Wellness Interventions in an Asian American-Specific Mental Health Setting

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Wellness Interventions in an Asian American-Specific Mental Health Setting

A Thesis

Presented in

Partial Fulfillment of the

Requirements for the Degree of

Master of Arts

By

Kris (Pui Kwan) Ma

July, 2016

Department of Psychology

College of Science and Health

DePaul University

Chicago, Illinois
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WELLNESS INTERVENTIONS FOR ASIAN AMERICANS WITH SMI

Thesis Committee

Anne Saw, Ph.D. Chairperson

Megan Greeson, Ph.D.
To My Grandma
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Biography

The author was born and raised in Hong Kong. She received her Bachelor of Social Science’s degree in Psychology in 2013 from the Chinese University of Hong Kong. In September 2014, she began her doctoral program in Clinical/Community Psychology at DePaul University, Chicago, Illinois. In 2015-2016, she completed her clinical practicum at DePaul Family and Community Services. In July 2016, she began her advanced practicum in Clinical Neuropsychology at the University of Illinois Medical Center at Chicago.
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Abstract

Individuals with serious mental illness (SMI) on average die 25 years sooner than individuals in the general population. The elevated mortality is mainly due to preventable medical conditions and barriers to care. Primary care-behavioral health integration and wellness interventions have shown to be effective in addressing the disparities. However, racial and ethnic minorities are underrepresented in the literature. In particular, the disparities in health conditions and access to care among Asian American immigrants with SMI are exacerbated by unique cultural and linguistic barriers in healthcare service delivery. The current thesis examined a multi-year multi-faceted wellness intervention designed for Asian American immigrant adults with SMI in a primary care behavioral health integrated care setting.

The first study used a longitudinal dataset on daily overall functioning, psychological distress, waist circumference, systolic and diastolic blood pressure from 220 Asian American adults with SMI to test our hypotheses: (1) participants in wellness groups had greater improvements in physical and psychological health outcomes than their counterparts who did not join wellness groups (ie. comparison group); (2) social connectedness moderated the relationship between wellness interventions and health outcome changes. Path analyses using structural equation modeling were conducted in Amos version 23.0. Results showed that participants with higher psychological distress, systolic and diastolic blood pressure at baseline had a greater decrease in distress and blood pressure respectively over time. Greater improvements in social connectedness were found to be associated with greater increase in daily overall functioning. By contrast, smaller improvements in social connectedness were linked with smaller reductions in distress. We did not find significant group differences in health outcome changes between wellness and comparison groups. There were also no statistically significant moderation effects.
of social connectedness. Important insights and lessons were offered in this study to direct future research on effectiveness of wellness interventions for Asian Americans with SMI.

The second study explored the possible mechanisms in wellness interventions that were associated with observed changes in health behaviors and outcomes among Asian Americans with SMI. We conducted 5 individual interviews with providers and 7 focus group discussions with 41 consumers. We employed constant comparative method deriving from modified grounded theory approach to analyze the data. Seven themes were generated: client empowerment, information sharing across providers, cross-organization dynamics and building a cohesive team, organizational and systems change, organizational leadership, building capacity, and sustainability and implementation of individual behaviors. Findings were situated in the Health Behavior Framework as barriers and supports at individual, organizational/system and societal levels that influence health behaviors (Bastani et al., 2010). The importance of multi-level wellness interventions that take individual and social-ecological determinants of health into consideration is underscored. The longitudinal and qualitative findings of the current thesis helped to inform decisions in designing research and intervention for improving wellness among Asian Americans with SMI.
Wellness Interventions in an Asian American-Specific Mental Health Setting

Individuals with serious mental illness (SMI) on average die 25 years sooner than the general population (Agency for Healthcare Research and Quality, 2009). The excess mortality is largely attributed to poor physical health and modifiable risk behaviors such as a sedentary lifestyle and obesity (Lawrence & Kisely, 2010). To address these health disparities, integration of primary care and behavioral healthcare as well as services that promote health and wellness among individuals with SMI have been proposed (Centers for Medicare & Medicaid Services, 2010). Wellness interventions and lifestyle modification programs have shown to be effective in improving physical health in individuals with SMI (Green et al., 2014; Happell, Davies, & Scott, 2012; Scharf et al., 2013). However, racial and ethnic minorities, in particular Asian Americans and immigrants, are underrepresented in the literature (Cabassa, Leopoldo, Jerel, Lewis-Fernandez, 2010). Research found that disparities in Asian Americans’ health conditions are exacerbated by the cultural and linguistic barriers in healthcare delivery (Kim & Keefe, 2010). They tended to underutilize healthcare services due to a lack of English proficiency, recognition of need and knowledge of access (Abe-Kim, 2007; Chen, Kazanjian, Wong, & Goldner, 2010; Kung, 2004; Ngo-metzger, Legedza, & Phillips, 2004). To address the needs among Asian Americans with SMI, our current project examined the effectiveness of wellness interventions in improving health outcomes among this population and explored possible mechanisms of change in the wellness intervention.

Disparities in Morbidity and Mortality

A number of studies have shown that individuals with SMI have an excess mortality rate being 2-3 times higher than the general population (Hert et al., 2011). This documented mortality
gap has widened in recent decades (Ösby et al., 2000). It is estimated that about 60% of this excess mortality is due to physical comorbidities (Hert et al., 2011). Individuals with SMI are associated with higher rates of comorbid medical conditions such as obesity, type 2 diabetes mellitus, heart diseases, hepatic disorders, asthma and acute respiratory diseases than those without SMI (Bartels, 2004; Hert et al., 2011; Miller, Paschall, & Svendsen, 2006). In a study with patients receiving community psychiatric services conducted by Sokal et al (2004), higher rates of almost all medical conditions including type 2 diabetes mellitus, lung diseases, liver problems and asthma were found in individuals with schizophrenia and mood disorders as compared to a matched group of persons from the general population, even when controlling for age, sex, race and ethnicity. Consistently, studies reported that among young and middle-aged adults (18-64) who have schizophrenia, approximately half (48%) of them have at least one current medical condition and one-fifth (20%) have multiple current medical conditions (Bartels, 2004). The prevalence of obesity and type 2 diabetes in persons with schizophrenia is 2-3 fold higher than the general population (Collins, Tranter, & Irvine, 2012; Hert et al., 2011). They are also 2.9 times more likely to die of natural causes, especially cardiovascular diseases, than people in the general population (Lambert, Velakoulis, & Pantelis, 2003). Similarly, persons with depression have a 50% greater risk of cardiovascular disease and it is suspected that depression is an independent risk factor for aggravating coronary heart disease (Collins et al., 2012; Hert et al., 2011). In fact, heart disease is one of the leading causes of death among persons with SMI (Hert et al., 2011; Miller et al., 2006). Together, these statistics demonstrate that individuals with SMI are prone to physical health problems and the burden is significantly greater on them as compared to the general population.
Overview of the Health Behavior Framework (HBF)

To understand the causes of health disparities in populations with SMI, a sound conceptual framework is required to systematically examine multiple determinants of health behaviors in this population. The Health Behavior Framework (HBF) (see Figure 1) is an integrative conceptual model developed at the University of California Los Angeles for studying multi-faceted health behaviors (Bastani et al., 2010). It incorporates major health theories such as the Health Belief Model (Becker and Maiman, 1974), Social Cognitive Theory (Bandura, 1989), the Theory of Planned Behavior (Ajzen, 2002), the Transtheoretical Model of Change (Prochaska and DiClemente, 1983) and Social Influence Theory (Greer, 1988; Lomas and Haynes, 1988). This framework has been applied to guide preventive screening studies and design community interventions to promote cancer-related health behaviors (Bastani et al., 2010). It proposes that individual, provider, and health care system factors influence behavior intentions, which in turn influence health behaviors (Bastani et al., 1999, 2001, 2007, 2010). Individual variables are: knowledge, communication with provider, health beliefs, social norms and support, past health behaviors, barriers and support, cultural factors and beliefs. Provider and health care system factors include provider characteristics, health care setting, practice patterns and structural factors. For example, on the individual level, whether an individual with SMI has knowledge about making healthy food choices, instructions from primary care providers, perceived susceptibility of developing obesity, support from family and peers, previous dine-out habits, financial difficulties and cultural preferences of food will influence his or her intentions of adopting a healthy and balanced diet. On the system level, whether the provider is supportive and maintains follow-up contact with the patient in an integrated care setting will also influence the patient to modify his diet. The connection between intention and behavior change depends on
the barriers and supports that function at individual, health system and society levels. These barriers and supports also directly influence health behaviors (Bastani et al., 2010). Examples of these barriers and support can be lack of universal healthcare and adequate access to green foods. The broader socio-ecological conditions such as health policy environment, health care system, built environment, economic environment, community capacity and engagement, social norms and advocacy are also considered.

In the following sections, we review literature on the individual factors such as modifiable risk behaviors and health care system factors such as barriers to care that contribute to the disparities in morbidity and mortality among individuals with SMI. We examine these factors in the context of Asian American populations. Then, we discuss the roles of wellness interventions and social support in addressing these disparities. Our study focuses on examining the effectiveness of wellness interventions in improving health among Asian Americans with SMI and exploring the mechanisms of change in intervention that may serve as supports or barriers when influencing health behaviors.

**Modifiable Risk Behaviors**

Modifiable risk behaviors have been identified as a major contributory factor aggravating the physical health of persons diagnosed with SMI. It is found that individuals diagnosed with SMI were more likely to engage in unhealthy lifestyle behaviors than those without SMI (Scott & Happell, 2011). In terms of diet quality, research showed that individuals with SMI make poor dietary choices characterized by limited fruit and vegetables and high-fat content. The average fruit and vegetable they had was 16 portions a week, which was much less than the recommended intake of 35 per week (Mccreadie, 2011). They consume higher amounts of
saturated fat, sucrose and sweetened drinks compared to the general population. They were also more likely to have higher salt consumption (Scott & Happell, 2011). Studies also showed that saturated fats from dietary intake of meat and dairy products were associated with worse outcomes in persons with schizophrenia (McCreadie, 2011). In terms of physical activity levels, persons with SMI have shown to be less physically active than the general population (McCreadie, 2011; Richardson, 2005). In a study conducted with 140 individuals with schizophrenia, none of them reported any vigorous exercise during the past week and only 34 percent reported participating in at least one session of moderate-intensity physical activity (Richardson, 2005). This is much less than the recommended amount of a minimum of 30 minutes of physical activity of moderate intensity in most days of the week. Thus, lifestyle behaviors represent a primary intervention target for reducing the gap in physical health between individuals with SMI and the general population (Scott & Happell, 2011).

**Barriers to Care**

In addition to lifestyle factors, the disparities in individuals with SMI are compounded by the barriers to care they encounter in the existing healthcare system. Physical health care needs of SMI population are overlooked by professionals in primary care and behavioral health sectors. Physical comorbidities are often undetected and untreated in individuals with SMI as there are a lack of assessments, monitoring and recording of their physical health status (Robson & Gray, 2007). Lambert et al (2003) reviewed studies showing that among 45 percent of patients in the public mental health system who had physical disease, almost 50 percent of them were undetected by psychiatrists and 33 percent were undetected by non-psychiatrist physicians.
One of the major barriers are the fragmented system of care in which the mental healthcare system has not incorporated physical care into their practice, despite there is a clear interconnection between physical and mental health (Bartels, 2004). There is a lack of role clarity about whose role it is to manage physical health needs of persons with SMI. Primary care physicians thought SMI is too specialized for primary care while individuals with SMI reportedly preferred to consult general practitioners regarding their physical symptoms (Lester, Titter, & Sorohan, 2005). Likewise, Cabassa et al (2014) found that mental health clinicians were ambivalent in delivering physical health care to individuals with SMI due to their limited education and training in this arena. On the other hand, strong stigma against persons with SMI also evoked fear and resistance among medical providers in treating them. Both parties failed to realize the reciprocity of physical and mental health, resulting in undermining the holistic wellbeing of the SMI population.

Another barrier is the misattribution of physical symptoms to a mental disorder. It is reported that physical complaints by individuals with SMI were perceived by psychiatrists as psychosomatic symptoms, thus delaying the detection of real medical conditions in the patients (Lambert et al., 2003). These structural barriers heighten the need for integrated care and multimodal healthcare initiatives that address both physical and mental health concerns among individuals with SMI.

Challenges Faced by Asian Americans

**Preventable medical conditions.** Asian Americans comprise 5.6% of the total U.S. population and are the fastest growing racial group, with a 45.3% increase in population between the years of 2000 and 2010 (U.S. Census Bureau, 2012). Physical health problems such as
obesity, diabetes and hypertension are common in Asian American population. Cardiovascular disease is in fact the leading cause of deaths in both Caucasian American and Asian American populations. When using the proposed Asian-specific BMI categories for the Asian American groups, 67% of Asian American men and 41% of Asian American women were categorized as increased or high risk of overweight or obese, which was similar to the percentage categorized as overweight or obese among non-Hispanic whites (Maxwell, Crespi, Alano, Sudan, & Bastani, 2012). About one-quarter (25.6%) of non-Hispanic Asian adults had hypertension [defined as having blood pressure greater than or equal to 140/90 millimeters (mm) mercury (Hg) or taking blood pressure-lowering medications] during 2011–2012. Men and women did not differ in the prevalence of hypertension, but prevalence increased with age: 5.0% for the 20–39 age group, 26.5% for the 40–59 age group, and 59.6% for the 60 and over age group (Centers for Disease Control and Prevention [CDC], 2014).

There is some heterogeneity in the physical health conditions among the Asian American subgroups (Appel, Huang, Ai, & Lin, 2011; Huang, Appel, Nicdao, Lee, & Ai, 2012). For instance, nearly 66% of Filipino Americans men met the criteria for being overweight or obese (Huang et al., 2012). They also had higher rates of hypertension compared with Chinese, Vietnamese and Japanese Americans. Chinese American men, on the other hand, had high rates of diabetes (Huang et al., 2012). Nearly one-fourth of Chinese American women reported hypertension which was associated with their high rates of cardiovascular diseases (Appel et al., 2011). All five Asian American groups (Chinese, Japanese, Korean, Filipino and Vietnamese) reported a lower consumption of five or more fruit and vegetables per day and lower levels of physical activity, as compared to non-Hispanic whites (Maxwell et al., 2012).
Mental disorders and somatization. Lifetime prevalence of any mental disorder among Asian Americans was 18.1% and anxiety, mood and substance use disorders were most prevalent in the population (Hong et al., 2014). In general, high rates of depression are found in Chinese Americans, Filipino Americans and Vietnamese Americans (Appel et al., 2011). Asian American women reportedly have higher depression rates and engage in fewer physical activities (Appel et al., 2011). Those who lacked social support, who rated their health as poor and who reported high levels of life stress were at increased risk of depression (Appel et al., 2011).

Alongside the high rates of internalizing disorders, there is also a phenomenon of somatization (Mak & Zane, 2004). The manifestations of distress, negative emotions and depression in Asian American cultures tend to be more somatic than emotional (Appel et al., 2011; Huang et al., 2012). Previous findings showed that somatic symptoms among Chinese Americans were associated with levels of anxiety and depression (Mak & Zane, 2004). Both Chinese American women and men reported the experience of headaches, muscle soreness, and lower back pain frequently (Mak & Zane, 2004). Since somatic symptoms of distress tend to be generally accepted by Asian American cultures, it is suspected that physical health needs and potential risks of chronic illnesses among Asian Americans with SMI could be more likely to be undetected and untreated (Huang et al., 2012).

Health disparities in Asians with SMI. Health disparities have also been observed in Asian populations with SMI. Out of 650 people with SMI in Taiwan, 31% of men and 41% of women were obese (Huang et al., 2009). In Thailand, 44% of people with schizophrenia were diagnosed with obesity (Thongsai et al., 2016). Over 26% of inpatients with schizophrenia in Japan were found to be overweight or obese (Suzuki et al., 2014). In Hong Kong, metabolic syndrome was more prevalent in people with SMI (35%) than in the general population (17%)
(Bressington et al., 2013). These studies showed that whereas Asians with SMI were at a higher risk of developing physical comorbidities, they were also more likely to consume too many portions of dietary fats and to have less exercise.

**Cultural and linguistic barriers to care.** Despite the health problems faced by Asian Americans, they tend to underutilize healthcare facilities (Abe-Kim et al., 2007; Chen et al., 2010; Hall & Yee, 2014; Leung & Lau, 2001. Ngo-metzger et al., 2004). Asian Americans are underrepresented in outpatient clinics and mental health hospitals (Appel et al., 2011). In particular, Asian American immigrants are less likely to use healthcare services than their US-born (Abe-Kim, 2007; Appel et al., 2011; Le Meyer, Zane, Cho, & Takeuchi, 2009). Cultural and linguistic barriers have impeded Asian American immigrants to access healthcare services (Kim & Keefe, 2010). Language is the foremost obstacle for many Asian Americans with limited English proficiency (LEP). Less than 50 percent of Chinese-, Korean- or Vietnamese-speaking population spoke English very well; in fact more than 20 percent of them did not speak English at all (U.S. Census Bureau, 2013). They face difficulties in communicating with health professionals and acquiring knowledge on illness. Research found that people with limited English-speaking skills refrained from asking questions about their health (Kim et al., 2011; Kim & Keefe, 2010). Though translation services were available, it is found that Chinese and Vietnamese immigrant patients who used interpreters at community-based health centers were more likely than language-concordant patients to have questions about their mental health they wanted to ask but did not (Green et al., 2005). Limited English proficiency was also found to be related to poorer self-rated physical and mental health (Zhang & Ta, 2009). Second, limited health literacy and cultural beliefs about diseases distort their recognition of health needs and thus prevent them from seeking healthcare support (Kung, 2004; Leong & Lau, 2001). It is found
that first generation Asian Americans only sought healthcare when their symptoms were severe enough, which led to poorer health outcomes (W. Kim & Keefe, 2010). Third, social stigma associated with mental disorders and the fear of loss of face in Asian culture also impede the help-seeking behavior among Asian Americans with serious mental illness (Kung, 2004; Leong & Lau, 2001). Since family name and face are important in their cultures, they tend to look to families for help first instead of seeking professional consultation, as to avoid having their name viewed poorly by others. This delays their help-seeking behavior and worsens their health problems (Leong & Lau, 2001). Fourth, practical barriers such as lacking the knowledge about available services and inability to access services due to economic and geographical reasons are also equally influential as cultural barriers in impeding Asian Americans to receive healthcare services (Kung, 2004).

Cultural characteristics shape Asian Americans’ help seeking behavior and influence the quality of care they receive. Previous research indicated that Asian Americans are less likely to report positive interactions with their doctors. According to a study conducted by Ngo-metzger et al (2004), Asian Americans had fewer regular doctors of their similar race or ethnicity and less choice in where they could go for medical care, as compared to Caucasian Americans. They were also less satisfied with their healthcare services, as they received less counselling from their doctors about lifestyle issues or mental health issues and their doctors did not understand their background and values.

Due to their unique culture, Asian Americans face additional challenges that exacerbate the health disparities. Though they face growing physical and mental health problems, they encounter cultural and physical barriers that undermine their access to healthcare services, impede their help-seeking behaviors and decrease the quality of care they receive. Thus,
culturally sensitive interventions are needed to eliminate disparities in physical and mental health, as well as increase service use by Asian Americans with SMI.

**Health and Wellness Interventions for Persons with SMI**

Numerous health initiatives have been proposed to reduce the excess mortality and morbidity rates among persons with SMI. These health initiatives vary from lifestyle modification programs that target specific health risk behaviors to multimodal interventions that improve holistic wellbeing of persons with SMI (Collins et al., 2012; Tranter, Irvine, & Collins, 2012). The most commonly reported lifestyle modification studies target weight management that involves changes in nutrition and physical activity (Cabassa, Ezell, Lewis-Fernandez, 2010). These studies supported the effectiveness of lifestyle modification programs in reducing weight, systolic blood pressure, body mass index and waist circumference among participants with SMI. A two-arm randomized controlled trial conducted by Green et al (2014) showed that participants in the intervention group had greater weight loss and decreased fasting glucose levels as compared to the usual care group. The 6-month intervention group engaged in weekly two-hour group activities that helped to increased their consumption of low-calorie density foods, created personalized plans, increased physical activity and fostered social support (Green et al., 2014).

On the other hand, multimodal interventions take a broader approach to enhance both physical and psychological wellbeing of persons with SMI and explore service provision within the community setting (Tranter et al., 2012). Wellbeing support programs combine elements of health screening, health education and health promotion (Smith et al., 2007). Wellness educational programs address a variety of behavioral health issues such as exercise, nutrition, safety, stress, smoking and body weight through individual wellness profile and clubhouse-
model treatment (Camann, 2001). It is found that these programs produce short term positive outcomes in increasing fruit and vegetables consumption, reducing smoking and increasing awareness of health behaviors among participants with SMI (Camann, 2001). Likewise, it is found that multidimensional wellness group programs produced improvements in physical, emotional and social roles functioning among veteran patients (Perlman et al., 2010). The multidimensional 15-week program consisted of modules that promoted stress management skills, health enhancing behaviors and behavioral activation. The positive effects in veterans maintained at follow-up assessments. As for outpatients, a randomized controlled trial conducted by Chafetz, White, Collins-Bride, Cooper, & Nickens (2008) showed that participants who received basic primary care services plus wellness training had significant better outcomes on perceived physical functioning and general health status over time, as compared to participants who only received primary care services. The 12-month wellness training was an individually administered program that included promoting skills in self-assessment, self-monitoring and management of physical health programs, including effective use of health services (Chafetz et al., 2008).

In addition to improvements in physical health, wellness interventions were also found to enhance psychological wellbeing. Studies by Van Citters et al (2010) and Hutchison et al (2016) both showed significant improvements in psychological functioning and reductions in depressive symptoms among participants with SMI who engaged in individualized health plans with their health mentors and in moderate to vigorous physical activity. Feeley, Servoss and Fox (2004) also found wellness programs enhanced quality of life among persons with SMI.
Role of Social Support in Health Behavior Interventions

A common feature shared by the majority of health behavior interventions is the adoption of a group-based approach in delivering the interventions. According to a review of literature by Happell et al (2012), 25 out of 42 intervention studies provided group programs to promote health behaviors among persons with SMI. Some studies suggested that persons with SMI benefit more from a group-based program as it can provide consistent support and build internal motivation for participants to engage in health activities. McDevitt and Wilbur (2006) found that group support was particularly helpful for persons with SMI to engage in walking exercise as it provided modeling, assistance with problem solving and socialization opportunities. Modeling by peers helped encourage individuals to work toward new goals despite the difficulties they encountered. The groups also helped individuals to overcome barriers and affirm one’s capacity to succeed. These findings are supported by surveys of mental health service users who reported having a “buddy scheme” where there was shared experience and peer support facilitated their participation in exercise (Roberts & Bailey, 2011). Knowledge of enjoyment and companionship are effective in influencing behavior, thus group programs are especially more important to participants with SMI who tend to have a smaller social network (Mcdevitt & Wilbur, 2006; Roberts & Bailey, 2011). In this case, social support facilitates participation and influences health behaviors in wellness interventions among individuals with SMI.

In Asian American population, due to their collectivistic culture, ties with family, relatives and friends are particularly important as they are more likely to use kin for emotional or instrumental support as compared to other ethnic groups (Zhang & Ta, 2009). The significance of social ties can be reflected on the association between self-rated health and levels of social connection. Zhang and Ta (2009) found that both self-rated physical and mental health were
positively associated with family cohesion, relative support and friends support. Respondents with strong family cohesion and more friends support were less likely to report poor or fair physical and mental health, after controlling for gender, age, marital status and national origin.

While studies found social support benefit health outcomes in group interventions, most of them used primarily subjective self-report measures of health. It is arguable that there would be inconsistencies between how participants felt about their health versus their actual health status. Hence, there is a need to consolidate the role of social support in wellness interventions using objective health measures such as blood pressure and waist circumference. Besides, most of the studies were conducted with non-Asian groups. It is less clear whether Asian Americans would benefit more from social support given their collectivistic culture. Therefore, more research should be conducted on examining the mechanisms of social support in group-based wellness programs that influence health behaviors and outcomes in Asian Americans with SMI.

**Rationale**

Despite the wealth of research on health and wellness interventions for individuals with SMI, there are three main research gaps that our current study aims to address. First, racial and ethnic minorities are underrepresented in the literature of wellness interventions. In a systematic literature review of 23 healthy lifestyle intervention studies between 1980 and 2010 for people with SMI, Cabassa, Ezell, and Lewis- Fernández (2010) found only one study adapted the intervention to an ethnic minority group. Existing programs are not including racial and ethnic minorities, or making cultural as well as linguistic adaptations for diverse populations. Given the unique challenges faced by Asian Americans in accessing to healthcare that exacerbates the
health disparities, the current study focused on evaluating the effectiveness of wellness interventions specifically designed for Asian American immigrants with SMI.

Second, although the reciprocal nature of mental and physical health is widely recognized, the majority of studies only focus on improvements in physical health. Psychological outcomes are rarely studied. In a systematic review conducted by Happell et al (2012), 26 out of 42 studies had only reported briefly baseline or pre-post changes for psychological variables, but this information were not effectively gathered. Hence, the current study included variables such as daily overall functioning and psychological distress to report changes in mental health as secondary outcomes among participants in the wellness interventions.

Third, there is the lack of process evaluation data in most studies and thus it is difficult to study the mechanisms of change in health behaviors (Hasselt, Krabbe, Ittersum, Postma, & Loonen, 2013; Green et al., 2014; Happell et al., 2012; Park & McDaid, 2013; Roberts & Bailey, 2011). It is equally unclear of the specific components of the wellness interventions that contribute to health improvements. Therefore, the current study examined moderating variable such as social connectedness and collected qualitative data from providers and participants to understand the mechanisms of change in these interventions.

**General Statement of Hypotheses and Research Questions**

The overall aim of this thesis was to evaluate the effectiveness of a multi-year multi-modal wellness intervention for Asian Americans with SMI. We examined the following hypotheses in study 1:
Hypothesis I. There will be greater improvements in physical and psychological health outcomes among participants in wellness groups as compared to those who did not join wellness groups.

Hypothesis II. There will be a moderating effect of social connectedness in the relationship between wellness interventions and changes in physical as well as psychological health outcomes in which an increase in social connectedness will strengthen the effect of wellness interventions in improving health outcomes.

In study 2, we explored the possible mechanisms of change in wellness interventions that are associated with the study’s physical and psychological health outcomes in study 2.

**Study 1**

Study 1 evaluated the effectiveness of the wellness interventions by examining two hypothetical models. On the basis of previous research, we developed our model as shown in Figure 2. In this model, wellness groups were considered to have a direct effect on each of the five health outcomes, namely the daily overall functioning, psychological distress, systolic blood pressure, diastolic blood pressure and waist circumference. Systolic and diastolic blood pressure were selected as they were common indicators of hypertension. Waist circumference was chosen as it was found to be a more reliable indicator than body mass index to predict cardiometabolic risk (Klein et al., 2007). The second model included social connectedness and proposed that social connectedness interacts and strengthens the wellness group effect on the health outcomes (see Figure 3). We decided the direction of path coefficients based on previous studies showing that social support enhanced the effect of group interventions on health behavior changes and health outcomes.
Method

Settings and Design

This study used archival data from the primary care integrated (PCI) program conducted in Asian Community Mental Health Services (ACMHS), a nonprofit mental health clinic in Oakland, California. ACMHS provides comprehensive outpatient mental health services to more than 2,000 clients annually. Their clientele are mainly low-income immigrants and 90% speak a primary language other than English. In September 2010, ACMHS received a grant from the Substance Abuse and Mental Health Services Administration (SAMHSA) to integrate primary care and wellness interventions into their existing behavioral health services for clients with serious mental illness. The PCI program provided co-located services for primary care and behavioral health needs and wellness activities to encourage clients to develop a healthier lifestyle. Participants in the PCI program chose to use healthcare services and join various wellness activities according to their needs and availabilities. Longitudinal data regarding their daily overall functioning, psychological distress, waist circumference, systolic and diastolic blood pressure were collected. Since a randomized controlled trial design was not feasible in this case, we identified our comparison group as participants who have not enrolled into any wellness activities and our wellness group as participants who have enrolled into wellness activities. The study protocol was approved by DePaul University Institutional Review Board (IRB#AS010515PSY).

Participants

There were 250 participants in the PCI program. They were adults aged 18 or above, self-identified Asian Americans, and have received mental healthcare through ACMHS. Two hundred and twenty participants, who had data beyond baseline assessments, were included in
Wellness Interventions

ACMHS introduced the Wellness Program to encourage clients to be creative, active and motivated to live a healthier lifestyle. It assisted them to be more involved with peer support and take advantage of community resources. It aimed to advance the physical and psychological health of their clients. The Wellness Program was led by the Wellness Coordinator at ACMHS, with shared participation from care managers and nutritionists. Examples of these wellness activities included Family Tai Chi, Healthy Food Choice Group, Exercise group, Zumba, Cambodian Wellness, Mien Wellness, Knitting and Chinese Art. Each group consisted of 10–20 members who met once a week for an hour. The groups were conducted in languages and cultures concordant with the members.

Core components of the wellness activities focused on enhancing physical wellness such as increasing awareness of health-related practices, reducing energy intake by reducing portions, increasing consumption of low-calorie density foods and increasing physical activity. They also promoted psychological wellness by providing psycho-education and teaching coping skills. Social wellness such as interpersonal skills and relationship building activities were included. These interventions adopted behavioral techniques such as goal-settings, self-monitoring skills and creating personalized plans to help members maintain their new healthier lifestyles.

The groups started with a greeting from a certified peer wellness coach who helped to collect and record members’ vitals (e.g., weight, blood pressure and waist circumference). Next,
the wellness coordinator checked in with every member regarding their feelings for the day, progress in taking care of themselves and their coming weekly plan. Next, the groups engaged in the main activities such as Tai Chi movements (for Family Tai Chi group), depending on the nature of the groups. The groups ended 5–10 minutes early for members to rest and have some refreshments, and socialize with one another.

**Procedure**

Eligible participants were contacted by ACMHS and were asked if they were interested in joining the primary care integrated (PCI) program. Interested parties were scheduled for full screening and orientation by their case managers. Case managers also reviewed the inclusion criteria to ensure eligibility before requesting full written consent. After they provided their consent, their case managers scheduled appointments for their first visit. During their first visit (i.e., at baseline), case managers conducted a 45-minute questionnaire-based individual interview with each participant to assess psychological functioning and social connectedness. Then, case managers brought participants down for a warm handoff with the primary care staff who provided an initial physical exam. The physical exam measured height, weight, blood pressure and waist circumference. Staff then informed participants of their results on site and referred them to specialty care providers (e.g., cardiologist) if results were outside normal ranges.

During their participation of the PCI program, participants could choose to join a wide variety of wellness activities based on their needs and availabilities. All participants, no matter they are in wellness groups or not, were asked to come back every 6 months and meet with their case managers. Case managers assessed their psychological functioning and health while primary care staff measured their height, weight, blood pressure and waist circumference. Final assessment would take place at their clinical discharge.
Materials

Physical measures. Waist circumference, systolic and diastolic blood pressure were obtained by trained and certified data collectors using standardized protocols.

Self-report measures. Self-report measures were adopted from the National Outcomes Measures Scales (NOMS) used by Substance Abuse and Mental Health Services Administration (SAMHSA) to assess the performance of the program. Case managers administered all instruments in languages concordant to the participants (See Appendix A for self-report measures).

Daily overall functioning was measured by the mean of eight items on a 5-point scale ranging from 1= “Strongly Disagree” to 5= “Strongly Agree”; sample items include “I deal effectively with daily problems”. This scale assesses how well the individual is adapting and solving life problems as well as fulfilling obligations. The scale had a good internal consistency with Cronbach’s $\alpha = .88$.

Non-specific psychological distress was measured using the 6-item Kessler Psychological Distress Scale (K6) (Kessler et al., 2003). The occurrence of cognitive, behavioral, emotional, psychophysiological symptoms was measured on a 5-point scale ranging from 0 = “None of the time” to 4 = “All of the time”; possible scores range from 0-24, where $\geq 13$ indicates serious distress (Prochaska et al., 2013). Sample items include “During the past 30 days, about how often did you feel so depressed that nothing could cheer you up?” The scale demonstrated a high reliability of Cronbach’s $\alpha = .91$.

Finally, social connectedness was measured by the mean of four items on a 5-point scale ranging from 1 = “Strongly Disagree” to 5 = “Strongly Agree”. Sample items include “I feel I
belong in my community.” This scale assesses the degree of participants’ perceived satisfaction with friends, social support, and belonging. The scale had a reliability of Cronbach’s $\alpha = .82$.

**Change scores.** All measurements were collected at baseline, every six months and at discharge. Given the data showing when did participants start and complete wellness groups activities were not available, the present study only used data from two time points, namely the baseline and discharge, with the assumption that participants in the wellness group joined wellness activities at some point between their start and termination of the PCI program. The baseline data were the first time point data that were collected from participants before they joined the PCI program. The discharge data were collected when participants were clinically discharged or were the last time point data that participants had in the dataset. The time interval between baseline and discharge varied among participants. The present study computed change scores of each health outcome and social connectedness by deducting the baseline data from the discharge data for each participant. The change scores, which represented the changes in outcomes, were used for analyses.

**Analysis**

We analyzed the data by using structural equation modeling in Amos version 23.0. There were two separate models for hypotheses I (the direct effects of wellness groups) and II (interaction effects of social connectedness). Maximum likelihood methods were used to estimate parameters in the models. Wellness group (ie. participants in wellness groups versus those who were not) was our main predictor in the first model. Wellness group and interaction term (which was computed by wellness group times the change score of social connectedness) were the main predictors in the second model. Other predictors included the baseline of each health outcome and social connectedness, and the change score of social connectedness in the
second model. In both models, change scores in five health outcomes, namely the daily overall functioning, psychological distress, waist circumference, systolic and diastolic blood pressure, were dependent variables. Path coefficients were modeled between predictors and dependent variables to assess the contributions of each predictor towards the change in health outcomes. Age, gender and time intervals between baseline and discharge were added as control variables. Covariances among the residuals of health outcomes were included as literature has shown the interconnections between systolic and diastolic blood pressure and waist circumference, as well as between physical and psychological health outcomes (Ojike et al., 2016). Similarly, covariances were added between baseline predictors, age and gender. Wellness groups were also modeled proposed to correlate with age, gender and time intervals.

To evaluate the model fit, we employed three measures of overall fit: the chi-square index, Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). The chi-square index is considered a measure of exact model fit and a heuristic is used in which chi-square to degrees of freedom ratios. If the model fits well, the chi-square will be insignificant – an indication that the residual variance is not significantly different from zero. The level for statistically significant differences was set at p<0.05. The CFI index indicates the relative reduction in model misfit when comparing the target model relative to a baseline (independence) model. RMSEA indicates model discrepancy per degree of freedom and imposes a penalty for adding complexity to a model without substantially improving model fit. According to Hu and Bentler (1999), a CFI value greater than .95 and a cutoff value close to .06 for RMSEA indicate a good fit of the model to the data when using maximum likelihood methods.
Results

Baseline Characteristics of Participants

Table 1 shows the baseline demographic and clinical characteristics of the participants in wellness and comparison groups. Of the wellness group, 58.4% (n = 45) were female. Of the comparison group, 53.1% (n = 76) were female. The average age in wellness group was 48.25 (SD = 11.33). Comparison group’s average age was 50.07 (SD = 13.01). An independent t-test found no significant differences between wellness and comparison groups in baseline health outcomes (see Table 1).

Descriptive Statistics

Table 2 shows the means, standard deviations (SD) and intercorrelations of each of the observed variables. To determine whether the distributions of data were normal, skewness and kurtosis values of the variables were examined. Items with skewness exceeding -3 or +3 are considered to be not normally distributed (Kline, 2016). All distributions had skewness between -3 to +3. Items with kurtosis values of 7 or above are considered to be not normally distributed (West et al., 1996). The baseline systolic blood pressure had a kurtosis of 7.28 (SE = .35). The percentages of missing data for each observed variable were shown in Table 2. Little’s Missing Completely at Random (MCAR) test demonstrated that data were missing completely or partially at random ($\chi^2 (1820) = 1822.244$, p. = .481). The Full Information Maximum Likelihood Method was used to analyze the full, incomplete data set.

Structural Equation Modelling

Hypothesis I. To test our first hypothesis (There will be greater improvements in physical and psychological health outcomes among participants in wellness groups as compared
to those who did not join wellness groups), we conducted path analysis examining the theoretical relationships as shown in Figure 1.

The initial model predicted paths from wellness groups to the changes in each of the five health outcomes, namely daily overall functioning, psychological distress, systolic blood pressure, diastolic blood pressure and waist circumference. It included age, gender, time intervals and baseline health predictors as covariates. Covariances were added among the residuals of health outcome changes and between baseline health predictors and age as well as gender. Age, gender and time intervals were also correlated with wellness groups.

The initial model fit the data only moderately well ($\chi^2 (19) = 35.26, p = .01, CFI = .98, RMSEA = .063 [CI = .03 – .09]$). The model indicated that paths between baseline functioning and changes in functioning, baseline distress and changes in distress, baseline systolic blood pressure and its changes, and baseline diastolic blood pressure and its changes were significant. No significant group effects were found.

To modify the model, covariances between baseline physical health predictors and baseline psychological health predictors were added as they were found to be correlated. Covariances between time intervals and all baseline health predictors were also included since the time participants spent in services before clinical discharge could depend on their health at baseline. The resulting model is shown in Figure 4. The resulting model fit the data well ($\chi^2 (8) = 13.79, p = .09, CFI = .99, RMSEA = .057 [CI = .00 – .11]$). It is found that there was a significant negative path correlation between psychological distress at baseline and change in psychological distress ($\beta = -.66, SE = .08$), suggesting that greater psychological distress at baseline predicted a greater decrease in psychological distress over time. Higher daily overall functioning at baseline
predicted a smaller increase in functioning over time ($\beta = -.69$, SE = .09). Systolic and diastolic blood pressures at baseline were also negatively correlated with change in systolic ($\beta = -.58$, SE = .09) and diastolic blood pressures ($\beta = -.64$, SE = .09), indicating that higher systolic and diastolic blood pressure at baseline predicted greater reductions in blood pressure over time. However, as opposed to our hypothesis I, the path coefficients from wellness groups to each of the five health outcomes changes were not significant.

**Hypothesis II.** To test our second hypothesis (There will be a moderating effect of social connectedness in the relationship between wellness interventions and changes in physical as well as psychological health outcomes in which an increase in social connectedness will strengthen the effect of wellness interventions in improving health outcomes), we included path coefficients between the interaction effects of social connectedness and wellness groups and the five health outcome changes. We also added social connectedness at baseline and change in social connectedness as predictors. The model is shown in Figure 5. The results indicated that the model fit was good ($\chi^2 (8) = 13.87$, p = .09, CFI = .99, RMSEA = .058 [CI = .00 – .11]). In addition to significant paths between baseline and change in functioning, distress, systolic and diastolic blood pressure as aforementioned, change in social connectedness was positively associated with change in functioning ($\beta = .61$, SE = .07) and negatively associated with change in distress ($\beta = -2.92$, SE = .61). This suggested that participants with a greater increase in social connectedness predicted greater improvements in functioning, whereas participants with smaller increase in social connectedness predicted smaller improvements in psychological distress. Similarly, social connectedness at baseline was also positively linked to change in functioning ($\beta = .54$, SE = .07) and negatively linked to change in distress ($\beta = -2.56$, SE = .56). This showed that participants reported greater social connectedness at baseline were predicted to have greater
improvements in functioning over time, whereas those who reported smaller social connectedness at baseline were predicted to have smaller improvements in psychological distress over time. However, as opposed to our hypothesis II, there were no statistically significant interaction effects of social connectedness.

**Discussion**

Study 1 enhanced our understanding on the effectiveness of wellness interventions for Asian American immigrant adults with SMI. Longitudinal data on physical and psychological health outcome changes were assessed using Structural Equation Modelling (SEM). Results showed that over time, participants experienced various extent of changes in daily overall functioning, psychological distress, systolic and diastolic blood pressure, and waist circumference. In particular, those reported with greater psychological distress at baseline were more likely to experience greater reduction in distress over time. Similarly, those who had higher systolic and diastolic blood pressure at baseline tended to have greater decrease in blood pressure over time. These findings suggested that our participants, in spite of greater psychological and physical health needs at baseline, had potential to benefit from some health improvements. Further findings showed the amount of improvements in social connectedness was also predicted to impact the magnitude of change in daily overall functioning and psychological distress.

**Wellness Intervention and Health Improvements**

Our current dataset did not demonstrate significant differences in health outcome changes between wellness and comparison groups; hence we could not conclude participants in wellness groups were doing better off than their counterparts who did not join wellness groups. The lack of strong evidence showing effectiveness of behavioral health or wellness interventions is not
uncommon in the literature. In a recent comprehensive review of 108 randomized controlled trials and observational studies, McGinty and colleagues (2015) found that the strength of the evidence was low for the majority of interventions that address major medical conditions and risk behaviors among the population with SMI. For instance, similar to our study, they found no interventions addressing hypertension outcomes had high strength of evidence, even with the best available evidence showing no effect of behavioral interventions on blood pressure. One of the main reasons for limited evidence is that most studies were too short-term to capture health outcome changes. Changes in blood pressure, waist circumference and other health indicators are distal outcomes that require a longer time to take place, yet most studies on obesity, hyperlipidemia, hypertension, and diabetes mellitus have followed participants for only 3 - 6 months (McGinty et al., 2015). In our study, even though 64% of the wellness sample had stayed in the PCI program for two years or longer, it is unclear at which point they started joining wellness activities and the number of sessions they joined might be varied. Consequently, our current dataset was not able to provide a better estimate of the effect of wellness interventions on health. Future research should focus on examining the long term effects of sustained involvement in wellness interventions and possibly exploring the minimal dosage of interventions needed for health improvements.

Another reason is the multimodal nature of the wellness intervention. Unlike most interventions in the literature that target a single specific health risk behavior, multimodal interventions cater different needs and promote holistic wellbeing among participants. However, it also makes evaluation studies much harder as different wellness activities produce different extent of contributions to physical and psychological health outcome changes. There were eight different wellness groups in this study. These included walking/exercise group, healthy food
choice group, art group and Cambodian wellness group. Each group contained various physical, psychological and social components. When focusing on the general effectiveness of the wellness intervention as a whole, differences in these groups were not considered and thus, providing gross estimates of the effectiveness of the intervention on each health outcome change.

The occurrence of a delicate network of supportive factors other than wellness interventions that might have influenced health outcome changes for all participants may also explain why both groups were improving on their health. Since the wellness intervention was situated in a primary care-behavioral health integrated care setting, participants from both wellness and comparison groups received primary care and behavioral health services from an interdisciplinary care team. These services included health screening, medication consultation and case management. Previous research showed that integrated care increased access and utilization of services among individuals with SMI (Fondow et al., 2015). Therefore, it is possible that the integrated care contributed to comparable health improvements in participants who did not join wellness groups.

Role of Social Connectedness

Despite social support has been widely believed to play an important role in behavioral interventions success, our findings did not support the hypothesis that social connectedness moderates the relationship between wellness interventions and health improvements. A possible reason for the inconsistency between our quantitative findings and the existing literature could be the insufficient sensitivity and specificity of the social connectedness scale employed in the archival data. Unlike the recently-developed measures of social support for individuals with diabetes, cancer, and other specific health conditions that measure domains of support unique to
persons with those medical conditions, the social connectedness scale is a broadband scale that assesses the degree of participants’ perceived satisfaction with friends, social support, and belonging. Our participants were asked to rate the four items, “I am happy with whom I can do enjoyable things”, “I have people with whom I can do enjoyable things”, “I feel I belong in my community”, and “In a crisis, I would have the support I need from family or friends” on a 5-point scale. Neither do these items tap onto participants’ perceptions of positive and negative social support for health behaviors such as diet and exercise habits, nor the types of social support relevant to adults living with SMI (Aschbrenner et al 2013; Chronister et al., 2015). The unique types of social support pertain to persons with SMI include supportive conditions, illness management, day-to-day living, resources and information, guidance and advice and community participation support (Chronister et al., 2015). This may explain why social connectedness did not show strong correlation with wellness groups and statistically significant interaction effects on health outcome changes in our study. Having a population-specific measure of social support for individuals with SMI is psychometrically and clinically useful for evaluating effectiveness of behavioral health interventions for this population.

Prior research on family and friends support showed mixed findings on health impacts. Some studies found that having a support partner in weight control interventions improved health behaviors and outcomes for both participants and partners (Gorin et al., 2005; Aschbrenner et al 2013); whereas other studies reported only a modest, short-term effect of partner or spouse involvement (Black et al., 1990; Wing, Marcus, Epstein, & Jawad, 1991). Gorin and colleagues (2005) found that participants lost significantly more weight than the controls only when their partners were also successful in losing weight. Likewise, Aschbrenner et al (2013) found that readiness to change dietary portion size in populations with SMI was associated with
encouragement for healthy eating from friends and family. These findings speak to the nuances and types of social support when influencing health behaviors and outcomes. Despite the growing evidence on family and friends support, less is known about the effects of social support within group settings for population with SMI. Group interventions are evolving rapidly as an alternative to individual encounters for health improvement, yet the evidence of these initiatives are mixed and information on social group processes are inadequate (Hoddinott et al., 2010). Future research should focus on examining the group processes and nuances of social interactions when studying the role of social support in behavioral health interventions.

Limitations

Several limitations of the study should be noted. First, our study sample was comprised of participants who voluntarily chose to join wellness activities in the intervention setting. Findings from this self-motivated group of people may have limited generalizability to the broader population of persons with SMI who are not aware or interested in changing their lifestyle or health. Second, this is not a randomized controlled trial and thus no complete causation can be made between changes in health outcomes and wellness interventions. Third, possible confounding factors such as mental health diagnoses, medical comorbidities and health-related effects of antipsychotic treatment were not included nor controlled in the analyses. Heterogeneity among Asian ethnic groups were not considered in the study despite there were ten ethnicities included in the sample and they vary in different health outcomes.

Implications

To our knowledge, this is the first observational study to examine the effects of wellness interventions on Asian Americans adults with SMI in natural settings using longitudinal data
with a relatively large sample. It offers important information regarding the feasibility and effects of interventions on the health of persons with SMI in real-world settings that randomized controlled trials may not provide. It also offers insights and lessons regarding future directions of evaluation studies on wellness interventions. Future research should prioritize evaluation of both proximal changes in health behaviors and long-term effects in health outcomes of wellness interventions. Assessments of comparative effectiveness by diagnoses, by ethnicities, by dosage and types of wellness activities and antipsychotic influences are necessary as the literature to date does not suggest that a proven intervention type works across all disparity and diagnostic groups (Agency for Healthcare Research and Quality, 2016). Population-specific and culturally adapted measures of social support should be employed to clarify how social processes in wellness interventions impact implementation of health behaviors and changes in health outcome. The continuation of this research agenda has potential to contribute to the improvements in health and wellbeing and reduce premature mortality among Asian Americans with SMI.

**Study 2**

To complement our understanding of the effectiveness of wellness interventions for Asian Americans with SMI, study 2 explored the possible mechanisms of change associated with health behaviors and health outcomes. In particular, it examined the barriers and supports proposed in the Health Behavior Framework (HBF; Bastani et al., 2010) that directly influence health behaviors. The framework suggests that the barriers and supports function at individual, system and societal levels; and they can be influenced by the broader social-ecological conditions such as health policy environment, health care system, built environment, economic environment, community capacity and engagement, social norms and advocacy. Given that the
wellness intervention took place in a primary care-behavioral health integrated care setting, which involved many innovative changes in organization practices and healthcare systems, it is appropriate to adopt the broader approach from the Health Behavior Framework to examine barriers and supports beyond individual level and extend to organizational/system and societal levels. The present study collected perspectives from consumers and providers and generated themes that elucidated the mechanisms of change in the wellness intervention.

Method

Participants

Seven semi-structured focus group discussions were conducted with forty-one consumers in the PCI program at ACMHS. We chose to do focus group discussions as consumers attended wellness activities in a group format and thus developed shared experiences. It is also more comfortable for persons with SMI to share their experiences together with people they know versus interviewed by a stranger. All participating consumers were adults aged 18 or above, self-identified Asian Americans, and have received mental healthcare through ACMHS. They were recruited through recruitment flyers that were distributed in individual and group meetings at the clinic. Interested parties contacted their case managers who then scheduled a time and location for focus group interviews. Consumers were compensated with a $20 gift card.

Five individual interviews were conducted with providers in the PCI program at ACMHS. These providers are from different disciplines so it is easier and more comfortable to capture information from different perspectives individually. They were adults aged 18 or above and are care providers or administrators at ACMHS. They were recruited through emails sent by
the principal investigator. Interested parties replied to the email and signed the online consent form. Then, the principal investigator contacted them to schedule for the interviews.

**Data Collection**

**Instrument development.** We developed an initial set of guiding questions based on the Health Behavior Framework and on research related to wellness interventions and integrated care. The Health Behavior Framework proposes that individual variables as well as provider and health care system factors influence behavior intentions which in turn influence health behaviors (Bastani et al., 2010). Separate interview guides were drafted for consumers and providers in order to examine the mechanisms of change in health behaviors and health outcomes from two stakeholder groups’ perspectives. Questions for consumers focus on individual variables such as knowledge, communication with provider, social norms and support, barriers and support (Bastani et al., 2010). On the other hand, questions for providers focus on provider and health care system factors such as provider characteristics, health care setting, practice patterns and structural factors. Both interview guides received approval from DePaul Institutional Review Board (See Appendices F and G for interview guides).

**Administration of focus groups.** The focus group discussions with consumers were conducted in a private conference room at the clinic. Each group met for approximately 1-1.5 hours and comprised of six to seven participants. The groups were conducted by the principal investigator and bilingual ACMHS staff in English and other languages that were concordant to the participants. The groups started with reviewing the study protocol and collecting informed consent. Consumers were asked about their experience in the wellness groups, their changes (if
any) in terms of health and wellbeing, health behaviors and access of healthcare services, and their attributions of these changes. All discussions were audiotaped.

**Administration of interviews.** The individual interviews with providers were conducted over the phone in English and each lasted about an hour. Demographic information was collected at the beginning of each interview. Each provider was asked to describe their role and experience in the PCI program, how these experiences were similar or different from other health service settings, unique challenges in working in an interdisciplinary team and providing wellness activities, their efforts in meeting these challenges and recommendations for improving wellness activities for other Asian Americans immigrants with SMI. All interviews were electronically recorded.

**Analysis**

Interviews and focus group discussions were transcribed and translated in English by the first author and a team of trained bilingual research assistants. Each transcript was independently verified by a peer in the research team. Modified grounded theory approach was employed to analyze the data (Glaser, 1965). To answer the study’s research questions, text related to supports and barriers at the client and system levels influencing health behavior changes were selected for data analyses. A tentative coding list developed based on the Health Behavior Framework (HBF) and the interview protocol was used to begin the analytic process. Using the coding list, research team members individually coded major ideas from different transcripts. At the open coding stage, they were allowed to freely code additional ideas to flesh out the coding list. Periodically, the research team met and reviewed the codes; compared them with one another and grouped them into categories. Constant comparison method was used to “saturate”
the categories. The research team looked for instances that represented the category and continued looking until the new information obtained did not provide further insight into the category. Subcategories were also identified to represent multiple properties of the categories. Through weekly discussions, the research team generated mutually-agreed definitions of the categories and subcategories to represent major ideas coded from the transcripts. To ensure all research team members understood and used the coding list in a consistent manner, all members coded two same transcripts individually based on the coding list. After they finished coding, the team came together and discussed discrepancies among their codes. Necessary revisions and clarifications of the codes were made. The coding list was finalized with a set of clearly defined categories and subcategories.

Once a solid coding list was generated, we conducted the second phase of analysis. This phase consisted of a team of six coders who alternated in pairs, with each pair coding two transcripts individually per week. Using the constant comparison method, each coder compared the new incidence to the previous ones they coded in the same category to ensure consistencies in the use of the category. The pairs met weekly to discuss the coded transcripts and to resolve any discrepancies and inconsistencies in coding. Any discrepancies that could not be resolved by the pair were discussed by the larger group until they were resolved. Once the transcripts were coded, the agreed codes were entered into a qualitative software program, N-Vivo (QSR International Pty Ltd, Version 10.0, 2012).

In the final phrase, the principal investigator and first author reviewed the codes and searched for abstract meanings, patterns and interconnections among categories. The thematic properties of codes were examined and compared. Findings were situated on the Health Behavior
Framework, highlighting the mechanisms in which the changes of participants’ health behaviors and outcomes can be interpreted by individual and provider as well as health care system factors.

Enhancing Credibility and Trustworthiness

To enhance the credibility of our findings and ensure they are reflective of participants’ experiences, we employed member checking, triangulation and peer debriefing procedures. Member checking involved sharing our findings with six participants after data analysis to ensure participants’ perspectives and experiences were captured accurately. Participants agreed that the themes reflected their experiences and perspectives. In triangulation, we cross-checked data by using multiple researchers and paired coders. We also conducted peer debriefing by discussing findings with one external researcher who has expertise in qualitative research in communities.

Results

Participant characteristics

Our sample consisted of 41 consumers and 5 providers. Of the consumers, 65.9 % (n = 27) were female. Consumers’ average age was 52.1 years (SD = 10.6). There were two missing cases for sex and age. The composition of ethnicities was as follow: 17.1% Chinese (n=7), 34.2% Cambodian (n=14), 14.6% Vietnamese (n=6), 17.1% Mien (n=7), 4.9% Korean (n=2), 2.4% Filipino (n=1) and 2.4% Thai (n=1). Ethnicity was missing for three participants. Of the providers, four were females and one was male. Their ethnicities were Chinese (n=3), Cambodian (n=1) and Vietnamese (n=1). They held positions of the project director, the project coordinator, primary care physician, wellness coordinator and clinician, and enrollment and data specialist. Their years of service ranged from 3 to 23 years, with the average years of 10.6.
Overview of themes

The constant comparative analysis yielded seven themes that represented the mechanisms of change in health behaviors at the client, organizational and societal levels. Both consistencies and discrepancies in the themes were observed across consumers and providers. These themes were summarized with subcategories and sample illustrative quotes in Table 1.

Client empowerment. At the individual level, a majority of clients reported feeling an increased sense of self efficacy and intrinsic motivation via knowledge and skills, strength-based service approach, peer leadership, and partnership with providers. Providers explained these empowerment channels were intentional, necessary and natural, given that their knowledge of behavior change theories and values supported empowerment; their limited institutional resources and their well-established rapport with clients facilitated greater client involvement.

Partnership between clients and providers. Empowerment began when clients and providers entered in a partnership to work together for their health. Providers stressed the need for increasing clients’ participation and ownership in the process of change because they believed the clients are the experts of their health. One provider said:

The client is part of the team…[In] the past, even though the treatment person or the treatment team decide what’s best for the client. But now, we are incorporating the client to be a part of it. They have a sense of that… Because they know what’s been working for them, what they are willing to do.

Providers enlisted the clients as “the navigator of their recovery” and stressed that “recovery happens if they are able to fully participate.” In addition, providers worked with clients’ support
networks including their family members, care managers and boarding care managers to ensure that clients could get the support they need in natural settings. One provider stated:

Again, when I say the team, that’s family, primary care [physician], case manager, psychiatrist, everyone just understands where the client is at, where the client has the potential to go and how we best support that. Whether the client has family member that can support them or if the client did not have anybody but us, how do we enlist them in their own treatment and to make them to be more participatory.

When treatment process became transparent and participatory, clients learnt to own their health for the decisions they have made and help themselves to become healthier. A client said, “We come here to learn how to help yourself and myself. And to share with other people”.

**Knowledge and skills.** Clients reported being aware of the changes they needed to make and the importance of making health behavior changes through learning knowledge and skills from the wellness groups. A client said, “I think to myself and question if I’m eating right and to check my health. I’m able to ask and learn about what I need”. In particular, clients were able to gain hands-on experience in making those health behavior changes. As one client said,

I can cook my own type of food at home but make it a little bit healthier, and then understanding why I am doing it. So by following what I’m learning here, I am able to lower my cholesterol, lower my blood pressure which before I did not really know what I can do.

Likewise, providers commented the opportunities for clients to apply and practice these health behavior changes were valuable. A provider from the Healthy Food Choice group explained her rationale:
We have to do a healthy way step by step and making those good choices, and give them examples of what healthy choice is. And in the group, we actually practice it, selecting recipe, selecting ingredients that go into recipe, modify the ingredients and explain why the ingredients need to be modified. Our clients, it’s difficult for them to visualize to conceptualize that. But in the group, they have the opportunity to see it practice it. And make mistake is ok too, they are not going to be dinged on that and I think it encourage them to make healthier choices. Certain choices we make mistake and it’s ok. So the next choice we make, might be a little better as long as we learn from the first one.

Providers and clients both reported that knowledge and skills were taught and reinforced in a hands-on manner with the onus being on the client to apply new knowledge and skills to their wellness goals.

**Strength-based approach.** When asked how the wellness intervention differed from other programs, providers mentioned they chose to work with clients’ strengths in order to help clients to achieve their wellness goals. The wellness coordinator explained in this way:

In terms of the program, I press upon [a] strength solution focus, a type of modality that [is] really engaging and listening to clients and their families. And just really amplify the small improvements, a type of improvement that they typically dismiss or other providers dismiss, family dismiss. We notice that, and we want to amplify that. Those little recognition[s], I believe really strengthen their ego[s]. Allowing them so see that they are able to do things, if they are willing to do it, and put some effort into it. I’ve always encourage the staff to not guarantee or make anything, but it’s up to the client that when they are ready and what step they are going to take. Given that flexibility, sometimes they
actually assert themselves, saying, I’m ready this is what I want to do. And these days, you know we have up and down days, always celebrate those days that they have just make some efforts. So just recognizing that they realize that the team is there, it’s here for them, and every activities and everything they’ve been engaged in, we were there as a team and we recognize their effort, we continue to encourage them. So definitely that’s something different.

Providers believed by celebrating small wins and allowing clients to take their own pace, clients were more likely to meet their wellness goals. Likewise, clients agreed that they were more motivated to change when their efforts were being validated and recognized.

**Peer leadership.** Several clients, who volunteered and assisted in wellness groups, described how their experiences of leadership motivated them to sustain their health behavior changes. One client from the Walking Exercise Group said,

I volunteer in the exercise, yoga group, in Zumba whenever the instructors are out. I usually volunteer and sub and I will teach the class myself. I just memorize the instructor’s combinations, and do the combinations more or less, and they’re just following along, the group members. I modify if necessarily. It makes me feel proud to be able to do anything good. I’m helping myself and I’m helping others at the same time. You get to feel good in two different ways. I attend the groups too whenever the main instructor is there and I learn a lot. It’s pretty basic for me because I have many years of danced.

Clients were motivated when they used their strengths and knowledge to help their peers. Providers also showed support in peer leadership by offering mentoring, supervision, training
and stipend to peer workers and volunteers. They considered peer workers as “a valuable work force member”. A provider said,

[For] The Cambodian wellness group, now we have so many clients that graduate, they graduate and they have yet return to… back to the system which is great. And also they are being more of a community leader now. They teach people what they learn, what to build upon. And now they are becoming advocate, they are becoming more leaders in the community.

Clients trained in the wellness groups empowered their peers to practice healthy behaviors by serving as advocates and role models, which in return increased their self-efficacy as well as motivation to sustain change.

**Information sharing across providers.**

*Providers’ perspectives.* At the organizational level, providers from both behavioral health (BH) and primary care (PC) teams reported using formal and informal communication channels frequently to exchange information and create multiple layers of accountability, differentiation and coordination of care. The importance of having regular case conferences among case managers, the wellness coordinator, the psychiatrist and the primary care provider in discussing clients’ treatment goals and progress was recognized. Several providers also mentioned using daily informal check-ins among themselves to help avoid clients falling through the cracks of the system and ensure services from different parties were provided to meet the clients’ physical and behavioral health needs. For instance, the primary care provider said,

I can recommend walking but who’s going to follow up? The case manager is taking them out for a walk or is actually seeing them back or giving them a pedometer and they
will go out and they’ll bring it back in, then they do walking groups. And it’s really great, you know, those are the kind of things I see. That [This] wouldn’t have happened if I was just seeing them regularly at a Primary Care clinic. Or at least it wouldn’t be reported back to me that they were doing this.

Information exchange allowed providers from two teams to integrate their services for their clients and be better informed about the feedback of their recommendations. The PC provider attributed the reductions in loss to follow-up to frequent communication with case managers:

I definitely think that the way that we integrated things made the delivery of Primary Care much better for the patient. The patients are actually coming back. I think in Primary Care, like just your Primary Care, a lot of the SMI patients don’t come back, they don’t show up, they’ll be lost to follow up and then they’ll go to the ER. So in Primary Care, in PCI if they don’t show up and you know I’m asking the case manager like “oh by the way your patient didn’t show up, you know. Could you figure out when they can next make it and schedule for them.” And the case manager would facilitate that.

Clients’ perspectives. Several clients described how providers were there to remind them of getting monthly medication and injections to ensure they were doing fine. In addition, clients saw their linguistic barriers with PCP and possibly discomfort in discussing mental health issues with PCP being removed by having linguistically matched case managers at PC appointments. For example, through a translator, a Khmer-speaking client shared his experience regarding how his multilingual case manager helped him to express his needs to the primary care physician:

And then when he was introduced to the integrated program, that’s when he noticed the big change because he felt like his case manager was more involved, the doctor was more
on top of his medication, even though he continued to deal with sinus issue, a lot of headaches, low energy. Because he gets frequent checkup, and getting his medication on monthly basis. And also be linked to his primary care doctor, he was able to get more services that he would not normally get. And when he was introduced to a primary care doctor which his case manager was be able to attend the appointment and explain and ask questions, and share things that he normally would not share. For example, he had a gout, which he didn’t know what it was, and he was really thankful that his case manager was there to bring it up to have the discussion with the primary care doctor so he had a better understanding of his physical health. And in addition to that, he has to do with physical health but often times, he has flashbacks [about] the experiences [with] the Khmer Rouge, and so he is really thankful to have a case manager also a clinician who is able to listen to that and also to share with a primary care doctor when he wasn’t able to share what was going on with him and to explain that, so make the communication a little bit better and knowing that he has a care manager who speaks his language. So right now he feels thankful to have that connection and convenience.

Increased information exchange across providers helped widen providers’ understanding of clients’ physical and mental health needs, as well as improved the coordination of care.

**Cross-organization dynamics and building a cohesive team.** When providers were asked about the challenges they faced in implementing the intervention, the majority of them shared their difficulties in navigating dynamics between organizations and building a cohesive team. Whereas it is universally agreed that it is important for an interdisciplinary team of providers to share visions, goals and priorities; both BH and PC providers wished they had spent
more time understanding each other’s workplace dynamics and defining mutually-agreed upon goals and visions. The PCP said,

Because together we do make each other’s lives a little easier, but that getting each other to work together in the beginning was very hard because you know I don’t want to work with them, they’re not my co-worker right. That kind of mentality. So that I think having good team building in the beginning is also important. Before you launch the project you at least want to know the people you’re working with.

Similarly, a BH provider said,

If I look back, I hope there will be more time finding the common ground, finding the vision, and kind of scale back what they need to do in order to get to that point. The outcome is not clearly defined, what are we trying to accomplish?

Getting to know one another, building rapport and establishing shared visions, goals and priorities were prerequisites in creating a cohesive team of providers from various disciplines to provide expertise and services for clients to improve health behaviors and outcomes.

Organizational and systems change.

Differences between PC and BH systems. Both PC and BH providers recognized the difficulties in bringing two teams with distinct cultures and administrative processes to work together. Yet, through the integration project, they were also able to make changes in their mentality and practice that paved the way for greater integration in the future. In the beginning of the project, the two teams saw each other’s “realities” as different from their own and expected the other side to follow their established system. The BH team leader said,
The culture is quite different, sure. So it takes some time and humility to hear people out and say “oh this is your reality”. But I have to say strictly speaking, the [primary care] and the [behavioral health] team work under a lot of constraints because [the primary care team] keep on saying this is their protocol, this is their protocol, they may not want to dig too much out of their protocol for the purpose of their grant or try out new ways.

On the other hand, the PCP said,

I think um Primary Care had a different style and behavioral health has a different style. It took a year to kind of figure all that out and then not only that all the little details of the project. Like we ran into a lot of issue, that because this is a new project and it was implemented differently of how we would normally see our Primary Care patients. Um, a lot of the protocols didn’t really apply. For example, there was a big issue on member services because in Primary Care you know the patient, everybody who comes in needs to be checked to see if they’re eligible, and once they’re eligible, um they can be scheduled and seen. If there are not, they go through this whole process of meeting with member services, bringing all the required documents…But when we started this, um we basically assumed that the behavioral health patients could do the exact same thing, but it was a lot of work for them. A lot of them didn’t have any of the documents that we required. A lot of them kept forgetting to bring them. They would show up and then they didn’t bring anything or they would just you know; it was so much work they just don’t want to do it.

The differences between two teams in terms of their protocols, care delivery model and target population made their collaborations very hard and dissatisfactory. However, the setbacks they
encountered also provided opportunities for both sides to restructure their systems in order to integrate their services. For instance, to solve the aforementioned member service issues, the PC team decided to make their protocol more flexible.

**Changes in PC and BH systems.** Over time, two teams reported changes in their own cultures and systems. Foremost, they started to identify clients as clients of both teams, rather than separate clients. A BH provider said:

> We talk about “our patients.” Before it used to be this mentality, like “your patient,” “my patient,” and at the end of the program though you could totally tell that we switched from that to “our patient” and um the case manager would come down anytime they want and say, “[PCP’s name], this patient you saw the other day, so I was working with him and he said this, what do you think.” And yeah even though it’s unofficial, like we do that on a daily basis and somehow it just became that way because we all got used to this integration environment.

The change in mentality from “your patient, my patient” into “our patient” also helped to facilitate the coordination of care between two teams. The PCP said,

> You know Primary Care is very intimidating for behavioral health clinicians because they don’t even know eligibility, they’re not used to talking to patients about health care, and everything was deferred to the PCP. And on Primary Care side, we’re not used to constantly contacting the case managers. Like that was one extra step we had to do, usually we call three times, they’re not picking up, we send a letter and that was it right? But now we’re calling the case manager, the case manager is calling us, we’re calling back. There’s a lot of back and forth that is extra. People will always see it as extra unless
you train them before and tell them why we’re doing this, what good is this going to do, why is it going to make your job easier later even though it’s so much harder up front.

Since providers saw their clients as shared between two teams, they were willing to exchange information with one another and were more aware of the clients’ holistic wellbeing.

Providers in both teams changed the conventions of their job and improved the service delivery. Case managers reported conducting more follow-ups with their clients. “I have to say if you talk about our care managers they are more willing [to] see the importance of bringing the client to their PCP appointments more than before”, said the BH team leader. Likewise, PCP reported seeing their clients for a longer time in appointments:

I think for those patients we did the most for because in the PCI setting I saw them a lot more regularly than I would have if it was a Primary Care setting. And for each appointment I would see them longer and so a lot more education happened, a lot more face-to-face contact. And so a lot more opportunity for them to share their story or their problem. A lot of time they come in, and the first time they wouldn’t say that there’s any issue and then suddenly the second, the third, or fourth time they’ll say by the way I’ve been hurting for a long time here. And then they wouldn’t let me touch them the first few times and eventually they’ll let me examine them. And so it takes a while. And so having that flexibility of seeing them more often and more and longer for each appointment. I was able to help them with something that they may not ever addressed kind of thing.

Providers from both teams agreed that the changes in PC and BH culture and practices within the organization as well as in the system as a whole helped them to better meet their clients’ physical and mental health needs.
Organizational leadership. Both PC and BH providers stated that they needed support from both systems’ administration and organizational leadership to communicate a unified picture to their clients of the equal importance of physical and mental health. More than one provider pointed out the perceived lack of shared vision and support from the management in two organizations. A BH representative said, “What would have made it easier for me in terms of transitioning and kind of learning this project, would have been a lot of, like if I could have more buy-in from leadership, um, I think the system should be set up so it’s easier to talk to each other”. Likewise, the PCP said,

What I kind of don’t like about it is the kind of the higher up, the administrative level of the PCI project just because it still…I feel like in the clinic, on a clinic level we were able to integrate, but on an administrative level there was still this tug and pull of primary care versus behavioral health. And that issue I think even though in the four years, I don’t think it was ever approached or even worked [out]. Not even just worked out I don’t think they even approached that problem.

Providers wished there would be more buy-in and support from the management to support and sustain the new integrated care culture in the organizations and system, which would create a favorable environment for clients to maintain their holistic and healthy lifestyle.

Building capacity. Providers reported that they needed more staff training, time, facilities, and funds to overcome the cultural and linguistic barriers unique to their client population; yet they expressed their constant struggle with inadequate resources from organization and government. One of the major struggles raised by BH providers was to find bilingual clinicians who had knowledge, experience and willingness to work with monolingual
population with SMI. BH providers stated that recruiting linguistically matched staff and clinicians was always not easy.

Another struggle was the lack of training in clinicians regarding cultural sensitive interventions and integrated care model. A BH clinician said,

We have clinicians… who they never had any experiences working with our diverse population, specifically with a API [Asian and Pacific Islanders] SMI population. It’s very new, something they don’t really receive in school. So it’s my duty to really gave them that education – how to effectively engage and how to effectively write those treatment plans and follow-ups, things like that. Incorporating things that are more culturally responsive to them, you know, to our population, or at least the case they are working with.

Providers said that in an integrated care setting, additional training and time were required to modify the interventions in the way that best engaged their clients, facilitated the groups and responded to clients’ needs.

Physical capacity in terms of available space and facilities to hold wellness groups for as many clients as possible was a concern expressed by both the providers and clients when thinking about sustaining the intervention. A peer worker said,

We were using a church to [do] some wellness activity. You know, the church was nice enough to use it as a facility for twice a week. So we conduct our yoga there, Zumba and also cooking…cooking classes there. And you know we don’t know if [it] work well there can be more than 20 people at one time. Then you know we have been conducting, we have to look at the other places. That’s one of the problems we are facing.
Despite the community support, providers said the availability of space from other community organizations tended to be short-lived and unstable. Thus, the existing physical barriers limited the variety of wellness activities held and the number of clients benefiting from the interventions.

A few providers mentioned the problem of inadequate financial support in implementing the intervention and sustaining changes. The BH team leader said since a lot of providers thought the funding stops means the integration stops, therefore, they were not willing to carry out more changes. Another provider pointed out that the PC team was losing money for the project because it was difficult for them to get reimbursement from medical insurance. The constraints on capacity building raised concerns about sustainability of the intervention, which was vital to long term behavior changes.

**Sustainability and implementation of individual behavior change.** Sustainability and implementation of individual behavior change requires support of family and living environment. Some clients, who were living with their family members, raised concerns regarding the lack of health awareness from family members in helping to improve their physical health. For instance, a client said,

> The problems is many of the clients don’t cook for themselves. And a lot of them have someone else who does the cooking and the kitchen…we don’t have access to the kitchen all the time. Like my mom makes food so salty that I find it uneatable. I can’t eat six of the cucumber six more than half of the time for something like that, because of the salt. And it’s just unbearable for me and my body.
The PCP acknowledged the varied support received by clients in their family. Some clients had engaged their family members in adopting a healthy lifestyle, whereas others had a harder time:

And then you have people that live at home, but their family aren’t really taking care of them and so I have a family where the patient lives with the brother, but the brother doesn’t want her on medication and lets the patient eat junk food. And the patient is severely, severely mentally ill and is supposed to be in charge of his own medication and insulin. Which you know, you kind of that’s just kind of not going to work and no matter how I talk to the family they just don’t have the time to deal with it and so they just kind of let it go.

Similar issues faced by clients staying in boarding care facilities, who received varied quality of care. One provider said,

A lot of patients are in boarding care. And boarding care, um some are so good that they would monitor everything to take the patient to all of the appointments. Make sure everything is followed through. And there are some that just not so great. No matter how much I talk to the manager they won’t really…well the patient doesn’t take it [medication] and you know I don’t really keep track.

A client from the boarding care facility explained, “Because the money for most of the boarding care, all the money goes to the care, and they don’t have money for extra food money. And the food in the boarding care is exactly the food film made food [convenience food]. Sometimes it’s even less than that so they are always hungry so on as that”. In environments with limited
resources and do not support health behavior change, both clients and providers showed
difficulties in implementing and sustaining those changes.

Discussion

Study findings suggested that client empowerment, information sharing and integrated
care across providers in wellness interventions supported health behavior changes and health
improvements; whereas limited leadership buy-in, inadequate capacity and support from society
hindered individual efforts in implementing and sustaining health behavior change.

By using the Health Behavior Framework (HBF, Bastani et al., 2010), we identified three
levels of barriers and support that serve as mechanisms of change in the wellness intervention. At
the individual level, client empowerment was reported as a key component that enhanced
behavior intention and improved health behaviors. Researchers believed empowerment is well
suited to address fundamental causes of health disparities through the agency of those who
experience the disparities (Zimmerman & Eisman, 2016). Empowerment help promote
individual health and wellbeing, as well as prevent harmful behaviors by helping individuals gain
a sense of control and competence, to be aware of factors that influence personal control, and
engage in behaviors to effect change (Zimmerman, 2000). Empowerment also motivated
behavior change and facilitated healthcare seeking, which were particularly useful for Asian
American immigrants who tended to underutilize healthcare services (Bellamy et al., 2016).
Empowering processes can come from multiple channels, yet most health literature only focused
on increasing knowledge and skills among clients, and masked the importance of organizational
involvement of clients. In the wellness intervention, our providers intentionally stressed the need
of shared decision making process and peer leadership in enlisting clients’ ownership of their
health behavior change process. Consumers, on the other hand, showed increased willingness to help themselves and others. Shared decision making has been frequently advocated in recovery-oriented mental health care and medication management, but seldom used in behavioral interventions for persons with SMI (Mahone, 2008). Recent research showed that consumers with SMI desired higher autonomy in decision making for their health-care behaviors, and that lower perceived autonomy support from the physician was related to higher desired autonomy in decision making (Wright-Berryman & Kim, 2015). Additionally, peer leadership had shown greater satisfaction and perceived benefits among consumers receiving peer-led interventions (Aschbrenner et al., 2015; Druss et al., 2011; Simoni, Franks, & Yard, 2013). Hence, future studies should examine higher-level empowerment such as shared decision making and peer leadership and their effects on wellness intervention as well as health benefits.

At the organizational/system level, information sharing across providers, cross-organization dynamics and building a cohesive team, organization and system changes were reported as innovative developments that supported clients’ health behavior change. Our providers reported that the increased exchange of information across one another and working together as a team to provide holistic and integrated care helped coordinate their support services for clients in improving health behaviors and outcomes. The strengths and benefits of collaborative care are increasingly recognized in our field. Collaborative care helped reducing disparities and improving engagement by addressing the unique needs of the disparity group and integrating specifically identified services, care models and existing treatment modalities (Swinson, Berkman, Brown, Gaynes, & Palmieri, 2016). Few studies also showed promising results of inter-professional efforts in promoting health behaviors, increasing weight loss and reducing metabolic syndrome among individuals with SMI (Gill, Zechner, Anderson, Swarbrick,
& Murphy, 2016; Vazin et al., 2016). Additional research should continue to examine the potential of collaborative care in interdisciplinary setting as an alternative to traditional behavioral interventions in promoting health behaviors and health outcomes in Asian Americans with SMI.

Providers reported limited organizational leadership buy-in and inadequate resources for capacity building as barriers to influence clients’ health behaviors. The providers reflected that there was a gap between administrative leaders and frontline staff in which the administrators from the PC and BH teams were not compatible with one another. This gap failed to communicate a unified picture to clients that the organization was advocating for both physical and mental health improvements. Having a safe and comfortable environment is important for individuals with SMI to participate in wellness interventions, yet the Health Behavior Framework also acknowledges the limitations of community-based trials in modifying macro-level factors such as health policy environment and structural factors (Bastani et al., 2010). The allocation of resources for building capacity to sustain the intervention in the long run was critical, as improvements in physical health generally happen when the behavior change is maintained for a longer period of time. The need for added resources is not uncommon in behavioral interventions for disparity groups, hence future directions in reducing health disparities in individuals with SMI should include health policy change and systemic barriers.

At the societal level, providers and consumers raised concerns regarding the implementation and sustainability of health behavior change in the clients’ natural settings. The lack of support and health consciousness in some boarding care facilities, communities and families hindered consumers from implementing their health behavior change. Our findings align with recent research on social-ecological factors influencing consumers’ health behaviors, even
in racial and ethnic groups (Cabassa et al., 2012; Cabassa et al., 2014; Jimenez et al., 2015). A study found that depressive symptoms were associated with unhealthier family eating environments when controlling for the amount of family contact, but readiness to change physical activity was associated with greater criticism from family for exercise behaviors. Readiness to change dietary portion size was associated with encouragement for healthy eating from friends (Aschbrenner, Mueser, Bartels, & Pratt, 2013). Latino participants with SMI in another study reported that their social environment undermined their goals of maintaining a healthy lifestyle (Jimenez et al., 2016). This was due to repeated exposure to unhealthy behaviors of others at home and in social settings, and engaging with friends and family with poor eating habits as well as sedentary lifestyle. The Latino culture of food including a traditional reliance on rice, meat and “few vegetables” was identified as a major barrier for participants to change their eating habits. On the other hand, participants reported having a support and accountability system from friends and family in their natural settings make it easier to improve lifestyle (Jimenez et al., 2016). The influence of socio-ecological factors on consumers’ health behavior changes and improvements call for involvement of families and other natural supports (ie. Collaterals in boarding care facilities) as well as changing social and cultural norms in wellness interventions for individuals with SMI in racial and ethnic groups (Aschbrenner et al., 2015).

Limitations

There were several limitations in this study. First, it relies on a small sample size recruited from one community mental health outpatient clinic in Oakland, California that primarily serves Asian Americans with SMI. Therefore, results may not generalize to individuals with SMI in inpatient facilities and with non-Asian ethnic backgrounds. Second, Asian Americans are a heterogeneous population. Since the current study focuses on general
mechanisms of change of health behaviors in wellness interventions, it did not specifically look at differences among ten Asian ethnicities in the sample. Hence, the findings should be interpreted with caution when applying to a particular Asian ethnic group. Third, multilingual staff were employed as interpreters to facilitate understanding between researchers and consumers in focus group discussions, which might induce the unintended consequence of increased social desirability bias. Fourth, the majority of providers recruited in the study are from the behavioral health team. Future research should explore differences in perspectives on wellness interventions among various Asian ethnic groups and also between primary care and behavioral health providers.

**General Discussion**

The excess mortality rate among individuals with SMI is public health crisis. There is a striking underrepresentation in interventions addressing disparities faced by individuals with SMI, particularly in those with racial and ethnic diverse backgrounds. Our study examined a multi-year multi-faceted wellness intervention designed for Asian American immigrant adults with SMI – a group whose disparities were exacerbated by cultural and linguistic barriers in utilizing healthcare services. The wellness intervention was culturally adaptive to the needs of Asian Americans and was delivered by bilingual providers. Despite its limitations, the current study illustrated a longitudinal approach to examine effectiveness of wellness intervention for observational studies when RCT is not feasible in real-life setting. Insights and methods may prove useful for researchers interested in capturing the long term changes in health outcomes and garnering better evidence of wellness intervention effects among Asian Americans with SMI. In addition, a qualitative approach was illustrated to examine the possible mechanisms in intervention that helped to explain changes in health behavior and outcomes in this population.
Study findings underscored the importance of multi-level wellness interventions that take individual, organizational/system, societal and social-ecological determinants of health into consideration. This may be useful to clinicians and practitioners interested in designing future interventions that promote health behaviors and ameliorate chronic physical illnesses in Asian Americans with SMI. Advancing our research and interventions are needed to bring us closer to the end of the grave disparities faced by Asian Americans with SMI.
Table 1
Baseline Demographic and Clinical Characteristics

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<th>Non-wellness (n=143)</th>
<th>Wellness (n=77)</th>
<th>P-value</th>
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<td><strong>Gender</strong></td>
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<td>- Male</td>
<td>67 (46.9%)</td>
<td>32 (41.6%)</td>
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</tr>
<tr>
<td>- Female</td>
<td>76 (53.1%)</td>
<td>45 (58.4%)</td>
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<tr>
<td><strong>Time interval</strong></td>
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<td>- 6 months</td>
<td>48 (35.3%)</td>
<td>12 (15.8%)</td>
<td></td>
</tr>
<tr>
<td>- 12 months</td>
<td>24 (17.6%)</td>
<td>6 (7.9%)</td>
<td></td>
</tr>
<tr>
<td>- 18 months</td>
<td>16 (11.8%)</td>
<td>9 (11.8%)</td>
<td></td>
</tr>
<tr>
<td>- 24 months</td>
<td>13 (9.6%)</td>
<td>9 (11.8%)</td>
<td></td>
</tr>
<tr>
<td>- 30 months</td>
<td>16 (11.8%)</td>
<td>21 (27.6%)</td>
<td></td>
</tr>
<tr>
<td>- 36 months</td>
<td>19 (14%)</td>
<td>19 (25%)</td>
<td></td>
</tr>
<tr>
<td>- Missing</td>
<td>7 (4.9%)</td>
<td>1 (1.3%)</td>
<td></td>
</tr>
<tr>
<td><strong>Daily overall functioning</strong></td>
<td>3.05 (0.82)</td>
<td>2.99 (0.83)</td>
<td>.60</td>
</tr>
<tr>
<td><strong>Psychological distress</strong></td>
<td>10.87 (6.58)</td>
<td>10.0 (5.86)</td>
<td>.82</td>
</tr>
<tr>
<td><strong>Social connectedness</strong></td>
<td>3.25 (.91)</td>
<td>3.43 (.99)</td>
<td>.19</td>
</tr>
<tr>
<td><strong>Systolic blood pressure</strong></td>
<td>123.55 (19.21)</td>
<td>123.0 (14.92)</td>
<td>.84</td>
</tr>
<tr>
<td><strong>Diastolic blood pressure</strong></td>
<td>76.26 (11.39)</td>
<td>77.60 (8.78)</td>
<td>.40</td>
</tr>
<tr>
<td><strong>Waist circumference (in)</strong></td>
<td>35.75 (4.77)</td>
<td>37.25 (5.52)</td>
<td>.08</td>
</tr>
</tbody>
</table>

\(^a\) The K6 Psychological distress scale scores ≥ 13 indicates serious distress; 37.1% of the control sample and 36.4% wellness sample reached the established cutoff for serious distress.

\(^b\) The International Diabetes Federation defines abdominal obesity as ≥ 35.4 in for men and ≥ 31.5 in for women.

\(^c\) The American Heart Association categorizes systolic blood pressure 120-139 mmHg as prehypertension.
### WELLNESS INTERVENTIONS FOR ASIAN AMERICANS WITH SMI

Table 2

*Observed variable means, standard deviations, percentage of missing, and intercorrelations*

| Variable                              | M      | SD     | Miss (%) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---------------------------------------|--------|--------|----------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| Age                                   | 49.43  | 12.45  | 0.5      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Functioning (baseline)                | 3.03   | .82    | 2.3      |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Functioning (discharge)               | 3.43   | .70    | 27.7     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Functioning (change)                  | .40    | .81    | 28.2     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Distress (baseline)                   | 10.57  | 7.12   | 2.7      |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Distress (discharge)                  | 7.58   | 5.68   | 26.8     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Distress (change)                     | -2.89  | 6.02   | 28.2     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Systolic BP (baseline)                | 123.35 | 17.47  | 11.4     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Systolic BP (discharge)               | 122.42 | 17.11  | 22.3     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Systolic BP (change)                  | -1.83  | 19.22  | 27.3     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Diastolic BP (baseline)               | 76.74  | 10.53  | 11.4     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Diastolic BP (discharge)              | 76.63  | 9.71   | 22.3     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Diastolic BP (change)                 | -.77   | 11.01  | 27.3     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Waist circumference (in)(baseline)    | 36.22  | 5.05   | 25.5     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Waist circumference (in)(discharge)   | 36.45  | 5.78   | 65       |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Waist circumference (in)(change)      | .37    | 2.93   | 71.4     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Social connectedness (baseline)      | 3.31   | .94    | 3.6      |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Social connectedness (discharge)     | 3.66   | .70    | 29.5     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| Social connectedness (change)        | .35    | .92    | 30.5     |   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |

**Correlation is significant at the 0.01 level (two-tailed)**

*Correlation is significant at the 0.05 level (two-tailed)**
<table>
<thead>
<tr>
<th>Levels</th>
<th>Themes</th>
<th>Sample quotes from consumers</th>
<th>Sample quotes from providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Client empowerment</td>
<td>“I can cook my own type of food at home but make it a little bit healthier, and then understanding why I am doing it. So by following what I’m learning here, I am able to lower my cholesterol, lower my blood pressure which before I did not really know what I can do.”</td>
<td>“The client is part of the team…we are incorporating the client to be a part of it. They have a sense of that…Because they know what’s been working for them, what they are willing to do.”</td>
</tr>
<tr>
<td></td>
<td>Increased self-efficacy and intrinsic motivation for health behavior change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational/</td>
<td>Information sharing across providers</td>
<td>“He had a gout, which he didn’t know what it was, and he was really thankful that his case manager was there to bring it up to have the discussion with the primary care doctor so he had a better understanding of his physical health.”</td>
<td>“I can recommend walking but who’s going to follow up? The case manager is taking them out for a walk…those are the kind of things I see…Or at least it would be reported back to me that they were doing this.”</td>
</tr>
<tr>
<td>System</td>
<td>Cross-organization dynamics and building a cohesive team</td>
<td></td>
<td>“If I look back, I hope there will be more time finding the common ground, finding the vision, and kind of scale back what they need to do in order to get to that point.”</td>
</tr>
<tr>
<td></td>
<td>Built a team of providers that share vision, goals and priorities</td>
<td></td>
<td>“Our care managers they are more willing [to] see the importance of bringing the client to</td>
</tr>
<tr>
<td></td>
<td>Organizational and systems change</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
my client” into “our client” and conventions of jobs

Organizational leadership

Needed support from organizational leadership to provide resources and model the integrated care (new) culture as well as system change

Building capacity

A need for greater resources in terms of staff, training, time, facilities and funding

Societal Sustainability and implementation of individual behavior

Required support from family, community and living environment (i.e. Boarding care facility)

The problems is many of the clients don’t cook for themselves. And a lot of them have someone else who does the cooking and the kitchen… Like my mom makes food so salty that I find it uneatable. I can’t eat six cucumbers…because of the salt. And it’s just unbearable for me and my body.

A lot of patients are in boarding care. And boarding care, some are so good that they would monitor everything to take the patient to all of the appointments… And there are some that just not so great. No matter how much I talk to the manager they won’t really… well the patient doesn’t take it and you know I don’t really keep track.

their PCP appointments more than before.”

“I feel like in the clinic, on a clinic level we were able to integrate, but on an administrative level there was still this tug and pull of primary care versus behavioral health.”

“Shortage of staff and having qualified instructor who’s willing to work with SMI population, monolingual SMI population is always been a struggle.”

“...
Figure 2. A structural equation model for hypothesis I in this study. We hypothesized wellness groups will have a direct effect on the changes in daily overall functioning, psychological distress, systolic blood pressure, diastolic blood pressure and waist circumference, when controlling for age, gender, time interval and all baseline health indicators.
Figure 3. A structural equation model for hypothesis II in this study. We proposed social connectedness as a moderator by strengthening the wellness group effect on the changes in daily overall functioning, psychological distress, systolic blood pressure, diastolic blood pressure and waist circumference, when controlling for age, gender, time interval, all baseline health indicators and baseline social connectedness.
Figure 4. A path diagram for hypothesis 1.
Figure 5. A path diagram for hypothesis II.
References


Wellness Interventions for Asian Americans with SMI


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http://doi.org/10.1002/jcop.10077


http://doi.org/10.1177/1359786810382058


WELLNESS INTERVENTIONS FOR ASIAN AMERICANS WITH SMI

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http://doi.org/10.1111/acps.12096


Appendix A

Self-report Measures

Center for Mental Health Services
NOMs Client-Level Measures for Discretionary Programs Providing Direct Services
Service Tool for Adult Programs (March 2011, Version 7)

Consumer ID: ____________________

Assessment:
- [ ] Baseline Assessment
- [ ] 6-Month Reassessment
- [ ] 12-Month Reassessment
- [ ] 18-Month Reassessment
- [ ] 24-Month Reassessment
- [ ] 30-Month Reassessment
- [ ] 36-Month Reassessment
- [ ] 42-Month Reassessment
- [ ] 48-Month Reassessment
- [ ] 54-Month Reassessment
- [ ] 60-Month Reassessment
- [ ] 66-Month Reassessment
- [ ] Clinical Discharge

A. DEMOGRAPHIC DATA
[SECTION A IS ONLY COLLECTED AT BASELINE. IF THIS IS NOT A BASELINE, GO TO SECTION B.]

1. What is your gender?
   - [ ] MALE
   - [ ] FEMALE
   - [ ] TRANSGENDER
   - [ ] OTHER (SPECIFY)
   - [ ] REFUSED

2. Are you Hispanic or Latino?
   - [ ] YES
   - [ ] NO [GO TO 3]
   - [ ] REFUSED [GO TO 3]

[IF YES] What ethnic group do you consider yourself? Please answer yes or no for each of the following. You may say yes to more than one.

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>YES</th>
<th>NO</th>
<th>REFUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central American</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Cuban</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Dominican</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mexican</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Puerto Rican</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>South American</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
3. What race do you consider yourself? Please answer yes or no for each of the following. You may say yes to more than one.

<table>
<thead>
<tr>
<th>Race</th>
<th>YES</th>
<th>NO</th>
<th>REFUSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black or African American</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native Hawaiian or other Pacific Islander</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alaska Native</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. What is your month and year of birth?

MONTH                    YEAR   ○ REFUSED

B. FUNCTIONING

1. In order to provide the best possible mental health and related services, we need to know what you think about how well you were able to deal with your everyday life during the past 30 days. Please indicate your disagreement/agreement with each of the following statements.

[READ EACH STATEMENT FOLLOWED BY THE RESPONSE OPTIONS TO THE CONSUMER.]

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>RESPONSE OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I deal effectively with daily problems.</td>
<td>Strongly Disagree Disagree Undecided Agree Strongly Agree Refused Not Applicable</td>
</tr>
<tr>
<td>b. I am able to control my life.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>c. I am able to deal with crisis.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>d. I am getting along with my family.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>e. I do well in social situations.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>f. I do well in school and/or work.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>g. My housing situation is satisfactory.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>h. My symptoms are not bothering me.</td>
<td>○ ○ ○ ○ ○ ○ ○ ○</td>
</tr>
</tbody>
</table>
2. The following questions ask about how you have been feeling during the past 30 days. For each question, please indicate how often you had this feeling. [READ EACH QUESTION FOLLOWED BY THE RESPONSE OPTIONS TO THE CONSUMER.]

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>RESPONSE OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All of the Time</td>
</tr>
<tr>
<td>a. nervous?</td>
<td>○</td>
</tr>
<tr>
<td>b. hopeless?</td>
<td>○</td>
</tr>
<tr>
<td>c. restless or fidgety?</td>
<td>○</td>
</tr>
<tr>
<td>d. so depressed that nothing could cheer you up?</td>
<td>○</td>
</tr>
<tr>
<td>e. that everything was an effort?</td>
<td>○</td>
</tr>
<tr>
<td>f. worthless?</td>
<td>○</td>
</tr>
</tbody>
</table>

C. SOCIAL CONNECTEDNESS

1. Please indicate your disagreement/agreement with each of the following statements. Please answer for relationships with persons other than your mental health provider(s) over the past 30 days. [READ EACH STATEMENT FOLLOWED BY THE RESPONSE OPTIONS TO THE CONSUMER.]

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>RESPONSE OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>a. I am happy with the friendships I have.</td>
<td>○</td>
</tr>
<tr>
<td>b. I have people with whom I can do enjoyable things.</td>
<td>○</td>
</tr>
<tr>
<td>c. I feel I belong in my community.</td>
<td>○</td>
</tr>
<tr>
<td>d. In a crisis, I would have the support I need from family or friends.</td>
<td>○</td>
</tr>
</tbody>
</table>
Appendix B

Informed Consent Form for Consumers

Primary Care-Behavioral Health Integration and Wellness Promotion
Principal Investigator: Anne Saw, PhD
Institution: DePaul University, Chicago, Illinois, USA
Department (School, College): Department of Psychology, College of Science and Health
Collaborators: Asian Community Mental Health Services (ACMHS)

What is the purpose of this research?
We are asking you to be in a research study because we are trying to learn more about the effectiveness of the primary care-behavioral health integrated care and wellness intervention specifically serving Asian American immigrant adults with serious mental illness. This study is being conducted by Dr. Anne Saw, Assistant Professor at DePaul University. There are other people who are on our research team may assist with the study.

We hope to include about 30-40 consumers in the research.

Why are you being asked to be in the research?
You are invited to participate in this study because you were or are a consumer in the primary care integration program at Asian Community Mental Health Services. You are aged 18 or above, self-identified Asian American and received primary care services and/or joined wellness activities that promote a healthier lifestyle.

What is involved in being in the research study?
If you agree to be in this study, being in the research involves participating in one focus group interview that invites you to share your experience and views on the wellness intervention and/or primary integrated care program in a group setting. The focus group interview will be conducted by trained investigators in a private room at ACMHS. The interviews will be audio recorded and transcribed into written notes later in order to get an accurate record of what you said. Audio files that contain data will be erased and permanently destroyed after files are transcribed.

How much time will this take?
The interviews will take about 1-1.5 hours to complete. You will be invited to participate in one interview only.

Are there any risks involved in participating in this study?
During the focus group interviews, you may feel uncomfortable or embarrassed about answering certain questions or sharing experiences of working in the integrated care program. There are also risks (though small) that you or other participants may bring up mental health issues when discussing the reasons for joining these wellness interventions. DePaul investigators are trained to be sensitive to deal with these issues. When necessary, you may approach DePaul investigators or ACMHS staff for additional help. You do not have to answer all questions if you do not want to. You can also withdraw from the study at any time.
Also, we cannot promise complete confidentiality, because everyone in the focus group will hear what you have said and it is possible that they may repeat something you said to someone outside the group.

**Are there any benefits to participating in this study?**

There will be no direct benefits to participating in this study, but we hope that what we learn will help to find more culturally appropriate means of improving physical and mental health among Asian Americans with serious mental illness. Also, the findings of the study may have important implications for current and future health services.

**Is there any kind of payment, reimbursement or credit for being in this study?**

You will receive a $20 gift card for your participation.

**Can you decide not to participate?**

Your participation is voluntary, which means you can choose not to participate. There will be no negative consequences, penalties, or loss of benefits if you decide not to participate or change your mind later and withdraw from the research after you begin participating.

**Who will see my study information and how will the confidentiality of the information collected for the research be protected?**

The research records will be kept and stored securely. Your information will be combined with information from other people taking part in the study. When we write about the study or publish a paper to share the research with other researchers, we will write about the combined information we have gathered. We will not include your name or any information that will directly identify you. We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. However, some people might review or copy our records that may identify you in order to make sure we are following the required rules, laws, and regulations. For example, the DePaul University Institutional Review Board may review your information. If they look at our records, they will keep your information confidential. Additionally, individuals who will assist in translation of interviews into English will have access to what you say. They will be instructed to keep your information confidential.

The interviews will be audio recorded and these audio recordings will be kept until accurate written notes have been made, then they will be destroyed.

You should know that there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court or to tell authorities if you report information about a child being abused or neglected or if you pose a danger to yourself or someone else.

**Who should be contacted for more information about the research?**

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or
complaints about the study or you want to get additional information or provide input about this research, you can contact the researchers:

Anne Saw at phone number 773-325-7880 and email at asaw@depaul.edu
Kris Pui-Kwan Ma at phone number 773-325-4124 and email at pma1@depaul.edu

This research has been reviewed and approved by the DePaul Institutional Review Board (IRB). If you have questions about your rights as a research subject you may contact Susan Loess-Perez, DePaul University’s Director of Research Compliance, in the Office of Research Services at 312-362-7593 or by email at sloesspe@depaul.edu.

You may also contact DePaul’s Office of Research Services if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.

_You will be given a copy of this information to keep for your records._

**Statement of Consent from the Subject:**

I have read the above information. I have had all my questions and concerns answered. By signing below, I indicate my consent to be in the research.

I authorize DePaul University to take and use audio recordings of me in connection with the research study. The audio recordings will be destroyed after the research study is completed.

Signature: ____________________________________________

Printed name: __________________________________________

Date: _________________
Appendix C

Informed Online Consent Form for Providers

Primary Care-Behavioral Health Integration and Wellness Promotion
Principal Investigator: Anne Saw, PhD
Institution: DePaul University, Chicago, Illinois, USA
Department (School, College): Department of Psychology, College of Science and Health
Collaborators: Asian Community Mental Health Services (ACMHS)

What is the purpose of this research?
We are asking you to be in a research study because we are trying to learn more about the effectiveness of the primary care-behavioral health integrated care and wellness intervention specifically serving Asian American immigrant adults with serious mental illness. This study is being conducted by Dr. Anne Saw, Assistant Professor at DePaul University. There are other people who are on our research team may assist with the study.

We hope to include about 6 Primary Care-Behavioral Health integration providers in the research.

Why are you being asked to be in the research?
You are invited to participate in this study because you are a member of the primary care integration program and/or wellness group in the Asian Community Mental Health Services. You provided primary care services and/or coordinated wellness groups at ACMHS.

What is involved in being in the research study?
If you agree to be in this study, being in the research involves participating in one individual interview that invites you to share your experience and views on the wellness intervention and/or primary integrated care program. We will also be asking a few questions about your background (e.g., gender, race/ethnicity) and training (e.g., education attained, training specific to integrated services). All interviews will be conducted by trained DePaul investigators at ACMHS. The interviews will be audio recorded and transcribed into written notes later in order to get an accurate record of what you said. Audio files that contain data will be erased and permanently destroyed after files are transcribed.

How much time will this take?
The interviews will take about 1 hour to complete. You will be invited to participate in one interview only.

Are there any risks involved in participating in this study?
During the interview, you may feel uncomfortable or embarrassed about answering certain questions or sharing experiences of working in the integrated care program. However, DePaul investigators are trained to be supportive and you will be informed that you do not have to answer all questions if you do not want to. You can also withdraw from the study at any time.

Are there any benefits to participating in this study?
There are no direct benefits to participating in this study, but we hope that what we learn will help to find more culturally appropriate means of improving physical health and lifestyle among Asian Americans with serious mental illness. Also, the findings of the study will have important implications in pushing the integration of primary care and behavioral health services to serve the underrepresented populations.

**Can you decide not to participate?**
Your participation is voluntary, which means you can choose not to participate. There will be no negative consequences, penalties, or loss of benefits if you decide not to participate or change your mind later and withdraw from the research after you begin participating.

**Who will see my study information and how will the confidentiality of the information collected for the research be protected?**

The research records will be kept and stored securely. Your information will be combined with information from other people taking part in the study. When we write about the study or publish a paper to share the research with other researchers, we will write about the combined information we have gathered. We will not include your name or any information that will directly identify you. We will make every effort to prevent anyone who is not on the research team from knowing that you gave us information, or what that information is. However, some people might review or copy our records that may identify you in order to make sure we are following the required rules, laws, and regulations. For example, the DePaul University Institutional Review Board may review your information. If they look at our records, they will keep your information confidential.

The interviews will be audio recorded and these audio recordings will be kept until accurate written notes have been made, then they will be destroyed.

You should know that there are some circumstances in which we may have to show your information to other people.

For example, the law may require us to show your information to a court or to tell authorities if you report information about a child being abused or neglected or if you pose a danger to yourself or someone else.

**Who should be contacted for more information about the research?**

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study or you want to get additional information or provide input about this research, you can contact the researchers:

Anne Saw at phone number 773-325-7880 and email at asaw@depaul.edu

Kris Pui-Kwan Ma at phone number 773-325-4124 and email at pma1@depaul.edu

This research has been reviewed and approved by the DePaul Institutional Review Board (IRB). If you have questions about your rights as a research subject you may contact Susan Loess-Perez,
DePaul University’s Director of Research Compliance, in the Office of Research Services at 312-362-7593 or by email at sloesspe@depaul.edu.

You may also contact DePaul’s Office of Research Services if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.

You will be given a copy of this information to keep for your records.

**Statement of Consent from the Subject:**

I have read the above information. I have had all my questions and concerns answered. By clicking "Yes, I agree" below, I indicate my consent to be in the research.

I authorize DePaul University to take and use audio recordings of me in connection with the research study. The audio recordings will be destroyed after the research study is completed.

If you understand the study and agree to participate in this research, please click "Yes, I agree". If you do not wish to participate, please click "No, thanks."

☐ Yes, I agree.

☐ No, thanks.

Please enter your name and contact information below. You will be contacted shortly to arrange the phone interview.

Your name: ______________________________
Best phone number to reach you: ________________
Your email address: _________________________
VOLUNTEERS NEEDED FOR A RESEARCH STUDY

DePaul University and Asian Community Mental Health Services

To understand attitudes and experiences of individuals in receiving primary care-behavioral health integrated care specifically serving Asian Americans

Who can participate?

- Participants receiving primary care-behavioral health integrated care services at ACMHS
- Aged 18 or above
- Self-identified as Asian/Asian American

What will participants be asked to do?

- Participate in a focus group interview for 1-1.5 hours
- Discuss and share experiences in receiving mental health care and/or joining wellness activities at ACMHS

Additional information

- Interviews will be conducted in English or Chinese, depending on your preference
- Interviews will be facilitated by trained researchers
- Interviews will be conducted in ACMHS

Compensation

- A $20 gift card will be offered for your participation

If you are interested in participating, please contact your case manager.

If you have questions, please contact:
Dr. Anne Saw (Assistant Professor)
Department of Psychology, DePaul University
asaw@depaul.edu
Appendix E

Recruitment Email to Providers

Email Subject: Primary Care Integration Care Provider Volunteers Needed for a Research Study

VOLUNTEERS NEEDED FOR A RESEARCH STUDY

DePaul University and Asian Community Mental Health Services

To understand perspectives of primary care integration care providers and identify possible factors related to patient health outcomes.

Who can participate?

- Care providers providing services associated with the Asian Primary Care Integration Project
- And are at least 18 years old

What will participants be asked to do?

- Be interviewed about your experiences and opinions on the primary care integration program.

Additional Information

- The interview will be conducted in English
- The interview will last about 1 hour
- All your participation will be conducted by phone at a location and time convenient for you
- This is a voluntary study and you will be compensated with a $20 gift card for your time

If you are interested in participating, please click on the following link to provide consent for participation: http://depaul.qualtrics.com/SE/?SID=SV_bORFTxoxQrbQkEl

If you have questions, please contact:
Dr. Anne Saw (Principal Investigator)
asaw@depaul.edu
Appendix F
Interview Guide for Consumers

Before the interview, interviewer will say: “This conversation is being recorded for research purposes. Please let me know now if you do not agree to being recorded. You may request that the recording stop at any time. Also, since this is a focus group interview, we ask everyone in this group to maintain each other’s confidentiality and do not share group information outside the group. When necessary, you will be asked to sign an agreement of confidentiality.”

• Questions about Primary Care Integrated (PCI) program
  1. Please describe your experience in PCI program.
     o (PROBES: How long have you been in this program? What services are you getting from the program? How involved are you in the program?)
  2. What differences, if any, have you observed in your experience in PCI program as compared to that in your previous healthcare settings?
     o (PROBES: What elements that are specific to integrated care settings?)
  3. What changes, if any, have you experienced since joining the PCI program?
     o (PROBES: Changes in terms of health and wellbeing, health behaviors and lifestyle, and access as well as utilization of healthcare services)
     o For changes described, probe for “In your opinion, what might contribute to the change?”
     o If no changes, probe for “In your opinion, what has gotten in the way of change?”
  4. What do you like or dislike about the program?
     o (PROBES: In terms of comprehensiveness, continuity, coordination and access to care)
  5. If you could change anything about the program, what would that be?

• Questions about wellness group (for consumers who have joined wellness groups)
  1. Please describe your experience in the wellness group
     o (PROBES: How long have you been a part of the group? What activities did you participate in the group?)
  2. Why did you join the wellness group? What about the wellness group that attracts you to join?
  3. What changes, if any, have you experienced since joining the wellness group?
o (PROBES: Changes in terms of health and wellbeing, health behaviors and lifestyle, and access as well as utilization of healthcare services)

o For changes described, probe for “what might contribute to the change?”

o If no changes, probe for “What has gotten in the way of change?”

4. What changes, if any, have you made since joining the wellness group?

  o (PROBES: Changes in terms of health behaviors and lifestyle; and other contextual factors for health)

  o For changes made, how important do you think the wellness group contributes to the change

  o For changes made, how important do you think the wellness group helps you to sustain the change
Appendix G

Interview Guide for Providers

Before the interview, interviewer will say: “This conversation is being recorded for research purposes. Please let me know now if you do not agree to being recorded. You may request that the recording stop at any time.”

- What is your gender?
- What is your race/ethnicity?
- Do you speak a language other than English? If so, what other languages/dialects do you speak?
- What is the highest level of education you have attained?
- What training or specialty have you received specifically related to PC-BH integration and/or wellness/health promotion?
- What role have you played in the PCI program?
  1 □ Project Manager
  2 □ Project Coordinator
  3 □ Wellness Coordinator
  4 □ Case manager
  5 □ Primary care provider
  6 □ Peer specialist
  7 □ Data specialist
  8 □ Non-medical staff
  9 □ Others, please specify ______________
- How many years/months have you been at ACMHS?
- How many hours of face-to-face direct interaction do you have with consumers per week?
  o How many hours are devoted to the PCI program?
- General questions about working in PCI program
  1. Please describe your role and duties in the PCI program
    o (PROBES: How do you work with consumers? What services do you provide? How engaged are you in the program in terms of working hours per week, leadership roles etc)
  2. Please describe your experience in the PCI program
    o (PROBES: Experience in terms of delivering service to consumers, working with your colleagues, coordination and administration work)
  3. What differences, if any, have you observed in your experience working in a primary care-behavioral health integrated setting as compared to other health service settings?
    o (PROBES: what would be the differences or uniqueness of this PCI program compared to other service delivery models?)
4. What is it like to work in an interdisciplinary team?
   - What are challenges and benefits? Any specific challenges working with primary care/behavioral health workers?
   - For challenges described, probe for “what might cause the challenges?”
   - For challenges described, probe for “what ways have been attempted to solve the issue?”
   - Any impact on how you think about your patients?

5. What do you like or dislike about the components of the PCI program?

6. What changes, if any, have you observed in consumers’ health and healthcare since they joined the PCI program?
   - For changes described, probe for “what might cause the change happened?”
   - If no changes, probe for “What has gotten in the way of change?”

7. How do consumers benefit from the PCI program?
   - Anything that you find it effective in this PCI program to improve consumers’ health, their health behaviors and access to healthcare?
   - If needed, provide examples

8. If you could change anything about the program, what would that be?
   - (PROBES: What are the barriers or difficulties in implementing the program?)

- Additional questions for wellness coordinators

1. What does a wellness group do?
   - (PROBES: describe the nature, purpose and activities of the wellness group)

2. What activities this group has that benefit participants more than activities in other group models?
   - (PROBES: The uniqueness of the group in terms of language, culture, diversity and style; and how these features meet participants’ needs?)

3. How does the wellness group benefit the participants?
   - (PROBES: Benefits in terms of physical and mental health, social support, knowledge, empowerment, self-efficacy)
For benefits described, what might contribute to the benefits? What are the factors associated with the benefits?

4. What components do you find are effective for encouraging and helping participants to modify health behaviors?

   (PROBES: What components in the wellness group contribute to the success/ effectiveness of the group to lifestyle modification and management?)