



Published in final edited form as:

Aging Ment Health. 2021 October ; 25(10): 1803–1810. doi:10.1080/13607863.2020.1783516.

Acceptability and Effects of Tele-delivered Behavioral Activation for Depression in Low-income Homebound Older Adults: In their Own Words

Namkee G. Choi^{a,*}, Julieta Caamano^a, Kelly Vences^a, C. Nathan Marti^a, Mark E. Kunik^b

^aThe University of Texas at Austin Steve Hicks School of Social Work, Austin, TX

^bHouston VA HSR&D Center for Innovations in Quality, Effectiveness and Safety; Michael E. Debakey VA Medical Center, Houston, TX; VA South Central Mental Illness Research, Education and Clinical Center, & Baylor College of Medicine, Houston, TX

Abstract

Objectives.—To examine experiences and perspectives of low-income homebound older adults (N=90) who participated in tele-delivered behavioral activation (Tele-BA) treatment for depression by bachelor's-level lay counselors.

Methods.—We used the 11-item Treatment Evaluation Inventory (TEI) to measure participants' acceptability of Tele-BA. We used inductive thematic analysis to explore participants' Tele-BA session goals and activities and unsolicited and solicited comments about their Tele-BA experience.

Results.—Participant's TEI score averaged 70 out of maximum possible 77. The most frequently chosen Tele-BA goals were to improve self-care management of physical and mental health, engage in self-enrichment/self-enjoyment, improve living environment and daily routine, and to increase social connectedness. The themes that emerged from participants' comments about Tele-BA were: (1) benefits of psychoeducation; (2) importance of and gratitude for working with a counselor; (3) benefits of activity planning; (4) understanding of behavior and mood connection; (5) positive effects of increased activity on health and self-enjoyment; (6) sense of being productive and useful from accomplishing goals; (7) hope for the future; and (8) pride in tele-treatment.

Conclusion.—Participants' comments show that Tele-BA aimed at reinforcing healthy behaviors that improve both physical functioning and mood is well aligned with these older adults' perception of what treatment should be. The findings also provide support for lay counselors' clinical capacity. Given geriatric mental health workforce shortages, lay counselors may be able to effectively supplement existing professional mental health service systems.

Keywords

Homebound older adults; depression; mental health; behavioral activation; tele-delivery

*Corresponding author: 1925 San Jacinto Blvd, Austin, TX 78712; nchoi@autin.utexas.edu; 512-232-9590.

Disclosure statement

The authors report no conflict of interest

Introduction

With the population aging, the numbers of homebound older adults are growing. Between 2011 and 2017, 8.3% of Medicare beneficiaries aged 65+ were largely persistently homebound (i.e., never or rarely left home in the past month due to physical, functional, or mental health limitations) and 26.2% had a rapid increase in their risk of becoming homebound (Xiang et al., 2020). Along with their high medical burden and mobility impairments, homebound older adults experience depression at two to three times higher rates than their nonhomebound age peers. A study of 736 home-delivered meals recipients aged 50+ found that 17.5% had clinically significant depressive symptoms (Patient Health Questionnaire-9 [PHQ-9] ≥ 10 ; Kroenke et al., 2001), and 8.8% had probable major depressive disorder (PHQ-9 ≥ 21) (Choi et al., 2010). Another study found that of a nationally representative sample of those aged 60+ receiving home care services, 38.7% had subthreshold depression and 13.4% had major depression, and a significant proportion of those with depression also had anxiety symptoms (Xiang et al., 2018).

Untreated or undertreated depression in late life is associated with increased healthcare costs (Bock et al., 2017; Luppá et al., 2012) as depression exacerbates the clinical manifestations of comorbid medical conditions and impairs self-care management (American Psychiatric Association, 2010). Older adults living with depression also experience lower quality of life, as they tend to lose interest in and motivation to maintain daily activities and isolate themselves by retreating from social engagement. Anhedonia and apathy are more common in older than younger depressed patients (Adams, 2001; Gallo et al., 1994; Groeneweg-Koolhoven et al., 2016; Hybels et al., 2012; Wuthrich et al., 2015). Low energy, psychomotor slowing, irritability, worries, appetite loss, hypochondriasis, and lack of hope for the future are also commonly experienced geriatric depressive symptoms (Adams & Moon, 2009; Fiske et al., 2009; Hybels et al., 2012).

Pharmacotherapy is the most common treatment for geriatric depression. Ambulatory care visit data showed that almost two-thirds of those aged 65+ with depression diagnosis were prescribed antidepressants, with selective serotonin reuptake inhibitors (SSRIs) and serotonin norepinephrine reuptake inhibitors (SNRIs) as first-line treatment (Akincigil et al., 2011; Beyer & Johnson, 2018; Choi et al., 2016). However, a meta-analysis of clinical trials of SSRIs, tricyclics, and other antidepressants for geriatric depression found low levels of efficacy (33.7% remission and 48.0% response rates, compared with 27.2% and 38.6%, respectively, achieved by placebos; Kok et al., 2012). A systematic review and meta-analysis of nine clinical trials also found no statistically significant difference in remission or response to second-generation antidepressants compared to placebo among older adults with moderate to severe depression (Mallery et al., 2019). Pharmacotherapy is also inadequate for treating older adults with persistent depressive disorder, who often have stressors, such as loss of social support and bereavement, and cerebrovascular or neurodegenerative pathology (Devanand, 2014). Pharmacotherapy effectiveness is even more limited for socioeconomically disadvantaged older adults, as pharmacotherapy does not address financial and multiple other life stressors that contribute to and exacerbate their depression (Choi et al., 2010; Cohen et al., 2009; Renn & Arean, 2017).

With or without pharmacotherapy, skills-based psychosocial treatments, such as cognitive behavioral therapy and problem-solving therapy, are effective for geriatric depression (Chen et al., 2019; Cuijpers et al., 2014; Renn & Arean, 2017). Our earlier randomized clinical trial (RCT) found brief, in-person or tele-delivered problem-solving therapy (Tele-PST) to be highly acceptable and effective for low-income, racially diverse homebound older adults (Choi et al., 2014). Our recent RCT also found brief, tele-delivered behavioral activation (Tele-BA) for depressed, low-income homebound older adults by bachelor's-level, lay counselors who were co-located in an aging-service agency to be an equally acceptable and nearly as effective as Tele-PST by mental health clinicians. BA's evidence base shows its effectiveness for alleviating overt depressive symptom, modifying maladaptive cognitions, and improving life functions (Lejuez et al., 2001; Lejuez et al., 2011; Dimidjian et al., 2011; Martell et al., 2010). The straightforward and highly structured BA can also be delivered by lay counselors without professional mental health training, and the evidence base of lay-provider-delivered BA has been established outside the U.S. (Richards et al., 2016). A study of 241 older U.S. veterans with depression also found tele (videophone)-delivered BA to be equivalent to in-person BA and resulted in significant healthcare cost benefits (Egede et al., 2018). Our Tele-BA study provides strong evidence for aging-service embedded Tele-BA by lay counselors for low-income homebound older adults in the U.S.

Given geriatric depressive symptoms discussed above, BA is indeed well-suited to help depressed older adults increase their level of mood-enhancing activities and social engagement. For growing numbers of homebound older adults, Tele-BA by lay counselors is also more pragmatic, scalable, and sustainable than in-person, clinician-delivered psychotherapy in terms of economies of scale (i.e., no travel time; more clients per counselor) and may alleviate geriatric workforce shortages. Aging-service integrated Tele-BA is a holistic approach as it facilitates care coordination between depression treatment and case management for low-income older adults (Choi, 2009). In this study, we examined experiences and perspectives of low-income homebound older adults who participated in Tele-BA RCT to better understand why and how Tele-BA was effective for reducing depressive symptoms among these older adults. First, we report participants' acceptability of Tele-BA as a depression treatment modality. Second, we report their Tele-BA session goals and activities to illustrate the focal areas of behavioral activation that these older adults chose. Third, we provide a summary of participants' unsolicited comments and responses to qualitative interviews about their Tele-BA experience. The perspectives of older adults who received Tele-BA would be useful for improving its future implementation.

Methods

Participants and procedures

The study participants were 90 depressed, homebound older adults in Central Texas who were enrolled in the Tele-BA arm of an RCT ([ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT02600754) identifier NCT02600754). The 3-arm RCT evaluated clinical effectiveness of Tele-BA delivered by two bachelor's-level, trained lay counselors compared to Tele-PST delivered by two master's-level, licensed mental health clinicians and attention control (telephone support calls by research assistants). Counselors were embedded in a large aging-service agency that provided home-

delivered meals (HDM) and case management. A majority (>95%) of the study participants were referred to the study team by the agency's HDM case managers, while the rest came from other aging-service entities during the 38-month enrollment period (February, 2016 – April, 2019). All were homebound (i.e., could not leave or rarely left home without assistance from others due to their mobility impairment). Other inclusion criteria were: (1) moderately severe to severe depressive symptoms (24-item Hamilton Depression Rating Scale [HAMD] ≥ 15 ; Depression Rating Scale Standardization Team, 2003); (2) age 50+; and (3) English or Spanish proficiency. Exclusion criteria were high suicide risk, probable dementia, bipolar or psychotic disorder, substance misuse, and antidepressant intake/modification < 8 weeks. We did not exclude those with visual or hearing impairments as long as they could participate in tele-sessions and were amenable to slightly modified procedures. For example, we mailed a CD of each session recording (in lieu of written worksheets) for the visually impaired and provided headsets (also for privacy protection) for the hearing impaired. All study participants received HDM and case management as usual.

One week prior to tele-session commencement, participants were assessed at home for depressive symptoms, disability, and other study variables by the same counselor who was assigned to work with them. Informed consent form approved by the authors' institutional review boards specified that the counselors were not mental health clinicians but were trained in BA and supervised by a licensed clinician. All participants received a folder containing psychoeducation materials and Tele-BA handouts and worksheets at this time. Each participant was loaned a laptop with a HIPAA-compliant videoconferencing platform and a wireless card for internet connection and received instructions on their use. Only a few had and used their own computer and internet and received help with downloading the videoconferencing platform.

Only four participants did not finish all five Tele-BA sessions due to hospitalization/health problems (two completed 1-2 sessions and two completed three sessions). No one dropped out from Tele-BA sessions due to her/his dislike of or disagreement with Tele-BA. Follow-up assessments were done at home by a trained assessor (not the same lay counselor) at 12, 24, and 36 weeks after baseline, with 84, 76, and 72 participants, respectively. Attrition was due to hospitalization/health problems, relocation to other areas, disconnected telephones, refusal, or death.

Tele-BA protocols

In BA, depressive symptoms are viewed as depressive behaviors. Compared to those without depression, people with depression engage in fewer overt behaviors that provide pleasure/enjoyment or positive reinforcement and in more behaviors that function to escape or avoid aversive stimuli (Dimidjian et al., 2011; Lewinshon & Libet, 1972; Lewinshon, 1974; Polenick & Flora, 2013). Thus, BA is aimed at increasing and reinforcing healthy behaviors (e.g., engaging in life activities aligned with personal values and beliefs) while decreasing depressive behaviors (e.g., staying in bed all day) (Lejuez et al., 2001; Lejuez et al., 2011).

For Tele-BA in this study, investigators adapted the self-guided BA manual by Lejuez et al. (2011) into a client-centered and collaborative process in which lay counselors help their older clients learn and practice BA in a five-step approach. The five steps were:

(1) elucidating the link between behaviors/activities and mood; reviewing healthy versus depressive behaviors; and identifying values in important life areas; (2) setting realistic and achievable goals/outcomes that are consistent with values; generating a list of potential healthy/pleasurable activities and/or social interactions (i.e., potential solutions) to achieve the goals; and identifying preferred ones; (3) problem-solving barriers to carrying out the identified activities; (4) scheduling and implementing the activities and monitoring progress; and (5) rewarding progress and modifying activities. These five steps were repeated during each of the five, one-hour weekly tele-sessions. Based on our previous Tele-PST study, five sessions were determined to be sufficient for participants to learn BA skills.

Lay counselor training and fidelity monitoring

Both counselors were in their early 30's at the project start. One had just completed a bachelor's in social work degree, and the other had a bachelor's in communications degree and was a bilingual (English-Spanish) pre-school teacher before joining the study team. Before they were assigned their first client, each received a total of 50 hours training in geriatric depression and Tele-BA approach, including practice of their BA skills with three training cases under a licensed clinical social worker's (LCSW) supervision. During the intervention phase, the LCSW provided clinical supervision via monthly (during the first year) and then quarterly meetings and fidelity monitoring based on the review of video-recordings of two sessions (the 1st and one randomly selected between the 2nd and 5th) of a randomly selected 20% of all Tele-BA participants. The Tele-BA Adherence Scale that the study team developed was used to rate lay providers' proficiency in and adherence to the manualized approach.

Measures, data sources, and analysis

Depressive symptoms were measured with the 24-item HAMD consisting of the GRID-HAMD-21 structured interview guide (Depression Rating Scale Standardization Team, 2003) augmented with three additional items assessing feelings of hopelessness, helplessness, and worthlessness (Moberg et al., 2001). We used the *Structured Clinical Interview for DSM-5* (SCID-5; First et al., 2015) for depression diagnosis. Disability was measured with the 12-item World Health Organization Disability Assessment Schedule (WHODAS 2.0; WHO, 2010).

Tele-BA acceptability was assessed using the 11-item Treatment Evaluation Inventory (TEI; Landreville & Guerette, 1998) at 12-week follow-up. The TEI is specifically developed and validated for geriatric depression treatment and has two subscales: 8-item General Acceptability scale and 3-item Negative Aspects subscale. A score of 44, out of the maximum possible 77, indicates moderately favorable attitudes toward the treatment. Cronbach's alpha for the 11-item TEI for Tele-BA participants were 0.85.

Goals and activities that the participants chose during Tele-BA sessions were extracted from each session progress notes completed by lay counselors. Three authors (NC, JC, KV) reviewed them independently and sorted them into categories (interrater reliability=.97), and then discussed to reach consensus.

During tele-sessions and at the time of TEI assessment, participants made unsolicited, spontaneous comments about Tele-BA. Additionally, at 12-week follow-up, 17 participants were randomly chosen for open-ended questions about their experience with Tele-BA treatment, specifically regarding its helpfulness, negative aspects, treatment components and processes, and tele-delivery. We transcribed participants' comments from the session recordings and compiled them into a document entitled, "Participant Stories." The verbatim, written-down comments at the time of TEI assessments and responses to open-ended questions were appended to "Participant Stories." We used inductive thematic analysis (Braun & Clarke, 2006; Guest, MacGueen, & Namey, 2012) employing the following steps: (a) the first three authors independently read Participant Stories and generated themes (interrater reliability=.96), and reviewed/discussed the themes to reach consensus and collapsed some theme categories to facilitate presentation; and (b) the rest of the authors reviewed the analysis methods and findings to ensure trustworthiness (Shenton, 2004).

Results

Participant characteristics and treatment acceptability

Table 1 shows that participants averaged 69 years old ($SD=9.5$); 73% were women; 60% were African American or Hispanic; 51% lived alone, 79% did not have a college degree; and 92% had household income \leq \$35,000. They had 3.6 ($SD=1.6$) chronic health conditions and 1.8 ADL (activities of daily living) and 2.7 IADL (instrumental activities of daily living) impairments; 47% and 39% were taking antidepressant medication and antianxiety/sleep medication (mostly benzodiazepines), respectively; and 64% had persistent depressive disorder. These characteristics, except gender composition, closely reflected those of the HDM clientele (65% women) of the primary partner agency.

HAMD and WHODAS 2.0 scores at baseline were 23.2 ($SD=5.7$) and 22.8 ($SD=8.0$), respectively. At 12-, 24-, and 36-week follow-ups, HAMD scores decreased to 15.1 ($SD=7.7$), 14.1 ($SD=7.1$), and 14.1 ($SD=7.3$), respectively; WHODAS 2.0 scores decreased to 18.1 ($SD=9.4$), 17.0 ($SD=8.4$), and 17.1 ($SD=9.4$), respectively, without any difference by age group (<60 v. 60+), gender, and race/ethnicity. The TEI score at 12 week follow-up was 70.1 ($SD=8.6$), without any difference by age group, gender, and race/ethnicity in full and two subscale scores.

Tele-BA goals and activities

Table 2 shows a total of 678 goals in seven categories. The most frequently chosen goal was to improve self-care management of health (44% of all goals), and the most frequently chosen activities under this goal were exercise and mental health enhancement. The second most frequently chosen goal was to engage in self-enrichment/self-enjoyment (19.2%), and the activities included finding/reengaging in hobbies, arts/crafts, and other enjoyable activities. The third goal category was to improve immediate living environment, and the activities were home de-cluttering and organizing and doing daily chores/activities. The fourth goal category was to increase social connectedness and reduce social isolation, and the activities were to connect more with family/friends, join groups and/or organizations, and go to church. The fifth goal category was to get out of home, and the activities

were walking and doing enjoyable activities outside the home. The sixth goal category was to improve self-esteem to feel more useful and independent, and the activities were volunteering, better self-grooming, and doing instrumental activities of daily living. The seventh goal category was to find employment or other means of easing financial strain, and the activities were filling out job applications and making phone calls.

Participants' perspectives on Tele-BA

The themes that emerged from participants' articulation of Tele-BA's effects were as follows: (1) benefits of psychoeducation; (2) importance of and gratitude for working with a counselor; (3) benefits of activity planning; (4) understanding of behavior and mood connection and motivation to "do things"; (5) positive effects of increased activity on physical and mental health and self-enjoyment; (6) sense of being productive and useful from accomplishing goals; (7) hope for the future; and (8) pride in tele-treatment. No one reported any discomfort from Tele-BA sessions or other negative aspect.

Benefits of psychoeducation: Most participants readily admitted their depressive symptoms; however, some thought of the symptoms as part of aging. Others struggled with admitting their symptoms on religious ground. They all stated that psychoeducation helped them better understand their depression. Some shared that knowledge with their loved ones. One man (73 years) stated: "If you did not explain what depression might look like, I would have continued thinking that some of the things I'm feeling were normal especially for my age." He also shared that maybe he was in denial of having depression and was glad that he was able to talk more about it. Another man (60 years) initially stated that he did not like to "own depression" and chose to instead use the term "feeling down" because he felt he should not feel depressed given his strong belief in God. He added that Black males his age would not accept depression so easily. However, towards the end of the treatment, he noted that he was really beginning to understand what depression was and that knowing more about it gave him comfort. He shared psychoeducation handouts with his wife and children and had a conversation with them about his depression. He felt that the discussion gave them a better understanding of the difficult things he had been going through. One woman (66 years) initially stated that she abstained from sharing her depressive and anxiety symptoms with others for fear of being labeled as "crazy." Following psychoeducation, she felt comfortable enough to share what she had been going through with her family and described it as "coming out of the closet."

Importance of and gratitude for working with a counselor: Participants stressed the importance of working with a counselor who validated their feelings, provided psychoeducation, explained treatment steps in easy-to-understand terms, and made suggestions. They also felt better because they had someone to talk to and share and process some of the things that were "bottled up inside." Others stated that counselors motivated and encouraged them to follow thorough activity plans: "I don't think that I could have started doing these activities on my own so I'm thankful you encouraged me. You helped me feel better about myself" (female, 74 years); "It feels very good to know that I did what I said I was going to do and that there was somebody to check on me and support me" (female, 59 years).

Benefits of activity planning: Participants stated that BA's goal setting and activity planning helped them establish more structure and routine in their daily life: "It's helping me out to set my day as to what I'm going to do, not just sitting, watching TV, and falling asleep. I feel happy and back to normal now" (female, 74 years). "What is important is setting up goals and doing enjoyable activities as planned. That makes me feel good. BA treatment really works. I wasn't sure if it would but it really does" (female, 57 years). Many participants asked for extra copies of BA worksheets to continue to plan their days/weeks.

Understanding of behavior and mood connection: Throughout the course of Tele-BA, almost all participants learned and internalized the behavior-mood connection: "[Tele-BA] made me look at my behaviors and held me accountable" (female, 60 years); "When I'm doing something to keep busy, I don't sit around and think about being sad" (female, 57 years); "I now know that when I move around and do things I feel more energy. I even shared my experience with other veterans I visited with while attending appointments at the VA. I encouraged them to do things so they would feel better" (male, 74 years); "I learned a lot about how to deal with my depression and how to stay involved with the world. Most people who suffer from depression give up and don't stay active" (female, 84 years). One also stated that "Through [Tele-BA], I was able to bring awareness to my daily life and realized that my irritability toward my family stemmed from not communicating very well with them" (female, 59 years).

Positive effects of increased activity on health and self-enjoyment: Along with feeling better and having more energy, participants reported improved daily functioning, pain management, sleep, concentration, appetite, peace of mind (calmness), self-esteem/pride, motivation to become more active, and social connections (e.g., going to church and meetings, talking with neighbors while walking a dog, going out to dinner with family/friends). One woman (69 years) stated: "I wasn't doing anything before. My problems are still there, but now I know what to do. I'm doing my housework. I'm doing everything now, even cooking. I feel different; I really do. I've been feeling good about myself. I feel better because I'm happy. I don't think I will ever go back to where I was. I'm not crying anymore. I haven't been crying since I've started the program."

One man (61 years) with a chronic lung disease reported that since he began BA, he took his two dogs for a walk once a week at first but four times a week by the fourth session, and visited a sister and her family who lived nearby. He mentioned that he had not done any of these activities in a long while because it was so difficult for him to physically get out of his trailer. Another man (74 years) stated: "It [doing activities] is a good means of pain control. When I'm able to focus on something else it helps distract my mind so I'm not thinking so much about pain." One woman (51 years): "With this treatment, I've learned to enjoy myself more even with my current situation" Owing to improved physical and mental health, several clients no longer needed HDM, started driving again, found a job, and/or mended marital or other relationship problems. Some also reported that based on improved lab results, their physicians stopped prescribing/reducing medications for anxiety, depression, or other chronic health conditions (high blood pressure, diabetes). These participants proudly showed the bottles of medications that they no longer had to take.

Feeling productive and useful: Before treatment, many described themselves as “useless” as they could not carry out household chores, lost interest in doing things, hardly went out of the house, and/or slept too much to escape from feeling down. As they began accomplishing their BA goals, all participants expressed great sense of pride in their productivity and usefulness. One woman (58 years) stated: “I write down my goals. I accomplish them all. It feels so good! I’ve been so great! I feel fantastic! I have not been feeling depressed whatsoever. I have so much energy. I want to keep going!” Others also reported sense of control as they began to take charge of their affairs (e.g., making medical appointments, reaching out to inquire about and obtain necessary resources). After successfully solving the problem of her lost Medicare card by calling Medicare helpline, an 84-year old woman stated: “I feel I’m being productive in helping myself. It gives me sense of stability and control. I’m starting to see the light at the end of the tunnel.”

Hope for the future: With experience of improved mood, physical health, and social connectedness, most participants reported their optimism and hope for the future. A woman (57 years) said: “I got to stand up and walk back and forth in my house and I haven’t walked in over ten years! I started crying because I never dreamed that I would walk again.” By the end of the program she was working on putting her socks on and combing her hair by herself, and even worked up to walking a few steps with her home health aide. This gave her hope about staying at home rather than moving to a nursing home as she had planned before Tele-BA.

A man (74 years) stated: “I was in a deep dark hole when [Tele-BA] came along. I’m still in the hole, but it’s not deep and dark like it used to be. I’m building steps on the side of the hole so I can climb out of it. My spirit is lighter. It’s like I’ve been carrying two big sacks full of rocks and someone took one off of me. This was the highlight for me throughout these weeks. I really appreciate this program. It made me responsible. I’m feeling very positive about my future.”

Another man (75 years) said: “I’m very thankful with God and [the HDM program that referred him to Tele-BA] for receiving this help that I so much needed. I’m like a different person now. People at church even stop me to ask me what has changed. I have begun volunteering at my church and will continue to help others. I cannot say no to helping others when I was lucky and blessed with the gift of help from someone else.”

A 58-year old woman has become a Tele-BA advocate: “I’m going to talk to the Senate about this [Tele-BA]. I hate seeing people go through what I went through. I give out the Tele-BA notes at church meetings and show them how it’s possible. My insomnia is gone. My anxiety attacks are gone. Through my experience, I tell others they can do it, too!”

Pride in doing tele-sessions: Tele-sessions turned out to be a source of pride and motivation to learn technology use. A 72-year old man was very nervous in the beginning because he had never touched a computer before, but with weeks of successful connection he became more confident in his abilities and mentioned, “I could not believe that I could do it myself! Now I know that anything is possible.” Another man (74 years) reported that although doing sessions over the laptop was scary at first, he saw the advantage of not

having to leave his home for treatment as it usually takes an entire day's time for him to travel to and from doctors' appointments. He also mentioned that the laptop was like having a treatment provider in his home without the extra worry about having his place "spic and span."

Discussion

This study reports qualitative data from the first clinical trial of BA for depression treatment for low-income homebound older adults in the U.S. The study was also the first test of tele-delivery and lay-counselor delivery of BA for these older adults. Participants wholeheartedly approved Tele-BA as a depression treatment modality and articulated their positive experiences with it. Their comments show that Tele-BA aimed at reinforcing healthy behaviors that improve both physical functioning and mood is well aligned with their perception of what treatment should be. As most participants understood their depressive symptoms as major barriers to carrying out basic life activities, treatment focused on "here and now" and increasing their activities and social connections resonated well with them. Tele-BA's flexibility for focusing on individualized target behaviors, goal setting, and activity planning coupled with concrete and easy-to-implement steps also appealed to these older adults.

The goals and activities that participants chose show their desire for more control over physical and mental health care in daily life, sense of fulfillment and usefulness, tidy and orderly living conditions, and independence. Many also wanted to simply get out of home to walk, talk with other people, and enjoy life a bit. Some also wanted to rejoin the workforce and took steps to apply for a job and others searched for other resources. The activities that they chose to accomplish these goals also show their desire for taking more initiatives for and control over their life. With depression, they had had difficulty mustering motivation to take action. Tele-BA enabled them to take steps to be more physically active, do household chores, learn new things, make phone calls/appointments, join groups, and volunteer.

All participants welcomed and respected their lay counselors for their knowledge and skills, and appreciated treatment opportunity as it allowed them to work with someone who was a source of support, guidance, and encouragement. The importance of support from and therapeutic alliance with a counselor is understandable given their homebound state and social isolation. Half of them lived alone and seldom interacted with other people except those who delivered their HDM. Thus, they welcomed collaboration with a counselor and readily accepted them as a source of social support beyond and above being a treatment provider. An important lesson is that for socially isolated older adults, BA that is built on collaborative process with a counselor rather than self-guided approach is essential.

Most important, participants' glowing evaluation of Tele-BA stemmed from their experience of immediate positive effects of behavioral activation on their physical, mental, cognitive, and social health. With immediate positive effects on their daily functioning, they quickly understood and internalized the behavior-mood and behavior-physical health connections and were motivated to continue practicing BA. Their experience of contrasting effects between healthy behaviors/doing things and depressive behaviors/not doing things was a

substantiation of the matching law that serves as a theoretical model of BA as a depression treatment. In the matching law, the relative frequency of reinforcement for depressive behavior, compared to nondepressive behavior, is proportional to the relative value of reinforcement provided for these behaviors (Polenick & Flora, 2013).

The quick internalization of the link between mood and behavior and the great sense of self-efficacy that they were able to achieve also justifies a brief, five-session approach. All participants admitted that five sessions were sufficient to learn BA, although many wished for more sessions because they liked interactions with their counselors. Some noted that the tele-sessions were weekly highlights. Participants' comments also provided implied support for Tele-BA integrated in aging services, as many expressed appreciation for their case managers' referral to treatment and ease of access to Tele-BA through internal referral process. The integration also appeared to increase their trust in Tele-BA and reduce sense of stigma as Tele-BA was offered as part of aging services. Though some were apprehensive of tele-delivery in the beginning, all quickly realized its convenience, embraced it, and took pride in technology use.

The study has some limitations. First, participants were limited to those who were willing to be enrolled in the trial. According to case managers, many more refused referral for a variety of reasons, including religious coping (Choi et al., 2019), denial of depression, and stigma, showing significant challenges to enrolling older adults in depression treatment even when it was integrated in aging services. Second, participants may have inflated their positive comments because it was a free treatment (and they received compensation for their time spent on research assessments), although their positive comments match Tele-BA's objectively measured clinical effectiveness that is comparable to a psychotherapy delivered by licensed mental health clinicians. Third, participants' depressive symptoms remained low at 36-week follow-up, showing long-term effects of Tele-BA; however, a longer-term follow-up is needed as these older adults have multiple health problems and other life stressors that can reverse treatment effects down the road. More research is needed if some older adults may need a refresher course of Tele-BA to have more protection as time goes by.

Despite these limitations, based on participants' reports of their positive experience, Tele-BA by lay counselors is a highly acceptable and effective treatment for depression in low-income homebound older adults. Tele-BA's important strengths are its manualized approach, concrete steps, and the absence of difficult skills for interventionists to acquire, facilitating lay-counselor delivery. Its patient/client-centered and collaborative protocol is also designed to provide support and encouragement for depressed older adults who would not likely have engaged in BA on their own. Participants' feedback indicates the design goal was met. Their feedback, along with Tele-BA's quantitative clinical outcome data, also provides strong support for lay counselors' clinical capacity. Lay counselors need to be deployed where licensed clinicians are in short supply. In conclusion, in a rapidly aging society, aging-service integrated, brief Tele-BA by lay counselors is an acceptable, scalable, sustainable, and potentially economical treatment modality for homebound older adults. To improve access to effective depression treatment among these vulnerable older adults, Tele-BA needs to be widely disseminated and implemented in community-based aging-service

agencies. One important roadblock is broadband access and cost, as most low-income older adults cannot afford high Internet subscription fee. Policy measures to improve feasibility of tele-delivery for underserved population groups will significantly increase the likelihood of widespread dissemination and implementation.

Acknowledgments

Authors express their gratitude toward community partners, especially Meals on Wheels Central Texas, their case managers and all participants in the study.

Funding

This work was supported by the National Institute on Minority Health and Health Disparities (under grant 1R01MD009675; PI: N. Choi). St. David's Foundation also provided supplemental grant.

References

- Adams KB (2001). Depressive symptoms, depletion, or developmental change? Withdrawal, apathy and lack of vigor in the Geriatric Depression Scale. *The Gerontologist*, 41(6), 768–777. [PubMed: 11723345]
- Adams KB & Moon H (2009). Subthreshold depression: characteristics and risk factors among vulnerable elders. *Aging & Mental Health*, 13(5), 682–692. doi: 10.1080/13607860902774501 [PubMed: 19882406]
- Akincigil A, Olfson M, Walkup JT, Siegel MJ, Kalay E, Amin S, Zurlo KA, & Crystal S (2011). Diagnosis and treatment of depression in older community-dwelling adults: 1992–2005. *Journal of the American Geriatrics Society*, 59(6), 59, 1042–1051. doi: 10.1111/j.1532-5415.2011.03447.x
- American Psychiatric Association. (2010). *Practice guideline for the treatment of patients with major depressive disorder*. 3rd ed. Arlington, VA: Author.
- Beyer JL, & Johnson KG (2018). Advances in pharmacotherapy of late-life depression. *Current Psychiatry Report*, 20(5), 34. doi: 10.1007/s11920-018-0899-6. Review
- Bock JO, Hajek A, Weyerer S, Werle J, Wagner M, Maier W, Stark A, Kaduszkiewicz H, Wiese B, Moor L, Stein J, Riedel-Heller SG, & König HH (2017). The impact of depressive symptoms on healthcare costs in late life: Longitudinal findings from the AgeMooDe study. *American Journal of Geriatric Psychiatry*, 25(2), 131–141. doi: 10.1016/j.jagp.2016.10.011
- Braun V, & Clarke V (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. doi:10.1191/1478088706qp063oa
- Choi NG (2009). The integration of social and psychological services to improve low-income homebound older adults' access to depression treatment. *Family and Community Health*, 32(1S), S27–S35. [PubMed: 19065091]
- Choi NG, Teeters M, Perez L, Farar B, & Thompson D (2010). Severity and correlates of depressive symptoms among recipients of Meals in Wheels: Age, gender, and racial/ethnic difference. *Aging & Mental Health*, 14(2), 145–154. doi: 10.1080/13607860903421078 [PubMed: 19946802]
- Choi NG, DiNitto DM, Marti CN, & Kunik ME (2016). When depression is diagnosed, older adults are as likely as younger adults to be prescribed pharmacotherapy and psychotherapy. *General Hospital Psychiatry*, 43(1), 6–11. doi: 10.1016/j.genhosppsych.2016.08.002 [PubMed: 27796260]
- Choi NG, Marti CN, Bruce ML, Wilson NL, & Kunik ME (2014). Six-month post-intervention depression and disability outcomes of in-home telehealth problem-solving therapy for depressed, low-income homebound older adults. *Depression & Anxiety*, 31(8), 653–661. doi: 10.1002/da.22242 [PubMed: 24501015]
- Choi NG, Sullivan JE, Marti CN, & Kunik ME (2019). Religious coping and acceptability and outcome of short-term psychotherapeutic treatment for depression among low-income homebound older adults. *Aging & Mental Health*, 3, 1–8. doi: 10.1080/13607863.2019.1697204
- Cohen A, Gilman SE, Houck PR, Szanto K, & Reynolds CF 3rd. (2009). Socioeconomic status and anxiety as predictors of antidepressant treatment response and suicidal ideation in older adults.

- Social Psychiatry & Psychiatric Epidemiology, 44(4), 272–277. doi: 10.1007/s00127-008-0436-8 [PubMed: 18818858]
- Cuijpers P, Karyotaki E, Pot AM, Park M, & Reynolds CF 3rd. (2014). Managing depression in older age: Psychological interventions. *Maturitas*, 79(2), 160–169. doi: 10.1016/j.maturitas.2014.05.027 [PubMed: 24973043]
- Depression Rating Scale Standardization Team (2003). GRID-HAMD-17, GRID-HAMD-21 structured Interview Guide. International Society for CNS Drug Development, San Diego, CA.
- Devanand DP (2014). Dysthymic disorder in the elderly population. *International Psychogeriatrics*, 26(1), 39–48. doi: 10.1017/S104161021300166X [PubMed: 24152873]
- Dimidjian S, Barrera M, Martell C, Munoz RF, & Lewinsohn PM (2011). The origins and current status of behavioral activation treatments for depression. *Annual Review of Clinical Psychology*, 7(1), 1–38. doi: 10.1146/annurev-clinpsy-032210-104535
- Egede LE, Dismuke CE, Walker RJ, Acierno R, & Frueh BC (2018). Cost-effectiveness of behavioral activation for depression in older adult veterans: In-person care versus telehealth. *Journal of Clinical Psychiatry*, 79(5), pii: 17m11888. doi: 10.4088/JCP.17m11888
- First MB, Williams JB, Karg RS, & Spitzer RL (2015). Structured Clinical Interview for DSM-5 Clinical Trials SCID-5-CT. American Psychiatric Association.
- Fiske A, Wetherell JL, & Gatz M (2009). Depression in older adults. *Annual Review of Clinical Psychology*, 5, 363–389. doi: 10.1146/annurev.clinpsy.032408.153621
- Gallo JJ, Anthony JC, & Muthen BO (1994). Age differences in the symptoms of depression: a latent trait analysis. *Journal of Gerontology*, 49(6), P251–P264. doi: 10.1093/geronj/49.6.p251. [PubMed: 7963280]
- Groeneweg-Koolhoven I, Comijs HC, Naarding P, de Waal MW, van der Mast RC (2016). Apathy in older persons with Depression: Course and predictors: The NESDO Study. *Journal of Geriatric Psychiatry and Neurology*, 29(4), 178–186. doi: 10.1177/0891988716632914 [PubMed: 26917555]
- Guest G, MacQueen KM, & Namey EE (2012). *Applied thematic analysis*. Thousand Oaks, CA: Sage.
- Hybels CF, Landerman LR and Blazer DG (2012). Age differences in symptom expression in patients with major depression. *International Journal of Geriatric Psychiatry*, 27(6), 601–611. doi: 10.1002/gps.2759 [PubMed: 21773997]
- Kok RM, Nolen WA, & Heeren TJ (2012). Efficacy of treatment in older depressed patients: A systematic review and meta-analysis of double-blind randomized controlled trials with antidepressants. *Journal of Affective Disorders*, 141(2-3), 103–115. doi: 10.1016/j.jad.2012.02.036 [PubMed: 22480823]
- Kroenke K, Spitzer RL, & Williams JB (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–813. doi: 10.1046/j.1525-1497.2001.016009606.x [PubMed: 11556941]
- Landreville P, & Guette A (1998). Psychometric properties of a modified version of the Treatment Evaluation Inventory for assessing the acceptability of treatments for geriatric depression. *Canadian Journal of Aging*, 17, 414–424. doi: 10.1017/S071498080001268X
- Lejuez CW, Hopko DR, & Hopko SD (2001). A brief behavioral activation treatment for depression: Treatment manual. *Behavior Modification*, 25(2), 255–286. doi: 10.1177/0145445501252005 [PubMed: 11317637]
- Lejuez CW, Hopko DR, Acierno R, Daughters SB, & Pagoto SL (2011). Ten year revision of the brief behavioral activation treatment for depression: Revised treatment manual. *Behavior Modification*, 35(2), 111–161. doi: 10.1177/0145445510390929 [PubMed: 21324944]
- Lewinsohn PM, & Libet J (1972). Pleasant events, activity schedules, and depression. *Journal of Abnormal Psychology*, 79(3), 291–295. doi: 10.1037/h0033207 [PubMed: 5033370]
- Lewinsohn PM (1974). A behavioral approach to depression. In Friedman R & Katz M (Eds.), *The psychology of depression: Contemporary theory and research* (pp. 157–176). New York, NY: Wiley.
- Luppa M, Sikorski C, Motzek T, Konnopka A, König HH, & Riedel-Heller SG (2012). Health service utilization and costs of depressive symptoms in late life - a systematic review. *Current*

- Pharmaceutical Design, 18(36), 5936–5957. doi: 10.2174/138161212803523572 [PubMed: 22681171]
- Mallery L, MacLeod T, Allen M, McLean-Veysey P, Rodney-Cail N, Bezanson E, Steeves B, LeBlanc C, & Moorhouse P (2019). Systematic review and meta-analysis of second-generation antidepressants for the treatment of older adults with depression: questionable benefit and considerations for frailty. *BMC Geriatrics*, 19(1), 306. doi: 10.1186/s12877-019-1327-4 [PubMed: 31718566]
- Martell CR, Dimidjian S, & Herman-Dunn R (2010). *Behavioral activation for depression: A clinician's guide*. The Guilford Press: New York.
- Moberg PJ, Lazarus LW, Mesholam RI, Bilker W, Chuy IL, Neyman I, & Markvart V (2001). Comparison of the standard and Structured Interview Guide for the Hamilton Depression Rating Scale in depressed geriatric inpatients. *American Journal of Geriatric Psychiatry*, 9(1), 35–40.
- Polenick CA, & Flora SR (2013). Behavioral activation for depression in older adults: theoretical and practical considerations. *Behavior Analysis*, 36(1), 35–55. doi: 10.1007/bf03392291
- Renn BN, & Areán PA (2017). Psychosocial treatment options for major depressive disorder in older adults. *Current Treatment Options in Psychiatry*, 4(1), 1–12. doi: 10.1007/s40501-017-0100-6 [PubMed: 28932652]
- Richards DA, Ekers D, McMillan D, Taylor RS, Byford S, Warren FC, Barrett B, Farrand PA, Gilbody S, Kuyken W, O'Mahen H, Watkins ER, Wright KA, Hollon SD, Reed N, Rhodes S, Fletcher E, & Finning K (2016). Cost and outcome of behavioral activation versus cognitive behavioural therapy for depression (COBRA): A randomised, controlled, non-inferiority trial. *Lancet*, 388(10047), 871–880. doi: 10.1016/S0140-6736(16)31140-0. [PubMed: 27461440]
- Shenton AK (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2), 63–75.
- World Health Organization (2010). *World Health Organization Disability Assessment Schedule 2.0: 12-item version, interviewer-administered*. https://www.who.int/classifications/icf/WHODAS2.0_12itemsINTERVIEW.pdf
- Wuthrich VM, Johnco CJ, & Wetherell JL (2015). Differences in anxiety and depression symptoms: Comparison between older and younger clinical samples. *International Psychogeriatrics*, 27(9), 1523–1532. doi: 10.1017/S1041610215000526 [PubMed: 25892278]
- Xiang X, Leggett A, Himle JA, & Kales HC (2018). Major depression and subthreshold depression among older adults receiving home care. *American Journal of Geriatric Psychiatry*, 26(9), 939–949. doi: 10.1016/j.jagp.2018.05.001
- Xiang X, Chen J, & Kim M (2020). Trajectories of homebound status in Medicare beneficiaries aged 65 and older. *The Gerontologist*, 60(1), 101–111. doi: 10.1093/geront/gnz023 [PubMed: 30864658]

Table 1.

Participant characteristics

Baseline (N=90)		N=90
Age (yrs), M (SD)		68.7 (9.5)
Age group (yrs, %)		
	50-59	21.1
	60-69	38.9
	70-79	26.7
	80-89	11.1
	90+	2.2
Female (%)		73.3
Race/ethnicity (%)		
	Non-Hispanic White	40.0
	Non-Hispanic Black	32.2
	Hispanic	27.8
Living alone (%)		51.1
Education (%)		
	<High school	23.3
	High school diploma	21.1
	Some college/Associate's degree	34.4
	Bachelor's degree or higher	21.1
Household income (%)		
	Up to \$15,000	54.4
	\$15,001-\$25,000	24.4
	\$25,001-\$35,000	13.3
	\$35,001 or higher	7.8
No. of chronic illnesses ¹ (0-9), M (SD)		3.6 (1.6)
No. of ADL ² impairment (0-6), M (SD)		1.8 (1.5)
No. of IADL ³ impairment (0-6), M (SD)		2.7 (1.3)
SCID-5 diagnosis (%)		
	Major depressive disorder, single episode	17.8
	Major depressive disorder, recurrent episode	17.8
	Persistent depressive disorder, dysthymia	64.4
Prescription medication intake (%)		
	Antidepressant	46.7
	Antianxiety/sleep	38.9
	Analgesic	33.7
Depressive symptoms (24-item HAMD), M (SD)		23.2 (5.7)
Disability (WHODAS 2.0), M (SD)		22.8 (8.0)

Baseline (N=90)	N=90
At 12 weeks (N=84)	
Treatment acceptability (TEI)	70.1 (8.6)
Depressive symptoms (24-item HAMD), M (SD)	15.1 (7.7)
Disability (WHODAS), M (SD)	18.1 (9.4)
At 24 weeks (N=76)	
Depressive symptoms (24-item HAMD), M (SD)	14.1 (7.1)
Disability (WHODAS), M (SD)	17.0 (8.4)
At 36 weeks (N=72)	
Depressive symptoms (24-item HAMD), M (SD)	14.1 (7.3)
Disability (WHODAS), M (SD)	17.1 (9.4)

¹Including arthritis/rheumatism, cancer, diabetes, high blood pressure, heart disease, stroke, kidney disease, liver disease, and lung disease

²Activities of daily living

³Instrumental activities of daily living

Table 2.

Participants' Tele-BA session goals and activities (N and % of total goals and activities)

Goal: To	N (%)	Activity	N (%)
Improve self-care management of physical and mental health	293 (43.2)	Exercise	123 (18.1)
		More relaxation; anxiety reduction; peace of mind; religious practice; feel good about self	67 (9.9)
		Find/contact healthcare providers; learn more about health conditions and treatment procedures; take medication; go to doctor's appointment	34 (5.0)
		Diet/nutrition	31 (4.6)
		Sleep improvement	22 (3.2)
		Make important phone calls; make appointments (with case managers, service organizations)	9 (1.3)
		Improve personal hygiene; quit smoking	7 (1.0)
Engage in self-enrichment / self-enjoyment	130 (19.2)	Discover or reengage in hobbies/do pleasurable activities (including gardening, singing, listening to music, movies/TV, puzzles, letter writing, piano playing, cooking/baking)	73 (10.8)
		Do arts/crafts	23 (3.4)
		Go to library/read or listen to books; learn Spanish or other subjects	20 (2.9)
		Play with pets	8 (1.2)
		Become more religious	6 (0.9)
Improve living environment	91 (13.4)	Tidy up/clean/rearrange/declutter house; organize; open windows	49 (7.2)
		Do household chores/activities; pay bills	26 (3.8)
		Research/request/attend to home-improvement services	16 (2.3)
Increase social connectedness/reduce social isolation	74 (10.9)	Contact family/friends; attend family gatherings	32 (4.7)
		Do recreational activities with others	17 (2.5)
		Join groups/YMCA/senior center/gym	16 (2.4)
		Go to church	9 (1.3)
Get out of the house	38 (5.6)	Do enjoyable activities (walk the dog or walk with family/friends, ride around, go to movies/stores, visit family)	22 (3.2)
		Build strength/exercise; service equipment (scooter); take care of personal hygiene	9 (1.3)
		Arrange transportation	7 (1.0)
Improve self-esteem by becoming more useful and independent	37 (5.5)	Volunteer/donate household items not in use	18 (2.7)
		Pay more attention to personal appearance	13 (1.9)
		Try to do IADL (including public transportation use to go places)	6 (0.9)
Find employment / seek other resources to ease financial strain	15 (2.2)	Fill out application forms; gather paperwork; make phone calls	14 (2.1)
		Go to employment office/employment fair; research online	2 (0.0)