Implementation of a mindfulness-based intervention to decrease loneliness and depression in the community setting.

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Introduction and Background

Loneliness and social isolation have been identified as a public health risk, that affects individuals of all ages. [1] Loneliness is defined as a subjective perception that one's social relationships are lacking, whereas social isolation is an objective lack of notable interaction with people over a specified time. Prior to the COVID 19 pandemic, loneliness and social isolation were estimated to effect 40 – 69 percent of individuals living within the United States. [2] While exact statistics are not yet known, the social distancing and self-isolation guidance put into place during the COVID 19 pandemic is thought to have significantly increased rates of loneliness and social isolation.[3]

Loneliness and social isolation are associated with increased risk for many chronic disease states, most notably, coronary artery disease, cerebral vascular accidents, hypertension hyperlipidemia and mental health disorder.[2] A 2020 report by the National Academies of Science, Engineering, and Medicine (NASEM) found there to be a 50% increase in the risk for dementia amongst those experiencing social isolation and loneliness. [4] Of note, it was found that social isolation and loneliness had individual and cumulative impacts of dementia and cognitive decline. [4] The health risks associated with both social isolation and loneliness are comparable to common health hazards such as obesity, substance use, lack of access to health care, under immunization and violence. [2] All-cause mortality rates are increased by 29 % for those experiencing loneliness and 26 % for those experiencing social isolation. [5] Primary care providers hold a unique position in identifying and addressing loneliness as they are generally the first and most frequent provider to assess a patient. [2]

The NASEM report in 2020 highlights the even further increased risk of loneliness and social isolation amongst vulnerable populations. These populations include older adults,

immigrants, lesbian, gay, bisexual, transgender, and minorities. This increased risk of social isolation and loneliness is attributed to barriers to care, discrimination, language barriers and differences in community. [4]

In addition to increased health risk, social isolation and loneliness are also associated with increased healthcare costs through the increased use of primary care, emergency room visits and longer hospitalizations. [2] Specifically, within the heart failure population there was found to be a 68 % increase in risk for hospitalization, a 57 % increased risk of emergency department visits and 26 % increased risk of outpatient visits when compared to those without social isolation. [4] Barnes et.al 2020 studied health care cost comparing loneliness, social isolation, and the cumulative effect of experiencing both. This study found those experiencing both social isolation and loneliness had the highest rates of emergency room visits, inpatient stays and overall health care costs when compared to those who are only experiencing either social isolation or loneliness. [6] However, the overall cost associated with loneliness and social isolation is poorly understood within the literature due to the expected increased use of health services by the elderly.

Problem

Staff members at a local clinic that serves those who are uninsured and fall below 300% of the federal poverty level or are underinsured (Medicaid participants) found post-COVID, reported rates of loneliness were increased on routine social determinants of health screening. This screening is completed at initial enrollment to the clinic and each year during reenrollment. There are no programs within the community that work to improve loneliness. The clinic staff concluded that an intervention that fit within the daily functioning of the clinic might provide a necessary resource for patients. The purpose of this evidence-based project was to implement a

mindfulness-based intervention in community-dwelling, low-income adults experiencing loneliness and depression and to evaluate the outcomes of the MBI on feelings of loneliness.

Methods and Evidence Search Method

A systematic literature review was performed to explore the question, Will a primary care-based intervention reduce loneliness and/or social isolation within a community dwelling population? For this review, the population was defined as community dwelling adults between the ages of 18 and 100. Searches were conducted individually using the databases; PubMed, Web of Science, Pysch Info, Cochran, and Cumulative Index to Nursing and Allied Health Literature (CINAHL). Publication years were not restricted during the searches. When using search terms, (meditation OR mindfulness) AND (loneliness OR "social isolation") were used.

A grey literature search was performed using Google Scholar to explore the possibility of publication bias. The search was completed using the terms: *loneliness* AND ("*mindfulness*" or *"mindfulness-based intervention"*) as well as *social isolation* AND (*"mindfulness"* or *"mindfulness-based intervention"*). The grey literature search findings were consistent with the findings of the systematic review, there was no evidence of publication bias. Several themes in the grey literature include the need for increased evidence to establish guidelines for mindfulness- based interventions (MBI), increasing prevalence of loneliness, consistent benefits of MBI, and improvement in feelings of loneliness with MBI.

Evidence synthesis and Recommendations

The quality and level of evidence was appraised for each retained article using the appropriate Johns Hopkins Nursing Evidence-Based Practice Evidence Appraisal Tool for the study design (Table 1). Overall, the studies included support the use of MBI to improve

loneliness. Evidence was based on a decrease in loneliness screening tool scores post-intervention when compared to pre-intervention scoring. Several validated screening tools were utilized, the most frequent being UCLA Loneliness scale. Three themes emerged from the data analyzed within during the systematic literature review regarding the use of MBI to improve loneliness. The themes include exploring effective MBI settings, the required duration of the program, and increasing accessibility to MBI programs.

The impact of setting on MBI

During the COVID-19 pandemic, the need to adapt traditional mindfulness training became apparent, due to social distancing measures. This led to the use of online and individual MBI programs. Traditionally, MBI has been offered as long-term in-person courses. The increase of social isolation and loneliness during and after COVID-19 has encouraged different approaches to utilizing MBI. Two of the studies retained during the literature review used an entirely virtual setting. In both studies, participants followed prompts for completion of the MBI, one without any interaction, all instructions and prompting were written instructions and the other with minimal interaction to direct the participant to their seat. Both studies found a positive impact on loneliness when utilizing a virtual approach.[78] Another study had an option for three synchronous sessions out of a total of eight sessions, however, these sessions were also offered asynchronously. This study did not report data on if the post program scores were different for those who choose to participate in the synchronous sessions, however, there was a significant decline in participation of the synchronous sessions with 60 % attending the first and just 30% attending the second and third sessions.[9] The last study retained from the literature review is a systematic review. Contained within this systematic review are eight studies, these were conducted using mixed in-person and virtual methods for MBI programs. Of note, the studies

using in-person formatting for the MBI program were not found to be more effective than the virtual based programs.[10]

Duration of intervention and program

Within the literature there is wide variability in both the duration of the program and the duration of the intervention. In the systematic review completed[10], the average length of MBI program was eight weeks. Four of the studies had weekly sessions ranging from 75 minutes to 2.5 hours for eight weeks, one had weekly session for ten weeks, two studies were considerably longer in length with weekly sessions for three months and two years, respectively. One study was considerably shorter in length (2 weeks) but had daily 20-minute sessions. Out of these studies the 8-week MBI programs had the most impact, particularly among the younger participants. The remaining four studies retained from the literature review had intervention and program durations of: a single 25-minute session, two 6-minute sessions daily for 4 weeks, four 4-minute session four times daily for 4 weeks, weekly 60-minute sessions for 8 weeks. Despite the significant variability in duration of both the intervention and the program, positive outcomes were reported in all studies. The strength of the outcome varied within the duration of the program but did not seem to be impacted by the duration of the intervention.

Increasing accessibility

Every study retained for this systematic review examined the dramatically increasing rates of loneliness and the need to increase accessibility to impactful interventions. MBI has been demonstrated to be effective for loneliness and is cost effective. Three of the studies focused on increasing accessibility through short duration sessions. Several studies increase accessibility through creating a program that was entirely virtual and, in many aspects, could be

complete at the participants convenience. Within the differences of the studies, there was not a singular accessibility feature that created a more robust impact on loneliness.

Limitations of the Literature Review

There are limitations to this literature review. Many of the included studies are of lower quality. Only one study included was a level I meta-analysis, all other studies are level II. Nearly all studies included had small participant numbers and several had high attrition. One included study used convenience sampling without randomization. The limited number of both studies and participants within the studies limits the generalizability of the findings, as well as the variability of study length. The design and methodology of the studies also varied greatly. There were no limitations placed on publication year, however, nearly all retained studies were completed within the last 5 years. The literature search was limited to the English language. There are no current guidelines or standards of care for the use of MBI.

Methods

Intervention

After extensive review of available mindfulness-based trainings, it was decided to utilize trainings created by the UCLA Mindful Awareness Research Center (MARC) (https://www.uclahealth.org/programs/marc). This training course is open for public use and available in many languages, led by native speakers. Two interventions were chosen, the first focused on kindness to oneself and the second on loving kindness meditations. The two training sessions ran consecutively and lasted a total of 18 minutes, the intervention was planned be viewed once weekly for three consecutive weeks, however since there are no established guidelines for MBI in the published literature, if patients missed a session or had to reschedule, they were permitted to continue participating in the pilot.

Design and Measures

The community clinic offers a unique opportunity to implement an EBP intervention into a homogenously high-risk population. This clinic serves individuals that are below 300% of the federal poverty level who either are uninsured or have Medicaid. The current patient population is over 60% immigrants with nearly 50% being non-English speaking.

An EBP implementation pilot project was conducted at the community clinic in the fall of 2023, utilizing the Iowa Model[11]. Prior to the initiation of the pilot, a full staff meeting was held to inform and educate the clinic staff of the pilot project. The staff members directly involved with the project were given a second education session with more in-depth training. A written protocol for informed consent and the delivery of the mindfulness-based intervention session was published to the clinic's Microsoft Teams page with all other clinic policies and protocols, as well as provided directly to the staff involved.

The measures collected during this pilot were the UCLA three-item loneliness screening and the Patient Health Questionnaire (PHQ)-9. The UCLA three-item loneliness screening was selected for its ease of completion both in time and comprehension. The questionnaire asks how often the individual has lacked companionship, felt left out, or felt isolated from others on a 3-point Likert scale graded from 1 'hardly ever', to 3 'often'. Higher scores indicate greater loneliness (range from 3 to 9)[12][13]. It has been validated in both English and Spanish.

The literature indicates that depression is frequently present with loneliness. Because MBI is effective in reducing depressive symptoms, patients also completed a PHQ-9 questionnaire. The PHQ-9 is comprised of 9 questions derived from the DSM V Criteria for Depression[14]. Questions are answered on a 4-point Likert scale ranging from 0 'Not at all' to 3 'Nearly every day'. Scores range from 0-27 with scores of 10 or greater indicating the presence

of depression[13]. While this questionnaire has been widely used and studied for its psychometric properties in the Spanish language, one recent systematic review/meta-analysis found variability in the reliability and validity of the Spanish version[12] Authors of that study suggested that due to these variations, a lower threshold for depression should be considered in Spanish-speaking patients.

All English or Spanish speaking patients initially enrolling or renewing eligibility with the clinic completed the UCLA 3-item loneliness scale. The staff member accepting the completed enrollment package scored the loneliness scale and discussed the pilot program with the patient and enrolled if they were interested. Community Engagement staff and volunteers then noted patients with positive screenings in a password protected Teams spreadsheet with chart identification numbers and initial UCLA 3-item loneliness scale score. Additionally, all patients checking in for a clinic appointment were given the UCLA 3 item screening tool. The reception staff scored, discussed the pilot and enrolled interested patients. Participants were scheduled for the intervention using AthenaHealth® electronic medical record. The electronic medical record (EMR) completed reminder calls, texts, and emails to increase participation in the pilot. The intervention sessions were guided and overseen by a bilingual staff member. Multiple staff members were trained in guiding the sessions. As the PHQ-9 screening tool is routinely administered to clinic patients, an updated screening tool was completed after each intervention session. A one-month post-intervention UCLA 3 item and PHQ-9 screenings were collected from as many participants as possible.

Ethical considerations

When screening for depression and loneliness, there was potential for discovery of suicidality. The clinic routinely screens every patient for depression using the PHQ-9 screening

tool and has a well-established standard operating procedure for suicidality. The same procedure was put into place for this pilot. All individuals that answered a 2 (more than half the days) or 3 (nearly every day) on question 9 of the PHQ9 (Thoughts that you would be better off dead, or of hurting yourself) were identified and met with a licensed provider for evaluation and contracted for safety as appropriate. The intervention was open to a multilingual population. Staffing was carefully planned to ensure there was proper communication in the participants' native language. MBI has been shown to be a low-risk intervention, with essentially no safety risk to those who participate.

Results

Analysis of the data was completed using Microsoft 365 Excel. Due to the nature of the project (EBP), descriptive statistical analysis was performed. A total of 25 participants enrolled in the pilot project. The age range was 23-89, with a mean age of 48. Of the participants, 15 were primarily Spanish speaking and 10 were primarily English speaking. Figure 1 outlines the number of participants and the individual timing of attrition over the duration of the program.

The mean initial UCLA 3 item score was 7.4, indicating all participants were lonely prior to participating in the mindfulness intervention. Following session 3, half of the participants scored below the threshold of positive on the UCLA 3 item screening tool (less than 6), of the remaining six, 3 participants showed improvement in their loneliness scoring, 3 remained unchanged or worsened. Overall, 50% of participants scored below the threshold for loneliness on the UCLA three-item screening following participation in the pilot (Figure 2).

The mean initial PHQ-9 score was 11.3, indicating moderate depression. Following session 3, the mean PHQ-9 score was 9.3, indicating mild depression, with 5 of those

participants scoring 4 or lower (minimal depression). While the change in the PHQ-9 is small, there was still clinically valuable improvement for several of the participants (Figure 3).

The attrition rate of this project was 50%, which is consistent with the studies included in the literature review. The most frequent answers for either not participating or dropping out were the time commitment to participate, travel distance, and lack of childcare.

Discussion

Improvements in both the UCLA 3 item and the PHQ-9 screening scores are consistent with the results found in the literature as well. At the 1 month follow up screening there was a slight increase in both the UCLA and PHQ 9 scores (mean 5.6 and 10.0, respectively). The increase in scoring likely reflects the chronic disease nature of both loneliness and depression. Of note, most of the 1 month follow up scores were collected in the month of December, a time of year that has well known higher rates of depression and loneliness.

Moving forward, adjustments to improve the program will include, diversifying the mode of delivery to include online access, as well as engaging with additional community partners, including the public libraries and other organizations within the building (Suicide Hotline, Literacy Volunteers, etc.). Data will be intermittently collected to gather more information about the most effective number of intervention exposures. The clinic is also preparing to implement a new social determinants of health screening tool that is shorter and more inclusive for all reading levels. It is hoped that by shortening other critical collection tools there will be more complete and accurate responses to all tools gathered at enrollment.

Conclusions

Implementation of a MBI into the clinic setting was exceptionally cost effective and produced a positive impact on both loneliness and depression. The high attrition rate could be

potentially mitigated with alternate modes of delivery, with independent access or through a telemedicine structure with schedule appointments or through coupling the intervention with another appointment. Exploration of intervention intervals could produce a more productive and longer lasting outcome. Overall, integration of MBI into daily clinic operations is both financially feasible, time efficient, and moderately effective.

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Table. 1

Citation	Study Purpose	Design	Sample	N	Findings	Level of Evidence
Duncan, L., & Weissenburger, D. (2003). Effects of a Brief Meditation Program on Well-being and Loneliness. *TCA Journal*, *31*(1), 4–14. psyh. [8]	To investigate whether brief meditation would provide similar benefits traditional meditation.	Nonrandomized controlled trial	Graduate students enrolled in a transpersonal psychology class, summer 2000	20	Utilization of brief meditation was found to decrease feelings of loneliness when compared to individuals that did not meditate.	II-B
Hanley, A. W., Dehili, V., Krzanowski, D., Barou, D., Lecy, N., & Garland, E. L. (2022). Effects of Video-Guided Group vs. Solitary Meditation on Mindfulness and Social Connectivity: A Pilot Study. *Clinical Social Work Journal*, *50*(3), 316–324. https://doi.org/10.1007/s10615-021-00812-0[7]	To examine the effect of online, video guided meditation on social connectedness and mindfulness in three settings, (1) group, (2) nature, (3) solitary.	Cross-sectional	University students	52	Individuals in the video-guided group meditation reported significantly higher feelings of social connectedness and mindfulness when compared to solitary practice.	II-B

Teoh, S. L., Letchumanan, V., & Lee, L.-H. (2021). Can Mindfulness Help to Alleviate Loneliness? A Systematic Review and Meta-Analysis. *Frontiers in Psychology, 12*, 633319. https://doi.org/10.3389/fpsyg.2021.633319[10]	To evaluate effectiveness and safety of mindfulness-based interventions in reducing feelings of loneliness.	Systematic Review and meta-analysis	Research articles, randomized controlled trials	8	Mindfulness based interventions demonstrate a positive impact on feelings of loneliness.	I-B
Thimmapuram, J., Pargament, R., Bell, T., Schurk, H., & Madhusudhan, D. K. (2021). Heartfulness meditation improves loneliness and sleep in physicians and advance practice providers during COVID-19 pandemic. *Hospital Practice (1995), 49*(3), 194–202. https://doi.org/10.1080/21548331.2021.1896858 [15]	To measure the effectiveness of heartfulness meditation on improving loneliness and sleep quality	Nonrandomized controlled trial	Medical providers	15 5	Heartfulness based meditation resulted in significant improvements in both feelings of loneliness and sleep quality.	II-B
Tkatch, R., Bazarko, D., Musich, S., Wu, L., MacLeod, S., Keown, K., Hawkins, K., & Wicker, E. (2017). A Pilot Online Mindfulness Intervention to Decrease Caregiver Burden and Improve Psychological Well-Being. *Journal of Evidence-Based Complementary & Alternative Medicine, 22*(4), 736–743. https://doi.org/10.1177/2156587217737204[9]	To evaluate an online mindfulness intervention's effect on caregiver burden, perceived stress, anxiety and loneliness.	Descriptive Study	Community based adults	40	Online mindfulness based interventions are more flexible. The intervention demonstrated a decreased in overall	II-B

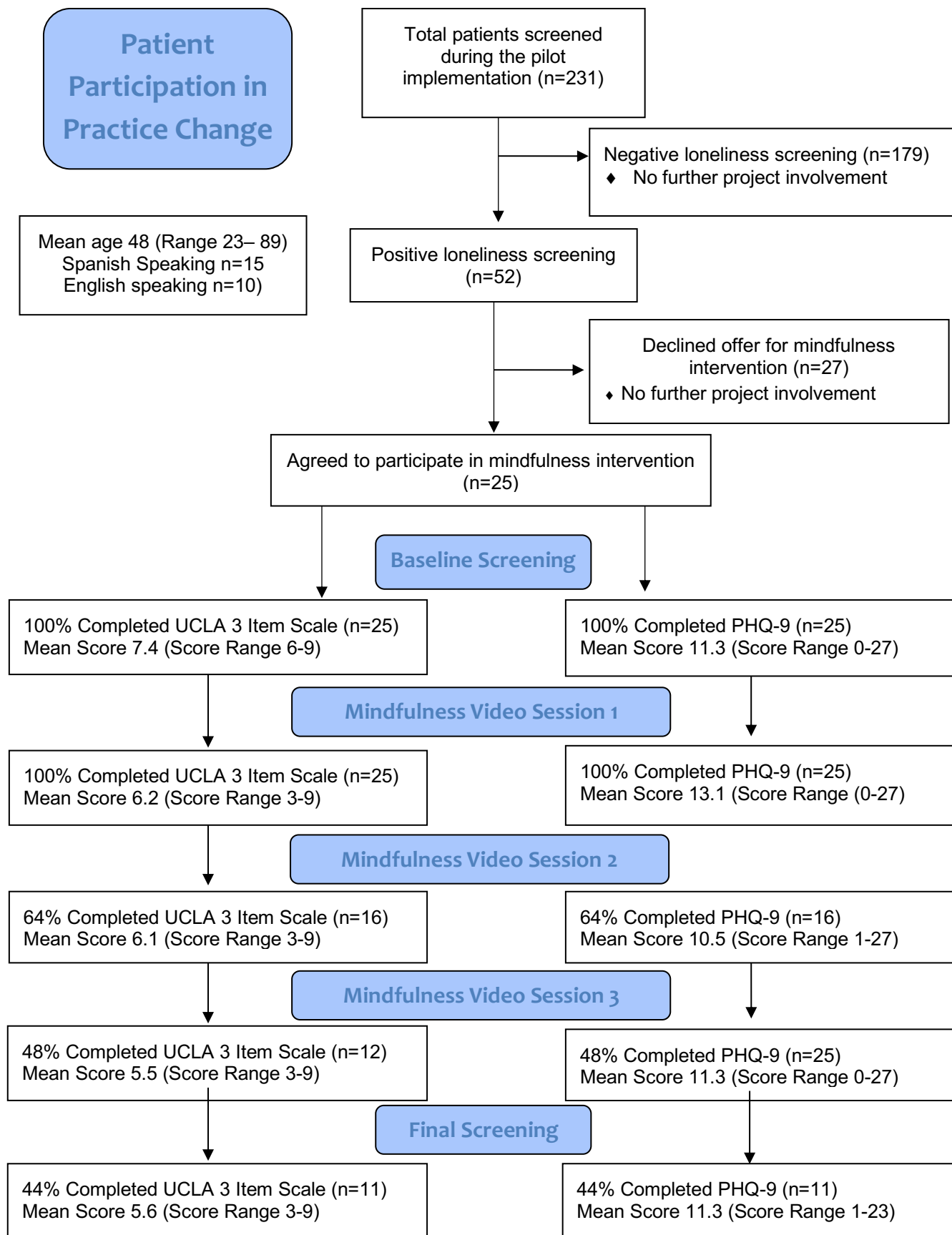|				feelings of burden, anxiety, loneliness and stress.	

Figure 1.

Patient Participation in Practice Change

Total patients screened during the pilot implementation (n=231)

Negative loneliness screening (n=179)
♦ No further project involvement

Mean age 48 (Range 23– 89)
Spanish Speaking n=15
English speaking n=10)

Positive loneliness screening (n=52)

Declined offer for mindfulness intervention (n=27)
♦ No further project involvement

Agreed to participate in mindfulness intervention (n=25)

Baseline Screening

100% Completed UCLA 3 Item Scale (n=25)
Mean Score 7.4 (Score Range 6-9)

100% Completed PHQ-9 (n=25)
Mean Score 11.3 (Score Range 0-27)

Mindfulness Video Session 1

100% Completed UCLA 3 Item Scale (n=25)
Mean Score 6.2 (Score Range 3-9)

100% Completed PHQ-9 (n=25)
Mean Score 13.1 (Score Range (0-27)

Mindfulness Video Session 2

64% Completed UCLA 3 Item Scale (n=16)
Mean Score 6.1 (Score Range 3-9)

64% Completed PHQ-9 (n=16)
Mean Score 10.5 (Score Range 1-27)

Mindfulness Video Session 3

48% Completed UCLA 3 Item Scale (n=12)
Mean Score 5.5 (Score Range 3-9)

48% Completed PHQ-9 (n=25)
Mean Score 11.3 (Score Range 0-27)

Final Screening

44% Completed UCLA 3 Item Scale (n=11)
Mean Score 5.6 (Score Range 3-9)

44% Completed PHQ-9 (n=11)
Mean Score 11.3 (Score Range 1-23)

Figure 2.

Figure. 3