Theses and Dissertations   Graduate School

2012

EVALUATION OF PSYCHOLOGICAL SERVICES PROVIED IN A UNIVERSITY-BASED PRIMARY CARE CLINIC

Elizabeth Sadock
Virginia Commonwealth University

EVALUATION OF PSYCHOLOGICAL SERVICES PROVIED IN A UNIVERSITY-
BASED PRIMARY CARE CLINIC

A thesis submitted in partial fulfillment of the requirements for the degree of Master of
Science at Virginia Commonwealth University

BY: ELIZABETH SADOCK
Bachelor of Science, The College of William and Mary, 2007

Director: Stephen Auerbach, Ph.D.
Professor, Department of Psychology

Virginia Commonwealth University
Richmond, Virginia
May, 2012

Acknowledgements

This thesis would not have been possible without the continual guidance and support of my advisor, Dr. Stephen Auerbach, and the expertise of Dr. Bruce Rybarczyk. I would also like to thank my family and friends for their love and encouragement.

Table of Contents

List of Tables

List of Figures

Abstract

EVALUATION OF PSYCHOLOGICAL SERVICES PROVIED IN A UNIVERSITY-BASED
PRIMARY CARE CLINIC

By Elizabeth Sadock

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science
at Virginia Commonwealth University.

Virginia Commonwealth University, 2012.

Major Director: Stephen Auerbach, Ph.D.
Professor
Department of Psychology

Primary care clinics are increasingly integrating psychological services into their service

programs; however few studies have provided quantitative data to support these services. This

study served as a program evaluation of the psychological services provided at the Ambulatory

Care Clinic at the Virginia Commonwealth University Medical Center in Richmond, Virginia. It

includes: 1) a description of the program, including types of patients served, their presenting

problems, and treatments administered and 2) evidence of the impact of mental health services

on primary care patients' emotional adjustment and progress on behavioral goals. Data on

exposure to stressful life events and intake and follow-up measures of depression, anxiety,

smoking, insomnia, chronic pain, and weight loss were collected on 452 adult primary care

patients. Although inferences are limited by the lack of a control or comparison group,

preliminary findings indicate that the mental health services provided were effective.

Implications and future directions are discussed.

Evaluation of Psychological Services Provided in a University-Based Primary Care Clinic

There is a growing need for psychologists to expand beyond their typical care settings and take an active role as care providers in medical settings. Primary care medicine, in particular, is changing from a strictly biomedical field to one that is adopting an increasingly biopsychosocial perspective, paving the way for the integration of psychology (Bluestein & Cubic, 2009). Approximately 75% of patients seen in primary care settings also have mental health concerns and often physicians are not fully equipped to treat both physical and psychological problems (Greneier, Marie-Helene, Gaboury, Ritchie, & Hogg, 2008; Levant, 2005). According to primary care physicians, they are not as confident addressing problems that are more psychologically based due to their lack of specialty training in this area (Greneier, et al., 2008). It is becoming clear that an integrated approach to medical care can best serve patients' varied and complex needs.

Over the past decade, psychologists have played an increasingly larger role in primary care settings and have filled a variety of roles. Grant funded projects aimed at integrating mental health services into the medical model began to emerge around the 1960s (Robinson & Strosahl, 2009). Early attempts at integration faced barriers similar to those being confronted today, such as lack of communication between physicians and mental health providers and lack of funding. Early exploratory research investigating the mental health status of patients seeking medical treatment revealed high prevalence rates of depression, inspiring many treatment studies focusing on depression treatments in primary care settings (Katon et al., 1995, 1996; Lin et al., 1995; Robinson, Afari, & Ludman, 1995; Simon et al., 1996, 1998 as cited in Robinson & Strosahl, 2009). The acceptance of psychologists in primary care gained momentum in the

1

1990s when the Group Health Cooperative integration model was first featured at many national conferences (Robinson & Strosahl, 2009). Today, the role of psychologists within the primary care setting is more established but the research literature supporting an integrated model of care remains insufficient. A few studies have examined the utility, feasibility, roadblocks, and advantages of an integrated care approach, and some provide descriptions of specific integrated programs and their model of care. However, no studies have provided quantitative evidence to support program efficacy (Edwards, Garcia, & Smith, 2007; Funk & Ivbijaro, 2008). Without evaluative studies, psychologists will be unable to establish a substantiating presence within primary care.

The present study explored the role and evaluated the functioning of primary care psychologists at the Ambulatory Care Clinic (ACC) at the Virginia Commonwealth University (VCU) Medical Center, a training clinic primarily serving minority and indigent populations. This study served as a program evaluation, and had two primary goals: 1) to provide a description of the program, including types of patients served and their level of psychopathology, range and severity of problems addressed by clinic psychologists, presence of stressful life events, and treatment goals, and 2) to provide a preliminary evaluation of the impact of a mental health service embedded in the primary care clinic on patient outcomes. Outcome measures addressed the following problem areas, which are among the most frequent behavioral problems presented by ACC patients based on a recent survey (Primary Care Psychology Presenting Problems, 2009): depression, anxiety, smoking cessation, chronic pain, insomnia and weight management. This evaluation provided a basis for improving the provision of psychological services at the ACC VCU Medical Center and helped quantify the impact of these services on patient wellbeing.

In the following sections, the model describing the roles of psychologists and justification for their presence in the primary care setting is presented, followed by a detailed explanation of the varying levels of integration between mental health professionals and physicians. Description of the typical problems afflicting patients referred to psychologists and some typical interventions employed will then be presented. Next, the barriers to integrating psychologists into a medical setting are discussed as well as some proposed solutions. This section is followed by a review of the relevant extant literature, with a particular focus on depression, anxiety, smoking cessation, insomnia, chronic pain, and weight management within a primary care outpatient setting. Finally, the hypotheses and proposed data analyses for the study are presented.

The Primary Care Model

The treatment model for psychologists in primary care settings is dramatically different than the traditional therapy model. The most prominent difference is that sessions are designed to be brief, approximately 15-30 minutes in contrast to the standard one-hour counseling session (Rowan & Runyan, 2005). This brevity is consistent with the medical model of care. The primary care psychologist must establish rapport and work quickly to ascertain the nature of the problem, potential diagnoses, and develop a plan of action. Most patients typically return once a month for care, concurrent with their medical appointment. Considering the infrequency of therapy-once a month as opposed to the traditional standard of once a week- it is important that psychologists are prepared to provide patients with ample information so that patients can work independently to address psychological concerns. Patients are typically given written pamphlets and information packets to supplement the brief intervention administered during the session (Rowan & Runyan, 2005).

Mental health services are integrated into primary care centers to varying degrees; services can be coordinated, co-located, or integrated (Blount, 2003). When a patient's care is coordinated, physicians and psychologists exchange information about the patient from different settings. It is effortful to maintain communication and often requires a personal commitment from medical and psychology staff (Blount, 2003). Co-located care implies that the psychologists are housed within the medical center thereby facilitating easier communication and likelihood of referrals. In co-located care, physicians and psychologists can often discuss patients in passing and therefore more seamlessly work together to improve patient care. In a study of 100 patients in a Family Medicine residency, physicians referred patients to the psychologist by either first introducing the patient to the psychologist during the patient's scheduled primary care visit, or by simply referring the patient to see a psychologist. When the psychologist was present, 74% of patients kept their referral appointments, as opposed to 44% when the psychologist was absent (Coleman, Patrick, Eagle & Hermalin, 1979 as cited in Blount, 2003). Therefore, co-located services have been found to have higher follow-up rates than coordinated care settings. Finally, integrated care involves development of a treatment plan for patients which addresses both behavioral and medical problem areas. Integrated healthcare is distinct from coordinated care or co-located care in that physicians and mental health providers work on a team, sharing files, space and information about the patient (Blount, 2003).

The level of integration in a medical setting can be influenced by factors such as physical environment, information sharing, and the collaborative culture of a center (Collins, Levis, Mung, & Wade, 2006). Studies have found that there are many added benefits to a shared environment; there is more communication between physicians and psychologists and physicians are more likely to refer patients to psychologists (Blount, 2003). Technology and limitations

placed on sharing patient information can influence the degree of integration (Knowles, 2009). Physicians and psychologists easily share patient information in centers that have electronic patient files that can be accessed by both parties. In addition, the culture of a medical setting can dictate the level of integrated care. Even if physical space and records are shared, if the role of psychologists is not established and their services not utilized, patients will not benefit. Educating physicians on the type of services that psychologists can provide can foster integration. Some programs have gone a step further and developed interdisciplinary treatment teams with a variety of specialists, such as the physician, social worker, psychologist, dietician, and other relevant support staff (Knowles, 2009).

Based on the definitions of levels of integrated care, the integration of psychologists at the ACC VCU Medical Center, where the proposed study was conducted, is best described as following an integrated care model. Psychologists work within the same physical space as physicians. They share electronic notes and psychologists copy the patients' primary care physicians on all patient notes. However, because VCU Medical College of Virginia is a training hospital, the medical staff is often rotating, so in-person communication between physicians and psychologists is not always feasible.

The Utility of Psychologists in Primary Care Settings

The need for psychologists in primary care has been addressed in the extant literature (Butler et al., 2008; Kessler, Stafford, & Messier, 2009). Physicians are not fully equipped to handle psychological problems in primary care and therefore an integrated model best addresses patient needs. There is a strong bi-directional relationship between the physical and mental health of a patient as evidenced by the high prevalence of psychological symptoms and disorders in medical settings (Levant, 2005). Patients with physical problems often experience many

associated stressors leading to anxiety and depression (Bluestein & Cubic, 2009). Consistent with this, the extent of patients' prescribed medical treatment is positively correlated with their symptoms of depression (Gunn & Blount, 2009). Therefore, it is important to have support staff who are well versed in the symptoms and treatment of depression and other psychological problems.

An important contribution psychologists can make in primary care is to help verify the necessity of psychotropic medication for patients and also provide an alternative to medication. Considering that primary care physicians prescribe 60-70% of all psychotropic medications, it is essential to have psychologically minded staff (Lewis, Marcus, Olfson, Druss, & Pincus, 2004 as cited in Gunn & Bount, 2009). These prescriptions are often written in the absence of an official diagnosis or proper assessment. A study conducted in 46 primary care clinics in the United States explored patient perception and preferences for receiving treatment for depression (Dwight-Johnson et al., 2000). Results revealed that 83% desired treatment for their depressive symptoms and 67% percent of those desiring treatment preferred counseling, especially African Americans. The population served by primary care psychologists in the present study in 2009 was approximately 67.44% African American (See Table A1). Thus, solely prescribing medication is insufficient and inconsistent with the preferences of most patients, who often desire counseling (Schaik, et al., 2004). There are unforeseen positive benefits to patients who receive psychological services. They show greater adherence to their medical treatment regimens and consequently experience improved general health outcomes; they are also more proactive, decreasing the likelihood of future visits (Robinson & Strosahl, 2009).

The primary care setting is a prime location to detect people with mental health disorders and provide patients with on-site mental health services. The American Academy of Family

Physicians (AAFP) noted that physicians are the first to identify many mental health disorders; 47% of people with Generalized Anxiety Disorder and 42% of people with depression were identified and diagnosed by primary care physicians (American Academy of Family Physicians, 2004 as cited in Westheimer, Steinley-Bumgarner, & Brownson, 2008). The presence of psychologists is therefore valuable. Furthermore, primary care is an optimal setting for identifying people who do not seek psychological services due to fear of stigmatization. Patients referred by their physician to see a psychologist within the course of a standard medical appointment are reportedly less resistant to mental health services (Ayalon, Arean, Linkins, Lynch, & Estes, 2007). This principle is especially salient for minority populations who are often underserved and do not independently seek out mental health services. One study found that the integrated care model afforded greater accessibility to care, resulted in fewer missed appointments, and increased patient participation in mental health services when compared to co-located primary care clinics (Ayalon et al., 2007). The authors interpreted these findings to be a result of the proximity of care and also the establishment of a trusting relationship between the patient and physician leading the patient to more readily accept mental health care within the primary care setting (Ayalon et al., 2007). Therefore primary care clinics are an ideal setting to address mental health concerns with patients who might not have otherwise sought out mental health services.

Patients also may avoid mental health services because of logistical barriers such as transportation problems. The true integrated model is often considered "one-stop shopping" for patients (Rowan & Runyan, 2005). This convenience is especially important for patients of lower socioeconomic status who may struggle to find transportation to their appointments. The population served by primary care psychologists at the VCU ACC in 2009 was approximately

31.93% indigent care and 34.61% on Medicare (See Table A2). Therefore, this particular demographic may be more likely to accept and benefit from the services provided by an integrated care model.

Primary care psychologists are often engaged in preventative care, which if effective, can offset medical costs. Medical conditions with the highest reported mortality rates have behaviorally modifiable risk factors (Mokdad, Marks, Stroup, & Gerberding, 2004). Tobacco use, lack of exercise, poor diet, and obesity are four commonly encountered risk factors in primary care patients that can be altered via behavior modification. The prevalence of patients with at least one of these risk factors is 97% and 80% for two or more of these factors (Flocke, Crabtree, & Stange, 2007). Treating prodromal symptoms is much more feasible and affordable than managing fully developed diseases or chronic conditions. Psychologists can educate patients about the connection between their physical and mental health and encourage and facilitate change by providing patients with the necessary tools and support.

The Role of Psychologist: Typical Referrals and Interventions

Primary care psychologists address a diverse array of patient symptoms and therefore there is no typical patient profile or treatment protocol within the primary care setting. Some patients may have a diagnosable mental health disorder that can be addressed using evidenced based treatments. Although these disorders can be treated in primary care using brief interventions, for more chronic cases it may be more appropriate to refer to an off-site practitioner who can develop a more consistent relationship and provide more frequent care (Knowles, 2009). Primary care psychologists also must consider how the patients' psychological state may exacerbate comorbid health conditions and affect their ability to manage their medical problems. Patients may also present with psychological distress from attempting to cope with a

difficult diagnosis, manage a chronic illness, and other health-related worries. Deep breathing, progressive muscle relaxation, and other relaxation techniques are often taught to patients who have difficulty managing anxiety and stress, which may be having a negative impact on their sleep, level of pain, mood, medical problems, and other areas of wellness. Often patients benefit from behavior modification interventions designed to improve their overall health by altering maintaining antecedents and consequences of a behavior. For example psychologists assist patients with diabetes management, smoking cessation, obesity management, medication adherence, chronic pain management, and insomnia. At times, patients may require some assistance in exploring their motivation to change, overcoming barriers to change, and enacting and sustaining change. This may involve interventions such as motivational interviewing, cognitive restructuring, and problem solving. Finally, psychologists can also act as a liaison between physicians and their patients, helping patients learn how to be assertive and voice their concerns to their doctors, and by relaying important information to the physician to improve overall care. Primary care psychologists encounter a range of presenting problems and patients rarely experience one problem in isolation. Primary care psychologists are required to have a broad base of knowledge and the ability to address the psychological, behavioral, and interpersonal components of any presenting concern (McDaniel & Fogarty, 2009). There are not any standard protocols that could effectively treat the diversity of patient needs that are presented within the course of a primary care psychology appointment.

Barriers to Integration

Unfortunately there are many identified barriers to integration which most likely account for the slow process of assimilating psychologists into medical settings despite all the aforementioned benefits (Kessler et al., 2009). Integration is made more difficult by differences

in professional languages (Knowles, 2009). However, this is not an insurmountable roadblock and psychologists are encouraged to adopt more medical terminology while working within the medical setting. It is recommended that standard psychological jargon be avoided to facilitate better communication with physicians (Knowles, 2009). Physical space is also a logistical problem, in that it is difficult to accommodate more professionals in established medical facilities. Available resources and offices for psychological staff is often a practical concern that prevents the expansion of the medical family to include mental health professions (Collins et al., 2006).

Furthermore, the role of psychologists within the medical center is not always clearly defined, so it is recommended that psychologists assimilate into the medical model, while establishing their position as an essential, unique contributor to patient health (Gunn & Blount, 2009). It is important that physicians understand the services provided by psychologists to increase the likelihood of referral, collaboration, and accomplishing the ultimate goal of improved health care for patients. Westheimer, Steinley-Bumgarner and Brownson (2008) surveyed ten primary care providers who worked in a university health center with integrated mental health and primary care services. They found that although the physicians valued integration and believed that psychological services were helpful, in practice they did not often make service referrals to psychology and did not understand the full scope of services that psychologists could provide. In a similar study exploring the factors affecting collaboration between physicians and psychologists (Grenier et al., 2008), physicians reported that they were aware that psychologists were available in the community but usually did not refer because of costs to the patient. Although they stated a desire to have more integration, those who had made referrals to psychologists in the past complained that they did not receive any follow-up

information about their patients (Grenier et al., 2008). Finally, in a third study, twenty-one primary care physicians were asked for their opinions on how to improve integrated primary care services (Flocke, Crabtree, & Stange, 2007). They recommended that when patients present with behavioral issues, doctors address them directly instead of taking the time to refer to psychologists. However, physicians spend very little time addressing behavioral issues because they are not reimbursed for such services (Flocke et al., 2007). In conclusion, if psychologists are integrated into primary care settings and therefore more accessible to both physician and patient, physicians may be more likely to refer (Flocke et al., 2007). The reviewed studies indicate a need for more effective communication between mental health service providers and physicians in order to establish a working integrated program. Physicians should be encouraged to make referrals and to bolster integration; it may be useful to have workshops that encourage collaboration between disciplines.

Finally, and most notably, financial barriers make medical professionals hesitant to incorporate an integrated care approach (Collins et al., 2006). Establishing an appropriate billing system is complicated and thus often avoided (Collins et al., 2006). In the primary care clinic where the proposed study will be conducted, we were able to circumvent financial issues because the psychologists employed are supervised graduate students providing free services as part of their training.

Solutions for Effective Integration

Fortunately there are some solutions to the barriers of integrating psychological services into primary care settings. First, good relationships must be established with medical care providers. It is important for psychologists to make known the services they can provide, welcome interruptions by physicians to discuss a patient's needs, have the flexibility to

assimilate into a new environment, and learn and adapt to hospital culture (Gunn & Blount, 2009). As integrated care programs become more normative, younger physicians will have greater exposure to this model of care, increasing overall integration. They will be more likely to identify situations in which referring to psychology would be valuable (Robinson & Strosahl, 2009). Another problem that needs to be addressed is the lack of specialty training; a traditionally trained psychologist cannot easily function in a medical setting without proper instruction (Bluestein & Cubic, 2009). Fortunately, as more psychologists are desired in medical settings, federal grant programs have been established to support the education of psychology graduate students in primary care settings. For example, in 2002 the Eastern Virginia Medical School (EVMS) Clinical Psychology Internship Program was awarded a Graduate Psychology Education grant for a project called "Integrating Psychology Internship Training in a Primary Care Setting" (Bluestein & Cubic, 2009). This program involved training graduate psychology students to work in a medical setting and shadow family medicine residents. Physician and psychology interns worked together to provide enhanced patient care. The program was deemed successful and so in 2007 another grant was awarded for a project called "Enhanced Patient Care by Collaboratively Training Psychologists and Primary Care Providers," exposing a larger number of psychologists to the primary care setting (Bluestein & Cubic, 2009). The role of psychologists and their integration into the EVMS primary care environment was evaluated using the Physician Belief Scale (Ashworth, Williamson, & Montanco, 1984), filled out by the family medicine residents. The qualitative data on the family medicine residents and faculty were unanimously positive and complimentary of the psychology interns. The success of such programs will continue to generate the awarding of future grants allowing more psychologists to gain exposure to the primary care setting. Furthermore, psychology-training programs are

increasingly incorporating health psychology and behavioral medicine into their curriculum at the graduate level (see Council for Clinical Health Psychology Training Programs website, http://www.cchptp.org/).

Problems Frequently Addressed by Primary Care Psychologists

Depression and anxiety. Depression is an important psychological variable to measure in primary care settings due to the impact of depressed mood on health outcomes. In a meta-analysis of twelve studies exploring the effects of anxiety and depression on patient adherence to medical recommendations, patients with depression were reportedly three times more likely to be noncompliant than patients that were not depressed (DiMatteo, Lepper, & Croghan, 2000). Therefore depression is considered a risk factor for poor compliance which leads to poor health outcomes.

As noted previously, there is a high prevalence rate of depression in primary care settings. In a sample of 1,752 patients receiving the Prime-MD as a screening tool for depression, 27.3% met criteria for depression (Tamburrino, Lynch, Nagel & Smith, 2009). High prevalence rates of depression have inspired research studies exploring the efficacy of treating depression in primary care settings. The Prevention of Suicide in Primary Care Elderly: Collaborative Trial (PROSPECT; Bruce et al., 2004) and Improving Mood–Promoting Access to Collaborative Treatment (IMPACT; Unützer, 2002) intervention studies examined depression in elderly primary care patients. Many older adults are at-risk for depression and visit their primary care physician in the months preceding suicide attempts. Therefore proper identification and treatment of depression is imperative. Outcomes of both programs showed significant improvement in reducing depression symptoms in elderly adults compared to care as usual. Additionally, a meta-analysis of randomized controlled trials of the psychological treatment for

depression for adults in primary care examined the results of fifteen studies (Cuijpers, Straten, Schaik, & Andersson, 2009). The authors selected studies of adults in primary care settings with depressive symptoms or depressive disorder who received psychological treatment compared to a control group defined as either care as usual, placebo, or waitlist (Cuijpers et al., 2009). The analysis indicated that depression can be effectively treated in primary care settings and the decrease in depressive symptoms is particularly greater in instances in which the physicians specifically referred the patient to mental health services. When referred by a general practitioner the effect size for treatment of depression did not differ between primary care settings and control settings. Also, when random screenings of depression identified patients who may benefit from services (as opposed to referral by physician), treatment outcomes were not as positive. Although the reason for this effect is unclear, it is possible that the physicians encouraged their patients to seek mental health services or that the physicians may have been able to accurately identify patients likely to benefit from psychological services (Cuijpers et al., 2009). For example, the physician may be aware of a patient's past experience with psychological services and other unknown factors that could not be readily identified in a self-report questionnaire. This is yet another illustration of the benefits of integrated patient care as well as the effectiveness of depression treatment in primary care.

Other studies have compared the treatment of depression by psychologists co-located in primary care settings with treatment administered in separate, specialty mental health clinics. The Primary Care Research in Substance Abuse and Mental Health for the Elderly (PRIMS-E) study examined depression rates in two groups of older adults (N = 1531, M = 73.9 years) randomly assigned to either integrated care or enhanced specialty referral (Krahn, Bartels, Coakley, Oslin, Chen, & McIntyre, 2006). Integrated care was defined as mental health services

and medical services co-located in the same facility. The results revealed that for those with major depression, the enhanced specialty referral patients had the largest symptom reduction. This is not surprising because it is typical for patients with more severe psychopathology to be referred out of a primary care clinic in order to receive more concentrated, specialty care (Knowles, 2009). Thus the enhanced specialty care is a more appropriate setting for patients with severe psychopathology because the concentrated treatment approach results in greater symptom reduction for people with more severe symptoms. However, the patients in the specialty referral group received transportation to their mental health appointments, which although ideal, is impractical for most settings. Furthermore, the two groups yielded similar results in lowering depression rates at three and six month follow-ups. Other studies have concluded that primary care settings yield the same outcomes as referral specialty care (Cuijpers et al., 2008; Lopez, et al., 2008). Besides effectiveness in treating depression, integrated care programs have many additional benefits, such as convenience of care and introducing mental health services to people who are unaware of their mental health problems or who have not sought services for fear stigmatization. In the proposed study, rates of depression will be assessed as well as any changes in depressive symptoms as a result of mental health services provided by student therapists.

People with generalized anxiety disorder have reported depressive symptoms and anxiety symptoms that are significantly correlated with health-related quality of life (HRQL; Revicki et al., 2008). Anxiety symptoms and depressive symptoms were linked to significant impairment as implicated in the HRQL (Revicki, Brandenburg, Matza, Hornbrook, & Feeny, 2008); with increased anxiety, there is increased impairment in many aspects of functioning such as physical functioning, disease-specific quality of life, psychological well-being, and disability in everyday life (Revicki et al., 2008). Compared to the general population, patients with any form of anxiety

disorder have self-reported poorer physical and mental functioning (Beard, Weisberg, & Keller, 2010). Therefore anxiety is an important symptom to monitor within a primary care setting because of its bi-directional impact on physical health.

Anxiety is often overlooked because it is less prevalent than depression in primary care settings; however, it leads to impairment when undetected and untreated. Kroenke and colleagues (2007) explored the prevalence, impairment, comorbidity, and detection of anxiety disorders in primary care. Nine hundred and sixty-five randomly assigned patients from fifteen primary care clinics in the United States completed the Generalized Anxiety Disorder (GAD-7) questionnaire followed by a structured interview administered over the phone by a mental health professional. The prevalence of at least one anxiety disorder was 19.5% out of the 965 patients. Additionally, 8.6% of patients had posttraumatic stress disorder, 7.6% had generalized anxiety disorder, 6.8% had a panic disorder, and finally 6.2% had a social anxiety disorder. The more anxiety disorders diagnosed in a patient, the greater the impairment. However, 41% of patients with a disorder reported that they were not receiving treatment (Kroenke, Spitzer, Williams, Monahan, & Lowe, 2007).

Besides anxiety and depression, there are a variety of behavioral health concerns that are commonly presented by patients and thus treated by psychologists in primary care settings. As previously mentioned, smoking cessation, insomnia, chronic pain, and weight management are frequently cited problem areas. The extant literature supports the treatment of these conditions within primary care settings especially considering the prevalence and negative implications of these problems.

Smoking cessation. Although there have been few studies measuring psychologists' influence on primary care patients who smoke, there are ample studies assessing the role of

16

physicians in encouraging patients to quit. Research from a statewide survey of 5,875 Michigan adults revealed that only 44% of smokers seen by their physician in the previous year had been told to quit by their physicians (Anda, Remington, Sienko, & Davis, 1987). This percentage has increased over time as physicians have become more educated on the effectiveness of addressing smoking cessation (Cokkinides, Ward, Jemal, & Thun, 2004). In a 2000 study (Cokkinides et al., 2004), an analysis of 3,010 smokers and former smokers who had attempted to quit and been seen by a physician in the past year, revealed that 61.8% received advice from their physician about quitting smoking. Despite this increase, many physicians do not always advise their patients to quit for a variety of reasons such as pessimism about their patients' ability to change and discomfort about their own efficacy (Rollnic, Butler, & Scott, 1997).

Lancaster and Stead (2004) conducted a review of the effect of minimal and extensive smoking cessation interventions by physicians. The authors searched the Cochrane Tobacco Addition Group trials register and the Cochrane Central Register of Controlled Trials for randomized trials for smoking cessation. Thirty nine trials were identified including a robust sample of more than 31,000 smokers. The review revealed that most physician advice was delivered in primary care settings and that minimal interventions produced small but clinically significant effects on cessation rates, and although intensive interventions were more effective they were not significantly more effective than minimal interventions.

Soria and colleagues (2006) provided further evidence of the positive impact of smoking cessation interventions. They conducted a randomized controlled trial comparing the effects of motivational interviewing versus anti-smoking advice on smoking cessation rates. Two hundred smokers were randomly assigned to each group and at 6 and 12 month follow up motivational interviewing was found to be 5.2 times more effective than anti-smoking advice (CI = 1.63 to

17.13). Besides motivational interviewing, other interventions have been effective in helping people quit smoking. A nonrandomized study examined "minimal intervention" (defined as asking patients about smoking and documenting their smoking status) versus "enhanced intervention" (defined as a five-question form that evaluated patients' readiness to quit and provided counseling prompts for the physician to deliver to patients) (Milch, Edmunson, Beshansky, Griffith, & Selker, 2004). After 8-10 months post intervention, self-reported smoking cessation was 12% for the enhanced intervention, 2% for minimal intervention, and 4% for the control group. Use of a short questionnaire increases smoking cessation considerably and therefore brief interventions are encouraged in primary care settings. According to Ockene and colleagues (1994), more intensive interventions are the most efficacious at 6 and 12 month follow up. Physicians administering counseling and nicotine-containing gum had the highest cessation rates (10%) as opposed to counseling alone (7.8%) or advice only (6%) in a randomized sample of 1261 primary care patients. Thus, the impact of brief, simple, cost-effective smoking cessation interventions has proven to be clinically and statistically significant.

Despite the plethora of studies investigating the effects of brief interventions by physicians to promote smoking cessation, studies have not systematically measured the effects of interventions administered by psychologists in primary care settings. The proposed study will add to the extant literature and measure the impact of psychologists on patients' ability to quit smoking. Due to the prevalence of smoking in the population and associated health risks, smoking cessation initiatives are necessary and if successful will have significant social and financial implications.

Insomnia. Many patients seen at primary care clinics suffer from insomnia, a condition that decreases quality of life and diminishes physical and psychological health (Culpepper,

2005). Because insomnia is a frequently cited health complaint in the primary care setting, with 69% of primary care patients reporting sleep problems compared to 40% of community adults (Ancoli-Israel & Roth, 1999; Culpepper, 2005), primary care physicians should evaluate patients for presence of insomnia.

According to an overview of insomnia studies (Doghramji, 2006), abnormal sleep patterns predict lower life expectancies (Kripke, Simons, Garfinkel, & Hammond, 1979). Furthermore, insomnia is associated with comorbid substance abuse, affective disorders, and other psychological disorders (Doghramji, 2006). The relationship between insomnia and health related quality of life was assessed in 3,445 patients (Katz & McHorney, 2002). Patients received a battery of self-report questionnaires and results indicated that even when controlling for depression, anxiety, and the presence of chronic medical conditions, insomnia is independently associated with lower health related quality of life.

If insomnia is detected, physicians should ensure that patients receive sleep hygiene education and that patients are offered pharmacological treatment and counseling (Culpepper, 2005). However, physicians often feel unqualified to assess or treat insomnia and patients do not always report sleep problems if unsolicited. According to the 1995 Gallup poll, conducted for the National Sleep Foundation, surveying 1,027 adults, 70% of people with sleep problems did not discuss these concerns with their physicians. The most common reason given was that they believed it was not a "big enough problem to discuss." Although the likelihood of addressing sleep problems with a physician increases with the severity of sleep interference, only 45% of people who reported frequent sleep interference had discussed their difficulty with their physicians (The Gallup Organization for National Sleep Foundation, 1995). Due to the negative impact of poor sleep in daily functioning and the apparent lack of communication between

physician and patients, the Standards of Practice Committee of the American Academy of Sleep Medicine strongly suggests that patients be routinely screened for insomnia symptoms so that treatment can be integrated into patients' standard care (Chesson, Hrtse, & Anderson, 2000). Psychologists can help assess and treat sleep problems in primary care patients.

The literature shows that behavioral health interventions can be effective in treating insomnia within primary care settings. In a study by Goodie, Isler, Hunter and Peterson (2009), 29 sleep-impaired patients were administered three brief intervention sessions by behavioral health consultants. At post-treatment 83% of patients achieved average sleep efficiency compared to only 14% at baseline. Furthermore, this success was obtained regardless of comorbid medical conditions. In a randomized controlled study of elderly adults, multi-component behavioral treatments were found to be more effective than sleep hygiene (McCrae, McGovern, Lukefahr, & Stripling, 2007). Sleep hygiene is defined as psychoeducation about healthy sleep practices such as caffeine restriction, restricting the bedroom activities to sexual activity and sleep, and other suggestions to improve healthy sleeping habits. Other studies have also found that brief behavioral treatment is more effective than sleep hygiene education (Germain et al., 2006). In a systematic review of the effect of a variety of treatment protocols on insomnia in primary care settings, cognitive behavioral therapy was shown to be superior to any one-dimensional treatment such as stimulus control, relaxation, educational programs, or other control conditions (Morin, 1993). Therefore, brief behavioral health interventions that are multi-componential and incorporate cognitive behavioral therapy should be used to address sleeping problems in the primary care setting.

Treatment of insomnia should be administered regardless of the etiology of the insomnia. Insomnia often goes untreated if it is considered secondary to a medical condition or to clinical

depression or chronic pain (Culpepper, 2006). However, the treatment of primary medical conditions does not always result in full recovery of sleep disturbances. Thus, research suggests that insomnia should be considered separately, and if treated may actually help improve the primary medical problem (Culpepper, 2006). Thus insomnia should be addressed and treated in primary care settings regardless of comorbid conditions. The assessment and treatment of insomnia should be a more common practice in primary care settings and once again the effectiveness of psychologists in treating symptoms of insomnia has yet to be assessed. This will be investigated in the proposed study.

Chronic pain. Chronic pain is another common complaint presented by primary care patients. Despite advances in medication and procedures to help mitigate pain, chronic pain continues to be a prevalent problem (Turk, Audette, Levy, Mackey, & Stanos, 2010). The rates of comorbid psychiatric diagnoses are much higher in samples of people with chronic pain with 59% presenting at least one current psychiatric diagnosis and 77% having at least one diagnosis over a lifetime as opposed to a community sample in which only 15% have at least one current diagnosis and lifetime rates are between 29% and 38% (Turk et al., 2010). Psychosocial factors should be considered when addressing chronic pain; a systematic review of the psychological factors involved in the development of chronic lower back pain indicated that distress, depressed mood and somatization are implicated in the development of chronic lower back pain (Pincus, Burton, Vogel, & Field, 2002). Another systematic review also uncovered the significant association between psychosocial factors and pain and dysfunction in patients with spinal cord injuries, acquired amputations, cerebral palsy, multiple sclerosis, and muscular dystrophy (Jensen, Moore, Bockow, Ehde, & Engel, 2011). The degree of pain experienced was correlated with levels of anxiety and depression (Brown, 1990). This interrelatedness of physical and

psychological pain supports the importance of holistic assessment and treatment practices.

Medical providers should consider psychosocial factors related to pain and coping at the onset of treatment instead of as a last resort (Leyshon, 2009). If the provider waits, the patient has time to develop entrenched, maladaptive coping strategies that may be difficult to alter. The most common theoretical approaches to treating chronic pain are operant conditioning and cognitive-behavioral therapy (CBT) (Turk et al., 2009). Operant conditioning, involves awareness of what is maintaining the pain behaviors and altering the contingencies. This especially focuses on the secondary gain of receiving sympathy and support for pain behaviors. For example, if others give pain patients attention and sympathy when they demonstrate pain behaviors (i.e. physical and verbal expressions of pain such as limping and grunting, respectively), the patients will be less likely to engage in activities and cope effectively with their pain (Keefe, 1992). Educating caregivers and family members about the social context of pain will reduce their propensity to reward pain behaviors and consequently help with the patient's treatment.

Cognitive behavior therapy is partially based on the principles of operant conditioning but also encourages patients to gain control over their pain by understanding the relationship between pain and one's subjective, cognitive, affective and psychological experience (Keefe 1992). CBT encourages patients to try to relax, confront their thoughts about the meaning of their pain, and engender feelings of self-efficacy; it involves stress management, problem solving, goal setting, pacing of activities, and relaxation techniques. Cognitive-behavioral coping skills training programs have been found to be more effective in lowing patient pain than psychoeducation (Keefe, 1992). Studies have also highlighted the effectiveness of different coping strategies for pain. Chronic pain patients who catastrophize, ignore, reinterpret their pain,

use attention diversion, or praying to cope with their pain, experience more physical and psychological disability, whereas those who have high perceived control or use active or intentional coping are higher functioning and have higher recovery rates (Turner, 1991 as cited in Keefe, 1992). Thus pain can be effectively treated using behavioral health interventions that can be easily administered by a psychologist. The proposed study will focus on pain treatments as a means to improve patients' overall physical and psychological well-being.

Weight loss. Obesity is a significant and growing problem in the United States (Ogden et al., 2006). In a national representative study of the US population, 4,431 adults participated in the National Health and Nutrition Examination Survey. Obesity was defined as a body mass index (BMI) of 30 or greater and extreme obesity was defined as a BMI of 40 or greater. Results of the 2003-2004 survey showed that 32.2% of participants were obese (Ogden et al., 2006). Since 1999, the number of obese men has increased (27.5% to 31.1%), while obesity rates in women have remained level (Ogden et al., 2006). Increased weight is related to a variety of negative health outcomes (Fontaine, 2003). One study specifically determined the number of years of life that people lose as a result of obesity. For white men, aged 20-30, the maximum number of years lost for BMI of greater than 45 is 13 years and eight years for women. African American men had a maximum of 20 years of lost life and women had a maximum of five years (Fontaine, 2003).

Weight loss can be addressed in a primary care setting using motivational interviewing. A systematic review and meta-analysis of randomized controlled trials revealed that motivational interviewing was significantly related to decrease in weight loss and lower body mass index compared to controls (standard mean difference = -0.51, 95% CI -1.04, 0.01; weighted mean difference = -1.47 kg, 95% CI -2.05, -0.88) (Armstong et al., 2011). In another study of 40

23

primary care physicians and 461 of their overweight or obese patients, results found that patients of physicians who used motivational interviewing-consistent techniques when addressing their weight, lost weight (Pollak et al., 2010). The physicians' motivational interviewing skills were rated using a higher global motivational interviewing-Spirit score. Patients of physicians with higher global motivational interviewing-Spirit scores had a weight change difference of 1.6 kg (95% CI = -2.9, -.03, p = 0.02) (Pollak et al., 2010) compared to patients of physicians with low global motivational interviewing-Spirit scores. Patients whose physicians used techniques that were in opposition to motivational interviewing (i.e. judging, confronting), experienced weight gain or maintained their weight. Thus, motivational interviewing techniques help patients lose weight and should be implemented by physicians or psychologists in primary care settings.

Statement of Problem

Psychologists have the expertise to service patients with mental health concerns and behavior modification goals and therefore should be an important addition to an integrative medical approach for primary care patients. Anecdotal evidence suggests that psychologists are an important and effective addition to the primary care team and physicians have responded positively to their presence in primary care (Bluestein & Cubic, 2009; Westheimer, et al., 2008). Despite the integration of clinical psychologists into medical settings, full evaluation of the effectiveness of their services has yet to be studied.

The main focus of the present study is to evaluate the existing services provided by primary care psychologists at the Ambulatory Care Clinic (ACC) at the Virginia Commonwealth University (VCU) Medical Center. The primary aims are: 1) to describe the mental health services provided by the program and the characteristics of the patients who are the recipients of those services, and 2) provide a preliminary evaluation of the impact of those services on patient

outcomes. Demographic and other descriptive data were obtained from medical records. Data on clinical psychological variables were obtained from self-report instruments administered to patients prior to the provision of services and at one or more follow-up periods over the course of treatment.

Patient progress in the following specific problem areas will be evaluated: smoking rates, weight management, sleep quality and quantity, chronic pain, and anxiety and depression. At the outset of treatment, all patients were administered a measure assessing the extent and frequency of their exposure to stressful life events during the past year. Further, all patients were evaluated on measures of anxiety and depression at the start of each visit, and those who reported smoking, weight management, sleep problems, or chronic pain as their presenting problem were additionally assessed with measures specific to their respective problem and completed these measures during all follow-up appointments.

The following specific hypotheses were evaluated:

1. Patients who are being treated in primary care psychology for weight management, smoking cessation, chronic pain management, or insomnia will respond differentially to treatment as a function of specific variables. We expected that patients who were more depressed (as measured by the PHQ-9), anxious (as measured by the GAD-7), and who had greater exposure to stressful life events (as measured by the SRRS-R) would respond more poorly to psychological interventions than those with lower scores on these measures.

2. Based on extensive prior research, patients who report greater exposure to stressful life events will have higher associated scores (at intake) on measures of anxiety and depression (Blazer, Hughes, & George, 1987; Finlay-Jones & Brown, 1981; Greene,

Walker, Hickens, Thompson, 1985; Hurst, Jenkins, & Rose, 1976; Kendler, Karkowski,

& Prescott, 1999; Kessler, 1997; O'Donnel, Creamer, & Pattison, 2004; Shalev et al.,

1998; Whitehead, Crowell, Robinson, Heller, & Schuster, 1992)

3. Based on findings by Linzer et al. (1996), Culbertson (1997), and Banks and Kohn-wood

(2002) women will report higher levels of chronic pain, depression, and anxiety than

men.

4. African Americans will report higher levels of chronic pain than Caucasian participants.

This hypothesis is based on findings that African Americans report higher levels of pain,

engage in more avoidance activity, and have greater physical and psychological distress,

particularly depression and fear (Edwards, Doleys, Fillingim, & Lowery, 2001;

McCracken, Matthews, Tang, & Cuba, 2001; Riley et al., 2002).

Method

Participants

Participants are primary care patients at the Ambulatory Care Clinic (ACC) at the

Virginia Commonwealth University (VCU) Medical Center in Richmond, Virginia. The medical

center primarily serves indigent, urban and rural populations. Resident primary care physicians

refer these patients to the psychology clinic. Psychological service providers are graduate

students from Virginia Commonwealth University clinical and counseling doctoral psychology

programs, supervised on-site by licensed clinical psychologists who specialize in health

psychology. The present study evaluates data from patients referred to the ACC psychology

clinic between July 2010 and November 2011.

Procedure

Physicians at the ACC identified and referred patients to the Psychology Clinic who they judge to be good candidates for behavioral interventions. All physicians were internal medicine residents whose work is being supervised by attending physicians. As standard practice, the psychology graduate student clinicians recorded the purpose of the patient referral and the focus of the session in the patients' electronic visit note. Student clinicians also administered a few brief questionnaires and recorded the results of the questionnaires in the patients' electronic visit note as well. For all patients, regardless of presenting problem, anxiety and depression were routinely assessed using the Generalized Anxiety Disorder (GAD-7; Spitzer, Kroenke, & Williams, 2006) and the Patient Health Questionnaire-9 (PHQ-9; Spitzer, Kroenke, & Williams, 1999) respectively due to the high prevalence of these conditions (Primary Care Psychology Presenting Problems, 2009). The revised Social Readjustment Rating Scale (SRRS-R; Hobson et al., 1998) was administered to all psychology clinic patients during their initial visit. In addition, psychology clinic patients who reported chronic pain were routinely given the Short-form McGill Pain Questionnaire (SF-MPQ; Melzack, 1987) and patients with sleep problems were routinely given the Insomnia Severity Index (ISI; Morin, 1993). In order to track patients who were seeking services for smoking cessation, student clinicians kept track of the number of cigarettes the patient was smoking per week. In order to track progress for patient's seeking services for weight management, patients reported their weight during their primary care psychology appointment and student clinicians reported patients' weight in their electronic visit notes.

After the initial assessment, the student clinician administered a brief intervention focusing on the identified problem area. This intervention was not standardized because the complexity of each patient's symptoms requires a more idiographic approach, which is consistent with standard psychological treatments utilized by primary care psychologists (Blount,

2003). However, interventions were consistent with empirically derived brief interventions as cited in the literature review. Patients then scheduled follow-up appointments at a variable interval, depending on the referral question, patient availability and access to transportation, and other factors that may affect scheduling.

       Follow-up appointment. Patients may or may not return for multiple follow-up appointments within the 16-month data collection window. Those who did return received the PHQ-9 and GAD-7, and those patients referred for either chronic pain, smoking cessation, or insomnia received additional measures as noted above. Basic demographic data such as gender, ethnicity, insurance type, age, and other factors were collected through access to patient medical records. Trained clinical psychology graduate students who reviewed the patients' psychology visit notes determined the focuses of the visit. All assessment data, such as the SRRS-R, PHQ-9, GAD-7, ISI, SF-MPQ results, weekly cigarette use, and weight were also recorded in patients' psychology visit notes and graduate students entered all relevant patient information into a database.

Measures

       Cigarette use. Student clinicians asked patients about their weekly cigarette use and recorded the number of cigarettes in their medical chart.

       Weight management. Student clinicians asked patients for their current weight at the beginning of each primary care psychology appointment. If a patient did not know his or her weight, the therapist weighed the patient.

       The Generalized Anxiety Disorder (GAD-7; Spitzer, Kroenke, & Williams, 2006). The GAD-7 is a seven item self-report questionnaire that assesses symptoms of anxiety using the following Likert scale: 0 = Not at all, 1 = several days, 2 = more than half the days, and 3 =

nearly everyday (see Appendix B1). The ratings are tallied to obtain a summary score with the following norms: less than 4 indicates no anxiety despite mild endorsement of symptoms, between 5 and 9 is considered mild anxiety, between 10 and 14 is considered moderate anxiety, and greater than 15 is considered severe anxiety. Finally there is a summary question that asks patients to rate how difficult these symptoms have made it for them to do work, take care of things at home, or get along with other people. Item responses range from "not difficult at all" to "extremely difficult."

The GAD-7 was normed on 2,739 patients in 15 primary care clinics in the United States (Spitzer, Kroenke, & Williams, 2006). Self-report scores derived from the GAD-7 were compared to diagnoses made by qualified mental health professionals, as well as patient functional status measures, disability days, and health care records with results indicating good agreement. The GAD-7 has good reliability and validity. The seven items had high internal consistency (Cronbach's alpha = .92) and good test retest reliability (intraclass correlation = .83). Additionally, scores derived from self-report versus mental health professional administered reports of the GAD-7 also had good reliability (intraclass correlation = .83), indicating that regardless of administration procedure, results on the GAD-7 are similar. In order to determine clinically significant cut-off scores for the GAD-7, mental health professionals first used the Diagnostic and Statistical Manual of Mental Disorders (4th Edition) as criteria for assessing patients. These scores were compared to patients' GAD-7 scores and results showed that a summary score of 10 or greater was determined as the cut off point to yield optimal sensitivity of 89% and a specificity of 82% for generalized anxiety disorder (Spitzer, Kroenke, & Williams, 2006). The GAD-7 was moderately good at detecting panic disorder (sensitivity of 74% and specificity of 81%), social anxiety disorder (sensitivity of 72% and specificity of 80%), and

posttraumatic stress disorder (sensitivity of 66% and specificity of 81%) (Spitzer, Kroenke, & Williams, 2006). Despite the interrelatedness of depression and anxiety, a factor analysis determined their distinct dimensionality. Further analysis showed differences in the presentation and effects of depression and anxiety as they relate to impairment and disability (Spitzer, Kroenke, & Williams, 2006).

The Patient Health Questionnaire-9 (PHQ-9; Spitzer, Kroenke, & Williams, 1999). The PHQ-9 has been used extensively as a brief, useful, tool for assessing depression in primary care settings (Tamburrino et al., 2009; Klinkman, 2009). It consists of nine items and is designed to measure depressive symptoms experienced over the last two weeks (see Appendix B2). Severity of depression is determined by the following cut-offs: less than 4 indicates no symptoms of depression despite mild endorsement of some symptoms, between 5 and 9 indicates mild depression, between 10 and 14 indicated moderate depression, 15 to 19 indicates moderate severe depression, and greater than 20 indicates severe symptoms of depression.

According to a validation study of the PHQ-9 (Kroenke, Spitzer, & Williams, 2001), internal consistency for the PHQ-9 is excellent (Cronbach's alpha = .89) and test-retest reliability is also good (r = .89) for a sample of 3,000 primary care patients. Mental health professionals gave patients the Structured Clinical Interview for DSM-III-R and asked diagnostic questions from the PRIME-MD, which was the longer version from which the PHQ-9 was derived, and the results were compared to patients' scores on the PHQ-9. Results were used to create cut-off scores for the measure (Kroenke, Spitzer, & Williams, 2001). Each severity range score (i.e. 0-4, 5-9, 10-14, 15-19, and 20-27) corresponds to a positive likelihood ratio for major depression disorder (i.e. 0.04, 0.5, 2.6, 8.4, and 36.8, respectively). For example a score 0-4 is 0.04 times as likely in a patient with or without major depression (Kroenke, Spitzer, & Williams, 2001). In a

systematic review attempting to determine the best methods for evaluating the most prevalent

mental disorders found in primary care (depression, anxiety, and somatization), the PHQ-9,

GAD-7, and PHQ-15 were examined. The PHQ-9 was found to be a good measure for detecting

depressive disorders and the abbreviated version, the PHQ-2, was also found to have good

sensitivity and to be a well-validated measure of depression (Kroenke et al., 2010). The PHQ-9

has been administered on a variety of patients within the primary care setting to test its reliability

and validity across different populations. In an ethnically diverse sample of 5,053 primary care

patients, with 2,520 non-Hispanic whites, 598 African Americans, 941 Chinese Americans, and

974 Latinos, exploratory factor analysis revealed one factor loading for each racial/ethnic group

with a range of coefficients from .79 to .89. This indicates that the PHQ-9 is effective in

detecting and monitoring depression in racially and ethnically diverse primary care patients

(Huang et al., 2006).

The Social Readjustment Rating Scale-Revised (SRRS-R; Hobson et al., 1998). The

experience of life altering events is a useful indicator of stress-related symptom scores and

stress-related health outcomes (Holmes & Rahe, 1967; Scully, Tosh, & Banning, 2000) and

therefore is an important measure to administer in primary care settings. The original SRRS

(Holmes & Rahe, 1967) consists of 43 life events such as death of a spouse, marriage, and the

gain of a new family member. However, it has been criticized for containing outdated events that

may no longer have the same impact as when the scale was originally developed (Scully, Tosi, &

Banning, 2000). Furthermore, the size and representativeness of the original sample on which the

SRRS was validated and the appropriateness of some items (stress symptoms rather than life

events) has been questioned (Hobson et al., 1998). A revised Social Readjustment Rating Scale

(SRRS-R) including 51 events was administered to a sample of 5,000 participants who were

asked to rate each event on a scale of 1 (not stressful) to 100 (very stressful) (Hobson et al.,

1998). These ratings were used to establish new weights for each life event. The revised SRRS

was then administered to a representative national sample of 3399 participants between the ages

of 18 and 65 years old to construct the norms for the overall scale scores (Hobson & Delunas,

2001).

The SRRS-R asks patients to indicate if they have experienced any of the listed events in

the past year (see Appendix B3). Pre-established weightings of each item in terms of

stressfulness are multiplied by frequency of endorsement and summed to provide a total score.

Patients with high SRRS scores reported significantly more somatic symptoms, which is

significantly correlated with number of hospital visits (Holmes & Rahe, 1967; Lynch et al.,

2005; Scully, Tosh, & Banning, 2000). Considering the relationship between stress and somatic

symptoms, stressful life events should be assessed in primary care.

Short-form McGill Pain Questionnaire (SF-MPQ; Melzack, 1987). The SF-MPQ asks

patients to report on the current quality of their pain. The measure includes a list of descriptors such

as "throbbing" or "shooting." Patients are asked to rate how closely their pain mimics the listed

descriptors using a scale ranging from 0 (none) to 3 (severe) (Melzack, 1987; see Appendix B4).

The first 11 descriptors represent sensory experiences of pain (i.e. stabbing, gnawing) and items 12-

15 represent the affective dimension of pain (i.e. fearful, sickening). These scores are summed for a

final pain score. Finally patients are asked to rate the intensity of their pain on a scale of 0 (no pain)

to 10 (excruciating) as well as to mark their current level of pain using a visual analogue scale

ranging from "no pain" to the "worst possible pain." Administration takes between 2 to 4 minutes

and therefore is ideal for primary care settings (Melzack, 1987). The original McGill Pain

Questionnaire (MPQ) was found to be too lengthy for administration in certain settings such as

primary care and thus there was a need for an abbreviated yet reliable measure of pain. The development of the short-form involved sampling from the most frequently endorsed pain descriptors chosen by 33% or more of patients using the MPQ (Melzack, 1987). There is a strong correlation between the SF-MPQ and the MPQ and the Pain Rating Scale indices for a variety of forms of pain with the exception of musculoskeletal pain. Pain ratings were taken before and after therapeutic intervention with an average correlation of .69 for pre-surgery and .79 pos-surgery, with a range from .32 - .93 (Melzack, 1987). The study also showed that the SF-MPQ has sensitivity to differences in pain ratings of people receiving different types of pain treatment, such as TENS, epidural blocks, and analgesic drugs, as well as sensitivity to different pain syndromes (Melzack, 1987).

The Insomnia Severity Index (ISI; Morin, 1993). The ISI is a brief measure of insomnia designed for medical patients. Patients are asked to rate problems on a scale of 0 (none) to 4 (very severe) (see Appendix B5). There are a total of seven questions summed to obtain a summary score indicating level of insomnia severity. A rating from 0-7 indicates no significant insomnia, 8-14 indicates subthreshold insomnia, 15-21 indicates clinical insomnia (moderate severity), and 22-28 indicates clinical insomnia (severe). Cut-off scores were determined by evaluating patients' ISI scores, polysomnography, and sleep diaries (Bastien, Vallieres, & Morin, 2001). The ISI takes five minutes or less to administer, requires minimal training, and is a cost-effective assessment and screening tool. It was validated on a sample of 145 patients at a sleep disorder clinic (Bastien, Vallieres, & Morin, 2001). The ISI was compared to sleep diaries and polysomnography in a randomized controlled trial of 78 older adults (Bastien, Vallieres, & Morin, 2001). The study evaluated the sensitivity of the ISI in detecting changes in patients' ratings after receiving behavioral and pharmacological treatments for insomnia by comparing

scores on the ISI with polysomnography and sleep diaries. Results were modest but statistically significant; correlations between total ISI score and sleep efficiently as defined by sleep diaries was -.37 and correlations between total ISI score and sleep efficiency as defined by polysomnography was -.36. The results of the study also indicated that the ISI has good face and construct validity as defined by the DSM-IV. The ISI also has good internal consistency (Cronbach's alpha of 0.74 – 0.78) (Bastien, Vallieres, & Morin, 2001).

Results

Characteristics of the Sample

The database is comprised of data obtained from primary care patients referred to the psychology clinic whose first primary care visit was on or after July 1, 2010 and who had subsequent primary care visits between July 1 and November 1, 2010. This 16-month window was chosen because prior to July 1st, therapists were not collecting data on changes in smoking cessation, insomnia, pain, and weight loss. Participants were 452 adults (164 males (36.28%), 288 females (63.72%)). Age of participants ranged from 19-88 ($M = 52.29$, $SD = 13.43$), with 18.58% of the sample aged 65 or older. The sample was comprised of 184 Caucasians (40.7%) and 267 African Americans (59.1%). The plurality of participants were African American females ($N = 183$, 40.5%). Most of the primary care psychology sample was unemployed (74.6 %), 14.6% were retired, 5.0% worked fulltime, and 4.4% worked part-time. The majority of primary care psychology patients were single (39.3%), 22.2% were divorced, 19.1% were married, 10.4% were widowed, and 8.7% were separated. Primary care psychology patients had various types of insurance: 41.2% had Medicare, 24.4% had private insurance, 17.2% had indigent care, and 15.2% had Medicaid.

Our sample of primary care patients who were referred for psychological services differed from that of the population of patients being treated at the primary care clinic on some demographic variables (See table 1). Out of a total of 14,005 patients attending the primary care clinic from January 1, 2011 to December 31, 2011, 8,314 were female (59.36%); the gender distribution did not differ significantly between the primary care sample and the primary care psychology sample, $\chi^2(1, 14457) = 3.26$, $p = .071$. Thirty-three (33.18)% of the patients were 65 or older, which is significantly greater than that of the primary care psychology sample (18.58%), $\chi^2(1, 1,5417) = 41.80$, $p < .001$. Similar to the primary care psychology sample, there were two primary races represented in the primary care clinic sample, Caucasian (30.97%) and African American (67.48%), however there was a greater representation of African Americans in the primary care sample than the primary care psychology sample, $\chi^2(1, 14240) = 17.15$, $p < .001$.

Table 1.

Demographics for patients in primary care clinic and primary care psychology clinic

	N	Gender	Race	Age
Primary Care Patients	14,005	8,314 female (59.36%) 5,691 males (40.64%)	9,451 Black (67.48%) 4,338 White (30.97%)	< 65 = 9,999 (66.82%) ≥ 65 = 4,966 (33.18%)
Primary Care PSYCHOLOGY Patients	452	288 female (63.72%) 164 males (36.28%)	267 Black (59.20%) 184 White (40.80%)	< 65 = 368 (81.42%) ≥ 65 = 84 (18.58%)

Frequency of Visits and Time Lapse between Visits

The 452 participants in the study had a total of 972 clinic visits. Forty-two (41.81)% of patients returned for more than one visit, 22.35% of patients returned for three visits, 13.72% of patients returned for four visits, and less than 10% returned for five or more visits. The average number of return visits was 2.15, $SD = 2.32$, although some patients had over 20 appointments during the 16-month data collection period. Patients who had more appointments were more likely to continue to return for subsequent visits. Of patients who returned for a second visit, 53.44% returned for a third visit, 61.39% of those returning for a third visit also returned for a fourth, 69.35% of those who returned for a fourth visit returned for a fifth, and 74.42% of patients who returned for a fifth visit returned for a sixth visit.

We reviewed patients' attendance rates for their first visit and return visits for the general primary care patient population as well as for our psychology clinic sample from July 4, 2010 to November 30, 2011. Of the 2,648 patients scheduled for primary care psychology visits, 746 (28.17%) cancelled and 495 (18.69%) were no-shows; a total of 46.87% of patients did not attend their scheduled appointments. The rates of cancelled versus no-show appointments were similar to those observed among all primary care patients $(\chi^2(1,12,237) = 1.88, p = .171)$, however the percentage of missed appointments was significantly higher in the primary care psychology patient sample, $(\chi^2(1, 34,597) = 165.22, p < .001)$. Out of 31,949 patients scheduled for appointments, 6,834 (21.39%) cancelled and 4,162 (13.03%) were no-shows, and therefore a total of 34.42% of patients did not attend their scheduled appointment with their physician compared to 46.87% of patients who did not attend their primary care psychology appointments. In the primary care psychology clinic, new patients (52.80%) had a higher percentage of missed appointments than returning patients (46.57%); however, the difference was not significant, $\chi^2(1, 2,648) = 1.61, p = .204$. In a sample of 125 new patients, 52.80% did not attend their first visit

because either they canceled (33.60%) or were no-shows (19.2%). In a sample of 2,523 return patients, 46.57% did not return for their visit because they canceled (27.90%) or they were no-shows (18.67%). Primary care physicians experienced similar return rates for new patients, χ^2(1, 2,729) = .49, p = .486. In a sample of 2,604 new patients, 49.19% did not attend their first appointment because they canceled (22.62%) or were no-shows (26.57%). However, the return rates for established patients in the general primary care clinic differed significantly from established patients in the primary care psychology clinic, χ^2(1, 31,868) = 186.254, p < .001. In a sample of 29,345 established patients, 33.12% did not keep their appointment because they canceled (21.28%) or were no-shows (11.82%). Number of return visits for primary care psychology was not significantly correlated with the distance that patients live from the primary care clinic, r = -.04, p = .45. The distance between patients' homes and the primary care clinic was an average of 33.74 miles (SD = 52.01), with a maximum distance of 846 miles.

Primary care physicians referred their patients to meet with clinicians and then an appointment was scheduled for primary care psychology. The time lapse between patients' primary care visit and primary care psychology visit was variable. Patients attended their first psychology visit (after they were referred by their primary care physician) between 0 (same day) and 587 days, mean = 20.86 days (SD = 44.15), median = 10 days. It should be noted that the scheduling of patients' initial psychology appointment varied based on factors not necessarily related to the presenting problem. For example, a psychology appointment may have been scheduled for the same day as another upcoming medical appointment for the patient. Issues such as transportation were a factor in determining how soon patients were able to return for an initial psychology visit. The modal time interval between the physician referral and the primary care psychology appointment was 0 days (34.9%); these appointments are called "warm hand-

offs," and they occur immediately after the physician meets with the patient. Patients who were warm hand-offs were less likely to attend a subsequent primary care psychology visit (29.53% chance of returning) than patients who attend their first visit as a separately scheduled appointment (47.20% chance of attending visit), $\chi^2(1, 274) = 8.31$, $p = .004$.

The time between primary care psychology visits was also highly variable. The average span between patients' first and second visit was 37.47 days ($SD = 53.09$), mode = two weeks, median = three weeks. The average interval between the second and third visits was 49.31 days ($SD = 65.17$); the modal and median interval were once again two and three weeks respectively. The average interval between the third and fourth visit was 34.43 days, with modal and median intervals of two and three weeks respectively. Finally, the interval between the fourth and fifth visit was 35.67 ($SD = 59.94$), with a modal interval of two weeks and a median interval of 19 days. The skewness of these data demonstrates that there was a subset of patients who had visits that were separated by months. These individuals may be best viewed as receiving serial single session treatments/consultations for two or more different problems or problem episodes that arose during the course of the year.

Focus of Visits

Each patient could have up to three visit foci; however, due to the low number of patients who focused on three areas of interest within a session, only two foci were analyzed. In initial visits, 51.55% of patients had a secondary focus and 13.27% had a tertiary visit focus. Results were similar for visits 2 and 3, with 53% and 52% of patients having secondary foci, and 13.04% and 15% of patients having tertiary foci, respectively. The following foci were used to categorize the problem areas addressed in each treatment session: depression, anxiety, smoking cessation, pain management, insomnia, diabetes management, weight loss, medication adherence,

substance abuse treatment, dementia (including administering tests of mental capabilities), suicide assessment and contracts, referrals (i.e. to specialty clinics and community health services), brief consults (i.e. where patients were provided with overview information as to the type of services provided by psychology, taking place most often during a warm handoff), and "other" foci for those that did not fit any of these categories. The problems addressed were indicative of the interventions that were employed because the clinic uses standardized, brief interventions targeting specific problems.

For initial visits only, the most common primary focus was depression (35.4%), followed by pain management (11.1%), brief consultations (14.8%), and smoking cessation (9.3%). More then half of the patients were treated for anxiety, depression and pain during a visit. Of the 288 patients whose primary or secondary visit focus for their initial visit was either depression or anxiety, 37 patients (12.85%) focused on both depression and anxiety. See Table 2 for a summary of primary and secondary foci for patients, collapsed across visits.

Table 2.

Primary and secondary foci for patient visits

Foci	Primary Focus: Number of visits (%)	Secondary Focus Number of visits (%)	Total Number of visits (%)
Depression	333 (39.55)	86 (19.50)	419 (32.66)
Pain	101 (12.00)	66 (14.97)	167 (13.02)
Anxiety	79 (9.38)	109 (24.72)	188 (14.65)
Brief Consult	69 (8.19)	18 (4.08)	87 (6.78)
Smoking	67 (9.96)	24 (5.44)	91 (7.09)
Insomnia	55 (6.53)	33 (7.48)	88 (6.86)
Other	37 (4.39)	18 (4.08)	55 (4.29)
Weight loss	37 (4.39)	(3.63)	53 (4.13)
Substance	15 (1.78)	18 (4.08)	33 (2.57)
Diabetes	14 (1.66)	2 (.45)	16 (1.25)
Dementia	12 (1.43)	4 (.91)	16 (1.24)
Adherence	11 (1.31)	9 (2.04)	20 (1.56)
Suicide Assessment	6 (.71)	16 (3.63)	22 (1.71)
Referral	6 (.71)	22 (4.99)	28 (2.18)

Levels of Distress: Depression

The PHQ-9 was used to measure levels of depression. One hundred and sixty patients completed the PHQ-9 during their first or second visit, revealing clinically significant levels of distress. The average PHQ-9 score was 13.90 ($SD = 6.68$), which is in the moderate depression range (see Method section for clinical range criteria). The average PHQ-9 score reported in the validation article for the PHQ-9 was 5.07 in a sample of 580 primary care patients (Kroenke, Spitzer, & Williams, 2001), which is much lower than the average found in the primary care psychology clinic. For patients who were specifically receiving services for depression ($N = 98$), average scores were in the moderately severe depression range ($M = 16.25$, $SD = 6.15$). For patients who were not specifically receiving services for depression ($N = 62$), average scores were in the moderate depression range ($M = 10.19$, $SD = 5.77$). Independent sample t-tests revealed significant differences in depression scores for patients treated for depression versus patients who were not treated for depression, $t(158) = -6.21$, $p < .001$.

There were significant gender differences in initial depression scores ($t(158) = -2.33$, $p = .021$), such that females ($N = 102$, $M = 14.81$, $SD = 6.38$; moderately severe depression) reported higher levels of depression than males ($N = 58$, $M = 12.29$, $SD = 6.94$; moderate depression). The difference in initial depression scores between Caucasian and African American patients trended towards significance, $t(158) = 1.91$, $p = 058$. Caucasians reported higher levels of depression ($N = 65$, $M = 15.12$, $SD = 6.58$; moderately severe depression) than African Americans ($N = 95$, $M = 13.07$, $SD = 6.66$; moderate depression). We also looked at differences in depression scores over time for African Americans and Caucasians, but because the PHQ-9 was not always administered at every patient visit we measured levels of depression using three clustered time intervals: (1) visits 1 and 2, (2) visits 3 through 5, and (3) greater than 6 visits. There was a

significant main effect for change in depression scores over time for African Americans and Caucasians, $F(1, 23) = 4.39$, $p = .047$, and there was a significant interaction between ethnicity and depression scores over time, $F(1,23) = 4.99$, $p = .036$ (See Figure 1). Depression scores were relatively stable over time for African Americans, whereas Caucasians experienced a significant reduction in depression. Initial depression scores were higher in Caucasians ($M = 17.08$, $SD = 6.80$, N = 12) than African Americans ($M = 15.54$, $SD = 6.17$, $N = 13$), they were similar at time 2 ($M = 14.00$, $SD = 9.29$; $M = 15.15$, $SD = 7.78$, respectively), and rates at time 3 were lower for Caucasians ($M = 12.25$, $SD = 8.83$) than African American ($M = 15.69$, $SD = 7.95$). When initial depression score was used as a covariate to control for initial level of depression for African Americans and Caucasians, the interaction remained significant, $F(1,22) = 4.61$, $p = .043$ (See Figure 2).
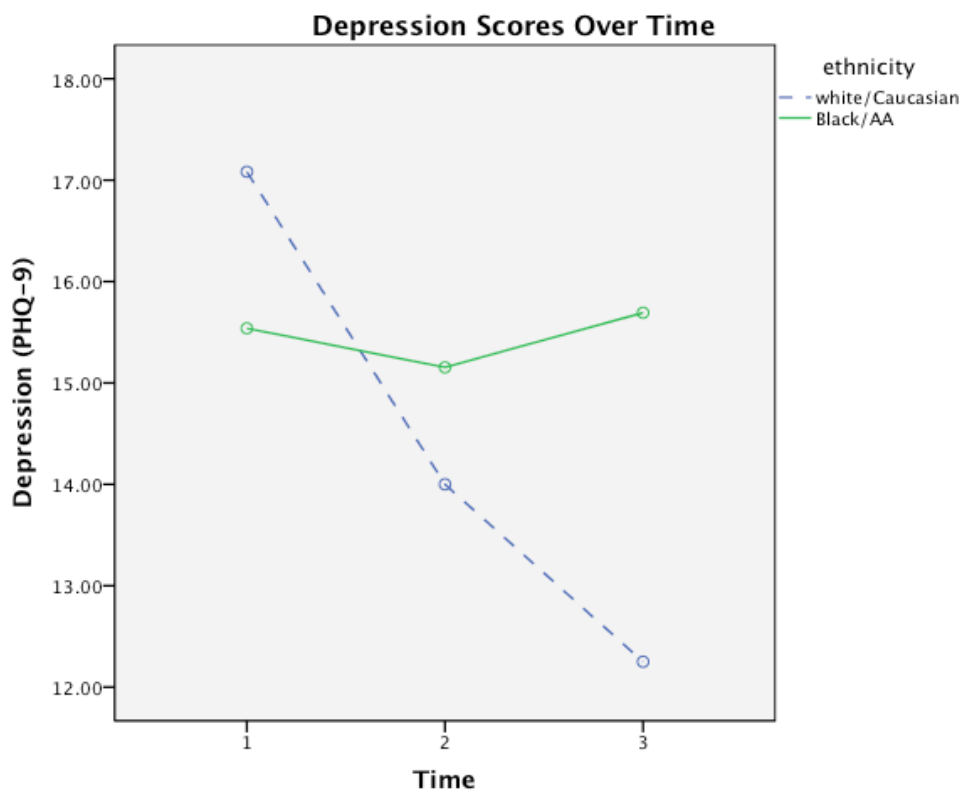
Figure 1. Depression scores over time for Caucasians and African Americans
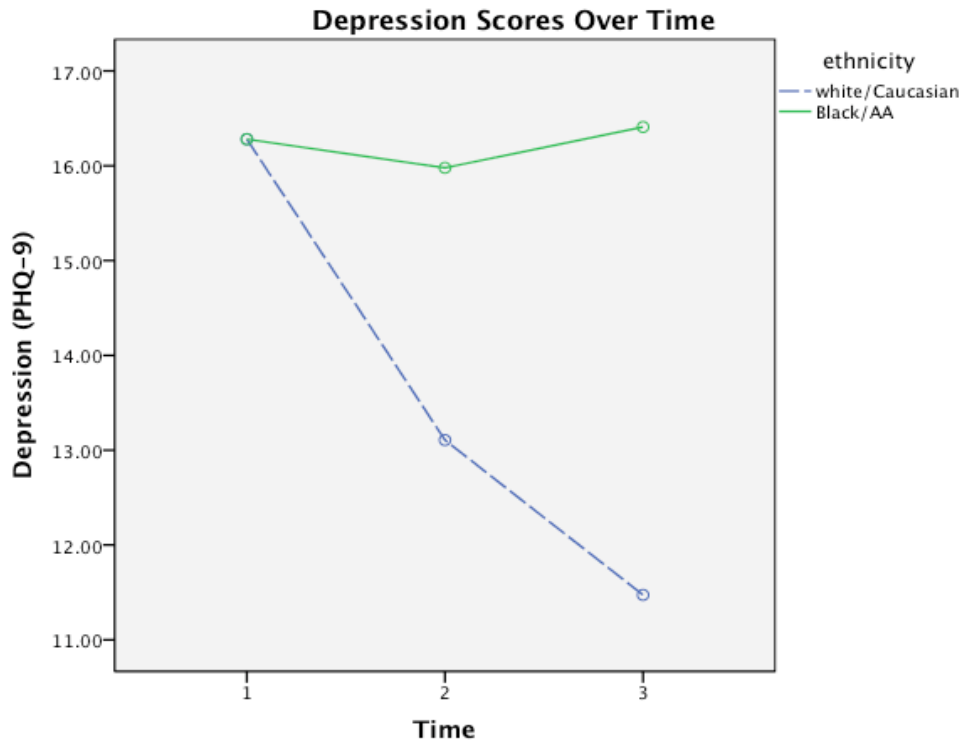
Figure 2. Depression scores over time for Caucasians and African Americans with initial

depression score as a covariate

Initial depression scores were unrelated to patient age, $r(158)= -.13$, $p = .108$. Mean

scores on the PHQ-9 were significantly different based upon employment status ($F(4, 287) =$

3.57, $p = .007$), such that people who were unemployed had the greatest depression scores ($M =$

14.22, $SD = 6.81$), followed by people who were full-time employees ($M = 12.06$, $SD = 1.33$),

part-time ($M = 11.31$, $SD = 5.51$, retired ($M = 10.06$, $SD = 6.96$), and finally self-employed ($M =$

9.67, $SD = 4.16$). Average depression scores were also significantly different based upon marital

status ($F(5, 286) = 4.50$, $p = .001$), such that people who were separated had the highest

depression scores ($M = 18.17$, $SD = 5.01$), followed by divorced people ($M = 15.25$, $SD = 6.21$),

single people ($M = 12.69$, $SD = 6.73$), married people ($M = 12.23$, $SD = 7.12$), and finally

widowers ($M = 12.17$, $SD = 6.81$). Finally average scores on the PHQ-9 did not differ

significantly based upon the type of insurance used by primary care psychology patients ($F(4,$

$287) = 2.30, p = .059$).

As noted above, levels of depression were reassessed during subsequent visits. The PHQ-9

was not always administered at every patient visit and therefore we measured levels of

depression using three clustered time intervals. Paired sample t-tests were used to evaluate

changes in patients' levels of depression over time (see Table 3). Changes in PHQ-9 scores were

assessed separately for patients whose primary or secondary focus of their psychology visits was

depression (and who received depression-focused interventions). Significant changes were

observed across the three time intervals. See Table 4 for changes in depression for patients who

were seeking treatment for depression. In order to determine whether or not patients experienced

clinically significant changes in depression, we calculated the percentage of patients who

experienced a 5-point decrease in their PHQ-9 scores. The severity scores for the PHQ-9 are

divided into 5-point intervals by the authors of the scale (Kroenke, Spitzer, & Williams, 2001)

and thus a decrease of 5-points on the PHQ-9 was used to infer a clinically significant shift in

depression. We also calculated the percentage of patients who dropped from a clinical level of

depression (PHQ-9 score ≥ 10) to a non-clinical level (PHQ-9 score < 10); see Table 5 for an

overview of clinically significant changes in PHQ-9 scores.

Table 3.

PHQ-9 scores for all psychology patients over time

Time Intervals 1= (visit 1-2), 2 = (visit 3-5), 3 = (last visit)	Mean (SD) Time 1	Mean (SD) Time 2	t	df	Sig. (2-tailed)
Pair 1: 1-2	14.33 (6.73)	12.41 (7.74)	2.88	72	0.005
Pair 2: 1-3	15.81 (6.71)	13.50 (8.67)	1.99	25	0.058
Pair 3: 2-3	14.60 (8.38)	14.04 (8.39)	0.53	24	0.602

Table 4.

PHQ-9 scores for patients whose visit foci were depression

Time Intervals 1= (visit 1-2), 2 = (visit 3-5), 3 = (last visit)	Mean (SD) Time 1	Mean (SD) Time 2	t	df	Sig. (2-tailed)
Pair 1: 1-2	16.49 (6.11)	14.39 (7.78)	2.46	50	0.018
Pair 2: 1-3	17.59 (5.35)	14.95 (7.86)	2.03	21	0.055
Pair 3: 2-3	15.95 (7.61)	14.95 (7.86)	0.86	21	0.40

Table 5.

Clinically significant changes in depression and anxiety scores over time

	% of patients who dropped 5 pts, (N)			% of patients who dropped below clinical significance, (N)		
	Time 1 & 2	Time 1 & 3	Time 2 & 3	Time 1 & 2	Time 1 & 3	Time 2 & 3
Depression	35.62, (73)	38.46, (26)	16.00, (25)	22.64, (53)	7.55, (53)	4.44, (45)
Depression FOCUS	41.18, (51)	45.45, (22)	18.18, (22)	18.18, (44)	9.09, (44)	5.26, (38)
Anxiety	36.11, (72)	40.00, (25)	16.00, (25)	33.33, (51)	11.76, (51)	10.26, (39)
Anxiety FOCUS	34.38, (32)	50.00, (10)	20, (10)	33.33, (24)	16.67, (24)	11.76, (17)

Levels of Distress: Anxiety

The GAD-7 was used to measure levels of anxiety for patients in the primary care setting. One hundred and fifty-eight patients completed the GAD-7 during their first or second visit, revealing clinically significant levels of distress. The average GAD-7 score was 11.89 ($SD =$ 6.12), which is in the moderate anxiety range (see Method section for clinical range criteria). The average anxiety score reported in the validation article for the GAD-7 (Spitzer, Kroenke, & Williams, 2006) was 6.1 for women and 4.6 for men in a sample of 2,739 primary care patients, which is nearly 50% lower than the average found in the primary care psychology clinic ($M =$ 12.96, $SD = 6.03$ for a sample of 50 women and $M = 11.30$, $SD = 4.71$ for a sample of 23 men). For patients who were specifically receiving services for anxiety ($N = 54$), average scores were

somewhat greater but also in the moderate anxiety range ($M = 13.20$, $SD = 5.62$). For patients

who were not specifically receiving services for anxiety ($N = 104$), average scores were also in

the moderate anxiety range ($M = 11.20$, $SD = 6.28$). Independent sample t-tests revealed that

initial anxiety scores for patients treated for anxiety were higher than those for patients who were

not treated for anxiety, $t(156) = -1.97$, $p = .051$. Results showed only modest but statistically

significant gender differences in initial anxiety scores ($t(156) = -2.12$, $p = .037$), such that

females ($M = 12.64$, $SD = 6.09$; moderate anxiety) reported higher levels of anxiety than males

($M = 10.52$, $SD = 5.98$; moderate anxiety). Caucasians reported higher levels of anxiety ($M =$

13.08, $SD = 5.48$; moderate anxiety) than African Americans ($M = 11.07$, $SD = 6.42$; moderate

anxiety), $t(156) = 2.04$, $p = 043$. Age was significantly correlated with initial anxiety scores,

$r(156) = -.23$, $p = .004$, such that older patients were more likely to have lower GAD-7 scores

than younger patients. Mean scores on the GAD-7 were not significantly different based upon

employment status ($F(4, 285) = 2.21$, $p = .079$). However, average anxiety scores were

significantly different based upon marital status ($F(5, 284) = 2.88$, $p = .015$), such that such that

people who were separated had the highest anxiety scores ($M = 14.79$, $SD = 5.39$), followed by

divorced people ($M = 12.91$, $SD = 5.72$), single people ($M = 11.90$, $SD = 6.48$), widowers (M =

10.67, SD = 6.24), and finally married people ($M = 10.14$, $SD = 6.57$). Lastly, average GAD-7

scores varied significantly based upon the type of insurance used by primary care psychology

patients ($F(4, 285) = 4.05$, $p = .003$), such that people with indigent care had the highest anxiety

scores ($M = 13.49$, $SD = 6.23$) and people with the lowest anxiety scores were on Medicare ($M =$

10.03, $SD = 6.30$).

As with the depression scores, levels of anxiety were not always assessed at every patient

visit and therefore we measured levels of anxiety using three clustered time intervals: (1) visits 1

and 2, (2) visits 3 through 5, and (3) greater than 6 visits. Paired sample t-tests were used to determine the changes in patients' levels of anxiety over time (See Table 6). We then analyzed GAD-7 scores separately for patients whose primary or secondary focus of their psychology visits was anxiety (and whose psychological intervention was therefore focused on anxiety). See Table 7 for changes in anxiety for patients who were seeking treatment for anxiety. There were no significant main effects ($F(1, 20) = .04$, $p = .85$) or interaction effects ($F(1, 20) = 1.01$, $p = .33$) for change in anxiety scores over time for African Americans and Caucasians. There were also no significant changes in anxiety scores over time based upon gender and age. In order to determine whether or not patients experienced clinically significant changes in anxiety, we calculated the percentage of patients who experienced a 5-point decrease in their GAD-7 scores. The severity scores for the GAD-7 are divided into 5-point intervals by the authors of the scale (Spitzer, Kroenke, & Williams, 2006) and thus a decrease of 5-points on the GAD-7 was used to infer a clinically significant shift in anxiety. We also calculated the percentage of patients who dropped from a clinically significant level of anxiety (GAD-7 score ≥ 10) to a non-clinical level (GAD-7 score < 10); see Table 5 for an overview of clinically significant changes in GAD-7 scores. Analyses revealed that depression and anxiety were significantly correlated, $r = 0.75$, $p < .001$. Initial levels of anxiety and depression show that of all patients with clinically significant anxiety or depression, 73.33% were clinically elevated for both anxiety and depression.

Table 6.

GAD-7 scores for patients over time

Time Intervals 1= (visit 1-2), 2 = (visit 3-5), 3 = (last visit)	Mean (SD) Time 1	Mean (SD) Time 2	t	df	Sig. (2-tailed)
Pair 1: 1-2	12.60 (5.54)	10.43 (6.32)	2.84	71	0.006
Pair 2: 1-3	13.16 (5.99)	10.48 (6.94)	1.92	24	0.068

| Pair 3: 2-3 | 11.72 (6.98) | 10.48 (6.94) | 1.18 | 24 | 0.252 |

Table 7.

GAD-7 scores for patients whose visit foci were anxiety

Time Intervals 1= (visit 1-2), 2 = (visit 3-5), 3 = (last visit)	Mean (SD) Time 1	Mean (SD) Time 2	t	df	Sig. (2-tailed)
Pair 1: 1-2	12.59 (5.51)	10.25 (5.81)	2.17	31	0.037
Pair 2: 1-3	13.40 (5.93)	8.20 (6.51)	2.36	9	0.043
Pair 3: 2-3	11.10 (6.94)	8.20 (6.51)	1.81	9	0.104

Exposure to Stressful Life Events

The SRRS-R assesses the number of stressful life events (weighted for severity in terms of life change units) experienced by a patient over the past year. One hundred and fourteen patients completed the Social Readjustment Rating Scale and descriptive analyses reveal that primary care patients referred for psychological services in the primary care psychology sample have much higher scores, indicating greater incidence of stressful life events weighted for severity than the general population. Norms for the overall scale scores were developed by administering the SRRS-R to a representative national sample of 3,399 participants between the ages of 18 and 65 years old (Hobson & Delunas, 2001). See Table 8 for a comparison between the distribution of primary care psychology patients' scores and general population norms.

Table 8.

Scores on the SRRS-R for the general population and primary care psychology patients

| | Overall Scale Score | |
Percentile	Population Norm	Primary Care Psych Patients
25	0	176.5
50	145	324
75	361	663.5
99	1936	4863.9

The average score on the SRRS-R questionnaire for the primary care psychology patients was 504.84 ($SD = 618.25$) and the average score from the normative sample was 278 ($SD = 422$). There was a significant difference between the scores on the SRRS-R in our sample and the scores in the normative population, $t(3,511) = 5.54$, $p <.0001$. The median score was 324 (70-75th percentile in a normative sample) and the modal score was 240 (60-65th percentile in a normative sample). The most commonly cited stressful life events are listed in Table 9. No significant gender or racial differences were found for SRRS-R scores, $t(115) = .43$, $t(115) = -.42$, respectively. Age was negatively correlated with SRRS-R scores, $r = -.22$, $p = .017$, such that younger patients scored higher than older patients.

Table 9.

Most frequently endorsed SRRS-R items by primary care psychology patients

	Top 10 most frequently cited Stressful life events	% of patients
1	Experiencing financial problems/difficulties (bankruptcy, credit card debt, college costs, tax problems)	47.92
2	Death of close family member	43.75
3	Attempting to modify addictive behavior of self (i.e., smoking, alcohol, drugs, etc.)	40.63
4	Death of close friend	31.25
5	Change in residence	31.25
6	Major injury/illness to self (i.e., cancer, AIDS, etc.)	28.13
7	Being fired/laid off/unemployed	27.08
8	Discovering/attempting to modify addictive behavior of close family member (i.e., smoking, alcohol, drugs, etc.)	25.00
9	Major injury/illness to close family member (i.e., cancer, AIDS, etc.)	23.96
10	Assuming responsibility for sick or elderly loved one	18.75

We tested the hypothesis that the prevalence and severity of stressful life events experienced over the past year (as measured by the SRRS-R) would be associated with higher rates of anxiety and depression for primary care patients. Correlational analyses revealed that the SRRS-R was not significantly correlated with initial scores on the PHQ-9 ($r(109) = .06, p = .56$) or the GAD-7 ($r(109) = .09, p = .34$) nor was there a significant relationship between the SRRS-R and changes in PHQ-9 and GAD-7 scores over time. Further, there were non-significant differences in SRRS-R scores based on marital status, insurance type, nor employment status of primary care psychology patients.

Smoking, Insomnia, Pain, and Weight Interventions

In order to assess the effectiveness of smoking interventions, we looked at the number of cigarettes patients were smoking when they first started to focus on smoking cessation and compared that number to the last recorded number of cigarettes they had smoked weekly. It should be noted that clinicians did not always record the number of cigarettes patients had smoked, especially if subsequent sessions did not focus on smoking cessation. The mean number of cigarettes smoked pre-intervention and post-intervention was 106.20 and 68.20, respectively. See table 10 for data on the number of cigarettes smoked from pre to post intervention for 15 patients who focused on smoking. A paired sample t-test indicated a significant decrease in the number of cigarettes smoked per week, $t(14) = 3.57, p = .003$ (See Table 11).

Table 10.

Number of cigarettes smoked per week by patients from pre to post-intervention

Pre	Post
210	140
56	14
42	38
123	0
140	140

140	70
70	16
70	21
140	49
210	210
70	59
70	70
42	56
140	70
70	70

The average number of treatment sessions for patients seeking smoking cessation and the average time interval (in days) between the first and last session are also reported in Table 11. It should be noted that one patient was excluded because his number of visits and time interval between visits were considered outliers. Only one patient was able to fully quit smoking, suggesting that the intervention outcome is best described as a harm reduction approach. However, it may be the case that some of these individuals were able to complete abstinence on their own. There were no significant changes in smoking rates over time based upon gender, ethnicity, and age.

Table 11.

Pre and post weight management and smoking cessation

Interventions	N	Average Pre-scores	Average Post-scores	t-value	df	Sig. (2-tailed)	Average sessions	Average Time Interval
Weight	9	278.78, SD = 70.40	271.10, SD = 67.43	2.71	8	0.026	2.89, SD = 1.17	52.44, SD = 44.76
Smoking	15	106.2, SD = 55.88	68.2, SD = 56.37	3.57	14	0.003	3.13, SD = 1.77	56.53, SD = 51.43

Patients who wanted to focus on weight management reported their weight during their primary care psychology visits. Once again, recordings were not always consistent. However, a paired sample t-test comparing initial and last reported weight indicated significant weight

reduction, $t(8) = 2.71$, $p = .026$. The average number of sessions for patients seeking weight management and the average time interval between the first and last session are presented in Table 11. See Table 12 for the weights of individual patients during their first and last assessment. There were no significant changes in patients' weight over time based upon gender, ethnicity, and age.

Table 12.

Weight of patients from pre to post-intervention

Weight Pre	Weight Post
256	243
410	390.9
244	224
270	263
191	195
283	277
253	245
226	228
376	374

Patients interested in addressing insomnia reported their level of insomnia using the Insomnia Severity Index (ISI; Morin, 1993). Unfortunately, only fourteen patients filled out the form multiple times. As stated previously, some patients who originally sought services for insomnia chose to focus on another area of intervention and therefore did not complete follow-up ISI questionnaires. Results of first and last ISI scores indicate a non-significant trend, $t(13) = 1.54$, $p = .15$, with average initial scores of 19.57 ($SD = 4.67$; clinically significant insomnia, moderate) and a final scores of 16.43 ($SD = 8.33$; clinically significant insomnia, moderate) (see Method section for clinical range criteria). There was a significant interaction between ethnicity and insomnia scores over time, $F(1,12) = 5.15$, $p = .042$ (See Figure 3). Analyses indicate that initial scores of insomnia were higher for Caucasians ($M = 21.13$, $SD = 1.58$, $N = 8$) than African

Americans ($M = 17.50$, $SD = 1.82$, $N = 6$) and post-scores were lower for Caucasians ($M = 14.50$,

$SD = 2.94$) than for African Americans ($M = 19.00$, $SD = 3.40$).

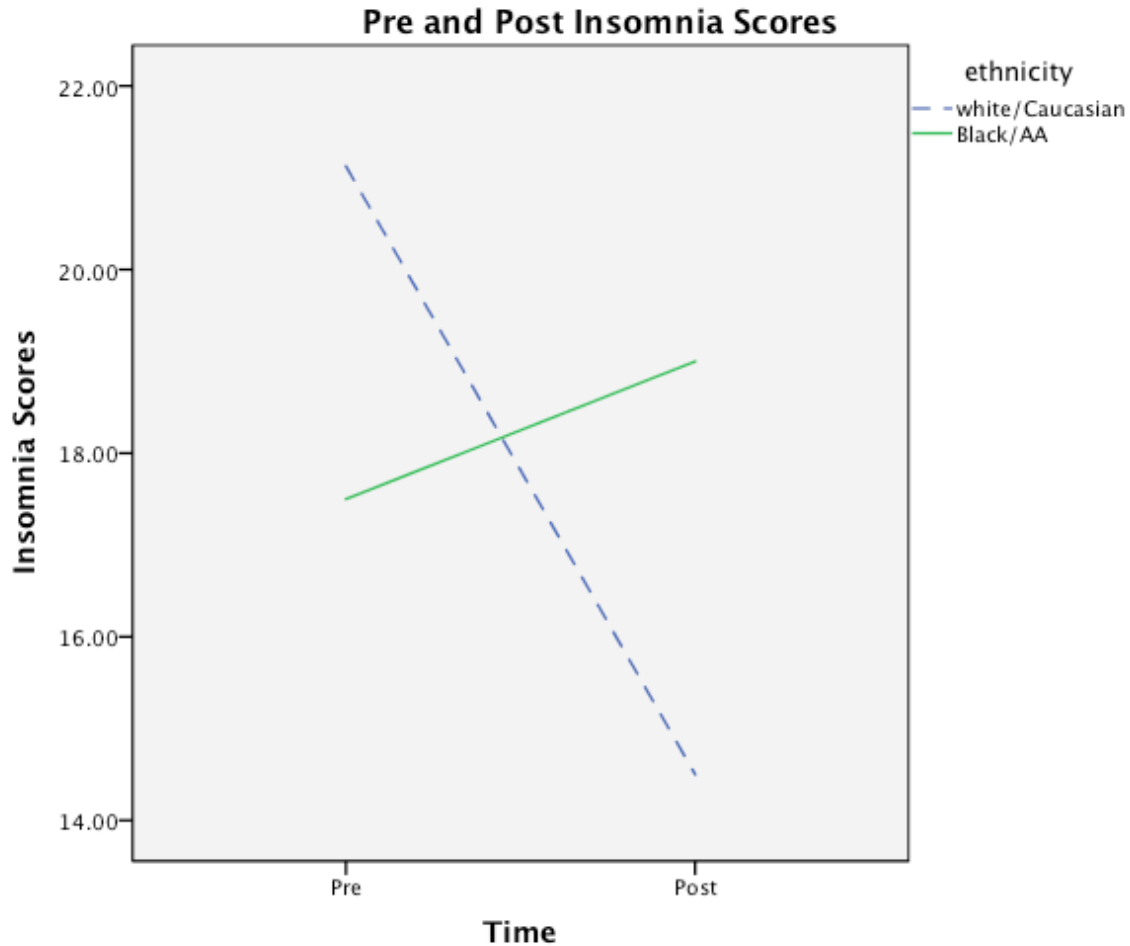*Figure 3.* Pre and post insomnia scores for Caucasians and African Americans

When initial insomnia score was used as a covariate to control for initial levels of

insomnia for African Americans and Caucasians, the interaction only trended towards

significance, $F(1,11) = 4.52$, $p = .057$. (See Figure 4). No significant changes were observed in

insomnia scores over time based upon gender and age.
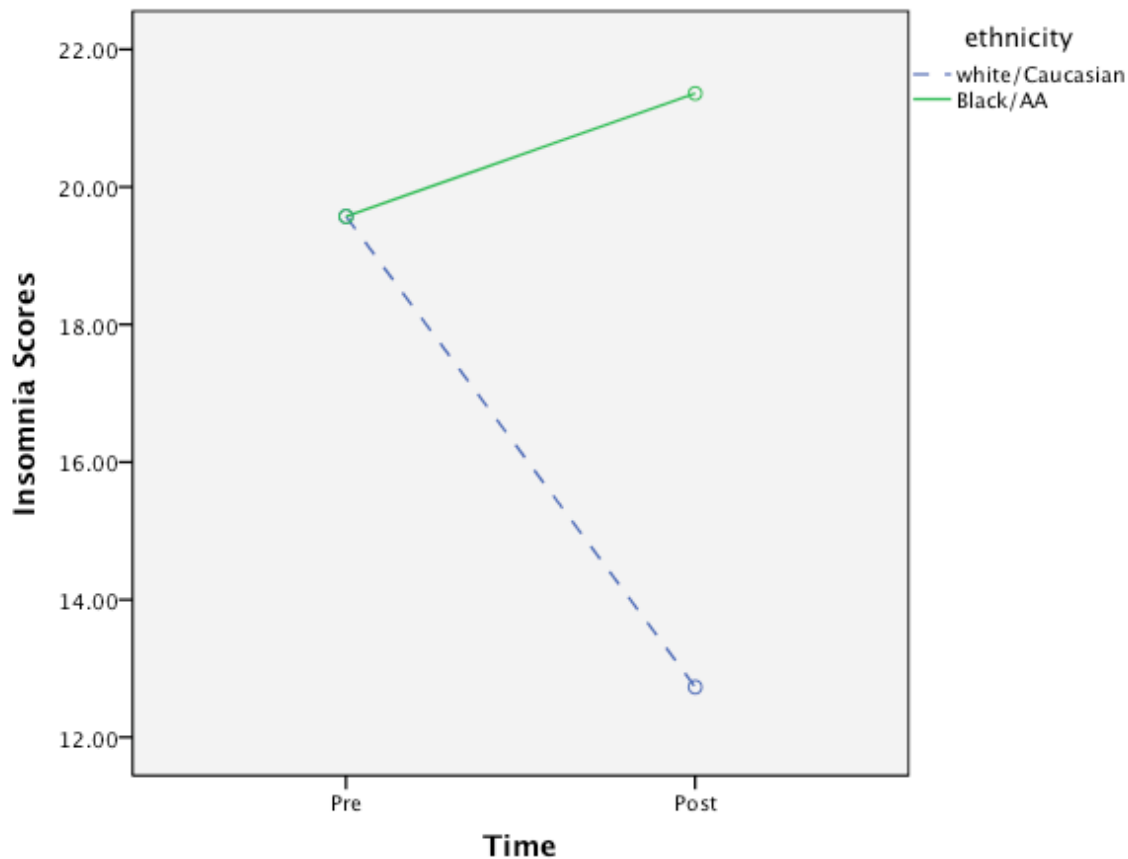
Covariates appearing in the model are evaluated at the following values: sleep_total = 19.5714

Figure 4. Pre and post insomnia scores for Caucasians and African Americans with initial

insomnia score as a covariate

Changes in pain scores from pre to post intervention, as measured by the Short-form

McGill Pain Questionnaire (SF-MPQ; Melzack, 1987), were not significant for the patients for

whom pre-post pain data were available, $t(8) = -1.96$, $p = .081$. Average pre scores were 21.30

($SD = 11.77$) and post scores were 26.80 ($SD = 10.96$). The number of patients who addressed

pain as a primary focus was too small to enable evaluations of pain changes as a function of

gender, age, or ethnicity.

Discussion

This study served as an initial program evaluation of the services provided by the primary care psychology clinic to patients at the Ambulatory Care Clinic at the Medical College of Virginia in Richmond, Virginia. The study provides a description of the patient population and data on changes in targeted areas of behavioral and mental health over time. It also provides preliminary support for the effectiveness of psychological services provided in primary care settings for underserved and underinsured populations. This demographic has been shown to be underserved in terms of specialty mental health services, with a relatively high percentage being under-diagnosed and under-treated (Callahan et al., 1996; Regier, Goldberg, & Taube, 1978).

Characteristics of the Sample

There are a number of notable characteristics of the present population. First, the evaluation indicated that middle-aged, African American females were the most likely type of patient to attend primary care psychology appointments. In comparison to the overall primary care population, the primary care psychology patients were of similar demographics, except that primary care psychology patients were more likely to be younger (i.e. less than 65 years old) and Caucasian. The literature suggests that mental health problems in older adults are often undetected and frequently mismanaged (German et al., 1987; Klap, Unroe, & Unutzer, 2003). There is less attention paid to older adults' mental health concerns and they are less likely to seek services. This may explain the lower referral rates of elderly adults to the primary care psychology clinic. In regard to the low representation of African Americans in our sample, studies show that depression and anxiety are under-detected for African Americans in primary care clinics. Data from 96,075 patients from the National Ambulatory Medical Care Study from 1995-2005 was used to determine if detection, referral and treatment of depression and anxiety in primary health care visits varied based upon race and ethnicity (Stockdale, Lagomasino,

Siddique, McGuire, & Miranda, 2008). Results showed that disparities in diagnoses, counseling/referrals for counseling, and antidepressant medication exist for African Americans and Latinos in primary care clinics. Also, it is suggested that African Americans may use services that require doctor's orders less frequently than Caucasians due to racial bias on the part of the physician, patient preferences (i.e. African Americans prefer fewer services but this may be due to a lack of information about options available), and poor patient-physician communication (Ashton et al., 2003). A survey of 43 depressed, low-income African Americans who were engaged in psychotherapy were asked why they thought African Americans were less likely to seek mental health services than Caucasians with similar levels of distress. They identified stigma, shame, and denial as barriers to care (Cruz, Pincus, Harman, Reynolds, & Post, 2008). However, similar concerns about stigma are recognized as a barrier for mental health services for Caucasians as well (Givens, Katz, Bellamy, & Holmes, 2007). African Americans are more likely than Caucasians to go to their primary care provider for mental health care than to seek services at specialty clinics or from psychiatrists (Snowden, 2001; Snowden & Pingitore, 2002) and so it is important that these patients be identified and encouraged to use primary care psychology services.

About three quarters of our primary care psychology patient population was unemployed. Only five percent were employed full-time, and most of the patients were separated or divorced, suggesting that the patients have many current life stressors. The unique demographics of our sample may account for some of the research findings.

Session Characteristics

Over half (about 58%) of the patients did not return for additional psychology appointments after an initial session. This may be due to a variety of factors such as lack of

interest or "buy-in," transportation issues preventing patients from returning, or the clinician determining from an initial screening that additional services are not needed. Alternatively, patients who attend one visit may receive benefits and do not feel a need to return. Unfortunately, this is only conjecture because patients' progress cannot be assessed if they do not return for follow-up visits. Fortunately, many patients are being exposed to the benefits of primary care psychology services and hopefully this will minimize some of the barriers to seeking mental health services in the future. These patients would presumably be more likely to utilize the service in the future if the need arises.

The average number of sessions patients attended is two and the more sessions that patients attended, the more likely they were to continue to return for services. These returning patients had more persistent levels of depression and anxiety. The percentage of patients who were no-shows or who cancelled their visits in the primary care psychology clinic was significantly greater than in the overall clinic population; patients tended to honor their primary care visits more than their primary care psychology appointments, which is a supplemental service to their medical care. In general, the number of no-shows and cancellations for the primary care clinic at MCV was notably high (34.42%) compared to other primary care clinics (George & Rubin, 2003). In a systematic review of non-attendance in primary care clinics, George and Rubin (2003) reported that non-attendance rates in the United States ranged from 5-55%, and thus a return rate of 34.42% is in the upper range. The review identified the following characteristics for non-attendees: relative youth (17-40 years), more psychological problems, lower socioeconomic status, living in deprived areas, and lack of comprehensive medical coverage.

The primary care population at MCV is generally lower in socioeconomic status than the reference population, which may explain the low return rate. In regard to the primary care psychology clinic, patients may be less likely to attend because they have psychology problems, which is one of the identified risk factors for missing appointments. The most common reason given by patients for missing their appointments in the George and Rubin (2003) study was forgetfulness. Many patients reported that they had forgotten to cancel the appointment or had not considered canceling and this forgetfulness may be more likely to occur for people who have more chaotic and unpredictable lives.

In the present study, non-attendance was more common for patients' initial visits than for their return visits in both the general primary care and primary care psychology clinic samples, which is inconsistent with findings by George and Rubin (2003). Return rates for new patients were similar in the primary care clinic and the primary care psychology clinic; however the return rate for established patients was significantly lower in the primary care psychology clinic. This finding makes sense considering that patients use their primary care physician for ongoing medical care, whereas psychological services are on an "as-needed basis." Future research should seek to uncover the reasons why patients at MCV do not attend their scheduled appointments. Due to the high number of no-shows, it is recommended that primary care psychology clinics overbook their schedules to account for this inevitability.

The mean interval between primary care psychology visits was one month, which is consistent with the extant literature (Rowan & Runyan, 2005); however, the median and modal interval in the present sample indicated that patients typically returned after 2-3 weeks. There was a considerable variability in both the frequency of appointments and time-lapse between visits. This variability may have been due to the range in the severity of patients' concerns.

Those who had more severe concerns may have attended appointments more consistently and as they improved, may chosen to schedule "check-in" or "booster" appointments at longer time intervals. In addition, many patients schedule their primary care psychology appointments in conjunction with their medical visits for "one-stop-shopping." This minimizes the number of trips to the hospital, which is especially important for lower socioeconomic patients who often cite transportation concerns (Rowan & Runyan, 2005). Interestingly, the distance between patients' homes and the primary care clinic was not associated with their number of visits, suggesting that geography is not a critical factor for continued attendance. This finding is inconsistent with our expectation that transportation difficulties might be a hindrance to attendance in our sample. Perhaps patients value the services provided and do not allow distance to be a barrier.

The time-lapse between patients' medical visit and subsequent psychology referral date was also variable for similar reasons. Notably, a large percentage (35%) of patients are introduced to primary care psychology on the same day as their medical visit. Physicians who identify a patient who could benefit from primary care psychology, will consult with one of the therapists and ask the therapist to meet with their patient. This is termed a "warm hand-off" and is one of the benefits of an integrated care clinic. However, analyses showed that patients who met with psychologists on the same day of their medical appointment were less likely to return for subsequent psychology appointments than patients whose physicians referred them to the primary care psychology clinic without an initial introduction. This is inconsistent with findings from other clinics. In one study, patients who were introduced by their physicians to psychologists during their primary care visit kept their referral appointments 76% of the time, whereas patients whose physicians simply referred them to see a psychologist kept their referral

appointments 44% of the time (Apostoleris, 2000, cited in Blount, 2003). The setting of the aforementioned study was a family medicine residency in which psychological and medical services were co-located. The primary care clinic at the Ambulatory Care Clinical at the Medical College of Virginia is an integrated care clinic and physicians and mental health providers work on a team, sharing electronic medical records, space and information about the patient (Blount, 2003). This higher level of integration likely results in greater acceptance of psychological services by patients who may perceive these services as an extension of their medical care, rather than as a separate service. Thus, in an integrated setting, we might not expect a significant difference in patient attendance rates based upon whether or not the physician introduced the psychological services prior to scheduling the referral. There may be a greater level of trust of the services provided within the primary care clinic.

Patients at the primary care psychology clinic sought services for a variety of concerns. A visit often had more than one area of focus; about 52% of visits had a secondary focus and about 13% had a tertiary focus. The interventions administered by primary care psychologists accommodated the unique and varied concerns of the patient. Primary care psychologists are required to have a broad base of knowledge and the ability to address the psychological, behavioral, and interpersonal components of any presenting concern (McDaniel & Fogarty, 2009). For initial visits only, the most common primary focus was depression, followed by pain management, brief consultations, and finally smoking cessation. Patients seeking services for depression often sought services for anxiety and vice versa; therefore many visits addressed both anxiety and depression. Even if interventions did not specifically focus on anxiety or depression, there were still a high number of patients who met criteria for clinical levels of anxiety and depression. Of those patients about 73% met criteria for both. Also, anxiety and depression

scores were significantly correlated. This is consistent with the literature, which indicates that approximately 10-20% of adults will visit a primary care physician while having an anxiety or depressive episode and over 50% of those adults will also have a comorbid depression or anxiety (Hirschfeld, 2001).

Levels of Distress

Patients in the present sample reported high levels of distress. The average patient was experiencing moderate anxiety and depression. Those specifically seeking services for depression reported moderately severe depression and those seeking services for anxiety reported levels of anxiety that were on the high end of the moderate range. There were significant differences in depression scores for patients whose visit focus was depression versus an another focus. Higher level of depression would logically lead patients to seek services in treating said depression. Similarly, patients whose visit focus was anxiety had higher levels of anxiety than those who had an another focus; however, the difference in scores only trended towards significance.

Some demographic differences emerged in the depression and anxiety data. We found that females reported higher levels of depression and anxiety than males, which is consistent with the extant literature. In a study of 1,000 primary care patients (559 women), results showed that women were more likely to have mental disorders, mood disorders, anxiety disorders, and somatoform disorders, and were more likely to have lower score on a measure of health related quality of life than men (Linzer et al., 1996), which would suggest a greater need for psychological services. Furthermore, most findings indicate that the discrepancy between rates of depression in women and men is a ratio of 2:1 and is often reported as 3:1 or 4:1 for diagnoses of major depressive disorder (Culbertson, 1997). The lifetime male to female prevalence rate for all

anxiety disorders is 1 to 1.7 and the one-year male to female prevalence rate is 1 to 1.79 (McLean, Asnaani, Litz, & Hofmann, 2011). One hypothesis for these differential rates is that women may be more likely to endorse symptoms of depression and anxiety and also that women may be more likely to seek treatment and thus their prevalence rates appear higher (Banks & Kohn-wood, 2002).

Our analyses also revealed that among all patients who received psychology services Caucasians had higher depression scores than African Americans, although this only trended towards significance. However, among patients who had multiple visits African Americans initially had slightly higher depression scores, but their scores remained constant across sessions, whereas Caucasians' depression scores significantly declined over time. Some research has shown that when African Americans and Caucasians are treated for depression in a research setting in which treatment protocols are standardized, there are no ethnic differences on initial depression or outcome measures, although African Americans have poorer functional outcomes (Brown, Schulberg, Sacco, Perel, & Houck, 1999). However, studies examining physician treatment practices, when they are not following a mandated, standardized, research protocol, show that African Americans receive similar mental health treatment but that they are less likely to be prescribed psychotropic medication for their depression (Snowden & Pingitore, 2002), which may account for the lack of treatment progress. The combination of therapy and medication is found to be the most efficacious in treating depression (Pampallona, Bollini, Tibaldi, Kupelnick, & Munizza, 2004). Unfortunately, we did not collect information about prescriptions for psychotropic medication or medication usage for the present sample and so further investigation is required in this area. African American primary care patients have also been found to have more comorbid psychiatric disorders, higher life stress, poorer physical

functioning and other complications that may act as barriers to treatment progress (Brown, Schulberg, & Madonia, 1996).

There were also differences in initial anxiety scores between Caucasians and African Americans. Caucasians reported higher anxiety; however the average scores were in the same clinical range. Prior findings regarding racial differences in anxiety rates have been inconclusive, with some studies concluding that African Americans suffer more from anxiety than the general population (Neal & Turner, 1991), while other studies of primary care psychology clinics find no racial differences in anxiety rates (Brown, Shear, Schulberg, & Madonia, 1999). Lifetime prevalence of GAD is lower in African Americans but this may be due to under-recognition (Breslau, Aguilar-Gaxiola, Kendler, Williams, & Kessler, 2006). There was also a significant age difference in anxiety levels (but not depression), such that older adults were less likely to report high anxiety than younger adults. The literature suggests that prevalence rates of anxiety disorders decline with age (Sable & Jeste, 2001). Older adults possess resiliency factors to cope with life changes and so they are able to thrive under adversity by using coping skills and accepting their health decline (Aldwin & Yancura, 2010; Hardy Concato, & Gill, 2002). We also found that the levels of both anxiety and depression experienced by the primary care psychology population were much higher than the averages reported in validation studies for the GAD-7 and PHQ-9, which may be why these patients were identified and referred by their physicians to primary care psychology. Finally, demographic results showed that marital status was associated with patients' anxiety and depression levels. People who were separated and divorced had much higher depression and anxiety scores than those who were widowed or married, which is consistent with literature that suggests that marital status affects ability to cope with stressors (Kessler & Essex, 1982). Further, people who were unemployed were more likely to be

depressed than people who were self-employed. This is consistent with studies indicating that unemployment is a risk factor for development of depression (Montgomery, Cook, Bartley, & Wadsworth, 1999). Finally, levels of anxiety was related to type of insurance that people were using, such that people who used indigent care reported higher anxiety than people who used Medicare.

Effects of Interventions on Patient Distress and Other Outcomes

Attending primary care psychology appointments significantly decreased levels of anxiety and depression for patients. Significant changes were observed between visits 1 or 2 and visits 3 through 5. The changes in anxiety and depression scores were also clinically significant. We measured clinical significance by the proportion of patients who experienced a 5-point drop in their scores, which is the range for the severity scores for the PHQ-9 and GAD-7. Between time interval 1 (i.e. visits 1-2) and 2 (i.e. visits 3-5), 41% of patients whose visit focus was depression and 34% of patients whose visit focus was anxiety had a 5 point drop in depression and anxiety scores, respectively. Looking at time point 1 (i.e. visits 1-2) and time point 3 (i.e. the last visit), 45% of patients whose visit focus was depression and 50% of patients whose visit focus was anxiety had a 5 point drop in depression and anxiety scores, respectively. Patients who attended more than five visits, had scores that did not drop significantly between time points 2 and 3, suggesting that these patients have more chronic, long-term cases of anxiety and depression and less substantial gains are observed in treatment. Research suggests that more chronic patients may benefit from attending a specialty clinic that could provide more consistent and intensive treatment options (Knowles, 2009). These patients should be referred; however, many patients cannot afford other services and have no other available free care options. So while brief treatment is far from ideal, it may be the only viable option in the current healthcare

climate and may provide a buffer against further deterioration over time and may serve as a placeholder until longer-term care options become available for that patient.

The revised Social Readjustment Rating Scale was given to a sample of patients within the primary care psychology patient population. Results revealed that many patients have experienced stressful life events. The amount of stress experienced by the present population compared to a normative sample is staggering. On average, patients in the present study scored between the 70th and 75th percentile of the normative sample. The most frequently cited stressful life events were financial and health-related concerns, which is consistent with the population demographics and intervention setting. Experiencing financial problems was the most commonly endorsed stressor, change in residence (most likely due to financial problems), and being fired and laid off were also highly endorsed. A principal role of primary care psychologists is to be supportive of patients who are coping with a variety of stressors, such as helping them modify health-related behaviors, supporting patients who are coping with illness and injury, and providing support for patients who are under a lot of stress. Often, this includes providing support and resources to caregivers. Thus, it is not surprising that many patients seeking primary care psychology services endorsed that they were attempting to modify an addictive behavior, experiencing major injury and illness, and assuming responsibility for a sick or elderly loved one.

Scores on the SRRS-R did not correlate with depression and anxiety, which may be due to the fact that the SRRS-R evaluates a different time period in the patient's life than the PHQ-9 or the GAD-7. The PHQ-9 and GAD-7 were designed to assess patient mood over the past two weeks. Thus it may be inappropriate to compare these measures to the SRRS-R, which is a measure of stressful events over the course of the past year. The PHQ-9 and GAD-7 are also

meant to detect changes in anxiety and depression over time and so there is an assumption that scores on these measures may fluctuate. Thus, although patients may have had increased stress and anxiety surrounding a stressful life event in the past year, their mood may have since stabilized and so we might not expect to find a correlation between SRRS-R and the GAD-7 and PHQ-9. Finally, younger patients were found to have scored higher than older patients (on the SSRS-R), which is consistent with age-related findings for the GAD-7. Perhaps younger patients experience more life changes and transitions during the past year, than older, less active adults.

Effects of Specific Interventions

Results showed that patient who were seeking services for smoking cessation experienced clinically and statistically significant decreases in smoking. Although smoking decreased from an average of 106 cigarettes to around 68 cigarettes, only one patient in the present sample stopped smoking entirely and thus our services can best be described as a harm reduction approach. However, it is unknown if some patients did not return for services because their primary objective, smoking cessation, had been resolved. Primary care psychologists employed interventions such as motivational interviewing in order to empower patients to make changes. Research has shown that motivational interviewing is 5.2 times more effective than anti-smoking advice (Soria et al., 2006). The primary care setting is an ideal location to help patients with smoking cessation because psychological and medical approaches can be implemented simultaneously. The combination of nicotine supplements and counseling has been shown to be the most effective intervention (Ockene et al., 1994). Primary care psychologists are able to counsel patients and also make recommendations to patients' physicians to prescribe nicotine supplements.

Positive changes were also observed for patients attempting to lose weight. Interventions for weight loss included psycho-education about nutrition and exercise, realistic and measurable goal setting and progress tracking, and motivational interviewing. A systematic review and meta-analysis of randomized controlled trials revealed that motivational interviewing significantly decreases body weight (Armstrong et al., 2011).

Unfortunately, results showed that patients did not experience significant changes in their levels of self-reported pain. Treatment of pain is challenging due to its multi-dimensional nature, which requires consideration of physical and psychosocial factors for treatment (Younger, McCue, & Mackey, 2009). Patients with chronic pain also have a lot of comorbidities that further complicates pain treatment (Pincus, Burlow, Vogel, & Field, 2002; Turk et al., 2010). Due to the complexity of chronic pain, it has been well-documented that physicians often express great frustration at their inability to properly treat chronic pain patients (Corrigan, Desnick, Marshall, Bentov, & Rosenblatt, 2011; Dobscha, Corson, Flores et al., 2008), and psychologists share this frustration. In a systematic review of 52 randomized control trials compared CBT and behavioral therapy to control groups (treatment as usual or active control) only weak effects were found for the improvement of pain and disability. However, the authors found some improvement of patient mood (Eccleston, Williams, & Morley, 2009). The results of meta-analyses and systematic reviews suggest that psychological treatments only show modest benefits in pain reduction and physical and psychological functioning and that no specific treatment modality is superior to the rest (Turk, Wilson, Cahana, 2011). Psychological interventions lack strong, conclusive results. In addition, it is possible that some patients may have been seeking narcotics. Many of the patients were referred to primary care psychology by their physicians because the patients had requested narcotic medications and their physicians required that they first attempt

behavioral interventions before starting or increasing pain medications. As a result, some patients may have been unmotivated to change; rather, they were complying with their physician's orders but did not want to improve too substantially or else they would be denied narcotics. Not all patients are medication seeking and even those who are, often desire narcotics because they are experiencing real, debilitating pain. A systematic review showed that malingering may be present in 1.25-10.4% of chronic pain patients (Fishbain, Cutler, Rosomoff, & Rosomoff, 1999), although these findings should be interpreted cautiously because malingering can be difficult to prove. Future research should focus on how to improve chronic pain treatment in primary care settings.

Changes in patients' self-reported insomnia scores were also non-significant. Tracking insomnia treatment is challenging in the primary care setting due to the changing of medications that may result in significant side effects that impact sleep and levels of fatigue. Unfortunately, medication side effects were not accounted for in the present study. However, there was an interesting interaction effect based upon ethnicity. Caucasian patients reported worse insomnia at pre-intervention than African Americans; however, insomnia scores for Caucasians improved at post-intervention, whereas insomnia scores for African Americans got worse. Research has not supported this finding and due to the small sample size of patients, we are hesitant to draw too many conclusions from this finding. Furthermore, life stressors may mediate this relationship, but we did not collect sufficient data on insomnia patients' experience of stressful life events to test this hypothesis.

Study Limitations

The most notable study limitation was the absence of a control group against which to compare the gains made by patients receiving treatment from primary care psychologists. A

control group may have revealed more pronounced or diminished treatment gains. For example, patients in a control group not receiving treatment services might experience increased depression over time and so the decreases in depression scores in the intervention group would be comparatively more pronounced. Alternatively, a control group might show slight improvements in depression scores over time, which would diminish the significance observed in the treatment group for the present study. Ideally, we would have compared the present sample to a random sample from the same population that was not immediately offered psychological services. This however would have involved denying treatment, at least temporarily, to patients in immediate need, which raises ethical concerns. Thus, in evaluating the effects of treatment in the present study we were restricted to the less than optimal situation of examining changes in a single treatment group without any concurrently obtained comparison data against which to evaluate the significance of patient changes.

Data collection in the primary care setting posed many practical challenges. The primary care psychology visits were primarily patient-centered and so the patient determined the focus of the session. This focus was often inconsistent with the stated referral question, as determined by the patient's primary care physician and so the therapists often had inaccurate preconceptions about the goal of the session. Thus, relevant assessment materials, which were administered at the beginning of the session as a service policy, were not always administered. For example, halfway through the session, it sometimes became apparent that the patient wanted to focus on insomnia despite originally being referred for symptoms of depression. Thus, the therapist may have been unable to get an accurate baseline measure of the patient's sleep quality before providing a brief intervention. According to the data, patients did not always maintain the same session focus. For example, one patient who originally wanting to address weight loss for his

first two session, focused on pain management in his third session, and anxiety reduction in his fourth session. Therefore, the intervention shifted and the therapist may not have followed up to determine whether or not the initial referral problem (weight loss) had been resolved or if the shift was due to other factors. Finally, at times therapists forgot to administer questionnaires and patients refused to fill out questionnaires. Thus there are unfortunate gaps in the assessment data that was collected.

Another limitation of the study pertains to the accuracy of reporting by some patients. Anecdotal and research evidence suggests that patients who are seeking social security disability over-endorse symptoms to convey a high level of distress (Samuel & Mittenberg, 2005). The population from which the current sample was drawn has a high rate of disability-seekers and thus this may have skewed some of the results. In the future, it is recommended that therapists record which patients are seeking disability so that this variable can be taken into account. The primary care model also presents certain challenges with capturing patient progress. It is impossible to assess patients who choose not to return for a follow-up appointment. There are many reasons why patients might not return for follow-ups. Some patients simply do not want the services provided, but in many cases patients do not return if their symptoms improve. In many instances, patients are told not to return unless they experience distress or have a need for additional treatment. Therefore, resolution of problems is often not captured, resulting in an underestimation of treatment success.

Additionally, physicians refer patients to primary care psychology who are in distress, perhaps from an acute stressor. For example, referrals are made as a result of patients crying during their medical appointments. Therefore, patients are often seen by primary care psychology when they are at their most vulnerable and the results of the assessment measures

reflect their acute distress. Intervention sessions may be helpful in decreasing patients' anxiety and depression (for example), however, patients may only return to primary care psychology when they are once again feeling particularly vulnerable and in crisis. Thus, the impact of a previous intervention session is not always captured during follow-up, crisis-control visits. To truly capture change, questionnaires would be administered more frequently, especially in between sessions. However, these measures are meant to be administered during sessions and designed to be brief in order to fit the primary care therapy model. Thus in implementing more rigorous assessments for research purposes, the external validity of the intervention would be compromised because the data collection would be inconsistent with typical assessment practice in primary care clinics.

The present study coded the focus of each primary care psychology patient visit by analyzing patient visit notes. The visit focus was used to infer the type of intervention that was presented to the patient during the visit. However, this does not address the possibility that different interventions may be employed for the same visit focus. Future studies should attempt to define interventions more precisely. This is a challenge in the primary care setting where standard care typically requires psychologists to address multiple issues and implement multiple types of interventions within the course of one 30-45 minute session. Despite the aforementioned challenges, future research should attempt to identify the active ingredients in the interventions responsible for patients' positive behavioral changes because brief interventions in the primary care setting are likely to be an attractive option for expanding mental health care in health care reforms.

This study also failed to capture the cost-benefit of employing psychologists in the primary care clinic. First, psychologists in this setting are involved in preventative care and help

patients modify behaviors that are linked to more chronic, severe diseases that are expensive to treat (Mokdad, Marks, Stroup, & Gerberding, 2004). Also, patients experiencing psychological distress such as depression are three times more likely to be non-compliant with medical recommendations, resulting in medical complications, increased medical visits, and increased hospital costs (DiMatteo, Lepper, & Croghan, 2000). Psychologists are also able to save the physician time and energy by identifying and diagnosing patients with psychological disorders and then administering appropriate, targeted interventions. This results in better use of physician time and in turn likely increases physician morale as a result of "sharing" the care of distressed patients with psychologists. A survey administered to 42 residents from the Medical College of Virginia (MCV) in June 2011 showed that 68.75% reported that they would be more likely to work in primary care if they had psychologists integrated into the program. Furthermore, according to a Health Partners Study (1997), hospitals that integrated psychology services into primary care had a 27% decrease in hospital admissions over a 12-month period, which significantly lowered hospital costs. A meta-analysis of primary care psychology clinics from 1967-1997 revealed that the average savings for integrating psychological services was 20% (Chiles, Lambert, & Hatch, 2006). Although we cannot definitively determine that integrating primary care psychology reduced hospital costs in the present study, we suspect similar cost-reductions were obtained. Future research should investigate the cost-benefit analysis for integrating psychological services into primary care at MCV.

The most prominent strength of the present study is its external validity. The measures administered are useful for clinical as well as research purposes. These measures are frequently used in primary care settings and were administered in typical fashion. Furthermore, patients were not aware that their data would be used retroactively for research purposes, eliminating the

71

potential for reactivity of measures and demand characteristics. Also, there were no exclusionary criteria applied to patients in the present study. Thus the evaluation represents an accurate representation of the typical patients seen at the primary care clinic at the Medical College of Virginia.

Another strength is that this study obtained quantitative measures of behavioral change from patients. Other studies of primary care psychology have been solely qualitative and descriptive in nature, often describing the primary care model or types of interventions administered (Edwards, Garcia, & Smith, 2007; Funk & Ivbijaro, 2008; Lopez et al., 2008). A few studies have gone further and also described psychology visit interventions and patient concerns based upon patient record reviews (Funderburk et al., 2011). The present study not only describes patient interventions and visit focuses, but also captures patients' endorsements of stressful life events. We also tracked patients' depression, anxiety, pain levels, insomnia, cigarette smoking, weight management progress, and other areas of intervention. Primary care psychology is under-researched and the present study contributes to a movement to collect more quantitative, objective measures of patient change.

Future Directions

The present study provides a general snapshot of the Ambulatory Care Clinic at the Medical College of Virginia in Richmond, Virginia. Based on the trends uncovered using these preliminary data, points of interest and areas for further investigation were identified. In future studies, it is recommended that a more thorough assessment be conducted on weight loss, depression, anxiety, pain, insomnia, and smoking cessation. These studies should have larger sample sizes and administration of measures and data recording should be more consistent to

capture patient progress. A more robust sample size will increase statistical power and enable

researchers to fully explore gender, age, and racial and ethnic differences in the data.

List of References

Aldwin, C., & Yancura, L. (2010). Effects of stress on health and aging: Two paradoxes. *California Agriculture*, *64*(4), 183-188. DOI: 10.3733/ca.v064n04p183.

American Academy of Family Physicians. (2004). *Mental Health Care Services by Family Physicians* [position paper]. http://www.aafp.org/x6928.xml. Accessed June 14, 2004.

Ancoli-Israel, S., & Roth, T. (1999). Characteristics of insomnia in the United States: results of the 1991 National Sleep Foundation Survey. I. *Sleep*, *22 Suppl 2*, S347-53. Retrieved May 18, 2011, from http://www.ncbi.nlm.nih.gov/pubmed/10394606.

Anda, R. F., Remington, P. L., Sienko, D. G., & Davis, R. M. (1987). Are physicians advising smokers to quit? The patient's perspective. *The Journal of the American Medical Association*, *257*(14), 1916-9. Retrieved May 18, 2011, from http://www.ncbi.nlm.nih.gov/pubmed/3820511.

Armstrong, M. J., Mottershead, T. A., Ronksley, P. E., Sigal, R. J., Campbell, T. S., & Hemmelgarn, B. R. (2011). Motivational interviewing to improve weight loss in overweight and/or obese patients: A systematic review and meta-analysis of randomized controlled trials. *Obesity Reviews, 12*(9), 709-723. doi: 10.1111/j.1467-789X.2011.00892.x.

Ashton, C. M., Haidet, P., Paterniti, D. A., Collins, T. C., Gordon, H. S., O'Malley, K., Petersen, L. A., Sharf, B. F., Suarez-Almazor, M. E., Wray, N. P., & Street, R. L. (2003). Racial and ethnic disparities in the use of health services. *Journal of General Internal Medicine, 18*(2), 146-152.

Ashworth, C. D., Williamson, P., & Montanco, D. (1984). A scale to measure physician beliefs about psychosocial aspects of patient care. *Social Science Medicine, 19,* 1235-1238.

Ayalon, L., Arean, P. A., Linkins, K., Lynch, M., & Estes, C. L. (2007). Integration of mental health servies into primary care overcomes ethnic disparities in access to mental health services between black and white elderly. *Journal of Geriatric Psychiatry*, *15*(10), 906-912. doi: 10.1097/JGP.0b013e318135113e.

Banks, K. H., & Kohn-wood, L. P. (2002). Gender, Ethnicity and Depression : Intersectionality in Mental Health Research with African American Women. *Scholarship.* Paper 6, 174-184.

Bastien, C. H., Vallieres, A., Morin, C. M. (2001). Validation of the Insomnia Severity Index as an outcome measure for insomnia research. *Sleep Medicine, 2*(4), 297-307.

Beard, C., Weisberg, R. B., & Keller, M. B. (2010). Health-related Quality of Life across the anxiety disorders: findings from a sample of primary care patients. *Journal of Anxiety Disorders*, *24*(6), 559-564. doi: 10.1016/j.janxdis.2010.03.015.

Blazer, D., Hughes, D., & George, L. (1987). Stressful life events and the onset of a generalized anxiety syndrome. *Am J Psychiatry*, *144*(9), 1178-1183. Retrieved May 18, 2011, from http://ajp.psychiatryonline.org/cgi/content/abstract/144/9/1178.

Blount, A. (2003). Integrated primary care: Organizing the evidence. *Family Systems Health*, *21*, 121-133.

Bluestein, D., & Cubic, B. A. (2009). Psychologists and primary care physicians: a training model for creating collaborative relationships. *Journal of clinical psychology in medical settings*, *16*(1), 101-12. doi: 10.1007/s10880-009-9156-9.

Breslau, J., Aguilar-Gaxiola, S., Kendler, K. S., Su, M., Williams, D., & Kessler, R. C. (2006). Specifying race-ethnic differences in risk for psychiatric disorder in a USA national sample. *Psychological medicine*, *36*(1), 57-68. doi:10.1017/S0033291705006161

Brown, G. K. (1990). A causal analysis of chronic pain and depression. *Journal of Abnormal Psychology, 99,* 121-137.

Brown, C., Schulberg, H. C., & Madonia, M. J. (1996). Clinical presentations of major depression by African Americans and whites in primary medical care practice. *Journal of affective disorders*, *41*(3), 181-91. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8988450

Brown, C., Schulberg, H. C., Sacco, D., Perel, J. M., & Houck, P. R. (1999). Effectiveness of treatments for major depression in primary medical care practice: a post hoc analysis of outcomes for African American and white patients. *Journal of affective disorders*, *53*(2), 185-92. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10360414

Brown, C., Shear, M. K., Schulberg, H. C., & Madonia, M. J. (1999). Anxiety disorders among African-American and white primary medical care patients. *Psychiatric services (Washington, D.C.)*, *50*(3), 407-9. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10096648

Bruce, M. L., Ten Have, T. R., Reynolds, C. F., Katz, I. I., Schulberg, H. C., Mulsant, B. H., et al. (2004). Reducing suicidal ideation and depressive symptoms in depressed older primary care patients: a randomized controlled trial. *JAMA : the journal of the American Medical Association*, *291*(9), 1081-91. doi: 10.1001/jama.291.9.1081.

Butler, M., Kane, R. L., McAlpin, D., Kathol, R. G., Fu, S. S., Hagedorn, H., et al. (2008). *Integration of Mental Health/Substance Abuse and Primary Care No. 173 (Prepared by the Minnesota Evidence-based Practice Center under Contract No. 290-02-0009.) AHRQ Publication No. 09-E003*. Rockville, MD: Agency for Healthcare Research and Quality.

Callahan, E. J., Bertakis, K. D., Azari, R., Robbins, J., Helms, L. J., & Miller, J. (1996). The influence of depression on physician-patient interaction in primary care. *Family medicine*, *28*(5), 346-51. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8735062

Chesson, a, Hartse, K., Anderson, W. M., Davila, D., Johnson, S., Littner, M., et al. (2000). Practice parameters for the evaluation of chronic insomnia. An American Academy of Sleep Medicine report. Standards of Practice Committee of the American Academy of Sleep Medicine. *Sleep*, *23*(2), 237-41. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10737341.

Chiles, J. A., Lambert, M. J., & Hatch, A. L. (2006). The Impact of Psychological Interventions on Medical Cost Offset: A Meta-analytic Review. *Clinical Psychology: Science and Practice*, *6*(2), 204-220. doi:10.1093/clipsy.6.2.204.

Collins, C., Levis, D., Mung, R., & Wade, T. (2006). Evolving models of behavioral health integration in primary care. *Journal of Clinical Psychology*. New York. doi: 10.1002/jclp.

Cokkinides, V. E., Ward, E., Jemal, A., & Thun, M. J. (2005). Under-use of smoking-cessation treatments: results from the National Health Interview Survey, 2000. *American journal of preventive medicine*, *28*(1), 119-22. doi: 10.1016/j.amepre.2004.09.007.

Corrigan, C., Desnick, L., Marshall, S., Bentov, N., & Rosenblatt, R. A. (2011). What can we learn from first-year medical students' perceptions of pain in the primary care setting? *Pain Medicine (Malden Mass.)*. doi: 10.1111/j.1526-4637.2011.01150.x.

Cruz, M., Pincus, H. A., Harman, J. S., Reynolds, C. F., & Post, E. P. (2008). Barriers to care-seeking for depressed African Americans. *International journal of psychiatry in medicine*, *38*(1), 71-80. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/18624019

Cuijpers, P., Straten, A. van, Schaik, A. van, & Andersson, G. (2009). Psychological treatment of depression in primary care: a meta-analysis. *The British journal of general practice : the journal of the Royal College of General Practitioners*, *59*(559), e51-60. Royal College of General Practitioners. doi: 10.3399/bjgp09X395139.

Culbertson, F. M. (1997). Depression and Gender: An International Review*1. *American Psychologist*, *52*(1), 31-25.

Culpepper, L. (2005). Insomnia: a primary care perspective. *The Journal of clinical psychiatry*, *66 Suppl 9*, 14-7; quiz 42-3. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/16336037.

DiMatteo, M. R., Lepper, H. S., & Croghan, T. W. (2000). Depression is a risk factor for noncompliance with medical treatment: A meta-analysis of the effects of anxiety and depression on patient adherence. *Archives of Internal Medicine, 160*, 2101-2107.

Dobscha, S. K., Corson, K., Flores, J. A., Tansill, E. C., & Gerrity, M. S. (2008). Veterans affairs primary care clinicians' attitudes towards chronic pain and correlates of opioid prescribing rates. *Pain Medicine, 9*(5), 564-571. doi: 10.1111/j.1526-4637.2007.00330.x.

Doghramji, K. (2006). The epidemiology and diagnosis of insomnia. *The American journal of managed care*, *12*(8 Suppl), S214-20. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/16686591.

Dohrenwend, B. S., Dohrenwend, B. P. (Eds.) (1974). *Stressful life events: Their nature and effects*. Oxford, England: John Wiley & Sons.

Eccleston, C., Williams, A. C. de C., & Morley, S. (2009). Psychological therapies for the management of chronic pain (excluding headache) in adults. *Cochrane database of systematic reviews (Online)*, (2), CD007407. doi:10.1002/14651858.CD007407.pub2

Edwards, B., S. Garcia, and A. Smith. 2007. *Integrating Publicly Funded Physical and Behavioral Health Services: A Description of Selected Initiatives*. Lansing, MI: Health Management Associates.

Edwards, R. R., Doleys, D. M., Fillingim, R. B., & Lowery, D. (2001). Ethnic Differences in Pain Tolerance: Clinical Implications in a Chronic Pain Population. *Psychosomatic Medicine*, *63*(2), 316-323. Retrieved March 20, 2011, from http://www.psychosomaticmedicine.org/cgi/content/abstract/63/2/316.

Finlay-Jones, R., & Brown, G. W. (1981). types of stressful life event and the onset of anxiety and depressive disorders. *Psychological medicine*, *11*(4), 803-15. Retrieved May 18, 2011, from http://www.ncbi.nlm.nih.gov/pubmed/7323236.

Fishbain, D. A., Cutler, R., Rosomoff, H. L., & Rosomoff, R. S. (1999). Chronic pain disability exaggeration/malingering and submaximal effort research. *The Clinical journal of pain*, *15*(4), 244-74. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10617254

Flocke, S. A., Gordon, L. E., Pomiecko, G. (2006). Evaluation of a community health promotion resource for primary care practices. *American Journal of Preventive Medicine, 30*(3), 243–251.

Flocke S. A., Crabtree, B. F., Stange, K. C. (2007). Clinician reflections on promotion of healthy behaviors in primary care practice. *Health Policy, 84*(2-3)*, 277-83.*

Fontaine, K. R. (2003). Years of Life Lost Due to Obesity. *JAMA: The Journal of the American Medical Association*, *289*(2), 187-193. doi:10.1001/jama.289.2.187

Funderburk, J. S., Sugarman, D. E., Labbe, A. K., Rodrigues, A., Maisto, S. A., Nelson, B. (2011). Behavioral health interventions being implemented in a VA primary care system. *Journal of Clinical Psychology in Medical Settings*, 18, 22-29. doi: 10.1007/s10880-011-9230-y.

Funk, M. and G. Ivbijaro, eds. 2008. *Integrating Mental Health into Primary Care: A Global Perspective*. Geneva, Switzerland: World Health Organization and London, UK: World Organization of Family Doctors. Available at http://www.who.int/mental_health/policy/Mental%20health%20 +%20primary%20care-%20final%20low-res%2020140908.pdf.

George, A., & Rubin, G. (2003). Non-attendance in general practice: a systematic review and its implications for access to primary health care. *Family Practice*, *20*(2), 178-184. doi:10.1093/fampra/20.2.178

Germain, A., Moul, D. E., Franzen, P. L. Miewalk, J. M., Reynolds, C. F. Monk, T. H., Buysse, D. J. (2006). Effects of a brief behavioral treatment for late-life insomnia: preliminary findings. *Journal of Clinical Sleep Medicine, 2*(4), 403-406.

German, P. S., Shapiro, S., Skinner, E. A., Von Korff, M., Klein, L. E., Turner, R. W., Teitelbaum, M. L., et al. (1987). Detection and Management of Mental Health Problems of Older Patients by Primary Care Providers. *JAMA: The Journal of the American Medical Association*, *257*(4), 489-493. doi:10.1001/jama.1987.03390040105026

Givens, J. L., Katz, I. R., Bellamy, S., & Holmes, W. C. (2007). Stigma and the acceptability of depression treatments among african americans and whites. *Journal of general internal medicine*, *22*(9), 1292-7. doi:10.1007/s11606-007-0276-3

Gonzalez, J. S., Peyrot, M., McCarl, L., Collins, E.M., Serpa, L., Mimiaga, M., Safren, S.A. (2008). Depression and diabetes treatment nonadherence: A meta-analysis. *Diabetes Care, 31,* 2398-2403.

Goodie, J. L., Isler, W. C., Hunter, C., Peterson, A. L. (2009). Using behavioral health consultant to treat insomnia in primary care: A clinical case series. *Journal of Clinical Psychology, 65*(3), 294-304.

Greene, J. W., Walker, L. S., Hickson, G., & Thompson, J. (1985). Stressful Life Events and Somatic Complaints in Adolescents. *Pediatrics*, *75*(1), 19-22. Retrieved May 18, 2011, from http://pediatrics.aappublications.org/cgi/content/abstract/75/1/19.

Grenier, J., Marie-Helene, C., & Gaboury, I., Ritchie, P., Hogg, W. (2008). Collaboration between family physicians and psychologists: What do family physicians know about psychologists' work? *Canadian Family Physician*, *54*(2), 232-233.

Gunn, W. & Blount, A. (2009). Primary care mental health: a new frontier for psychology. *Journal of Clinical Psychology, 65*, 235-252.

Harris, M. A., Lustman, P. J. (1998). The Psychologist in Diabetes Care. *Clinical Diabetes, 16*(2), 91-93.

Hirschfeld, R. M. A. (2001). The Comorbidity of Major Depression and Anxiety Disorders: Recognition and Management in Primary Care. *Primary care companion to the Journal of clinical psychiatry*, *3*(6), 244-254. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=181193&tool=pmcentrez&rendertype=abstract

Heisler, M. Piette, J. D., Spensor, M., Kieffer, E. Vijan, S. (2005). The Relationship Between Knowledge of Recent HbA1c Values and Diabetes Care Understanding and Self-Management. *Diabetes Care, 28*(4), 4 816-822.

Hobson, C. J., Kamen, J., Szostek, J., Nethercut, C. M., Tiedmann, J. W., & Wojnarowicz, S. (1998). *Stressful Life Events: A Revision and Update of the Social Readjustment Rating Scale. International Journal of Stress Management* (Vol. 5, pp. 1-23-23). Springer Netherlands. doi: 10.1023/A:1022978019315.

Hobson, C. J., & Delunas, L. (2001). National Norms and Life-Event Frequencies for the Revised Social Readjustment Rating Scale. *International Journal*, *8*(4), 299-314.

Holmes, T. H., & Rahe, R. H. (1967). The Social Readjustment Rating Scale. *Journal of Psychosomatic Research, 11*, 213-218

Huang, F. Y., Chung, H., Kroenke, K., Delucchi, K. L., & Spitzer, R. L. (2006). Using the Patient Health Questionnaire-9 to measure depression among racially and ethnically diverse primary care patients. *Journal of general internal medicine*, *21*(6), 547-552. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1924626&tool=pmcentrez&rendertype=abstract.

Hurst, M. W., Jenkins, C. D., & Rose, R. M. (1976). The relation of psychological stress to onset of medical illness. *Annual review of medicine*, *27*, 301-12. doi: 10.1146/annurev.me.27.020176.001505.

Jensen, M. P., Moore, M. R., Bockow, T. B., Ehde, D. M., & Engel, J. M. (2011). Psychosocial factors and adjustment to chronic pain in persons with physical disabilities: a systematic review. *Archives of physical medicine and rehabilitation*, *92*(1), 146-60. doi: 10.1016/j.apmr.2010.09.021.

Katz, D. A., & McHorney, C. A. (2002). The relationship between insomnia and health-related quality of life in patients with chronic illness. *The Journal of family practice*, *51*(3), 229-35. Retrieved May 18, 2011, from http://www.ncbi.nlm.nih.gov/pubmed/11978233.

Keefe, F. J. (1992). Behavioral and Cognitive-behavioral approaches to chronic pain: Recent advances and future directions. *Journal of Consulting and Clinical Psychology, 60*(4), 528-536.

Kendler, K. S., Karkowski, L. M., & Prescott, C. A. (1999). Causal Relationship Between Stressful Life Events and the Onset of Major Depression. *Am J Psychiatry*, *156*(6), 837-841. Retrieved May 1, 2011, from http://ajp.psychiatryonline.org/cgi/content/abstract/156/6/837.

Kessler, R. C. (1997). The effects of stressful life events on depression. *Annual review of psychology*, *48*, 191-214. Annual Reviews 4139 El Camino Way, P.O. Box 10139, Palo Alto, CA 94303-0139, USA. doi: 10.1146/annurev.psych.48.1.191.

Kessler, R. C. & Essex, M. (1982). Marital status and depression: The importance of coping resources. *Social Forces, 61*(2), 484-507. doi: 10.1093/sf/61.2.484

Kessler, R., Stafford, D., & Messier, R. (2009). The problem of integrating behavioral health in the medical home and the questions it leads to. *Journal of clinical psychology in medical settings*, *16*(1), 4-12. doi: 10.1007/s10880-009-9146-y.

Klap, R., Unroe, K. T., & Unützer, J. (n.d.). Caring for mental illness in the United States: a focus on older adults. *The American journal of geriatric psychiatry : official journal of the American Association for Geriatric Psychiatry*, *11*(5), 517-24. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/14506085

Klinkman, M. S. (2009). Assessing functional Outcomes in clinical Practice © Managed Care & Healthcare Communications , LLC. *The American Journal Of Managed Care*, *15*(11), 335-342.

Knowles, P. (2009). Collaborative communication between psychologists and primary care providers. *Journal of clinical psychology in medical settings*, *16*(1), 72-6. doi: 10.1007/s10880-009-9151-1.

Krahn, D. D., Bartels, S. J., Coakley, E., Oslin, D. W., Chen, H., McIntyre, J., et al. (2006). PRISM-E: comparison of integrated care and enhanced specialty referral models in depression outcomes. *Psychiatric services (Washington, D.C.)*, *57*(7), 946-53. doi: 10.1176/appi.ps.57.7.946.

Kripke, D. F., Simons, R. N., Garfinkel, L., & Hammond, E. C. (1979). Short and long sleep and sleeping pills. Is increased mortality associated? *Archives of general psychiatry*, *36*(1), 103-16. Retrieved May 18, 2011, from http://www.ncbi.nlm.nih.gov/pubmed/760693.

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), 606-13. Retrieved April 21, 2011, from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1495268&tool=pmcentrez&rendertype=abstract.

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. Retrieved from
http://www.ncbi.nlm.nih.gov/pubmed/20633738.

Kroenke, K. Spitzer, R. L., Williams, J. B., Monahan, P. O., Lowe, B. (2007). Anxiety disorders
in primary care: prevalence, impairment, comorbidity, and detection. *Annals of Internal
Medicine, 146*(5), 317-25.

Lancaster, T., & Stead, L. (2004). Physician advice for smoking cessation. *Cochrane database of
systematic reviews (Online)*, (4), CD000165. doi: 10.1002/14651858.CD000165.pub2.

Levant RF. Psychological approaches to the management of health and disease. In: Cummings
NA, O'Donahue WT, Naylor EV, eds. *Psychological Approaches to Chronic Disease
Management*. Reno, NV: Context; 2005:37–48.

Leyshon, R. T. (2009). Coping with chronic pain: Crrent advances and practival information for
clinicians. *Work*, 33, 369-372. doi: 10.3233/WOR-2009-0908

Lopez, M., Coleman-Beattie, B.,Jahnke, L. & Sanchez, K. (2008). *Connecting Body and Mind:A
Resource Guide to Integrated Health Care in Texas and the United States*. Austin, TX:
Hogg Foundation for Mental Health. Available at
www.hogg.utexas.edu/PDF/IHC_Resource_Guide.pdf

Linzer, M., Spitzer, R., Kroenke, K., Williams, J., Hahn, S., Brody, D., et al. (1996). Gender,
quality of life, and mental disorders in primary care: Results from the PRIME-MD 1000
study. *The American Journal of Medicine*, *101*(5), 526-533. doi: 10.1016/S0002-
9343(96)00275-6.

Lynch, D. J., McGrady, A., Alvarez, E., Forman, J. (2005). Recent life changes and medical
utilization in an academic family practice. *The journal of Nervous and Mental Disease,
193*(9), 633-665.

McCrae, C. CS. McGovern, R., Lukefahr, R., Stripling, A. M. (2007). Research evaluating brief
behavioral sleep treatments for rural elderly (RESTORE): A preliminary examination of
effectiveness. *American Journal of Geriatric Psychiatry, 15*(11), 979-982.

McCulloch, D. K., Price, M. J., Hindmarsh, M., Wagner, E. H. (1998). A population-based
approach to diabetes management in a primary care setting: early results and lessons
learned. *Effective Clinical Practice, 1*, 12-22.

McCracken, L. M., Matthews, A. K., Tang, T. S., Cuba, S. L. (2001). A comparison of blacks
and whites seeking treatment for chronic pain. *Clinical Journal of Pain, 17*(3), 249-255.

McDaniel, S. H., & Fogarty, C. T. (2009). What Primary Care Psychology Has To Offer the
Patient-Centered Medical Home. *Practice, 40*(5), 483- 492. doi: 10.1037/a0016751.

McLean, C. P., Asnaani, A., Litz, B. T., & Hofmann, S. G. (2011). Gender differences in anxiety disorders: Prevalence, course of illness, comorbidity and burden of illness. *Journal of psychiatric research*, *45*(8), 1027-35. doi: 10.1016/j.jpsychires.2011.03.006

Melzack, R. (1987). The short-form McGill Pain Questionnaire. *Pain, 30*, 191-197.

Milch, C. E., Edmunson, J. M., Beshansky, J. R., Griffith, J. L., & Selker, H. P. (2004). Smoking cessation in primary care: a clinical effectiveness trial of two simple interventions. *Preventive medicine*, *38*(3), 284-94. doi: 10.1016/j.ypmed.2003.09.045.

Mokdad A. H., Marks J. S., Stroup D. F., Gerberding J. L. (2004). Actual causes of death in the United States, 2000. *Journal of the American Medical Association, 291*(10), 1238–1245. doi: 10.1001/jama.291.10.1238

Montgomery, S. M., Cook, D. G., Bartley, M. J., & Wadsworth, M. E. (1999). Unemployment pre-dates symptoms of depression and anxiety resulting in medical consultation in young men. *International journal of epidemiology*, *28*(1), 95-100. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10195671

Morin, C. M. (1993). Insomnia: psychological assessment and management. New York: Guilford Press.

Nathan, D. M., Singer, D. E., Hurxthal, K., Goodson, J. D. (1984). The Clinical Information Value of the Glycosylated Hemoglobin Assay. *New England Journal of Medicine, 310*, 341-346.

Neal, A. M., & Turner, S. M. (1991). Anxiety disorders research with African Americans: current status. *Psychological bulletin*, *109*(3), 400-10. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2062979

O'Donnell, M. L., Creamer, M., & Pattison, P. (2004). Posttraumatic stress disorder and depression following trauma: understanding comorbidity. *The American journal of psychiatry*, *161*(8), 1390-6. doi: 10.1176/appi.ajp.161.8.1390.

Ockene, J. K., Kristeller, J., Pbert, L., Hebert, J. R., Luippold, R., Goldberg, R. J., et al. (1994). The physician-delivered smoking intervention project: can short-term interventions produce long-term effects for a general outpatient population? *Health psychology : official journal of the Division of Health Psychology, American Psychological Association*, *13*(3), 278-81. doi: 10.1037/0278-6133.13.3.278

Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K. M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA : the journal of the American Medical Association*, *295*(13), 1549-55. doi:10.1001/jama.295.13.1549

Pampallona, S., Bollini, P., Tibaldi, G., Kupelnick, B., & Munizza, C. (2004). Combined pharmacotherapy and psychological treatment for depression: a systematic review. *Archives of general psychiatry*, *61*(7), 714-9. doi:10.1001/archpsyc.61.7.714

Pincus, T., Burton, A. K., Vogel, S., & Field, A. P. (2002). A systematic review of psychological factors as predictors of chronicity/disability in prospective cohorts of low back pain. *Spine*, *27*(5), E109-20. Retrieved March 19, 2011, from http://www.ncbi.nlm.nih.gov/pubmed/11880847.

Pollak, K. I., Alexander, S. C., Coffman, C. J., Tulsky, J. A., Lyna, P., Dolor, R. J., James, I. E., et al. (2010). Physician communication techniques and weight loss in adults: Project CHAT. *American journal of preventive medicine*, *39*(4), 321-8. doi:10.1016/j.amepre.2010.06.005

Regier, D. A., Goldberg, I. D., & Taube, C. A. (1978). The de facto US mental health services system: a public health perspective. *Archives of general psychiatry*, *35*(6), 685-93. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/306803

Renders, C. M., Valk, G. D., Griffin, S. J., Wagner, E. H., Eijk van, J. T., Assendelft, W. J. J. (2001). Interventions to Improve the Management of Diabetes in Primary Care, Outpatient, and Community Settings: A systematic review. *Diabetes Care, 24*(10), 1821-1833.

Revicki, D. a., Brandenburg, N., Matza, L., Hornbrook, M. C., & Feeny, D. (2008). Health-related quality of life and utilities in primary-care patients with generalized anxiety disorder. *Quality of life research : an international journal of quality of life aspects of treatment, care and rehabilitation*, *17*(10), 1285-94. doi: 10.1007/s11136-008-9406-6.

Riley, J. L., Wade, J. B., Myers, C. D., Sheffield, D., Papas, R. K., & Price, D. D. (2002). Racial/ethnic differences in the experience of chronic pain. *Pain*, *100*(3), 291-8. Retrieved March 20, 2011, from http://www.painjournalonline.com/article/S0304-3959(02)00306-8/abstract.

Robinson, P. J., & Strosahl, K. D. (2009). Behavioral health consultation and primary care: lessons learned. *Journal of clinical psychology in medical settings*, *16*(1), 58-71. doi: 10.1007/s10880-009-9145-z.

Rollnick, S., Butler, C. C., & Stott, N. (1997). Helping smokers make decisions: the enhancement of brief intervention for general medical practice. *Patient education and counseling*, *31*(3), 191-203. Retrieved May 18, 2011, from http://www.ncbi.nlm.nih.gov/pubmed/9277242.

Rowan, A. B., & Runyan, C. N. (2005). A primer on the consultation model of primary care behavioral health integration. In *The primary care consultant: the next frontier for psychologists in hospitals and clinics* (pp. 9-27). Washington DC: American Psychologist.

Sable, J. A., & Jeste, D. V. (2001). Anxiety disorders in older adults. *Current Psychiatry Reports*, *3*(4), 302-307. Current Medicine Group LLC. doi:10.1007/s11920-001-0023-0

Samuel, R. Z., Mittenberg, W. (2005). Determination of malingering in disability evaluations. *Primary Psychiatry, 12*(12), 60-68. Retieved December 23, 2011, from http://www.primarypsychiatry.com/aspx/article_pf.aspx?articleid=122

Sansone, R. A., & Sansone, L. A. (2010). Psychiatric disorders: a global look at facts and figures. *Psychiatry (Edgmont (Pa. : Township))*, *7*(12), 16-9. Matrix Medical Communications. Retrieved May 1, 2011, from /pmc/articles/PMC3028462/?report=abstract.

Schaik, D., Klign, A., van Hout, H., et al. Patients' preferences in the treatment of depressive disorders in primary care. *General Hospital Psychiatry, 26*(3), 184-189.

Scully, J. A., Tosi, H., Banning, K. (2000). Life Events Checklists: Revisiting the social readjustment rating scale after 30 years. *Educational and Psychological Measurement, 60*, 864-876. doi: 10.1177/00131640021970952.

Shalev, A. Y., Freedman, S., Peri, T., Brandes, D., Sahar, T., Orr, S. P., et al. (1998). Prospective Study of Posttraumatic Stress Disorder and Depression Following Trauma. *Am J Psychiatry*, *155*(5), 630-637. Retrieved March 20, 2011, from http://ajp.psychiatryonline.org/cgi/content/abstract/155/5/630.

Shelder, J., Beck, A., & Benson, S. (2000). Practical mental health assessment in primary care: validity and utility of the QuickPsychoDiagnositics Panel. *Journal of Family Practice, 49*(7), 614-621.

Snowden, L. R. (2001). Barriers to effective mental health services for African Americans. *Mental health services research*, *3*(4), 181-7. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11859964

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), 123-30. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12385565

Soria, R., Legido, A., Escolano, C., López Yeste, A., & Montoya, J. (2006). A randomized controlled trial of motivational interviewing for smoking cessation. *The British journal of general practice : the journal of the Royal College of General Practitioners*, *56*(531), 768-74. Retrieved May 18, 2011, from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1920717&tool=pmcentrez&rendertype=abstract.

Spitzer, R. L. (1999). Validation and Utility of a Self-report Version of PRIME-MD: The PHQ Primary Care Study. *JAMA: The Journal of the American Medical Association*, *282*(18), 1737-1744. doi: 10.1001/jama.282.18.1737.

Spitzer, R. L., Kroenke K., Williams, J. B., et al. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med, 166*(10), 1092-7.

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), 668-77. doi:10.1097/MLR.0b013e3181789496

Tamburrino, M. B., Lynch, D. J., Nagel, R. W., & Smith, M. K. (2009). Primary Care Evaluation of Mental Disorders (PRIME-MD) Screening for Minor Depressive Disorder in Primary Care. *Primary care companion to the Journal of clinical psychiatry*, *11*(6), 339-43. doi: 10.4088/PCC.08.m00711.

The Gallup Organization for National Sleep Foundation. (1995). Sleep in America, Princeton,NJ: The Gallup Organization.

Turk, D. C., Audette, J., Levy, R. M., Mackey, S. C., & Stanos, S. (2010). Assessment and treatment of psychosocial comorbidities in patients with neuropathic pain. *Mayo Clinic proceedings. Mayo Clinic*, *85*(3 Suppl), S42-50. doi: 10.4065/mcp.2009.0648.

Turk, D. C., Wilson, H. D., & Cahana, A. (2011). Treatment of chronic non-cancer pain. *Lancet*, *377*(9784), 2226-35. doi:10.1016/S0140-6736(11)60402-9

Unger, J. (2007). Diabetes Management in Primary Care. Lippincott Williams & Wilkins: Philadelphia, PA.

Unutzer, J. (2002). Collaborative Care Management of Late-Life Depression in the Primary Care Setting: A Randomized Controlled Trial. *JAMA: The Journal of the American Medical Association*, *288*(22), 2836-2845. doi: 10.1001/jama.288.22.2836.

Westheimer, J. M., Steinley-Bumgarner, M., & Brownson, C. (2008). Primary care providers' perceptions of and experiences with an integrated healthcare model. *Journal of American college health : J of ACH*, *57*(1), 101-8. doi: 10.3200/JACH.57.1.101-108.

Whitehead, W. E., Crowell, M. D., Robinson, J. C., Heller, B. R., & Schuster, M. M. (1992). Effects of stressful life events on bowel symptoms: subjects with irritable bowel syndrome compared with subjects without bowel dysfunction. *Gut*, *33*(6), 825-830. doi: 10.1136/gut.33.6.825.

Younger, J., McCue, R., & Mackey, S. (2009). Pain outcomes: a brief review of instruments and techniques. *Current pain and headache reports*, *13*(1), 39-43. Retrieved from

http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2891384&tool=pmcentrez&rendertype=abstract

Appendix A

VCU Health Systems Patient Demographics and Patient Referral Information from
January 1, 2009 – December 31, 2009

Table 1.
Race/Ethnicity of patients of primary care psychology

Race/Ethnicity	Appt Count	Percentage
AMERICAN INDIAN-ALASKAN	24	0.16%
ASIAN-PACIFIC ISLANDER	28	0.19%
BLACK	10,092	67.44%
HISPANIC	128	0.86%
OTHER	99	0.66%
UNKNOWN	8	0.05%
WHITE	4,578	30.59%
TOTAL	14,965	

Table 2.
Insurance coverage of patients of primary care psychology

FSC Reporting Category	Appt Count	Percentage
BCBS	176	1.18%
COMMERCIAL	39	0.26%
INDIGENT CARE	4,779	31.93%
MANAGED CARE	128	0.86%
MEDICAID	772	5.16%
MEDICAID MANAGED CARE	1,420	9.49%
MEDICARE	5,179	34.61%
MEDICARE MANAGED CARE	1,994	13.32%
OTHER	27	0.18%
SELF PAY	338	2.26%
UNKNOWN	113	0.76%
TOTAL	14,965	

Table 3.

Patient referral problem from a sample of 100 patients

Referral Problem	Percentages
depression	48%
anxiety	22%
insomnia	19%
smoking cessation	17%
ETOH abuse	10%
weight loss	9%
chronic pain/behavioral management	9%
diabetes management	7%
bipolar disorder	3%
anger management	2%
decreased sex drive	1%
complicated bereavement	1%

Appendix B

Measures:
1. Generalized Anxiety Disorder (GAD-7; Spitzer, Kroenke, & Williams, 2006)
2. Patient Health Questionnaire-9 (PHQ-9; Spitzer, Kroenke, & Williams, 1999)
3. The Social Readjustment Rating Scale-Revised (SRRS-R; Hobson et al., 1998)
4. Short-form McGill Pain Questionnaire (SF-MPQ; Melzack, 1987)
5. The Insomnia Severity Index (ISI; Morin, 1993)

1. Generalized Anxiety Disorder (GAD-7; Spitzer, Kroenke, & Williams, 2006)

GAD-7 Anxiety

Over the last 2 weeks, how often have you been bothered by the following problems? *(Use "X" to indicate your answer)*	Not at all	Several Days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worry	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

2. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? (PLEASE CIRCLE)

Not difficult at all   Somewhat difficult   Very difficult   Extremely difficult

2. Patient Health Questionnaire-9 (PHQ-9; Spitzer, Kroenke, & Williams, 1999)

PHQ-9 Depression

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "X" to indicate your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? (PLEASE CIRCLE)

Not Difficult At All   Somewhat Difficult   Very Difficult   Extremely Difficult

3. The Social Readjustment Rating Scale-Revised (SRRS-R; Hobson et al., 1998)

Social Readjustment Rating Scale

Please write the number of times you have experienced the following events in your life over the past 12 months.

1. Change in residence

2. Employer reorganization/downsizing

3. Major injury/illness to self (i.e., cancer, AIDS, etc.)

4. Being the victim of police brutality

5. Infidelity (cheating on spouse/mate)

6. Spouse/mate begins/ceases work outside the home

7. Separation or reconciliation with spouse/mate

8. Assuming responsibility for sick or elderly loved one

9. Detention in jail or other institution (mental, drug rehab, etc.)

10. Foreclosure on loan/mortgage

11. Loss of/or major reduction in health insurance/benefits

12. Getting married/remarried (self)

13. Child leaving home (i.e., marriage, attending college, etc.)

14. Beginning/ceasing formal education

15. Experiencing discrimination/harassment outside the workplace

16. Surviving a disaster (fire, flood, earthquake, tornado, hurricane)

17. Receiving a ticket for violating the law (traffic, parking)

18. Being fired/laid off/unemployed

19. Failure to obtain/qualify for a mortgage

20. Death of close family member

21. Experiencing a large unexpected monetary gain (lottery/inheritance)

22. Changing work responsibilities (increased/decreased hours/travel)

23. Discovering/attempting to modify addictive behavior of close family member (i.e., smoking, alcohol, drugs, etc.)

24. Obtaining a home mortgage

25. Retirement

26. Major disagreement with boss/coworker

27. Major injury/illness to close family member (i.e., cancer, AIDS, etc.)

28. Finding appropriate child/day care

29. Being a victim of crime (theft, robbery, assault, rape, etc.)

30. Death of spouse/mate

31. Dealing with unwanted pregnancy

32. Adult child moving in with parent/parent moving in with adult child

33. Changing employers/careers

34. Death of close friend

35. Divorce

36. Change in employment position (i.e., lateral transfer, promotion)

37. Pregnancy of spouse/mate/self

38. Gaining a new family member (through birth, adoption, marriage)

39. Experiencing financial problems/difficulties (bankruptcy, credit card debt, college costs, tax problems)

40. Dealing with infertility/miscarriage

41. Attempting to modify addictive behavior of self (i.e. smoking, alcohol, drugs, etc.)

42. Experiencing domestic violence/sexual abuse

43. Self/close family member arrested for violating the law

44. Major disagreement over child support/custody/visitation

45. Experiencing employment discrimination/sexual harassment

46. Obtaining a major loan other than a home mortgage (car, boat, etc.)

47. Child develops behavioral/learning problem

48. Experiencing/involved in auto accident

49. Becoming a single parent

50. Being disciplined at work/demoted

51. Release from jail

4. Short-form McGill Pain Questionnaire (SF-MPQ; Melzack, 1987)

SHORT-FORM McGILL PAIN QUESTIONNAIRE

Please choose the words below that describe your pain *today*. If a word does not describe your pain, choose the 0 (*none*) for that word. For each word that does describe your pain, rate the intensity for that quality of your pain from 1 (*mild*) to 3 (*severe*).

	None	Mild	Moderate	Severe
Throbbing	0) _____	1) _____	2) _____	3) _____
Shooting	0) _____	1) _____	2) _____	3) _____
Stabbing	0) _____	1) _____	2) _____	3) _____
Sharp	0) _____	1) _____	2) _____	3) _____
Cramping	0) _____	1) _____	2) _____	3) _____
Gnawing	0) _____	1) _____	2) _____	3) _____
Hot-burning	0) _____	1) _____	2) _____	3) _____
Aching	0) _____	1) _____	2) _____	3) _____
Heavy	0) _____	1) _____	2) _____	3) _____
Tender	0) _____	1) _____	2) _____	3) _____
Splitting	0) _____	1) _____	2) _____	3) _____
Tiring-exhausting	0) _____	1) _____	2) _____	3) _____
Sickening	0) _____	1) _____	2) _____	3) _____
Fearful	0) _____	1) _____	2) _____	3) _____
Punishing-cruel	0) _____	1) _____	2) _____	3) _____

Rate the intensity of your pain on the two scales below. Make a mark on the line to indicate where your pain falls between *No Pain* and *Worst Possible Pain* and then circle the appropriate number on the second scale.

No
Pain ├───┤ Worst
Possible
Pain
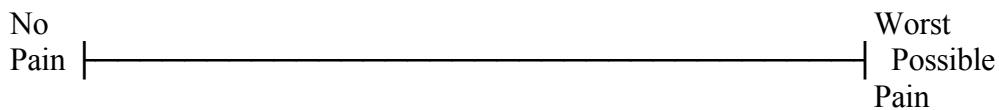
0 No pain
1 Mild
2 Discomforting
3 Distressing
4 Horrible
5 Excruciating

5. The Insomnia Severity Index (ISI; Morin, 1993)

Please rate the *CURRENT (i.e. LAST 2 WEEKS) SEVERITY* of your insomnia problem(s).

Insomnia problem	None	Mild	Moderate	Severe	Very severe
1. Difficulty falling asleep	0	1	2	3	4
2. Difficulty staying asleep	0	1	2	3	4
3. Problem waking up too early	0	1	2	3	4

4. How SATISFIED/DISSATISFIED are you with your CURRENT sleep pattern?

Very Satisfied	Satisfied	Moderately Satisfied	Dissatisfied	Very Dissatisfied
0	1	2	3	4

5. How NOTICEABLE to others do you think your sleep problem is in terms of impairing the quality of your life?

Not at all Noticeable	A Little	Somewhat	Much	Very Much Noticeable
0	1	2	3	4

6. How WORRIED/DISTRESSED are you about your current sleep problem?

Not at all Worried	A Little	Somewhat	Much	Very Much Worried
0	1	2	3	4

7. To what extent do you consider your sleep problem to INTERFERE with your daily

functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration,

memory, mood, etc.) CURRENTLY?

Not at all Interfering	A Little	Somewhat	Much	Very Much Interfering
0	1	2	3	4

Guidelines for Scoring/Interpretation:

Add the scores for all seven items (questions 1 + 2 + 3 + 4 + 5 +6 + 7) = _____ your total score

Total score categories: 0–7 = No clinically significant insomnia 8–14 = Sub-threshold insomnia 15–21 = Clinical insomnia (moderate severity) 22–28 = Clinical insomnia (severe)

Vita

Elizabeth Sadock was born on November 14, 1984, in New Haven Connecticut, and is an American citizen. She graduated from Greenwich High School, Greenwich, Connecticut in 2003. She received her Bachelor of Science in Psychology from The College of William and Mary, Williamsburg, Virginia in 2007 and subsequently worked for two years as a research assistant for the Psychiatric and Neurodevelopmental Genetics Unit at Massachusetts General Hospital, Boston, Massachusetts.