2017

Implementing Integrated Care in Family Medicine: Description and Outcomes in an Underserved Population

Zach Radcliff
Virginia Commonwealth University

Implementing Integrated Care in Family Medicine: Description and Outcomes in an Underserved Population

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University

Zach Radcliff
B.S., The Pennsylvania State University, December 2009
M.S., Virginia Commonwealth University, August 2014

Advisor: Bruce D. Rybarczyk, Ph.D.
Professor
Department of Psychology, Virginia Commonwealth University

Virginia Commonwealth University
Richmond, VA
September 2017

Table of Contents

Abstract

Introduction: Family physicians provide access to medical and behavioral healthcare for many underserved populations. Integrating behavioral health clinicians into primary care practices has been proposed as one of the most effective ways to increase access to necessary behavioral health services for many Americans. Integrated behavioral healthcare (IBHC) has begun to be implemented in family medicine practices but there is limited research examining the impact for patients and clinic staff. This study begins to fill this gap in the literature by examining the effects of implementing integrated behavioral healthcare in an urban family medicine clinic in a medically underserved area.

Objective: The objective of this study is to describe patients who use IBHC services, examine behavioral health outcomes, and study patient and staff satisfaction with IBHC services. This is done in the context of the Quadruple Aim of Healthcare which purposes to improve population health, provide a better patient experience, create smarter healthcare spending, and improve medical staff work quality of life. Aspects of implementation are addressed as well, namely the appropriateness, acceptability, adoption, feasibility, and penetration of IBHC services.

Methods: IBHC services were introduced to an urban family medicine clinic in a medically underserved area with a census of greater than 4,500 patients (56.17% African American, 24.4% White, 1% Asian, 22.9% Latino/a; 33.3 % Children under 18). Using information from medical records, a description and comparison of the general clinic population and those that use IBHC services is provided. Behavioral health outcomes were measured by tracking patient anxiety and depression over time, from initial session through follow-up at least 3 months after their final session for a subset of patients. Patient and clinic staff satisfaction were assessed using

qualitative and quantitative methods. Supplemental analysis compare behavioral health outcomes against a previous sample of patients from the same clinic before IBHC services were present.

Results: Demographic information is presented and compared to highlight the unique difference between race/ethnicity, age, and gender. This study showed that adult patients experienced a significant reduction over time from initial session to follow-up with regards to anxiety, $F(1.77, 130.63) = 65.65$, $p < .001$, and depression, $F(1.78, 131.68) = 37.88$, $p < .001$. Patient interviews and surveys were analyzed and found that patients generally reported high satisfaction with IBHC services and found their behavioral health needs where addressed in the way they wanted them to be. Finally, medical staff reported high satisfaction with IBHC services and reported that they had reduced stress, increased comfort in caring for patients with behavioral health needs, and improved work quality of life.

Discussion: IBHC services were implemented at a family medicine clinic with a population that is overrepresented by minorities and uninsured patients. This study showed that implementation of IBHC addressed components of the Quadruple Aim of Healthcare, namely improvement of population health, enhanced patient experience, and improvement of clinic staff work life. IBHC services were found by patients and staff to be acceptable, appropriate, and feasible. Further, this study demonstrated the ability of a clinic to adopt IBHC services with sufficient penetration (10.8% of patients received at least brief services) after 2 years. Implications for practice and research and future directions are also discussed.

Introduction

In 2013, over 44% of United States adults with a diagnosable behavioral health condition did not receive the recommended level of behavioral healthcare, and the percentage was higher in minority and low socioeconomic status populations (SAMHSA, 2014). This dearth of care may impact a person's ability to function, work, care for others, and manage their physical health. Since the mid-1990s, increasingly more patients have sought behavioral health services from their primary care physicians. It has been recognized that primary care physicians are the point of access for behavioral health services for many individuals, with 59% of psychiatric medications being prescribed by these physicians (Mark, Levit, & Buck, 2009). This situation provides an ideal opportunity to integrate non-pharmacologic behavioral healthcare into medical settings to complement and provide patients with an alternative to pharmacotherapy, improve outcomes, and provide appropriate treatments, particularly where evidence suggests behavioral treatments are more effective (e.g., anxiety disorders, chronic insomnia).

Integrated behavioral healthcare (IBHC), "close collaboration between primary care clinicians and mental health specialists" (Olfson, 2016), is rapidly becoming the standard for best practice care, particularly to address the vast behavioral health needs seen in underserved populations that is communities or groups of individuals that access behavioral healthcare services at lower rates than the national average (de Voursney & Huang, 2016; Padwa et al., 2016). It has been proposed as an ideal mode for delivery for a variety of interventions to patients with the added bonus of being recognized as means for healthcare cost saving by reducing use of more expensive services (The Colorado Health Foundation, 2012; Crowley & Kirschner, 2015). Further, with the reinforcement of patient center medical homes (PCMH) by the Affordable Care Act (ACA), integrated behavioral healthcare is expanding and including

more professions (i.e. pharmacy, social work) in an attempt to provide more comprehensive services for patients' primary needs (Crowley & Kirschner, 2015; Padwa et al., 2016). As of 2011, primary care practices seeking recognition as patient-centered medical homes must track the use of evidence-based treatment of at least one condition related to behavioral health (National Committee for Quality Assurance, 2011). Behavioral health refers to the inclusive branch of health psychology and medicine comprised of care of physical health symptoms and chronic conditions, behavioral medicine conditions (e.g. sleep difficulties, chronic pain, weight management, and medication adherence), substance abuse, and traditional mental health concerns (i.e. anxiety, depression, ADHD, and disruptive behaviors; Peek, 2013).

While integrated care is being implemented across medical specialties, it maps onto to the principles of family medicine particularly well. The American Academy of Family Physicians (AAFP; 2016) describes family medicine as being "dedicated to treating the whole person" with the governing principles focused on advocating and caring for patients of all ages, genders, and backgrounds. Family medicine practices are more widespread than any other practices in the United States and provide more care to underserved and minority populations than any other specialty (AAFP, 2016). As such, family medicine often serves the very populations that have the least access to mental health care, placing the burden for care on the physicians. Figure 1 shows the practices that serve medically underserved areas in the Richmond area, where the clinic in this study is located. This figure shows how needed these services are for patients who would otherwise not have care. While there is a significant body of research supporting integration of behavioral healthcare in the primary care setting (Crowley & Kirschner, 2015), there currently is no research exploring implementation of IBHC in an underserved family medicine clinic.

Objective

The objective of this study is to begin to fill the gaps in the IBHC family medicine literature by studying the impact of implementing IBHC services at a family medicine clinic located in a behavioral health and medically underserved area. Specifically, the study will assess who uses IBHC services, what are the patient outcomes when they receive IBHC services, and are patients and staff satisfied with the inclusion of IBHC services at the clinic. To accomplish this, the literature review describes the history of integrated behavioral healthcare in other settings, the case for using IBHC to meet behavioral health needs, and guidelines for studying IBHC; discussed as it applies to family medicine and its role in meeting the needs of underserved patients. Further, current data on underserved populations is discussed with a particular focus on African American, Latino/a immigrant, women, and youth populations. Current literature on patient and provider satisfaction with integrated behavioral healthcare is reviewed and discussion includes the use of qualitative data. Due to the scope of this study, the literature review will not include a review of minority behavioral healthcare outside of the IBHC context, a review of cost and sustainability of IBHC, or an exploration of behavioral healthcare models not applied in the primary care/family medicine setting.

The study itself evaluates the impact of introducing integrated behavioral health services to an urban safety net family medicine clinic. The population at the clinic is described and compared to the subset of patients who use IBHC services at the clinic. Next, the most common behavioral health concerns (i.e. depression and anxiety) are examined over time in a subset of IBHC patients. Finally, patient and staff satisfaction with IBHC services is examined using quantitative and qualitative methods. By using a multi-method design, this study provides a comprehensive description of integrated behavioral healthcare services in family medicine.

Literature Review

Integrated Care

Healthcare and reform continues to be a complex issue in America today. In 2008, the Triple Aim of healthcare was introduced; improve population health, better patient experience, and smarter healthcare spending (Institute for Healthcare Improvement, 2017). Now expanded, the Quadruple Aim also includes improving the work life of medical staff. Integrated behavioral health care (IBHC) is one way that healthcare providers attempt to meet the Quadruple Aim of healthcare (Bodenheimer & Sinsky, 2014). IBHC allows for the provision of more complete care of the patient, which improves patient satisfaction, while reducing burden on practitioners, which enhances practitioner work life. There is also growing evidence that IBHC reduces healthcare costs (The Colorado Health Foundation, 2012; Padwa et al., 2016).

Integrated behavioral healthcare refers to a "practice team of primary care and behavioral health clinicians, working together with patients and families, using a systematic and cost-effective approach to provide patient-centered care for a defined population. This care may address mental health and substance abuse conditions, health behaviors (including their contribution to chronic medical illnesses), life stressors and crises, stress-related physical symptoms, and ineffective patterns of health care utilization" (Peek, 2013). This idea first grew out of the recognition that some patients and some conditions require multiple specialties to treat. By housing multiple specialties together and fostering a team based approach, patient care can be improved (Asarnow, Rozenman, Wiblin, & Zeltzer, 2015; Woltmann et al., 2012). Further, patients found this type of practice to be beneficial and often a better fit for their needs (Funderburk, Fielder, DeMartini, & Flynn, 2012). IBHC has found particular favor in primary

care settings due to the ability to provide behavioral medicine interventions in addition to traditional mental health interventions.

IBHC is a dynamic field that is not just limited to the integration of psychologists into a medical setting but also may include social work (Craig et al., 2016; Stanhope, Videka, Thorning &, McKay, 2015), psychiatry (Cowley, 2015; Rickerby & Roesler, 2016; Rogers et al., 2016), the family system (Garg, Marino, Vikani, & Solomon, 2012; O'Farrell & Fals-Stewart, 2002), and medication management (Fraser & Oyama, 2013). Social work has found a unique role in IBHC as the profession "allows for the exploration, assessment, and support of a patient's psychological, social, and medical needs… …to address the various facets of a patient's life that impact health" (Craig et al., 2016). Further, social workers are able to work beyond a patient's psychosocial and medical needs to address practical concerns that may be increasing stress, impacting behavioral health, or impairing a patient's ability to manage their health effectively (Craig et al., 2016). On the other end of the spectrum, psychiatry finds a role in IBHC providing services to patients with serious mental illness (SMI) and consulting with physicians on psychiatric medication management, which may increase patient's access to psychopharmaceutical care (Cowley, 2015; Rogers et al., 2016). Finally, there is growing research to support inclusion of the family system into services to provide assistance to the patient outside of the therapy setting, particularly in the context of substance abuse (O'Farrell & Fals-Stewart, 2002) and child behavioral health concerns (Garg, Marino, Vikani, & Solomon, 2012). Thus to provide the most comprehensive care to patients, when services were launched at the clinic in this study both social work and psychiatry were included.

Components of Integrated Behavioral Healthcare. As defined by the Society of Behavioral Medicine (SBM; 2016), behavioral healthcare is "the multidisciplinary field

concerned with the behavioral and social aspects of medical conditions". First described in the 1970's, behavioral healthcare initially examined the psychological factors that may be linked to medical conditions. Over time, this field has become defined and refined to build an evidence base of many social and behavioral components of multiple conditions typically treated by primary care and family medicine physicians. Within the framework of IBHC, mental health conditions are often treated in the context of the physical health or behavioral medicine conditions that they impact. IBHC services are sometimes viewed on a continuum with traditional independent mental healthcare on one end and fully integrated behavioral healthcare, such as the model employed in this study, on the other, with collaborative care in the middle (Stergiopoulos, et al., 2015).

Today, the goal of behavioral healthcare in primary care or IBHC services is to improve care for all patients of the medical clinic through direct and indirect intervention. This is accomplished through the behavioral health clinician 1) providing accessible, high-volume, generalist services targeting functional improvement, 2) working as a part of an integrated team, extending their ability to provide biopsychosocial services, and 3) to educate and improve other team members ability to manage biopsychosocial needs (Hunter et al., 2017). Commonly treated behavioral health conditions include sleep difficulties, chronic pain, weight management, medication adherence, substance abuse, and cardiovascular disease in addition to areas thought of as more traditional mental health such as anxiety, depression, and disruptive behaviors (SBM, 2016). Due to the nature of the model, brief evidence-based interventions have been developed that provide noticeable improvements in fewer sessions with behaviorally targeted treatment goals (Bridges et al., 2015). The nature of these interventions may improve patient engagement

in behavioral healthcare by reducing barriers and stigma associated with traditional mental health care.

In addition to providing these behavioral healthcare services, IBHC has other advantages. Not only can patients come in for an IBHC appointment, they can also be connected with the behavioral health provider through a "warm handoff". This type of referral occurs when another practitioner is meeting with a patient and identifies a behavioral health concern and "hands off" the patient to the behavioral health clinician for services. This type of service is beneficial for a number of reasons. First, it allows patients to put a face with a name, making a referral to IBHC a friendlier process. Second, it can reduce stigma surrounding mental health providers as it allows the behavioral health clinician to get their foot in the door and explain IBHC services. Third, medical staff find they are more efficient in seeing their patients if they can focus on the medical conditions while a behavioral health clinician targets behavioral and social concerns (Bentham et al., 2015; Funderburk et al., 2012). This may be particularly helpful when a patient is in crisis (e.g. suicidality, psychosis, acute stressors) and requires more attention from clinic staff. Finally, patients can leave their appointment with new behavioral health skills to address their concerns immediately, capitalizing on the "teachable moment" when a problem is initially voiced by a patient.

Yet another advantage is the ability to participate in screenings that occur routinely in primary care and family medicine practices. Numerous medical organizations recognize the need to screen for a variety of behavioral health issues in many populations (i.e. externalizing behaviors in children, depression in the elderly, autism in toddlers, post-partum mental health). Integrated behavioral health clinicians are uniquely suited to assist with these screenings and interpret positive screens. Further, they can help patients make sense of positive results and help

them begin to address concerns. These screenings allow for a more complete understanding of each patient, provide valuable information to all practitioners on site, and allow for more preventative steps to be taken. This study evaluates a fully integrated IBHC program that utilizes all aspects of integration including screening, “warm handoffs”, consultation, and patient appointments.

Efficacy of IBHC. As with any new healthcare initiative, it can be difficult to capture the impact and effectiveness of IBHC. In IBHC, there are numerous outcomes that have been targeted since its inception, often related to the Quadruple (formerly Triple) Aim of Healthcare. Outcomes that have been studied included behavioral health outcomes, physical health outcomes in specific populations, cost effectiveness, and patient satisfaction (Padwa et al., 2016; Woltmann et al., 2012). As noted above, there is growing literature on the benefits to patients (behavioral and physical health outcomes and satisfaction), while many organizations have found cost and utilization analyses to be helpful. As such, researchers need to identify their goals in implementation of IBHC to determine what outcomes to measure. Often improvements to patient care and patient experience are the primary aims, with utilization or cost as secondary benefits, and the majority of studies examine these patient outcomes (Hunter & Goodie, 2012; Woltmann et al., 2012). With the recent development of the Quadruple Aim of Healthcare, it will become important to include practitioners’ experiences in the equation when studying IBHC outcomes.

Beyond the Quadruple Aim of Healthcare, eight recently established principles guide the implementation outcomes for IBHC (Hunter et al., 2017; Proctor et al., 2011). Acceptability (1) is the perception among clinic staff and administration that IBHC services are satisfactory. Adoption (2) refers to the decision to implement specific IBHC services within the clinic while appropriateness (3) is the perception that the IBHC services provided are compatible to setting

and need. Cost (4) refers to the true costs of implementing and sustaining IBHC services within the clinic. IBHC feasibility (5) is the extent to which a novel service can be successfully implemented within the clinic. The fidelity (6) of IBHC implementation examines the extent that a service is delivered relative to the original manual. Penetration (7) measures the extent IBHC services have integrated and reached the clinic population. Finally, sustainability (8) refers to the extent that IBHC services can be maintained as a part of the clinic's typical operation. This study will examine clinic penetration, adoption, acceptability, appropriateness, and feasibility.

Comparison to Collaborative Care. Collaborative care is related and sometimes confused with integrated behavioral healthcare. As noted above, collaborative care falls in the middle of the continuum of integrated care (Stergiopoulos, et al., 2015). The specific Collaborative Care Model (CoCM), pioneered and disseminated by the University of Washington Advancing Integrated Mental Health Solutions (AIMS) Center defines collaborative care as "mental health professionals coordinating care with primary care professionals to provide comprehensive care for patients" (AIMS Center, 2017). As described by the AIMS center, "collaborative care addresses chronic mental health conditions like depression and anxiety that require longer-term treatment". Thus, the focus of CoCM is on treating a specific mental health concern in a medical setting, employing a combination of care management, and psychopharmacology (Woltmann, et al., 2012). A carefully designed clinical algorithm supervised by a psychiatrist provides stepped care that includes behavioral treatments as needed, and brief behavioral interventions (typically problem-solving training) that can be easily delivered by variety of mental health and non-mental health clinicians. Current research indicates that collaborative care provides an improvement over usual care (Bortolotti, Menchetti, Bellini, Montaguti, & Berardi, 2008). There are demonstrated benefits across minority populations, ages,

and genders in safety net clinics (Angstman, et al., 2015; Ell, Aranda, Xie, Lee, & Chou, 2010; Ell, et al., 2011; Richardson, et al., 2015). Despite these improvements, a recent meta-analysis indicated that collaborative care models did not result in any healthcare cost savings (Woltmann, et al., 2012).

Since collaborative care does not provide the same high level of integration that IBHC does and primarily targets depression and anxiety, it appears limited in its ability to meet all aspects of the quadruple aim of healthcare (Bodenheimer & Sinksy, 2014). Collaborative care does not typically address more complicated and comorbid mental health issues, or behavioral medicine concerns such as smoking cessation, sleep difficulties, or chronic pain. Further, treatment is protocol-driven and based on a single mode of therapy (e.g., problem-solving), and uses "treatment to target", which provides care until treatment measures show a 50% reduction in symptoms. In contrast, IBHC focuses on brief population based care designed to increase access to all patients with any behavioral issue that is a problem for the patient (University of Washington, 2016), and IBHC also implements a modular approach allowing for flexibility across treatments delivered and the ability to adapt from one session to the next to the needs of the patient. Finally, collaborative care is delivered by a care manager who coordinates with a psychiatric consultant. Psychiatric consultants do not typically see patients but provide support to care managers and physicians regarding mental healthcare (University of Washington, 2016). Conversely, IBHC clinicians perform both roles and are directly involved with all levels of care. While these differences may seem subtle, they result in a vastly different set of services provided to patients and contrasting structures within medical clinics. Collaborative care does provide improvements over usual care, but properly applied IBHC serves to provide wider ranging patient benefits through its unique goals and inclusion of the quadruple aim of healthcare. Due to

these differences, a fully integrated model of IBHC was used when introducing behavioral healthcare services to the clinic in this study.

Integrated Behavioral Healthcare Outcomes

Practical application of IBHC. Only a few studies have measured the efficacy of IBHC applied in real world integrated care clinics (Bryan et al., 2012; Corso et al., 2012; Davis, Corrin-Pendry, & Savill, 2008.; Goodie, Isler, Hunter, & Peterson, 2009; Katon et al., 1996;McFeature & Pierce, 2012; Ray-Sannerud et al. 2012; Runyan, Fonseca, Meyer, Oordt, & Talcott, 2003; Sadock, Auerbach, Rybarczyk, & Aggarwal, 2014), with only one study in family medicine clinics providing services to underserved minority populations like the clinic in this study (Bridges et al., 2014).So far, the findings have been favorable, demonstrating that patients experience an improvement in their symptoms and functioning across behavioral health problems (Cigrang et al., 2011; Goodie et al., 2009; Katon et al., 1996; McFeature & Pierce, 2012; Sadock et al., 2014). Effects for patients have been found as rapidly as two or three appointments with IBHC (Bryan, Morrow, & Appolonio, 2009) with treatment gains being maintained at a longitudinal follow-up, even as far out as two years (Cigrang et al., 2011; Ray-Sannerud et al., 2012; Sadock, Grinnell, Rybarczyk, & Auerbach, 2017). In another safety net study that examined patient gains after four 30-minute IBHC session that involved problem solving and goal setting patients experienced significant reductions in depression, with almost half (49.8%) of participants reporting score reductions of at least 50% (McFeature & Pierce, 2012).

While these preliminary findings are favorable, more research is needed to establish the short and long-term effects of implementing IBHC in family medicine clinics. Research has primarily studied IBHC in adult primary care settings (Haibach, Beehler, Dollar, & Finnell,

2014; Woltmann et al., 2012) rather than family medicine settings with both children and adults. While research in primary care is informative and valuable, a few key aspects are needed to make this literature more robust. To date, only one study has used a comparison control group receiving services at a clinic without IBHC; discussed in detail below (Sadock et al, 2017). Use of a comparison control group is important, as it demonstrates that IBHC is more effective in improving functioning than the usual care provided by a family medicine clinic (Hunter et al. 2017). Additionally, only three studies have examined the lasting treatment effects of IBHC beyond the end of treatment (Cigrang et al., 2011; Davis et al., 2008; Ray-Sannerud et al., 2012). However, none evaluated IBHC in a safety net clinic. Finally, to date there is limited research describing the different contexts in which IBHC has been employed and methods are often not comparable across contexts, making it difficult to compare different implementations of IBHC (Hunter et al., 2017). This is particularly important when looking out patient and staff outcomes as different contextual factors may influence feasibility, treatment fidelity, acceptability to patients and staff, and the adoption and sustained use of IBHC services.

Safety net IBHC. IBHC has been presented as a possible means to increasing access to behavioral health services in underserved populations, provides much needed care to patients who otherwise have limited access to affordable behavioral healthcare. To date, only five outcome studies have been conducted in safety net clinics based on review of the literature (Bryan et al., 2012; Corso et al., 2012; McFeature & Pierce, 2012; Sadock et al., 2014, Sadock et al, 2017). Preliminary findings from these studies indicate that IBHC is an effective service for these populations with variable benefits based on diagnosis and severity. Specifically, patients with varied levels of distress saw improvements in functioning and a reduction in symptoms (Bryan et al., 2012; Sadock et al., 2014), with patients with SMI experience more rapid

improvements (Bryan et al., 2012). Further, Corso et al (2012) addressed concerns about the impact the brief nature IBHC may have on therapeutic alliance. IBHC patients in a safety net clinic reported a stronger alliance after one session than patients in a traditional outpatient clinic did after four sessions, possibly due to the fact that patients viewed the clinician as part of a team they already trusted prior to treatment. These results highlight the added value of IBHC in a safety net clinic and show that it is likely to be a desired service among patients.

In a recent two-part study, patients were followed at two different university health system-operated primary care clinics, one operated by the Internal Medicine Department and the other operated by the Family Medicine Department, both targeting underserved patients (Sadock et al., 2017). IBHC was implemented at the Internal Medicine clinic, where residents receive no additional psychiatric training, and the Family Medicine clinic served as a control clinic, where family medicine faculty and residents receive additional psychiatric training. Patients were administered anxiety and depression screening measures at their initial IBHC visit and throughout treatment. At the family medicine clinic, patients were matched to a patient receiving IBHC based on initial scores on both the anxiety and depression measures at baseline. These matched "control" patients received treatment as usual from their family physicians, with the same screeners administered at a follow-up interval matched to the treatment length of their counterpart receiving IBHC. At completion of treatment, patients who had been treated through IBHC at the primary care clinic showed significant improvement in both depression and anxiety scores relative to patients receiving treatment as usual from their family physicians. In the second part of the study, a subset of the patients who received IBHC were followed longitudinally (6-18 months post treatment), with patients who received IBHC significantly increasing their improvements at posttreatment (The matched control patients could not be

followed for this study). The results of this study highlight a few important issues. First, the addition of IBHC to patients' care provides significant improvement over the care provided by family medicine physicians, including the referrals they made to other types of behavioral health services. Second, these treatments gains increased over time following termination of treatment, suggesting that patients continue to improve after brief treatment, potentially due to allowing additional time for behavior changes to yield further benefits. Thus, while primary care physicians may be able to provide accessible and beneficial behavioral health services, the addition of IBHC services improves care to patients with depression and anxiety, including in settings where patients may face significant challenges to their health and wellness.

Family Medicine Specialty

The family medicine specialty is uniquely placed to serve many of the nation's most underserved population due to their training in a wide range of conditions. Family medicine residents receive training in pediatrics, obstetrics and gynecology, internal medicine, psychiatry and neurology, surgery, and community medicine (AAFP, 2016). Further, their cross-ages training allows them to meet the needs of entire families for most conditions. Their training in psychiatry and neurology is in keeping with the biopsychosocial model and uniquely suits them to provide first line behavioral health care. In fact, in locations where there are fewer psychiatrists, more family physicians report providing behavioral health care (Xierali et al., 2012). Further, the 5th leading chronic condition treated in primary care settings is depression (National Center for Health Statistics, 2012). Potentially as a result of their ability to provide this care or lack of IBHC dissemination, IBHC has only been studied in a few instances in family medicine and adoption of IBHC has been low so far (Drummond, Abbott, Williamson, & Somji, 2012; Larzelere, 2014; Lehmann, Dunn, Beaulieu, & Brophy, 2016). These studies primarily

focus on policy and implementation rather than clinical outcomes for patients. Due to their wide spread practice and provision of services to underserved areas, family medicine is ideally suited to having IBHC complement the skills and training of their physicians to provide more comprehensive behavioral health care. This was, in part, why the family medicine clinic was chosen for the introduction of IBHC services in this study: to meet patient needs and better understand how family medicine and IBHC services could complement each other.

Behavioral healthcare. Family medicine physicians receive training in psychiatry as a part of their comprehensive training in residency. As a result, many family physicians feel they are able to handle most behavioral health concerns that present to their office, and know when to refer patients to specialty mental health services (Oyama, Burg, Fraser, & Kosch, 2012). Further, many physicians feel that their patients prefer to receive services from their medical provider. This may be for a number of reasons including stigma associated with behavioral healthcare, belief that behavioral health conditions have a medical cause, or ease of access. Regardless of the reason, family physicians often find themselves as a patient's primary access to behavioral health care (Xierali et al., 2013). Behavioral health care in family medicine primarily occurs through psychoeducation and brief counseling and the prescribing of psychotropic medication (Oyama et al., 2012; Xierali et al., 2013).

Counseling and education ideally occurs throughout family medicine office visits. Best practice would include a process that begins with nursing as they check the patient in, review primary concerns, and provide psychoeducation as needed. Screening for depression and/or anxiety has also become a frequent part of this process and the Generalized Anxiety Disorder questionnaire (GAD; two or seven question versions) and Patient Health Questionnaire (PHQ: two or nine question versions) are frequently used to screen anxiety and depression, respectively.

The physician would then follow up on any behavioral health concerns during their visit; providing the necessary education and brief counseling as needed as well as addressing any chronic physical conditions, acute concerns, or preventative care. Family physicians receive some training to provide brief counseling and medication management for a variety of behavioral health concerns including health behaviors and mild to moderate mental health concerns. In fact, five of most common nine types of counseling/education physicians report performing in their visits are behavioral health related, including weight management, smoking cessation, and stress management (National Center for Health Statistics, 2012). However, more serious mental health concerns (e.g. crisis, psychosis, severe depression) are recommended to be referred out to specialty mental health providers for more complete management.

In addition to counseling, family medicine physicians are able to prescribe psychotropic medications. More than 70% of family physicians report that they manage their patients' psychotropic medications sometimes or often (Fraser & Oyama, 2013), with psychotropic medications being the second most prescribed medications by primary care physicians (NCHS, 2012). Almost 60% recommend psychotropic medication as either the first treatment or as a part of a treatment plan for behavioral health conditions. Additionally, primary care physicians account for 65% of anxiolytic and 62% of antidepressant medication prescriptions (Mark, Levit, & Buck, 2009). Despite all of this, 58% of family physicians acknowledge that they have none to marginal knowledge of psychotropic medications. There are also concerns that patients are not receiving the necessary psychotherapy and support for their medications, particularly those taking numerous medications for complex medical conditions (López-Lanza, et al., 2016; Olfson, 2016). Further, there is limited evidence for improvement in mild depressive symptoms with the use of anti-depressant medication in primary care settings (Lin et al., 1995).

Regardless of the type of care provided to patients, the family physician approach to holistic care of the mind and body is one that appeals to many patients. The mind-body connection has been well documented and many conditions since cardiovascular disease in the 1950's have been linked to behavioral health. By caring for the mind as a part of care for the body, family physicians are able to better serve their patients. While family medicine continues to be uniquely suited for this type of care due to their training, the addition of IBHC may allow for better care of the mind, further improving their care of the body.

Specific Populations

As IBHC expands across settings, it is also being introduced to new populations of patients. Clinics providing care to medically underserved populations have found that IBHC has been an effective method to increase behavioral healthcare access (Bridges et al., 2014; Manoleas, 2008; VanderWielen et al., 2015). Further, having IBHC has reduced stigma associated with behavioral healthcare that is often found in these underserved populations. These populations are defined by the number of primary care providers per 1,000 individuals, the number of individuals over 65, infant mortality rate, and percentage of the population living in poverty (Health Resources and Services Administration, 2016). In urban settings, these underserved populations are often minority groups, with a growing number of those communities being Latino/a. This is true of the clinic where this study was conducted, which has an overrepresentation of minority populations, namely Latino/a and African American (Tables 1 and 2). As such, it is important to understand the context and factors influencing these disparities in the populations served by this clinic. As these factors may disproportionally affect women and youth, additional attention is given to these populations.

Latino/a behavioral health. Latino/a populations, particularly the immigrant and/or Spanish speaking sub-populations, are the largest minority population in the United States. Yet, they are often viewed as one of the most underserved populations, especially when it comes to behavioral health care. There are a number of factors that may result in this disparity including availability and access barriers, health literacy, stigma, and a lack of culturally sensitive diagnostic tools and interventions (Becker Herbst, Margolis, Millar, Muther, & Talmi, 2016; Bridges et al., 2014). These barriers may increase behavioral health problems and result in greater physical health disparities.

Prevalence of behavioral health concerns in Latino/a populations is mixed and is often dependent on a number of factors. The "immigration paradox" is also seen to frequently apply to behavioral health concerns in Latino/as, where immigrant Latino/as have lower rates of behavioral health concerns than U.S. born Latino/as (Alegria et al., 2008). In general, immigrant Latino/as are seen to have lower rates of behavioral health concerns than U.S. born non-Latino/as. Latino/as also have lower rates of behavioral health concerns than non-Latino/a Whites, 29.7% to 43.2% lifetime prevalence of any disorder, respectively (Alegria et al., 2008). Further, in U.S. born Latino/a youth, rates of internalizing and externalizing problems are higher when parents reported lower levels of acculturation to the U.S. (Haack, Kapke, & Gerdes, 2016). Meanwhile, U.S. born adult Latinos have increased risk for developing depression and anxiety when there was increased family conflict or acculturation stress (Ai, Pappas, & Simonsen, 2015). Thus, while immigration status may be initially protective, it can pose an increased risk of developing behavioral health problems for future generations.

While there is lower prevalence of behavioral health concern in Latino/a populations, Latino/as with behavioral health concerns are far less likely to access behavioral health services

than their non-Latino/as White peers and this disparity is growing (Ault-Brutus, 2012; Cook, Trinh, Li, Hou, & Progovac, 2016). Lack of Spanish speaking behavioral health providers or interpreters not properly trained for behavioral health services commonly interferes with immigrant populations properly accessing or maintaining appropriate care (Becker Herbst et al., 2016). Additionally, low health literacy and lack of appropriate diagnostic tools often result in medical patients failing to appropriately access services (Green et al., 2012). Many screeners and behavioral health materials are being translated into Spanish but this does not necessarily improve identification as cultural factors influence presentation of many behavioral health conditions (Bridges et al., 2014; Cabassa, Lester, & Zayas, 2007; Lewis-Fernández, Das, Alfonso, Weissman, & Olfson, 2005). Some symptoms of depression or anxiety are interpreted by Latino/a patients as physical symptoms and not identified by patient or provider as relating to behavioral health concerns (Lewis-Fernández et al., 2005). As a result, behavioral health concerns are identified and referred for counseling or psychotropic medication at lower rates than non-Latino/a Whites (Stockdale, Lagomasimo, Siddique, McGuire, & Miranda, 2008). Further, when medications are prescribed Latino/a patients are less likely to be prescribed newer second generation medications than White Americans (Puyat et al., 2013). Latino/a patients also report high rates of misinformation about antidepressant medication, with concerns about side effects and addiction (Green et al., 2017). These patients were also interested in better understanding the medication being prescribed to them as 50% of the patients who had stopped medication did so without consultation of their physician. When Latino/a patients do have access to counseling in their preferred language and psychotropic medications, more patients with depression choose counseling over medication, with both groups reporting symptom improvements (Lagomasino et al., 2017). Even when a concern is identified and a “warm

handoff" is made from a medical practitioner to a behavioral health clinician, Latino/a patients may not follow up for a variety of reasons including continued stigma, language difficulties, and lack of behavioral health literacy (Horevitz, Organista, & Arean, 2015). These barriers are complicated by many Latino/a communities being in underserved areas, locations without enough providers to meet population needs. Finally, Latino/a populations have one of the highest proportions of uninsured, at 26.5% being uninsured, further making it difficult for them to access appropriate behavioral healthcare (National Center for Health Statistics, 2014).

Even if a patient has appropriate access and desire for services, personal beliefs and stigma may prevent them from participating in care (Nadeem et al., 2007). The stigma surrounding behavioral health care in Latino/a populations has been well documented and indicates spiritual, community, and behavioral health literacy as primary reasons for not seeking care (Bridges et al., 2015; Becker Herbst et al., 2016; Manoleas, 2008; Vega, Rodriguez, & Ang, 2010). Many Latino/a populations view the mind/body as a whole unit and as a result trust their primary care physician to provide holistic mind-body care (Manoleas, 2008). However, Latino/as show a preference to counseling over psychiatric medication for the treatment of behavioral health concerns, suggesting that stigma may be more closely tied to being on psychiatric medication (Cooper et al., 2003). Further strengthening the belief in the mind-body connection, Latino/as with SMI report the belief that improving their physical health will improve their mental health (Jimenez et al., 2016). Community related stigma relates to fears that others will believe they have a more severe illness, that they are weak, and that they cannot cope effectively (Interian, Martinez, Guarnaccia, Vega, & Escobar, 2007). Further, Latino/a patients at a primary care clinic who identified high levels of behavioral health stigma were less likely to share their condition with family or friends, less likely to accept assistance from professionals, and less

likely to be on antidepressant medication (Interian et al., 2010; Vega et al., 2010). Of particular interest, these same patients were more likely to no-show for medical appointments, further reducing their access to physical and behavioral healthcare. This is also problematic because Latino/a populations view their primary care practitioner as their preferred behavioral health provider (Manoleas, 2008). Thus, not only is behavioral health stigma preventing Latino/as from accessing care but it is potentially interfering with their relationship with their primary care physician and becoming a barrier to physical wellbeing. However, as Latino/as become more acculturated they are more likely to view behavioral healthcare favorably and are more interested in receiving behavioral healthcare (Cabassa et al., 2007; Nadeem et al., 2007). Despite this, stigma remains and they continue to be apprehensive about psychiatric medications and continue to prefer treatment from their primary care physicians. This complex intersection of beliefs and culture poses a unique opportunity for primary care physicians and behavioral health practitioners to implement IBHC as a way to potentially reduce stigma, provide culturally sensitive services, and fulfill the need.

With stigma surrounding behavioral health services impacting attendance to medical appointments (Vega et al., 2010), it is important to note that Latino/as with behavioral health concerns are at greater risk for physical health concerns (Hellerstein et al., 2007). A recent meta-analysis found that Latino/a patients with SMI are at greater risk for developing diabetes and metabolic syndrome than their peers without SMI and White and African American patients with SMI (Carliner et al., 2014). Further, Latino/as with asthma were more likely to have had psychological distress in the past year and over their lifetime than those without asthma (Arias, Becerra, & Becerra, 2015). Even more troubling is that Latino/as are already the population with the lowest healthcare access and Latino/as with behavioral health concerns are far less likely to

receive appropriate medical care (Liao et al., 2011). When this is combined with the belief that improving physical health will improve behavioral health (Jimenez et al., 2016), it is clear that stigma is not the only barrier to appropriate care for Latino/as.

Latino/a population struggle with language barriers, access and availability barriers, and stigma to receive the care they need. Currently, they remain one of the most underserved populations in the U.S. with regards to behavioral healthcare and this gap is continuing to grow. Clearly, there are continued challenges with connecting Latino/a populations to the appropriate behavioral health resources and IBHC may be the first step in reducing these behavioral health disparities.

African American behavioral health. African American urban populations also experience behavioral health disparities for similar reasons to Latino/as. Recent figures estimate that African Americans have lower lifetime prevalence of anxiety and mood disorders but are more likely to experience chronic symptoms, greater symptom severity, and greater functional impairment (Gibbs et al., 2013; Himle, Baser, Taylor, Campbell, & Jackson, 2009; Williams et al., 2007). While there is limited research about the use and effectiveness of IBHC within African American clinic populations, stigma and limited access to care have been well researched (Ayalon & Alvidrez, 2009; Rao, Feinglass, & Corrigan, 2007). Additionally, many diagnostic tools and interventions have been poorly adapted to minority populations resulting in misdiagnosis and treatment (Green et al., 2012). Urban African Americans are also more likely to live in areas with fewer behavioral health providers and have lower rates of being insured, further limiting access to necessary care (VanderWielen et al., 2015). Preference for religious coping and racial injustices perpetrated by the behavioral health system have played a role in the stigma associated with behavioral healthcare in the African American community (Ward,

Wiltshire, Detry, & Brown, 2013; Williams & Williams-Morris, 2000). As a result, African Americans utilize the necessary behavioral health services at lower rates than non-Latino/a Whites (Ault-Brutus, 2012; Stockdale et al., 2008).

Dating back to post-revolutionary period, mental illness has a long history of being poorly diagnosed and treated in African Americans (Jarvis, 2012). African Americans have experienced periods of overdiagnosis, misdiagnosis, and underdiagnosis. Currently, measures are being validated in African American populations in an attempt to better understand the presentation of behavioral health concerns in African American communities. However, these measures, adapted from measures validated in White or European populations, still struggle to properly capture the cultural presentation of conditions like anxiety or depression, and many African American patients continue to be misdiagnosed (Goldstein et al., 2014; Jarvis, 2012; Markell et al., 2013; Williams, Wetterneck, Thibodeau, Duque, 2013). Additionally, when proper assessment and diagnosis is available, African Americans have similar rates of SMI to non-Hispanic Whites (Gibbs et al., 2013) but access behavioral health services at lower rates (Ayalon & Alvidrez, 2009). They are also less likely to be prescribed second generation psychotropic medications than White Americans (Puyat et al., 2013), which may lead to less effective treatment of their concerns. Further, research has suggested that African American patients may prefer to access behavioral health services through their primary care physician over psychiatry and do so at higher rates than non-Latino/a Whites (Snowden & Singitore, 2002). As a result, they may receive less specialty mental health services and disparities may continue to grow.

Not only are there disparities in identification of behavioral health concerns in African American individuals but many low socioeconomic status African American communities in

America are designated as underserved (HRSA, 2016; Wong, 2015). With a lack of access to the appropriate resources, stigma may continue to impede effective care. Research indicates that African American communities, more than other racial/ethnic communities, may hold beliefs that those with behavioral health concerns are dangerous and pose a risk to the community (Rao et al., 2007). Similar to Latino/a communities, African American communities stigmatize those with behavioral health concerns or accessing behavioral health services. Unlike Latino/as, some African Americans tend to view behavioral health concerns as a private family matter and do not feel it should be shared socially or medically, contributing to underreporting of symptoms and conditions (Carpenter-Song et al., 2010). Further, religion and spirituality plays an important role in many African American communities. As such, African Americans may turn to their religious leaders for assistance with psychosocial difficulties before turning to a behavioral health professional (Chatters et al., 2008). Religiosity may further reinforce the view that a person is weak or does not have strong faith if they turn to behavioral health professionals (Ward et al., 2013). Interestingly, African Americans who reported stronger ties to their church also reported fewer behavioral health concerns (Chatters et al., 2008).

Whether it is stigma or reduced access, African American patients with behavioral health needs continue to have low engagement in behavioral healthcare. This becomes particularly concerning as mental illness and lack of behavioral healthcare has been linked to poorer physical health in African American heart patients (Carliner et al., 2014). African Americans in the USA are less likely to have insurance than White Americans, while those with behavioral health concerns are less likely to attend regular medical appointments and having a greater risk of diabetes (Carliner et al., 2014; Liao et al., 2011). African American patients with behavioral health concerns and chronic medical conditions like HIV are also less likely to follow their

medical regimen (Beer, Mattson, Bradley, & Skarbinski, 2016). Further, research shows that African American patients are less likely to link mental and physical health, with behavioral health concerns often attributed to stress, family problems, or loss of a family member (Jimenez, Bartels, Cardenas, Daliwal, & Alergia, 2012). This failure to see a link between mental and physical health may further result in a lack of physical care when one is managing behavioral health concerns.

Further disparities in youth and women. Much of the current literature has focused on minority adults, particularly men. However, there is also research indicating that women and children face disparate behavioral health concerns healthcare and negative outcomes as a result.

Youth. Minority youth also experience disparate behavioral healthcare (Marrast, Himmelstein, & Woolhandler, 2016), particularly related to ability to access services and the amount of money spent on necessary behavioral healthcare services (Lé Cook, Barry, & Busch, 2013). Of note, the decreased access to behavioral healthcare in minority youth appears to be driven by difficulty initiating services. This may be complicated by the fact that parents who perceive stigma associated with their child's behavioral health concerns, may be less likely to engage in care as result of that stigma (Turner, Jensen-Doss, & Heffer, 2015). Minority children engaging in externalizing behaviors or who have internalizing symptoms are also seen to access psychosocial services at lower rates than their non-minority peers (Alegria et al., 2012; Malhotra et al., 2015). This may be the result of parent stigma and youth struggling to effectively communicate their needs. Further, most children access behavioral health concerns healthcare through their pediatrician, higher than any other population (Stewart et al., 2013). This makes IBHC ideal for increasing youth ability to access appropriate behavioral health concerns healthcare.

Not only are there barriers to accessing care but there are also limits to the ability to identify and provide appropriate care for minority children. Many child measures do not properly account of cultural and ethnic identity, as well as fail to account for the degree of acculturation in immigrant Latino/a children (Stewart, Simmons, & Habibpour, 2012). Further, presentation of depression or anxiety may be different in children making it harder for clinicians to identify (Green et al., 2012; Stewart et al., 2012). Youth may be at a further disadvantage as they may not have the ability properly communicate their needs and problems. While there have been increases in recognizing attention and externalizing behaviors across races, minority youth, particularly immigrant Latino youth, are less likely to access care for these behaviors (Akinbami, Liu, Pastor, & Reuben, 2011). Even when children do have an identified behavioral health concerns health concern, they are more likely than their peers without a behavioral health concerns health condition to be readmitted to a hospital within 30 days of discharge from a previous visit (Feng, Toomey, Zaslavsky, Nakamura, & Schuster, 2017). This demonstrates the added complexity that behavioral health concerns health conditions create in youth, which impact their health and medical costs, particularly if appropriate behavioral healthcare is not accessed. Thus, not only do minority youth face numerous barriers to accessing appropriate behavioral healthcare but once they are able to initiate services, they may face additional barriers to receiving culturally appropriate care.

Women. In addition to the above discussed stigma and disparities that affect Latino/as and African American communities, minority women face other barriers to appropriate behavioral healthcare. While women are more likely to be diagnosed with and treated for a behavioral health condition than men (World Health Organization, 2016a), ethnic minority women are less likely to identify a need for services and are less likely to access services even

when a need is identified (Kimerling & Baumrind, 2005). In some communities, strong African American women are looked on for support and feel that they cannot have their own psychosocial needs (Fouquier, 2011). Further, pregnant African American women are expected to rely on their family for support during their pregnancy and may be discouraged from receiving behavioral healthcare (O'Mahen, Henshaw, Jones, & Flynn, 2011). Finally, women with SMI are at greater risk for obesity and complications of obesity than women without SMI (Jonikas et al., 2016). Thus, women may be even more susceptible than men to the disparities faced by minorities.

Preliminary evidence suggests that IBHC may reduce some of the stigma of behavioral healthcare, possibly due to the colocation of services, option for counseling instead of medication, and connection to medical services. Continued efforts to reduce these disparities are beginning to include IBHC but the effectiveness of this type of intervention has yet to be fully explored. More information is needed to determine if IBHC is an effective way to meet the vast behavioral health disparities experienced by minority populations. Finally, the more holistic approach of family medicine and IBHC than traditional independent mental health practices may better serve the cultural needs of these populations.

Satisfaction as an Outcome for IBHC

Satisfaction, the fulfillment of one's needs or desires, is a key component to the success of the quadruple aim of healthcare for both patient and staff. For patients, satisfaction plays a role in improving their experience. Similarly, feeling like their needs are being met is important in improving the work life of clinicians. This study designs to better understand the role of satisfaction in the adoption and acceptance of IBHC services by both patients and staff.

Patient satisfaction. Patient satisfaction has long been viewed as a valuable piece of making healthcare work. Patients who feel like their needs and desires are being met are more likely to remain engaged in care (Funderburk et al., 2012). There is limited research showing that patients favorably view IBHC services and feel they are receiving better clinical care when IBHC is a part of their services (Ede et al., 2015; Funderburk et al., 2012). Further, patients report being more comfortable accessing behavioral health services through IBHC (Funderbunk et al., 2012). In a recent qualitative study of IBHC, patients identified six themes necessary to structure the emotional and physical space so that it meets their needs; holism, individuality, listening/heeded, caring, continuity of care, and empowerment (Greenfield et al., 2014). These studies highlight the value that IBHC provides to a medical practice as well as its ability to further meet patients' needs.

Staff satisfaction. A primary reason for adding the quality of staff work life to the health care aims was the belief that satisfied healthcare professionals provide better care to their patients (Bodenheimer & Sinksy, 2014). Recent research indicates that clinicians and support staff are very satisfied with the implementation of IBHC (Ede et al., 2015; Funderburk et al., 2012). Further, physicians reported that they were better able to provide medical care when they knew that the psychosocial and behavioral medicine needs of their patients were being met through IBHC (Funderburk et al., 2012). Physicians also found that IBHC allowed for treatment of behavioral health concerns that were typically outside their scope of practice as well as allowed for experiential learning from IBHC clinicians (Bentham et al., 2015).

Hayes E. Willis Health Center

Hayes E. Willis Health Center (HEW) is a family medicine practice affiliated with Virginia Commonwealth University Health System, that is tasked with reaching the medically

underserved area (MUA) on the southside of Richmond, Virginia (Figure 1). The primary area that it serves includes neighborhoods with significant minority populations namely African American and Latina/o, which are over-represented compared to the United States population in the clinic's patient population (Tables 1 and 2). Further, the clinic serves patients with Virginia Coordinate Care (VCC), which provides affordable health coverage to uninsured individuals in central Virginia through VCUHS locations and other community affiliates. VCC is not health insurance itself but aims to lower access to care for those who would otherwise have limited options for primary care and specialty medicine.

HEW provides a number of services to their patients, with the primary service being family medicine where physicians have training in pediatrics, obstetrics and gynecology, internal medicine, psychiatry and neurology, surgery, and community medicine. As a part of these services there are nursing visits, diabetes education visits, and an onsite lab. There is also an onsite pharmacy, which provides regular pharmacy services, and a PharmD chronic disease clinic for patients to meet with a pharmacist for medication management. This service is designed to improve medication adherence, provide education, and reduce the barriers and difficulties of taking medications to address chronic medical conditions. Finally, HEW has a full time social worker onsite, with the current social worker being trained in IBHC at HEW prior to starting in the role as the clinic social worker.

In March 2014, the VCU Primary Care Psychology Training Network (PCPTN) first began offering IBHC services at HEW on a warm-handoff basis, same-day referrals from medical staff. HEW fully adopted IBHC after initial feedback from staff indicating they found the IBHC services from the PCPTN to be acceptable and appropriate. With support from the Virginia Health Care Foundation and Richmond Community Memorial Foundation, in August

2014, the PCPTN launched comprehensive IBHC services including the addition of a psychiatric nurse practitioner one day a week. The PCPTN provided graduate student trainees in primary care psychology supervised by onsite licensed psychologists.

From the beginning, IBHC services at HEW were designed to be completely integrated into the clinic. PCPTN team members worked closely with HEW staff to educate them on what appropriate referrals were and how to assist patients in accessing care. All HEW staff was empowered to refer patients from the front desk staff to pharmacy to nursing and medicine. IBHC services were available to patients throughout the week with a typical week including two mornings and two afternoons of available IBHC appointments. Appointments were designed to be 30 minutes long with time allowed in between appointments for consultation and documentation. During a given semester, approximately six graduate students provided IBHC services at HEW. After 18 months at HEW, a total of 27 different PCPTN team members (24 psychology graduate students, two social workers, one psychiatric nurse practitioner) provided over 5,000 hours of coverage. Further, from the start the PCPTN provided bilingual services through bilingual providers (3 psychology graduate students and one social worker) or interpreter services.

IBHC services at HEW were also designed to be appropriate for the patient population. As such behavioral health and screening services are offered to all patients. Behavioral health services include psychiatry (through psychiatric nurse practitioner) and counseling. Counseling services target all types of traditional mental health concerns as appropriate for the setting and including depression, anxiety, grief, trauma, ADHD, and crisis services. Behavioral medicine services address concerns related to sleep, pain, substance use, adherence, and weight management. Patients under age 18 were also screened regularly for autism (ages 18 and 24

months) and internalizing/externalizing/attention problems from ages 5- 17. New mothers were also screened for post-partum depression at 2-weeks and 2-months post-partum. Finally, warm-handoffs were available anytime IBHC providers were onsite to immediately connect patients to IBHC services for any of the above needs. By designing services to be appropriate and acceptable to patients and providers at HEW, IBHC services exhibited high levels of integration from the start.

Statement of the Problem

Integrated behavioral health care is a growing practice in family medicine clinics. More and more physicians are recognizing the utility of being able to provide behavioral health services in conjunction with medical services. By providing IBHC in the context of family medicine, patients and staff feel that the clinics are providing better care for their patients (Bentham et al., 2015; Ede et al., 2015). Further, both patients and staff report being more satisfied with the care provided when IBHC is included (Ede et al., 2015; Funderburk et al., 2012). However, despite some encouraging studies showing benefits to patients and medical staff, there remains limited research into implementation of IBHC, particularly contextual factors associated with patient outcomes (Hunter et al., 2017). Without more studies examining the eight domains of implementation (acceptability, adoption, appropriateness, cost, feasibility, fidelity, penetration, and sustainability), there will continue to be a dearth of information of what makes IBHC services effective, how to continuously improve them, and how to justify them to policy makers.

There currently is only limited research to supporting these findings and few studies have conducted a thorough evaluation of IBHC implementation (Hunter et al., 2017; Lehmann et al., 2016). Further, most of the focus has been on traditional primary care practices that only see

adult patients and only two studies have examined IBHC in Latino/a populations (Bridges et al., 2014; Horevitz et al., 2015). However, family medicine is one of the broadest-reaching specialties, with more patients accessing medical care through a family physician than any other primary care. Family medicine sees diverse patient populations across ages while providing care for a significant range of conditions, often in locations where patients have limited access to care. Additionally, only a handful of studies have examined staff and patient satisfaction with IBHC services, none in the family medicine setting,(Funderburk et al., 2012; Goodie, Isler, Hunter, & Peterson, 2009; Katon et al., 1996; Runyan, Fonseca, Meyer, Oordt, & Talcott, 2003) and none have studied patient satisfaction at multiple time points using multiple methods. As outlined by Hunter et al. (2017), multiple methods are necessary part of research if the field is going to fully understand and describe the implementation of IBHC and the effects on patients and staff.

To meet this gap in the literature and taking into consideration the Quadruple Aim of Healthcare and eight principles for measuring IBHC implementation (Proctor et al., 2011), this study evaluated the impact of introducing IBHC services on a safety-net family medicine clinic. Specifically, this study looked at the principles related to initially launching IBHC services: acceptability, adoption, appropriateness, penetration, and feasibility. Further, this study examined the ability of IBHC to improve population health, patient experience, and staff work quality of life- part of the Quadruple Aim of Healthcare. As such the following aims and hypothesis will serve to study each of these noted healthcare aims and principles for IBHC implementation.

Aims and Hypotheses

The following aims were studied through the proposed hypotheses.

Aim 1. In an effort to show adoption, penetration, and appropriateness of IBHC services, Aim 1 seeks to describes the patient population who utilized IBHC services (attended at least one visit) and the differences between IBHC utilizers versus non-utilizers. Non-utilizers are patients who are registered at the clinic but did not attend a single IBHC visit, but they may have been referred to IBHC and canceled or no-showed their initial appointment. Underserved minority populations are seen to have different rates of accessing behavioral healthcare than non-Hispanic Whites (Ayalon & Alvidrez, 2009; Cook et al., 2016). As such, it is expected that the majority of patients who receive services will not have previously accessed behavioral healthcare or been properly diagnosed with a behavioral health condition. Limited research shows that when IBHC is available to minority patients, they access it at similar rates to non-Latino/a Whites (Bridges et al., 2015). IBHC services at the clinic in this study include visits for behavioral health clinicians, psychiatric nurse practitioner, and social work. As such, the following hypotheses are proposed.

Hypothesis 1. Adult and pediatric patients who have attended at least one IBHC visit (not including patients screened by behavioral health) will be more likely than clinic patients who have never attended an IBHC visit to:

a) Have more medical visits to the clinic during this study (March 2015- December 2016). A medical visit is defined as a visit where a patient was seen by physician or nurse-practitioner and does not include visits where the patient only saw a nurse, social work, a pharmacist, IBHC, or had labs drawn.
b) Be female than male.

Hypothesis 2. Because minority children access behavioral health services at lower rates, significantly more minority youth (ages 5-17) who use IBHC services will have no behavioral

health diagnosis and will not have previously accessed behavioral health services than White youth who have a prior diagnosis and have previously accessed behavioral health services.

Hypothesis 3. There will be significant differences in IBHC use and outcomes regarding patient race among IBHC patients such that:

a) A higher percentage of adult African American patients receiving IBHC services will have clinically significant depression and anxiety symptoms than other racial groups.
b) A higher percentage of minority IBHC patients of all ages will not previously have accessed behavioral healthcare services than White patients.
    i. Further, a higher percentage of minority patients of all ages with current behavioral health diagnoses will not have previously access behavioral healthcare than White patients.
c) Each racial group will access IBHC at a similar rate, relative to the total number of patients in that racial group in the entire clinic population.

Aim 2. To show improved patient behavioral health and appropriateness of IBHC services, Aim 2 examined the short- and long-term impact of IBHC on the two most common behavioral health referral concerns, depression and anxiety (Table 3). Patients will be followed throughout their care and outcomes will be measured with the following results expected.

Hypothesis 4. Patients who were actively involved with IBHC (at least three visits, with at least two occurring within a six-week span of each other) will have significant reductions in psychological distress at their final IBHC visit as indicated by lower scores on at least one of the following:

a) Patient Health Questionnaire-9 (PHQ-9)

b) Generalized Anxiety Disorder-7 (GAD-7)

c) Pediatric Symptom Checklist-17 (PSC-17)

Hypothesis 5. Patients who received at least three IBHC visits (with at least two occurring within a six-week span of each other) will have further significant reductions in psychological distress from the last treatment session to follow-up, at least three months after patient's final visit, as indicated by lower scores on at least one of the following:

a) Patient Health Questionnaire-9 (PHQ-9)

b) Generalized Anxiety Disorder-7 (GAD-7)

c) Pediatric Symptom Checklist-17 (PSC-17)

Aim 3. In an effort to examine the third and fourth aims of the quadruple aim of healthcare, Aim 3 will explore patient and staff satisfaction with IBHC services (Bodenheimer & Sinsky, 2014). Further, it will also address acceptability and feasibility of IBHC services. The following outcomes are expected as they relate to patients' perception of the services they have received and clinic staff's perception of work life. This patient portion of the study in Aim 3 was qualitative in nature, thus there are no associated hypotheses.

Hypothesis 6. Patients who have actively engaged with the IBHC team (at least three visits, with at least two occurring within a six-week span) will report, at three month or greater follow-up, high levels of satisfaction with the services they received.

Hypothesis 7. All clinic staff will report high levels of satisfaction with the behavioral healthcare provided by the IBHC team.

a) Further, medical staff will report increases in their medical efficiency, reduced provider burden, and an increase in their knowledge of their patients' needs since the inclusion of IBHC at the clinic.

Supplementary Analysis. While there is not a control or comparison sample available for the aim 2 hypotheses, there are previous study results from the same clinic prior to services being introduced (Sadock, et al., 2017). The previous study sampled patients from the waiting room and screened for depression and anxiety with a follow-up. An exploratory analysis using this data and data collected from the proposed study was undertaken to examine differences before and after IBHC services were made available at the clinic. Follow-up time for this study and the previous study were similar which provides improved ability to compare samples.

Methods

Participants

Participants for this study were patients of the Virginia Commonwealth University's (VCU) Primary Care Psychology Training Network (PCPTN) at the Hayes E. Willis Health Center (HEW) since services began at that location in March 2015 until data collection was completed at the end of December 2016. Further, participant satisfaction data was collected as part of a routine program evaluation of the PCPTN services and included a subset of the IBHC patient population who were selected based on the procedure outlined below. This evaluation is conducted as a part of a PCPTN training grant from Health Resources and Services Administration's (HRSA) Graduate Psychology Education program.

Clinic Patients. HEW provided medical services to more than 4,500 unique patients during the span of this study (Tables 1 and 2). Of these patients, 56.17% were Black or African American, 24.44% were White or European descent, 1.78% were of Asian descent, and 22.9% were Hispanic or Latino/a. Children under 18 made up 33.3% of the patients and 72.9% of child patients are Hispanic or Latino/a. Less than 4% of patients had private insurance, while 41% had Medicaid, 12.9% had Medicare, and 41.1% were uninsured. All patients had the ability to access

the PCPTN team at HEW but only the patients who attended appointments were included in this study. Patients primary and secondary presenting concerns for IBHC are found in Table 3.

Clinic Staff. The integrated team at the HEW family medicine clinic is made up of a variety of medical professions. Currently there are eight physicians, six nurses, three medical assistants, one social worker, one phlebotomist, and seven administrative staffers. The current staff provides physician, nursing, lab, pharmacy, and social work visits during weekdays. There is also a pharmacy on-site. HEW is also a training site and numerous medical students, medical residents, and pharmacy students, who participate in various rotations. Further, the PCPTN team staffs 15 clinical and counseling psychology doctoral students who provide IBHC services for a half day, five days a week.

Procedures

All data was collected routinely as a part of regular IBHC appointments with the PCPTN or as a part of regular program evaluations for the current HRSA grant that funds the PCPTN at this clinic. IRB approval was obtained before accessing patient medical charts or HRSA grant data.

Clinical Outcomes Data. The measures used to collect this data are described below. A variety of outcomes are measured on an ongoing basis as a part of regular medical and IBHC services at HEW. Behavioral health outcomes were collected regularly at IBHC appointments to evaluate patient progress. Follow-up behavioral health measures were administered via phone three to six months after a patient's final session with the PCPTN team. The follow-up phone calls for this study were conducted between August 2016 and December 2016. Patients did not have to be specifically treated for anxiety or depression but the below measures were routinely used for patients to monitor anxiety and depression levels as these are the two most common

referral reasons in this population (Table 3). Patients who were seen for behavioral medicine concerns (i.e. sleep, weight, smoking) typically completed these measures at their initial visit and then as warranted clinically. Behavioral health outcomes were entered into the medical chart and into REDCap for tracking, supervision, and evaluation purposes.

Satisfaction Data. Patient and provider satisfaction data is collected at regular intervals through a number of methods as a part of a program evaluation for the HRSA grant. Once a year, patients are contacted via phone regarding their satisfaction with IBHC services. These interviews are documented and reviewed collectively. Finally, a provider satisfaction survey is administered to the staff at HEW once a year. The survey was open for staff responses during November and December 2016

As part of a planned program evaluation of the clinical services, the follow-up phone calls were conducted with patients who have discontinued behavioral health services -- to evaluate and improve IBHC services, as required by Health Resource and Services Administration, who is funding these services. A database of patients last seen for IBHC services at least three months prior was created. For this portion of the study, data was only included for patients who had been seen by IBHC between March 2015 and August 2016 were included to ensure at least 3 months had passed prior to receiving follow-up phone calls. The patients' electronic medical charts are reviewed to identify those who had been received services primarily for anxiety and/or depression, and who have not returned for psychology services within the last three months. At least two phone call attempts were made for patients meeting these criteria. Patients were only invited to participate if direct contact is made; no messages are left on answering machines. Patients who agree to participate in the phone interview were asked questions about their current depression and anxiety symptoms (PHQ-9 and GAD-7,

respectively). They were also asked about any behavioral healthcare they have received since their previous visit. Finally, they were asked a series of questions about their satisfaction and view of the IBHC services. A note was entered into their chart to update their doctor about their current depression and anxiety symptoms. Patients who meet clinical levels of anxiety or depression were encouraged to schedule with IBHC and receive services. Patients endorsing suicidal ideation were appropriately referred or connected to services. The interviews were conducted by clinicians from the IBHC team and a script can be found in Appendix A. The interview was translated into Spanish for Spanish speaking patients. The same procedures were used for parents of children who accessed IBHC services. The PSC-17 was used to follow-up on progress since treatment. Detailed notes were taken about the phone interviews, which were used to evaluate the IBHC services to ensure patient needs and concerns are being properly addressed. As a part of this study, these notes were coded and analyzed for content themes.

Measures

Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 is a screening measure that assess depression symptoms in adults (Kroenke, Spitzer, & Williams, 2001). Patients select how frequently in the past two weeks they have experienced a list of nine depressive symptoms. Choices range from never to rarely to sometimes to often. Scores were calculated by assigning values zero through three to each choice, respectively, and then summing the items together. Total scores relate to the severity of depression; within normal limits (scores 0-4), mild (scores 5-9), moderate (scores 10-14), moderately severe (scores 15-19), and severe (scores 20-27). A score of 10 or higher indicates clinically significant levels of depression. This measure is intended to be administered every two weeks and on phone call follow ups (Pinto-Meza, Serrano-Blanco, Penarrubia, Blanco, & Haro, 2005). Analysis of the PHQ-9 across primary care

settings shows good reliability (Cronbach's α= .86- .89; Kroenke, Spitzer, Williams, & Löwe, 2010).

Generalized Anxiety Disorder-7 (GAD-7). The GAD-7 screens for anxiety symptoms in adults (Spitzer, Kroenke, Williams, & Löwe, 2006). Like the PHQ-9, patients indicate how frequently in the past two weeks they have experienced a list of seven anxiety symptoms. Choices range from never to rarely to sometimes to often. Scores were calculated by assigning values zero through three to each choice, respectively, and then summing the items together. Total scores relate to the severity of depression; within normal limits (scores 0-4), mild (scores 5-9), moderate (scores 10-14), and severe (scores 15-21). A score of 10 or higher indicates clinically significant levels of anxiety. This measure is intended to be administered every two weeks and is also administered as a part of the phone follow-ups. Analysis of the GAD-7 in primary care shows good reliability (Cronbach's α= .92; Kroenke, Spitzer, Williams, & Löwe, 2010).

Pediatric Symptoms Checklist- 17 (PSC-17). The PSC-17 is a 17-item questionnaire that screens for internalizing, attention, and conduct problems in children (Murphy, et al., 2016). Children ages 11-17 complete the questions themselves, while parents complete the screener for children under 11. There are three choices for each question; never, sometimes, often, scored 0-2 respectively. Subscales and a total score were summed from the responses with a total score over 15 indicating clinical concern. Scores over 5 on the internalizing subscale indicate impairment while attention and conduct subscales scores over 7 indicate impairment. This measure is repeatable and can be administered over the phone and in multiple languages.

Patient Satisfaction. Patient satisfaction and feedback is routinely measured at the clinic in two ways. First, once a year, patients for a week were given the opportunity to anonymously

complete a survey immediately following their IBHC visit. During 2016, this occurred in the second week of June. Patients rated how much they agree with a series of 15 statements about their experience that describe rapport, environment, acceptability of services, and satisfaction. Responses range from "Not at all True" to "Completely True" on a Likert scale ranging from 0 to 4. The survey was designed for the PCPTN and is used across clinics. No personal information is collected with the survey. It is completed on paper in the language of their choosing and placed in an envelope by the patient so that the clinician has no contact with it after completion. Second, at regular intervals patients who have not been seen for at least three months are contacted by phone to complete a brief interview asking about their satisfaction with services. Information is collected about the reason for their visit, satisfaction with the behavioral health clinician, and reason for stopping services. Staff conducting the phone surveys take notes on the conversation, which were reviewed upon completion of the call and saved anonymously. As noted above, the interviews included in this study occurred between August 2016 and December 2016 and included patients who had received services from March 2015 through August 2016.

Staff Satisfaction. As a part of same HRSA grant mechanism, HEW staff were asked to complete a measure designed for the PCPTN to assess satisfaction of medical staff and personnel working with PCPTN team members. This measure was adapted with permission from the Peak Vista Community Health Centers medical staff attitudes and perceptions questionnaire (Torrence et al., 2014). This measure assessed for satisfaction with the care provided by the PCPTN and impact on the staff of the PCPTN services. Questionnaires were administered anonymously but categorize the different positions (e.g. physician vs. non-physician staff). A copy of the measure can be found in Appendix B.

Medical Data. Patients charts were reviewed to retrieve demographic and visit data for medical and IBHC appointments. Psychiatric diagnoses were also retrieved from the chart and were defined as any behavioral health diagnosis listed in the patient's medical chart by one of the patient's providers that corresponded to an International Statistical Classification of Diseases and Related Health Problems- Tenth Edition (ICD-10) behavioral health condition (World Health Organization, 2016b). This data was collected from medical charts at the end of the study window and closest to patient final session or follow-up phone call to provide most up to date and accurate patient history. This data was provided by the Virginia Commonwealth University Health System in July 2017. Clinical information and patient totals were provided for patients seen between March 2015 and December 2016.

Data Analysis Plan

SPSS- Version 24 (IBM Inc., 2012) was used to conduct all analyses. Descriptive statistics were evaluated and correlations between primary outcome variables and demographic data tested. Any correlations between demographic data and outcomes were controlled for appropriately as each hypothesis is tested. Missing data was handled separately for each hypothesis.

Hypotheses 1, 2, and 3 sought to describe the population at the clinic and examine differences between sub-populations. For Hypothesis 1a, IBHC utilizers, patients who attended at least one scheduled IBHC appointment, were compared against non-utilizers, patients at HEW who had never attended a scheduled IBHC appointment, using an independent sample t-test to examine the average number of clinical visits. Analysis was conducted separately for youth (ages 17 and under) and adults (ages 18 and older). Similarly, for Hypothesis 1b, analysis was

conducted by age group (i.e. youth and adult) using a Chi square to examine whether IBHC utilizers were more likely to be male or female.

Hypothesis 2 was also examined using a Chi square. Only youth (<18 years old) who had attended a minimum of one IBHC appointment were included in analysis for Hypothesis 2. There was only one White case included in analysis resulting in the analysis being significantly under powered. Thus, Chi squares were used to evaluate differences between races on whether IBHC utilizers had a behavioral health diagnosis and whether patients had previously received behavioral health services. Further, the sub-hypotheses of Hypothesis 3 were examined using Chi squares to determine differences in race/ethnicity among IBHC utilizers. Hypothesis 3a used PHQ-9 and GAD-7 scores of 10 or higher to determine clinically significant symptoms of depression and anxiety, respectively.

Hypotheses 4 and 5 examined the behavioral health outcomes of IBHC services, specifically the most common diagnoses seen (i.e. depression and anxiety). Due to a lack of data and insufficient power, the PSC-17 was not analyzed with the GAD-7 and PHQ-9. Instead, descriptive statistics were conducted to provide a summary of the data available. Descriptive data about these patients can be found in Table 6. Patients included in these analyses were being treated for behavioral health concerns, including but not limited to anxiety and depression. Patients were selected for inclusion if they had completed at least three IBHC visits and had not been seen in clinic for at least three months (Figure 2). There were a number of patients eligible for inclusion in these analyses but some had missing data at various time points. On the PHQ-9, there were 26 cases at the initial, 13 at termination, and 40 at the follow-up that were missing. On the GAD-7, there were 27 cases at the initial, 13 at termination, and 40 at the follow-up that were missing. Since less than 50% of the cases were missing, Little's Missing Completely At

Random (MCAR) analysis was conducted (Little, 1988), which showed that data was missing completely at random for the PhQ-9 (X^2 = 13.42, p = .098). Thus, expectation maximization imputation was chosen to impute the missing values for both the PHQ-9 and GAD-7 (Gupta & Chen, 2011). A repeated measures analysis of variance (ANOVA) was conducted for each measure that included all three time points. All assumptions were met for both ANOVAs conducted.

Aim 3 was analyzed using a number of methods. Patients were included in Aim 3 if they had received a follow-up phone call from the IBHC clinicians. Patients receive follow-up phone calls if they have attended at least three visits and have not been seen for at least three months. First, Hypotheses 6 and 7 reported means and standard deviations for objective rating scales. Then, qualitative analysis of structured phone interviews with patients required multiple levels of analysis. Detailed notes were written for all interviews and reviewed by the interviewer for content and accuracy one additional time within 24 hours of completion of the interview. Inductive thematic analysis followed by content analysis was used to analyze the semi-structured interview notes (Braun & Clark, 2006; Vaismoradi, Turunen, & Bondas, 2013). Before either analysis could begin, responses that were connected to a specific question were compiled, while other responses were also grouped. First, an inductive thematic analysis was conducted on each group of responses by a single rater with knowledge and understanding of the project and population. Initially, broad semantic themes were coded in a first pass of the interviews. Then, these themes were reviewed for underlying latent themes. These themes where then compared across questions and refined. Next, these themes were reviewed by a second reviewer who was not familiar with the project or population. This reviewer examined the raw interview notes and

identified latent themes for subject matter and accuracy. Finally, a content analysis, reviewing the latent themes, was conducted to quantify these themes (Table 8).

Finally, the supplementary analysis compared the results of Sadock, et al. (2017) to the current study using independent means t-test to compare pre- and posttreatment anxiety and depression data across the two different conditions (pre-IBHC implementation or treatment as usual and post-IBHC implementation).

Results

Aim 1

Multiple analyses were conducted to examine Hypothesis 1. An independent t-test indicated that adult (ages 18 and older) IBHC patients (M= 10.19, SD= 6.74) had more medical visits at HEW than non-IBHC HEW patients (M= 4.24, SD= 3.70), t (3281)= 26.45, $p < .001$, r = .42. This was also reflect in youth (ages 17 and under), with IBHC patients (M= 7.44, SD= 4.86) having more medical visits than non-IBHC HEW patients (M= 3.63, SD= 3.00), t (1329)= 11.82, $p < .001$, r = .31. Further, a Chi square test of independence was preformed to examine the relation between patient sex and whether a patient had attend an IBHC appointment or not. In adult patients, this relation was significant, X^2 (1, N= 3283) = 8.13, p= .004, r = .05, with 13.2% of female HEW patients receiving IBHC services while only 9.8% of male patients received services. In youth, this relation was not significant, X^2 (1, N= 1331) = 1.27, p= .26, r = .03 with male (8.8%) and female (7.1%) patients accessing IBHC services at similar rates.

Hypothesis 2 used Chi squares to assess relations in pediatric IBHC patients. The relation between youth race/ethnicity and whether they had a previous behavioral health diagnosis was significant, X^2 (4, N= 80) = 20.29, p< .001, r = .50. Additionally, the relation between youth race/ethnicity and whether they had previous received behavioral health services was not

significant, X^2 (4, N= 80) = 8.99, p= .06, r = .36. However, when the relation between having a behavioral health diagnosis and having previously accessed behavioral health services was explored further significant relations were found for Latino/Hispanic youth, X^2 (1, N= 50) = 3.77, p= .05, r = .27. Of note, regardless of whether these youth had a behavioral health diagnosis, 88% had not previously received services. Further, 24% of the Latino/Hispanic youth seen for IBHC services at HEW had a behavioral health diagnosis (N=12) but had never received services prior to IBHC. However, this relation was not significant for African American or Black IBHC youth, X^2 (1, N= 26) = 2.75, p= .09, r = .33. However, 69.2% African American or Black youth (N= 24) that received IBHC had not previously received services and of those that received IBHC services who had a behavioral health diagnosis, 50% (N=13) had not previously received services.

The sub-hypotheses of Hypothesis 3 serve to examine the role that race/ethnicity play in patients seen by IBHC services at HEW. All hypotheses were analyzed using Chi squares. Hypothesis 3a found non-significant relations between adult patient race/ethnicity and clinically significant depression scores (PHQ-9 $\geq$ 10), X^2 (3, N= 127) = 4.09, p= .25, r = .18, or clinically significant anxiety scores (GAD-7 $\geq$ 10), X^2 (3, N= 127) = .58, p= .90, r = .12. It should be noted that across race/ethnicity there were relatively high rates of clinically significant depression (69.3%, N= 88) and anxiety (69.3%, N= 88) among all patients who completed these measures at their initial session with IBHC. Hypothesis 3b was broken down into two separate Chi square tests of independence. The first found a relation between patient minority racial/ethnic status and whether they had previously access behavioral health services before IBHC services, X^2 (1, N= 499) = 19.46, p < .001, r = .20. This was then expanded on by examining the relation of minority racial/ethnic status and previously receiving behavioral health services in patients with current

behavioral health diagnoses who had received IBHC services. This relation was also significant, X^2 (1, N= 323) = 11.96, p= .001, r = .19, such that 65.6% (N=158) patients of minority racial/ethnic status with a behavioral health diagnosis had not previously accessed behavioral health services prior to IBHC services, while 56.1% (N= 46) of White/Caucasian patients with behavioral health diagnoses had previously accessed behavioral health services prior to receiving IBHC services. Finally, Hypothesis 3c found that for pediatric patients there were significant differences in the rates that each race/ethnicity accessed IBHC services at HEW, X^2 (5, N= 1,331) = 17.82, p =.003, r = .12. The analysis was notable for 11.5% (N= 32) of African American/Black patients, 5.9% (N= 1) of White/Caucasian patients, 7.0% (N= 69) of Latino/a patients, and 7.3% (N= 3) of Asian patients receiving IBHC services at HEW. For adult patients, there were also significant differences in the rates that each race/ethnicity accessed IBHC services at HEW, X^2 (6, N= 3,283) = 50.10, p < .001, r = .12. The analysis was notable for 11.5% (N= 266) of African American/Black patients, 14.6% (N= 104) of White/Caucasian patients, 46.2% (N= 12) of Latino/a patients, 2.9% (N= 5) of Other patients, and 12.8% (N= 6) of Asian patients receiving IBHC services at HEW.

Aim 2

Aim 2 focused on specific IBHC patient behavioral health outcomes (i.e. depression and anxiety). Means and standard deviations for the PSC-17 are found in Table 4. Demographics of the total IBHC population were compared to patients included in the follow-up study. Follow-up patients had more male patients (Total Sample Male= 30.17%; Follow-up Sample Male= 73.3%) and patients attended more sessions (Total Sample Mean Number of Sessions= 2.92, SD= 3.28; Follow-up Sample Mean Number of Sessions= 5.33, SD= 3.94). Otherwise, no descriptive differences were observed.

After using expectation maximum imputation, 75 patients had data at the initial session, termination session, and follow-up call (Table 5). A repeated measures ANOVA with a Greenhouse-Geisser correction determined that mean GAD-7 scores differed statistically significantly between time points ($F(1.77, 130.63) = 65.65$, $p < .001$, $\eta_p^2 = .47$; Figure 3). Post hoc tests using the Bonferroni correction revealed a significant reduction from the initial visit GAD-7 scores (M= 14.22, SD= 4.70) to both the termination session scores (M= 11.08, SD= 5.23), p< .001, and the follow-up scores (M= 9.14, SD= 6.35), p< .001.There was also a significant reduction in scores from termination to follow-up, p< .001.

With regards to the PHQ-9, repeated measures ANOVA with a Greenhouse-Geisser correction determined that mean scores differed statistically significantly between time points ($F(1.78, 131.68) = 37.88$, $p < .001$, $\eta_p^2 = .34$; Figure 3). Post hoc tests using the Bonferroni correction revealed a significant reduction from the initial visit PHQ-9 scores (M= 13.98, SD= 4.96) to both the termination session scores (M= 12.10, SD= 5.89), p= .002, and the follow-up scores (M= 9.88, SD= 5.64), p< .001. There was also a significant reduction in scores from termination to follow-up, p< .001. Therefore, patients showed significant improvement on the GAD-7 and PHQ-9 from initial visit to termination, which was maintained at follow-up, 4-6 months later.

Aim 3

Aim 3 described patient and provider satisfaction with IBHC services. Patient satisfaction was captured through patient surveys and semi-structure interviews. 24 Patient satisfaction interviews were conducted with a demographically matched sample of patients at Hayes E. Willis. Of the 16 adults, 72% were African American, 18% were White, and 10% were Hispanic/Latinx with an average age of 50 years old (range 21-75). Eight parents of the children

treated by IBHC were interviewed with all patients being Latino/a with an average age of 8 (range 3-16). Parents were interviewed when the patient was under 18 years of age and interviews were conducted in Spanish when appropriate. Overall patients and their parents did rate indicate a moderately high level of satisfaction with IBHC services (N= 24, M= 2.97 on a 4-point scale, SD= 1.14). A number of themes were identified regarding services and they are presented in the order a patient would proceed through services (Table 8). Further, 25 patients completed the survey immediately following an IBHC visit. Of these patients, 23 completed the survey in English and two in Spanish. A breakdown of means and standard deviations for patient responses can be found in Table 9.

Patients were often not aware of services prior to hearing about BH from their doctor (50%). After hearing about services, they would be connected fairly quickly (typically less than a week) and found the process generally to be smooth. One third of patients were referred for multiple reasons, but the majority of patients were seen for behavioral health concerns with a quarter of patients also being referred for behavioral medicine and a quarter for other psychosocial reasons. Across questions it was apparent that a majority of patients found BH to be beneficial (66%-75%) and were able to readily identify a number of aspects of treatment as beneficial. Of particular note, patients found essential therapeutic factors like unconditional positive regard, non-judgmental listening, and clinicians creating a warm, safe space to talk to be helpful. Further, supportive counseling techniques (e.g. reflections, active listening, empathy) and behavioral therapy techniques (e.g. relaxation, behavioral activation, sleep hygiene, problem focused therapy, and homework) were reported to be important factors in reducing symptoms for most patients. One patient reported that the primary benefit they received was financial and medication support from social work while three other patients found social work support to

beneficial in addition to services from a behavioral health clinician. Finally, others found referrals to psychiatry to be helpful (12.5%, N= 3) as a part of their care.

When patients did not find BH to be beneficial they identified two common areas for why and suggestions for improvement. Many of these patients felt their concerns were not able to be addressed by BH due to either a biomedical cause requiring a biomedical solution or that their concerns were too complex. Other patients were also dissatisfied with the BH model employed at HEW, namely they would have preferred not to see trainee clinicians and/or preferred to see the same clinician every time. Patients who did not find BH beneficial were the ones most likely to stop due to being dissatisfied.

There were two other common themes for why patient stopped services. Notably, the first reason was that the patient had a positive outcome. For most patients, this was symptom reduction (37.5%) while a smaller subset of patients were referred to appropriate resources that were beneficial (i.e. social work, psychiatry, long term psycho-therapy). Other patients stopped returning to BH for reasons that were logistic in nature. Some patients had changes in their medical coverage (i.e. lost their insurance, change physicians) and no longer came to the clinic. Others still had schedules that were not compatible with the BH schedule, were unable to find transportation for their appointments, or had moved. Of these patients, many were still interested in services like BH but found they no longer had access. Patient's that still had access at HEW but had stopped for a logistic reason were able to schedule with BH again as a result of being contacted for the follow-up interview (20.8%). However, the show rate for these patients was low (20%).

Regarding HEW staff satisfaction with IBHC services, results indicated high overall satisfaction with all aspects of IBHC services (Table 7). Physicians (N= 5) and non-physician

staff (N= 9) completed the same questionnaire. The majority of the staff indicated that they interact with the Behavioral Health Team on most days that they work at HEW (N= 11). Notably, staff found that the quality of their work life was improved and that they experienced less work stress after the addition of IBHC. Further, staff strongly agreed that IBHC improves patient care and staff comfort in managing behavioral health concerns. In the open-ended questions, both physician and non-physician staff indicated that they desired to have behavioral staff onsite at all times. Additionally, some staff indicated a desire to have BH see all patients at the clinic and greater consistency among providers each patient sees.

Supplementary Analysis

Additional analyses were run comparing the sample from Sadock et al. (2017) that utilized HEW patients prior to the implementation of IBHC to the current sample (Figure 4). Two sample independent t-tests showed that baseline scores were not significant different from before the addition of IBHC (Sadock et al.) to afterward (current sample) for either the PHQ-9, $t(212) = .55$, $p = .58$, Cohen's $d = .081$ or the GAD-7, $t(212) = .94$, $p = .35$, Cohen's $d = .14$. However, there were significantly lower means for follow-up scores after the implementation of IBHC on both the PHQ-9 ($t(212) = 2.43$, $p = .016$, Cohen's $d = .36$) and the GAD-7 ($t(212) = 2.02$, $p = .04$, Cohen's $d = .29$).

Discussion

Through mixed methods, this study described the impact of introducing integrated behavioral healthcare (IBHC) to a family medicine practice in an underserved area. Family medicine physicians meet a significant need in many underserved areas around the country but even still may not be able to completely meet the needs of the patients they are serving, particularly when it comes to behavioral health care (AAFP, 2016). As this study showed, the

introduction of IBHC can begin to meet that need, with wide ranging benefits to patients and clinic staff. Through the three aims of this study, the patient population has been more completely described, behavioral health outcomes for IBHC patients have been presented, and patients and staff have provided feedback about their experience interacting with IBHC. Throughout the discussion of results, patient feedback will be included to provide an enriched view of the data.

In the first aim of this study, the population of the clinic was described (Tables 1 and 2). With regards to overall penetration into the patient population at HEW, 10.9% of all patients attended a behavioral health visit in the first 16 months of the IHBC service. It is difficult to know how this penetration compares as these rates are not typically reported in comparable studies. Overall, patients at HEW came from diverse racial/ethnic backgrounds and were almost 60% female, which was reflected in patients seen by the PCPTN for IBHC services. Of particular note, among the adult patients who received IBHC services, significantly more were female. While there were no sex differences between youth patients, this may be related to higher referral rates for males ages 11 and under for disruptive behaviors and higher referral rates for adolescent females for internalizing concerns, which matches national trends (Compass et al., 1997; Olfson, Blanco, Wang, Laje, & Correll, 2014). IBHC patients were also more likely to have more medical visits than non-IBHC patients, which indicates patients with behavioral health concerns are more likely to be higher utilizers of medical care. However, this may be beneficial to these patients as it is possible that they have more medical concerns or more complex presentations. Future research should explore the relation between medical visits, medical conditions, and behavioral health presentation and needs. Finally, highlighting the ability of IBHC services to reach a racial/ethnically diverse patient population that has historically experienced numerous

barriers to accessing behavioral healthcare, the Hayes patients attended a mean number of 3.14 IBHC sessions compared to a similarly racially/ethnically diverse population with a mean of 1.53 visits (Bridges et al., 2014).

There were a number of trends found in presenting concerns for patients as well. Adult patients primarily were seen due to anxiety or depression concerns (see Table 3). However, other common concerns included substance use, pain, sleep, and trauma history. This highlights that patients are using services for more than just behavioral health concerns, even though depression and anxiety are the most pressing concerns addressed. For children, behavioral concerns and parenting were the most common concerns identified, while anxiety and depression were other common presenting concerns. This reflects findings from Hypothesis 1 that suggest that adolescents are more commonly seen for internalizing concerns (i.e. anxiety, depression), while younger children are seen for externalizing concerns (i.e. ADHD, disruptive behaviors). For children, fewer behavioral medicine concerns (i.e. sleep, weight, pain) are found, with most families seeking IBHC services for behavioral health concerns.

When compared to the only other study of a safety net clinic with comparable trainee services (Bridges et al., 2014), there were a number of notable similarities and differences. First, Bridges et al. (2014) had a significant Latino/a population (60.1%), while the clinic in this study was more diverse across African American (59.7%), White (21.0%), and Latino/a (16.2%) populations, though 74.5% of youth (17 and under) were Latino/a. The Bridges et al. (2014) study did not examine referrals for non-mental health concerns but did report that 25.7% of their sample did not meet criteria for a mental health diagnosis, noting that these patients may have been referred for other reasons such as weight management or chronic pain. In the current study, the largest group of patients referred for non-mental health diagnoses were substance use (7.9%

of adult referrals) and chronic pain (6.5% of adult referrals). When comparing mental health diagnoses, Bridges et al. (2014) found depression (23.2%) and anxiety (18.6%) were their primary referral diagnoses, which was true of the current study though anxiety (31.8%) received more referrals than depression (28.2%) in adults. Both studies also included youth in their samples, however Bridges et al. (2014) did not separate their population by ages. In youth in the current study, ADHD/behavioral (30%; N= 81) and parenting (17.4%, N= 47) concerns were the primary referral concerns, while Bridges et al. (2014) found that child externalizing disorders were 7.6% of their total referrals (N= 87). However, Bridges et al. (2014) had 360 youth participants while the referral concerns for youth in the current study were based off of 270 unique visits. This may indicate a higher percentage of externalizing behavioral concerns in this clinic or that patients with externalizing concerns are more likely to return for follow-up visits. The current study was able to replicate and expand on findings from Bridges et al. (2014), demonstrating that traditional mental health concerns are significant referral reasons but that a significant minority are referred for behavioral medicine concerns. Both studies also demonstrate acceptability of IBHC services in minority populations that historically have stigma associated with behavioral health services.

With the release of the Surgeon General's report on behavioral health disparities in minority communities in 2001, increased focus and attention has been given to understanding these disparities and differences in care (U.S. Department of Health and Human Services, 2001). This study adds to the understanding of these disparities and their continued presence, particularly in medically underserved areas. In keeping with the findings of this report, this study found that adult patients of minority race/ethnic status were less likely to have previous access behavioral health services prior to receiving IBHC services. Further, minority IBHC patients

were also more likely to have a current behavioral health diagnosis than White/Caucasian IBHC patients. However, among youth, African American youth were more likely than Latina/o youth to have a current behavioral health diagnosis but no differences were found for access to prior treatment. In keeping with current literature, it should be noted that while there were no differences in rates of access, youth across races had accessed behavioral healthcare services at low rates (Lé Cook, Barry, & Busch, 2013). These results highlight the need for services for these patients and the continued disparities faced by patients despite efforts to reduce disparities. Prior to the introduction of IBHC services at HEW they had not been able to access them, suggesting that the introduction of IBHC services increased access and reduced barriers to receiving behavioral healthcare for these patients. However, race/ethnicity related findings of this study should be interpreted with caution due to small effect sizes in these analyses, likely due to limited number of White/Caucasian youth and Latino/a adult patients. While the sample was representative of the clinic, for better generalizability and understanding of race/ethnicity related differences future studies may want to sample multiple locations to more equally represent races/ethnicities.

Despite these limitations, the race/ethnicity related findings are particularly important since HEW provides services to a medically underserved minority population and highlights the behavioral health disparities faced by these patients on a number of levels. Minority patients with behavioral health concerns, particularly those that are not accessing services, have higher rates of medical comorbidities (Carliner et al., 2014; Liao et al., 2011). Having comorbid behavioral health and medical conditions adds complexity to a patient's presentation and care, may lead to increased medical costs, and impact patient health outcomes (Carliner et al., 2014; Liao et al., 2011). While this study did not examine these outcomes, it will be important for future studies to

factor these aspects into their examination of the impact of IBHC services on long-term patient outcomes. In addition, the lower rates of accessing services despite having a behavioral health condition may also be related to the stigma that is often associated with behavioral health services in Latina/o and African American communities (Rao et al., 2007). In light of behavioral health stigma, previous research has found that many minority groups prefer to access behavioral healthcare through their primary care physician (Snowden & Singitore, 2002). Thus, by providing patients IBHC services through HEW, access to care may have been increased and stigma related to behavioral healthcare may be reduced. This was a sentiment that was echoed by patient interviews, as a number of patients reported that they were pleased to find out that they could receive IBHC services at HEW as logistically IBHC services were easier to access and could receive the type of services they desired.

When screening measure scores were compared among different demographic groups of IBHC patients, no significant relations were found. Adult patients across race/ethnic statuses had clinically significant depression and anxiety scores at similar rates. These findings reflect previous research that finds when properly assessed, patients of all races/ethnicities experience behavioral health problems at similar rates (Gibbs et al., 2013). However, despite these similar rates of clinically significant scores, this study also found minority patients accessed behavioral health services at lower rates than White/Caucasian patients, which supports current literature (Ayalon & Alvidrez, 2009). As such, the introduction of IBHC services at HEW may reduce barriers to care for this medically underserved population.

One of the most significant findings of this study was that adult patients who received IBHC services made significant anxiety and depression treatment gains from initial to termination and follow-up sessions. This finding replicated previous research in primary care

practices that found reductions in anxiety and depression among IBHC utilizers (McFeature & Pierce, 2012; Sadock et al., 2014) and shows the value of extending IBHC services into family medicine when a smaller sample was measured. Further, patients held on to their improvements from initial session to follow-up at least three months after termination. Not only did patients show significant improvement but both depression and anxiety scores were below the clinical cutoff at follow-up. As seen in Figure 3, patient improvement appeared to be consistent over time, with similar decreases between initial and termination sessions and between termination and follow-up. These continued gains indicate that patients were able to continue to make gains after conclusion of treatment. Not only were the results significant but both analyses exhibited moderate effect sizes, indicating that these results are not simply an effect of sample size but instead show meaningful change across time points. It should be noted that expectation maximization was required to account for missing data, with almost 50% of patients missing one data point.

The findings in Aim 2 may be a result of patients continuing to apply skills learned after the final session. Further, these results show that patients can be effectively treated in four or less IBHC sessions and make significant treatment gains. Patients who completed follow-up interviews not only reported lower anxiety and depression but also reported that had learned new skills to manage their concerns (66.7%) and were able to do so on their own (50.0%). This is particularly significant as one goal of population based IBHC is to provide brief care designed to improve the general well-being of patients not just reduce symptoms. Future research may explore the possibility that response to treatment was slower for depression than anxiety or that behavioral interventions used in IBHC are more effective for anxiety.

Building from these analyses, the supplemental analysis compared clinic patients from before on-site IBHC services were available to patients who received IBHC services. Patients who received IBHC services showed significant treatments gains over patients who received treatment as usual prior to IBHC implementation. This was true for self-reported symptoms of both anxiety and depression. Further, it is notable that Sadock et al. (2017) samples were not significantly different between time points, while this study found significant reduction in symptoms on the GAD-7 and PHQ-9 from initial to termination session. Further, this study had a longer time in between time points (116.35 days) than the Sadock et al. study (56.20 days). The current study also had a higher percentage of male patients (73.3% male) compared to the Sadock et al. sample (26.6% male), otherwise samples were similar demographically (Table 6). It is conceivable that the results would change given more equal demographic comparisons but this result reflects other findings that IBHC provides improved care over treatment as usual (Bryan et al., 2012; Sadock et al., 2014; Sadock et al., 2017).

To further highlight the benefits and acceptability of IBHC, patient feedback about the services they received was solicited. First, a subset of patients completed a 15-item survey immediately following an IBHC visit. These patients reported very high levels of satisfaction in the services they received. Of note, patients found the information provided to be acceptable and reported that they would apply the learned skills. Patients also reported that they felt their clinician was supportive and trustworthy and they felt comfortable during the visit. This is an important distinction since there has historically been elevated stigma and mistrust of behavioral health services within African American and Latina/o communities (Cabassa et al., 2007; Ward et al., 2013). Not only did patients feel comfortable but they also reported that they were able to address important problems in session and their clinician listened to them and provided useful

support. These results show that, immediately following an IBHC visit, patients found IBHC services at HEW to be appropriate, meeting their needs in a fashion that was acceptable to them.

In keeping with the Quadruple Aim of Healthcare, when patients were called on the phone for follow-up at least three months later, 66.7% patients interviewed reported positive experiences with IBHC and high satisfaction with the services they received. They felt they had been well supported (41.7%), listened to (29.1%), and been an active participant in their care (75.0%). 37.5% of patients also noted improvements in functioning, which is perhaps more critical for many patients than symptom reduction on a measure. These patients also reported that behavioral therapy techniques were the most beneficial in improving their functioning and increasing their satisfaction with IBHC services at HEW. These results further highlight the acceptability of the services to many patients and that IBHC services are appropriate for most patients' needs. Further, this was true across racial/ethnic background, demonstrating the feasibility of implementing IBHC services within in a medically underserved family medicine clinic with an overrepresentation of minority patients.

By examining patient satisfaction at multiple time points through multiple methods, this study is able to provide a rich detail to the patient experience. While patients may be rating their experience as more favorable immediately following session versus three months later, patients clearly left an IBHC session feeling like they have a received a beneficial service. And even at follow-up, patients generally viewed these services favorably. However, the time between receiving IBHC services and follow-up interviews may have allowed patients to more fully process their sessions, allowed for them to have a chance to apply skills learned, and distanced them from the comfortable supportive feelings they reported immediately following session. This difference in patient report of experience depending on time-frame for reporting is an important

distinction in the reporting of patient satisfaction and one that to date has to date received no discussion true in IBHC literature. Funderburk et al., (2012) discuss how timing of surveys (delivered around 4 months later) may impact response rates and patient ability to recall their IBHC sessions but did not evaluate or discuss the impact of patients responding shortly after an IBHC session. IBHC clinicians are trained to provide a support, non-judgmental, warm environment for their patients, something that is reflected in the survey given immediately after session. These feelings and the connection to the clinician may cause patients to more favorably rate IBHC services and be optimistic for their ability to apply learned skills. These optimistic feelings may increase the likelihood of patients returning for follow-up session as well. However, many patients interviewed at follow-up (almost one year later on average) were distanced from the positive environment of the IBHC session. As such, they were able to reflect on their overall experience with IBHC services and the impact it had on their life over time, highlighting the specific skills that continued to be helpful as well as recognizing the limitations seen with IBHC services. Both time points provide valuable information about the patient experience but the context of patient satisfaction data is important as well. The modest decline in patient satisfaction with IBHC services also points to the need for clinicians to deliver interventions that can be continued to be applied after a patient is no longer receiving services. When interventions are adapted to IBHC, there may be poor treatment fidelity related to maintenance and relapse prevention. However, this may be a confound of the setting and not a purposeful exclusion but rather a product of the brief nature of services where patients often will not return for follow-up if symptoms or functioning improves. Either way, future implementation and fidelity research (and practicing clinicians) should explore methods to include appropriate maintenance training into IBHC sessions to further benefit patients once they are no longer in

treatment. There should be a focus on setting, supportive connection to patients, and behavioral therapy techniques, which were reported by patients in this study to be the most important aspects of IBHC services.

Not only did patients find IBHC services to be acceptable, appropriate, and feasible, clinic staff found there to be benefits to these services. As one of the first studies to examine staff satisfaction and the only to include non-physician staff, this study provides a unique perspective on how staff view IBHC services. Their favorable view of IBHC indicates that the addition of IBHC to the clinic met important needs for patients and staff and adds further evidence for the inclusion of IBHC into family medicine clinics. Of note, staff expressed desires for increased IBHC presence as they felt IBHC improved the care provided to patients, increased their knowledge of treating behavioral health concerns, and reduced their work stress (see Table 7). This study replicated the results of the initial study to use the Peak Vista Community Health Centers medical staff attitudes and perceptions questionnaire, which showed high levels of physician satisfaction with IBHC services across questions (Torrence et al., 2014). There are some notable differences between these studies, particularly in that Torrence et al. conducted their study in a primary care practice only including physicians. By including the non-physician staff, this study was able to show that IBHC improves work quality of life for all clinic staff, not just physicians. It also expanded application of the survey to a new setting by examining staff in a family medicine clinic. Further highlighting the adoption of IBHC services, both physicians and non-physician staff reported that IBHC had become an integral part of the services offered at the clinic. This also has implications for sustainability of IBHC services, as staff may be more likely to refer patients when there has been good adoption of appropriate services. Future studies should strive to include a larger number of clinic staff members and also consider collecting

demographic and more detailed job information. Due to the modest size of the clinic and familiarity with the persons conducting the study, the questionnaires were designed to be completely anonymous to protect clinic staff, which did limit the ability to further understand how different clinic roles interact with IBHC.

Aim 3 provided rich information about the IBHC patients and clinic staff, with some data being collected through qualitative means as described above. By incorporating qualitative and quantitative methods into this study, a more comprehensive description was provided. However, there are limitations to the qualitative components of this study. Since the study used interviews collected for the PCPTN, only notes were available for analysis. While these notes were detailed and written by individuals with training, using notes does create a reduction in the data and limits the types of analyses that can be used. Further, for this study an individual with familiarity did the initial inductive thematic and content analyses which were then reviewed by someone who was not otherwise involved in the study. Ideally, multiple raters would conduct each analysis and then their results would be reviewed and further interpreted. Despite these limitations, this study met base guidelines for qualitative analysis rigor, allowing the results to be interpretable, providing a rich detail this study (Braun & Clark, 2006; Vaismoradi, Turunen, & Bondas, 2013).

While a breakdown of visits by type of behavioral health provider (i.e. social work, behavioral health clinician, psychiatric nurse practitioner) was not available, this study further demonstrated the effect of integrating diverse psychosocial services into a family medicine clinic. Of note, a small minority of patients interviewed indicated that patients benefited from social work (16.7%) and psychiatry services (12.5%) at the clinic. This suggests that the inclusion of all three types of psychosocial providers in IBHC allows for each specialty to focus on their specialty while learning from other providers. Future studies would benefit from

distinguishing between these services and more directly examining the differences in needs they address in the patient population, particularly depending on which psychosocial providers are present in the clinic. Currently, most studies have examined these three types of providers individually and the provider is often attempting to address needs that ideally would be addressed by all three specialties individually (Hunter et al., 2017; Rickerby & Roesler, 2016; Stanhope et al., 2015).

The results of this study support use of IBHC as part of meeting the Quadruple Aim of Healthcare as it relates to improving population health, enhanced patient experience, and improving clinic staff work life. IBHC is a form of population based care, designed to provide brief, evidence-based, problem-focused treatment to a wide range of patients in a medical setting. By showing significant reductions in scores from the beginning to the end of treatment that are maintained overtime with the number of patients seen for behavioral health services and the reported increased ability of medical staff to manage behavioral health concerns, it is likely that there has been an improvement in the clinic population's health. Further, both patients and clinic staff report improved patient satisfaction and experience. Finally, this study also met the relatively new fourth aim to improve clinic staff work life.

Regarding the eight targets of implementation (Proctor et al., 2011), this study was able to demonstrate adoption of IBHC services with effective clinic penetration, acceptability to clinic staff, patients, and other stakeholders, appropriateness of the services to meet patient and clinic needs, and feasibility of implementing IBHC services. While sustainability of IBHC services was not studied, the results indicated that sustaining these services will be a goal for this clinic. Both patients and staff found that the services met a need (appropriate), were provided in a way that was beneficial to patients and staff (acceptable and appropriate), and could be applied practically

to improve patient outcomes (Quadruple Aims, feasibility). However, it would be prudent to collect data about the cost savings and sustainability of introducing IBHC. Methods that would be meaningful and reinforce the benefits of IBHC include tracking patient medical visits over time for IBHC utilizers and non-utilizers, track patient emergency visits and inpatient hospitalizations, and examine patient flow to IBHC services. Further, future studies should examine the fidelity of the interventions being provided to ensure that implementation of IBHC services are truly effective. This is especially important as more clinicians adapt their training from other settings to the primary care setting. Thus, future fidelity studies should not just examine protocols designed for IBHC but also study application of interventions by clinicians trained in other settings first.

While the financial impact of IBHC services was not a focus of this study it is likely that there were cost savings to the clinic and local healthcare facilities. First, recent studies have shown that the presence of IBHC services is related to shorter physician visits, increased number of patients seen in a day, and increased physician billing (Gouge, Polaha, Rogers, & Harden, 2016). Thus, it is likely that physicians were able to be more efficient with patients, handing off patients with significant psychosocial concerns and thus increasing revenue for the clinic. Notably, IBHC clinicians provided care for 67 patients in crisis, defined as a patient with suicidal or homicidal ideation where this is the primary focus of session. Further, 35 patients with SMI were treated by the IBHC team, where SMI is a chronic presentation of psychotic symptoms, bipolar disorder, or severe depression. Without IBHC services some of these patients may have presented to the emergency department for services instead of being stabilized and cared for in an outpatient setting. However, not only is there the cost of treating patients' behavioral health concerns but patients with behavioral health concerns have higher rates of comorbid medical

conditions and increased medical costs (Freeman, McGuire, Thomas, & Thayer, 2014). In fact, a recent study showed that by reducing behavioral health disparities in African American and Latino/a communities there was a reduction in medical inpatient hospitalizations and emergency visits, with estimated savings up to $1 billion nationwide (Cook, Liu, Lessios, Loder, & McGuire, 2015). Additionally, in keeping with the current opioid crisis faced by the United States today, IBHC services provided services for 133 patients with substance use problems. Many of these patients would not have had access to substance use treatment otherwise and untreated may have led to increased medical costs. Future research should also target the impact of introducing IBHC on healthcare costs. Finally, it should be noted that the IBHC services provided were provided without cost to the patient through grant funding from the Virginia Health Care Foundation and Health Resources and Services Administration. These grants covered the cost of 6 hours FTE of faculty supervision per week and 12 rotating doctoral students providing part-time coverage. These IBHC staff provided more than 1,700 sessions during the span of this study. Future studies are encouraged to work with local, state, and national funding sources to staff services appropriately or work with clinic leadership to appropriately fund the necessary positions given the benefit of the services to clinic patients.

As noted above, graduate students in clinical and counseling psychology doctoral programs provided the IBHC services. The use of graduate students has its benefits and limitations. These students provided these services as a part of their training program allowing them to be provided without a charge to the patients. However, a limitation to the use of graduate students is that services were only provided 40-50% of the time the clinic was open, which may have reduced access to some patients. Clinic staff noted in their questionnaires that having full-

time IBHC services would be beneficial to patients. Future programs should consider this when launching services, so as to maximize penetration of their services.

This study provides important information and has a number of valuable strengths. First, this is one of the first studies to examine the impact of fully integrating behavioral health services into a family medicine clinic. Much of the current research focuses either on adult or pediatric primary care clinics. Since family medicine physicians receive psychiatry training, there are potentially greater benefits to family medicine patients when integrating behavioral healthcare. Further, this study examined implementation of IBHC to medically underserved racial/ethnic minorities as a way to reduce barriers to accessing behavioral health care. Few prior studies have used mixed methods to accomplish this. This study reported on multiple aspects of the patient population and treatment outcomes across ages in the clinic and compared IBHC utilizers to non-IBHC utilizers. Throughout the main analyses of this study, moderate effect sizes were found further indicating good fit of the data and highlighting the significance of the results. Further, this study incorporated feedback, both qualitative and quantitative, from patients and clinic staff. This provided a more robust picture of how establishing IBHC impacts all levels of the clinic.

Due to the retrospective nature of this study, there are a number of limitations that should be considered and expanded upon in future research. First, much of Aim 1 was based off of chart review and retroactive records searches. This lead to higher rates of missing data, which impacted what comparisons could be made (i.e. no behavioral health information for non-IBHC HEW patients). Further, much of the data was dichotomous (i.e. whether patients had accessed previous services) thus limiting the ability to engage in more advanced statistical modeling. With more categories or continuous variables, more complex relations could be examined between

study variables (i.e. what type of previous services, what behavioral health diagnosis). Missing data and lack of cases may have also led to a number of Chi square test being non-significant as they did not meet the assumption of five cases per cell. This also led to some lower effect sizes in Aim 1, as there was limited data available to effectively make comparisons. Additionally, the retrospective nature limited outcomes analysis in Aim 2 to anxiety and depression as there was not sufficient data to examine other patient outcomes, whether patient report (e.g. pain ratings, cigarettes smoked, sleep) or biometric data (e.g. patient weight, diabetes outcomes). Finally, staff satisfaction levels may be elevated as a result of such good/high level integration, which may not be representative of national levels.

With regards to the Aim 2, there were a number of limitations. First, due to the nature of the study, there was not an ability to randomly assign participants to groups or have a control group at the clinic. By including random assignment and more rigorous methods to the IBHC treatment group, treatment fidelity can be examined while studying the effect of IBHC on outcomes. With regard to outcomes, this study was limited in its scope and did not include other common referral reasons such as chronic pain and substance use. In addition, depending on when patients completed the survey in session they may report artificially high (or low) scores as a result of participation in the session. Future studies would benefit from separating research from clinical work to reduce bias. This also applies to Aim 3, as patients and providers were aware that the PCPTN was conducting the research and providing the services. Aim 3 conducted interviews with patients and surveyed staff using methods that had no or limited validation, respectively. Due in part to how new the fourth aim of healthcare is, there is limited research into staff satisfaction and thus limited measures available to understand staff beliefs around the acceptability, appropriateness, and adoption of IBHC services. Continued use of the tools like the

Peak Vista Community Health Centers medical staff attitudes and perceptions questionnaire will help to provide a standardized picture of staff satisfaction across clinics and settings (Torrence et al., 2014).

Conclusion

This study confirmed that the integration of behavioral healthcare into a family medicine clinic makes a significant impact on the patient population. Patients that had not previously accessed behavioral health services were able to do so. Further, these patients experienced improvements in function, symptom reduction, and reported moderately high levels of satisfaction with the services they received. Staff also reported positive effects of the introduction of IBHC services on their work quality of life as well as on the patient population. While there is room to expand this research, this study demonstrated the importance of integrating behavioral healthcare into family medicine clinics, particularly in medically underserved areas. Future studies and clinical applications of IBHC would benefit from establishing a clear plan to monitor outcomes and collect implementation data (Hunter et al., 2017). Notably, many healthcare systems are interested in cost reduction as well as ensuring feasible and sustainable services. The field's ability to move IBHC services forward providing necessary access to behavioral health for more patients is dependent on its ability to effectively study implementation of IBHC across diverse contexts.

References

Advancing Integrated Mental Health Solutions Center (2017). Collaborative Care. Retrieved September 11, 2017, from https://aims.uw.edu/collaborative-care.

Ai, A. L., Pappas, C., & Simonsen, E. (2015). Risk and protective factors for three major mental health problems among latino american men nationwide. *American Journal of Men's Health, 9*(1), 64-75.

Akinbami, L. J., Liu, X., Pastor, P. N., & Reuben, C. A. (2011). Attention deficit hyperactivity disorder among children aged 5-17 years in the united states, 1998-2009. *NCHS Data Brief, (70)*, 1-8.

Alegria, M., Canino, G., Shrout, P. E., Woo, M., Duan, N., Vila, D., . . . Meng, X. L. (2008). Prevalence of mental illness in immigrant and non-immigrant U.S. latino groups. *The American Journal of Psychiatry, 165*(3), 359-369. doi:10.1176/appi.ajp.2007.07040704

Alegria, M., Lin, J. Y., Green, J. G., Sampson, N. A., Gruber, M. J., & Kessler, R. C. (2012). Role of referrals in mental health service disparities for racial and ethnic minority youth. *Journal of the American Academy of Child and Adolescent Psychiatry, 51*(7), 703-711.e2. doi:10.1016/j.jaac.2012.05.005

American Academy of Family Physicians. (2016). Family medicine specialty. Retrieved from http://www.aafp.org/about/the-aafp/family-medicine-specialty.html

Angstman, K. B., Phelan, S., Myszkowski, M. R., Schak, K. M., DeJesus, R. S., Lineberry, T. W., & van Ryn, M. (2015). Minority primary care patients with depression: Outcome disparities improve with collaborative care management. *Medical Care, 53*(1), 32-37. doi:10.1097/MLR.0000000000000280

Arias, D., Becerra, B. J., & Becerra, M. B. (2015). Racial and ethnic differences in asthma and mental health among US adults: Results from the national survey on drug use and health. *The Journal of Asthma, 52*(7), 715-720.

Asarnow, J. R., Rozenman, M., Wiblin, J., & Zeltzer, L. (2015). Integrated medical-behavioral care compared with usual primary care for child and adolescent behavioral health: A meta-analysis. *JAMA Pediatrics, 169*(10), 929-937. doi:10.1001/jamapediatrics.2015.1141 [doi]

Ault-Brutus, A. A. (2012). Changes in racial-ethnic disparities in use and adequacy of mental health care in the United States, 1990–2003. *Psychiatric Services, 63*(6), 531-40. doi: 10.1176/appi.ps.201000397

Ayalon, L., & Alvidrez, J. (2007). The experience of black consumers in the mental health system--identifying barriers to and facilitators of mental health treatment using the consumers' perspective. *Issues in Mental Health Nursing, 28*(12), 1323-1340. doi:787700852 [pii]

Becker Herbst, R., Margolis, K. L., Millar, A. M., Muther, E. F., & Talmi, A. (2016). Lost in translation: Identifying behavioral health disparities in pediatric primary care. *Journal of Pediatric Psychology, 41*(4), 481-491. doi:10.1093/jpepsy/jsv079 [doi]

Bentham, W. D., Ratzliff, A., Harrison, D., Chan, Y. F., Vannoy, S., & Unutzer, J. (2015). The experience of primary care providers with an integrated mental health care program in safety-net clinics. *Family & Community Health, 38*(2), 158-168. doi:10.1097/FCH.0000000000000067 [doi]

Bodenheimer, T., & Sinsky, C. (2014). From triple to quadruple aim: Care of the patient requires care of the provider. *Annals of Family Medicine, 12*(6), 573-576. doi:10.1370/afm.1713

Bortolotti, B., Menchetti, M., Bellini, F., Montaguti, M. B., & Berardi, D. (2008). Psychological interventions for major depression in primary care: A meta-analytic review of randomized controlled trials. *General Hospital Psychiatry, 30*(4), 293-302. doi:10.1016/j.genhosppsych.2008.04.001

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3* (2), 77-101. http://dx.doi.org/10.1191/1478088706qp063oa

Bridges, A. J., Andrews, A. R.,3rd, Villalobos, B. T., Pastrana, F. A., Cavell, T. A., & Gomez, D. (2014). Does integrated behavioral health care reduce mental health disparities for latinos? initial findings. *Journal of Latina/o Psychology, 2*(1), 37-53. doi:10.1037/lat0000009

Bridges, A. J., Gregus, S. J., Rodriguez, J. H., Andrews, A. R., Villalobos, B. T., Pastrana, F. A., & Cavell, T. A. (2015). Diagnoses, intervention strategies, and rates of functional improvement in integrated behavioral health care patients. *Journal of Consulting and Clinical Psychology, 83*(3), 590-601. doi:10.1037/a0038941

Bryan, C. J., Corso, M. L., Corso, K. A., Morrow, C. E., Kanzler, K. E., & Ray-Sannerud, B. (2012). Severity of mental health impairment and trajectories of improvement in an integrated primary care clinic. *Journal of Consulting and Clinical Psychology, 80*(3), 396-403. doi:10.1037/a0027726

Cabassa, L. J., Lester, R., & Zayas, L. H. (2007). "It's like being in a labyrinth:" hispanic immigrants' perceptions of depression and attitudes toward treatments. *Journal of Immigrant and Minority Health, 9*(1), 1-16. doi:10.1007/s10903-006-9010-1

Carliner, H., Collins, P. Y., Cabassa, L. J., McNallen, A., Joestl, S. S., & Lewis-Fernandez, R. (2014). Prevalence of cardiovascular risk factors among racial and ethnic minorities with

schizophrenia spectrum and bipolar disorders: A critical literature review. *Comprehensive Psychiatry, 55*(2), 233-247. doi:10.1016/j.comppsych.2013.09.009

Cigrang, J. A., Rauch, S. A. M., Mintz, J., Brundige, A., Avila, L. L., Bryan, C. J., Goodie, J. L., & Peterson, A. L. (2015). Treatment of active duty military with PTSD in primary care: A follow-up report. *Journal of Anxiety Disorders, 36*, 110–114. doi: 10.1016/j.janxdis.2015.10.003

Compas, B. E., Oppedisano, G., Connor, J. K., Gerhardt, C. A., Hinden, B. R., Achenbach, T. M., & Hammen, C. (1997). Gender differences in depressive symptoms in adolescence: Comparison of national samples of clinically referred and nonreferred youths. Journal of Consulting and Clinical Psychology, 65(4), 617-626. http://dx.doi.org/10.1037/0022-006X.65.4.617

Cook, B. L., Liu, Z., Lessios, A. S., Loder, S., & McGuire, T. (2015). The costs and benefits of reducing racial-ethnic disparities in mental health care. *Psychiatric Services, 66* (4), 389-96. doi: 10.1176/appi.ps.201400070

Cook, B. L., Trinh, N. H., Li, Z., Hou, S. S., & Progovac, A. M. (2016). Trends in racial-ethnic disparities in access to mental health care, 2004-2012. *Psychiatric Services (Washington, D.C.).* doi:10.1176/appi.ps.201500453 [doi]

Cooper, L. A., Gonzales, J. J., Gallo, J. J., Rost, K. M., Meredith, L. S., Rubenstein, L. V., . . . Ford, D. E. (2003). The acceptability of treatment for depression among african-american, hispanic, and white primary care patients. *Medical Care, 41*(4), 479-489. doi:10.1097/01.MLR.0000053228.58042.E4

Corso, K. A., Bryan, C. J., Corso, M. L., Kanzler, K. E., Houghton, D. C., Ray-Sannerud, B., & Morrow, C. E. (2012). Therapeutic alliance and treatment outcome in the primary care

behavioral health model. *Families, Systems & Health : The Journal of Collaborative Family Healthcare, 30*(2), 87-100. doi:10.1037/a0028632

Cowley, D. (2015) Teaching Integrated Care. *Academic Psychiatry, 39,* 422-424. doi: 10.1007/s40596-015-0351-8

Craig, S., Frankford, R., Allan, K., Williams, C., Schwartz, C., Yaworski, A., Janz, G., & Malek-Saniee, S. (2016). Self-reported patient psychosocial needs in integrated primary health care: A role for social work in interdisciplinary teams. *Social Work in Health Care, 55*(1), 41-60. doi: 10.1080/00981389.2015.1085483.

Crowley, R. A., & Kirschner, N. (2015). The integration of care for mental health, substance abuse, and other behavioral health conditions into primary care: Executive summary of an american college of physicians position paper. *Annals of Internal Medicine, 163*(4), 298-299.

Davis, D., Corrin-Pendry, S., & Savill, M. (2008). A follow-up study of the long-term effects of counselling in a primary care counselling psychology service. *Counselling & Psychotherapy Research, 8*(2), 80-84. doi:10.1080/14733140802007863

de Voursney, D., & Huang, L. N. (2016). Meeting the mental health needs of children and youth through integrated care: A systems and policy perspective. *Psychological Services, 13*(1), 77-91. doi:10.1037/ser0000045

Drummond, N., Abbott, K., Williamson, T., & Somji, B. (2012). Interprofessional primary care in academic family medicine clinics: Implications for education and training. *Canadian Family Physician Medecin De Famille Canadien, 58*(8), e450-8. doi:58/8/e450 [pii]

Ede, V., Okafor, M., Kinuthia, R., Belay, Z., Tewolde, T., Alema-Mensah, E., & Satcher, D. (2015). An examination of perceptions in integrated care practice. *Community Mental Health Journal, 51*(8), 949-961. doi:10.1007/s10597-015-9837-9 [doi]

Ell, K., Aranda, M. P., Xie, B., Lee, P. J., & Chou, C. P. (2010). Collaborative depression treatment in older and younger adults with physical illness: Pooled comparative analysis of three randomized clinical trials. *The American Journal of Geriatric Psychiatry : Official Journal of the American Association for Geriatric Psychiatry, 18*(6), 520-530. doi:10.1097/JGP.0b013e3181cc0350 [doi]

Ell, K., Katon, W., Xie, B., Lee, P. J., Kapetanovic, S., Guterman, J., & Chou, C. P. (2011). One-year postcollaborative depression care trial outcomes among predominantly hispanic diabetes safety net patients. *General Hospital Psychiatry, 33*(5), 436-442. doi:10.1016/j.genhosppsych.2011.05.018 [doi]

Feng, J. Y., Toomey, S. L., Zaslavsky, A. M., Nakamura, M. M., & Schuster, M. A. (2017). Readmission After Pediatric Mental Health Admissions. *Pediatrics,* Epub ahead of print. doi: 10.1542/peds.2017-1571

Fouquier, K. F. (2011). The concept of motherhood among three generations of african american women. *Journal of Nursing Scholarship, 43*(2), 145-153. doi:10.1111/j.1547-5069.2011.01394.x [doi]

Fraser, K., & Oyama, O. (2013). Knowledge of psychotropics and prescribing preferences of family physicians: A preliminary study. *Academic Psychiatry : The Journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry, 37*(5), 325-328. doi:10.1176/appi.ap.12090160 [doi]

Freeman, E., McGuire, C. A., Thomas, J. W., & Thayer, D. A. (2014). Factors affecting costs in Medicaid populations with behavioral health disorders. *Medical Care, 52,* Supplement 3, 60-66. doi: 10.1097/MLR.0000000000000075

Funderburk, J. S., Fielder, R. L., DeMartini, K. S., & Flynn, C. A. (2012). Integrating behavioral health services into a university health center: Patient and provider satisfaction. *Families, Systems & Health : The Journal of Collaborative Family Healthcare, 30*(2), 130-140. doi:10.1037/a0028378

Gibbs, T. A., Okuda, M., Oquendo, M. A., Lawson, W. B., Wang, S., Thomas, Y. F., & Blanco, C. (2013). Mental health of african americans and caribbean blacks in the united states: Results from the national epidemiological survey on alcohol and related conditions. *American Journal of Public Health, 103*(2), 330-338. doi:10.2105/AJPH.2012.300891 [doi]

Goodie, J. L., Isler, W. C., Hunter, C., & Peterson, A. L. (2009). Using behavioral health consultants to treat insomnia in primary care: A clinical case series. *Journal of Clinical Psychology, 65*, 294–304. doi: 10.1002/jclp.20548

Gouge, N., Polaha, J., Rogers, R., & Harden, A. (2016). Integrating Behavioral Health into Pediatric Primary Care: Implications for Provider Time and Cost. *Southern Medical Journal, 109*(12), 774-778. doi: 10.14423/SMJ.0000000000000564

Green, J. G., Gruber, M. J., Kessler, R. C., Lin, J. Y., McLaughlin, K. A., Sampson, N. A., . . . Alegria, M. (2012). Diagnostic validity across racial and ethnic groups in the assessment of adolescent DSM-IV disorders. *International Journal of Methods in Psychiatric Research, 21*(4), 311-320. doi:10.1002/mpr.1371

Green, B. L., Watson, M. R., Kaltman, S. I., Serrano, A., Talisman, N., Kirkpatrick, L., Campoli, M. (2017). Knowledge and Preferences Regarding Antidepressant Medication Among

Depressed Latino Patients in Primary Care. *Journal of Nervous and Mental Disease, 205*(12), 952-959. doi: 10.1097/NMD.0000000000000754.

Gupta, M. R. & Chen, Y. (2011). Theory and Use of the EM Algorithm. *Foundations and Trends in Signal Processing, 4* (3), 223-296. http://dx.doi.org/10.1561/2000000034

Haack, L. M., Kapke, T. L., & Gerdes, A. C. (2016). Rates, associations, and predictors of psychopathology in a convenience sample of school-aged latino youth: Identifying areas for mental health outreach. *Journal of Child and Family Studies, 25*(7), 2315-2326.

Haibach, J. P., Beehler, G. P., Dollar, K. M., & Finnell, D. S. (2014). Moving toward integrated behavioral intervention for treating multimorbidity among chronic pain, depression, and substance-use disorders in primary care. *Medical Care, 52*(4), 322-327. doi:10.1097/MLR.0000000000000098 [doi]

Health Resources and Services Administration. (2016). Medically underserved Areas/Populations. Retrieved from http://www.hrsa.gov/shortage/mua/

Himle, J. A., Baser, R. E., Taylor, R. J., Campbell, R. D., & Jackson, J. S. (2009). Anxiety disorders among african americans, blacks of caribbean descent, and non-hispanic whites in the united states. *Journal of Anxiety Disorders, 23*(5), 578-590. doi:10.1016/j.janxdis.2009.01.002

Horevitz, E., Organista, K. C., & Arean, P. A. (2015). Depression treatment uptake in integrated primary care: How a "warm handoff" and other factors affect decision making by latinos. *Psychiatric Services (Washington, D.C.), 66*(8), 824-830. doi:10.1176/appi.ps.201400085

Hunter, C. L., & Goodie, J. L. (2012). Behavioral health in the department of defense patient-centered medical home: History, finance, policy, work force development, and evaluation. *Translational Behavioral Medicine, 2*(3), 355-363. doi:10.1007/s13142-012-0142-7

Hunter, C. L., Funderburk, J. S., Polaha, J., Bauman, D., Goodie, J. L., Hunter, C. M. (2017). Primary Care Behavioral Health (PCBH) Model Research: Current State of the Science and a Call to Action. *Journal of Clinical Psychology in Medical Settings*. Advanced Online Publication. doi: 10.1007/s10880-017-9512-0

Institute for Healthcare Improvement (2017). The IHI Triple Aim. Retrieved September 11, 2017, from http://www.ihi.org/Engage/Initiatives/TripleAim/Pages/default.aspx

Interian, A., Ang, A., Gara, M. A., Link, B. G., Rodriguez, M. A., & Vega, W. A. (2010). Stigma and depression treatment utilization among latinos: Utility of four stigma measures. *Psychiatric Services, 61*(4), 373-379. doi:10.1176/appi.ps.61.4.373

Interian, A., Martinez, I. E., Guarnaccia, P. J., Vega, W. A., & Escobar, J. I. (2007). A qualitative analysis of the perception of stigma among latinos receiving antidepressants. *Psychiatric Services, 58*(12), 1591-1594.

Jarvis, G. E. (2012). Changing psychiatric perception of african-americans with affective disorders. *The Journal of Nervous and Mental Disease, 200*(12), 1031-1040. doi:10.1097/NMD.0b013e318275cf43

Jimenez, D. E., Burrows, K., Aschbrenner, K., Barre, L. K., Pratt, S. I., Alegria, M., & Bartels, S. J. (2016). Health behavior change benefits: Perspectives of latinos with serious mental illness. *Transcultural Psychiatry, 53*(3), 313-329. doi:10.1177/1363461516632388 [doi]

Katon, W., Robinson, P., Von Korff M., Lin, E., Bush, T., Ludman, E., Simon, G., & Walker, E. (1996). A multifaceted intervention to improve treatment of depression in primary care. *Archives of General Psychiatry, 53*, 924–932.

Kimerling, R., & Baumrind, N. (2005). Access to specialty mental health services among women in california. *Psychiatric Services (Washington, D.C.), 56*(6), 729-734. doi:56/6/729 [pii]

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*(9), 606-613. doi:jgi01114 [pii]

Kroenke, K., Spitzer, R. L., Williams, J. B., & Löwe, B (2010). The Patient Health Questionnaire Somatic, Anxiety, and Depressive Symptom Scales: a systematic review. *General Hospital Psychiatry, 32*(4), 345-359. https://doi.org/10.1016/j.genhosppsych.2010.03.006

Lagomasino, I. T., Dwight-Johnson, M., Green, J. M., Tang, L., Zhang, L., Duan, N., Miranda, J. (2017). Effectiveness of Collaborative Care for Depression in Public-Sector Primary Care Clinics Serving Latinos. *Psychiatric Services, 68*(4), 353-359. https://doi.org/10.1176/appi.ps.201600187

Larzelere, M. M. (2014). Behavioral interventions for office-based care: Interventions in the family medicine setting. *FP Essentials, 418*, 11-19.

Lé Cook, B., Barry, C. L., & Busch, S. H. (2013). Racial/ethnic disparity trends in children's mental health care access and expenditures from 2002 to 2007. *Health Services Research, 48*(1), 129-49. doi: 10.1111/j.1475-6773.2012.01439.x

Lehmann, F., Dunn, D., Beaulieu, M. D., & Brophy, J. (2016). Performance of an integrated network model: Evaluation of the first 4 years. *Canadian Family Physician Medecin De Famille Canadien, 62*(8), e448-56.

Lewis-Fernandez, R., Das, A. K., Alfonso, C., Weissman, M. M., & Olfson, M. (2005). Depression in US hispanics: Diagnostic and management considerations in family practice. *The Journal of the American Board of Family Practice, 18*(4), 282-296.

Lin, E. H., Von Korff, M., Katon, W., Bush, T., Simon, G. E., Walker, E., & Robinson, P. (1995). The role of the primary care physician in patients' adherence to antidepressant therapy. *JAMA, 273*(13), 1026-1031. doi:10.1001/jama.1995.03520370068039

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83*(404), 1198–1202. doi: 10.2307/2290157

López-Lanzaa, J. R., Villa Puente, M., Lopez Viderasa, R., Arribasc, I., Pandiellad, M. J., & Sineiroe, E. (2016). Management of a first depressive episode in the primary care setting. Use of antidepressants and referrals. *Semergen - Medicina de Familia 42*(2), 88-93. https://doi.org/10.1016/j.semerg.2014.10.019

Malhotra, K., Shim, R., Baltrus, P., Heiman, H. J., Adekeye, O., & Rust, G. (2015). Racial/Ethnic disparities in mental health service utilization among youth participating in negative externalizing behaviors. *Ethnicity & Disease, 25*(2), 123-129.

Manoleas, P. (2008). Integrated primary care and behavioral health services for latinos: A blueprint and research agenda. *Social Work in Health Care, 47*(4), 438-454. doi:10.1080/00981380802344480

Mark, T. L., Levit, K. R., & Buck, J. A. (2009). Datapoints: Psychotropic drug prescriptions by medical specialty. *Psychiatric Services (Washington, D.C.), 60*(9), 1167. doi:10.1176/appi.ps.60.9.1167 [doi]

McFeature, B., & Pierce, T. W. (2012). Primary care behavioral health consultation reduces depression levels among mood-disordered patients. *Journal of Health Disparities Research and Practice, 5*(2), 36-44.

Murphy, J. M., Bergmann, P., Chiang, C., Sturner, R., Howard, B., Abel, M. R., & Jellinek, M. (2016). The PSC-17: Subscale scores, reliability, and factor structure in a new national sample. *Pediatrics, 138*(3), 10.1542/peds.2016-0038. Epub 2016 Aug 12.

Nadeem, E., Lange, J. M., Edge, D., Fongwa, M., Belin, T., & Miranda, J. (2007). Does stigma keep poor young immigrant and U.S.-born black and latina women from seeking mental health care? *Psychiatric Services, 58*(12), 1547-1554. doi:10.1176/ps.2007.58.12.1547

National Center for Health Statistics. (2012). National ambulatory medical care survery. Retrieved from http://www.cdc.gov/nchs/data/ahcd/namcs_summary/2012_namcs_web_tables.pdf

Olfson, M. (2016). The rise of primary care physicians in the provision of US mental health care. *Journal of Health Politics, Policy and Law, 41*(4), 559-583. doi:10.1215/03616878-3620821

Olfson, M., Blanco, C., Wang, S., Laje, G., Correll, C. U. (2014). National trends in the mental health care of children, adolescents, and adults by office-based physicians. *JAMA Psychiatry, 71*(1), 81-90. doi: 10.1001/jamapsychiatry.2013.3074

Oyama, O., Burg, M. A., Fraser, K., & Kosch, S. G. (2012). Mental health treatment by family physicians: Current practices and preferences. *Family Medicine, 44*(10), 704-711.

Padwa, H., Teruya, C., Tran, E., Lovinger, K., Antonini, V. P., Overholt, C., & Urada, D. (2016). The implementation of integrated behavioral health protocols in primary care settings in project care. *Journal of Substance Abuse Treatment, 62*, 74-83. doi:10.1016/j.jsat.2015.10.002

Peek, C. J. and the National Integration Academy Council (2013). Lexicon for Behavioral Health and Primary Care Integration: Concepts and Definitions Developed by Expert Consensus. AHRQ Publication No.13-IP001-EF. Rockville, MD: Agency for Healthcare Research and Quality. Available at: http://integrationacademy.ahrq.gov/sites/default/files/Lexicon.pdf.

Pinto-Meza, A., Serrano-Blanco, A., Penarrubia, M. T., Blanco, E., & Haro, J. M. (2005). Assessing depression in primary care with the PHQ-9: Can it be carried out over the telephone? *Journal of General Internal Medicine, 20*(8), 738-742. doi:JGI05335 [pii]

Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R., & Hensley, M. (2011). Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda. *Administration and Policy in Mental Health and Mental Health Services Research, 38*, 65-76. doi: 10.1007/s10488-010-0319-7

Puyat, J. H., Daw, J. R., Cunningham, C. M., Law, M. R., Wong, S. T., Greyson, D. L., Morgan, S. G. (2013). Racial and ethnic disparities in the use of antipsychotic medication: a systematic review and meta-analysis. *Social Psychiatry and Psychiatric Epidemiology, 48*(12), 1861-72. doi: 10.1007/s00127-013-0753-4

Rao, D., Feinglass, J., & Corrigan, P. (2007). Racial and ethnic disparities in mental illness stigma. *The Journal of Nervous and Mental Disease, 195*(12), 1020-1023. doi:10.1097/NMD.0b013e31815c046e [doi]

Ray-Sannerud, B. N., Dolan, D. C., Morrow, C. E., Corso, K. A., Kanzler, K. E., Corso, M. L., & Bryan, C. J. (2012). Longitudinal outcomes after brief behavioral health intervention in an integrated primary care clinic. *Families, Systems & Health : The Journal of Collaborative Family Healthcare, 30*(1), 60-71. doi:10.1037/a0027029 [doi]

Runyan, C., Fonseca, V. P., Meyer, J. G., Oordt, M. S., & Talcott, G. W. (2003). A novel approach for mental health disease management: The Air Force Medical Service's interdisciplinary model. *Disease Management, 6*, 179–187. doi: 10.1089/109350703322425527

Sadock, E., Grinnell, R., Rybarczyk, B., & Auerbach, S. (2017). Initial and follow-up evaluations of integrated psychological services for anxiety and depression in a safety net primary care clinic. *Journal of Clinical Psychology, 73*(10), 1462-1481. doi: 10.1002/jclp.22459

Sadock, E., Auerbach, S. M., Rybarczyk, B., & Aggarwal, A. (2014). Evaluation of integrated psychological services in a university-based primary care clinic. *Journal of Clinical Psychology in Medical Settings, 21*(1), 19-32. doi:10.1007/s10880-013-9378-8 [doi]

Snowden, L. R., & Pingitore, D. (2002). Frequency and scope of mental health service delivery to african americans in primary care. *Mental Health Services Research, 4*(3), 123-130.

Society of Behavioral Medicine. (2016). Behavioral medicine. Retrieved from http://www.sbm.org/resources/education/behavioral-medicine

Spitzer, R. L., Kroenke, K., Williams, J. B., & Lowe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine, 166*(10), 1092-1097. doi:166/10/1092 [pii]

Stanhope, V., Videka, L., Thorning, H., & McKay, M. (2015). Moving toward integrated health: an opportunity for social work. *Social Work in Health Care, 54*(5), 383-407. doi: 10.1080/00981389.2015.1025122.

Stergiopoulos, V., Schuler, A., Nisenbaum, R., deRuiter, W., Guimond, T., Wasylenki, D., . . . Dewa, C. (2015). The effectiveness of an integrated collaborative care model vs. a shifted outpatient collaborative care model on community functioning, residential stability, and health service use among homeless adults with mental illness: A quasi-experimental study. *BMC Health Services Research, 15,* 348-015-1014-x. doi:10.1186/s12913-015-1014-x [doi]

Stockdale, S. E., Lagomasino, I. T., Siddique, J., McGuire, T., & Miranda, J. (2008). Racial and ethnic disparities in detection and treatment of depression and anxiety among psychiatric and primary health care visits, 1995-2005. *Medical Care, 46*(7), 668-677. doi:10.1097/MLR.0b013e3181789496 [doi]

Substance Abuse and Mental Health Services Administration (SAMHSA). (2014). *Results from the 2013 national survey on drug use and health: Summary of national findings.* (No. NSDUH Series H-50 HHS Publication No. SMA 15-4927).Substance Abuse and Mental Health Services Administration.

The University of Washington. (2016). AIMS center: Collaborative care. Retrieved from https://aims.uw.edu/collaborative-care

Torrence, N. D., Mueller, A. E., Ilem, A. A., Renn, R. N., DeSantis, B., Segal, D. L. (2014). Medical Provider Attitudes About Behavioral Health Consultants in Integrated Primary Care: A Preliminary Study. *Families, Systesms, and Health, 32*(4), 426-432.

U.S. Department of Health and Human Services (2001). Mental health: Culture, race, and ethnicity: A supplement to Mental Health: A Report of the Surgeon General. Rockville, MD. Retrieved from http:// www.surgeongeneral.gov/library/reports

Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences, 15* (3), 398-405. doi: 10.1111/nhs.12048

Vega, W. A., Rodriguez, M. A., & Ang, A. (2010). Addressing stigma of depression in latino primary care patients. *General Hospital Psychiatry, 32*(2), 182-191. doi:10.1016/j.genhosppsych.2009.10.008

Ward, E. C., Wiltshire, J. C., Detry, M. A., & Brown, R. L. (2013). African american men and women's attitude toward mental illness, perceptions of stigma, and preferred coping behaviors. *Nursing Research, 62*(3), 185-194. doi:10.1097/NNR.0b013e31827bf533

Wielen, L. M., Gilchrist, E. C., Nowels, M. A., Petterson, S. M., Rust, G., & Miller, B. F. (2015). Not near enough: Racial and ethnic disparities in access to nearby behavioral health care and primary care. *Journal of Health Care for the Poor and Underserved, 26*(3), 1032-1047. doi:10.1353/hpu.2015.0083 [doi]

Williams, D. R., Gonzalez, H. M., Neighbors, H., Nesse, R., Abelson, J. M., Sweetman, J., & Jackson, J. S. (2007). Prevalence and distribution of major depressive disorder in african americans, caribbean blacks, and non-hispanic whites: Results from the national survey of american life. *Archives of General Psychiatry, 64*(3), 305-315. doi:64/3/305 [pii]

Williams, D. R., & Williams-Morris, R. (2000). Racism and mental health: The african american experience. *Ethnicity & Health, 5*(3-4), 243-268. doi:10.1080/713667453 [doi]

Woltmann, E., Grogan-Kaylor, A., Perron, B., Georges, H., Kilbourne, A. M., & Bauer, M. S. (2012). Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: Systematic review and meta-analysis. *The American Journal of Psychiatry, 169*(8), 790-804. doi:10.1176/appi.ajp.2012.11111616 [doi]

Wong, S. L. (2015). Medically underserved populations: Disparities in quality and outcomes. *Journal of Oncology Practice, 11*(3), 193-194. doi:10.1200/JOP.2015.004259 [doi]

World Health Organization. (2016a). Gender and women's mental health. Retrieved from http://www.who.int/mental_health/prevention/genderwomen/en/

World Health Organization. (2016b). The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines. Geneva: World Health Organization.

Table 1

Demographic Data for HEW and IBHC Adult Patients

	Non-IBHC Patients (N=2,929)		IBHC Patients (N=401)	
	Mean/ Total	Std. Dev/ Percent	Mean/ Total	Std. Dev/ Percent
Age	50.23	15.18	48.41	13.35
Race				
Black or African American	2003	68.39%	263	65.59%
White or Caucasian	691	23.59%	118	29.43%
Asian	39	1.33%	4	.98%
Other	187	6.38%	16	3.99%
Unknown	9	.31%	0	0%
Ethnicity				
Latina/o	99	3.38%	16	3.99%
Sex (Female)	1825	71.87%	280	69.83
Total HEW Medical Appts	4.20	3.68	7.25	4.91
Black or African American	4.22	3.61	6.98	4.83
White or Caucasian	4.16	3.81	7.84	5.11
Asian	4.17	3.76	7.50	5.91
Other	4.77	4.79	7.31	4.60
Unknown	1.67	1.12	-	-
Latina/o	4.00	4.00	7.19	4.90
Total IBHC Appts	-	-	2.92	3.28
Current Mental Health Diagnosis*	-	-	276	68.84%
Prior Access to Mental Health Services	-	-	121	30.15%
Referral to IBHC for Mental Health	-	-	350	87.19%

* refers to mental health diagnosis at completion of study after IBHC services were present.
Note: Non-IBHC Patients did not attend a scheduled appointment with IBHC providers. IBHC appointments do not include warm handoffs or screening visits but refer only to scheduled visits.

Table 2

Demographic Data for HEW and IBHC Pediatric Patients

	Non-IBHC Patients (N=1,181)		IBHC Patients (N=103)	
	Mean/ Total	Std. Dev/ Percent	Mean/ Total	Std. Dev/ Percent
Age	7.33	4.55	9.00	4.52
Race/Ethnicity				
Black or African American	221	18.71%	30	29.13%
White or Caucasian	363	30.74%	33	32.04%
Asian	37	3.13%	2	1.94%
Other	559	47.33%	37	35.92%
Unknown	1	.08%	1	.97%
Ethnicity				
Latina/o	914	77.39%	70	67.96%
Sex (Female)	593	50.21%	43.69	43.69%
Total HEW Medical Appts	3.68	3.01	3.40	5.107
Total IBHC Appts	-	-	2.29	2.66
Black or African American	2.74	2.18	5.20	2.83
White or Caucasian	3.40	3.04	4.76	3.74
Asian	4.24	3.10	4.5	3.54
Other	4.19	3.17	5.43	3.63
Unknown	1.00	-	3.00	-
Latina/o	3.90	3.10	5.20	3.64
Current Mental Health Diagnosis*	-	-	49	47.17%
Prior Access to Mental Health Services	-	-	15	14.15%
Referral to IBHC for Mental Health	-	-	95	92.45%

* refers to mental health diagnosis at completion of study after IBHC services were present.
Note: Non-IBHC Patients did not attend a scheduled appointment with IBHC providers. IBHC appointments do not include warm handoffs or screening visits but refer only to scheduled visits.

Table 3

Presenting Concerns for Integrated Behavioral Health Patients

	Adult		Pediatric	
	Primary Concern	Secondary Concern	Primary Concern	Secondary Concern
Mental Health Concerns				
Anxiety/ Stress	358 (31.8%)	488	39 (14.4%)	54
Depression	318 (28.2%)	358	35 (12.9%)	39
Crisis Sessions	65 (5.8%)	0	2 (.7%)	0
Anger Management	42 (3.7%)	21	12 (4.4%)	6
Grief	25 (2.2%)	32	0 (0.0%)	0
Trauma	19 (1.7%)	41	10 (3.7%)	7
Psychosis/ Bipolar	18 (1.6%)	16	1 (.4%)	0
Developmental/ Cognitive Concerns	5 (.4%)	3	24 (8.9%)	13
Behavioral Concerns/ ADHD	2 (.2%)	0	81 (30%)	16
Parenting	1 (.1%)	0	47 (17.4%)	70
Behavioral Health Concerns				
Substance Use/ Abuse	89 (7.9%)	43	0 (1.9%)	0
Pain	73 (6.5 %)	86	0 (0.0%)	0
Sleep Difficulties	52 (4.6%)	40	5 (1.9%)	3
Tobacco	35 (3.1%)	11	0 (0.0%)	0
Nutrition/ Exercise	15 (1.3%)	14	14 (5.2%)	13
Medical Adherence	10 (.8%)	32	0 (0.0%)	0

Note: Data is across all IBHC visits (N= 1,573) and not unique patients (N= 499), with 177 appointments missing data.

Table 4

Initial Visit PSC-17 Scores for Pediatric Patients

PSC-17 Scale	Mean	Standard Deviation	Clinically Significant
Internalizing	2.07	2.37	1 (2.6%)
Externalizing	1.95	2.11	3 (7.9%)
Attention	3.16	2.39	6 (15.8%)
Total	7.37	5.67	9 (23.7%)

Note: N=38. Total scores 15 or greater, Attention and Externalizing scores over 7, and Internalizing scores over 5 indicate clinical significance.

Table 5

Descriptive Data for Aim 2

	PHQ-9: Mean (SD)	GAD-7: Mean (SD)
Initial	13.98 (4.96)	14.22 (4.71)
Termination	12.10 (5.89)	11.08 (5.28)
Follow-up	9.88 (5.64)	9.14 (6.35)

Note: Scores of 10 or higher are clinically significant on both GAD-7 and PHQ-9. N= 75

Table 6

Demographic Information for Aim 2

	Current Study Sample		Supplemental Sample from Sadock et al.	
	Mean/ N	Standard Deviation/ Percent	Mean/ N	Standard Deviation/ Percent
Age	50.28	13.20	49.35	9.88
Gender (male)	55	73.3%	37	26.6%
Race				
African American/Black	51	68.0%	91	65.5%
White	23	30.7%	42	30.2%
Latino/Hispanic	1	1.3%	-	-
Other	0	0%	5	3.6%
Time Between (days):				
Initial and Termination	116.35	97.53	56.20	37.37
Termination and Follow-up	349.52	130.57	-	-
Number of Visits	5.33	3.94	-	-

Note: Current Sample N= 75, Sadock et al. Sample N= 139

Table 7

Results of the Staff Satisfaction Survey

	All Staff (N=14)	Non Physician Staff (N= 9)	Physician Staff (N=5)
Overall satisfaction with IBHC?	4.64 (.497)	4.56 (.527)	4.80 (.447)
Better Quality of Work Life	4.33 (.888)	4.43 (.535)	4.20 (1.30)
Less Patient Related Stress	4.33 (1.16)	4.57 (.535)	4.00 (1.73)
Increased Confidence in care provided to patients	4.46 (.877)	4.63 (.518)	4.20 (1.30)
Improved Atmosphere of workplace	4.33 (1.16)	4.57 (.535)	4.00 (1.73)
Improved Staff communication	4.33 (.888)	4.57 (.535)	4.00 (1.73)
Using IBHC improves my efficiency as a healthcare provider.	4.58 (.669)	4.71 (.488)	4.40 (.894)
Using IBHC improves overall patient care.	4.69 (.480)	4.63 (.518)	4.80 (.447)
IBHC effectively helps patients address their mental health problems.	4.67 (.492)	4.57 (.535)	4.80 (.447)
Working with IBHC has increased my comfort in discussing mental health issues with patients.	4.58 (.669)	4.71 (.488)	4.40 (.894)
IBHC is an important part of Hayes E. Willis Health Center.	4.71 (1.07)	4.56 (1.33)	5.00 (.000)

Note: Scores were on a scale of 1-5 with higher scores indicating greater satisfaction/agreement

Table 8

Themes identified from patient interviews

	N (%)
Were you aware of behavioral health services at HEW prior to meeting with them? (Yes)	7 (29.2%)
What was your experience like getting started with behavioral health services? Did you see them the same day you were referred?	
Smooth process, seen as rapidly as desired	23 (95.8%)
Difficult process	1 (4.2%)
Do you feel like your behavioral health visits were beneficial? (Yes)	16 (66.7%)
Supportive counseling beneficial	9 (37.5%)
Behavioral therapy techniques beneficial	8 (33.3%)
Multiple providers not helpful	3 (12.5%)
How were your (child's) needs and concerns addressed by the behavioral health team? (Yes)	16 (66.7%)
The therapy provided was helpful	7 (29.2%)
Patient reported biological cause; IBHC cannot benefit them	2 (8.3%)
Required more services than IBHC could provide	2 (8.3%)
What was most helpful to you (your child)? What did you like best about working with behavioral health?	
Safe, warm environment; comfortable with clinicians	10 (41.7%)
Cathartic release and supportive counseling	7 (29.2%)
Learned beneficial skills	7 (29.2%)
Symptom reduction	5 (20.8%)
Nothing was helpful	4 (16.7%)
Do you feel that they understood your concerns/questions and were able to assist you in the way that you desired? (Yes)	18 (75.0%)
Problem too complex for IBHC	3 (12.5%)
Are there any ways that we could improve our behavioral health services? If, yes, what ways? (No)	18 (75.0%)
See same clinician each time	3 (12.5%)
Focus on the real problem; be understood better	3 (12.5%)
Next, can you tell me the main reason why you didn't come back to see us?	
Improved symptoms; aware could return if needed	12 (50.0%)
Logistic issues prevented return (i.e. transport, insurance)	11 (45.8%)
Dissatisfied with services	4 (16.7%)

Table 9

Descriptive Statistics for the Post-Visit Patient Satisfaction with Care Survey

Item (*N* = 25)	Mean	SD
1. My clinician seemed warm and supportive	3.52	.54
2. My clinician seemed trustworthy	3.56	.65
3. My clinician treated me with respect	3.72	.54
4. My clinician did a good job of listening	3.80	.50
5. I was able to express my feelings during the visit	3.76	.83
6. I talked about the problems that are bothering me	3.64	.90
7.The approach my provider used made sense	3.68	.85
8. I learned some new ways to deal with my problems	3.44	.91
9. I believe the visit was helpful to me	3.68	.74
10. Overall, I was satisfied with today's visit	3.72	.67
11. I plan to do what I told the clinician I would do before I come to the clinic for my next visit	3.80	.57
12. I intend to use what I learned in today's visit	3.60	.91
13. At times, my provider didn't seem to understand how I felt	.08	1.15
14. At times, I felt uncomfortable during the visit	.24	.26
15. I didn't always agree with my clinician	.08	1.11
Number of visits with PCP	3.64	2.80
Language of Completion	N	%
Completed in English	23	92.0
Completed in Spanish	2	8.0

Options: 0 = Not at all true; 1 = Somewhat true; 2 = Moderately true; 3 = Very true; 4 = Completely true

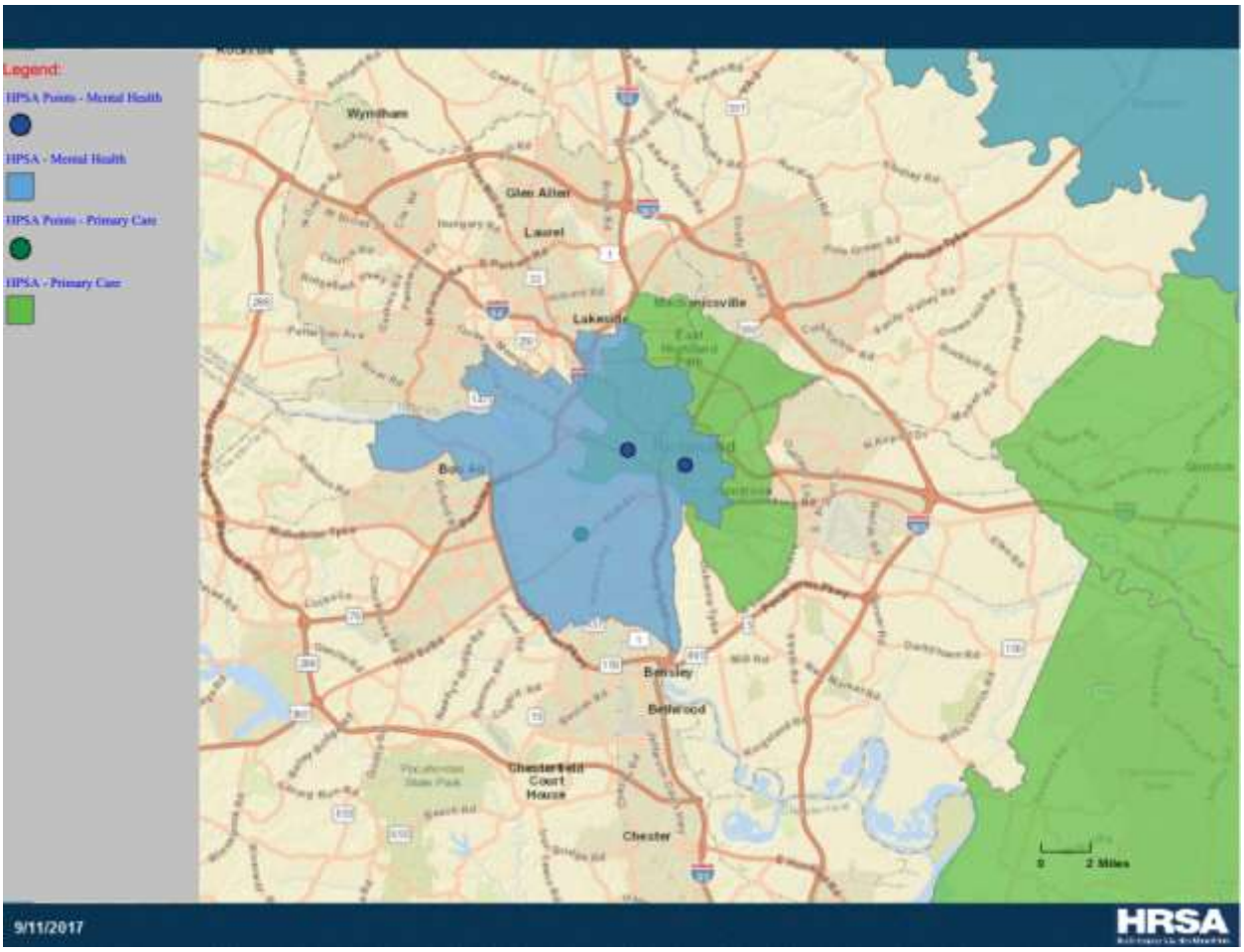

Figure 1. *Underserved areas in Richmond and the clinics serving them. HEW is the green dot located on the southside of Richmond.*

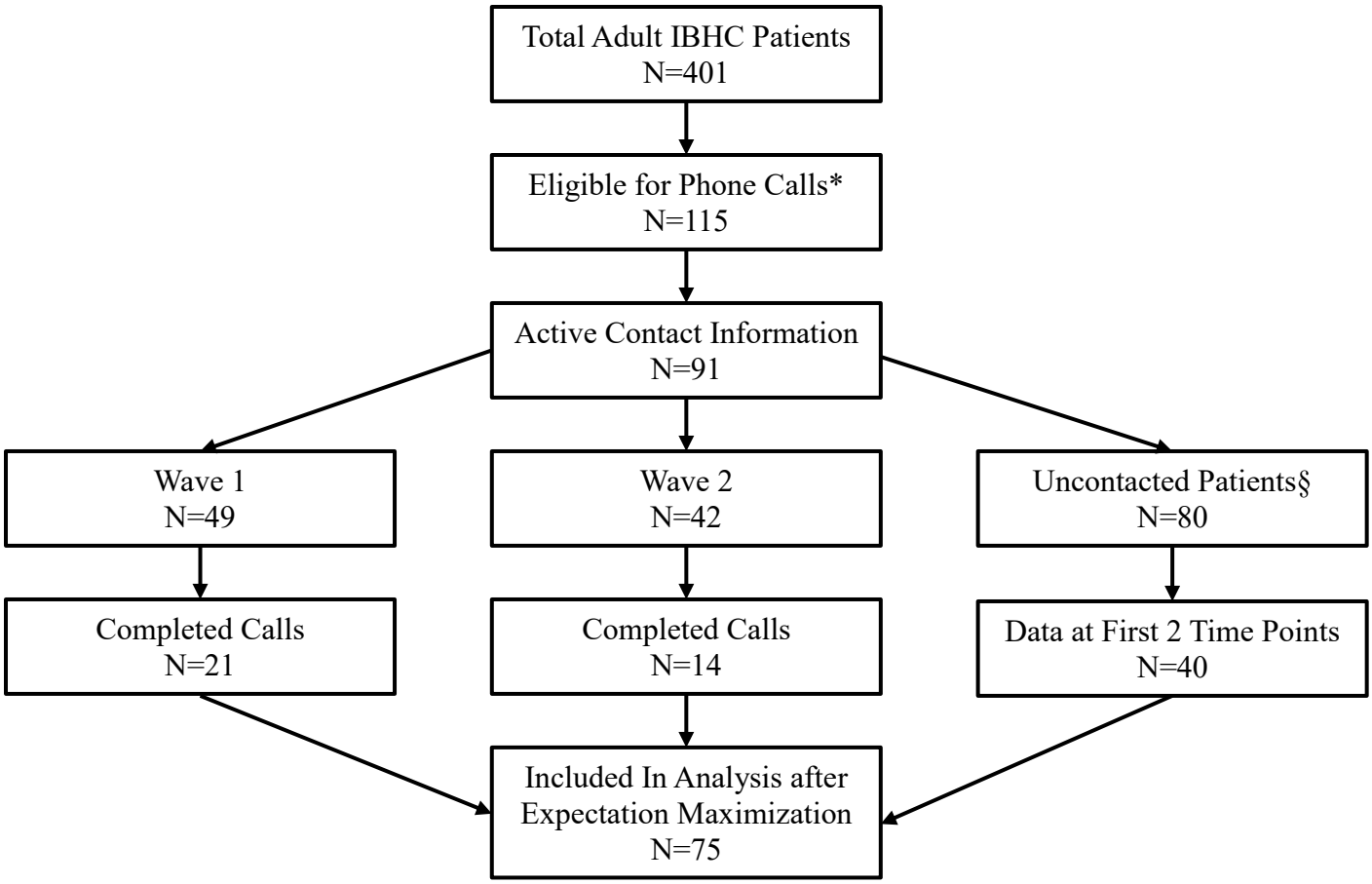

Figure 2. *Consort diagram showing patients included in Aim 2 analyses*
* Patients were eligible if they had attended at least three IBHC appointments and had not been seen for three months.
§ This includes patients that had active contact information but were unable to be reached after three attempts

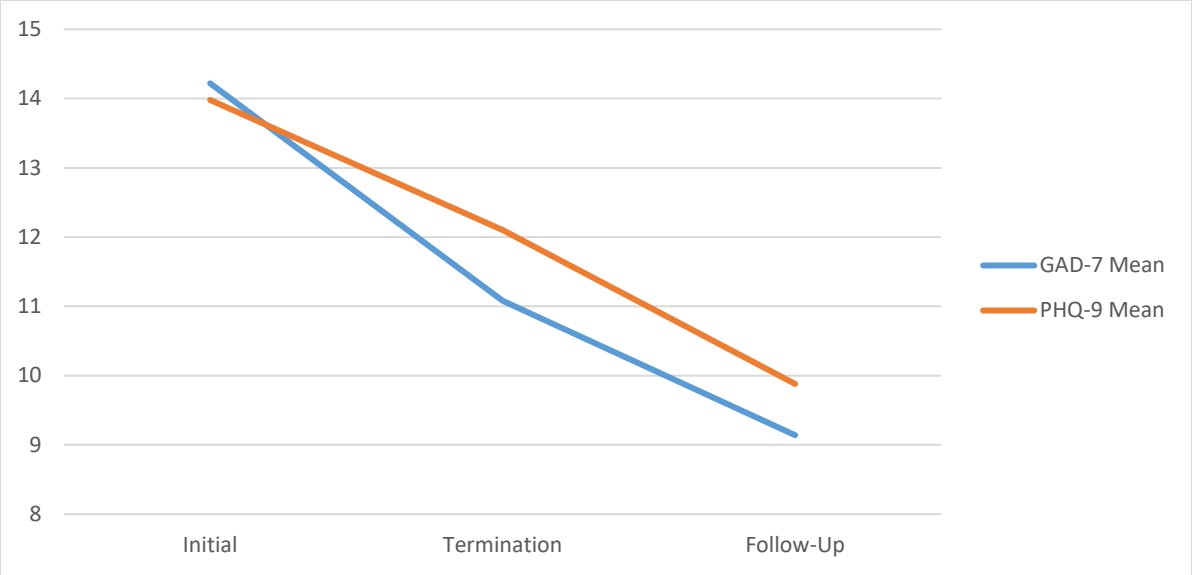

Figure 3. *Patient outcomes overtime*
Note: Clinical cutoff for both measures is 10.

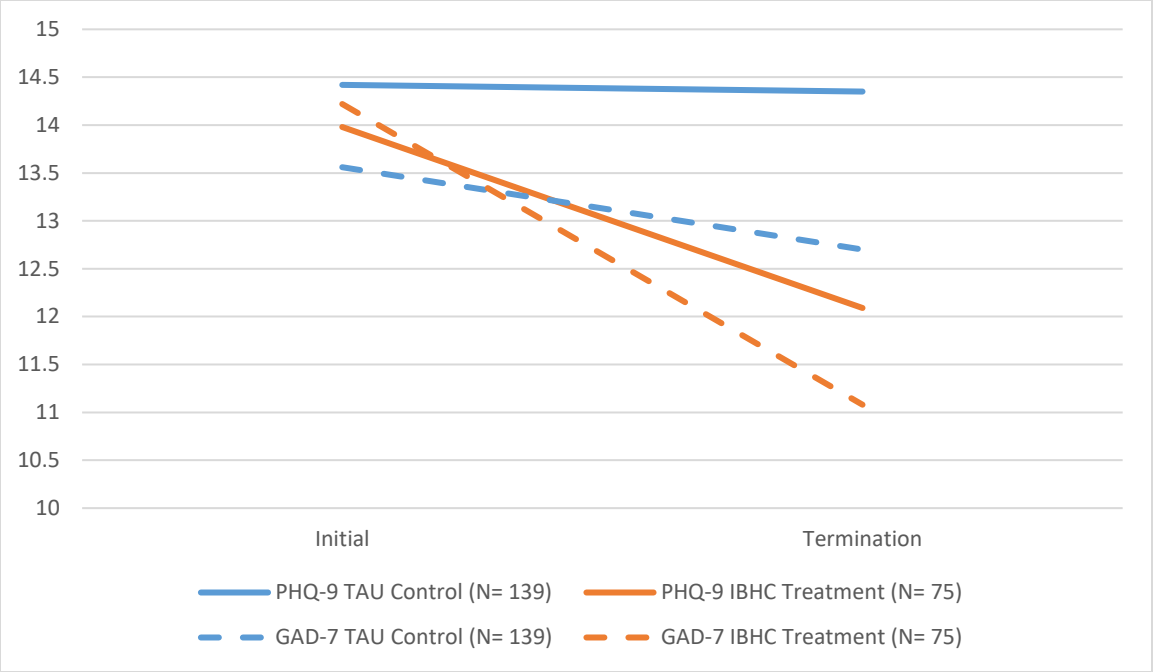

Figure 4. *Supplementary comparison to group receiving care as usual for same interval of time prior to and after the introduction of IBHC services*

Note. Clinical cutoff for both measures is 10. TAU= Treatment as Usual, which refers to participants in the Sadock et al. (2017) comparison study

Appendix A

Phone Script for follow-up evaluation with IBHC patients, with PHQ-9 and GAD-7

If needed to reassure patients:

- *Re-identify the clinic and physician who referred them for care.*
- *If they ask about your credentials – I am a graduate student trainee under Drs. Rybarczyk and Shaffer, they're my supervisors. If you'd like to call them the # is 828-1675.*

Hello (patient name), my name is (trainee name) and I'm calling from VCU to follow up on the behavioral health sessions we gave you at Hayes Willis Medical Center for enhancing your behavioral and emotional health. Do you have about ten minutes to talk? (If no: When would be a good time for me to call back?) Does this sound OK/shall we proceed?

Just as a reminder, we provided ## sessions to you in MONTH(S) of YEAR(S). What I'd like to do today is check in and see how you're doing by asking you the same questions we asked you in the clinic. Then I'll ask you about your experiences as a patient. Your answers will help us to evaluate our services and see how people are doing long-term. Everything you tell me today will be confidential and won't be shared with anyone without your permission. However, we will put a note in your chart so you doctor knows how you're currently doing.

Administer GAD-7 and PHQ-9 or PSC-17 (parent report for patient aged 17 and under)

Now I'd like to know how helpful our services were to you in addressing your mental health concerns. Please be honest, as we're trying to learn more to make sure our services are meeting the patients' needs at Hayes.

Did you feel our services were:
not at all helpful (1), a little helpful (2), medium/moderately helpful (3), or very helpful (4)

Why did you meet with behavioral health? Were you referred?

How were your needs and concerns were addressed by the behavioral health team?

Do you feel that they understood your concerns and were able to assist you in the way that you desired?

Were your questions and concerns answered?

Next, can you tell me the main reason why you didn't come back to see us? For example, did the problem get better, did you start getting care somewhere else, or did something else prevent you from continuing?

I'd also like to know if you've gotten any other treatment for your mental health since you came to see us. (If yes: What sort of treatment, medication or counseling? Was it from someone else at MCV, or did we refer you?) Are you applying for disability?

Finally, can you tell me whether you are still a patient with Hayes Willis Clinic at VCU?

****If patient scores a 10 or above on GAD and/or PHQ and is still a patient at HEW****
OK, so from what you've told me about your mood these days it looks like you are still experiencing some distress and might want to consider getting more treatment. Before I let you go I just want to make sure you know that you can come see us any time for an appointment. Would you like the clinic number (804-230-7777), or a referral number for somewhere else in the community (see below referral numbers)?

****If patient scores a 10 or above on GAD and/or PHQ and is no longer at a HEW patient:****
OK, so from what you've told me about your mood these days it looks like you are still experiencing some distress and might want to consider getting more treatment. Would you like a referral number for resources near you (see below referral numbers)?

****If patient reports suicidality:****
You said that you are having suicidal thoughts. I want to make sure that you are safe. Is there someone you could call for support? Here are numbers for national suicide hotlines: 1-800-784-2433 or 1-800-273-8255. If you are unsafe, it is always best to call 911 or go to the ER immediately. If you want to go to counseling, I can provide you with some local resources (see below).

Remember our services are always available to you as long as you're a patient at Hayes. Thank you so much for your time, (patient name). Have a great day!

Counseling Services – Referral Information

Community Services Boards
Richmond Behavioral Health Authority (City of Richmond)
Counseling and psychiatry services: (804) 819-4000
Emergency services: (804) 819-4100
http://rbha.org/child-mental-health.htm

Hanover County
All Services (Emergency included): (804) 365-4200
http://www.co.hanover.va.us/csb/default.htm

Henrico County
Counseling and psychiatry services: (804) 727-8500
Emergency services: (804) 727-8484
http://www.co.henrico.va.us/mhmr

District 19 (Petersburg and Tri-Cities)
Counseling and psychiatry services: (804) 863-1689
Emergency services: (804) 862-8000
http://www.d19csb.com

Chesterfield County
Counseling and psychiatry services: (804) 768-7203
Emergency services: (804) 748-6356
http://www.chesterfield.gov/content.aspx?id=319447

Therapy Clinics
Accept Medicaid or affordable sliding fee scale
Center for Psychological Services and Development
612 North Lombardy Street, Richmond, VA 23284
(804) 828-8069 • http://www.has.vcu.edu/psy/cpsd/

Jewish Family Services: Accepts families of all faiths
6718 Patterson Ave, Richmond, VA 23226
(804) 282-5644 x 234 • http://www.jfsrichmond.org

Dominion Behavioral Healthcare
Midlothian: Courthouse Rd (804) 794-4482; Harbor Pointe (804) 639-1136
West End: Pembrooke Medical Center (804) 270-1124

If it is an emergency: CALL 911
Suicide Hotlines: 1-800-784-2433 or 1-800-273-8255
VA Warmline: 1-866-400-6428

Appendix B

Please complete this survey regarding your view of the Behavioral Health Team and the services they provide. This anonymous survey will provide valuable information to the team so they can continue to improve their services. Please be honest in your responses as this provides the best information to the team.

Disclosure Statement: All responses are anonymous and only summaries of the responses will be reported. Participation is voluntary and you may stop at any time.

Position/Role at HEW: Physician Non-physician staff

How long have you worked at HEW?
<1 year 1-2 years 3-4 years 5 or more years

Have you ever interacted with the Behavioral Health Team? Yes No
If yes, how frequently do you interact with them:

<1x month 2-5x month weekly most days I work

In general, how confident do you feel in your ability to manage/work with patients with mental health concerns?

Very Confident Confident Neutral Unconfident Very Unconfident

Since the addition of BH to HEW, how do you feel about the clinic's ability to provide for patients with mental or behavioral health concerns?

Very Confident Confident Neutral Unconfident Very Unconfident

Does this represent a change from prior to the addition of BH?

Yes, more confident No Change Yes, less confident

In general, how do you feel about the services provided by the BH team?

Very Satisfied Satisfied Neutral Dissatisfied Very Dissatisfied

Please indicate the extent to which you agree with the following statements since the addition of the Behavioral Health Team.

	Strongly Disagree		Neutral		Strongly Agree	N/A
Better quality of work life	1	2	3	4	5	N/A
Less patient related stress	1	2	3	4	5	N/A
Increased confidence in care provided to patients	1	2	3	4	5	N/A
Improved atmosphere of workplace	1	2	3	4	5	N/A
Improved staff communication	1	2	3	4	5	N/A

Please indicate the extent to which you agree with the following statements

	Strongly Disagree		Neutral		Strongly Agree	N/A
Using BH improves my efficiency as a healthcare provider	1	2	3	4	5	N/A
Using BH improves overall patient care	1	2	3	4	5	N/A
BH effectively helps patients address their mental health problems	1	2	3	4	5	N/A
Working with BH has increased my comfort in discussing mental health issues with patients	1	2	3	4	5	N/A
BH is an important part of Hayes E. Willis Health Center.	1	2	3	4	5	N/A

Please provide information about any improvements the Behavioral Health team could make to their current services or practices that would benefit the patients and/or clinic staff.

Please provide any additional feedback about positive aspects of the Behavioral Health services or that you see as a particular benefit to you or the patients of the clinic.