TBM

Translation of the diabetes prevention program into a community mental health organization for individuals with severe mental illness: a case study

Kristin L Schneider, PhD,[1] J Cherry Sullivan, PhD,[2] Sherry L Pagoto, PhD[1]

[1]Department of Medicine, Division of Preventive and Behavioral Medicine, University of Massachusetts Medical School, 55 Lake Avenue North, Worcester, MA 01655–0002, USA

[2]ServiceNet, 129 King St., Northampton, MA 01060, USA

Correspondence to: K Schneider
Kristin.Schneider@umassmed.edu

Cite this as: *TBM* 2011;1:453–460
doi: 10.1007/s13142-011-0053-z

ABSTRACT

Individuals with severe mental illness (SMI) have significant health disparities. Wellness services embedded in community mental health organizations could lessen these disparities. This case study illustrates the integration of the Diabetes Prevention Program (DPP) lifestyle intervention into a community mental health organization. The Diffusion of Innovations Theory was used as a model for integration, which included a collaboration between researchers and the organization and qualitative work, culminating in a small pilot of the DPP led by peer specialists to test the feasibility of the DPP in this setting. Fourteen individuals with SMI participated in the 19-week intervention. Three dropped out, but the remaining 11 demonstrated 92% attendance. Weight loss was minimal, but the participants reported benefit and showed continued interest in the intervention. The use of a peer-led DPP in a community mental health organization is feasible and warrants further investigation to demonstrate efficacy.

Keywords

Severe mental illness, Obesity, Lifestyle intervention, Community mental health

Implications

Practice: This manuscript describes information for mental health practitioners on integrating wellness into their settings.

Policy: May inform policy research for mental health organizations to increase funding for wellness programs.

Research: Can benefit from learning ways to collaborate with community mental health organizations.

INTRODUCTION

Mortality rates among people with severe mental illness (SMI) are significantly higher than the general population, mostly due to their increased risk of chronic diseases. Seventy-five percent of people with schizophrenia will die of cardiovascular disease and about 25 years earlier than average [1]. Psychotropic medications used to treat SMI predispose them to obesity and related medical conditions [2–5]. Individuals with SMI also demonstrate higher rates of unhealthy lifestyle behaviors such as physical inactivity and an unhealthy diet [6–8].

Lifestyle intervention is recommended as the first-line treatment for obesity in patients with SMI and is one of the eight psychosocial treatments recommended by the Schizophrenia Patient Outcomes Research Team [9]. Two systematic reviews of lifestyle interventions concluded that they were effective in preventing and reducing antipsychotic medication-induced weight gain in adults with SMI [10, 11]. Alvarez-Jimenez and colleagues [10] reviewed ten studies, four were focused on weight gain prevention (i.e., at the initiation of a second-generation antipsychotic (SGA) medication regimen) while six were focused on weight loss (i.e., following an SGA-induced weight gain). The weighted mean difference across all ten studies was a 5.6-lb weight loss, which the authors estimated is equated to a 2.5–4.0% difference from baseline. Gabriele and colleagues [11] reviewed 16 studies focused specifically on atypical antipsychotic-induced weight gain, six nonrandomized controlled trials (RCTs) and ten RCTs. Conclusions were consistent in that lifestyle interventions were effective in preventing and treating atypical antipsychotic weight gain. The authors suggested that a weakness of this literature is that few trials use behavioral interventions with established efficacy in non-SMI populations, such as the Diabetes Prevention Program Lifestyle Group (DPP). They also note the need for the implementation of behavioral weight loss programs in real-world settings [11]. The present study aims to address these limitations by describing the implementation of the DPP for individuals with SMI in a community mental health organization.

Few mental health settings provide lifestyle interventions, possibly due to the lack of implementation research that demonstrates how to do so, lack of resources and training, and the misperception that individuals with SMI are unable or unwilling to participate in weight loss treatment [12]. Organizations that serve individuals with SMI may become

increasingly interested in providing assistance with physical health issues such as weight loss, as national mental health agencies increase their focus on physical health. In 2010, the Substance Abuse and Mental Health Services Administration (SAMSHA) launched its 10 by 10 Wellness Campaign, which focuses on increasing the life expectancy of individuals with SMI by 10 years in 10 years [13]. To begin addressing wellness, community mental health organizations need guidance on the process of implementing evidence-based programs in their settings, with minimal cost and resource allocation.

This manuscript describes the process of implementing a peer-led, evidence-based lifestyle weight loss group (DPP) into a community mental health organization. The implementation process was put into context of the Diffusion of Innovations Theory [14]. The Diffusion of Innovations Theory includes five stages: knowledge, persuasion, decision, implementation, and confirmation. We describe how the community organization, ServiceNet and local obesity researchers collaborated throughout these stages, protocol modifications, the challenges to program implementation and lessons learned, as well as the factors to facilitate sustainability and further dissemination of the program.

Knowledge stage

The knowledge stage involves gaining an awareness of an innovation, often via the conduct of a literature review and needs assessment. Struck by the substantial physical health problems their consumers faced, as well as increasing state and national priorities toward addressing physical health issues, in 2006, ServiceNet launched an innovative wellness initiative to improve the health of their consumers. ServiceNet is a nonprofit human services organization located in Western Massachusetts that serves approximately 500 adult consumers with SMI through outreach and community treatment programs. Funding for ServiceNet comes from a variety of sources, including government and private contracts, foundations, insurance reimbursements and donations, and funding for wellness services comes from an existing department of mental health contract and a private foundation grant. The goal of the wellness service is to engage, motivate, and support consumers in the adoption of health and wellness activities to reduce risk factors for co-occurring diseases and to improve compliance with medical treatment.

Given scant research on how to improve the health status of individuals with SMI, ServiceNet competed for and received a grant from the Blue Cross and Blue Shield Foundation of Massachusetts to conduct key informant interviews with consumers to gather information on their needs, their relationship with their health care provider, their ideas about health, and their interest in healthy lifestyle behaviors that could be used to develop wellness programs. These interviews and research highlighting the success of system approaches with other populations and health behaviors (e.g., [15]) led to the creation of a systems approach to addressing the health and wellness of this population. This systems approach included: (1) the designation of direct care staff as "Wellness Specialists," (2) improving communication between ServiceNet and healthcare providers, (3) raising awareness organization-wide about mental health stigma and its effects on physical health, and (4) adopting evidence-based practices that utilize peer mentors as delivery agents. ServiceNet recognized the value of delivering evidence-based weight loss treatment to their consumers and pursued a relationship with obesity researchers from a nearby academic institution to elicit their input on how to do so. Researchers and ServiceNet's Wellness director discussed implementing the DPP. The researchers advocated for the DPP because it is an evidence-based weight loss program [16] that had been successfully used with individuals with SMI [17]. ServiceNet representatives agreed and suggested meeting with key leaders from ServiceNet to facilitate integration of the DPP.

Persuasion and decision stages

The persuasion and decision stages occurred in concert with one another. The persuasion stage involves the formation of an opinion about the proposed innovation, and the decision stage involves the acceptance or rejection of the innovation. Following the selection of the DPP, key leaders from ServiceNet (i.e., the organization's CEO, director of Mental Health Recovery Services, and Wellness director) met with the researchers to discuss using the DPP. The meeting was highly collaborative with the researchers and ServiceNet agreeing to provide the DPP to consumers. Although one leader from ServiceNet suggested removing some of the more complex content from the DPP before implementation, most felt strongly that minimal changes should be made before proceeding, rather than assuming that some aspects may be inappropriate or too difficult for consumers. It was agreed that no protocol components would be removed unless informed by the initial pilot group. Some additional content was added in response to feedback from Wellness Specialists, as described below.

Implementation stage

The implementation stage involves putting the innovation into practice. Implementation included two components: training Wellness Specialists in the DPP and adapting the DPP to the ServiceNet setting. Wellness Specialists are direct care workers who were hired through the wellness initiative to work exclusively on wellness. Some Wellness Specialists were certified peer specialists who completed training and state certification in peer counseling and are in recovery from SMI. Peer Wellness Specialists were employed as the group leaders because, in the key informant interviews with consumers described earlier, consumers preferred peer facilitators. National

organizations, such as Mental Health America, advocate for the use of peers in mental health to reduce social isolation and improvemental health. Moreover, the use of peers instead of professionals is cost-effective and has been used successfully with other community adaptations of the DPP [18, 19].

Wellness Specialists' responsibilities include assisting participants with nutritional, physical activity, and smoking cessation goals, coaching consumers before or during medical appointments and providing support in medication and psychosocial treatment. Wellness Specialists were not required to have health care or wellness training, and thus did not have previous knowledge in weight loss treatment. Two authors (KLS and SLP), who have significant experience with the DPP lifestyle intervention, [20–22] and a registered dietitian provided the DPP training. Training was delivered to the entire peer and non-peer Wellness Specialist staff over five half day sessions and included: (1) information on the history of the DPP and the rationale underlying the protocol, (2) detailed instruction on the structure of the intervention, (3) basic behavioral counseling for health behaviors, (4) an orientation on using the DPP facilitator manual and protocol materials, intervention delivery methods and tools, and (5) discussion of difficult patient situations such as noncompliance. All training materials were taken from the DPP Research Group's website, which provides materials free of charge for noncommercial purposes (http://www.bsc.gwu.edu/dpp/manuals.htmlvdoc). Wellness Specialists were encouraged to use the skills themselves and to discuss barriers they anticipated in using the content with their consumers.

Adaptations based on Wellness Specialist feedback

After receiving the DPP training, feedback was elicited from the Wellness Specialists about their opinions of the feasibility of the DPP. Several concerns emerged. First, Wellness Specialists were concerned that consumers may find some of the DPP strategies overwhelming and require more time to process the information and practice strategies. To address this concern, we added three sessions to allow for repetition of concepts and extra practice. Additionally, the DPP was supplemented with weekly 1 h individual meetings with a Wellness Specialist. During these meetings, Wellness Specialists were instructed to review the content covered during the group session, discuss the participant's weekly goal, address barriers, and model healthy behaviors by engaging in physical activity, cooking healthy meals or going grocery shopping with the participant. Second, Wellness Specialists were concerned that, given their fixed income, consumers could benefit from information regarding shopping on a budget, using food stamp benefits and cooking with a microwave; content in these areas was added. Third, a concern arose about the extent to which consumers, who are largely unemployed and isolated, would identify with the examples in the materials relevant to work or family. Scenarios in the facilitator's script were revised to reflect the lives of the consumers (e.g., describing the dining experience in group homes). Table 1 lists the topics by week with examples of how topics were amended.

Adaptation based on institutional resources

ServiceNet's health and wellness service has a limited budget for programs, thus program cost was a concern. To address issues related to cost and facilitating sustainability, the following changes were made. First, the DPP was delivered in a group setting by two peer Wellness Specialists who were certified peer specialists, rather than via the individual visits with case managers that occurred in the original DPP. After the DPP training, two peer Wellness Specialists were chosen to lead the group based on their interest and enthusiasm for the DPP. These peer Wellness Specialists reported that they began applying strategies in their lives and reported significant weight loss, diet improvements, and increased physical activity. More importantly, they gained real life experience with the DPP they could share with the group.

Another adaptation to reduce expense was modification of the toolbox provided in the original DPP, which included a wealth of resources including exercise equipment, paid cooking and exercise classes, and liquid meal replacements. Our "toolbox" included cooking lessons, pedometers, therabands, and healthy snacks during group sessions. Finally, the ServiceNet DPP did not include exercise classes or the 6 months of monthly maintenance sessions included in the original DPP, but ServiceNet consumers have free access to a fitness facility owned by ServiceNet, which caters to the needs of its consumers.

Confirmation stage

The confirmation stage includes integrating the innovation into routine practice, assessing the benefits of implementation, and promoting the innovation to others [14, 23]. The confirmation stage is currently ongoing. We began assessing the benefits of the ServiceNet DPP by obtaining funding from the University of Massachusetts Medical School to conduct a pilot study testing the feasibility of the DPP in consumers.

PILOT STUDY

Methods

Participants were recruited by posting flyers and making presentations to consumers at recreation groups and clubhouses. Clinical case managers and Wellness Specialists also invited their consumers to attend the DPP group. Of the consumers approached, about 65% were not interested. Primary refusal reasons include that they were not interested in

Table 1 | List of the session topics and examples of modified content

Session	Topic	Example of modified content
1	Welcome to the Lifestyle Balance Program	Discussion of how Wellness Specialists can support diet and activity changes
2	Getting started being active and move those muscles[a]	No modifications
3	Being active: a way of life	Examples of ways to make sedentary activity more physically active were tailored to the population (e.g., getting a ride to the bank)
4	Getting started eating healthier[b]	No modifications
5	Healthy eating	No modifications
6	Exploring serving sizes[b]	No modifications
7	Be a fat detective	No modifications
8	3 Ways to eat less fat	No modifications
9	Jump start your activity plan	No modifications
10	Taking charge of what's around you	No modifications
11	Problem solving	No modifications
12	Making our favorite meals healthier[c]	Practiced making meals typically eaten by participants healthier
13	Shopping on a budget[c]	Creating a shopping list based on specials or coupons, using food stamps
14	4 Keys to healthier eating out	Examples of healthier menu substitutions from restaurants the consumers frequent
15	Talking back to negative thoughts	No modifications
16	Slippery slope of lifestyle change	No modifications
17	Making social cues work for you	No modifications
18	Managing stress	Examples of ways to manage stress specific to the population (e.g., problem solve situations with your wellness specialist)
19	Ways to stay motivated	No modifications

[a] Combined the physical activity content from session 1 into "Move those Muscles"

[b] Separated some content from a session of the original DPP to provide additional time for review

[c] Not an original DPP session

attending a group, not interested in lifestyle changes, and had a conflict with the group time. Interested individuals were called by the Wellness director to discuss the program and screened for eligibility. The inclusion criteria were minimal and included being overweight or obese (body mass index>24), capable of providing informed consent, and primary care provider clearance (only two could not obtain this). Participants then attended a group session where they provided written informed consent and had their weight measured. They also completed questionnaires on eating and activity habits and physical health.

The DPP groups were delivered to two cohorts at two agency locations to accommodate participant's commuting distances. Participants attended 19 weekly 90-min group sessions. They also received an additional hour of individual support from a Wellness Specialist trained in the DPP content. The director of Wellness for ServiceNet and the two peer Wellness Specialists who led the group received biweekly telephone supervision from two of the study authors. The director of Wellness provided supervision to the Wellness Specialists conducting the individual sessions.

Participants completed the baseline questionnaire upon conclusion of the group and were weighed again. After the conclusion of the group, two study authors conducted 60-min key informant interviews with interested participants to obtain qualitative feedback on the group. Interviews were also conducted with the group leaders and individual Wellness Specialists. Procedures were approved by the institutional review board of the University of Massachusetts Medical School.

RESULTS

Pilot results–Fourteen participants agreed to participate in the DPP group (50% female). Participant characteristics are described in Table 2. Three participants (21%) dropped out of the program; one after session 4 and two after session 7. Reasons for dropping out included feeling that the group was disorganized, not being ready to make healthy changes, and interference from mental and physical health issues. Of the remaining 11 participants, the mean attendance rate was high (92%). Due to the

Table 2 | Pilot participant's demographics (n=14)

	Number (%)
Sex	
Male	7 (50)
Female	7 (50)
Diagnosis	
Schizoaffective disorder	5 (35.7)
Schizophrenia	3 (21.5)
Bipolar disorder	2 (14.3)
Posttraumatic stress disorder	2 (14.3)
Mood disorder NOS	1 (7.1)
Unknown	1 (7.1)
Taking antipsychotic medication	
Yes	10 (71.5)
Unknown	4 (28.5)
Race/ethnicity	
Caucasian	10 (71.5)
African-American	2 (14.3)
American Indian or Alaskan native	1 (7.1)
Unknown	1 (7.1)
	Mean (SD)
Age	44.83 (12.26)
Body mass index	37.23 (10.05)

NOS not otherwise specified

small sample size, adequate power does not exist to find significant differences from baseline to the end of the treatment (week 19). However, participants who completed the group lost an average of 2.5 lb. They also self-reported that their physical health interfered less with their life and reported improvements in their overall health and healthier eating habits.

Key informant interviews with participants–Two participants completed a key informant interview. Participants were uniformly quite positive about their experience and described how they liked that they had a choice about what changes they wanted to make. Despite our concerns about the diet journals, the participants reported that they liked using them and found them useful for referring back to what they had eaten. However, they also reported that it was sometimes difficult to remember to use them. In our experience, we did not observe more difficulty or less enthusiasm with tracking in SMI consumers than other populations. They stated that they liked engaging in physical activity during the groups, but pedometers often fell off. They emphasized how helpful it was that the peer group leaders shared their own experiences with lifestyle changes. The participants felt valued and supported by the peer group leaders stating that "they liked us." The participants stated that they felt comfortable contributing to the group discussion. Contrary to our concerns about the length of the 19-week group program, the participants stated that the program was "too short," and that they wished it would continue. To decrease the complexity of lifestyle changes, interviewers asked participants about whether they would prefer focusing on physical activity or diet only, but not both. Participants stated that they preferred the combination.

Key informant interviews with peer group leaders–The researchers also met with the peer group leaders to solicit feedback. First, they reported that some consumers had cognitive deficits and/or low intellectual functioning and required more than 19 weeks to understand and integrate the principles into their lives. Second, a concern was raised that the 7% weight loss goal would be difficult for this population to achieve in 19 weeks, which could reduce motivation. An ongoing program was suggested. Third, they stated that the participant's knowledge and intentions did not always translate to behavior. Participants could identify healthier choices for snacks and voiced intentions to make these changes but, in practice, often did not make healthy choices. Last, when participants encountered a novel food they often had difficulty determining whether it was a healthy choice. One participant assumed a frozen coffee drink was a healthy choice if she did not add sugar and cream, not realizing that large amounts of cream and sugar are already in the beverage. More time on basic nutrition education, label reading, and reviewing nutrition information from restaurants may be beneficial.

Key informant interviews with individual wellness specialists–Wellness Specialists (n=8) who conducted the individual sessions provided feedback on their experience with participants. Several themes emerged. Wellness Specialists reported that one of the main program benefits was that it increased their participant's awareness of healthy eating and activity behaviors. They noticed changes in the participant's behavior such as planning meals, buying more

healthy foods at the grocery store, paying attention to the caloric content of food, increasing physical activity, and eating out less. Wellness Specialists stated that walking with participants was helpful. However, variability emerged among Wellness Specialists with regard to the amount of time spent reviewing the DPP content; about half reported that they reviewed content regularly with participants, while others reported that their participant was resistant to discussing content. Training the Wellness Specialists in dealing with resistance through the use of motivational interviewing could address this challenge. Other challenges the Wellness Specialists noted were similar to what is observed in non-SMI populations: problems with self-control, emotional eating, and discouragement with lack of weight loss. Consistent with the feedback provided by group leaders, individual Wellness Specialists reported that the participants had difficulty grasping some of the complex concepts like counting fat grams. Consistent with the feedback provided by participants, individual Wellness Specialists stated that the participants did not find the pedometers useful.

Sustainability

Although the University of Massachusetts Medical School grant and the Blue Cross Blue Shield grant only provided funding for one wave of groups, the positive response from the consumers combined with strong institutional support led to the continuation of the program, without the involvement of the researchers. ServiceNet is currently conducting their second wave of DPP groups, which enrolled 12 participants in two cohorts. The costs to continue the program include staff time (roughly 3 h per week) and materials (e.g., binders, food). These costs were covered by the Wellness services budget.

Health issues among Wellness Specialists became salient during the implementation process. During the DPP training, many Wellness Specialists described their weight struggles and expressed concerns about their ability to help others. Thus, the Wellness director began a DPP group for six staff members. Addressing the lifestyle issues of both consumers and staff is part of ServiceNet's institution-wide commitment to creating a culture of wellness, which appeared to be the driving force for sustainability after the research project ended.

DISCUSSION

This case study describes the implementation of the DPP lifestyle intervention in a community mental health setting. The partnership between ServiceNet and academic researchers was successful at training the Wellness Specialists in the DPP and conducting a pilot of the DPP with 14 consumers. Although weight loss was small, the program was feasible as evidenced by the low dropout rate and high attendance.

The weight loss of 2.5 lb is less than the 4.6 to 5.9 lb observed in trials of individuals with SMI [10, 11]. Those trials typically employed more stringent eligibility criteria (e.g., excluded mental retardation, required compliance with antipsychotic medication) than we imposed in our community setting, which may have contributed to the observed weight loss discrepancy. A systematic review reported that the average weight loss at 6 months was almost double the weight loss observed between 2.5 and 4 months, which suggests that a longer intervention may have improved weight loss [11]. The use of nonprofessional Wellness Specialists (peer and non-peer) to deliver the intervention, as opposed to the use of professionals such as psychologists, psychiatric nurses, and dietitians, which have been used by most other studies, could have contributed to the lower weight loss. Participants enjoyed working with the peer Wellness Specialists, as evidenced by their high attendance rate, and this model is less expensive and more sustainable making it premature to abandon for use in community mental health organizations. Instead, more intensive training of peer Wellness Specialists and/or training in motivational interviewing may be warranted. The use of peer Wellness Specialists as group leaders is a novel approach to lifestyle intervention with this population and may have contributed to the high attendance rates. Peer Wellness Specialists provide authenticity to consumers by connecting with shared experiences. An alternative approach is to use wellness professionals, like fitness trainers, but they may lack comfort, knowledge, and familiarity with SMI. The Self-Health Action Plan for Empowerment program was a pilot study investigating the feasibility of using health mentors (i.e., fitness trainers) to improve diet and physical activity in 76 individuals with SMI [24]. Health mentors conducted weekly individual meetings with participants for 9 months to increase their physical activity and improve their diet, and work on other health goals such as tobacco cessation. The program demonstrated feasibility in that over half of the participants reported that they met weekly with their health mentor. Participants showed significant increases from baseline to 9 months in self-reported physical activity, satisfaction with their health and mental health functioning, as well as significant decreases in negative symptoms and waist circumference, but not in weight. Research is needed to identify whether fitness professionals who receive training in working with an SMI population or direct care workers who receive training in healthy lifestyle changes, or a combination of both, are more effective for facilitating weight loss in consumers.

While the DPP, as delivered, provided some benefit to consumers, further adaptation may be warranted to facilitate greater weight loss in individuals with SMI. Other populations with mental illness, such as those with depression, binge eating disorder, or attention deficit hyperactivity disorder, demonstrate greater difficulty losing weight in the DPP lifestyle interven-

tion [25, 26]. Based on our experience and feedback from participants, individual Wellness Specialists and peer group leaders, we recommend the following modifications. First, increasing the length of the program to allow repetition of key concepts, more basic nutrition education, and extra practice appears warranted. Activities such as rate your plate, problem solving, and talking back to negative thoughts were understood by participants during group, but not typically utilized outside of group. Second, individuals with SMI may be particularly vulnerable to the obesogenic food environment due to fixed incomes and cognitive limitations. Greater practice in community settings such as grocery stores, convenience stores and local fitness centers, could enable individuals with SMI to learn through experience. This might help them learn how to apply the information they receive in the group into their daily lives. Third, given the high attendance rates and consumer desire for continued intervention, increasing the length of the intervention may assist with behavior change. We made these changes to the program and will assess whether they result in greater weight gain.

Future studies should examine changes in outcome variables other than weight. Changes in body composition and cardiometabolic health might occur even in the absence of significant weight loss. Given the connection between physical and mental health, outcomes such as mental health functioning and quality of life should also be assessed.

Keys to the success of the partnership between ServiceNet and the researchers include ServiceNet's interest in evidence-based treatment, their support for wellness and use of a community-based participatory research approach. While ServiceNet recognized that their consumers are different than the samples included in most weight loss studies, they also felt strongly that their consumers should not be underestimated. They were interested in using data to drive changes to the intervention instead of hunches about what consumers could accomplish. Additionally, the organization provided time for their Wellness Specialists to attend the training and covered the cost of peer Wellness Specialists to lead the groups for the pilot. Lack of institutional support would likely have precluded this project. Leadership expressed that the SAMSHA 10 by 10 national goal had a tremendous impact on their care philosophy, which underscores the importance of these public health initiatives. Lastly, the mutual respect between the researchers and ServiceNet facilitated collaboration.

In our experience, challenges to training the Wellness Specialists included their assumptions that consumers would not be capable of benefiting from the DPP and their perception that consumers would prefer focusing on non-weight-related concerns. During the training, Peer Wellness Specialists made suggestions to address these issues. Consumers often report feeling like they have little control over their treatment decisions, so peer Wellness Specialists encouraged the non-peer Wellness Specialists to let the consumer decide on goals, which may increase the likelihood that they benefit from the DPP content. When consumers prefer focusing on non-weight-related concerns, the Wellness Specialist can discuss the concern while also encouraging healthy behavior by going for a walk or preparing a healthy snack. Despite initial misgivings, the Wellness Specialists, overall, rated the training as helpful and by the last session, many were describing how they used certain skills or techniques with consumers. Some were more enthusiastic than others, which is another reason why conducting the training provided an ideal way to assess which Wellness Specialist might be particularly good for leading the group. Training the Wellness Specialists in the DPP was also helpful in that we realized their need for assistance with lifestyle changes. Increasing the health of the Wellness Specialists, or similar direct care workers, may be a critical first step toward increasing the health of the consumers they serve. The training coupled with the myriad lifestyle challenges we observed in the Wellness Specialists led to the provision of a staff-only DPP group. Future research on the value to consumers of providing lifestyle intervention to community mental health workers is warranted.

Limitations of the study include the small sample size, the lack of a longer term follow-up, and the poor response rate for the key informant interviews. We opted for a separate session to conduct the key informant interviews, without the group leaders present, because we wanted them to feel comfortable providing negative feedback about the intervention. For this session, we arranged transportation and provided incentives (food and gift cards) to encourage participation in the interviews. In spite of that, transportation failures still occurred, which is typical in this setting. However, meeting with strangers to discuss their opinions generated some discomfort, which was also a barrier to attendance. Completing a debriefing at the final group session may be a more successful approach to obtaining feedback from participants.

CONCLUSION

This case study illustrates how a peer-led DPP for individuals with SMI can be implemented in a community mental health organization. The DPP was feasible, but weight losses were small. Further research is necessary to determine how to improve weight loss outcomes in the SMI population. The DPP lifestyle intervention appears to be a good foundation for a program, but likely will require more extensive modification to be more effective in the SMI population. We are encouraged that the program as implemented was sustainable given that it is still ongoing 1 year later. Research on how to disseminate intensive lifestyle interventions more widely is needed.

Acknowledgments: This study was funded by grants from the Blue Cross Blue Shield Foundation of Massachusetts awarded to ServiceNet (#HCD-163.1) and a Healey Foundation Public Service Award from the University of Massachusetts Medical School to Dr. Pagoto. The authors wish to thank Tam Ward, Michael Oestreicher, and Kim McGovern for their assistance with and enthusiasm for this project.

1. Hennekens, C. H. (2007). Increasing global burden of cardiovascular disease in general populations and patients with schizophrenia. *The Journal of Clinical Psychiatry, 68*(Suppl 4), 4–7.
2. DE Hert, M., Schreurs, V., Vancampfort, D., & VAN Winkel, R. (2009). Metabolic syndrome in people with schizophrenia: a review. *World Psychiatry, 8*(1), 15–22.
3. Douglas, I. J., & Smeeth, L. (2008). Exposure to antipsychotics and risk of stroke: self controlled case series study. *BMJ, 337*, a1227.
4. Newcomer, J. W. (2005). Second-generation (atypical) antipsychotics and metabolic effects: a comprehensive literature review. *CNS Drugs, 19*(Suppl 1), 1–93.
5. Pagoto S, Schneider K, Appelhans B, Curtin C, Hadjuk A. Psychological comorbidities of obesity. In: Pagoto S, editor. Psychological comorbidities of physical illness: a behavioral medicine perspective. New York: Springer; (in press).
6. American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, North American Association for the Study of Obesity. (2004). Consensus development conference on antipsychotic drugs and obesity and diabetes. *Diabetes Care, 27*(2), 596–601.
7. Brown, S., Birtwistle, J., Roe, L., & Thompson, C. (1999). The unhealthy lifestyle of people with schizophrenia. *Psychological Medicine, 29*(3), 697–701.
8. Hennekens, C. H., Hennekens, A. R., Hollar, D., & Casey, D. E. (2005). Schizophrenia and increased risks of cardiovascular disease. *American Heart Journal, 150*(6), 1115–1121.
9. Dixon, L. B., Dickerson, F., Bellack, A. S., et al. (2010). The 2009 schizophrenia PORT psychosocial treatment recommendations and summary statements. *Schizophrenia Bulletin, 36*(1), 48–70.
10. Alvarez-Jimenez, M., Hetrick, S. E., Gonzalez-Blanch, C., Gleeson, J. F., & McGorry, P. D. (2008). Non-pharmacological management of antipsychotic-induced weight gain: systematic review and meta-analysis of randomised controlled trials. *The British Journal of Psychiatry, 193*(2), 101–107.
11. Gabriele, J. M., Dubbert, P. M., & Reeves, R. R. (2009). Efficacy of behavioural interventions in managing atypical antipsychotic weight gain. *Obesity Reviews, 10*(4), 442–455.
12. Radke, A. Q., Parks, J., & Ruter, T. J. (2010). A call for improved prevention and reduction of obesity among persons with serious mental illness. *Psychiatric Services, 61*(6), 617–619.
13. USDHHS. (2010). *The 10 by 10 campaign: a national wellness action plan to improve life expectancy by 10years in 10years for people with mental illness. A report of the 2007 National Wellness Summit for people with mental illness.* Washington, D.C.: International Med Publishing.
14. Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
15. Ryan, T., Webb, L., & Meier, P. S. (2006). A systems approach to care pathways into in-patient alcohol detoxification: outcomes from a retrospective study. *Drug and Alcohol Dependence, 85*(1), 28–34.
16. DPP Research Group. (2004). Achieving weight and activity goals among diabetes prevention program lifestyle participants. *Obesity Research, 12*(9), 1426–1434.
17. Weber, M., & Wyne, K. (2006). A cognitive/behavioral group intervention for weight loss in patients treated with atypical antipsychotics. *Schizophrenia Research, 83*(1), 95–101.
18. Mau, M. K., Keawe'aimoku Kaholokula, J., West, M. R., et al. (2010). Translating diabetes prevention into native Hawaiian and Pacific Islander communities the PILI 'Ohana Pilot project. *Progress in community health partnerships research, education, and action, 4*(1), 7–16.
19. Parikh, P., Simon, E. P., Fei, K., Looker, H., Goytia, C., & Horowitz, C. R. (2010). Results of a Pilot Diabetes Prevention Intervention in East Harlem, New York City: Project HEED. *American Journal of Public Health, 100*(Suppl 1), S232–S239.
20. Pagoto, S. L., Kantor, L., Bodenlos, J. S., Gitkind, M., & Ma, Y. (2008). Translating the Diabetes Prevention Program into a hospital-based weight loss program. *Health Psychology, 27*(1), S91–S98.
21. Schneider, K. L., Bodenlos, J. S., Ma, Y., et al. (2008). Design and methods for a randomized clinical trial for co-morbid obesity and major depressive disorder. *BMC Psychiatry, 8*(1), 77.
22. Pagoto, S. L., Bodenlos, J. S., Schneider, K. L., Olendzki, B., Spates, R. C., & Ma, Y. (2008). Initial investigation of behavioral activation therapy for co-morbid major depressive disorder and obesity. *Psychotherapy Theory, Research, Practice, Training., 45* (3), 410–415.
23. Backer, T. E. (2000). *Finding the balance: program fidelity and adaptation in substance abuse prevention*. Washington, D.C.: Center for Substance Abuse Prevention.
24. Van Citters, A. D., Pratt, S. I., Jue, K., et al. (2010). A pilot evaluation of the In SHAPE individualized health promotion intervention for adults with mental illness. *Community Mental Health Journal, 46*, 540–552.
25. Pagoto, S. L., Bodenlos, J. S., Kantor, L., Gitkind, M., Curtin, C., & Ma, Y. (2007). Association of major depression and binge eating disorder with weight loss in a clinical setting. *Obesity, 15*(11), 2557–2559.
26. Pagoto, S. L., Curtin, C., Bandini, L. G., et al. (2010). Weight loss following a clinic-based weight loss program among adults with attention deficit/hyperactivity. *Disorder symptoms Eat Weight Disord, 15*, e166–172.