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Utilizing Digital Technology to Address Loneliness and Isolation in Older Adults through a Community-Based Connection Model: Responding to a Pandemic

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Abstract

Problem: Loneliness and social isolation, both of which can have serious detrimental effects on health and well-being, have become more prevalent during the recent COVID-19 pandemic, particularly in the older adult population. During part of the past year, older adults were strongly encouraged to follow strict quarantine measures because of their vulnerability to the virus. This forced isolation exacerbated the already existing issue of loneliness and social isolation in this population.

Interventions: Older adults who are members of a local non-profit community organization, focused on increasing independence and social vitality, were invited to participate in a virtual, interactive social engagement program encompassing meaningful conversations and story-sharing with the aim to reduce feelings of loneliness and isolation in older adult participants. The program was implemented over a 12-week period with a total of six, one-hour sessions every other week.

Measures: The evaluation included data from the Zoom poll results after each session, which incorporated the UCLA Loneliness Scale. Personal experience feedback from a final Survey Monkey poll distributed to participants following completion of the 12-week program was used to collect additional data.

Results: The Zoom polls demonstrated that the majority of participants felt less isolated and more connected with other people during the sessions and that the program was beneficial in building meaningful relationships and improving their overall health and well-being. The final survey results were less conclusive that the program adequately addressed loneliness and isolation in older adults outside of the community setting.
Conclusions: The individual sessions potentially reduced feelings of loneliness and isolation in the short term, but the intergenerational program overall did not adequately address loneliness and isolation in the older adult participants longer term. Recommendations for future intergenerational programs include longer, in-person or hybrid sessions, consistency and commitment from volunteers, and smaller breakout groups for more intimate conversations.

Keywords: loneliness, social isolation, older adult, intergenerational, digital technology
Utilizing Digital Technology to Address Loneliness and Isolation in Older Adults through a Community-Based Connection Model: Responding to a Pandemic

Over the course of the past year, as the world has navigated one of the greatest public health crises in recent history, loneliness and social isolation have emerged as unintended consequences of the attempt to curtail the spread of the deadly COVID-19 virus. The COVID-19 pandemic transformed the lives of people all over the world in 2020 and had particularly damaging effects on the older adult population. Restrictions on social gatherings and mandates for physical distancing have confined many older adults to their homes, putting them at an increased risk of experiencing loneliness and isolation. When speaking about social isolation and loneliness, it is important to differentiate between the two terms, as they are not synonymous. The terms isolation and loneliness can, however, be interrelated. Social isolation refers to an objective lack of social contact, a physical separation from social networks, or a lack of participation in social activities (Brooke & Jackson, 2020). Loneliness is a subjective emotion that involves dissatisfaction with social connections and engagement (Brooke & Jackson, 2020). While individuals who are socially isolated may feel lonely as a result, a person can feel lonely despite having adequate social connections and engagement. Some experts believe that loneliness can also occur as a result of having no useful role in society (Norman, 2018).

Problem Description

Prior to the COVID-19 pandemic, older adults were already at a greater risk of experiencing isolation and loneliness due to factors such as living alone, loss of family or friends, and chronic illness (Centers for Disease Control and Prevention, 2020). Certain major life events, such as retirement, deterioration of functional capacity, declining physical health, and the death of a spouse or members of a peer group, become more prevalent as one ages, further
reducing one’s social network (Nicolaisen & Thorsen, 2014). Cudjoe and Kotwal (2020) conveyed from national statistics that prior to the COVID-19 pandemic, one in four older adults were socially isolated and greater than 40 percent of older adults faced loneliness. The physical distancing mandates of the COVID-19 pandemic have further reduced social interaction for older adults by removing social contacts gained through activities such as grocery shopping and attending religious services (Brooke & Jackson, 2020).

**Setting**

In addressing physical and mental health conditions, it is fundamental to address the social determinants of health associated with these conditions. This DNP project was implemented in a community setting with the intent of addressing a prevalent social determinant of health, loneliness and isolation, amongst independent-living older adults with an emphasis on primary prevention. San Francisco Village (SFV), a community support and engagement organization, was used as the setting for this project. San Francisco Village is a non-profit organization that provides adults age 55 and older who reside in San Francisco connections with their local community as well as expertise to help them remain independent as they age (San Francisco Village, 2021). Their mission statement encompasses their goals and responsibilities to the community, “To help San Franciscans navigate the transitions of aging; we partner with our members to connect them with the community, programming and expertise they need to live lives of purpose and meaning” (SFV, 2021). San Francisco Village is an all-inclusive organization that welcomes members regardless of faith, culture, gender, ability, sexual orientation, and gender identity (SFV, 2021). Membership fees depend on the member’s ability to pay, allowing individuals of varying socioeconomic classes to participate in SFV activities and benefit from SFV’s advantages. Because members of SFV reside independently in the
community, they characteristically have adequate cognitive function to care for themselves with minimal intervention and support.

The SFV community provides a small demographic sample of the population of San Francisco. According to the United States Census Bureau in 2019, 46.4 percent of the San Francisco population was White, 34.4 percent was Asian, 15.2 percent was Latino, and 5.2 percent was Black or African American (United States Census Bureau, 2019). A substantial number of San Francisco City residents emigrated to the United States, with 34.3 percent being foreign-born (United States Census Bureau, 2019). Educational attainment is relatively higher in San Francisco compared to the rest of the U.S., with 58.1 percent of residents having a Bachelor’s degree or higher, compared to only 32.1 percent of U.S. citizens (United States Census Bureau, 2019).

Activities and social support interventions organized by SFV provide a variety of options for members to connect with other members and their community. Some activities at SFV are organized within neighborhoods so members can connect with individuals who live nearby, allowing ease of access to social support. Other activities take place at the SFV community center, where members from other neighborhoods around San Francisco can interact and socialize with people from other parts of the city and from different backgrounds. In 2020, all activities became virtual to protect members during the COVID-19 pandemic. The entirety of the DNP project took place virtually as needed and required due to the pandemic.

Community Needs Assessment

For the community assessment, the DNP author attended multiple videoconferencing events that were held by SFV to determine the problems affecting the older adult members. Virtual sessions included group discussions regarding experiences during the pandemic, racial
justice, and local neighborhood issues. Discussions, particularly conversations about the COVID-19 pandemic, led to several members voicing increased feelings of depression and loneliness, and expressing that they especially missed social interactions with family and friends. During the COVID-19 pandemic discussion, members specifically expressed increased feelings of depression, and more than half of participating members agreed that they felt lonelier while isolating themselves during the pandemic. Although all participating members agreed that face-to-face interaction was preferred over virtual interaction, videoconferencing with family and friends was beneficial and helped reduce feelings of loneliness and isolation and depressive symptoms, and participants remained open to engagement via this format.

**PICOT**

The PICOT question addressed by the following literature review was: Has the COVID-19 pandemic exacerbated loneliness and social isolation in older adults, what effects do loneliness and isolation have on health and well-being, and do intergenerational and virtual programs help reduce feelings of loneliness and isolation in older adults?

**Available Knowledge**


To determine the extent of the problems associated with loneliness and isolation, as well as how the COVID-19 pandemic has exacerbated these issues, two literature reviews were performed. Both reviews included searches of CINAHL, The National Library of Medicine (PubMed), and the American Psychological Association’s (APA) PsycInfo database. Keywords for the first search regarding loneliness during the COVID-19 pandemic included: COVID-19, loneliness, isolation, and older adult or older people or senior or geriatric. Search results were
narrowed to find only full-text, peer-reviewed research articles from 2020 and 2021. CINAHL yielded 14 articles, four of which were relevant to the effects of the COVID-19 on loneliness in older adults. PubMed returned only one article, which was irrelevant to the search topic, and APA PsycInfo generated five articles in total, one of which was applicable to the desired topic and one that had already been found using CINAHL. Hence, four articles were evaluated in the section regarding loneliness and the COVID-19 pandemic.

The second search for articles concerning the health consequences of loneliness in older adults included the following keywords in search fields: loneliness or isolation; older adult or older people or elderly or geriatric; morbidity and mortality or health or physical or mental; and risk or association or adverse or predict. Results were further narrowed to only full-text original research articles published within the past 10 years with loneliness as a major heading and subjects over the age of 65. The CINAHL search yielded 211 articles, 17 of which were relevant, original research articles that provided evidence of the detrimental health effects of loneliness in older adults. The APA PsycInfo search yielded six articles, one of which was previously found using CINAHL and five of which did not address the current issue. The PubMed search returned 19 articles, and three addressed the health consequences of loneliness in older adults; the remaining articles were extraneous with one relevant article that was previously found in the CINAHL database. Consequently, 21 articles in total were used for the next section regarding the effects of loneliness on the health and well-being of older adults.

The Johns Hopkins Review of Evidence Tool was used to grade each piece of literature in the review (Dang & Dearholt, 2018). Due to the nature of the DNP project topic, the majority of research comprised quasi-experimental longitudinal studies. The bulk of evidence included in this review was level II, quasi-experimental data of good or high quality. Major themes of the
literature review included increased loneliness and isolation related to social distancing measures during the COVID-19 pandemic, decreased physical function related to loneliness and isolation, increased morbidity of chronic diseases and mortality related to loneliness and isolation, and increases in health care utilization in lonely individuals. Details of the literature review are reflected in Appendix A.

Recent studies have shown that the COVID-19 pandemic, with the consequent shelter-in-place orders and physical distancing mandates, has exacerbated the already widespread epidemic of loneliness and isolation in the older adult population (Kotwal et al., 2021). Kotwal et al. (2021) conducted a mixed-methods longitudinal study of community-dwelling adults age 60 and older in the San Francisco Bay Area during the shelter-in-place orders enacted in early 2020. The purpose of the study was to examine participants’ experiences of social isolation and loneliness and assess unmet health needs during this time (Kotwal et al., 2021). Data were collected via telephone interviews with the 151 participants; social connections and loneliness were measured using adapted standard scales, including a three-item version of the UCLA Loneliness Scale (Kotwal et al., 2021). Several covariates, including age, sex, race, ethnicity, education level, financial status, and co-morbid health conditions, were used to help accurately determine correlations between shelter-in-place orders and loneliness (Kotwal et al., 2021). Kotwal et al. (2021) found that participants reported social engagement levels consistent with social isolation in 40 percent of the interviews conducted. Additionally, 54 percent of participants reported increased feelings of loneliness at least once during the study, and those who reported worsened loneliness were more likely to report worsened depression (Kotwal et al., 2021). Differences in loneliness and depression during the COVID-19 pandemic were statistically significant with P values less than 0.001 (Kotwal et al., 2021). Thus, Kotwal et al. (2021) concluded that the
COVID-19 shelter-in-place mandate contributed to increased levels of loneliness and isolation in older adults, thereby contributing to higher levels of depression in the older adult population.

Stolz et al. (2020) found similar results in a study conducted in Austria that compared levels of loneliness before and during the COVID-19 shelter-in-place orders in March and April 2020. Data from a national cross-sectional survey of adults age 60 and older were compared to previously obtained data about loneliness from the Survey of Health, Ageing and Retirement in Europe (SHARE) (Stolz et al., 2020). Loneliness was measured using the three-item UCLA Loneliness Scale (Stolz et al., 2020). Other variables that were considered in the cross-sectional survey included age, sex, education, living situation, depressive symptoms, and co-morbid conditions (Stolz et al., 2020). A linear regression model was used and the bivariate Pearson correlation coefficient was calculated to determine the strength of the relationship between shelter-in-place orders and loneliness (Stolz et al., 2020). Stolz et al. (2020) first repeated the analysis of the cross-sectional data from the previous SHARE study and found that there was little change in levels of loneliness over the years preceding the COVID-19 pandemic. There was, however, a significant increase in loneliness from the pre-pandemic years to the pandemic in 2020 as well as an association between the number of restriction measures and loneliness with a Pearson coefficient of 0.34 and a P value of less than 0.001 (Stolz et al., 2020).

Findings in a study conducted by Macdonald and Hulur (2021) further confirm that social restrictions during COVID-19 exacerbated loneliness in older adults and had detrimental effects on their mental health. Data from a 2019 study on loneliness and social relationships of adults age 65 to 94 were compared to new data collected shortly after social distancing measures were introduced in 2020 (Macdonald & Hulur, 2021). The 99 participants completed questionnaires about daily social interactions for 21 days during the implementation of COVID-19 restrictions.
(Macdonald & Hulur, 2021). Additional measures included loneliness and positive and negative affect (Macdonald & Hulur, 2021). Control variables were used, including age, gender, and number of physician-diagnosed medical conditions (Macdonald & Hulur, 2021). The data was analyzed using descriptive statistics and calculation of correlations between variables (Macdonald & Hulur, 2021). Findings revealed that overall negative emotional affect and loneliness increased during COVID-19 social restriction measures, and positive emotional affect decreased overall (Macdonald & Hulur, 2021). Unsurprisingly, participants that reported lower levels of loneliness had more social interactions, larger social networks, and did not live alone (Macdonald & Hulur, 2021).

Finally, with respect to the impact of COVID-19 restriction measures on older adults, Krendl and Brea (2021) found results consistent with previously cited studies. Krendl and Brea (2021) used data from a previous study on social relationships in 2019 and compared findings to data collected in April to May 2020. Using linear regression models, the found that of the 93 participants surveyed in 2020, 79.3 percent reported that their social life had been negatively impacted by COVID-19, and 69 percent said that they had spent less time with the close family and friends (Krendl & Brea, 2021). Krendl and Brea (2021) also found that overall older adults experienced more depressive symptoms and loneliness during the pandemic than in prior months.

Available Evidence – The Impacts of Loneliness on Health and Well-Being

Evidence demonstrates that not only are loneliness and isolation significant concerns in adults as they age, but public health crises like the COVID-19 pandemic can produce clinically significant exacerbations of these conditions. Although loneliness and isolation are considerable problems independently with their apparent impact on depressive symptoms, it is also important
to consider the effects of these conditions on other aspects of physical and mental health. This portion of the analysis will focus on the health effects of loneliness and isolation on the older adult population, including ties to mental health, cognitive function, chronic illness, functional capacity, quality of life, health care utilization, and mortality.

Individuals that experience loneliness are at an increased risk of rating their own health poorly, having lower functional capacity, and suffering from multiple chronic illnesses than those who are not lonely (Jessen et al., 2018). A study conducted by Jessen et al. (2018) analyzed data collected in 2012 from the National Longitudinal Survey of Ageing conducted by the Danish National Centre for Social Research. The study population, which included 9154 individuals born between 1920 and 1960, were assessed for overall health status and loneliness (Jessen et al., 2018). Three self-reported health measures were used to determine overall health status, including self-rated health, physical ability, and multi-morbidity. (Jessen et al., 2018). Physical ability comprised a subjective measure of the individual’s ability to perform activities of daily living (ADLs) independently, and multi-morbidity was characterized by having more than one of eight specified medically diagnosed diseases (Jessen et al., 2018). Loneliness was measured using a shortened, two-question version of the UCLA loneliness scale (Jessen et al., 2018). Jessen et al. (2018) controlled for several covariates, including gender, year of birth, marital status, living situation, and employment status, to accurately perceive correlations between health status and loneliness. Chi-square tests were used to determine the relationship between the independent variable, loneliness, and dependent variable, health status (Jessen et al., 2018). Individuals experiencing loneliness were 2.58 times more likely to rate their health poorly, 1.91 times more likely to have physical limitations, and 1.77 times more likely to suffer from multi-morbidity (Jessen et al., 2018). Overall, lonely individuals had a significantly
increased risk of rating their own health poorly, having limited physical ability, and suffering from multiple chronic diseases (Jessen et al., 2018).

Further research regarding functional capacity has revealed that loneliness and social isolation are also linked to poorer physical performance in older adults as evidenced in a study conducted by Philip et al. (2020). Data for the study were acquired from the English Longitudinal Study of Ageing (ELSA), a national cohort study of community dwelling adults over the age of 50 in England (Philip et al., 2020). The 8780 participants included in this study were assessed for physical performance using the Short Physical Performance Battery (SPPB), which includes three separate measures of physical ability (Philip et al., 2020). Social isolation was based on three measures, including living situation, frequency of social interactions, and frequency of community group activities (Philip et al., 2020). Loneliness was assessed via a shortened, three-question version of the UCLA Loneliness Scale (Philip et al., 2020). Philip et al. (2020) controlled for several time variable covariates, including age, marital status, and employment status, and health related covariates, including items such as body mass index (BMI), co-morbidities, and eyesight, to ensure accurate statistical analysis. The relationships between the independent variable, physical performance, and the dependent variables, isolation and loneliness, were determined using fixed effects regression models (Philip et al., 2020). Outcomes of the study showed that both loneliness and social isolation exhibited a significant longitudinal association with poorer physical performance in older adults (Philip et al., 2020).

Further exploration of functional status in older adults and the detrimental effects of social isolation and loneliness can be found in a study done by Shankar et al. (2016). Shankar et al. (2016) utilized data from two separate waves of the English Longitudinal Study of Ageing (ELSA), and the final statistical analysis included 3070 adults over the age of 60. Measures
included indicators of physical function, including gait speed and difficulty with activities of daily living (ADLs) (Shankar et al., 2016). Statistical analysis aimed to determine whether a relationship existed between these measures and social isolation or loneliness (Shankar et al., 2016). Several covariates were included in the analysis including financial status, age, gender, co-morbid health conditions, education level, smoking status, and physical activity (Shankar et al., 2016). Bivariate regression analysis was used to determine correlations between isolation, loneliness, and covariates, and linear regression was used to determine connections between isolation and loneliness and gait speed (Shankar et al., 2016). Relationships amongst covariates were determined first, and then Shankar et al. (2016) evaluated the relationship between social isolation and loneliness, finding a standardized regression coefficient of 0.24, revealing that being socially isolated was significantly associated with greater levels of loneliness after adjusting for all confounding variables. In addition, increased levels of loneliness were significantly associated with increased difficulty with ADLs over time with a 1.08 times increase in ADL difficulty for every one unit increase in loneliness score, but isolation was not found to be associated with ADL difficulty (Shankar et al., 2016). There was found to be no significant relationship between isolation or loneliness and gait speed (Shankar et al., 2016). Finally, looking at financial status and level of wealth, Shankar et al. (2016) found that although wealth did not significantly moderate the effects of social isolation and loneliness on functional capacity, it was associated with less isolation and loneliness overall. This study adds to the body of evidence suggesting that loneliness can have a negative impact on the functional capacity of older adults and that social isolation and loneliness are interrelated concepts.

Loneliness can have even more serious harmful effects on functional capacity and may even be associated with an increased risk of death, as demonstrated in a study led by Perissinotto
et al. (2012). Perissinotto et al. (2012) conducted a six-year prospective study using participants from the 2002 Health and Retirement Study (HRS), a longitudinal population-based study of community-dwelling adults over the age of 60. The 1604 participants were assessed for loneliness using a modified three-question version of the UCLA Loneliness Scale (Perissinotto et al., 2012). Four measures of functional decline over a six-year period were used, including increasing difficulty with ADLs, increasing difficulty with upper extremity tasks, walking ability, and stair climbing ability (Perissinotto et al., 2012). Chi-square tests and t tests were used in the statistical analysis with results reported using hazard ratios and relative risk ratios. Results revealed that there was a significant association between loneliness and increased risk of death over the six-year period, with a hazard ratio of 1.45 after adjusting for confounding variables (Perissinotto et al., 2012). Loneliness was also associated with all measures of functional decline, including a risk ratio of 1.59 for decline in ADL ability, thereby contributing to a decrease in independence over time (Perissinotto et al., 2012).

To further explore the relationship between loneliness and mortality, O’Suilleabhain et al. (2019) conducted a longitudinal study of 413 older adults that looked at the contribution of social and emotional loneliness to all-cause mortality over a 19-year period using data from the Berlin Aging Study (BASE). Loneliness was assessed using specifically selected questions from the UCLA Loneliness Scale, and participants were categorized into two groups: those that lived alone and those that did not live alone (O’Suilleabhain et al., 2019). The dependent variable, mortality, was defined as the number of days between the beginning of the study and day of death (O’Suilleabhain et al., 2019). Functional capacity and personality measures were also used plus several covariates, including sex, age, education, marital status, education, current diagnosis of depression, and recent losses to account for confounding factors (O’Suilleabhain et al., 2019).
For statistical analysis, Cox Proportional Hazards Models with hazard ratios and descriptive statistics were used (O’Suilleabhain et al., 2019). Final outcomes of the study revealed that although social loneliness was not a significant predictor of mortality, with a hazard ratio of 1.10, emotional loneliness was significantly associated with all-cause mortality in those that lived alone, and loneliness was significantly associated with living status (O’Suilleabhain et al., 2019).

One study examined the relationship between loneliness and multiple aspects of mental and physical health, including certain lifestyle factors (Richard et al., 2017). Richard et al. (2017) conducted an analysis which used data from the Swiss Health Survey (SHS), a cross-sectional, population-based study of people age 15 and older. The final data analysis of the study performed by Richard et al. (2017) included 20,007 individuals. Loneliness was determined via answers to the question “How often do you feel lonely?”, and mental and physical health were measured by self-reports of diagnoses of chronic diseases (Richard et al., 2017). Depression was identified using the Patient Health Questionnaire-9 (PHQ-9) (Richard et al., 2017). Lifestyle factors that were incorporated into the analysis included smoking, alcohol consumption, physical activity, and dietary factors (Richard et al., 2017). Confounding variables that were used for statistical analysis included age, sex, location, education, marital status, household size, nationality, and level of social support (Richard et al., 2017). Statistical analysis included weighted percentages to exemplify loneliness and outcome variables and logistic regression analysis to determine relationships between loneliness and health (Richard et al., 2017). Findings revealed the highest levels of loneliness in individuals age 25 to 29 and slight increases in loneliness after the age of 75 (Richard et al., 2017). Results also revealed a statistically significant relationship between loneliness and self-reported co-morbid health conditions with an odds ratio of 1.41, psychological distress with an odds ratio of 3.74, depression with an odds
ratio of 2.78, and more physician visits with an odds ratio of 1.29 (Richard et al., 2017). However, loneliness was not significantly associated with lifestyle factors overall (Richard et al., 2017). In conclusion, although young adults were found to be the group with the highest levels of loneliness, findings of this study provide important contributions to the current evidence demonstrating that loneliness may be linked to chronic mental and physical health conditions.

Several additional studies have demonstrated links between loneliness and unfavorable effects on mental health, including depression, anxiety, and stress. A study conducted by Lee et al. (2019) looked at the relationships between loneliness and mental health, resilience, and life satisfaction. Three cohorts of adults over age 21, with a total of 340 participants, were assessed for depression, anxiety, perceived stress, resilience, life satisfaction, cognitive function, and wisdom using standardized scales (Lee et al., 2019). The UCLA Loneliness Scale was used as the primary measure for loneliness in the data analysis (Lee et al., 2019). Bivariate correlational analysis and multiple regression analysis were used with loneliness scores as the dependent variable and demographic and other clinical data as independent variables (Lee et al., 2019).

Overall, higher levels of loneliness were associated with greater incidence of depression, anxiety, perceived stress, and more cognitive complaints (Lee et al., 2019). High levels of loneliness were also associated with less resilience, optimism, and wisdom (Lee et al., 2019). Participants with moderate levels of loneliness also had higher levels of anxiety, depression, and stress than those with low or no loneliness (Lee et al., 2019). Although the subjects of this study were not strictly in the older adult population, the study offers important evidence to the connection between loneliness and mental health overall.

Chronic and transient loneliness may both be connected to major depression in older adults according to a study conducted by Martin-Maria et al. (2020). Martin-Maria et al. (2020)
performed a cross-sectional nationally representative survey with a multi-level mixed-effects model to examine the relationship between loneliness and major depression in older adults. A sample of 1190 adults over age 50 were assessed at three different times between 2011 and 2018 (Martin-Maria et al., 2020). Loneliness was measured using the three-item UCLA Loneliness Scale, and those who experienced loneliness at all three waves of the study were categorized as chronically lonely (Martin-Maria et al., 2020). Transient loneliness was defined as being lonely during only one wave of the study, and those found to be lonely in two of the three waves were excluded from the results (Martin-Maria et al., 2020). Martin-Maria et al (2020) controlled for certain covariates that could affect loneliness, including the presence of certain chronic medical conditions, level of physical activity, age, gender, marital status, and income. Descriptive statistics were used for analysis, and a multi-level logistic regression model was used to evaluate the relationship between loneliness and depression while controlling for covariates (Martin-Maria et al., 2020). Findings revealed a significant association between loneliness and depression for participants with both transient and chronic types of loneliness, even after adjusting for all confounding variables (Martin-Maria et al., 2020). Results also showed that those with chronic loneliness had a higher risk of developing depression than those with transient loneliness, revealing an odds ratio of 6.11 for those with chronic loneliness versus an odds ratio of 2.22 for those experiencing only transient loneliness (Martin-Maria et al., 2020).

A few studies have offered evidence for the association between loneliness and cognitive impairment in older adults. Luchetti et al. (2020) utilized data from the Survey of Health, Ageing and Retirement in Europe (SHARE) study of adults over the age of 50 to evaluate this relationship. Participants included 14,114 older adults from 12 different countries across Europe (Luchetti et al., 2020). Loneliness was measured at baseline using a single item from the CES-D
scale, and at follow up was measured using the three-item UCLA Loneliness Scale (Luchetti et al., 2020). Cognitive impairment was determined via a series of memory recall tasks and a timed naming test (Luchetti et al., 2020). Social isolation was established through certain factors such as relationship status, household size, and contact with children (Luchetti et al., 2020).

Covariates integrated into the analysis were age, sex, education, body mass index (BMI), certain health conditions, smoking status, and depressive symptoms (Luchetti et al., 2020). Statistical analysis included Cox regression hazard models to determine the relationship between baseline loneliness and cognitive impairment over time, and hazard ratios were calculated to determine the strength of those relationships (Luchetti et al., 2020). After 11 years, 3.6 percent of participants had developed cognitive impairment with a 31 percent increase in cognitive impairment for every one point increase in loneliness, and subjects who were lonely most of the time had double the risk of cognitive impairment in comparison to those who were never lonely as revealed by the hazard ratio of 2.07 comparing these values (Luchetti et al., 2020).

Yang et al. (2020) examined the relationship between social isolation and cognitive function in older adults while considering loneliness as a mediating factor within this relationship. Data from a single wave of the China Health and Retirement Longitudinal Study (CHARLS) were used in the analysis (Yang et al., 2020). Social isolation was determined by assessing living situation, social engagement activities, and contact with adult children and grandchildren (Yang et al., 2020). Loneliness was measured using a single item from the Center for Epidemiologic Studies Depression Scale (CESD-10) that addressed loneliness (Yang et al., 2020). Cognitive function was measured by assessing attention and orientation via telephone (Yang et al., 2020). Covariates were used to help authenticate results; these included age, gender, marital status, and comorbid health conditions (Yang et al., 2020). Results showed a significant
direct relationship between social isolation and decreased cognitive function (Yang et al., 2020). Moreover, loneliness exhibited a significant indirect effect as a mediator between isolation and cognitive function by negatively impacting this relationship (Yang et al., 2020). The authors cited the importance of addressing loneliness in improving cognitive function in socially isolated older adults (Yang et al., 2020).

O’Luanaigh et al. (2012a) took a different approach; the researchers intended to evaluate the relationship between loneliness and cognitive function exclusive of the overarching effects of depression and social isolation. Data from the Dublin Healthy Ageing study, which included 466 community-dwelling older adults without diagnosis of dementia, were used for this study (O’Luanaigh et al., 2012a). Loneliness was determined via a single question from the CES-D tool, and social networks were assessed by means of the Wenger’s Social Networks Typology instrument (O’Luanaigh et al., 2012a). Numerous tests were used to determine several different domains of cognitive function, including psychomotor processing, verbal and category fluency, verbal learning and delayed recall, visual recall and reproduction, immediate and delayed memory, and working memory (O’Luanaigh et al., 2012a). Covariates included age, gender, social networks, education, relationship status, and baseline MMSE score). Statistical analysis involved multiple linear regression to determine correlations between loneliness, cognitive function, and confounding variables, and p values were calculated to determine statistical significance (O’Luanaigh et al., 2012a). The multivariate analysis revealed that loneliness was significantly related to reduced psychomotor processing speed, with a p value of 0.036, as well as several measures of delayed visual memory, thereby allowing researchers to conclude that loneliness is linked to lower global cognitive function scores, specifically processing speed and
visual memory with a p value of 0.003, in older adults independent of depression and social isolation (O’Luanaigh et al., 2012a).

Loneliness can be viewed in terms of transient or chronic loneliness, and it is important to consider the effects of each when evaluating outcomes. Zhong et al. (2016) used data from three different waves of the Chinese Longitudinal Health Longevity Study (CLHLS), a nationally representative dynamic cohort study of older adults in China, and hypothesized that chronic loneliness would have a more profound effect on cognitive decline than transient loneliness. The population sample included 2995 adults over the age of 65 (Zhong et al., 2016). The independent variable for this study, cognitive function, was determined using a modified version of the Chinese Mini Mental Status Examination (mMMSE) (Zhong et al., 2016). The dependent variable, loneliness, was measured via subjective responses to a single question about how often subjects felt lonely (Zhong et al., 2016). Several covariates were included in the analysis, including age, sex, education, socioeconomic status, marital status, living situation, physical activity, smoking status, overall physical health, and emotional well-being (Zhong et al., 2016). Linear regression was used for the statistical analysis to determine the effects of loneliness on cognitive function, adjusting for all covariates (Zhong et al., 2016). The analysis revealed that transient and chronic loneliness were both significantly correlated with lower mMMSE scores, with regression coefficients of -1.254 and -1.818 respectively, even after controlling for any confounding variables, and chronic loneliness was more strongly tied to cognitive decline (Zhong et al., 2016).

Donovan et al. (2016) assessed the correlation between loneliness and cognitive function in older adults by considering the prospect of a bi-directional relationship between increasing loneliness and decreasing cognition. Data from the Health and Retirement Study (HRS) were
used, and 8030 participants over the age of 65 were included in the analysis (Donovan et al., 2016). Loneliness and depression were measured via the eight-item version of the CES-D, and cognitive assessments were performed to test for memory and overall cognitive performance (Donovan et al., 2016). Confounding variables were integrated into the final data analysis to improve accuracy; these included age, race, sex, education, and household income (Donovan et al., 2016). Statistical evaluation included two longitudinal analyses, adjusted for potential bias, to evaluate the bi-directional relationship between loneliness and cognition (Donovan et al., 2016). The results revealed a statistically significant association between loneliness over time and worsening cognitive function, revealed by a regression coefficient of -0.2 and p value of 0.002, as well as a significant correlation between depression and worsening cognition, with an odds ratio of 1.3 and p value of 0.005, even after adjusting for all confounding variables (Donovan et al., 2016). From the data collected over the 12-year period, researchers were able to predict that the rate of cognitive decline was about 20 percent faster if loneliness was present (Donovan et al., 2016).

Previously cited studies examined the relationship between loneliness, isolation, and cognitive function in the older adult population. Zhou et al. (2018) specifically addressed the relationship between loneliness in older adults and the development of dementia in a three-year cohort study drawn from the Chinese Longitudinal Healthy Longevity Survey (CLHLS). The sample for the study included 7867 adults over the age of 65 who did not suffer from dementia at baseline (Zhou et al., 2018). Dementia was found via self-reporting or physician-reporting, loneliness was measured by direct questioning about loneliness, and social isolation was established if the participant lived alone, was unmarried, or lacked social support (Zhou et al., 2018). Researchers controlled for covariates, including age, gender, education level, and whether
participants lived in a rural area (Zhou et al., 2018). Data analysis consisted of a multiple logistic regression model to determine the relationship between loneliness and dementia (Zhou et al., 2018). Zhou et al. (2018) found a statistically significant positive relationship between loneliness and risk of dementia, revealed by an odds ratio of 1.31 with a 95 percent confidence interval, and a more significant association in men than in women, with an odds ratio of 0.81 with a 95 percent confidence interval.

Rafnsson et al. (2020) also examined the relationship between loneliness and dementia with a study using data from the English Longitudinal Study of Ageing (ELSA) of adults over the age of 50 in England. This longitudinal, population-based study included 6677 participants that did not have physician diagnosed dementia or Alzheimer’s disease at baseline (Rafnsson et al., 2020). The development of dementia was determined if diagnosed by a health care provider or via a questionnaire regarding performance of various functions filled out by a family member or representative (Rafnsson et al., 2020). Additionally, two different cognitive tests were used to assess memory and orientation (Rafnsson et al., 2020). Loneliness was measured using the three-item UCLA Loneliness Scale, and social isolation was assessed by determining the participant’s level of social involvement and social networks (Rafnsson et al., 2020). The covariates that were adjusted for in statistical analysis included education, socioeconomic status, relationship status, diagnosis of certain chronic conditions, mobility, and baseline cognitive function (Rafnsson et al., 2020). Five models were used in the analysis using Cox proportional hazards regression models, comparing certain individual covariates with loneliness, isolation, and dementia risk (Rafnsson et al., 2020). At follow up, 3.3 percent of participants acquired a new diagnosis of dementia or were reported to be above the threshold for dementia symptoms via informant questionnaire (Rafnsson et al., 2020). Loneliness, lack of close relationships, and not being
married were all found to be independent predictors of the development of dementia compared to other factors (Rafnsson et al., 2020). Loneliness showed a significant relationship with dementia with a hazard ratio of 1.40 with a 95 percent confidence interval and p value of 0.008 (Rafnsson et al., 2020). Social isolation was not found to be a predictor of dementia in this study, but loneliness showed a strong association with the development of dementia over the six-year period (Rafnsson et al., 2020).

Regarding physical health, two studies from the literature search evaluated the relationship between loneliness and vascular, inflammatory, and metabolic biomarkers. The first study, conducted by O’Luanaigh et al. (2012b), was a community-based, cross-sectional analysis of adults age 65 and older that examined the relationship between loneliness and vascular biomarkers, including C-reactive protein (CRP), homocysteine, glycosylated hemoglobin (HbA1C), and lipid profile. Data was obtained from the Dublin Healthy Ageing Study, and 466 older adults were included in the final analysis (O’Luanaigh et al., 2012b). Loneliness was measured using a single item from the CES-D scale, and blood samples were collected to measure levels of homocysteine, HbA1C, blood glucose, CRP, and lipid profiles (O’Luanaigh et al., 2012b). Additional items, including BMI and waist circumference measurements, were included as independent variables (O’Luanaigh et al., 2012b). Covariates were also used in the statistical analysis for accuracy, and they included education, diet, tobacco and alcohol use, medical and psychosocial history, medications, physical activity, and family history (O’Luanaigh et al., 2012b). Data were also collected for social networks and cognition (O’Luanaigh et al., 2012b). ANOVA means comparison was used in statistical analysis to compare loneliness with other variables, chi-square tests were utilized to illustrate prevalence of certain variables, and linear regression helped to examine the relationship between loneliness and HbA1C. Outcomes
showed a significant positive relationship between loneliness and higher BMI and type 2 diabetes, and loneliness was significantly associated with HbA1C measurements with a p value less than 0.005 including in participants without diabetes, but not the other measured biomarkers (O’Luanaigh et al., 2012b).

The next study used data from the National Social Life, Health, and Aging Project (NSHAP), a longitudinal study of community-dwelling adults age 57 to 85, to evaluate relationships between loneliness and inflammatory changes and metabolic dysfunction in older adults (Shiovitz-Ezra & Parag, 2018). Data from the first and second waves of the nationally-representative NSHAP study were used, and a sample of 1815 participants were included in the final analysis (Shiovitz-Ezra & Parag, 2018). Researchers used a single item from the CES-D scale to identify loneliness, and further divided lonely participants into three groups based on level of loneliness experienced (Shiovitz-Ezra & Parag, 2018). The dependent variables included inflammation and metabolic bio-markers; inflammation was identified using blood analysis for CRP, and metabolic dysfunction was determined via BMI, waist circumference, and HbA1C (Shiovitz-Ezra & Parag, 2018). Covariates that were included in the statistical analysis included age, gender, specific medical conditions, cognitive screening results, and alcohol use (Shiovitz-Ezra & Parag, 2018). Data was analyzed using logistic regression models to evaluate the relationship between the independent and dependent variables with adjustments made for all covariates (Shiovitz-Ezra & Parag, 2018). Individual results were provided for all biomarkers. No significant association was seen between loneliness and the inflammatory marker, CRP (Shiovitz-Ezra & Parag, 2018). Loneliness was, however, found the be associated with higher levels of HbA1C, particularly in adults age 65 to 69 and Hispanic participants with an odds ratio of 1.39 and p value less than 0.05 (Shiovitz-Ezra & Parag, 2018). Loneliness was also found to
be correlated with a greater likelihood of increasing BMI with an odds ratio of 1.46 and p value less than 0.05 and worsening of metabolic burden overall with an odds ratio of 1.60 for mild loneliness and a ratio of 1.71 for frequent loneliness (Shiovitz-Ezra & Parag, 2018). No significant association was seen with waist circumference (Shiovitz-Ezra & Parag, 2018).

Conclusively, three out of the four evaluated biomarkers, including BMI, HbA1C, and overall metabolic burden, exhibited worsening with the presence of loneliness, even after adjusting for several confounding factors (Shiovitz-Ezra & Parag, 2018).

It has been well established that loneliness and isolation can have significant consequences on the physical and mental health of older adults, but it is important to also consider how these consequences can affect the consumption of health care by patients. Gerst-Emerson and Jayawardhana (2015) studied the relationship between loneliness and health care utilization using data from the Health and Retirement Study (HRS) of older adults in the United States in 2008 and 2012 in addition to in-person interviews and written questionnaires (Gerst-Emerson and Jayawardhana, 2015). A total of 3530 participants were included in the study (Gerst-Emerson and Jayawardhana, 2015). Measures including hospitalizations and physician visits were used to quantify health care utilization, loneliness was measured using a three-item loneliness questionnaire, and ADLs were measured using a standardized six-item ADL scale (Gerst-Emerson and Jayawardhana, 2015). Additional control variables were used, including age, race, ethnicity, education, gender, depressive symptoms, marital status, and insurance (Gerst-Emerson and Jayawardhana, 2015). Chi-square tests and t tests were used to determine statistical significance in findings (Gerst-Emerson and Jayawardhana, 2015). Loneliness was found to be significantly associated with an increased number of doctor visits, revealed by a regression coefficient of 0.075, for participants that were lonely at both waves of the study compared to
participants that were not lonely at either wave (Gerst-Emerson and Jayawardhana, 2015). Loneliness was also found to have a non-statistically significant relationship with higher ADL disability and more depressive symptoms (Gerst-Emerson and Jayawardhana, 2015).

Hanratty et al. (2018) examined the relationship between loneliness and health care utilization by looking at home care admissions in lonely older adults. Home care admissions included care homes as well as residential homes; care homes were defined as nursing homes with registered nursing staff, and residential homes were described as those without nursing staff (Hanratty et al., 2018). Data from the 15,783 participants in the English Longitudinal Study of Ageing (ELSA) of adults over the age of 50 were used to determine the quantity of older adults that were admitted into care homes during the study as a result of loneliness (Hanratty et al., 2018). Loneliness was measured using two methods, the first being the three-item UCLA Loneliness Scale and the second being a single item from the CES-D scale addressing loneliness (Hanratty et al., 2018). Social isolation was determined based on a point system for certain variables related to social contact and social engagement (Hanratty et al., 2018). Researchers used weighted logistic regression models to adjust for confounding variables, such as age and sex (Hanratty et al., 2018). Of the total sample from the ELSA study, 313 community-dwelling participants, or two percent, moved into care homes in the allotted time frame (Hanratty et al., 2018). The results presented by Hanratty et al. (2018) showed that loneliness in older adults is associated with a significantly increased likelihood of moving into a care home, shown by the odds ratio of 2.13 and p value of 0.0002 for the CES-D scale, and the odds ratio of 1.81 and p value of 0.05 for the UCLA Loneliness Scale.

Recent studies have also examined how loneliness can affect quality of life in older adults. Arslantas et al. (2015) conducted a community-based, cross-sectional study in Turkey
that examined the relationship between loneliness and self-reported quality of life in adults age 65 and older. The 174 participants completed questionnaires that included demographic information as well the 20-question UCLA Loneliness Scale and Quality of Life (QOL) Short Form (SF-36) (Arslantas et al., 2015). Spearman’s Correlation Analysis was used to determine relationships between loneliness and quality of life, and additional variables, such as age, employment status, literacy, income, and comorbid conditions, were controlled for in the analysis (Arslantas et al., 2015). Arslantas et al. (2015) found a statistically significant negative relationship between loneliness and quality of life as determined by the p value of less than 0.05 and discovered that chronic disease and an absence of hobbies were significant predictors of loneliness with significance revealed by the p value of less than 0.05.

Determining the Project Intervention

With the information gathered during the community assessment and the review of current literature, it was decided that a program addressing loneliness and isolation in the older adult population would be most beneficial to SFV members. The DNP author communicated to SFV members and leadership staff a proposed direction of the project. The first proposal for a new program at SFV was brought to the attention of the DNP author by one SFV member, who proposed the idea of creating a virtual tutoring program in which SFV members could tutor children in various subjects. During a virtual meeting, several SFV members expressed interest in participating in a virtual tutoring program and offered details about school subjects and other topics they would like to include. With this proposal in mind and substantial support from SFV members, the SFV program coordinator contacted the local YMCA and opened discussion between the DNP author and the YMCA about creating a tutoring program. The YMCA program
utilizing digital technology to address loneliness and isolation

coordinators offered several options for virtual tutoring, including programs that had been previously established, allowing for ease of access.

With a program proposal established with the YMCA, the virtual tutoring program was proposed to SFV members to determine interest. Unfortunately, there were no members that were still interested in participating in a tutoring program. Members expressed disinterest with making a significant time commitment and creating lesson plans or determining what specific topics to cover. Several options were offered, including teaching art and craft classes for small groups of children, one-on-one tutoring, homework assistance, and teaching a specific topic with a time commitment. None of these options were appealing to members, so it was necessary for the project to take a new direction.

After tutoring proposal was not well supported, another virtual meeting was held with SFV members where two members proposed the idea to create a story-sharing program that included younger participants in which members of different generations could share experiences and develop meaningful relationships. The SFV members voiced desires for an in-person program, but because of the COVID-19 pandemic, in-person meetings were not feasible, and the program would have to be adapted for the safety of all participants. The proposal for an intergenerational story-sharing, conversational program gained significantly more support than the proposed tutoring program as it did not require substantial preparation or time commitments.

Review of Evidence – Intergenerational and Virtual Programs

To determine whether intergenerational and interactive virtual programs would be beneficial to older adults in combating loneliness and social isolation, another literature search of the current literature were performed in March 2020 to compile evidence for the use of intergenerational and virtual programs in combating loneliness in the older adult population.
This literature search used the CINAHL, PubMed, and APA PsycInfo databases to compile evidence for the role of intergenerational programs and technology in combating loneliness and isolation in older adults using the keywords: *loneliness* or *isolation* and *intergenerational* or *generation*. Results were narrowed to full text articles containing original research within the past 10 years with major headings of *social isolation* and *loneliness* and adults over the age of 65. CINAHL returned a total of 33 results with five relevant articles to be used in the review. PubMed presented 11 articles with only one relevant to intergenerational programs, loneliness, and isolation, and APA PsycInfo returned eight articles, and two were relevant to intergenerational programs and loneliness in older adults. Thus, seven articles were used for this section of the literature review. For this part of the review, a second search was conducted to find evidence for the use of technology to fight loneliness in older adults using the keywords: *technology* or *computer* or *video* or *internet* or *tablet* or *phone*; *older adult* or *older people* or *geriatric* or *elderly*; and *loneliness* or *isolation*. Results were refined to only full-text, original research articles published within the past 10 years for ages 65 and older with major headings containing the words *loneliness* or *isolation*. Using CINAHL, 20 articles were found with the stated search criteria; two of the articles were selected based on relevance and the remaining were discarded for irrelevance. APA PsycInfo returned six articles, five of which did not pertain to the use of technology, and one which was unavailable via open access. Finally, the PubMed search returned 21 articles, two of which were relevant to the current topic and were selected for review. In total, four articles describing the impact of technology on isolation and loneliness in older adults were reviewed.

A summarized review of the evidence table can be found in Appendix B. The Johns Hopkins Review of Evidence Tool was used to grade each piece of literature in the review (Dang
& Dearholt, 2018). Due to the nature of the topic of study, the majority of research applied quasi-experimental longitudinal studies. Most of the reviewed studies were level II, quasi-experimental studies of good to high quality. Major findings from the literature review revealed that intergenerational and virtual computer programs are beneficial in reducing social isolation and feelings of loneliness as well as improving cognitive function and mental health outcomes. Details of this review of evidence are reflected in Appendix B.

Considering the immense impact loneliness and isolation can have on the health and well-being of older adults, it is crucial for health care professionals be aware of available evidence-based interventions that can be useful in combating these problems. There is a multitude of evidence regarding intergenerational relationships and the use of intergenerational and virtual programs to mediate the effects of isolation and loneliness in older adults. Fu and Ji (2019) conducted a cross-sectional survey in China of adults 65 and older that explored the relationship between intergenerational relationships and mental health measures. Interviews from 2038 participants were included in the data analysis (Fu & Ji, 2019). Parameters included depressive symptoms using the Center for Epidemiologic Studies Short Depression Scale (CESD-10), intergenerational relationships using the 13-item Intergenerational Relationship Quality Scale for Aging Chinese Parents (IRQS-AP), insomnia symptoms using three questions from the Insomnia Severity Index (ISI), and loneliness using a version of the De Jong Gierveld Loneliness Scale (Fu & Ji, 2019). Covariates were included in the model and included age, gender, marital status, employment status, education, and chronic diseases (Fu & Ji, 2019). Means and standard deviations were calculated using descriptive analysis, and correlations between variables were then assessed (Fu & Ji, 2019). Results of the study revealed that intergenerational relationships were significantly associated with mental health outcomes in
older adults with p values of less than 0.01 (Fu & Ji, 2019). Specifically, positive intergenerational relationship components, including consensual-normative solidarity and affectual closeness, had positive effects on measured mental health outcomes, and intergenerational conflict was associated with higher levels of loneliness, all determined with 95 percent confidence intervals (Fu & Ji, 2019).

Loneliness can result from the loss of a useful role in society, as may occur in older age with significant life changes like retirement (Norman, 2018). Therefore, interventions that increase an individual’s sense of usefulness may be beneficial in combating loneliness and isolation. Murayama et al. (2015) explored the effects of an intergenerational program in Japan on the mental health of older adults over a three-year period. This intervention research study included 80 participants over the age of 65 and included a control group (Murayama et al., 2015). The intervention group in this study participated in a portion of the Research of Productivity by Intergenerational Sympathy (REPRINTS) program, a school-based program wherein older adults read picture books to pre-school and school-aged children. According to Yasunaga et al. (2016), “The REPRINTS program is based on three pillars: intergenerational engagement, intergenerational relationship building and life-long learning” (p. 100). Members of the control group were prohibited from engaging in any intergenerational programs with children for the duration of the study (Murayama et al., 2015). Differences between the intervention and control groups were assessed by measuring “sense of coherence”, components of which included a sense of meaningfulness, sense of manageability, and sense of comprehensibility in the lives of participants (Murayama et al., 2015). The Geriatric Depression Scale-Short Version-Japanese (GDS-S-J) was used to measure depressive mood (Murayama et al., 2015). Demographic characteristics, including age, sex, education level, living situation, self-rated health, financial
status, volunteer experience, and occupation, were included in the assessment (Murayama et al., 2015). Differences between the intervention and control groups were examined using $t$ tests and chi-square tests, and ANOVA was used to determine whether there was a change in measured variables over time (Murayama et al., 2015). Results showed a significant increase in sense of meaningfulness, sense of manageability, and sense of comprehensibility over time for the intervention group, with $p$ values for each parameter being less than 0.05 (Murayama et al., 2015). No changes in sense of meaningfulness over time were seen for the control group (Murayama et al., 2015). Additionally, outcomes revealed that the intergenerational program had significant indirect effects on depressive mood through the mediating effect of meaningfulness with a regression coefficient of 0.26 and $p$ value of 0.023 (Murayama et al., 2015). Yasunaga et al. (2016) also evaluated the REPRINTS program in Japan with a focus on self-rated health. The study was a non-randomized trial with an intervention group and control group, and included 67 older adult participants (Yasunaga et al., 2016). Measured variables included participant demographics, subjective health status, frequency of social interactions, and self-esteem (Yasunaga et al., 2016). Significant differences were found between the 37 participants that were considered “intensive volunteers” and the control group, namely regarding frequency of volunteer experiences with children and self-rated health, concluding that those who volunteered more often were more likely to rate better overall health (Yasunaga et al., 2016). Significance of findings was revealed by $p$ values of less than 0.01 (Yasunaga et al., 2016).

Gaggioli et al. (2014) explored the effects of an intergenerational group reminiscence program on the wellbeing of older adults through a one-group, repeated measures design study. A total of 146 participants, including 32 older adults and 114 children, were placed into small groups and participated in three sessions in which they reminisced on topics like local traditions,
careers, and historical events (Gaggioli et al., 2014). Pre-intervention and post-intervention measures were compared with regards to loneliness, quality of life, and self-esteem in the older adults as well as the children’s perception of older adults (Gaggioli et al., 2014). Loneliness was measured using the Italian Loneliness Scale (ILS); quality of life was measured via an adapted Italian version of the World Health Organization Quality of Life Scale for Older People (WHOQol-Old); and self-esteem was determined using the Italian version of Rosenberg’s Self-Esteem Scale (Gaggioli et al., 2014). Pre-intervention and post-intervention poll results were compared using \( t \) tests, and analysis of correlations were done using Spearman tests (Gaggioli et al., 2014). Results showed a significant decrease in general loneliness and emotional loneliness, with \( t \) values 2.195 and 2.074 respectively, in the pre-post analysis with \( p \) values for both meeting the less than 0.05 significance level, and a significant increase in all subscales of perceived quality of life, with a \( t \) value of 2.034 and \( p \) value of less than 0.05 (Gaggioli et al., 2014). However, no significant difference was seen in self-esteem in pre-post comparisons (Gaggioli et al., 2014). Lastly, the final analysis showed that the children’s overall perception of older adults improved with participation in the intergenerational program, revealing positive outcomes for the older and younger participants alike (Gaggioli et al., 2014).

The positive effects of intergenerational programs on older adults were apparent in a study performed by Teater (2016) which examined the outcomes of the “Time after Time” intergenerational event that took place in the UK in 2011 and 2012. The “Time after Time” program included an array of intergenerational activities, such as theater, singing, dancing, arts and crafts, picnics, board games, and Tai-Chi. At the completion of the program, 70 older adult participants completed a questionnaire about their experiences, and descriptive statistics were used to determine percentages and frequencies of answers to the survey questions (Teater, 2016).
The majority of older adults believed that the event increased their self-confidence and self-esteem, had a positive effect on their lives, helped them to relax and relieve stress, improved their emotional and overall well-being, and helped them stay healthy (Teater, 2016). All older adults that responded to the questionnaire gave positive ratings for their experiences (Teater, 2016).

The evidence demonstrates that formal intergenerational programs can have significant positive impacts on the physical and emotional well-being of older adults (Teater, 2016). Tian (2014) explored this concept from a different view by exploring how intergenerational social support, both giving and receiving support, can affect the subjective well-being of older adults. The study conducted by Tian (2014) included 429 older adult participants in China and used the Intergenerational Social Support Scale (ISS) to measure levels of giving and receiving personal assistance, financial support, and emotional support. The Rosenberg Self-Esteem Scale (RSES) and the Social and Emotional Loneliness Scale were used to determine measures for independent variables (Tian, 2014). Additionally, measures of social well-being and life satisfaction were included in the data analysis as independent variables (Tian, 2014). Results were determined using descriptive statistics and correlation analysis (Tian, 2014). Tian (2014) found that both giving and receiving intergenerational support were positively associated with social well-being and self-esteem, and intergenerational support was negatively associated with loneliness in older adults, with all findings being statistically significant with p values of less than 0.01.

Intergenerational programs can be beneficial in many ways to older adults as well as those in younger generations. Harris and Caporella (2014) piloted a qualitative study that examined the effects of an intergenerational choir on isolation in older adults as well as the effects of the program on the stigma toward individuals with Alzheimer’s disease. This pilot
study comprised 27 participants, including older adults with early dementia and college students, that met weekly for eight weeks for choir practice with a choir performance at the conclusion of the eight-week study (Harris & Caporella, 2014). Data were collected via focus groups at baseline, at the halfway point of the study, and at after the final performance (Harris & Caporella, 2014). The major themes found within the focus groups included an expanded understanding for adults with Alzheimer’s disease, a reduced stigma and reduced discomfort toward these individuals, and a better understanding for the capabilities of people with Alzheimer’s disease (Harris & Caporella, 2014). Finally, the older participants had a reduction in overall feelings of isolation related to the social cohesion fostered by the intergenerational program (Harris & Caporella, 2014).

The COVID-19 pandemic has recently changed the world in many ways, one of which is the way people interact with each other. Virtual video calls with family and friends, grocery and meal delivery, and other contactless interactions have become essential for many since the pandemic began. Loneliness and isolation have the opportunity to thrive in these times, but technology has the potential to mitigate these effects. Review of the current evidence suggests that internet use has the potential to reduce isolation and loneliness in older adults, and social interaction is an important factor in mediating these effects. The study conducted by Yu et al. (2021) used data from three waves of the Health and Retirement Study (HRS), which included a sample of 5240 participants age 65 and older, to determine whether internet use influences feelings of loneliness in older adults and whether this relationship is mediated by social interaction. Loneliness in this study was measured using the three-item UCLA loneliness scale; internet use was measured via a dichotomous yes/no response by asking participants whether they used the internet regularly; and social contact was determined by assessing frequency of
interaction of contact with family or friends (Yu et al., 2021). Control variables that have been identified as predictors of loneliness were also used in the analysis; these variables included age, gender, race, education level, marital status, employment, living situation, income, and self-rated health status (Yu et al., 2020). Yu et al. (2021) ran mixed-effect models to determine the longitudinal effects of internet usage on loneliness and used longitudinal mediation analysis to determine whether this relationship was mediated by social contact. Outcomes of the study revealed that internet use was significantly longitudinally correlated with lower levels of loneliness in older adults, shown by the regression coefficient of -0.049 and p value less than 0.001, and that social contact had a mediating effect between these factors (Yu et al., 2021).

Khalaila and Vitman-Schorr (2018) performed a cross-sectional study of 525 community-dwelling adults age 50 and older in Israel to determine whether internet use was correlated with quality of life and loneliness in older adults. To determine internet use, participants categorized themselves as a user or non-user (Khalaila & Vitman-Schorr, 2018). Quality of life was measured with the CASP-19 scale, which represents the categories Control, Autonomy, Self-realization, and Pleasure (Hyde et al., 2003). The Revised UCLA Loneliness Scale was used to establish loneliness levels of participants (Khalaila & Vitman-Schorr, 2018). Covariates including social networks, age, gender, ethnicity, and education were included in the analysis (Khalaila & Vitman-Schorr, 2018). Initial data analysis incorporated descriptive statistics for calculating means and standard deviations, and bivariate analysis was utilized to determine correlations between quality of life and remaining variables (Khalaila & Vitman-Schorr, 2018). Finally, mediation analysis was used to determine the mediating effects of loneliness on these relationships (Khalaila & Vitman-Schorr, 2018). The results showed a negative correlation between loneliness and quality of life, with a regression coefficient of -0.31 and p value of 0.001,
and revealed that internet users received lower scores on the loneliness scale when compared with non-users, with a regression coefficient of -5.28 and p value of 0.001 (Khalaila & Vitman-Schorr, 2018).

Further evidence of the beneficial effects of internet usage on loneliness in older adults can be found in a study conducted by Czaja et al. (2018) in which adults age 65 and older were given access to a computer system specifically designed for older adults with the intention of reducing loneliness and isolation. The Personal Reminder Information and Social Management (PRISM) computer system was introduced to the intervention group, and a paper binder containing similar information offered on the PRISM system was provided to the control group (Czaja et al., 2018). The 300 participants, 150 in the intervention group and 150 in the control group, utilized either the PRISM computer system or the paper information binder over the next 12 months, and outcomes were compared between the two groups (Czaja et al., 2018). The primary outcomes measures included social isolation, loneliness, social support, social network size, and quality of life perceptions (Czaja et al., 2018). Statistical analysis included linear mixed-effects models with control variables for age, baseline cognitive function scores, and baseline depression (Czaja et al., 2018). At the six-month point of the study, the intervention group reported less loneliness with a regression coefficient of -1.68, greater social support with a regression coefficient of 0.79, and improved quality of life with a regression coefficient of -1.08 with use of the PRISM computer program (Czaja et al., 2018). All of these findings were statistically significant with p values less than 0.01 (Czaja et al., 2018). There was continued improvement in these parameters through the 12-month point of the study, but with less difference between the intervention and control groups (Czaja et al., 2018). Additionally, participants using the PRISM system reported having an easier time communicating with family
and friends and participate in games and hobbies compared to those using the paper binder system (Czaja et al., 2018).

The use of technology in combating loneliness and isolation in older adults was further explored in a study conducted by Tsai et al. (2020) in which a video conferencing program was used to allow nursing home residents to have increased social interaction with family and friends. The quasi-experimental study consisted of 32 older adult participants from multiple different nursing homes in Taiwan that were randomly placed into an intervention and a control group (Tsai et al., 2020). The intervention group was provided access to a smartphone video conferencing program that was to be used at least once per week to communicate with family or friends, and the control group was not allowed access to the program (Tsai et al., 2020). Covariates were used in the statistical analysis, including age, gender, marital status, children, education, co-morbid diseases, duration of time spent in the nursing home, and frequency of visits from family and friends (Tsai et al., 2020). Measured outcomes included loneliness, depressive symptoms, and self-rated quality of life (Tsai et al., 2020). Loneliness was measured using the 10-item UCLA Loneliness Scale; depressive symptoms were assessed via the Geriatric Depression Scale (GDS); and quality of life was evaluated with the Taiwanese version of the SF-36 scale (Tsai et al., 2020). Data analysis included multiple linear regression models to compare differences between the intervention and control groups at multiple points in time (Tsai et al., 2020). Results showed a significant difference between the two groups in feelings of loneliness, revealed by a regression coefficient of -3.41 and p value of less than 0.001, with the intervention group showing continual decreases in loneliness over the six months of the study and significantly greater decreases in loneliness than the control group (Tsai et al., 2020). Additionally, the intervention group showed greater improvement in quality of life over six
months, but there was no statistical difference in depression between groups or change in depressive symptoms in either group over time (Tsai et al., 2020).

**Rationale**

The conceptual frameworks used to guide this project included Watson’s *Philosophy and Science of Caring* with the integration of Fawcett’s *Conceptual Model of Nursing (Nursology)* and *Population Health* as well as Foronda’s *Theory of Cultural Humility* (Watson, 1979; Fawcett & Ellenbecker, 2015; Foronda, 2020). Watson (1985) emphasized assisting patients in achieving an optimal level of harmony within their own minds to help produce higher degrees of self-awareness, self-respect, self-care, and overall healing. Additionally, Watson (1985) believed that nurses are capable of helping patients find meaning in their experiences and their own existence. The intergenerational program created for this project was designed to adhere to Watson’s (1985) principles by creating a safe environment for older adults to share their experiences with younger generations, which in turn would help them find meaning in their own lives and ultimately led to decreased feelings of loneliness. The literature review for this project outlined the many potential negative health outcomes associated with loneliness and isolation, thus it is important to emphasize that addressing loneliness in older adults is crucial to healing and promotion of self-care. Watson’s (1979) theory also incorporates the major components of the nursing process, which include assessment, plan, intervention, and evaluation, each of which will be carefully followed throughout the DNP project implementation. The assessment portion, which involved observation, identification of a problem, and formation of a hypothesis, was completed during the community needs assessment portion of the DNP project (Watson, 1979). The creation of the plan for change was completed through discussions with SFV members and staff to determine the ideal direction of the project for optimal outcomes (Watson, 1979). The
intervention was implemented over the specified 12-week period, and the evaluation took place after the conclusion of the program (Watson, 1979).

In addition to Watson’s *Theory of Human Caring* for the DNP project, aspects of Fawcett’s *Conceptual Model of Nursing and Population Health* were utilized for the conceptual framework. Fawcett’s (2015) model focused on the role of nursing in helping people attain the highest achievable quality of life through activities intended to promote or reestablish wellness and prevent disease. This intergenerational program was intended to reduce illness and promote health and well-being through preventing or reducing feelings of loneliness and isolation, which in turn had the potential to positively affect numerous health outcomes. Finally, Foronda’s (2020) *Theory of Cultural Humility* was incorporated into the conceptual framework of this DNP project. Foronda’s (2020) theory underscored the development of reciprocal understanding and the improvement of human interactions amid conflict to promote appreciation of diversity among groups and cultural humility. Foronda (2020) looked at the potential conflicts that can arise from differing perspectives, and stressed the importance of being adaptable, valuing humankind, and guiding people to thrive in a diverse world with differing experiences, perspectives, and values. The core of this DNP project was designed to involve sharing of stories, experiences, and viewpoints between generations and age groups that are often in conflict over perspectives and values and allowing a space for mutual understanding and respect.

**Project Aim**

The aim of this project was to implement and evaluate the effects of a virtual intergenerational, meaningful conversation, and story-sharing program on feelings of loneliness and isolation in older adult participants. Goals of this intervention were for at least 75 percent of participants to report feeling less isolated, enhanced connectedness with others, and benefit to
their overall health and well-being as a result of participating in the 12-week program from March through May 2021.

Methods

Context

The key stakeholders of this project included SFV leadership and staff, SFV members, and young adult nurses and students recruited from the University of San Francisco (USF). During the community assessment, the DNP author worked closely with SFV leadership and staff to determine the needs of members and the best direction for the project. Collaboration with SFV staff included biweekly or more frequent virtual meetings or emails to ensure agreement over details of the project. San Francisco Village staff were deeply involved in the planning and development of the program to ensure members’ needs were being met. The SFV staff also provided a connection between the DNP author and SFV members. Emails to SFV members were screened and sent through the SFV staff, and important information was disseminated to members through staff. Members were recruited via an advertisement placed in the SFV newsletter that was written by the DNP author and approved by SFV leadership. Members of SFV were not required to participate in the intergenerational program; the program was strictly voluntary, and members could participate in as many or as few sessions as they chose. Intentions of the program were disclosed at the beginning of the first session, and participants were welcome to sign out of the video conference at any time. For those that attended the sessions, participating in the conversation was voluntary. Young adult student and nurse volunteers were recruited through an advertisement disseminated to students via the USF student portal as well as through email and text message to fellow students. Student volunteers were given a $30 gift card to a restaurant of their choice for their time participating in at least one session. Young adult
student volunteers were encouraged to participate in all sessions but were not required to participate in the entire program. Volunteer permission forms were collected from all students prior to participation, allowing exchange of information through email and personal messaging. The permission form used can be found in Appendix C.

**Intervention**

The review of evidence revealed that older adults can greatly benefit from the use of virtual technology and interactive intergenerational programs. Combining these ideas, the intervention utilized Zoom videoconferencing technology to connect students and nurses belonging to generation X, generation Y (millennial), and generation Z with older adults through meaningful conversations and story-sharing. This program was intended to provide a platform for support, sharing, and exchange of ideas to provide a sense of belonging, purpose, and meaningful engagement for the older adult participants as well as an opportunity for younger generations to better appreciate the views of older generations, build meaningful relationships, and perhaps find a system of support as well. The review of evidence also suggested that intergenerational programming and the use of technology can have beneficial effects on the health and wellbeing of older adults by reducing social isolation and feelings of loneliness. An intervention designed to incorporate the intergenerational aspect with virtual connection via the internet was ideal considering the restrictions on in-person meetings during implementation as a result of the COVID-19 pandemic. A total of six sessions, one hour each, were conducted over 12 weeks in March through May 2021. For each session, a Zoom meeting was created by the DNP author, who served as the program creator and lead, that included a title topic, specific meeting identification number, and six poll questions. Topics of discussion included sharing of life stories, generational differences and misconceptions, advice for other generations, travel
experiences, historic events, and career advice. Prior to each session, the Zoom meeting link and
details were emailed to a representative of SFV to distribute to participants who replied to a
newsletter advertisement sent out prior to initiation of the program. Zoom meeting details were
also emailed to student and nurse participants prior to each session. In addition to the Zoom
meeting link, relevant internet articles were sent to all participants to help guide discussions. All
discussions were mediated by the DNP author to ensure all participants could contribute to the
conversation as desired. A short anonymous poll was conducted at the end of each session
utilizing items from the UCLA Loneliness Scale as well as general questions about benefits
gained from the experience.

**Gap Analysis**

The *Gap Analysis* in Appendix D provides an abridged representation of the current
problem. The gap analysis illustrates that in the current state, loneliness and isolation are
prevalent in the older adult population, and this issue has been exacerbated by the COVID-19
pandemic. It also reveals that loneliness and isolation can have serious detrimental effects on
health and well-being. The desired state would involve reduced loneliness and isolation in older
adults with resultant positive health outcomes, leaving a gap between the current state and the
desired state. The solution to this concern would involve an intergenerational program that would
allow virtual interaction for the safety of participants, as evidence has revealed that
intergenerational and virtual programs can be beneficial in reducing loneliness and isolation.

**Work Breakdown Structure**

The *Work Breakdown Structure* (*WBS*) in Appendix E illustrates details of the three
major phases of the DNP project. First, project development started with a needs assessment in
the community, determination of the direction of the DNP project, followed by identification of
stakeholders, recruiting of participants, and completion of the prospectus for review. The implementation phase involved notification of stakeholders, confirmation of volunteers and participants, determination of topics for Zoom sessions, finding and providing articles to help guide discussions, holding the Zoom sessions with participants and volunteers, and simultaneous collection of data. Finally, the evaluation phase involved organization and analysis of collected data and finalization of the DNP project to include written and oral presentation of the project.

The major stakeholders, including the DNP project advisor, SFV leadership, SFV members, and student volunteers, were involved in the communication matrix. The DNP advisor helped guide the DNP author through the planning and implementation phases of the project. The DNP advisor also helped facilitate communication between the DNP author and SFV leadership as well as to USF students via the USF student portal and provided the initial contact with SFV. SFV leadership facilitated all correspondence from the DNP author to the SFV members via email and in virtual sessions. SFV leadership also provided the medium of the SFV newsletter to allow dissemination of information regarding the new program. The SFV members and student volunteers were the subjects for the intergenerational program and were kept abreast of program developments via email during the implementation phase.

**GANTT**

The timeline for project planning and implementation with specific milestones are illustrated in the *GANTT* chart in Appendix F. The community assessment began in March 2020 and involved DNP author attendance of multiple videoconferencing sessions and classes with SFV members as well as multiple meetings with SFV staff and the DNP academic advisor. A total of 45 hours were spent completing the community assessment from March to July 2020. The project planning phase, from August through December 2020, included 45 hours of
attending videoconferencing meetings with SFV staff, the DNP academic advisor, and San Francisco YMCA staff while determining the direction of the project. Participants were recruited from both SFV and USF from December 2020 through February 2021. Recruitment of SFV members required cooperation of the SFV program coordinator, who provided an announcement in the organization’s newsletter about the program. The program coordinator had continued involvement in the DNP project by providing communication between the DNP author and SFV members about meeting details. A commitment of about one hour every other week was required of the program coordinator for the duration of the program. Recruitment of USF students and nurses was an ongoing task for the DNP author that required emails and text messages to potential participants to attend each session, with a total of six hours spent recruiting student and nurse volunteers. Project implementation comprised six, one hour-long videoconferencing sessions every other week for 12 weeks from March to May 2021. Implementation included one to two hours every other week to determine topics of discussion and relevant articles to help guide discussions plus one hour after each session to compile poll results and update the academic advisor on current developments. The implementation phase required 20 hours of direct contact time for the DNP author. Data analysis and completing the written portion of the DNP project took place from May to June 2021 and required about 20 hours for the DNP author to complete. Final presentation of the DNP project to the board took place in August 2021.

**SWOT**

The *SWOT* analysis in Appendix G provides an examination of the internal strengths and weaknesses of the project as well as the potential external opportunities and threats of continuation of such a program. The internal strengths included the desire of health care professionals as well as the SFV leadership to improve the lives and overall well-being of
Village members by reducing loneliness and isolation in this demographic, thereby increasing the potential for better health outcomes related to loneliness and isolation in older adults. Weaknesses of the study included resistance to change on the part of SFV members as well as SFV staff and difficulty communicating the potential health benefits of a program designed to reduce loneliness to non-medical members and staff. Externally, similar intergenerational programs may be implemented in other SFV programs throughout California as well as other programs targeting more vulnerable populations, such as individuals residing in skilled nursing facilities. Also, as the COVID-19 pandemic restrictions loosen, intergenerational programs may evolve into in-person or hybrid programs, allowing the benefit of face-to-face interactions, potentially providing more robust benefits to older adults. However, the task of recruiting young adult or adolescent volunteers remains a barrier and may be more challenging on a larger scale, and a larger team along with a larger budget may be necessary for expansion.

To continue the proposed intergenerational program, a minimal time commitment from the SFV program coordinator would be required. Since the participants voiced desires for longer, more frequent sessions, it is estimated that the project manager would spend about 10 hours per week hosting the intergenerational program. The project manager salary would need to be figured into the annual budget if the program were to fall outside of the project manager’s scope. The infrastructure for the program is already in place with free Zoom access for SFV members. San Francisco Village currently coordinates similar programs for its members, and the addition of this intergenerational program required minimal effort and time commitment from SFV staff. Continuation of the program would, in theory, be possible if able to overcome the challenge of continued commitment from younger volunteers to participate.
Budget Analysis

The Budget is illustrated in Appendix H, and the Cost-Benefit Analysis can be found in Appendix I. This DNP project entailed a small cost and potentially no additional costs for SFV to continue the program indefinitely. If a different facility were to adopt the program, or if SFV needed to hire an additional project manager to run the program, a portion of the project manager’s salary would need to be figured into the annual budget. Assuming a commitment of 10 hours per week for the program and $50 per hour salary, the cost of a project manager to continue the program would be $26,000. This is reflected in the Cost-Benefit Analysis in Appendix I. The DNP author was required to purchase a Zoom Professional yearly subscription for $149.90 to utilize specific features necessary to facilitate the sessions, which included live transcript closed captions for hearing impaired participants, breakout rooms for smaller group discussions, in-meeting polling for data collection, and hour-long meetings with multiple participants. San Francisco Village staff that facilitate similar meetings already utilize these features and would require no additional cost to the organization to continue such meetings. However, another facility may need to add this purchase to their annual budget; this is also reflected in the Cost-Benefit Analysis in Appendix I. Additionally, the DNP author provided $30 gift cards to all student and nurse volunteers that participated in at least one session. With eight volunteers total, there was a cost of $240 for volunteer compensation for the project. With program continuation, volunteer compensation may be required for continued participation, adding a small cost to the ongoing program. With 12 volunteers that agree to a yearly commitment, this would equal a cost of $360. Total annual expenses at the highest potential budget would cost $26,509.90.
The Cost-Benefit Analysis gives further breakdown of the cost of loneliness and isolation and the cost benefit of developing programs that address these issues. An article by Sullivan and Papievis (2020) reported that Medicare spends close to $6.7 billion annually as a result of social isolation and loneliness in the U.S. Medicare spends about $1644 more per person annually on individuals that are socially isolated (Shaw et al., 2017). Therefore, for a group of 20 older adults who are lonely or isolated, there is an additional $32,880 spent each year on health care. With a program that costs $26509.90 annually for 20 participants with the intention of reducing loneliness and isolation, there is a potential to save $6370.10 annually for each program that is created.

Project Responsibility and Communication

The DNP author worked closely and continuously with the DNP academic advisor in cooperation with the leadership and staff at SFV for the development of this project. The needs assessment involved several Zoom meetings with the academic advisor and SFV staff to ensure the needs of participants were being met. The SFV leadership provided ongoing communication with SFV members to determine preferences for the program as well as timing. The DNP author had the opportunity to interact with members through virtual programs during the needs assessment phase with the support of SFV leadership. All communication between the DNP author and SFV was either facilitated by the academic advisor, or the academic advisor was included on all communication via email. The SFV leadership provided advertisement for the program through the SFV newsletter. San Francisco Village leadership also recruited participants via email for the program and provided pertinent information to SFV members prior to each session. A breakdown of the communication amongst responsible parties can be seen in Appendix K, the Communication Matrix.
Study of the Interventions

Poll questions were provided at the end of the Zoom sessions to determine whether participants gained any benefit from participation. There are no poll results from the fifth Zoom session because there were no student volunteers in attendance. Thus, due to the lack of an intergenerational piece during the fifth session, no poll was conducted. Questions included items from the UCLA Loneliness Scale and additional questions to determine if that particular session, and the program overall, provided benefit to health and well-being or reduced feelings of loneliness and isolation. The Zoom poll included multiple-choice questions, for which survey respondents chose from the following responses: “Yes”, “Maybe”, “Unsure”, and “No”. Answers for “Yes” and “Maybe” were considered positive responses, and “Unsure” and “No” were considered negative responses. Additionally, since the poll questions from the Zoom sessions did not differentiate between student volunteers and older adult participants, a final survey was conducted after completion of the program that differentiated participants based on age group with similar questions addressing specific benefits of the program. Multiple-choice questions from the final survey comprised of the same response options. Percentages comparing the responses for each multiple-choice question were evaluated by session and overall to determine whether the sessions were advantageous, if it adequately addressed the aims of the intervention, and whether the intervention was beneficial over time.

Measures

The outcomes for the DNP project were measured using descriptive statistics. The analysis encompassed five anonymous, optional poll questions offered via the Zoom polling feature at the end of five of the videoconferencing sessions. The questions included three items from the UCLA Loneliness Scale as well as two additional questions about benefits of
participating. The questions included: “Did this experience make you feel more meaningfully connected with others?”; “Did this experience make you feel less isolated from others?”; “Do you think sessions like this are helpful in building meaningful relationships?”; “Do you believe these sessions could offer any value to your health or well-being?”; and “Did you gain anything valuable from this experience?”. The questions were multiple choice with only one answer allowed per question with the following options: “Yes”; “No”; “Maybe”; “Unsure”.

The analysis included results from a final poll that was sent to all participants after conclusion of the program. The final survey offered more detailed information about overall changes in feelings of loneliness and isolation as a result of the program as well as personal experiences and opinions of the program. This poll was anonymous and voluntary. Final poll questions included: “How many Zoom sessions did you attend?”; “To which group do you belong (San Francisco Village member, USF student)?”. Three questions from the UCLA Loneliness Scale were incorporated, including: “Did participating in this program make you feel less isolated from other people?”; “Did participating in this program make you feel more meaningfully connected with other people?”; “Did this program make you feel like other people truly understand you?”. Additional multiple choice questions included: “Do you believe this program had any positive effects on your health or well-being?”; “Did you receive any benefit at all from participating in this intergenerational program?”; “Would you participate in a similar program in the future?”. Finally, participants were able to offer their opinions using free text for the following questions: “What aspects of the program did you enjoy? Please explain.”; “What did you dislike about the program? What would you change? Please explain.”; and “Please provide any other feedback about the intergenerational program.”
Analysis

The poll results were reported using descriptive statistics from the Zoom sessions, as well as the poll results from the final survey, were compiled and placed into bar graphs to visually demonstrate the results. The bar graphs represented percentages of participants that provided specific answers to poll questions to better compare the results from each session. It was considered a positive result if the participant answered “Yes” or “Maybe” to each question, and it was considered a negative result if the participant answered “No” or “Unsure”. The Zoom polls did not differentiate between student volunteers and SFV members, so the final survey included a question regarding what group to which the participant belonged to determine if the program was beneficial to older adults specifically. Additionally, the final Zoom session allowed time for participants to voice their opinions and suggestions for future programs, and qualitative questions were included in the final program survey for members to give feedback. These data were included in the qualitative analysis. Results also included measures of participation to show how interest in the program fluctuated over time. Microsoft Excel Spreadsheet and Data tools was used to summarize the findings and create graphs demonstrating the responses to poll questions as well as participation.

Ethical Considerations

The DNP project was approved by the USF DNP program as a quality improvement project. The project did not involve original research, therefore institutional review board (IRB) approval was not required. The Statement of Determination for the project, approved by the DNP chair and DNP committee member, can be found in Appendix J.

The DNP project is in compliance with the Health Insurance Portability and Accountability Act (HIPAA) of 1996 (U.S. Department of Health and Human Services, 2020).
Medical records were not accessed or necessary to perform the project intervention. The project did not require the sharing of any health information by participants. Any related information offered by participants was completely voluntary and not requested by the DNP author. The Zoom sessions were not recorded using either video recording or record of closed-caption transcripts.

The DNP project is in acquiescence with the core values of USF. First, utilizing the most recent evidence to guide an intervention benefitting members of the San Francisco community, the project follows USF’s core value to “pursue truth and follow evidence to its conclusion” (USF, n.d.). Next, by gathering members of different generations for meaningful conversations, this project addresses USF’s core value of “diversity of perspectives, experiences and traditions as essential components of a quality education in our global context” (USF, n.d.). Finally, by developing a program connecting older adults to their local community and the world at large, the DNP project helped bring meaning to the lives of these individuals, in line with the USF core value of “a culture of service that respects and promotes the dignity of every person” (USF, n.d.). Additionally, in protecting the dignity of all participants, automatically-generated closed-captions were enabled for the meetings to accommodate members with hearing deficits and allow equal involvement from all participants.

The DNP project followed the American Nurses Association (ANA) Code of Ethics for Nurses, Provision 3, Protection of Human Participants in Research (ANA, 2015). Section 3.2 of Provision 3 of the ANA Code of Ethics for Nurses states that individuals have a right to choose whether they participate in research and that participants must be provided adequate information to make informed decisions (ANA, 2015). Participation in the DNP project intervention was completely voluntary. Each volunteer was required to read and sign a consent form detailing
expectations related to participation in the program. Volunteers and San Francisco Village participants were allowed to drop out of the program at any time or opt out of any sessions they did not wish to attend. Information regarding the purpose of the program was disclosed at the beginning of each session. Polling in each Zoom session, as well as the final participation survey, were completely anonymous and voluntary, and there were no repercussions for lack of participation. Furthermore, to protect all participants from the dangers of COVID-19, the program was conducted entirely virtually. Although not ideal in addressing loneliness, the virtual program was the safest method for all involved.

Finally, the DNP project provided contributions to the nursing profession through scholarly inquiry in accordance with the ANA’s Code of Ethics, Provision 7, Contributions through Research and Scholarly Inquiry (ANA, 2015). Section 7.1 of Provision 7 states that all nurses must contribute to the advancement of the nursing profession through the development of knowledge and application of that knowledge to practice (ANA, 2015). The DNP author, using the most recent evidence regarding loneliness, isolation, and intergenerational programs, created a change of practice project addressing an important health issue prevalent amongst community-dwelling older adults. In accordance with Provision 7, the DNP project expanded the body of knowledge to advance nursing practice in the community (ANA, 2015).

Results

Six virtual intergenerational sessions were held over a twelve-week period with fluctuations in participation over the course of the program. Participation reduced noticeably after the first meeting and showed a slighter decrease over the remaining sessions. A visual depiction of participation for each meeting is represented in Appendix L and shows the drop-off in participation over the course of the 12 weeks. In this section, poll results from individual
meetings, as well as the final survey results collected via Survey Monkey, will be presented. Appendix M provides visual representations of the poll results from the five sessions in which the poll was administered.

The initial meeting was the largest virtual gathering of the program with six student volunteers and 17 SFV members. This session was the only meeting in which participants were divided into three separate breakout rooms to allow for a more intimate experience and facilitate more meaningful conversations. Each room comprised two student volunteers and between five and six SFV members. Participants were randomly assigned to breakout rooms. The meeting started with a short introduction from the facilitator with instructions for the session. The entire session lasted for one hour, and the main topic was “How Did I Get Here?”. This included discussions about where participants were born, where they lived as children and younger adults, and how they ended up in San Francisco. The DNP author facilitated the session and divided her time between the three breakout rooms to help guide conversations. Through observation, it was found that the conversations seemed to flow naturally as participants got to know each other. Ten minutes before the end of the one-hour meeting, the participants were removed from breakout rooms and gathered in a common meeting room.

The Zoom poll was conducted at the end of the meeting after all participants were gathered in the common meeting room. The first three questions were pulled from the UCLA Loneliness Survey to use a more standardized approach to evaluate whether the program was adequately addressing the problem of loneliness. Fourteen participants submitted answers for the poll from the first session. Ten survey participants (71.4% of survey participants) answered “Yes” that the experience made them feel more meaningfully connected with others and four answered “Maybe” (28.6%); no participants answered “No” or “Unsure”. Ten participants
(71.4%) answered “Yes”, and four answered “Maybe” (28.6%), that these sessions may be helpful in building meaningful relationships; again, there were no answers for “No” or “Unsure”. Eleven participants said “Yes” (78.6%) that the experience made them feel less isolated from others, and three participants answered “Maybe” (21.4%); no one answered “No” or “Unsure”. Twelve participants said “Yes” (85.7%) that these types of sessions could offer value to their health and well-being, one answered “Maybe” (7.1%), and one answered “Unsure” (7.1%); no participants answered “No”. Finally, ten participants (71.4%) answered “Yes” that they gained something valuable from the experience, three answered “Maybe” (21.4%), and one answered “Unsure” (7.1%).

The topic of discussion for the second session was “Clearing Up Misconceptions About Our Generation”. There were fewer SFV members as well as fewer student volunteers that attended the second session as interest for the program started to dwindle. Three student volunteers and ten SFV members attended the second session. Because of the minimal participation and difficulty facilitating several conversations, breakout rooms were not used in the second meeting. Discussions took place as one larger group, making it easier to facilitate the discussion and observe interactions. Discussions were slightly more stunted at the beginning of this session, and some encouragement was needed to get the conversation started. However, as the discussion unfolded, the session lasted longer than one hour and went over time almost 30 minutes. The poll was administered 45 minutes into the session. Only seven people participated in the poll. Five participants (71.4%) answered “Yes” agreeing that the session made them feel more meaningfully connected with others, and two answered “Maybe” (28.6%). Five (71.4%) said “Yes” that the session was helpful in building meaningful relationships, and two said “Maybe” (28.6%). Six (85.7%) said that the session made them feel less isolated from others,
and one said “Maybe” (14.3%). Five (71.4%) answered “Yes” that the sessions could offer benefit to their health or well-being, two answered “Maybe” (28.6%). Lastly, five answered “Yes” (71.4%) that they gained something valuable from the experience, and two said “Maybe” (28.6%). No poll participants answered “No” or “Unsure” to any poll questions from this session.

The third session was titled “Generation to Generation” and involved sharing of advice with members of different generations. Participants were encouraged to offer guidance on various topics and ask questions of members from other generations. Attendance for this session was similar to the previous meeting with only two student volunteers and twelve SFV members. The meeting was held as one large group discussion due to minimal participation. Conversation mostly consisted of the older adults offering advice to the younger volunteers on various topics, such as travel and financial advice, and the younger participants asking multiple questions. The same poll was conducted over the last 10 minutes of the session. Seven of the eight participants that contributed to the poll said “Yes” (87.5%) that they felt more meaningfully connected with others, and one answered “Maybe” (12.5%). Five (62.5%) said that the session helped build meaningful relationships, and three said “Maybe” (37.5%). Seven (87.5%) said “Yes” that the session made them feel less isolation from other people, and one said “No” (12.5%). Six (75.0%) answered “Yes” that the program contributed to their health and well-being, while two (25.0%) answered “Maybe”. Seven (87.5%) said “Yes” that they gained something valuable from the experience, and one said “No” (12.5%).

By the fourth session, the number of participants had declined even more with only two student volunteers and nine participants from SFV. The topic for this discussion was “Wanderlust: World Travels”. Participants discussed some of their favorite places to travel and
what they gained from their travel experiences. Participation in the poll for this session was minimal with only five responses. Four poll participants (80.0%) said “Yes” that the experience made them feel meaningfully connected, while one said “Maybe” (20.0%). Three (60.0%) answered “Yes” that they were building meaningful relationships, while two (40.0%) said “Maybe”. Four (80.0%) said “Yes” that they felt less isolated from others while participating, and one (20.0%) said “Maybe”. Three (60.0%) answered “Yes” that the program has been beneficial to their health and well-being, while one (20.0%) answered “Maybe” and one (20.0%) participant answered “No”. Finally, four participants (80.0%) said “Yes” that they gained some overall value from the experience, and one (20.0%) answered “Maybe”.

The fifth session had the least participation of the entire program. No student volunteers showed for the session, and the 10 SFV members in attendance voiced their disappointment. The conversation, nonetheless, continued with facilitation from the DNP author. The topic of conversation for this meeting was “Historical Events”, and participants discussed various historical events that they remember experiencing or hearing about that had an impact on their lives. Although there was no intergenerational interaction, the discussion was robust as SFV members shared stories about events that they remembered and their different experiences. No poll was conducted at the conclusion of this session as there was no intergenerational aspect to analyze.

The sixth and final session offered a conclusion of the program that allowed both students and older adult participants to share their feedback, offer any final advice, and say goodbye to fellow participants. Nine SFV members and two student volunteers attended the final session. One SFV member expressed that she would have preferred face-to-face, in-person conversations as well as more intimate smaller groups to allow each member more time for sharing their
experiences and view. The seven other SFV members in attendance agreed with this statement. Another SFV member expressed that she would have enjoyed talking to members of younger generations as well, such as middle school and high school students. Four other participants expressed similar wishes. Participants also shared additional topics that they would have liked to discussed if the program had allowed for more meetings. Some of the desired topics included, “Who are your heroes?” and “What did you want to be when you grew up, and did you follow that dream?”.

A Zoom poll was conducted at the conclusion of the final session with a total five responses. This poll included the original poll questions as well as three additional questions. Four respondents said “Yes” (80.0%) that overall the program made them feel more meaningfully connected with others, and one (20.0%) answered “Maybe”. All five poll participants (100%) said “Yes” that if the program continued, it could help build meaningful relationships. Four (80.0%) participants said “Yes” that overall the program made them feel less isolated from others, and one (20.0%) answered “Maybe”. Four (80.0%) answered “Yes” that the program offered some benefit to their health or well-being, and one (20.0%) answered “Maybe”. All five (100%) responded that “Yes” they did gain something valuable from the experience, and they would participate in the program again if given the opportunity.

Two weeks after the last Zoom session, the final participation survey was sent to all SFV participants and student volunteers who attended at least one session. Eleven participants responded to the survey, including eight SFV members and three student volunteers. Two of the questions adapted from the UCLA Loneliness Scale used in the Zoom polls were used again in the final survey, and one item from the UCLA Loneliness Scale was added. Five (45.5%) respondents reported that “Yes” the program overall made them feel less isolated from other
people, two (18.2%) said “No”, three (27.3%) said “Maybe”, and one (9.1%) answered “Unsure”. Eight (72.7%) survey participants said “Yes” that the program made them feel more meaningfully connected with others, while one (9.09%) said “No”, one said “Maybe”, and one said “Unsure”. Five respondents (45.5%) answered “Yes” that the program made them feel that other people truly understand them, two (18.2%) said “Maybe”, four (36.4%) said “Unsure”, and one (9.1%) said “No”. Seven (63.6%) respondents reported that “Yes” this program had positive effects on their health or well-being, two (18.2%) said “Maybe”, two (18.2%) said unsure, and zero participants answered “No” to this question. Nine participants (81.8%) said “Yes” that they would participate in a similar program in the future, and two (18.2%) answered “Maybe”.

Considering the results only from the eight SFV members who completed the final survey, the results were less conclusive. Only three (37.5%) older adult respondents said “Yes” that the program made them feel less isolated from others, two (25%) said “Maybe”, one (12.5%) was “Unsure”, and one (12.5%) said “No”. Five (62.5%) said “Yes” that they felt more meaningfully connected with others from participating in the program, one (12.5%) said “Maybe”, one (12.5%) said “Unsure”, and one (12.5%) said “No”. Only three older adult respondents (37.5%) said the program made them feel that other people truly understand them, two (25%) said “Maybe”, and three (37.5%) were “Unsure”. Four SFV members (50%) said they found overall benefit to their health or well-being from participating in the program, two (25%) said “Maybe”, and two (25%) were “Unsure”. Five (50%) said “Yes” that they found some overall benefit to participating in the intergenerational program, two (25%) said “Maybe”, and one (12.5%) was “Unsure”. Finally, six respondents from SFV (75%) said “Yes” they would participate in a similar program in the future, and two (25%) said “Maybe”. The graphs in
Appendix N show the differences between the overall survey results and the responses from SFV Village members only.

Additional questions were included in the final survey to allow anonymous sharing of feedback as well as collection of qualitative data. The participants were first asked what they enjoyed about the program. One participant from SFV expressed that they enjoyed “Listening to the other generation. Saying something and seeing two students open their eyes wider...they had not thought of the idea in this manner”. Another SFV member offered, “This was my favorite program. I really loved the students and wanted so much to get into deeper conversations with them. I also wanted to hear more about their lives. It was just too short of a session”. Another participant stated, “I really enjoyed discussing experiences with people I would not normally encounter in my daily life”. Finally, a participant from SFV offered, “I learned a lot and felt more of a connection not only to other Village members but to another generation. Really, it was my favorite program. I would love to give them more advice”.

Participants were also asked what they disliked about the program or what they would change if given the opportunity. Three respondents stated that they would have liked to have longer sessions to allow for deeper discussions of the presented topics. Two participants expressed that they preferred the breakout room method because it allowed more time for each participant to speak. This feedback would be important to consider in developing similar programs in the future.

**Summary**

The quantitative results showed that the majority of participants found benefit from the intergenerational program in all areas addressed in the session polls. The aim was for 75 percent of participants to feel more meaningfully connected with others, less isolated, and help build
meaningful relationships and find benefit to their health and well-being. The poll results from each individual meeting showed that more than 75 percent of participants answered “Yes” or “Maybe” to all questions. All participants in all sessions answered “Yes” or “Maybe” to the three questions adapted directly from the UCLA Loneliness Scale, demonstrating that the individual sessions positively addressed loneliness in participants. Additionally, the majority of participants found some benefit, answering “Yes” or “Maybe”, to their health or well-being or found some overall benefit from the program. The outcomes from session to session were consistent, which may be due in part to the fact that the same older adult participants attended most sessions. One significant limitation was that the Zoom poll results did not distinguish between San Francisco Village members and student volunteers. Because the session polls were completely anonymous, the results cannot be attributed only to the older adult participants. This issue was addressed in the final Survey Monkey questionnaire by asking participants to which group they belonged, either SFV or USF.

The findings from the final survey were less conclusive. Although some older adult members did find benefit from participating in the program, it was less evident that the program was successful in addressing loneliness in this population. The dissimilarity between the Zoom poll results and the final survey results addressing only the older adult population are likely due to the student volunteers giving higher scores overall. Additionally, it may be a factor that participants felt less lonely during, and directly after, each session, but the results were not lasting, and the program overall was not adequate in reducing loneliness longer term.

The findings of this DNP project also revealed that program retention was a significant problem in both the volunteer group and the older adult group. Recruitment and retention of student volunteers proved to be an especially difficult undertaking. Four of the volunteers that
attended the first session did not return for any subsequent sessions. Persuading student and young adult volunteers to continue the program required substantial effort with multiple text messages and emails. As volunteer numbers dwindled, it was necessary to communicate through the USF student portal to recruit additional volunteers. Using the portal only provided two additional students for participation. Merely one student consistently attended sessions with attendance at five of the six sessions. Participation from SFV also declined as the program progressed, particularly after the initial session. Feedback from the SFV program coordinator revealed that the introduction at the start of the initial session was rushed and some participants were confused about how the program was supposed to progress. This concern and confusion likely caused the initial drop-off in participation. Possible explanations for the slower but continued decrease in involvement may have been due to low volunteer participation, disinterest in discussed topics, or dislike for overall structure or management of the sessions and program.

**Interpretation**

The findings from this intervention project, although mixed, were consistent with the current literature. The intergenerational sessions tended to reduce feelings of loneliness and isolation in the short-term, but had less compelling results in the long-term and over the course of the 12-week program. With modification, this type of intergenerational program could have a considerable positive impact on the health and well-being of older adults. The virtual, intergenerational model used in this intervention was supported by Watson’s Philosophy and Science of Caring by helping the SFV members find meaning in their lives and in their experiences by creating a welcoming environment in which to share stories and experiences with members of other generations (Watson, 1985). This intervention is also supported by Fawcett’s
UTILIZING DIGITAL TECHNOLOGY TO ADDRESS LONELINESS AND ISOLATION

(2015) model by improving quality of life through activities that promote wellness and help prevent disease through reducing loneliness and isolation.

Based on feedback from participants, similar programs with a few modifications from the present intervention could be quite beneficial to the health and well-being of participants. Ideally in future programs, meetings would be in-person or hybrid, allowing some participants to have the desired face-to-face interaction while allowing some members to participate from their own homes via Zoom if preferred. The sessions would also be longer and more frequent, permitting more time to have meaningful conversations and develop lasting relationships with people of other generations. The option for smaller groups would also be preferred; this option being more feasible with in-person meetings. Finally, recruiting more committed volunteers who would be agreeable to attending frequent sessions for a longer period of time would be ideal in creating a program that focuses on developing meaningful relationships. With these improvements and a more permanent program with consistent resources, the intergenerational story-sharing program has vast potential.

Limitations

Several limitations and barriers were presented during the evaluation and implementation phases of the intervention. The community assessment for the project began shortly after the COVID-19 pandemic began in the U.S. when shelter-in-place orders were being enacted. This obstacle changed the direction of the initial plan to implement an in-person program for San Francisco Village members. The community assessment, therefore, took place through videoconferencing with members and emailing with San Francisco Village staff. Next, while developing a plan for a virtual program, several Village members expressed interest in participating in a tutoring program with school-age children. However, after starting
development for the desired program, it was determined that no Village members were interested in offering tutoring through the YMCA. Consequently, the project needed to take a new direction. San Francisco Village members preferred a story-sharing model with members of other generations, so the plan for an intergenerational story-sharing program was implemented.

Recruiting student and nurse volunteers proved to be rather challenging. Several emails, text messages, and messages on the University of San Francisco School of Nursing student portal were necessary to recruit a small number of participants. Continued support from the volunteers for the duration of the program was an ongoing challenge. Additionally, San Francisco Village members preferred in-person meetings versus virtual videoconferencing meetings. Members have previously communicated that virtual communication, even with video capabilities, did not have the same benefits as face-to-face interaction. Unfortunately, this barrier may not be overcome due to the current circumstances related to COVID-19. Additionally, the sample size for this intervention varied from session to session because there was no requirement for commitment from either SFV members or student volunteers. Poll answers were represented as percentages to control for this variation.

**Conclusion**

The findings of this DNP project were mixed. Results from the individual sessions showed that the intergenerational program may have had positive short-term effects on loneliness, but the final survey revealed less conclusive evidence to support the long-term effects of the program on loneliness and isolation in older adults. Research suggests that intergenerational programs can positively affect the health and well-being of older adults by reducing loneliness and social isolation, in turn reducing the detrimental effects loneliness and isolation can have on both physical and mental health. The overall findings from the current
intervention were consistent with the existing literature. This project has implications for similar interventions in various settings, communities, and age groups. Intergenerational programs with a similar structure can be implemented in settings such as skilled nursing facilities, hospitals, mental health treatment centers, schools, and a multitude of other settings.

Results revealed that the current intervention not only had positive effects on the health and well-being of older adults, but that of younger adults as well. With loneliness and social isolation becoming more prevalent as the world continues to shift to a more virtual, computer-oriented society, programs aimed to reduce loneliness and isolation have significant potential in the arena of public health. With widespread implementation, similar intergenerational programs can help improve health outcomes from a primary perspective. With a few modifications, this intergenerational program has the potential to be highly successful at addressing loneliness and isolation over the long term and positively improving the health and well-being of individuals of all ages.

**Funding**

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References


Martin-Maria, N., Caballero, F.F., Lara, E., Domenech-Abella, J., Haro, J.M., Olaya, B., Ayuso-


Perissinotto, C.M., Cenzer, I.S., & Covinsky, K.E. (2012). Loneliness in older persons: A


Shaw, J.G., Farid, M., Noel-Miller, C., Joseph, N., Houser, A., Asch, S.M., Bhattacharya, J., &


## Appendix A

### Summary of Evidence: Exacerbation of Loneliness and Isolation Related to COVID-19 and the Effects of Loneliness and Social Isolation on Health and Well-Being

<table>
<thead>
<tr>
<th>Reference</th>
<th>Design</th>
<th>Sample Size</th>
<th>Variables</th>
<th>Measurement of Variables</th>
<th>Significant Findings</th>
<th>Johns Hopkins Evidence Appraisal (Dang &amp; Dearholt, 2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kotwal et al. (2021)</td>
<td>Longitudinal study</td>
<td>n=151</td>
<td>IV: Physical distancing during COVID-19 pandemic</td>
<td>Standardized scales: Duke Social Support Index to measure isolation and UCLA Loneliness Scale to measure loneliness</td>
<td>54% reported worsened loneliness d/t COVID, which was associated with worsened depression</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: Measures of social isolation and loneliness</td>
<td></td>
<td>40% reported social isolation</td>
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<td></td>
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<td></td>
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<td></td>
<td>Loneliness improved since shelter-in-place orders were discontinued</td>
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<tr>
<td>Stolz et al. (2020)</td>
<td>Longitudinal study with cross-sectional analysis</td>
<td>n=388</td>
<td>IV: Reduction of social contacts during COVID lockdown</td>
<td>Three-item UCLA Loneliness Scale Cross-sectional survey about effects of COVID lockdown</td>
<td>Substantial increase in loneliness from pre-pandemic years to 2020 lockdown</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>DV: Measure of loneliness</td>
<td></td>
<td>Positive association between number of restriction measures and loneliness level</td>
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</tr>
<tr>
<td>Macdonald and Hulur (2020)</td>
<td>Longitudinal study</td>
<td>n=99</td>
<td>IV: COVID-19 lockdown and social distancing measures</td>
<td>Measures of loneliness as well as positive and negative affect using a selection of adjectives (1-100 scale)</td>
<td>Positive affect decreased during lockdown</td>
<td>Level IIC quasi-experimental study, lower quality (no standardized scales used)</td>
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<tr>
<td></td>
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<td></td>
<td>DV: Data from a study on loneliness, well-being, and social relationships</td>
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<td>Negative affect and loneliness increased during lockdown</td>
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<tr>
<td>Krendl and Perry (2020)</td>
<td>Longitudinal study</td>
<td>n=93</td>
<td>IV: COVID-19 isolation measures</td>
<td>Social network interviews including questions from PhenX Toolkit Social Networks Battery</td>
<td>79.3% reported their social lives were negatively affected by COVID-19</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: Loneliness as a measure and predictor of depression</td>
<td></td>
<td>Older adults experienced more depression and loneliness during COVID-19</td>
<td></td>
</tr>
<tr>
<td>Jessen et al. (2018)</td>
<td>Longitudinal cross-sectional analysis</td>
<td>n=9154</td>
<td>IV: Loneliness</td>
<td>Subjective measures of self-rated health, physical ability</td>
<td>Lonely participants had increased risk of poor health rating, having more limited physical ability, and suffering from multiple chronic conditions</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
<tr>
<td></td>
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<td>DV: Self-rated health, physical ability, and multi-morbidity</td>
<td>Objective measure of multi-morbidity by occurrence of certain diagnosed conditions</td>
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<tr>
<td>Study</td>
<td>Study Type</td>
<td>n</td>
<td>IV:</td>
<td>DV:</td>
<td>Main Findings</td>
<td>Study Quality</td>
</tr>
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<tr>
<td>Philip et al. (2020)</td>
<td>Longitudinal study</td>
<td>8780</td>
<td>Loneliness and social isolation</td>
<td>Physical performance</td>
<td>Short Physical Performance Battery 3-item UCLA Loneliness Scale Objective measure of social isolation Domestic isolation, social disengagement, and loneliness significantly associated with poorer physical performance</td>
<td>Level IIA quasi-experimental study, high quality with large sample size and use of standardized scales</td>
</tr>
<tr>
<td>Shankar et al. (2017)</td>
<td>Longitudinal study</td>
<td>3070</td>
<td>Social isolation and loneliness</td>
<td>Gait speed and ADL difficulties</td>
<td>Short form UCLA Loneliness Scale Measure of social isolation using marital status, social contact frequency, and participation in social activities Gait speed and subjective difficulty with ADLs Social isolation and loneliness were associated with a decrease in gait speed Loneliness was associated with an increase in ADL difficulties</td>
<td>Level IIA quasi-experimental study, high quality</td>
</tr>
<tr>
<td>Perissinotto et al. (2012)</td>
<td>Longitudinal cohort study</td>
<td>1604</td>
<td>Loneliness</td>
<td>Functional decline and death</td>
<td>Time to death over a 6-year period Functional decline over a 6-year period Loneliness associated with decline in ADL ability, reduced mobility, and increased risk of death</td>
<td>Level IIA quasi-experimental study, high quality</td>
</tr>
<tr>
<td>O’Suilleabhain et al. (2019)</td>
<td>Longitudinal study</td>
<td>413</td>
<td>Social and emotional loneliness</td>
<td>All-cause mortality</td>
<td>Mortality measured by number of days from initial contact and date of death 8 items from UCLA Loneliness Scale Emotional loneliness was a significant predictor of all-cause mortality in very old adults who live alone</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
<tr>
<td>Richard et al. (2017)</td>
<td>Cross-sectional, population-based survey</td>
<td>20,007</td>
<td>Loneliness</td>
<td>Physical and mental health, lifestyle factors</td>
<td>Loneliness measured with single-item Likert scale question Self-reported chronic diseases and lifestyle factors PHQ-9 to detect depression Loneliness significantly associated with more self-reported chronic disease, more depression, poorer self-rated health, and more doctor visits</td>
<td>Level IIA quasi-experimental study, high quality</td>
</tr>
<tr>
<td>Lee et al. (2019)</td>
<td>Cross-sectional analysis</td>
<td>340</td>
<td>Loneliness</td>
<td>Mental and physical functioning (depression, anxiety, perceived stress, resilience, life satisfaction)</td>
<td>UCLA Loneliness Scale Version 3 Standardized scales to measure depression (PHQ-9), anxiety, perceived stress, resilience, and life satisfaction High loneliness associated with more depression, anxiety, perceived stress; less resilience, optimism, mental well-being; more cognitive complaints</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
<tr>
<td>Study Authors</td>
<td>Study Type</td>
<td>Sample Size</td>
<td>Independent Variable</td>
<td>Dependent Variable</td>
<td>Design Description</td>
<td>Quality</td>
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<tr>
<td>Martin-Maria et al. (2020)</td>
<td>Longitudinal study</td>
<td>n=1190</td>
<td>IV: Loneliness</td>
<td>DV: Major depression</td>
<td>Level IIB quasi-experimental study, good quality</td>
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<td>3-item UCLA Loneliness Scale, Composite International Diagnostic Interview to detect depressive episodes</td>
<td>Loneliness (both transient and chronic) significantly associated with depression</td>
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<tr>
<td>Luchetti et al. (2019)</td>
<td>Longitudinal study</td>
<td>n=14,114</td>
<td>IV: Loneliness</td>
<td>DV: Cognitive impairment</td>
<td>Level IIA quasi-experimental study, high quality</td>
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<td>Single-item loneliness measure from the Center for Epidemiological Studies Depression scale (CESD-10)</td>
<td>Lonely participants had almost double the risk of cognitive impairment compared to non-lonely participants</td>
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<tr>
<td>Yang et al. (2020)</td>
<td>Secondary analysis of a longitudinal study</td>
<td>n=7410</td>
<td>IV: Social isolation</td>
<td>DV: Cognitive function</td>
<td>Level IIA quasi-experimental study, high quality</td>
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<td>Mediating variable: Loneliness</td>
<td>Loneliness was found to be a mediator of the relationship between isolation and decreased cognitive function</td>
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<tr>
<td>O’Luanaigh et al. (2012a)</td>
<td>Cross-sectional community-based study</td>
<td>n=466</td>
<td>IV: Loneliness</td>
<td>DV: Cognition</td>
<td>Level IIA quasi-experimental study, high quality</td>
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<td></td>
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<td>Single item from the CESD scale to determine loneliness</td>
<td>Loneliness associated with poorer global cognition, psychomotor processing speed, and visual memory in older adults</td>
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<tr>
<td>Zhong et al. (2016)</td>
<td>Follow-up cohort study</td>
<td>n=2995</td>
<td>IV: Transient and chronic loneliness</td>
<td>DV: Cognitive function</td>
<td>Level IIB quasi-experimental study, good quality</td>
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<td>Chinese Mini-Mental State Examination (mMMSE)</td>
<td>Transient and chronic loneliness were both significantly associated with worse cognitive function</td>
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<td>Self-reported loneliness</td>
<td>Loneliness was a strong predictor of cognitive decline</td>
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<tr>
<td>Donovan et al. (2016)</td>
<td>Secondary analysis of longitudinal study</td>
<td>n=8030</td>
<td>IV: Loneliness</td>
<td>DV: Depression, cognitive decline</td>
<td>Level IIA quasi-experimental study, high quality</td>
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<td>8-item CES-D to measure loneliness and depression</td>
<td>Greater loneliness associated with faster cognitive decline over 12-year period; 20% faster decline than non-lonely participants</td>
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</tr>
</tbody>
</table>
### Zhou et al. (2018)
- **Secondary analysis of longitudinal study; 3-year cohort study**
- **n=7867**
- **IV: Loneliness**
- **DV: Dementia risk**
- **Physician diagnosis of dementia**
  - mMMSE for baseline cognitive function
  - Subjective single-item Likert scale question about loneliness
- **Loneliness was associated with a higher risk of developing dementia**
- **Level IIB quasi-experimental study, good quality**

### Rafnsson et al. (2017)
- **Secondary analysis of longitudinal study**
- **n=6677**
- **IV: Loneliness**
- **DV: Dementia**
  - Physician-diagnosed dementia or self-reported dementia
  - Cognitive tests for memory and time orientation
  - 3-item UCLA Loneliness Scale
- **Loneliness associated with increased risk of developing dementia**
- **Level IIB quasi-experimental study, good quality**

### O’Launaigh et al. (2012b)
- **Cross-sectional community-based assessment**
- **n=466**
- **IV: Loneliness**
- **DV: Vascular biomarkers (HbA1c, lipids, etc.), biophysical measurements (BMI, weight, waist circumference)**
- **Biophysical measurements**
  - Blood laboratory measurements
  - CES-D single item to measure loneliness
- **Loneliness significantly associated with elevated HbA1c and higher BMI**
- **Level IIB quasi-experimental study, good quality**

### Shiovitz-Ezra and Parag (2019)
- **Secondary analysis of longitudinal study**
- **n=1815**
- **IV: Loneliness**
- **DV: Changes in inflammatory and metabolic markers**
  - Loneliness measured using single item from the CES-D
  - C-reactive protein, HbA1c, BMI, waist circumference were measured and metabolic burden calculated from these values
- **Loneliness associated with higher HbA1c, worse BMI, and worse metabolic burden**
- **Level IIB quasi-experimental study, good quality**

### Gerst-Emerson and Jayawardhana
- **Correlational analysis**
- **n=1531**
- **IV: Loneliness**
- **DV: Health care utilization**
  - 3-item loneliness scale developed by Hughes et al. in 2004
  - Number of hospitalizations and physician visits
- **Loneliness associated with a significantly greater number of doctor visits and hospitalizations**
- **Level IIB quasi-experimental study, good quality**

### Hanratty et al. (2018)
- **Longitudinal study with correlational analysis**
- **n=15,783**
- **IV: Loneliness**
- **DV: Care home admission**
  - Single item from the CES-D scale and single item from 3-item UCLA Loneliness Scale
  - Recorded place of residence to determine admissions to care homes
- **Loneliness is an independent risk factor for moving into a care home**
- **Level IIA quasi-experimental study, high quality**
| Arslantas et al. (2015) | Cross-sectional study | n=174 | IV: Loneliness
DV: Quality of life | UCLA Loneliness Scale (20-item)
Quality of Life Scale Short Form 36 | Loneliness negatively associated with quality of life | Level IIA quasi-experimental study, good quality |
## Appendix B

### Summary of Evidence – Intergenerational and Virtual Programs

<table>
<thead>
<tr>
<th>Reference</th>
<th>Design</th>
<th>Sample Size</th>
<th>Variables</th>
<th>Measurement of Variables</th>
<th>Significant Findings</th>
<th>Johns Hopkins Evidence Appraisal (Dang &amp; Dearholt, 2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fu and Ji et al. (2019)</td>
<td>Cross-sectional survey</td>
<td>n=2038</td>
<td>IV: Intergenerational relationships</td>
<td>13-item Intergenerational Relationship Quality Scale for Aging Chinese Parents (IRQS-AP)</td>
<td>Intergenerational relationships significantly associated with loneliness, depression, and insomnia</td>
<td>Level IIA quasi-experimental study, high quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: Depressive symptoms, loneliness, insomnia symptoms</td>
<td>CESD-10 scale to measure depressive symptoms</td>
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<td></td>
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<td>Insomnia Severity Index</td>
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<tr>
<td>Murayama et al. (2015)</td>
<td>Intervention research project with control group</td>
<td>n=141</td>
<td>IV: Intergenerational programs</td>
<td>Japanese Sense of Coherence (SOC-13) scale</td>
<td>Participation in intergenerational program associated with increased sense of meaningfulness</td>
<td>Level IC experimental study, lower quality (small sample size, subjective measures)</td>
</tr>
<tr>
<td>Gaggioli et al. (2014)</td>
<td>Feasibility study</td>
<td>n=146</td>
<td>IV: Intergenerational group program</td>
<td>Italian Loneliness Scale (ILS)</td>
<td>Participation in intergenerational program associated with decreased feelings of loneliness and increased perceived QOL</td>
<td>Level IIC quasi-experimental study, lower quality</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>DV: Psychosocial wellbeing of older adults (loneliness, self-esteem, quality of life)</td>
<td>Italian version of the Rosenberg’s Self-Esteem Scale</td>
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<td></td>
<td>Italian version of the World Health Organization QOL Scale for Older People</td>
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</tr>
<tr>
<td>Teater (2016)</td>
<td>Qualitative study</td>
<td>n=70</td>
<td>IV: Intergenerational program</td>
<td>Questionnaire with 16 Likert-style questions</td>
<td>Participation increased confidence, contributed to self-esteem, and had positive effect on the lives of participants</td>
<td>Level IIIIB qualitative study, good quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: Experiences of older adults</td>
<td></td>
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</tr>
<tr>
<td>Tian (2016)</td>
<td>Correlational analysis</td>
<td>n=429</td>
<td>IV: Intergeneration social support, self-esteem, and loneliness</td>
<td>Rosenberg Self-Esteem Scale</td>
<td>Both giving and receiving social support associated with higher self-esteem, better social wellbeing and less loneliness</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DV: Subjective wellbeing of older adults</td>
<td>Social and Emotional Loneliness Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Type</td>
<td>Design</td>
<td>Sample Size</td>
<td>IV</td>
<td>DV</td>
<td>Measures</td>
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</tr>
<tr>
<td>Harris and Caporella (2014)</td>
<td>Pilot study, qualitative analysis</td>
<td>n=27</td>
<td>IV: Intergenerational choir</td>
<td>Qualitative feedback from participants</td>
<td>Participating in the choir reduces feelings of social isolation</td>
<td>Level IIC qualitative study, lower quality</td>
</tr>
<tr>
<td>Yu et al. (2021)</td>
<td>Longitudinal study</td>
<td>n=5240</td>
<td>IV: Internet use</td>
<td>3-item UCLA Loneliness Scale</td>
<td>Internet use associated with decreased loneliness in older adults</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
<tr>
<td>Khalaila and Vitman-Schorr (2018)</td>
<td>Correlational study with convenience sample</td>
<td>n=502</td>
<td>IV: Internet use, social networks</td>
<td>CASP-19 scale to measure QOL</td>
<td>Loneliness negatively correlated with QOL</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
<tr>
<td>Czaja et al. (2018)</td>
<td>Randomized Controlled Trial</td>
<td>n=300</td>
<td>IV: Internet access with special features</td>
<td>Hawthorne Friendship Scale to measure social isolation</td>
<td>Users of the internet program had greater perceived social support, decreased loneliness, increased wellbeing, improved daily life</td>
<td>Level IIB RCT, good quality</td>
</tr>
<tr>
<td>Tsai et al. (2020)</td>
<td>Quasi-experimental study with control group</td>
<td>n=62</td>
<td>IV: Videoconferencing program</td>
<td>10-item UCLA Loneliness Scale</td>
<td>Videoconferencing program reduced feelings of loneliness</td>
<td>Level IIB quasi-experimental study, good quality</td>
</tr>
</tbody>
</table>
Appendix C

Consent Form

(For Participants 18 Years of Age and Older)

Introduction

You are invited to participate in a small group discussion hosted by Hannah Mandecote and Melissa Nagel with San Francisco Village and with support from University of San Francisco (USF). The project will involve sharing of experiences and exploring of perspectives regarding health and well-being. It will develop recommendations and potential actions that the SF Village-USF partnership could take to support and empower older adults in the community.

What we will ask you to do: If you accept, we will ask you to participate in a discussion, or a series of small group discussions and activities, via Zoom and complete a short survey at the end of each session. You are asked to participate in one or more 60-minute meetings with 16-20 participants.

Risks and benefits of being in the project: There will be no direct risks or benefits to you for participation. You will be asked to share your thoughts only when you want to, and the conversation will be guided in a way that avoids potential discomfort.

Compensation: A $30 gift card as a “thank you” for participating in the small group discussion and completing the survey questionnaire.

Taking part is voluntary: Participation in the small group discussion is completely voluntary. The gift card will be mailed to you after the group discussion.

Your responses are confidential: The records of this project will be kept confidential. Only the SF Village/USF team responsible for the project will be able to look at the records, notes, questionnaires, and other materials containing your comments. Names are not collected on the information, nor are they documented in the notes. We will always ask participants to use first names only during the small group discussion.

The information we learn will be used to write a report that will be presented to the DNP Board in a private committee meeting and will inform plans for health programs for older adults. The report will focus on themes, not specific people or stories. No names will be included in the report to the DNP Board. The information you share will not affect your ability to use SF Village/USF services. The audio recording of the small group discussion will be deleted after it is listened to by the researchers.

If you have questions: Please ask any questions you have now, before you sign the form. If you have questions later, you may contact Hannah Mandecote (hmmandecote@dons.usfca.edu) or Melissa Nagel (mnagel2@dons.usfca.edu).

You will be given a copy of this form for your records.

Statement of consent:

I have read the above information and have received answers to any questions I asked.

By signing below, I indicate I consent to participate in the project. I understand the small group discussion will be audio-recorded (optional).

Your printed name: ____________________________________________________________

Your signature: ______________________________ Date ___________________
Appendix D

**Gap Analysis**

<table>
<thead>
<tr>
<th>Current State</th>
<th>Desired State</th>
<th>Gap</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loneliness and isolation are prevalent in the older adult population. This</td>
<td>Reduced loneliness and isolation in older adults, thereby reducing the</td>
<td>Loneliness and isolation have been particularly elevated during the COVID-19 pandemic, and programs should be established to reduce loneliness and isolation in older adults, thus reducing negative health effects.</td>
<td>Establish and host an interactive virtual intergenerational program to help older adults feel more connected with their community, less isolated, and more meaningfully connected with others, thereby reducing feelings of loneliness.</td>
</tr>
<tr>
<td>problem has been exacerbated by the COVID-19 pandemic and shelter-in-place</td>
<td>detrimental effects that loneliness and isolation can have on physical and</td>
<td></td>
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<tr>
<td>orders and restrictions on social gatherings.</td>
<td>mental health.</td>
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<tr>
<td>Loneliness and isolation can have serious detrimental effects on the health</td>
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<tr>
<td>and well-being of older adults.</td>
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</tbody>
</table>
Appendix E

Work Breakdown Structure

Utilizing Digital Technology to Address Loneliness and Isolation in Older Adults through a Community-Based Connection Model

Phase 1: Project Development
- Needs assessment
- Determine details of project
- Identify stakeholders
- Recruit participants
- Complete prospectus

Phase 2: Project Implementation
- Notify stakeholders
- Confirm volunteer participation
- Determine topics for Zoom sessions
- Find articles to guide discussions
- Zoom sessions with participants
- Data collection

Phase 3: Project Evaluation
- Organize data
- Analyze data
- Finalize DNP project
- Complete written DNP project
- Oral presentation of DNP project
- Complete prospectus Zoom sessions with participants

Utilizing Digital Technology to Address Loneliness and Isolation in Older Adults through a Community-Based Connection Model
## Gantt

<table>
<thead>
<tr>
<th>Event</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Assessment</td>
<td></td>
<td></td>
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<tr>
<td>Project planning</td>
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<tr>
<td>Recruiting participants</td>
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<tr>
<td>Project implementation</td>
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<tr>
<td>Writing Prospectus</td>
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<tr>
<td>Data Analysis</td>
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<tr>
<td>Writing DNP Project</td>
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<tr>
<td>DNP Presentation</td>
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<table>
<thead>
<tr>
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<th>Jan</th>
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<tbody>
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<td>Community Assessment</td>
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<td>Data Analysis</td>
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<tr>
<td>DNP Presentation</td>
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## Appendix G

### SWOT Analysis

<table>
<thead>
<tr>
<th><strong>Internal Analysis</strong></th>
<th><strong>Strengths:</strong></th>
<th><strong>Weaknesses:</strong></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Desire of health care professionals to improve the health and well-being of older adults.</td>
<td>Resistance to change amongst San Francisco Village leadership and staff.</td>
</tr>
<tr>
<td></td>
<td>Potential to improve the lives of older adults by reducing loneliness and isolation.</td>
<td>Lack of desire of San Francisco Village members to participate in a new program.</td>
</tr>
<tr>
<td></td>
<td>Potential for better health outcomes in older adults by reducing loneliness and isolation.</td>
<td>Difficulty communicating the benefits of reduced loneliness and isolation to non-medical personnel at San Francisco Village.</td>
</tr>
<tr>
<td></td>
<td>San Francisco Village staff and leadership care about their members and want to help develop a program that is beneficial to them.</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th><strong>External Analysis</strong></th>
<th><strong>Opportunities:</strong></th>
<th><strong>Threats:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Similar programs may be implemented throughout Village organizations throughout California.</td>
<td>With difficulty recruiting young adult volunteers, this may prove to be even more challenging on a larger scale.</td>
</tr>
<tr>
<td></td>
<td>With program continuation and growth, it may become an in-person or hybrid program, providing more robust benefits to members.</td>
<td>On a larger scale, this may require a larger team of people and a larger budget for continuation.</td>
</tr>
<tr>
<td></td>
<td>Similar programs may extend to other more vulnerable populations of older adults, i.e., nursing homes or disabled homebound individuals.</td>
<td></td>
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Appendix H

*Budget*

<table>
<thead>
<tr>
<th>DNP Project Expenses ($)</th>
<th>DNP Project Time Expenditures (hours)</th>
</tr>
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<tbody>
<tr>
<td>Zoom Annual Subscription</td>
<td>149.90</td>
</tr>
<tr>
<td>Gift Cards for Volunteers</td>
<td>240.00</td>
</tr>
<tr>
<td>Community Assessment</td>
<td>45</td>
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<td>Project Planning</td>
<td>45</td>
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<td>Recruiting Participants</td>
<td>16</td>
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<td>Project Implementation</td>
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<td>Data Analysis</td>
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<td>Writing DNP Project</td>
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**Total**  $389.90  **Total**  222 hours
Appendix I

Cost-Benefit Analysis

Annual Expense to Continue Program (20 participants)

<table>
<thead>
<tr>
<th>Expense</th>
<th>Quantity</th>
<th>Unit Cost</th>
<th>Total Cost</th>
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<tbody>
<tr>
<td>Annual Zoom Subscription</td>
<td>1</td>
<td>149.90</td>
<td>$149.90</td>
</tr>
<tr>
<td>Gift cards for volunteers</td>
<td>12</td>
<td>30.00</td>
<td>$360.00</td>
</tr>
<tr>
<td>Project Manager Salary</td>
<td>520 hours (10 hours per week)</td>
<td>50.00</td>
<td>$26,000.00</td>
</tr>
<tr>
<td><strong>Total Annual Expense</strong></td>
<td></td>
<td></td>
<td><strong>$26,509.90</strong></td>
</tr>
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</table>

Cost of Loneliness and Isolation

<table>
<thead>
<tr>
<th>Type</th>
<th>Annual Expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost to Medicare r/t social isolation and loneliness</td>
<td>$6.7 billion</td>
</tr>
<tr>
<td>Additional cost to Medicare per person</td>
<td>$1,644.00</td>
</tr>
</tbody>
</table>

Cost/Benefit Ratio

<table>
<thead>
<tr>
<th>Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional cost to Medicare for 20 lonely/isolated individuals</td>
<td>$32,880.00</td>
</tr>
<tr>
<td>Annual expense of program for 20 participants</td>
<td>$26,509.90</td>
</tr>
<tr>
<td><strong>Total annual savings for a single program (20 Participants)</strong></td>
<td><strong>$6370.10</strong></td>
</tr>
</tbody>
</table>
Appendix J

Statement of Determination

Doctor of Nursing Practice
Statement of Non-Research Determination (SOD) Form

The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E

<table>
<thead>
<tr>
<th>General Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Name:</td>
</tr>
<tr>
<td>First Name:</td>
</tr>
<tr>
<td>CWID Number:</td>
</tr>
<tr>
<td>Semester/Year:</td>
</tr>
<tr>
<td>Course Name &amp; Number:</td>
</tr>
<tr>
<td>Chairperson Name:</td>
</tr>
<tr>
<td>Advisor Name:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Title of Project</strong></td>
</tr>
<tr>
<td>Implementation of an Intergenerational Program Using Video Conferencing to Combat Loneliness and Isolation in Older Adults</td>
</tr>
</tbody>
</table>

| **2. Brief Description of Project** |
| Clearly state the purpose of the project and the problem statement in 250 words or less. |
| The DNP project aims to address loneliness and social isolation in older adults through a virtual, interactive intergenerational program encompassing meaningful conversations and story-sharing. The systematic review for the project looks at the evidence for the various negative effects of loneliness and isolation on health and well-being as well as the effects of the COVID-19 pandemic on loneliness and isolation in older adult populations. Evidence is offered for the effects of intergenerational and virtual interactive programs on loneliness and isolation to support implementation of the project. Goals of the intergenerational program include decreased feelings of loneliness and isolation, greater feelings of connection with others, and benefits to overall health and well-being of older adult participants. |

| **3. AIM Statement: What are you trying to accomplish?** |
| What do you hope to accomplish with this project? Aims should be SMART, specific, clear, well-defined, and at a minimum describe the target population, the desired improvement, and the targeted timeframe. |
To improve (your process) from (baseline)% to (target)%, by (timeframe), among (your specific population)

Complete this statement:

At least 75 percent of participants report positive outcomes for creation of meaningful relationships, increase feelings of connectedness with others, and reduce feelings of isolation and loneliness.

by: July 1, 2021

in: older adult participants, age 55 and older, at San Francisco Village.

4 Brief Description of Intervention (150 words).

There will be six, hour-long intergenerational sessions, every other Friday for 12 weeks. Each session will utilize Zoom videoconferencing technology and will have a different core topic of conversation. The conversations will be led and mediated by the DNP student and will involve dialogue, story-sharing, and perspectives between older adult participants, over the age of 55, and young adult participants, including nurses and students from the University of San Francisco (USF). A poll will be administered at the end of each Zoom session, and a final survey using Survey Monkey will be distributed to all participants for further feedback for data analysis.

4a. How will this intervention be implemented?

- Where will you implement the project?
- Attach a letter from the agency with approval of your project.
- Who is the focus of the intervention?
- How will you inform stakeholders/participants about the project and the intervention?

This DNP project will be implemented virtually using Zoom videoconferencing technology. The older adult participants will be recruited from San Francisco Village with cooperation from the Village staff. The focus of this intervention will be the older adult participants from San Francisco village. San Francisco Village staff will be informed about the project and intervention via email and regular Zoom meetings with the DNP student and DNP academic advisor. The Village staff will inform participating members of all developments.

5. Outcome measurements: How will you know that a change is an improvement?

- Measurement over time is essential to QI. Measures can be outcome, process, or balancing measures. Baseline or benchmark data are needed to show improvement.
- Align your measure with your problem statement and aim.
- Try to define your measure as a numerator/denominator.
  - What is the reliability and validity of the measure? Provide any tools that you will use as appendices.
  - Describe how you will protect participant confidentiality.
A poll, utilizing specific questions from the UCLA Loneliness Scale, will be conducted with participants at the end of each Zoom session. These data will be quantified for analysis. Additionally, a Survey Monkey questionnaire will be sent to all participants after conclusion of the program to allow for further feedback and to collect qualitative data.
DNP Statement of Determination
Evidence-Based Change of Practice Project Checklist*
The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E

**Project Title:**
Implementation of an Intergenerational Program Using Video Conferencing to Combat Loneliness and Isolation in Older Adults

<table>
<thead>
<tr>
<th>Mark an “X” under “Yes” or “No” for each of the following statements:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of the project is to improve the process or delivery of care with established/accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The specific aim is to improve performance on a specific service or program and is a part of usual care. All participants will receive standard of care.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>The project is not designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does not follow a protocol that overrides clinical decision-making.</td>
<td>X</td>
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</tr>
<tr>
<td>The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does not develop paradigms or untested methods or new untested standards.</td>
<td>X</td>
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</tr>
<tr>
<td>The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does not seek to test an intervention that is beyond current science and experience.</td>
<td>X</td>
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</tr>
<tr>
<td>The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.</td>
<td>X</td>
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</tr>
<tr>
<td>The project has no funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.</td>
<td>X</td>
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</tr>
<tr>
<td>The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.</td>
<td>X</td>
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</tr>
<tr>
<td>If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: “This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board.”</td>
<td>X</td>
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</tr>
</tbody>
</table>

**Answer Key:**
- □ If the answer to all of these items is “Yes”, the project can be considered an evidence-based activity that does not meet the definition of research. IRB review is not required. Keep a copy of this checklist in your files.
- □ If the answer to any of these questions is “No”, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.*
DNP Statement of Determination
Evidence-Based Change of Practice Project Checklist Outcome

*The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E*

**Project Title:**

| Implementation of an Intergenerational Program Using Video Conferencing to Combat Loneliness and Isolation in Older Adults |

☐ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). **Student may proceed with implementation.**

☐ This project involves research with human subjects and **must be submitted for IRB approval before project activity can commence.**

**Comments:**

---

<table>
<thead>
<tr>
<th>Student Last Name:</th>
<th>Nagel</th>
<th>Student First Name:</th>
<th>Melissa</th>
</tr>
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<tbody>
<tr>
<td>CWID Number:</td>
<td>20493936</td>
<td>Semester/Year:</td>
<td>Spring 2021</td>
</tr>
<tr>
<td>Student Signature:</td>
<td>nagel</td>
<td>Date:</td>
<td>May 24, 2021</td>
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<tr>
<td>Chairperson Name:</td>
<td>Prabhjot Sandhu</td>
<td>Chairperson Signature:</td>
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<tr>
<td>Date:</td>
<td>May 24, 2021</td>
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<tr>
<td>DNP SOD Review Committee Member Name:</td>
<td>Alexa Colgrove Curtis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DNP SOD Review Committee Member Signature:</td>
<td>A. Curtis</td>
<td>Date:</td>
<td>5/24/21</td>
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</table>

---

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: [http://answers.hhs.gov/ohrp/categories/1569](http://answers.hhs.gov/ohrp/categories/1569)
## Appendix K

*Communication Matrix*

<table>
<thead>
<tr>
<th>Information</th>
<th>Audience</th>
<th>Timing</th>
<th>Method(s) of Communication</th>
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</thead>
<tbody>
<tr>
<td>Community Assessment</td>
<td>DNP Chair and SF Village staff/leadership</td>
<td>Weekly to Biweekly</td>
<td>Virtual Zoom meetings and email</td>
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<tr>
<td>Project Planning</td>
<td>DNP Chair and SF Village staff/leadership</td>
<td>Weekly to Biweekly</td>
<td>Virtual Zoom meetings and email</td>
</tr>
<tr>
<td>Project Status and Implementation</td>
<td>DNP Chair and SF Village staff/leadership</td>
<td>Biweekly (after sessions) and as needed</td>
<td>Email and telephone calls</td>
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<tr>
<td>Details about individual sessions</td>
<td>SF Village members (through SF Village staff/leadership), volunteers</td>
<td>Biweekly (before sessions) and as needed</td>
<td>Email</td>
</tr>
<tr>
<td>Changes and resolution of issues</td>
<td>DNP Chair and SF Village staff/leadership</td>
<td>As needed</td>
<td>Email and telephone calls</td>
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</table>
Appendix L

Participation by Session

<table>
<thead>
<tr>
<th>Session Number</th>
<th>San Francisco Village Members</th>
<th>Student Volunteers</th>
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<tbody>
<tr>
<td>1</td>
<td>20</td>
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Appendix M

Poll Responses by Session

Q1  Did the session make you feel more connected with others?
Q2  Was the session helpful in building meaningful relationships?
Q3  Were there any benefits to your health or well-being?
Q4  Did you gain any value from this session?
Q5  Did this session make you feel less isolated from others?
Appendix N

Final Participation Survey Results

<table>
<thead>
<tr>
<th>Question</th>
<th>All Participants</th>
<th>SF Village Members Only</th>
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</thead>
<tbody>
<tr>
<td>Q1 Did the program make you feel less isolated from others?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2 Did the program make you feel more meaningfully connected with others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q3 Did the program make you feel like others truly understand you?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q4 Were there any benefits to your health or well-being?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q5 Did you gain any value from this program?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q6 Would you participate in a similar program in the future?</td>
<td></td>
<td></td>
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</table>