whether or not depression alone causes dementia, or whether there are other factors involved in mental health that cause both depression and dementia. Another study from 2011 added that depressed elderly in long-term care with dementia physically declined more quickly than dementia patients without depression (Rapp et al., 2011). The results were unclear if the mental health condition of dementia or depression played more of a role in the physical decline.

2-3. Depression and Physical Functioning

Physical functioning can be measured in two ways – Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL). ADL are tasks essential for sustaining life such as the ability to walk, get dressed, or eat. IADL on the other hand are not essential for life, but are needed to be able to perform socially – i.e. managing money, arranging transportation, or using the telephone. Studies find that depression, ADL, and IADL are interrelated, although it is not clear if depression or disability comes first, as depression is a predictive factor for quicker physical decline in older adults. (Ormel et al., 2002; Wada et al., 2004; Luber, 2001),

A community-based study was conducted between 2000 and 2001 in four Japanese towns – Hokkaido, Shiga, Kyoto, and Mie Prefecture (Wada et al., 2004). This study had a high survey response rate of 75 percent, indicating the results should be a good representation of the population surveyed. 5,363 elderly (age 65+) completed the 65-item questionnaire, which measured ADL (activities of daily living), subjective QOL (quality of life), and GDS-15 (a depression questionnaire). Patients (subjectively) measured their perception on their independence in activities of daily living, quality of life, and depression on scales.

The study showed that 33.5% of community-dwelling older people had mild depression. These numbers were consistent across the four towns, showing that the depression seemed to be age-related as opposed to town-related. The questionnaire also revealed that ADL and QOL were related to depression. Those elderly who reported that they were depressed had lower ADL and QOL scores than those who were not depressed. Researchers concluded that it is important to identify and help community-dwelling elderly because of its relation to their ability to live in the community and quality of life.

Another large study conducted by Luber (2001), surveyed 3,481 elderly patients in New York. They found that elderly with depression had more frequent doctor visits, lab tests, scans, and consultations than those elderly without depression. It is likely that psychosomatic symptoms caused

by depression decrease quality of life by giving elderly physical problems such as pain and digestive issues. These findings are significant for the elderly population because of physical functioning, and are also important for the general population, as this is likely one of the contributing factors to doctor's office and emergency room overcrowding. It also stresses the importance of including mental health as part of physical check-ups if possible, to prevent band-aiding more serious underlying problems.

Although results are inconclusive about the relationship between depression and disability, majority of research does suggest that depressive symptoms and suicide are very likely to increase soon after onset of a new disability or physical problem (Purcell et al., 1999; Ormel et al., 2002). It is plausible that the relationship between depression and physical functioning is cyclical, as physical disability causes depression, and depression causes further rapid decline. Overall, studies on physical functioning and depression all emphasize the importance of early intervention, which can be assisted via social support.

2-4. Social Support as a Coping Resource

There are a variety of coping strategies that people can use to deal with stressors in their lives. Social support is one of the most common strategies proven to benefit mental and physical health (Thoits, 2011; Umberson & Montez, 2010). Due to the epidemic of elderly depression and suicides in Japan, recent studies focus on causes and interventions to remedy the problem. One of the causes found for elderly depression and suicide was that elderly did not feel they were able to talk with others about their mental health issues (Ono et al., 2001).

To combat the problem of low social support for depressed elderly, many research studies and programs in Japan focus on social support as an intervention for depression in the elderly. Oyama et al. (2004) showed a dramatic decrease in elderly suicide rates in rural areas after hosting depression screenings, follow up therapy, and health education workshops for the community. Another longitudinal study done in an urban city of Japan observed the relationship between social support and depression and found it to be an important factor influencing depression development in later life (Koizumi et al., 2005).

Studies of older American also display the significant correlation between strong social support and lower levels of depression among older adults (Greenglass, 2006). A cross-cultural, cross-sectional study was conducted in 2002, comparing Japan and the United States to find the impact of different social support sources on depression in the elderly in both countries (Sugisawa et al., 2002). This study suggested that the spousal relationship had the largest impact on health of American elderly while the parental relationship was most influential for Japanese elderly.

Literature on family dynamics in Japanese and American elderly households differs in results. Some studies agree with Sugisawa (et al. 2002) in that social support from a spouse is the most influential relationship for good health because of the closeness of the spousal relationship (Okabayashi et al., 2004; Harris et al., 1998). Other studies disagree and find that the parental relationship between elderly and their children is the most significant to better health (Sugisawa et al., 2002). The relationship between generations can also be seen specifically in Hawaii as the state with the largest number of multigenerational homes in the United States (Lofquist, 2012).

A possible explanation for the difference in literature could be due to family structure differences. In the traditional Japanese role of a male, the father/husband figure is expected to be a breadwinner for the family while the mother/wife tends to the house and children (Williamson & Higo, 2007). In families with these roles, it is not unusual to find that men become depressed upon retirement as they do not fit into family life in the home since working was majority of their life (Sugihara et al., 2008). In fact, the highest suicide rates in Japan come from men of retirement age (NPA, 2014).

Many of the studies on family dynamic, social support, and depression have also discussed the currently changing value of family in Japanese culture. More frequently than before, children are moving out of parents' homes to live on their own (Sugisawa et al., 2002), and women are drifting away from the traditional housewife role by remaining single and not starting a family (Holloway, 2010). The culture of Japanese Americans in Hawaii cannot be described as entirely Japanese or

entirely American, so impacts of the various sources of social support may or may not be different in Hawaii.

These studies described above show the cultural differences between Japan and the United States in terms of coping with depression and impacts of social support from the family structure. Healthcare providers should understand that not all families are the same, and that depression strategies that work for one group of people may not always work for another group or individual. Considering social support for Japanese elderly in Hawaii, it is important to look at long-term-care because the prior studies done on elderly and depression in Hawaii have excluded institutionalized persons. Social support within an institutionalized setting differs from the social support seniors would receive living independently or with family.

2-5. Research in Hawaii

Due to Hawaii's unique culture, mainly a combination of American and Asian/Pacific cultures, it cannot be assumed that research from prior studies in places outside of Hawaii will have the same results in Hawaii. Therefore, more research needs to be done specific to Hawaii in the areas of depression and elderly population. There were a few studies published that covered the areas of depression and social support in the elderly in Hawaii.

In a study in Honolulu County published in 1999, researchers analyzed 96 elderly suicides that occurred between the years of 1987 and 1992 (Purcell et al., 1999). It was found that 46 percent of older adults who committed suicide had a current diagnosis of mental illness, the most prevalent of which was depression at 78 percent. The data also showed 78 percent of those who committed suicide had received a diagnosis of a new medical problem within 6 months of their suicide. Other studies outside of Hawaii note that most stressors elderly face are dealing with loss – physical, social, or economic (Manfredi, 1987). Therefore, it is imperative to research elderly in long-term care/healthcare settings in order to prevent depression and suicide after a new diagnosis of a medical problem.

Another study performed in 2006 by the Hawaii Behavioral Risk Factor Surveillance System, funded by the CDC (Salvail et al., 2007). The study was the first of its kind in Hawaii to measure anxiety and depression in the Hawaii population. Data was collected using interviewers trained to use the Computer Assisted Telephone Interview (CATI) program. The requirement to participate in the survey was to be 18 year or older, non-institutionalized, and have access to a landline phone. 5,840 people participated and completed the study. The questionnaire covered basic demographics, health, alcohol/smoking consumption, social/emotional support, and the PHQ-8 (depression screening) form.

There appear to be some issues with the way this study was conducted, due to the choice of sampling via landline phone in the year 2006. Additionally, the study claims that elderly are the "least depressed" "probably due in part to the fact that these adults have survived the challenges of living", which is an example of ageism in research. Although it is plausible to say that elderly are still around because they are 'survivors', elderly face a completely different set of problems than younger adults do and express stress/cope differently than younger adults (Manfredi, 1987).

The way the researchers sampled the population did not make for a good representation of the elderly population because it excluded those who live in institutional settings and grouped everyone 65+ into one group, when there should have been three separate groups from this population. There is also a question the soundness of the survey overall (not just elderly) because it limits the surveyed population to those who have a landline phone in 2006. It assumes that people with depression and anxiety would be willing to answer their phone, participate in a survey, and answer honestly about personal health issues.

Although there are many issues regarding validity of the survey for the older population, it was a good attempt to start research in this area in Hawaii. The researchers started off by stating that depression is a large problem in the United States and is considered a disability that affects people's ability to function and participate in the growth of the economy and social life of their communities. Depression is an important topic to research, and this study is a good base to work from to pursue further research.

A longitudinal study in 2002 focused on depressive symptoms and mortality in elderly Japanese-American men in Honolulu (Takeshita et al., 2002). This study started with pointing out that depression appears to come with aging, yet diagnosis and treatment of it is inadequate (at least in the United States). This research was significant because it was the first community-based study of an Asian population comparing depression and mortality. From 1991 to 1993, the Honolulu Heart Program collected depressive symptom data from 3,196 Japanese American men between the ages of 71-93 living in Hawaii. They also did two follow up studies to measure the mortality rates of those who were originally surveyed at three and six years after the original tests.

Participants in the survey filled out depressive symptom scales, wrote down their demographic data, brought in current medications, and took a few simple health tests. 9.9% (317 men) of the participants were considered "depressed" according to the scale that they filled out. Overall between the two groups, the study found that participants with depressive symptoms had a higher mortality rate than those who were not. They also found that those who were depressed were most likely: not married, lower BMI, and lower blood pressure. They did not find any correlation with age, education, anti-depressant use, cancer, diabetes, etc.

This study was one of few pertaining to depression in older Japanese in Hawaii. Although it is only for the male population, it was a significant step towards further research in this area. What was especially good about this study was that they attempted to control for medications and health conditions, which is not very common in most research. Additionally, this study is continuing to produce more reports measuring longitudinal data of other variables in Hawaii's older adult population that may prove to be very useful for the baby boomer generation.

3. Research Methods

3-1. Study Design

This study aimed to examine the relationship between social support and depression among older Japanese in long-term care. The survey design was cross-sectional with mostly quantitative measures. The main independent variable (IV) measured was social support and the dependent variable (DV), depression. Other independent variables measured in this survey were: socio-demographic, cognitive ability, and physical functioning measured by ADL and IADL abilities.

3-2. Hypothesis

Based on previous literature, this study hypothesized that social support is significantly positively associated with depressive symptoms. Additionally, this study hypothesized that other factors such as cognitive and physical functioning may be related to social support and/or depression.

3-3. Sampling

Selection criteria for participants were Japanese, age 65+ and in long-term care. Participants for this cross-sectional survey were chosen through convenience sampling of long-term care. For the purposes of this study, long-term care was defined as: residential or day facility servicing anywhere from independent living through nursing level care, and willing to participate.

Independent living facilities are living communities in which older adults can live together (usually an apartment building type setting but with an age requirement). Some adults in independent living receive physical assistance and some do not, and most facilities offer activities for socialization. Care homes are usually smaller than assisted living/nursing facilities, but are similar in that the older adult lives at the care home, and receives physical assistance and opportunities for socialization.

Adult Day Health Care centers are similar to live-in facilities in that the elderly spend most of their waking hours in a community setting receiving physical assistance. The difference is that those who participate in Adult Day Health Care go home every night, usually with family, and only attend the program in the day. Regardless of the differences between the programs and facilities surveyed, I believe that this study observing social support and depression should yield similar results across settings due to spending majority of time in a location with other non-related older adults in a social setting receiving physical care.

3-4. Survey Procedure

As stated earlier, there has not been much published research about long-term care in Hawaii. In the following sections on survey procedure, data analysis, and discussion, I will share some things learned about research in long-term care in Hawaii through the process of implementing the study. This new information about research procedures with elderly in long-term care can assist researchers in creating future studies with this population by identifying difficulties and improving upon them.

The study received original IRB approval in September 2013, and amendment approval to add on Adult Day Care and Day Health programs in January 2014. All survey materials including recruitment script, screening consent script, consent form, and survey scales (listed in Section 3.3) were translated from English into Japanese, back translated, and checked by students in the Social Work department to ensure appropriate language and word meaning. Since all forms were translated and checked for consistency, all participants who took the survey in Japanese received a uniform version of the interview rather than a rough translation (which could differ between surveyors).

Surveys were completed with the aid of trained surveyors. Surveyors were selected among BSW students at Myron B. Thompson School of Social Work There were 9 surveyors, 1 of which was bi-lingual in Japanese and English. Each was trained in either a group or individual session with the PI and adviser to go over the research study topic, process of administering the questionnaire, and some guidance for potential problems.

Long-term care facilities and programs on Oahu were contacted a minimum of two times each by phone and/or email in September 2013 through February 2014 using information from the Senior Information and Assistance Handbook 2012/2014 (Elderly Affairs Division, 2012) from the sections: Nursing Facilities (p.14-16), Retirement and Assisted Living Residences (p.17-18), and Adult Day Care and Day Health (p.34-37). ARCH (Adult Residential Care Homes) facilities with 20 or more beds were also contacted using the online list from the Office of Health Care Assurance (2014). Each facility received a copy of the thesis proposal, survey materials, and IRB approval prior to any surveying.

In total, the following were contacted on the island of Oahu: 27 nursing facilities, 9 retirement and assisted living residences, 25 adult day care and day health programs, and 8 ARCHes. The following participated: 5 nursing facilities, 3 retirement and assisted living residences, 2 Adult Day Health Care programs, and 1 ARCH. Only 16% of facilities contacted participated in the study. Surveys were completed on-site at facilities between September 2013 and February 2014.

Each facility that participated was different in the process of contact, survey set up and execution. Some facilities required approval from a chain of command. Other facilities, usually the smaller ones, were able to give the go-ahead sooner after contact. Some facilities required family approval for each participant, while others did not as the participants were able to sign for themselves.

Approval and point persons at facilities ranged from social workers, administrators, directors of nursing, and activities coordinators. At some facilities, it was easier to have a pre-set schedule for the surveyors to come in, usually with the more independent participants. In other settings, it was more convenient to send in a surveyor for a set amount of time and meet with participants, as they were available, usually in more skilled nursing settings.

3-5. Measures

All willing participants were interviewed in person using a paper survey questionnaire in English or Japanese (whichever was most comfortable for the participant). There were 69 Japanese elderly interviewed. Each interview had 6 parts, consisting of 136 questions in total, and estimated time taken for each interview was about 30-45 minutes.

3-5-1. Depression

GDS-15 is commonly used to measure depression specifically for use with the elderly population. Depression can be shown in a variety of ways, from sleepiness to agitation, so many depression scales do not ask just about someone's perception of mood, but also about physical manifestations of mood issues. This scale consists of 15 yes/no questions, and is good for elderly, including those who

have difficulty understanding complex questions such as Likert scales (Greenberg, 2012). Some statements are phrased positively, and some negatively, to prevent a tendency for participants to completely agree or disagree. The GDS-15 was accepted by many previous studies (Iwamasa, Hilliard, & Kost, 2008; Morimoto et al., 2003; Umegaki et al., 2008; Wada et al., 2004).

3-5-2. Social Support

MOSS-E is short for "Measurement of Social Support in the Elderly". This scale separates social support into three categories: instrumental support, emotional support, and providing support. Instrumental support comes from others assisting with physical needs such as cooking and cleaning. Emotional support assists emotions and mental health. There are also questions about providing support to others, as that is important in social support as well. The MOSS-E scale was tested and accepted by previous studies on the Japanese population (Harada et al., 2001; Sakihara et al., 2000; Shima et al., 1985; Takizawa et al., 2006).

3-5-3. Cognitive Function

Part two, the MMSE, measures cognitive functioning on a 30-point scale. Questions ask about orientation to time, person, and place. It also tests ability to follow-multi-step instructions, write, and memorize words. Lower points indicate dementia or some other type of cognitive disability (Kurlowicz & Wallace, 1999). The MMSE was specifically tested for validity in the Japanese elderly population by previous studies (Gondo et al., 2006; Ikeda et al., 2001; Maki et al., 2000; Naramura et al., 1999).

3-5-4. Physical Function

ADL stands for "Activities of Daily Living". ADLs are physical abilities that are necessary for someone to do to sustain life. The Katz Index of Independence in ADLs is a 6-point questionnaire that asks about physical ability/independence in bathing, dressing, toileting, transferring, continence, and feeding. Previous studies on Japanese populations used Katz ADL and showed the scale was accepted (Ishizaki et al., 2006; Koyano et al., 1986; Miura et al., 1998).

IADL, not to be confused with ADL, stands for "Instrumental Activities of Daily Living". IADLs are physical abilities that are not necessary for someone to sustain life, but are necessary for social functioning. Lawson's IADL is an 8-point questionnaire that asks about ability to use the telephone, shop, cook, clean, launder clothing, use transportation, take medications, and handle finances. It was found that Lawson's IADL was used in previous studies on the Japanese population (Fujiwara et al., 2003; Ishizaki et al., 2006; Koyano et al., 1988).

3-5-5. Socio-demographic Variables

The socio-demographic information started with gender (0=male, 1=female), age, and marital status (0=single/divorced/widowed/separated, 1=married). Then, it asked culture questions regarding percentage of Japanese ancestry, generation (0=1st generation/immigrant, 1=2nd generation, etc.), length of time living in Hawaii, and primary language. The third group of questions measured socio-economic status – highest level of education completed (0=less than high school, 1=high school, 2=college, 3=graduate), occupation prior to retirement, and current monthly income (including retirement, social security, etc.).

There was also a question about religious affiliation. Religion was the only qualitative measure in the study and was not used in the bivariate or multivariate analyses. Lastly, participants were asked about their length of stay in the current facility/program measured in months.

3-6. Analysis

Data was input from paper survey to Excel spreadsheet and checked to ensure proper data entry. Then, the research data was analyzed for descriptive statistics, and bivariate and hierarchical regression analyses using STATA/SE for Mac version 12.1. The hierarchical regression analysis created four models introducing independent variables in the following steps: (1) socio-demographic, (2) cognitive, (3) physical, and (4) social support.

4. Results

This section displays the results of the three kind of analyses performed on the variables measured. The first portion will show the characteristics of the sampled population as well as data gathered from scales regarding mental and physical functioning, social support, and depression. Next will be a table of the bivariate analysis of the data between two variables. A section follows this on hierarchical regression analysis of the data, showing the relationship between multiple variables.

4-1. Descriptive Statistics

4-1-1. Characteristics of the Sample

A total of 69 older Japanese adults from the island of Oahu in long-term care participated in the study. Table 1 shows the demographic variables measured from the sample. The average age of participants was 87 years old with a standard deviation of 6.54, meaning majority of participants were in the old old (75-85) or oldest old (85+) category of age. Three out of four participants were female (75.36%). Seventy percent of participants were married while 30 percent were unmarried, widowed or divorced.

Income averaged to $2,800 per month with a large standard deviation of $3,106. The n for income was 29 out of 69 because the 32 stated that they did not know their monthly income, and 8 declined to answer or were not specific numerically. The larger portion of the sample had a high school diploma/GED (45.59%), or undergraduate degree (30.88%). Religious affiliation differed with majority associating with Christian/Protestant (37.5%), Buddhism/Shinto (32.81%), or no affiliation (20.31%). There was a large range of time spent in facility/program, as the average was approximately 3 years with a standard deviation of about 4 years, and a range of 1 month to 20 years. The high end of the range, 20 years, is feasible considering the sample age ranged from 68 to 103.

Table 1 Characteristics of the Sample

Variable	N	Percentage
Age	N=69	
Range	68-103	
Mean (SD)	86.57 (6.54)	
Youngest old (65-74)	3	4.35
Old old (75-84)	17	24.64
Oldest old (85+)	49	71.01
Gender	N=69	
Male	17	24.64
Female	52	75.36
Marital Status	N=69	
Single (unmarried, widowed, or divorced)	21	30.43
Married	48	69.57
Monthly Income	N=29	42.02
Don’t know	N=32	46.38
Declined answer/not specific	N=8	11.59
Range	0-14,000	
Mean (SD)	2,800 (3,106)	
Education	N=68	
Less than High School	7	10.29
High School diploma/GED	31	45.59
Undergraduate degree	21	30.88
Graduate degree	9	13.24
Religion	N=64	
No affiliation	13	20.31
Christian/Protestant	24	37.50

Catholic	2	3.13
Buddhism/Shinto	21	32.81
Mix Christian/Buddhist	4	6.25
Months in facility/program	N=62	
Range	1 mo – 20 yrs	
Mean (SD)	35 mo. (47.70)	

4-1-2. Cognitive Functioning

Cognitive functioning was measured using the MMSE. The range of scores on the MMSE was 10-30 out of a possible 30 points, and the mean was 25 with a standard deviation of 4.74 meaning majority of participants fell into the "normal" cognition range.

Table 2 Cognitive Functioning

Variable	N	Percentage
Cognitive Functioning (MMSE)	N=69	
Range	10-30	
Mean (SD)	25 (4.74)	

4-1-3. Physical Functioning

Two aspects of physical functioning were measured using the Katz ADL and Lawson IADL scales. The results of ADL are listed in Table 3 below, with the detailed data from each scale arranged in order of least able to most able. The Activities of Daily Living mean was 5.22 (maximum score of 6) with a standard deviation of 1.48, indicating that most participants had high physical functioning. Feeding was the only ADL that all participants indicated ability to do (mean = 1, SD = 0).

IADL was reported in Table 4 below, with abilities ordered from least to most able to do. Instrumental Activities of Daily Living averaged 5.45 (out of 8) with a standard deviation of 2.42, indicating that there was a wide range of IADL in the population sampled. There was no IADL variable measured that all participants were able or unable to do.

Table 3 Physical Functioning – Activities of Daily Living (ADL)

Variable	N	Percentage
Katz Activities of Daily Living (ADL)	N=69	
Range	1-6	
Mean (SD)	5.22 (1.48)	
Bathing		
Range	0-1	
Mean (SD)	0.78 (0.42)	
Transferring		
Range	0-1	
Mean (SD)	0.81 (0.39)	
Toileting		
Range	0-1	
Mean (SD)	0.84 (0.37)	
Dressing		
Range	0-1	
Mean (SD)	0.85 (0.35)	
Continence		
Range	0-1	
Mean (SD)	0.93 (0.39)	
Feeding		

Range	0-1
Mean (SD)	1 (0)

Table 4 Physical Functioning – Instrumental Activities of Daily Living (IADL)

Variable	N	Percentage
Lawson Instrumental Activities of Daily Living (IADL)	N=69	
Range	0-8	
Mean (SD)	5.45 (2.42)	
Food preparation		
Range	0-1	
Mean (SD)	0.42 (0.50)	
Laundry		
Range	0-1	
Mean (SD)	0.52 (0.50)	
Shopping		
Range	0-1	
Mean (SD)	0.54 (0.50)	
Housekeeping		
Range	0-1	
Mean (SD)	0.67 (0.47)	
Responsibility for medications		
Range	0-1	
Mean (SD)	0.72 (0.45)	
Ability to handle finances		
Range	0-1	
Mean (SD)	0.75 (0.43)	
Mode of transportation		
Range	0-1	
Mean (SD)	0.90 (0.30)	
Ability to use telephone		
Range	0-1	
Mean (SD)	0.93 (0.26)	

4-1-4. Social Support

The Measurement of Social Support in the Elderly (MOSS-E) scale measures social support in three categories: instrumental support, emotional support, and providing support. Table 5 shows the results of the ten questions asked, broken down by type of social support. Overall social support was moderate with a mean of 7.68 out of 10 points. Social support is highest in the category of emotional support with a mean of 2.72 out of possible 3 points, and lowest for providing support with a mean of 1.53 out of 3 points. Specific questions are listed under each category of social support, listed from least to most support.

Table 5 Social Support

Variable	N	Percentage
Total Support (IS + ES + PS)	N=68	
Range	0-10	
Mean (SD)	7.68 (2.28)	
Instrumental Support (IS)	N=68	
Range	0-3	
Mean (SD)	2.72 (0.83)	
Someone to help with cooking and shopping		

Range	0-1
Mean (SD)	0.90 (0.31)
Someone to help with gardening, cleaning, washing	
Range	0-1
Mean (SD)	0.91 (0.29)
Someone to help with other chores	
Range	0-1
Mean (SD)	0.91 (0.29)
Emotional Support (ES)	N=68
Range	0-4
Mean (SD)	3.43 (1.07)
Someone who cares for you when you are in difficulty	
Range	0-1
Mean (SD)	0.81 (0.40)
Someone to talk to when you are worried	
Range	0-1
Mean (SD)	0.87 (0.29)
Someone who encourages you when you feel depressed	
Range	0-1
Mean (SD)	0.82 (0.38)
Someone concerned about your welfare	
Range	0-1
Mean (SD)	0.93 (0.26)
Providing Support (PS)	N=68
Range	0-3
Mean (SD)	1.53 (1.17)
Someone you help or do housework for	
Range	0-1
Mean (SD)	0.54 (0.50)
Someone you shop for or help	
Range	0-1
Mean (SD)	0.51 (0.50)
When your friend is sick, do you care for them	
Range	0-1
Mean (SD)	0.46 (0.50)

4-1-5. Depression

Depression was measured using the GDS-15 questionnaire. Majority (75%) of the elderly surveyed did not have depression, as the mean score of 2.97 falls into the "normal", no depression category. However, approximately one of every four people surveyed showed signs of at least mild depression (24.64%). In Table 6, the results from each of the GDS questions are ranked according to prevalence of depressive symptom (0=not depressive, 1=depressive).

Table 6 Depression

Variable	N	Percentage
Depression	N=69	
Range	0-14	
Mean (SD)	2.97 (3.13)	
Normal (0-4)	52	75.36
Mild depression (5-8)	11	15.94
Moderate depression (9-11)	5	7.25
Severe depression (12-15)	1	1.45

Do you prefer to stay at home, rather than go out?	
Range	0-1
Mean (SD)	0.42 (0.50)
Have you dropped many of your activities/interests?	
Range	0-1
Mean (SD)	0.35 (0.28)
Do you feel full of energy?	
Range	0-1
Mean (SD)	0.28 (0.45)
Do you feel that your life is empty?	
Range	0-1
Mean (SD)	0.25 (0.43)
Do you feel worthless the way you are now?	
Range	0-1
Mean (SD)	0.25 (0.43)
Do you think most people are better off than you are?	
Range	0-1
Mean (SD)	0.23 (0.43)
Do you often get bored?	
Range	0-1
Mean (SD)	0.20 (0.41)
Do you feel helpless?	
Range	0-1
Mean (SD)	0.20 (0.41)
Do you feel you have more memory problems than most?	
Range	0-1
Mean (SD)	0.17 (0.38)
Are you in good spirits most of the time?	
Range	0-1
Mean (SD)	0.14 (0.35)
Are you afraid something bad will happen to you?	
Range	0-1
Mean (SD)	0.13 (0.34)
Do you feel that your situation is hopeless?	
Range	0-1
Mean (SD)	0.12 (0.32)
Do you think it is wonderful to be alive now?	
Range	0-1
Mean (SD)	0.10 (0.31)
Do you feel happy most of the time?	
Range	0-1
Mean (SD)	0.08 (0.26)
Are you basically satisfied with your life?	
Range	0-1
Mean (SD)	0.07 (0.26)

4-2. Bivariate Analyses

Table 6 displays a bivariate analysis between the variables measured in this study using STATA/SE 12.1. The bivariate analysis shows the relationship between two variables. Looking at the main variables studied, social support and depression were negatively correlated and significant with a p value of less than .05. This means that the less social support a person has, the more depressive symptoms they reported.

Other factors very significantly correlated with depression (p value <.01) were: education, cognitive functioning (MMSE), ADL, and IADL. Meaning, those with higher education, higher cognitive functioning, and higher physical functioning from ADL and IADLs were less likely to be depressed. Additionally, the qualities of individuals most likely to have higher social support were: more educated ($p<0.01$), younger ($p<0.05$), higher cognitive functioning ($p<0.05$), and higher physical functioning in ADL and IADLs ($p<0.05$).

There were several other factors shown to be significantly correlated that were not related to social support and depression in this analysis. Younger age and higher education, younger age and higher cognitive functioning (MMSE), younger age and increased IADL ability, higher education and higher cognitive functioning (MMSE), and higher ADL and higher IADL were all very significantly correlated (p value <.01). Gender (maleness) and higher income as well as higher cognitive functioning (MMSE) and higher ADL were also correlated (p value <.05).

Table 7 Bivariate Analysis (N=69)

	1	2	3	4	5	6	7	8	9	10
1. Age	1									
2. Gender	0.0757									
3. Marital status	0.0964	0.0604								
4. Income	-0.2947	-0.4064*	0.1113							
5. Ed	-0.3440**	-0.1827	0.0331	0.2744						
6. Mo @ Prog.	-0.0783	-0.1715	-0.0110	0.1660	0.0442					
7. MMSE	-0.3759**	0.1573	0.0670	0.2544	0.5593**	-0.0391				
8. ADL	-0.2083	0.0615	-0.0307	0.1841	0.0755	-0.0287	0.2510*			
9. IADL	-0.3216**	-0.0051	0.0974	0.2925	0.1728	0.1178	0.1165	0.7251**		
10. Total SS	-0.2561*	0.0226	0.1016	-0.0899	0.3441**	-0.1986	0.2452*	0.2784*	0.2439*	
11. GDS	0.0777	-0.0270	-0.0264	-0.3582	-0.4657**	0.0161	-0.5109**	-0.3216**	-0.4114**	-0.2590*

$p<0.05$ * $p<0.01$**

4-3. Hierarchical Regression Analysis

A hierarchical regression analysis was performed to observe the effects of social support and other independent variables on depression. The hierarchical regression analysis shows the effects of multiple independent variables on the dependent variable. All variables were tested for multicollinearity. Variables that explain depressive symptoms in older Japanese in long-term care were evaluated in four steps: (1) Socio-demographic, (2) cognitive, (3) physical, and (4) social support. The analysis found social support to be significantly correlated with depression.

In Model 1, depression was the dependent variable and independent variables were socio-demographic variables: gender, age, marital status, generation, and months at facility/program. The socio-demographic variables measured in Model 1 accounted for 4% of the total variance. In this model, no variables were found to be statistically significant. Model 2 added the cognitive functioning MMSE variable, adding 21% to the explained variance. Model 2 suggested that cognitive functioning (β =-0.49, $p<0.01$) was significantly correlated with depression.

Model 3 added physical functioning through the physical ADL and IADL scales, adding another 6% of explained variance. Cognitive functioning (β=-0.37, p<0.01) remained significant. Lastly, Model 4 included the MOSS-E scale totals to represent social support, adding an additional 6% to explained variance. Model 4, including socio-demographic, cognitive, physical, and social support variables explained a total of 36% (p<0.01) of the variance in depressive symptoms. Cognitive functioning (β=-0.30, p<0.05), IADL (β=-0.41, p<0.05), and social support (β=-0.27, p<0.05) were all correlated with depressive symptoms. This affirms the hypothesis that social support and other variables correlate with depression.

Table 8 Hierarchical Regression: Correlation of Variables with Depression (N=59)

Variable		Model 1		Model 2	
		Beta (B)	T-value	Beta (B)	T-value
Socio-demographic variables	Gender	0.13(.87)	0.97	0.18(1.19)	1.48
	Age	0.03(.01)	0.19	-0.14(-.06)	-1.05
	Marital Status	-0.10(-.62)	-0.13	0.02(-.15)	-0.20
	Generation	-0.09(-.44)	-0.63	-0.07(-.37)	-0.59
	Mo. at facility	-0.06(-.00)	-0.42	-0.04(-.00)	-0.35
Cognitive	MMSE			-0.49(-.33)	-3.80**
Physical	ADL				
	IADL				
Social Support	MOSS-E Totals				
Model Fit Index	Constant	2.82	1.71	8.60	4.05
	R^2 (Adj.R^2)	0.04		0.25(.21)	
	F	F(5/54)=0.44		F(6/53)=2.87*	

p<0.05* p<0.01**

(Continued) Table 8 Hierarchical Regression: Correlation of Variables with Depression (N=59)

Variable		Model 3		Model 4	
		Beta (B)	T-value	Beta (B)	T-value
Socio-demographic variables	Gender	0.15(.99)	1.23	0.10(.68)	0.88
	Age	-0.18(-.08)	-1.36	-0.25(-.12)	-1.97
	Marital Status	-0.01(-.03)	-0.04	-0.02(-.11)	-0.15
	Generation	-0.11(-.55)	-0.89	-0.11(-.53)	-0.89
	Mo. at facility	0.02(.00)	0.14	-0.02(-.00)	-0.16
Cognitive	MMSE	-0.37(-.25)	-2.70**	-0.30(-.21)	-2.25*
Physical	ADL	0.20(.42)	1.11	0.28(.62)	1.63
	IADL	-0.39(-.47)	-1.99	-0.41(-.50)	-2.15*
Social Support	MOSS-E Totals			-0.27(-.40)	-2.24*
Model Fit Index	Constant	8.77	3.46	11.46	4.10
	R^2 (Adj.R^2)	0.30(.06)		0.36(.06)	
	F	F(8/51)=2.76*		F(9/49)=3.12**	

p<0.05* p<0.01**

5. Discussion and Implications

The goal of this study was to observe the effects of social support on depression in elderly Japanese in long-term care in Hawaii. As anticipated, social support and depression were found to correlate significantly in both the bivariate (p<0.05) and multivariate (p<0.05) analyses. Additionally,

the multivariate analysis showed that taking into account socio-demographic, cognitive, physical, and social support variables, that cognitive functioning, physical functioning (IADL) and social support were all correlated with depressive symptoms.

This discussion section will further analyze the relationship between these three variables and depression, explore possible reasons for the results, identify how it relates to the previous literature in this research area, and discuss the implications for long-term care. Since this study surveyed those in long-term care, the focus of the implications of the results will be directed towards the long-term care setting.

5-1. Social Support and Depression

The bivariate analysis between social support and depression showed a negative relationship with $p<0.05$, indicating significance. The multivariate analysis also showed a negative relationship and $p<0.05$. This means that social support and depression are significantly correlated, and those with more social support are likely to have less depressive symptoms. Looking more in depth at the social support variable, scores were high for the categories of instrumental support and emotional support, but low for providing support. This suggests that the group of elderly surveyed could get emotional and instrumental support when needed, but had difficulty in providing assistance to others.

The results of the GDS-15 depression questionnaire add to the importance of thinking about providing support. Four of the five most common depression statements were: 42 percent "preferred to stay at home, rather than go out," 35 percent "dropped many of their activities/interests," 25 percent "felt their life was empty," and 25 percent "felt worthless the way they are now". These four depression questionnaire statements demonstrate that older adults in long-term care under the "depressed" category may be depressed because they do not feel self-worth.

One cultural aspect to consider when thinking about self-worth, social support, and depression in older adults is the implication of retirement. In both Japanese and American cultures, work is central to life up until retirement age, upon which some individuals struggle to find purpose in life after work (Muslin, 2013; Sugihara et al., 2008). For those older adults with low social support and low participation in social and group activities, it is understandable that they may feel little self-worth.

To add to this issue, long-term care can have an alienating effect on older adults from their family and friends. Long-term care is linked to decreased autonomy (heteronomy) because the environment is most beneficial to healthcare, but not always to social and emotional care (Agich, 2003; Kane, 2001). Studies on the long-term care setting emphasize that facilities should attempt to create a home-like feeling rather than a hospital if possible by adopting more holistic approaches to care in providing things like activities and customizable living space (Cooney, 2010).

When transitioning to long-term care from home, many older adults need assistance adjusting to the new setting away from friends and family and having more limited options than before (Castle, 2001; Chao et al., 2008). Due to this change in social support, physical incapability, and heteronomy, long-term care participants are at an increased risk of depression than those living in community settings (Jongenelis, et al., 2004). Although support from outside friends and family is beneficial, support can also come from staff and other older adults in long-term care (Fessman & Lester, 2000), which shows the importance of a proactive transition experience and group activities.

These findings about social support and depression concur with previous research that suggests social support in long-term care is beneficial to mental health. Additionally, the findings support that social activities have more impact than solitary activities on depressive symptoms and overall physical well-being in older adults (Menec, 2002). Therefore, long-term care programs should attempt to provide social contact through group activities rather than individual solitary activities if possible, and take a holistic approach to providing care. Future studies should also focus on the sources of social support in older adults to identify the key relationships that influence depressive symptoms in long-term care.

5-2. IADL and Depression

The bivariate analysis between IADL and depression were strongly negatively correlated ($p<0.01$). The multivariate yielded similar results with a negative correlation and $p<0.05$. This

suggests that those with higher IADL functioning have lower levels of depression. The descriptive statistics of IADL showed a large range of ability: 0-8 on a scale of 8, with a mean of 5.45 and SD of 2.42. The large range shows that some older adults were able to do all IADLs while others could not do any.

The data collected on Instrumental Activities of Daily Living may be related to the low score of providing support and depression questionnaire statements discussed in the previous section, as older adults choose not to or are unable to perform social tasks such as providing support to others. Most participants had high physical functioning as shown by the average score of 5.22 out of 6 on the Activities of Daily Living scale, but Instrumental Activities of Daily Living was only an average of 5.48 on a scale of 8. If an adult has high levels of physical functioning, they should be able to do IADLs such as using the telephone or light housekeeping. However, this sample shows that although most participants had the ability to function physically, they were unable to perform some social activities.

The data implies there could be another variable impacting the sampled elderly population's perceived ability or motivation to perform socially, as they have proven they can perform general physical tasks. One possible explanation is that long-term care is not conducive to older adults providing support to others and being active participants in a community. Future studies should research if there are differences between elderly in institutional or program settings and those who live independently in the community to see if living situation has an impact on social performance, and if providing support and social performance influences depressive symptoms.

The results found regarding the negative relationship between IADL and depression agrees with previous literature (Kiosses & Alexopoulos, 2005). A study from 2002 found that the relationship between physical function and depression was cyclical with IADL/ADL influencing depression more than depression influencing ADL/IADL (Ormel et al., 2002). Considering the results found in this study that suggest a relationship between IADL and depression with the study on the cyclical relationship, it is key to maximize physical function in the long-term care setting to prevent or lessen the effects of depression.

5-3. Cognitive Functioning and Depression

Lastly, cognitive functioning and depression were negatively correlated in both the bivariate and multivariate analyses. The bivariate analysis displayed a significance of $p<0.01$ and multivariate of $p<0.05$. Majority of participants fell into the "normal" cognition range on the MMSE questionnaire with a mean score of 25 and SD of 4.74. The negative relationship between cognition and depression indicates that those with higher cognitive functioning have less symptoms of depression.

One possible reason for this correlation is the cyclical relationship that appears between physical and cognitive functioning with depressive symptoms. As described earlier, many older adults deal with loss, and loss of any function can cause depressive symptoms, in turn causing further decline. In order to prevent the cycle from causing further harm to older adults, long-term care programs and members of the older person's social network should attempt to provide support and encouragement during times of difficulty.

This ties into the self-worth concept discussed in the social support and IADL sections because depressed elderly may become complacent with the heteronomous lifestyle provided in long-term care, and stop trying to take on new challenges. Research has identified that older adults need to continue "training" their brains in order to prevent dementia and cognitive decline, which includes participation in social activities such as playing board games and learning new skills (Verghese, et al., 2003; Winningham, 2011). Therefore, if elderly do not participate in social activities or challenge themselves mentally, they are at risk of cognitive decline and depressive symptoms.

Not much previous research has been done specifically in the area of cognitive function and depression in older adults, as shown in Section 2.2 of this paper. However, the results found in this study are similar to those found in Byers and Yaffe (2011) and Rapp et al. (2011) in that a correlation was found when looking at cognitive functioning and depression. These two studies both suggest that depression causes mental and physical decline, implying that depression should be

prevented to promote better quality of life. Future studies should attempt to identify if this casual relationship found in previous studies applies to older adults in Hawaii and in long-term care.

6. Limitations and Recommendations

One of the limitations to this study was the difficulty that came along with surveying elderly participants in a long-term care setting. As stated earlier in the paper, each facility and program was contacted a minimum of two times by phone and/or email, but only 16 percent agreed to participate in the study. Many of the facilities and programs contacted did not return phone calls and/or emails. However, the few that did respond but chose not to participate gave at least one of the following reasons: do not have any participants that qualify due to advanced dementia, already involved in other research studies, and/or could not obtain approval from facility for participation.

Nearly every program that participated in the study had similar remarks about the participant qualifications. Many would say something as: "Japanese and elderly, no problem, but dementia..." This explains why even though 11 programs participated, there were only 69 participants. Although this study was low risk and majority of the scales were actually created to be able to work with elderly with some degree of cognitive decline, elderly with dementia were excluded from this study because it would be unethical to survey adults who may not understand what they are agreeing to with participation. Future studies that include elderly in the long-term care setting should think about ways to encourage participation from facilities and how to deal with the high percentage of adults with a diagnosis of dementia or other cognitive and physical restrictions.

It should also be noted that there was a possibility of selection bias caused by facilities and participants. Facilities had the choice of who to ask to participate, that was not completely regulated. Although it was requested to interview all participants over the age of 65, Japanese, and without severe disability, it was ultimately up to the facility in how to approach residents with the proposed survey. It is possible that facilities could have excluded those with depression and/or only reached out to those who regularly participate in activities. Potential participants may have also biased the data, as those who declined participation may have done so due to the topic being research in the study.

Another limitation of this study was that there was no control for medications, substances, and diagnoses other than dementia. Many elderly, especially those in the long-term care setting, take a handful or more of pills each day for a variety of diagnoses. This issue will become more important in future studies as literature suggests that the baby boomer generation is even more likely than the current elderly to use prescription medications or alcohol to solve their problems (Gfroerer et al., 2003). Although it is difficult to measure or control for the effects of medications, substances, and diagnoses, future studies should take this into consideration when surveying elderly.

Another limitation associated with elderly in long-term care is the measurement of "income" or other socio-economic-status (SES) variables. A little under a half of participants (29/69) were able to answer the question regarding monthly income. The survey interviewers documented that participants (32 out of 69) who did not answer the question of monthly income on the survey did not due to the fact that they did not know.

I speculate from my experience working with elderly in Hawaii that income or SES are not easy variables to measure because of the complexity of financial factors in old age. Elderly, especially those in long-term care can have a variety of income, benefit, and welfare sources including retirement, investments, Medicaid, Medicare, Social Security Disability Insurance, private long-term care insurance and more. Additionally, some share resources and income with their children – the elderly could pay for their children's needs, or the children could pay for the elderly's needs.

On the opposite end of income, elderly also have many costs to cover such as medications and physical care services. The Long Term Care Commission report (2012) gives a detailed explanation of the costs of growing older in Hawaii, one of the most costly being long-term care at an average of $11,071 per month for nursing home services. If a senior in long-term care is on Medicaid due to low savings, their entire income goes to payment for their care each month and they keep only $50 per month for personal expenses like clothes. So, if a senior is on Medicaid, is their "income" the income that they normally receive that goes entirely to long-term care or is it the $50 per month

stipend they collect from Medicaid? This gives one possible explanation why older adults may not have been sure how to answer the question about income. In the future, surveyor training should include education on the Medicaid system to be able to clarify this question for participants.

A further example of the difficulty of measuring socio-economic status is: an elderly person in long-term care could be low income and qualify for Medicaid to cover long-term care costs, but their children still provide items like new clothing, cable T.V. service, phone service, etc. that the elderly could not afford on their own $50 per month. Therefore, they do not truly live a "low-income" lifestyle. As seen in these examples, when someone asks an older adult what their income or perceived SES is, it seems understandable that they may not be able to provide a definite answer. Future studies should attempt to find a proper measure for income/SES in the elderly population, especially in areas such as Hawaii where multi-generational households and sharing assets/income are commonly accepted practices.

Lastly, this study topic could be improved upon by making it longitudinal and larger scale. By expanding the population to include "Asian Americans" in Hawaii or including Japanese American elderly in the mainland, the results may be clearer than what was found in this study, since it had a small sample size. Additionally, because this study was cross-sectional, results show correlation, but not causation. This research topic could benefit from longitudinal study design.

7. Conclusion

Despite some limitations, this study showed that social support is correlated with depressive symptoms in older Japanese in long-term care. Other factors also related to depression were cognitive functioning (MMSE), and IADL. This study was also able to document the difficulties of surveying elderly in long-term care in Hawaii as well as provide guidance for areas that need continued study, in order to support researchers planning to survey similar populations in the future.

Due to the study findings, long-term care should emphasize social support in their programs by promoting group activities, and attempt to maximize IADL and cognitive functioning. Generally, the purpose of long-term care is to attend to the physical needs of older adults, but many programs and facilities already provide additional services such as activities and counseling for the elderly to care for their social and emotional aspects as well. The research findings from this exploratory study advocate that social and emotional supports are an essential part to good health and well-being in all long-term care settings. The focus of long-term care facilities should be to help older adults love life, and not just to live it.

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