Remotely-delivered Interventions for Social Isolation and Loneliness in Older Adults

Introduction

Interventions have the potential to significantly improve the well-being of older adults experiencing social isolation and loneliness. While psychosocial interventions to address social isolation and loneliness have been developed and tested over the last several decades (Hoang et al., 2022), digitally-delivered interventions represent a more recent area of focus among researchers (Cattan et al., 2005; Ibarra et al., 2020). Intervention approaches that leverage digital technologies improve accessibility by allowing for service access to those with functional limitations or in geographically isolated areas and enhance cost-effectiveness by reducing expenses associated with physical spaces (i.e., clinics or offices) and automating processes that may not require human interaction (such as psychoeducation). Digital interventions also have advantages in scalability, which allows interventions to benefit a larger number of older adults.

This topic has direct relevance to social work. The Grand Challenges, published by the American Academy of Social Work & Social Welfare (Herbert Williams, 2016) frames the role of social workers directly "Working in tandem with other key professions, social work possesses the unique expertise to greatly reduce the risk and consequences of social isolation. The "social" element of social work is the key for solving the Grand Challenge of reducing the risk of social isolation and strengthening social ties among all populations" (Lubben et al., 2015). Further calls within the Grand Challenges for Social Work also have bearing on social isolation and loneliness. These include advancing long and productive lives, closing the health gap, and harnessing the power of technology for social good. Interventions work is necessary in achieving these goals.

Interventions addressing social isolation and loneliness can take multiple forms. In one of the earliest systematic reviews of interventions in older adults (Masi et al., 2011), the authors categorize interventions as motivated by one of five goals: 1) improving social skills, 2) enhancing social support, 3) increasing opportunities for social contact, 4) social cognitive training, and 5) integrative. This typology has been adopted in subsequent work (Welch et al., 2022). This preliminary response will explore remotely-delivered interventions for social isolation and loneliness among older adults. It will focus on social cognitive training interventions and integrative interventions that contain a social cognitive component. This focus is informed by previous work that has identified social cognitive interventions as more impactful than other strategies (Masi et al., 2011). The prelim response will explore the characteristics of intervention studies and provide recommendations for future work based on these findings. Particular attention will be given to studies that in which participants had meaningful reductions in social isolation or loneliness. While multiple digital interventions have been tested, few have had effect sizes > .2 or have found statistically significant increases in social isolation or loneliness. For this reason, this response will also inform recommendations for future work on findings from in-person interventions and successful interventions that target mental health outcomes other than social isolation or loneliness.

Systematic Reviews and Meta-Analyses

Multiple systematic reviews overviewing interventions for social isolation, loneliness, or both have been completed. These reviews often define interventions broadly, so may include approaches such as music therapy, animal therapy, or the use of robots (Hoang et al., 2022; Ibarra et al., 2020). Further, many existing reviews do not separate remotely-delivered interventions from in-person interventions. One recent review of reviews noted that published reviews used the same terms to categorize different intervention components and many did not provide a clear definition for the terms they used. (Fakoya et al., 2020). For interventions broadly (not categorizing by approach), one meta-analysis (Jarvis et al., 2020) found the pooled effect size for interventions using the UCLA Loneliness scale as an outcome was small (Cohen's d = .25) and the pooled effect size in interventions that used the Gierveld Loneliness Scale was negligible (Cohen's d = .04). Across interventions broadly, loneliness is a far more studied outcome measure than social isolation (Cattan et al., 2005). In examining across different interventions, neither group-based format nor the use of technology appears related to effect size (Masi et al., 2011).

While multiple systematic reviews have included remotely-delivered interventions using a social cognitive approach, none focus expressly on these interventions. One review, an evidence and gap map, is currently underway that will synthesize findings. This study, however, has only provided provisional findings through a protocol paper (Welch et al., 2022). One systematic review and meta-analysis (Shah et al., 2021) that examined digital technological interventions (DTIs), which they defined as any digital platform based technology that allows for communication or education. They concluded that exiting studies are of poor methodological quality and current research does not support the effectiveness of DTIs in reducing loneliness in older adults.

Study Selection

This prelim response will examine a specific subset of interventions that meet the following criteria: 1) the average age of participants was at least 60 years, 2) the intervention was informed by a social cognitive approach, and 3) loneliness or social isolation are included as either main or secondary quantitative outcome measures, and 4) the study involve a comparison or control group. The characteristics of studies that meet these inclusion criteria will be discussed, and attention will be drawn to those that demonstrated relative success. Studies were located by through existing related systematic reviews and meta-analyses, reference lists in intervention work, and the comprehensive bibliography of a protocol paper by Welch et al. (2022). Additional studies were located via searches of key words on PubMed and Google Scholar. In total, this resulted in fourteen studies, all published between 2003 and 2023.

Overall Intervention and Study Characteristics

While some interventions treated loneliness or social isolation as a primary outcome measure (Boekhout et al., 2021; Hartke & King, 2003; Jarvis et al., 2019; Shapira et al., 2021) while other interventions included social isolation and loneliness as secondary outcome measures. Primary outcome measures for these studies included depression or anxiety(Bruce et al., 2021; Choi et al., 2021; Choi et al., 2020; Gilbody et al., 2021; Nelson et al., 2019; Tomasino et al., 2017), quality of life (Dichter et al., 2020; Gustafson et al., 2022), and physical activity (Matson et al., 2019; Matz-Costa et al., 2018)

The most common therapeutic model used in interventions was cognitive behavioral therapy (CBT). Some studies used variants of CBT, such as low-intensity CBT (Jarvis et al., 2019) or focused on specific techniques of CBT, such as behavioral activation (Choi et al., 2021; Choi et al., 2020). Target populations included homebound older adults (three studies), caregivers (two studies), older adults with chronic conditions (five studies), older adults with sedentary lifestyles (two studies), and community dwelling older adults who endorse social isolation and loneliness at baseline or are considered at risk for doing so (two studies).

Several studies used formalized programs, including ElderTree (Gustafson et al., 2022), I-STAND (Matson et al., 2019), Engaged4Life (Matz-Costa et al., 2018), CARE (Nelson et al., 2019), TALKING TIME and (Dichter et al., 2020) while all interventions were remotely delivered, exact delivery format varied. Five interventions were delivered via phone, two were delivered via website, two were delivered via videoconference, and the remainder were delivered using a combination of approaches (e.g., phone and website). Nearly all programs provided some form of reference materials such as handouts, workbooks, or other informational materials. For those interventions that involved contact via phone or videoconference, project staff had a range or training and expertise. Seven interventions opted for "lay counselors" or "coaches," meaning providers with a Bachelor's degree or less and little to no formal prior experience. The remainder used either Masters of Doctoral level clinicians. Ten interventions were completed either independently or with one-on-one support and the remaining five were completed in groups or a combination of group and individual work. Intervention length ranged from four weeks to one year, with most taking 2-4 months to complete.

With respect to demographics, studies showed a strong gender bias, with participants far more likely to be female. Only one study had >50% male participants. Two had between 50-59%, four had between 50-69%, two had between 70-79%, and four had greater than 80% female participants. In ten studies participant's average age was in their seventies, and the remainder averaged in mid to late-sixties. For the eleven studies that did report race or ethnicity, seven reported that greater than 80% of their participants were non-Hispanic and White. For the twelve studies that reported education or income, participants tended to be high income or have beyond a high school education. The majority of studies took place in the United States (nine), while one study each was conducted in the Netherlands, Germany, United Kingdom, South Africa, and Israel. For overall sample size, three studies had more than 100 participants, and the remaining studies averaged 64 participants.

Findings

Unsuccessful Interventions

While the overall goal of this preliminary response is to highlight characteristics of successful recommendations and make recommendations for future work based on these, it is informative for sake of contrast to also consider interventions that have not been successful. For social isolation and loneliness outcomes, seven of the studies did not find significant improvement in one or both outcome when comparing the treatment and control groups. With the exception of one study, the studies that did not find statistically significant improvements in social support or loneliness still observed small improvements in the intervention groups relative to control groups. The exception to this was and intervention that involved a workshop and twice weekly peer support mentoring found a decrease in the number of daily social interactions from baseline in the intervention group while the control group had an increase in social interactions (Matz-Costa et al., 2018).

In both studies that targeted caregivers and the study of older adults with cancer, the interventions failed to produce favorable improvements. The study by Dichter et al, (2020) enrolled participants providing care for those with dementia evaluated changes in perceived social support after a 3-month telephone intervention using linear models to estimate expected values of the differences in outcome measures between pre and post time points. In their analysis, adjusted differences between the control and intervention group were not statistically significant. In the second intervention, which involved stroke caregivers receiving an 8-week psychoeducation telephone group intervention, those who received the intervention did not have a statistically significant decrease in loneliness post intervention or at follow-up when compared to a control group. The study that targeted older adults with cancer (Nelson et al., 2019) found no statistically significant differences in loneliness as measured by the UCLA Loneliness scale at post intervention or 2-month follow up between groups using ANCOVA. The intervention condition involved one-on-one phone conversations with mental health clinician and weekly homework and control group received care-as-usual which involved brief contact with a geriatric social worker.

Three remaining studies did not demonstrate a significant effect on social isolation or loneliness, two were health interventions. The first of these was a website called ElderTree that was designed to improve quality of life, social connection, and independence (Gustafson et al., 2022). The intervention was unstructured in that participants had no sessions or contact with coaches or clinicians, but had access to the website that included interactive information, social, self-management, and motivational resources. They measured received and provided social support and tested differences between the two groups using cumulative link mixed models for each outcome across three time points. They found no improvement in time over either measure of support. The second intervention, a program called I-STAND, involved 6 coaching sessions and was intended improve mobility among participants who had a body mass index of $\geq$ 30kg/m2 and qualified as sedentary based on their criteria (Matson et al., 2019). The intervention lasted 12 weeks, and they measured social support at baseline and post-intervention. Comparing to the control group, they did not find differences in mean change scores. The last study involved an 8-week unsupported CBT program with 16 sessions (Tomasino et al., 2017). Participants either received the intervention with individual coaching, peer support, or a waitlist condition. Social isolation was measured using the Patient-Reported Outcomes Measurement Information System – Social Isolation. In their analysis, they did not find statistically significant differences between groups or changes within each group.

Successful Interventions

Seven interventions from those studies identified reported statistically significant decreases in either loneliness or social isolation. Three of these studies (Bruce et al., 2021; Choi et al., 2021; Choi et al., 2020) were based on the same core program, but differed in comparator conditions, follow-up period, and measures used. The Choi et al (2020) and Bruce et al (2020) papers draw on the same sample, but the Bruce et al (2020) paper also includes a 1-year follow-up. In two studies involved comparing two conditions, one-on-one coach facilitated behavioral activation videoconference program and friendly visiting. Both measured social isolation using the Patient-Reported Outcomes Measurement Information System – Social Isolation and Duke Social Support Index. Their analysis used mixed-effect regression models with random intercept that treated two follow-up time points as dependent variables and condition treated as a dummy variable. They found that participants in the behavioral activation intervention reported higher levels of social interaction (dGMA-raw = 0.36) and satisfaction with social

support (dGMA-raw = 0.29) along with lower levels of loneliness (dGMA-raw = -0.60). Extending these findings (Bruce et al., 2021), this effect was maintained across a one-year period, though slightly attenuated. The Choi et al (2021) paper involves the same interventions in a larger sample size (n = 195 rather than n = 89). The study includes an attention control and problem-solving therapy conditions. In an attention-to-treat analysis, the tele-behavioral activation and tele-problem-solving therapy conditions increased participant's social engagement and satisfaction with social roles relative to the attention control condition.

Of the 4 remaining successful interventions, two were intended to address loneliness in the context of the coronavirus pandemic. One study by Gilbody et al., 2021 was designed as a one-on-one phone intervention and emphasized behavioral activation. They measured loneliness using the de Jong Gierveld Scale At three month follow-up, the adjusted mean difference between the two group suggested the intervention decreased loneliness in the group that received the intervention. In the second intervention that was tested in the context of the coronavirus pandemic (Shapira et al., 2021), participants received seven twice-weekly group sessions via Zoom or were assigned to a control condition. All participants were community-dwelling older adults; loneliness was measured using the UCLA Loneliness Scale before and after the intervention. Directly following completion of the intervention, the between-group effect size was d = 0.58. Unlike most studies included in this review, the study by Shapira et al. (2021) did not include a follow-up beyond directly after intervention completion.

The final two successful interventions were randomized control trials of tailored interventions. The first used a computer-based intervention call Active Plus which is tailored to older adults with chronic diseases (Boekhout et al., 2021). The intervention itself lasted three months and participants received personalized written materials, advice, and psychoeducation based on questionaires that they completed. The materials they received encouraged physical activity and social connectedness and was tailored based on a participant's age, functional limitations, gender, and chronic illnesses. Twelve months after the baseline interview, participants in the intervention group scored significantly lower than those in the control group. The last intervention involved a low intensity cognitive behavioral program designed to reduce loneliness. The intervention was delivered via WhatsApp and lasted three months. Participants were provided with smartphones with mobile data. Aside from use in the intervention, participants were encouraged to use their new phones to increase their social contact. The intervention involved group technological training and psychoeducation. Based on surveys they completed, participants also received tailored content related to maladaptive social cognitions. Social isolation was measured using the Young Schema Questionnaire – Short Form and loneliness was measured using the de Jong Gierveld Scale. In comparing the intervention and control group, those that received the intervention had lower levels of social isolation and loeliness both directly after completing the intervention and at 1-month follow-up