HHS Public Access

Author manuscript

Community Ment Health J. Author manuscript; available in PMC 2023 May 01.

Published in final edited form as:

Community Ment Health J. 2022 May ; 58(4): 761–769. doi:10.1007/s10597-021-00881-y.

Correlates of Attendance in a Peer-Led Healthy Lifestyle Intervention for People with Serious Mental Illness Living in Supportive Housing

Daniela Tuda[a], **Ana Stefancic**[b], **Mark Hawes**[a], **Xiaoyan Wang**[a], **Shenyang Guo**[a], **Leopoldo J. Cabassa**[a,*]

[a]George Warren Brown School of Social Work, Washington University in St. Louis, USA

[b]Department of Psychiatry Columbia University, New York, NY, USA

Abstract

Healthy lifestyle interventions can improve the physical health of people with serious mental illness (SMI; e.g., schizophrenia). Yet, people with SMI report challenges participating in these interventions, thus limiting their potential benefits. This study examined attendance of participants (N=155), largely comprised of racial and ethnic minorities, in a peer-led healthy lifestyle intervention living in supportive housing. A logistic regression model was used to identify correlates associated with attendance. Results indicated that females, those with at least a high school education, and a diagnosis of schizophrenia were more likely to attend. In contrast, the odds of attending at least one session were significantly lower for those who reported any drug use and for those who rated their health as good or excellent. Our findings indicate certain subgroups of people with SMI could benefit from tailored motivational strategies and supports to improve their participation in healthy lifestyle interventions.

Keywords

Attendance; Healthy Lifestyle Intervention; Physical Health; Serious Mental Illness; Peer Specialist; Racial/Ethnic Health Disparities

I. Introduction

Healthy lifestyle interventions can improve the physical health of people with serious mental illness (SMI; e.g., schizophrenia, bipolar disorder). These interventions use behavioral strategies to increase physical activity and healthy dietary habits, two critical health behaviors that can reduce obesity and risk for cardiovascular disease (Cabassa, Ezell, & Lewis-Fernandez, 2010; Bartels et al., 2013; Daumit et al., 2013; Greene at al., 2015). Prior studies have indicated that greater participation in healthy lifestyle interventions resulted in increased physical activity, greater improvement in dietary habits (Bartels et al., 2013) and found a significant correlation between the number of sessions attended and changes

*Corresponding Author: George Warren Brown School of Social Work at Washington University in St. Louis, Goldfarb Hall, Campus Box 1196, One Brookings Drive, St. Louis, MO 63130. Tel: 314.935.2829, ljcabassa@wustl.edu (LJ Cabassa).

in weight at six months (Greene et al., 2015). Unfortunately, attendance rates in healthy lifestyle interventions for people with SMI tend to be low, representing a potential barrier to achieving interventions' full benefits (Phalen et al., 2020; Bartels et al., 2013; Daumit et al., 2013; Greene at al., 2015). Healthy lifestyle interventions also have limited reach, especially for racial and ethnic minorities with SMI who are often underrepresented in prior trials (Cabassa, Ezell, & Lewis-Fernandez, 2010; Cabassa et al., 2017). Despite these challenges, little is known about what factors may influence participation in healthy lifestyle interventions for people with SMI.

Healthy lifestyle interventions for people with SMI have often reported challenges in achieving high rates of attendance, thus indicating potential implications for client outcomes (Phalen et al., 2020; Greene et al., 2015). One study of InSHAPE, a 12-month intervention consisting of free gym memberships and individual sessions with a health/fitness coach offered at least once a week, reported that 40% of participants in the intervention group attended at minimum half of the weekly sessions (Bartels et al., 2013). Similarly, the ACHIEVE trial, which offered individual and group weight management and exercise sessions within psychiatric rehabilitation programs over 18 months, found that up to 50% of the participants had not attended a single session in a 30-day period (Daumit et al., 2013). Further, of the 246 total sessions offered throughout the 18-month intervention, only 77 sessions had at least one participant attend (Daumit et al., 2013). While attendance was higher in STRIDE, a shorter intervention lasting only six months, 40% of the intervention group did not attend any of the sessions (Greene et al., 2015). These findings are particularly important as higher attendance may increase the chances for people to learn and benefit from these interventions and achieve health outcomes like weight loss (Greene et al., 2015; Daumit et al., 2013).

Despite the importance of attendance for understanding an intervention's reach and impact, there is a lack of research exploring factors that may be associated with attendance, especially for healthy lifestyle interventions among people with SMI (Roberts & Bailey, 2011). Studies have tended to focus on attendance and engagement in mental health interventions for this population, similarly finding that attendance is a challenge overall (Kreyenbuhl, Nossel & Dixon, 2009; Chinman et al., 2019). To our knowledge only one study has examined correlates of attendance in the context of a physical health program for people with SMI (Phalen et al., 2020). Among those who attended at least one session, attendance was found to significantly decrease among younger people, people with a higher number of current and lifetime medical conditions, and those with higher emergency room utilization rates prior to participating in the intervention (Phalen et al., 2020). Greater understanding of who is less likely to attend health interventions can inform adaptations to expand intervention access and reduce health disparities, especially for racial and ethnic minorities with SMI.

To further explore engagement and factors associated with attendance, this study utilized data from a hybrid type I effectiveness/implementation trial of a peer-led healthy lifestyle intervention. The trial implemented the Peer-Led Group Lifestyle Balance (PGLB) program, a manualized, 22-session group-based intervention that seeks to facilitate weight loss by supporting individuals with behavior change to develop a healthier diet and increase

physical activity (Kramer et al., 2009). The trial sought to increase attendance and participation in the PGLB intervention by bringing the intervention to people's doorsteps at three supportive housing agencies (i.e., affordable, community-based housing with support services). Additionally, the study targeted racially and ethnically diverse groups for enrollment (Cabassa et al., 2015). Further, it utilized peer specialists - people with lived experience of mental illness who use their own recovery process, along with specialized training, to support others - as intervention facilitators (SAMHSA, 2020). By serving as role models who inspire, engender trust, and communicate intervention elements in more relatable ways through shared experience, peer specialists have the potential to facilitate intervention engagement (Stefancic et al., 2020; Bochicchio et al., 2020). Peer-led interventions also have the potential to expand the reach of health interventions because they utilize a workforce that is increasingly common in behavioral health settings versus relying on health professionals (e.g., nurses) (Bellamy, Schmutte & Davidson, 2017).

This study explores factors associated with attendance in a peer-led healthy lifestyle intervention. In this study, we aimed to: 1) describe attendance to a peer-led healthy lifestyle intervention in supportive housing for people with SMI and 2) identify demographic, health and mental health factors associated with attendance.

2. Methods

Overview

This study is a secondary analysis using data from a hybrid type 1 trial investigating the effectiveness and implementation of the PGLB intervention in three supportive housing agencies. The study protocol is published elsewhere (Cabassa et al., 2015) and registered in clinicaltrials.gov (NCT02175641). The clinical trial enrolled individuals with SMI who were overweight or obese (BMI ≥ 25) and randomly assigned participants to usual care or PGLB (Cabassa et al., 2021). Participants were recruited from three supportive housing agencies in two Northeast cities in the United States. Agency's approach to housing varied, with one site following a Housing First approach and the other two sites utilizing a treatment first approach (Stefancic & Tsembris, 2007). The institutional review boards of [University] and [City] Department of Public Health approved all study procedures.

PGLB Intervention

PGLB was adapted from the Group Lifestyle Balance program developed by the University of Pittsburgh (based on the Diabetes Prevention Program) (Kramer et al., 2009) to meet the unique needs of the population in this study (O'Hara, Stefancic, & Cabassa, 2017) and for delivery by peer specialists. PGLB is a 12-month intervention delivered weekly for three months (core), bi-weekly for three months (transition), and monthly for six months (maintenance) for a total of 22 sessions. Sessions were delivered in offices at each respective housing agency or in participants' residences. Sessions lasted approximately one hour, beginning with participant weigh-ins and followed by delivery of intervention content. PGLB content included education on healthy eating (e.g., understanding calorie content, volumetrics) and physical activity (e.g., types of physical activity, ways to decrease sedentary behavior), as well as behavioral strategies, such as self-monitoring of food intake

and physical activity, analyzing problem behaviors (e.g., overeating or sedentary behavior), and practicing mindfulness during meals. Adaptations, deemed consistent with fidelity by GLB developers, included one-on-one sessions for participants who missed group sessions or preferred individual sessions, brief individual check-ins between sessions, practicing session content in the community (e.g., ordering healthier foods in restaurants), providing information regarding community resources (e.g., local farmers' markets, gyms), and simplifying some intervention concepts (e.g., measuring portions using your hand instead of measuring cups) (O'Hara, Stefancic, & Cabassa, 2017).

Sample

Eligible participants for the current secondary analysis were those who met criteria to participate in the RCT and were randomized to the intervention group. RCT inclusion criteria were being a supportive housing resident, aged 18 or older, speaking English and/or Spanish, with an SMI diagnosis, a BMI ≥ 25, willingness to obtain a medical clearance if assigned to PGLB, and for those over 65, a passing score on a cognitive test (Palmer & Meldon, 2003). Participants were excluded from the RCT if they self-reported physical health conditions contraindicated to participation in the intervention, required detoxification services, were at imminent risk of harm to self or others, and/or failed a capacity-to-consent questionnaire (Zayas et al., 2005).

Measures

Attendance.—Participant attendance was documented by peer specialists facilitating each session and subsequently reported to the research team during weekly supervision meetings throughout the duration of the intervention. Four indicators of attendance were subsequently calculated: 1) a binary variable reflecting whether a participant attended no intervention sessions or at least one session; 2) a count variable of total sessions attended; 3) a categorical variable indicating which phase of the intervention the participant attended, for those who attended at least one session of the corresponding intervention phase (i.e., attended core sessions only, attended core + transitions sessions only, or attended core + transitions + maintenance); and 4) a discrete variable reflecting the percentage of sessions attended in group versus individual format.

Correlates.—Selection of potential correlates of attendance was informed by our review of the literature examining factors that influence attendance among people with SMI (Kreyenbuhl, Nossel & Dixon, 2009). All the factors described below were collected during a structured face-to-face interview at baseline prior to participation in PGLB. *Demographic factors* included age, sex, race/ethnicity, racial/ethnic minority status, education, employment status (Yes/No) and duration of prior homelessness. *Health factors* included self-reported lifetime physician confirmed medical conditions (e.g., diabetes, cardiovascular disease, high cholesterol), number of medical conditions, and self-rated health (i.e., poor-fair vs. good-excellent). Cardiovascular disease (CVD) was defined as anyone who had a self-reported physician-confirmed diagnosis of coronary heart disease, stroke, arteriosclerosis, heart attack, or congestive heart failure. Blood pressure (BP) was collected twice at the time of the interview by trained research assistants with the average of the two measures used to create this variable. Our blood pressure variable was created using

the American Heart Association (AHA) ideal cardiovascular health (ICVH) metric (Lloyd-Jones DM, 2010). Participants were classified as having high BP if they were categorized as having poor BP (systolic ≥ 140 or diastolic ≥ 90 mm Hg) under the ICVH guidelines. This method of categorizing high BP has been used in past studies of ICVH in people with SMI (Hawes, et al. 2020). *Mental health factors* comprised of self-reported lifetime physician confirmed diagnosis (e.g., schizophrenia/schizoaffective disorder, bipolar disorder, depression) and whether the participant was prescribed any antipsychotic medication at the time of enrollment. *Substance use* was indicated by any drug use using the Addiction Severity Index (ASI-5) which assesses the use of alcohol or any of 10 drug categories (e.g., marijuana, barbiturates, heroin) in the past 30 days (Zanin, McLellan & Corse, 1997). Substance use was stratified into three categories: any alcohol use, any drug use, and any alcohol or drug use. The ASI-5 is considered a reliable and valid measure for people with SMI, despite some limitations in producing high rates of test-retest reliability (Zanin, McLellan & Corse, 1997). Smoking status was self-reported as current smoker yes/no.

Data Analysis

All analyses were performed in Stata. Frequencies, percentages, and measures of central tendency and dispersions were used to describe attendance and sample characteristics. We used a two-step process to identify which demographic, health, and mental health factors were associated with attendance. In these analyses, the main dependent variable was our binary attendance indicator (0 = no attendance vs. 1 = attending one or more PGLB sessions). First, bivariate analyses were used to select factors that were at least marginally associated ($p < 0.10$) with our attendance indicator. Continuous variables were compared using Pearson correlation and categorical variables were compared using chi-square or Fisher's exact test. Based on the results of these bivariate analyses, we then used a multivariate logistics regression model to identify which of these factors were associated with attendance in our sample. The variance inflation factor (VIF) was used to test multi-collinearity; no variables included in our logistic regression model had a VIF greater than 2, indicating no multicollinearity issues (Kutner et al., 2004). Given the nested nature of our data (i.e., participants clustered in three different study sites), we considered using a mixed effects logistic regression model to examine between-site variation in attendance. However, we did not use this modeling approach because we did not meet the minimum suggested number of 30 clusters for a binary outcome model (McNeish et al., 2016). Our final logistics model had one missing case due to listwise deletion procedures. We also conducted a series of exploratory bivariate analyses to examine the relationships between demographic, health, and mental health factors and our other three attendance indicators: total sessions attended among participants who attended at least one PGLB session, attendance of intervention phases (e.g., core only, core and transition only, and core, transition and maintenance) and the percentage of sessions attended in group format. The distribution of attendance as a count variable failed to meet the variance assumptions of a Poisson model and so we conducted negative binomial regression analysis to examine the relationship between potential correlates and total sessions attended. None of these exploratory bivariate analyses yielded any statistically significant results ($p < 0.05$), thus results are not reported and are available upon request.

3. Results

Sample Characteristics

Of the 314 participants enrolled in the study, 157 (50%) were randomized to the intervention group and eligible for inclusion in this analysis. Two participants randomized to PGLB had incomplete attendance information, thus they were excluded from these analyses. The total sample for this report was 155 participants. Sample characteristics are presented in Table 1. Of 155 participants included in this analysis, 25.16% (N=39) were at Site 1, 34.84% (N=54) at Site 2, and 40% (N=62) at Site 3. Participants' mean age was 48.43 and 42.48% were female. Most participants were racial/ethnic minorities (81.94%), particularly non-Hispanic Blacks (65.81%), and most had a high school education or above (59.35%). Most participants had a history of homelessness of one year or more (54.19%) and only 12.90% were employed. The most common lifetime mental health diagnoses were depression (76.77%), schizophrenia/schizoaffective disorder (59.35%), and bipolar disorder (46.45%), and 63.7% were taking an antipsychotic medication. Participants, on average, reported 3.31 medical conditions most commonly hypertension (41.29%), high cholesterol (34.19%) and diabetes mellitus (32.26%). Most participants (65.16%) were current tobacco smokers, and 21.94% reported using alcohol or illicit drugs in the past 30 days.

Attendance

Of participants randomized to PGLB, 83.23% (N=129) attended at least one session (i.e., were attenders). Among attenders, mean sessions attended was 15.66 (SD = 8.04) of 22 total session and the median was 21 sessions. Of those who attended at least one session, 22.58% attended core only, 6.45% attended core and transition, and 54.19% attended a session in all three phases (i.e., core, transition, and maintenance). On average, participants attended 63% of sessions in group format.

Factors Associated with PGLB Attendance

Bivariate analyses indicated that intervention site, sex, education, self-rated health, having a schizophrenia/schizoaffective diagnosis, any substance use, and any drug use where at least marginally associated ($p < 0.10$) with the binary outcome of having attended any sessions (See Table 1). These variables were then included in a logistic regression model (See Table 2). After adjusting for all variables, the odds of attending any PGLB sessions were significantly higher for female compared to male participants; for those with at least a high school education compared to those with less than a high school education; and for those with a diagnosis of schizophrenia/schizoaffective disorder compared to those without this diagnosis. Moreover, the odds of attending PGLB were significantly lower for those who reported any drug use compared to those who reported no drug use and for those who rated their health as good or excellent compared to those who rated their health as fair or poor.

IV. Discussion

This study used data from a randomized effectiveness trial to identify factors associated with attendance in a peer-led healthy lifestyle intervention for people with SMI in

supportive housing. Our main findings indicate gender, education, substance use, diagnosis of schizophrenia/schizoaffective disorder and self-rated perceptions of one's own health were critical factors associated with attendance for this healthy lifestyle intervention.

PGLB was successful in engaging a majority racial and ethnic minority population consisting of 81% of the total sample. Overall, PGLB had far fewer non-attenders (16%) than prior studies, including STRIDE (40%) which reports one of the highest rates of overall attendance in a healthy lifestyle intervention (Green et al., 2015). Furthermore, PGLB participants who did attend at least one session, on average attended 15 of the 22 sessions representing 68% of all sessions offered. While this finding is similar to that of InSHAPE, only 40% of InSHAPE participants attended a minimum of half the weekly sessions (Bartels et al., 2013), while 59% of those randomized to PGLB attended more than 50% of the sessions. Qualitative findings among PGLB participants suggest that the role of peer specialists as intervention facilitators within PGLB may have been critical to attendance (Bochicchio et al., 2019; Bochicchio et al., 2021). These studies highlighted how interactions with PGLB peer specialists, embedded within supportive housing, facilitated participation, and differed from the approach of non-peer providers in regard to addressing physical health. Participants emphasized, for example, how peers' individualized and process-oriented approach helped build hope about the possibility of change (Bochicchio et al., 2021). These findings suggest that the relationship with the peer specialist in combination with the delivery of the intervention being on-site or in participants' homes may have reduced barriers to attendance and facilitated participation, thus, accounting for higher rates of attendance when compared to prior healthy lifestyle interventions for people with SMI.

Among the demographic factors examined, we found that gender and education were each independently associated with any attendance in our sample. Interpretation of these findings guided by the Social Determinants of Health (SDOH) framework can provide further insight into better understanding health equity factors that may facilitate or limit participation in a healthy lifestyle intervention (Weinstein et al., 2019). Gender, as a social determinant of health recognizes how gender roles, norms and behavior not only influences an individual's access to health services but also how health systems respond to their different needs (CSDH, 2008). For example, our findings indicate that lower likelihood of attendance among men is consistent with literature that highlights gender differences in health-seeking behaviors. Prior research in the general population has found that men, especially those of racial and ethnic minority, are less likely to seek assistance for any physical health concerns due to prevailing cultural and societal norms (such as being viewed as weak or lacking control of their own bodies) (Eley et al., 2019). Similarly, one's level of educational attainment is considered an important social determinant of health and has been found to be a strong predictor of long-term health and quality of life (CSDH, 2008). Individuals who have lower levels of education may also have lower levels of health literacy, and so may not have sufficient knowledge to discern the personal importance and relevance of such an intervention (Friis et al., 2016). Studies have indicated the inclusion of video-instruction materials and testimonials as potential adaptations tailored towards men and those with lower levels of education can enhance motivation towards addressing physical health and increase the likelihood of attending a healthy lifestyle intervention (Fortuna et al., 2019;

Brewer et al., 2020; Cabassa et al., 2012, Sagar-Ouriaghli et al., 2019). Future studies are needed to use these approaches in people with SMI and test their impact, particularly among men and people with low level of education.

Additionally, those with a diagnosis of schizophrenia or schizoaffective disorder are more likely to be taking anti-psychotic medications which often cause significant weight gain (Correll et al., 2014), and so they may be particularly motivated to participate – either because they experienced weight gain or because they were informed of weight gain as a potential side effect. In a recent qualitative study exploring the experiences of those who attended PGLB, attenders' reasons for engaging in the intervention were often tied to receiving a new medical diagnosis or feeling the negative impacts (e.g., trouble breathing, walking) of a medical condition (Stefancic et al, 2021). These findings may explain why those who perceived themselves to be in better health, and who thus may not have experienced the negative effects of a medical condition, may have been less likely to see the need to attend the intervention.

Further, studies have shown that those with an active substance use issue and co-occurring SMI are less likely to engage in substance abuse treatment (Brown et al., 2011). Similarly, in this study, those who reported recent drug use may not be in a stage of change to address their physical health as they may be either ambivalent to making a health change or not viewing health as a current priority (Stefancic et al., 2020). Studies guided by the transtheoretical model of change suggest that those with active drug use may need additional incentives to facilitate movement into the action stage of behavioral change (Brown et al., 2011). To rectify this gap utilizing motivational interviewing following initial enrollment into the intervention group may increase the likelihood of attending at least one session (Lawrence et al., 2017).

In general, motivational enhancement strategies can be tailored to the subgroups of participants who are less likely to attend healthy lifestyle interventions, with the intention of better orienting or preparing the participant to begin the intervention (Stonerock et al., 2017). Identifying the most effective strategy to implement among specific subgroup of participants less likely to attend could benefit by distinguishing the correlates of attendance that are modifiable (e.g., substance use, self-rated health and education) at the person level in which the intervention could target from those that are non-modifiable (e.g., gender and psychiatric diagnosis) but could be responsive to by adapting components of the intervention. Strategies include providing clear and digestible educational information and resources to enhance and emphasize the personal importance of participants' engagement. Future healthy lifestyle interventions should consider factors associated with lower attendance and work towards tailoring interventions to further incorporate additional approaches to increasing motivation for behavioral change and participation.

This study has several limitations. The findings are particular to PGLB and may not be generalizable to other healthy lifestyle interventions, especially those that are not peer-led. The sample for this study was comprised of individuals living in supportive housing at three separate agencies, thus limiting the generalizability of findings. Additionally, measurement of most correlates relied on participant self-report, which may be subject to response bias.

Future research incorporating qualitative interviews with non-attenders could be beneficial to further understanding reasons for not engaging.

Conclusion

Attendance is an integral aspect of healthy lifestyle interventions that seek to address the physical health needs of those living with SMI. This study explored attendance in a peer-led healthy lifestyle intervention for people with SMI who were predominantly of a racial and ethnic minority status and living in supportive housing. Findings from this analysis suggest that if peer-led healthy lifestyle interventions seek to further expand their reach, interventions may need to be further adapted to better meet the needs of participants who are less likely to attend any sessions and the specific subgroups (e.g., males, those with lower levels of education, those using drugs, higher self-rated health) that may need further motivational enhancements. Despite findings indicating particular characteristics were associated with lower attendance, the majority of the study sample attended at least one session. Findings provide further insight about who the intervention is missing due to participant's lack of attendance and its implications on how to better expand the reach of healthy lifestyle interventions. By addressing barriers to attendance in a healthy lifestyle intervention for people with SMI, participants are provided the opportunity to further engage in the intervention and subsequently, receive the maximum gains possible to improve their overall physical health and well-being.

Acknowledgement

This work was supported in part by a grant from the National Institute of Mental Health (R01MH104574 and T32 MH019960). Authors thank the study participants and community partners for their engagement in this study.

References

Bartels SJ, Pratt SI, Aschbrenner KA, Barre LK, Jue K, Wolfe RS, Xie H, McHugo G, Santos M, Williams GE, Naslund JA, & Mueser KT (2013). Clinically Significant Improved Fitness and Weight Loss Among Overweight Persons With Serious Mental Illness. Psychiatric Services, 64(8), 729–736. 10.1176/appi.ps.003622012 [PubMed: 23677386]

Bellamy C, Schmutte T, & Davidson L (2017). An update on the growing evidence base for peer support. Mental Health and Social Inclusion, 21(3), 161–167. 10.1108/MHSI-03-2017-0014

Bochicchio L, Stefancic A, Gurdak K, Swarbrick M, & Cabassa LJ (2019). "We're All in this Together": Peer-specialist Contributions to a Healthy Lifestyle Intervention for People with Serious Mental Illness. Administration and Policy in Mental Health, 46(3), 298–310. 10.1007/s10488-018-0914-6 [PubMed: 30565004]

Bochicchio L, Stefancic A, McTavish C, Tuda D, & Cabassa LJ (2020). "Being There" vs "Being Direct:" Perspectives of Persons with Serious Mental Illness on Receiving Support with Physical Health from Peer and Non-Peer Providers. Administration and Policy in Mental Health and Mental Health Services Research. 10.1007/s10488-020-01098-z

Brewer LC, Fortuna KL, Jones C, Walker R, Hayes SN, Patten CA, & Cooper LA (2020). Back to the Future: Achieving Health Equity Through Health Informatics and Digital Health. JMIR MHealth and UHealth, 8(1), e14512. 10.2196/14512 [PubMed: 31934874]

Brown CH, Bennett ME, Li L, & Bellack AS (2011a). Predictors of initiation and engagement in substance abuse treatment among individuals with co-occurring serious mental illness and substance use disorders. Addictive Behaviors, 36(5), 439–447. 10.1016/j.addbeh.2010.12.001 [PubMed: 21196081]

Brown CH, Bennett ME, Li L, & Bellack AS (2011b). Predictors of Initiation and Engagement in Substance Abuse Treatment among Individuals with Co-occurring Serious Mental Illness and Substance Use Disorders. Addictive Behaviors, 36(5), 439–447. 10.1016/j.addbeh.2010.12.001 [PubMed: 21196081]

Cabassa LJ, Camacho D, Vélez-Grau CM, & Stefancic A (2017). Peer-based health interventions for people with serious mental illness: A systematic literature review. Journal of Psychiatric Research, 84, 80–89. 10.1016/j.jpsychires.2016.09.021 [PubMed: 27701013]

Cabassa LJ, Ezell JM, & Lewis-Fernández R (2010). Lifestyle Interventions for Adults With Serious Mental Illness: A Systematic Literature Review. Psychiatric Services, 61(8), 774–782. 10.1176/ps.2010.61.8.774 [PubMed: 20675835]

Cabassa LJ, Molina GB, & Baron M (2012). Depression fotonovela: Development of a depression literacy tool for Latinos with limited English proficiency. Health Promotion Practice, 13(6), 747–754. 10.1177/1524839910367578 [PubMed: 21051325]

Cabassa LJ, Stefancic A, O'Hara K, El-Bassel N, Lewis-Fernández R, Luchsinger JA, Gates L, Younge R, Wall M, Weinstein L, & Palinkas LA (2015). Peer-led healthy lifestyle program in supportive housing: Study protocol for a randomized controlled trial. Trials, 16. 10.1186/s13063-015-0902-z

Cabassa LJ, Stefancic A, Lewis-Fernández R, Luchsinger J, Weinstein LC, Guo S, Palinkas L, Bochicchio L, Wang X, O'Hara K, Blady M, Simiriglia C, & Medina McCurdy M (2021). Main Outcomes of a Peer-Led Healthy Lifestyle Intervention for People With Serious Mental Illness in Supportive Housing. Psychiatric services (Washington, D.C.), 72(5), 555–562 10.1176/appi.ps.202000304

CSDH (2008). Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. Geneva, World Health Organization. Geneva, World Health Organization. 10.13016/uyxj-ebkf

Chinman M, McCarthy S, Mitchell-Miland C, Bachrach RL, Schutt RK, & Ellison M (2019). Predicting Engagement With Mental Health Peer Specialist Services. Psychiatric Services (Washington, D.C.), 70(4), 333–336. 10.1176/appi.ps.201800368

Colton CW, & Manderscheid RW (2006). Congruencies in Increased Mortality Rates, Years of Potential Life Lost, and Causes of Death Among Public Mental Health Clients in Eight States. 3(2), 14.

Correll CU, Robinson DG, Schooler NR, Brunette MF, Mueser KT, Rosenheck RA, Marcy P, Addington J, Estroff SE, Robinson J, Penn DL, Azrin S, Goldstein A, Severe J, Heinssen R, & Kane JM (2014). Cardiometabolic Risk in Patients With First-Episode Schizophrenia Spectrum Disorders: Baseline Results From the RAISE-ETP Study. JAMA Psychiatry, 71(12), 1350. 10.1001/jamapsychiatry.2014.1314 [PubMed: 25321337]

Daumit GL, Dickerson FB, Wang N-Y, Dalcin A, Jerome GJ, Anderson CAM, Young DR, Frick KD, Yu A, Gennusa JV, Oefinger M, Crum RM, Charleston J, Casagrande SS, Guallar E, Goldberg RW, Campbell LM, & Appel LJ (2013). A Behavioral Weight-Loss Intervention in Persons with Serious Mental Illness. New England Journal of Medicine, 368(17), 1594–1602. 10.1056/NEJMoa1214530

Eley NT, Namey E, McKenna K, Johnson AC, & Guest G (2019). Beyond the Individual: Social and Cultural Influences on the Health-Seeking Behaviors of African American Men. American Journal of Men's Health, 13(1), 155798831982995. 10.1177/1557988319829953

Fortuna K, Barr P, Goldstein C, Walker R, Brewer L, Zagaria A, & Bartels S (2019). Application of Community-Engaged Research to Inform the Development and Implementation of a Peer-Delivered Mobile Health Intervention for Adults With Serious Mental Illness. Journal of Participatory Medicine, 11(1), e12380. 10.2196/12380 [PubMed: 32095314]

Fortuna KL, Brooks JM, Umucu E, Walker R, & Chow PI (2019). Peer Support: A Human Factor to Enhance Engagement in Digital Health Behavior Change Interventions. Journal of Technology in Behavioral Science, 4(2), 152–161. 10.1007/s41347-019-00105-x [PubMed: 34337145]

Friis K, Lasgaard M, Rowlands G, Osborne RH, & Maindal HT (2016). Health Literacy Mediates the Relationship Between Educational Attainment and Health Behavior: A Danish Population-Based Study. Journal of Health Communication, 21(sup2), 54–60. 10.1080/10810730.2016.1201175 [PubMed: 27668691]

Green CA, Yarborough BJH, Leo MC, Yarborough MT, Stumbo SP, Janoff SL, Perrin NA, Nichols GA, & Stevens VJ (2015). The STRIDE weight loss and lifestyle intervention for individuals taking antipsychotic medications: A randomized trial. The American Journal of Psychiatry, 172(1), 71–81. 10.1176/appi.ajp.2014.14020173 [PubMed: 25219423]

Hawes MR, Roth KB, Wang X, Stefancic A, Weatherly C, & Cabassa LJ (2020). Ideal Cardiovascular Health in Racially and Ethnically Diverse People with Serious Mental Illness. Journal of Health Care for the Poor and Underserved, 31(4), 1669–1692. 10.1353/hpu.2020.0126 [PubMed: 33416746]

Kramer MK, Kriska AM, Venditti EM, Miller RG, Brooks MM, Burke LE, Siminerio LM, Solano FX, & Orchard TJ (2009). Translating the Diabetes Prevention Program. American Journal of Preventive Medicine, 37(6), 505–511. 10.1016/j.amepre.2009.07.020 [PubMed: 19944916]

Kreyenbuhl J, Nossel IR, & Dixon LB (2009). Disengagement From Mental Health Treatment Among Individuals With Schizophrenia and Strategies for Facilitating Connections to Care: A Review of the Literature. Schizophrenia Bulletin, 35(4), 696–703. 10.1093/schbul/sbp046 [PubMed: 19491314]

Kutner MH, Neter J, Nachtsheim CJ and Li W (2004) Applied linear statistical models, 5th Edition. McGraw- Hill Irwin, Boston.

Lawrence P, Fulbrook P, Somerset S, & Schulz P (2017). Motivational interviewing to enhance treatment attendance in mental health settings: A systematic review and meta-analysis. Journal of Psychiatric and Mental Health Nursing, 24(9–10), 699–718. 10.1111/jpm.12420 [PubMed: 28816412]

McNeish D (2016). On Using Bayesian Methods to Address Small Sample Problems. Structural Equation Modeling A Multidisciplinary Journal, 23. 10.1080/10705511.2016.1186549

O'Hara K, Stefancic A, & Cabassa LJ (2017). Developing a peer-based healthy lifestyle program for people with serious mental illness in supportive housing. Translational Behavioral Medicine, 7(4), 793–803. 10.1007/s13142-016-0457-x [PubMed: 28155109]

Phalen PL, Muralidharan A, Travaglini L, Bennett M, Stahl N, Brown C, Hack S, Klingaman EA, & Goldberg R (2020). Predictors of attendance in health and wellness treatment groups for people with serious mental illness. Psychiatric Rehabilitation Journal, 43(2), 149–155. 10.1037/prj0000376 [PubMed: 31259581]

Roberts SH, & Bailey JE (2011). Incentives and barriers to lifestyle interventions for people with severe mental illness: A narrative synthesis of quantitative, qualitative and mixed methods studies: Lifestyle interventions for people with severe mental illness. Journal of Advanced Nursing, 67(4), 690–708. 10.1111/j.1365-2648.2010.05546.x [PubMed: 21323972]

Sagar-Ouriaghli I, Godfrey E, Bridge L, Meade L, & Brown JSL (2019). Improving Mental Health Service Utilization Among Men: A Systematic Review and Synthesis of Behavior Change Techniques Within Interventions Targeting Help-Seeking. American Journal of Men's Health, 13(3), 1557988319857009. 10.1177/1557988319857009

Stefancic A, Bochicchio L, Svehaug K, Alvi T, & Cabassa LJ (2020). "We Die 25 Years Sooner:" Addressing Physical Health Among Persons with Serious Mental Illness in Supportive Housing. Community Mental Health Journal. 10.1007/s10597-020-00752-y

Stefancic A, Bochicchio L, Tuda D, Gurdak K, & Cabassa LJ (2020). Participant Experiences With a Peer-Led Healthy Lifestyle Intervention for People With Serious Mental Illness. Psychiatric Services, appi.ps.202000311. 10.1176/appi.ps.202000311

Stefancic A, & Tsemberis S (2007). Housing First for long-term shelter dwellers with psychiatric disabilities in a suburban county: A four-year study of housing access and retention. The Journal of Primary Prevention, 28(3–4), 265–279. 10.1007/s10935-007-0093-9 [PubMed: 17592778]

Stonerock GL, & Blumenthal JA (2017a). Role Of Counseling To Promote Adherence In Healthy Lifestyle Medicine: Strategies to Improve Exercise Adherence and Enhance Physical Activity. Progress in Cardiovascular Diseases, 59(5), 455–462. 10.1016/j.pcad.2016.09.003 [PubMed: 27640186]

Stonerock GL, & Blumenthal JA (2017b). Role of Counseling to Promote Adherence in Healthy Lifestyle Medicine: Strategies to Improve Exercise Adherence and Enhance Physical Activity. Progress in Cardiovascular Diseases, 59(5), 455–462. 10.1016/j.pcad.2016.09.003 [PubMed: 27640186]

Weinstein LC, Chilton M, Turchi R, Klassen A, LaNoue M, Lamar S, … Cabassa L (2019). Reaching for a Healthier Lifestyle: A Photovoice Investigation of Healthy Living in People with Serious Mental Illness. Progress in Community Health Partnerships: Research, Education, and Action 13(4), 371–383. 10.1353/cpr.2019.0061

Zanis DA, McLellan AT, & Corse S (1997). Is the Addiction Severity Index a reliable and valid assessment instrument among clients with severe and persistent mental illness and substance abuse disorders? Community Mental Health Journal, 33(3), 213–227. 10.1023/a:1025085310814 [PubMed: 9211041]

Zayas LH, Cabassa LJ, & Perez MC (2005). Capacity-to-Consent in Psychiatric Research: Development and Preliminary Testing of a Screening Tool. Research on Social Work Practice, 15(6), 545–556. 10.1177/1049731505275867

Table 1.

Sample Characteristics

	Total Sample (N=155)		No Attendance (N=26)		Any Attendance (N=129)		
Variables	**N (%)**	**Mean (SD)**	**N (%)**	**Mean (SD)**	**N (%)**	**Mean (SD)**	**P**
Site							
Site 1	39 (25.16)		11 (28.21)		28 (71.79)		
Site 2	54 (34.84)		7 (12.96)		47 (87.04)		0.087
Site 3	62 (40.00)		8 (12.90)		54 (87.10)		
Demographics							
Age-continuous	155	48.43 (11.61)	26	45.81 (15.61)	129	48.96 (10.63)	0.208
Gender							
Male	89 (57.42)		20 (22.47)		69 (77.53)		0.027 *
Female	66 (42.58)		6 (9.09)		60 (90.91)		
Racial/Ethnic Status							
Non-minority	28 (18.06)		4 (14.29)		24 (85.71)		0.697
Minority	127 (81.94)		22 (17.32)		105 (82.68)		
Race/Ethnicity							
Non-Hispanic White	28 (18.06)		4 (14.29)		24 (85.71)		
Non-Hispanic Black	102 (65.81)		19 (18.63)		83 (81.37)		0.767
Hispanic	13 (8.39)		1 (7.69)		12 (92.31)		
Non-Hispanic Other	12 (7.74)		2 (16.67)		10 (83.33)		
Education							
<High school	63 (40.65)		15 (23.81)		48 (76.19)		0.052
>=High school	92 (59.35)		11 (11.96)		81 (88.04)		
Employment							
No	134 (86.45)		22 (16.42)		112 (83.58)		0.69
Yes	20 (12.90)		4 (20.00)		16 (80.00)		
Homeless (≥ 1 year)							
No	58 (37.42)		8 (13.79)		50 (86.21)		0.411
Yes	84 (54.19)		16 (19.05)		68 (80.95)		
Health Factors							
Self-reported Lifetime Physician Confirmed Medical Conditions Diabetes							
No	105 (67.74)		20 (19.05)		85 (90.95)		0.272
Yes	50 (32.26)		6 (12.00)		44 (88.00)		
CVD							
No	136 (87.74)		25 (18.38)		111 (81.62)		0.172
Yes	18 (11.61)		1 (5.56)		17 (94.44)		
High cholesterol							
No	99 (63.87)		16 (16.16)		83 (83.84)		0.863
Yes	53 (34.19)		8 (15.09)		45 (84.91)		

	Total Sample (N=155)		No Attendance (N=26)		Any Attendance (N=129)		
Variables	**N (%)**	**Mean (SD)**	**N (%)**	**Mean (SD)**	**N (%)**	**Mean (SD)**	**P**
Number of medical conditions	155	3.31 (2.17)		3.35 (2.28)		3.3 (2.15)	0.925
Self-rated health							
Fair-poor	68 (43.87)		6 (8.82)		62 (91.18)		0.019*
Good-excellent	87 (56.13)		20 (22.99)		67 (77.01)		
Hypertension [a]							
No	88 (56.77)		12 (13.64)		76 (86.36)		0.273
Yes	64 (41.29)		13 (20.31)		51 (79.69)		
Mental Health Factors							
Self-reported Lifetime Physician Confirmed Mental Health Conditions Schizophrenia / schizoaffcctivc							
No	62 (40.00)		15 (24.19)		47 (75.81)		0.047*
Yes	92 (59.35)		11 (11.96)		81 (88.04)		
Depression							
No	35 (22.58)		8 (22.86)		27 (77.14)		0.283
Yes	119 (76.77)		18 (15.13)		101 (84.87)		
Bipolar disorders							
No	82 (52.90)		16 (19.51)		66 (80.49)		0.353
Yes	72 (46.45)		10 (13.89)		62 (86.11)		
Currently taking antipsychotic medications							
No	56 (36.13)		11 (19.64)		45 (80.36)		0.472
Yes	99 (63.87)		15 (15.15)		84 (84.85)		
Substance use							
Current smoker							
No	54 (34.84)		10 (18.52)		44 (81.48)		0.671
Yes	101 (65.16)		16 (15.84)		85 (84.16)		
Addiction Severity Index Any substance use in the past 30 days [b]							
No	121 (78.06)		17 (14.05)		104 (85.95)		0.087
Yes	34 (21.94)		9 (26.47)		25 (73.53)		
Any alcohol use in the past 30 days							
No	129 (83.23)		20 (15.50)		109 (84.50)		0.299
Yes	25 (16.13)		6 (24.00)		19 (76.00)		
Any drug use in the past 30 days							
No	133 (85.81)		18 (13.53)		115 (86.47)		0.008*
Yes	22 (14.19)		8 (36.36)		14 (63.64)		

Note:

*$p<0.05$;

[a]Participants were classified as having hypertension if they were categorized as having poor BP (systolic ≥ 140 or diastolic ≥ 90 mm Hg) under the ICVH guidelines;

[b] includes alcohol use or substance use in the last 30 days

Table 2.

Logistic Regression Model of Any PGLB Attendance *

	Odds Ratio	Standard Error	95% Confidence Interval
Gender: (Ref: Male) Female	4.62	2.96	1.31 – 16.23
Education (Ref: < High School) >=High School	3.78	2.10	1.27 – 11.23
Schizophrenia/Schizoaffective Disorder (Ref: No)	3.18	1.82	1.04 – 9.73
Drug Use (Ref: No Drug Use)	0.23	0.14	0.07 – 0.78
Self-Rated Health: (Ref: Fair-Poor Self-Rated Health) Good-excellent	0.24	0.14	0.07 – 0.77
Analytic N	154		
Model Likelihood Ratio Chi2 (df, p value)	27.95 (7, .0002)		

Note:

* Main dependent variable: 0 = no attendance vs. 1 = attended at least one PGLB session. Model adjusted for site.