

Behavioral health service utilization: Trends in utilization within a patient-centered medical home for low-income children and women

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ABSTRACT

Background: Behavioral health (BH) problems frequently present in primary care settings. Despite high intervention needs, the majority of low-income, racially/ethnically diverse children and women do not receive necessary care. The current study examined utilization of BH care among low-income, racially/ethnically diverse pediatric and obstetric patients receiving services in an integrated patient-centered medical home (the Center) compared to patients receiving services in traditional settings. **Methods:** A retrospective review was performed on all consecutive Texas Children's Health Plan (TCHP) patients who received outpatient BH services between 2015 and 2017. Children and woman who utilized BH services at the Center were compared against those who utilized BH services via a traditional sitting outside the Center. **Results:** A total of 54,612 were identified. Of those, 3,559 (6.5%) patients were seen at the Center and 51,053 (93.5%) patients were seen in the traditional setting. A larger proportion of pregnant/postpartum women and African American and Hispanic/Latino children and women utilized BH services in the PCMH compared to the traditional setting. Results also indicated higher levels of BH service use for patients with behavior problems or anxiety disorders, and increased use of services provided by doctoral level psychologists in the PCMH. **Conclusion:** Findings support the benefit of integrated BH services in PCMH models for engaging traditionally marginalized populations in BH care.

Keywords: Behavioral health and primary care, behavioral health integration, low-income population

Introduction

Behavioral health (BH) refers to mental health, substance use, and other health behaviors, such as diet, adherence, and sleep. BH problems frequently present in primary care settings, including pediatrics and obstetrics. An estimated 15%–20% of children and adolescents and 25% of pregnant and postpartum women exhibit BH problems that warrant

intervention.^[1,2] BH problems have long been recognized to be impairing and burdensome due to the impact on all areas of current functioning, in addition to long-term difficulties in the absence of intervention.^[3-5] Specifically, pediatric BH problems are associated with problems at school and with peers, poor family functioning, school dropout, and early substance abuse.^[6-8] For pregnant women, BH problems can impact fetal development and birth outcomes, e.g. preterm birth,^[9,10] and among postpartum women, BH problems can influence parental behaviors, such as safety maintenance, child development, and discipline practices [McLearn,

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Minkovitz, Storbino, Marks and Hou, 2006]. BH problems are also associated with increased healthcare utilization and cost.^[11,12] Unfortunately, despite high rates of BH problems and intervention needs, the vast majority of children and pregnant/postpartum women, particularly low-income patients, do not receive needed care.^[2,13-15]

Patient-centered medical home versus traditional care

The Patient-centered medical home (PCMH) model of care strongly emphasizes the provision of integrated care, including close links between primary care and the provision of behavioral health services. In this model, a primary care provider leads an interdisciplinary team to provide comprehensive, continuous, and easily accessible care.^[6] Criteria published by the Health Resources and Services Administration (HRSA) and the Substance Abuse and Mental Health Services Administration's (SAMHSA) outline key features of level 6 criteria, which define the highest level of integration in a medical home model of services.^[17,18] Standards for meeting level 6 criteria include the following. For providers: BH, primary care, and other providers work together in the same shared space; there are high levels of communication among all providers in support of an integrated care model; collaboration is guided by a shared concept of care; and there is a blending of the diverse providers' roles and cultures. Regarding clinical services, the approach to care is population-based; medical and BH screening is standard practice; there is a single treatment plan for each patient; and evidence-based practices are selected and implemented by a team. From the patient's perspective: for all patients, all health needs are treated by a team, and there is a seamless response to all healthcare needs as they arise. At an organizational and administrative level, leaders strongly support integrated care as a model of practice.

In contrast, in more traditionally organized types of care, a patient's health services are likely to be fragmented into being delivered in different settings and modes of delivery.^[19,20] Services to patients are provided by individual providers working in a solo fashion rather than by a coordinated team whose members communicate regularly and frequently with one another about their shared patients. In such traditional settings, there is not a multidisciplinary, unified treatment plan. In the traditional setting, the range of services is typically narrower and more specialized. If problems outside the usual range for that setting are encountered, the patient will most likely be referred elsewhere and instructed to arrange for another provider with a different specialty focus. Communication among the patients' diverse providers is very limited or barely exists.

Aims of the present study

This study aimed to describe behavioral health service delivery in an integrated PCMH center serving patients in the Texas Children's Health Plan, which serves a low-income, racially and ethnically diverse population. The first aim of this paper was

to describe BH processes and utilization within this integrated PCMH. The second aim is to contrast care patterns of patients who received BH services within an integrated PCMH compared with those who received BH services via a traditional care model, a model in which BH services are provided either by the primary care physician in the primary care office or by BH providers in specialty BH settings.

Method

About the Texas children's health plan

Texas Children's Health Plan (TCHP) is a Medicaid managed care organization (MCO) serving members with STAR Medicaid, the Children's Health Insurance Plan (CHIP), and StarKids, (Social Security Disability insurance or SSI). In August of 2013, TCHP opened The Center for Children and Women (The Center), a PCMH for children and pregnant women in Greenspoint, an underserved area of North Houston, and in November 2014, a second location in Southwest Houston. The Center for Children and Women is a comprehensive, patient-centered clinic, offering same site services including obstetrics and gynecology, maternal-fetal medicine, genetic counseling, pediatrics, behavioral health, optometry, speech therapy, dentistry, laboratory, ultrasonography, and pharmacy. With extended hours of operation, The Center provides accessible, multidisciplinary, evidence-based, comprehensive care to its patients. The Center is a 501(a) subsidiary of the TCHP that operates on a fully capitated 100% risk model, in which The Center receives contractually fixed payments per month for each patient in a defined population of patients, irrespective of what services, are provided to a patient in any given month.

With respect to integration of The Center's BH services, the facility satisfies SAMHSA-HRSA level 6 criteria, the highest level of integration in a medical home. This assessment is supported by National Committee for Quality Assurance (NCQA) designation of The Center's PCMH clinical practice for Pediatrics as a NCQA certified PCMH, which is based upon demonstrating strong performance or significant improvement in measures across the triple aim: better patient experience, better health, and lower per capita cost.^[21] More specifically, the NCQA^[22] focuses on six areas of a health services organization's practice competency for achieving a high level of recognition, namely: 1) practice leadership and care teams effectively partner with patients and families; 2) high standards are set for data collection, and data are used for support of evidence-based clinical decision making; 3) there is continuity of care and patients are provided with access to useful clinical advice; 4) care management protocols are used to identify patients whose care needs to be managed more closely; 5) primary and specialty care clinicians share information effectively, and referral of patients is well managed; and 6) performance is measured, and performance improvement is a high priority.

With respect to integration of BH services with The Center's obstetric services for women, the OB practice is supported by an NCQA award of Patient-Centered Specialty Practice

Recognition (PCSP). Specifically, PCSP recognition is based on an assessment of coordination and information sharing among specialists and primary care clinicians.^[23] The expectation is that care is organized around the patient, and that all clinical providers who see a patient are actively involved in processes of coordination and communication concerning the patient, and both the patient and the patient’s family are included in the planning of care, and as partners in managing care.

Integrated behavioral health services at the center

The Center has a large bilingual BH team that maintains a 7 days/week or 80 h of clinical coverage consisting of scheduled outpatient therapy and psychiatry services, which may coincide with a coordinated pediatric and/or obstetrics/gynecology (OB/GYN) appointment if necessary. Patients are also seen by members of the BH team in the pediatric and OB/GYN clinics in an integrated fashion as need arises throughout the day.

Clinical services offered by the BH team are extensive and designed to meet the majority of patients’ BH needs in-house. Psychologists and licensed therapists provide crisis intervention, diagnostic assessment, medication monitoring services, and evidence-based therapy services. The most common modalities that all therapists are trained in and which they provide include the following: cognitive-behavioral therapy, dialectical behavioral therapy, interpersonal therapy, parent behavior management training, and motivational interviewing for healthcare adherence. Therapists also have experience in interventions for substance abuse/dependence and in marital/couples counseling. Additional services are provided by a social work team that staffs patient registries and provide care coordination for patients’ BH needs. Social workers also provide triage for abnormal primary care screening results, social work resourcing, and just-in-time solution-focused counseling to patients on an as-needed basis.

The Center practices a unique model for psychiatry service in which medication management responsibilities are shared between the pediatric or OB/GYN provider and a psychiatrist. This model is designed to allow all providers to work at the top of their license and to maintain accessibility to psychiatry specialty services, a highly needed and scarce resource in the urban Houston area. The BH provider and the pediatric or OB/GYN provider work together for initial assessment and initiation and titration of many psychotropic medications (e.g. stimulants for ADHD, antidepressants, etc.). For patients with complex psychiatric medication needs, the psychologists and licensed therapists typically provide therapy services while the psychiatrist provides medication management services. Psychiatry reserves a portion of the daily schedule for the provision of consults to the BH and medical teams in support of diagnostic and medication management decisions.

Behavioral health services through traditional care at other Texas children’s health plan settings

Relative to delivery of BH services at The Center, much less is known about details of the provision of behavioral

health services for comparable populations at other, more traditional TCHP health services settings. However, given lack of behavioral health integration in pediatrics around Houston and the surrounding areas, the framework within which other TCHP settings delivered behavioral health care is expected to be nonintegrated, within a tertiary behavioral health clinic setting and within a traditional fee-for-for service model.

Study design and population

A retrospective review was performed on all consecutive Texas Children’s Health Plan patients who received outpatient behavioral health services between October 2015 and October 2017. Children, adolescents, and woman enrolled in the TCHP who utilized behavioral health services in the time period of the study were included. Patients who received behavioral health services outside the study period were excluded. BH service utilization was defined as one or more outpatient visits to a BH provider. Our study was approved by our institution’s Institutional Review Board.

Two groups of patients were identified. The first group included TCHP children, adolescents, and woman who utilized BH services at the Center between October 2015 and October 2017. For comparison purposes, a second group was identified and consisted of TCHP patients who utilized BH services via a traditional sitting outside the Center, in the same study period.

Data for both groups were obtained from insurance claims submitted by individual providers in the TCHP and by the Center. Patient demographics such as age, gender, race, and ethnicity were collected. Behavioral health variables such as number of encounters, type of provider, patient diagnosis, and whether medications were prescribed were all included for analysis. All data were de-identified to protect patient health information.

Eight groups of billing provider types or institutions were identified from the claims data: psychiatry, psychology,

Table 1: ICD-10-CM Diagnosis Groups

ICD - 10 group	Definition
F01-F09	Mental disorders due to known physiological conditions.
F10-F19	Mental and behavioral disorders due to psychoactive substance use.
F20-F29	Schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders.
F30-F39	Mood [affective] disorders.
F40-F48	Anxiety, dissociative, stress-related, and other nonpsychotic mental disorders
F50-F59	Behavioral syndromes associated with physiological and physical disturbances
F60-F69	Disorders of adult personality.
F70-F79	Intellectual disabilities.
F80-F89	Pervasive and specific developmental disorders.
F90-F98	Behavioral and emotional disorders with onset in childhood and adolescence.
F99	Unspecified mental disorder.

master-level BH providers (LCSW or LPCs), primary care providers (PCP) for pediatrics, PCP for obstetrics and gynecology patients, nurse practitioners, licensed BH facilities, and other specialties. Patient diagnoses were grouped according to the ICD-10-CM (International Classification of Diseases, Tenth Revision, Clinical Modification) coding system into 11 groups. The groups are defined in Table 1.

Data analysis

Categorical variables were reported as counts and percentages. Continuous data were evaluated by the Shapiro-Wilk test for normal distributions. Data with normal distribution were reported as means, and comparisons were performed with the *t*-test. Data with no normal distribution were presented as medians, and comparisons were performed with the Mann-Whitney-Wilcoxon test. Categorical data were presented as a percentage and analyzed using the Chi-square test. A value of *P* < 0.05 was considered significant. All statistical analyses were performed using Stata SE 14, 2015, StataCorp.

Results

In total, 54,612 patients with 278,139 BH encounters were identified during the study period and were included in the study. Of those, 3,559 (6.5%) patients (with 18,297 visits) were seen at the Center and 51,053 (93.5%) patients (with 259,842 visits) were seen in the Traditional Care setting. Mean patient age for patients at The Center was 11.2 (0.9–50)-year old and for the Traditional Care patients 11.8 (0.9–61)-year old (*P* < 0.001). Pediatric patients constituted the majority of patients; 92% of those seen at The Center and 93.2% of those in Traditional Care (*P* = 0.007). Male patients were more common than female patients in both study groups; 56.3 in The Center and 59.2% in Traditional Care (*P* < 0.001). The most common known ethnicity was Hispanic in both groups; (52.0%) in The Center, and (38.0%) in Traditional Care; followed by African American (25.2%, at the Center and 19.2% in Traditional Care; *P* < 0.001, respectively). Caucasian patients were more common in the Traditional Care (19.2%) than in The Center (8.0%). In both groups, some patients chose not to disclose their ethnicity or race. Demographic characteristics are shown in Table 2.

Encounter details

Mean number of encounters per member was significantly higher in patients who were seen at The Center 5.5 (1–75) compared with those in Traditional Care 5.1 (1–86), *P* < 0.001. Providers' specialty differed significantly between the two groups (*P* < 0.001). The most common provider specialties in The Center were mid-level providers (34.1%) followed by pediatric primary care providers (27.2%) and psychologists (23.8%). On the other hand, BH licensed facility (43.4%) followed by psychiatrist (29.2%) and mid-level BH providers (28.1%) were the most common in Traditional Care.

Diagnosis group F90–F98, involving childhood behavioral and emotional disorders such as Attention Deficit Hyperactive

Table 2: Members Demographic Characteristics

Variables	The Center n (%)	Traditional Care n (%)	P
Total patients	3,559	51,053	
Total encounters	18,297	259,842	
Mean age, years*	11.2 (0.9-50)	11.8 (0.9-61)	<i>P</i> <0.001
Adults (>18)	284 (8.0)	3,466 (6.8)	<i>P</i> =0.007
Pediatrics (0-18)	3,275 (92.0)	47,587 (93.2)	
Gender*			<i>P</i> =0.001
Males	2,003 (56.3)	30,168 (59.2)	
Females	1,552 (43.7)	20,851 (40.8)	
Race and ethnicity*			<i>P</i> <0.001
Hispanic	1,850 (52.0)	19,393 (38.0)	
African American	899 (25.2)	9,819 (19.2)	
Caucasian	282 (8.0)	11,220 (22.0)	
Asian/Pacific	31 (0.9)	566 (1.1)	
Native American	3 (0.01)	97 (0.2)	
Unknown ^z	494 (13.9)	9,958 (19.5)	

*All values are per member. ^z Patients either chose not to disclose or data was missing

Table 3: Behavioral Health Services based on Provider and Patient Diagnosis*

Variables	The Center n (%)	Traditional Care n (%)	P
Total encounters	18,297	259,842	
Mean encounters per member, range	5.5 (1-75)	5.1 (1-86)	<i>P</i> <0.001
Diagnosis ^z			<i>P</i> <0.001
F01-F09	19 (0.1)	1,251 (0.5)	
F10-F19	48 (0.3)	666 (0.3)	
F20-F29	129 (0.7)	1,653 (0.6)	
F30-F39	3,010 (16.4)	45,867 (17.7)	
F40-F48	2,741 (15.0)	59,998 (23.1)	
F50-F59	145 (0.8)	1,781 (0.7)	
F60-F69	339 (1.9)	1,173 (0.5)	
F70-F79	22 (0.1)	318 (0.1)	
F80-F89	1,025 (5.6)	9,905 (3.8)	
F90-F98	10,817 (59.1)	137,199 (52.8)	
F99	2 (0.01)	31 (0.01)	
Provider specialty			<i>P</i> <0.001
Psychiatry	2,372 (13.0)	75,934 (29.2)	
Psychology	4,356 (23.8)	31,697 (12.2)	
Mid-level BH provider	6,237 (34.1)	73,088 (28.1)	
PCP pediatrics	5,067 (27.7)	49,952 (19.2)	
PCP OBGYN	75 (0.4)	592 (0.2)	
Nurse practitioner	113 (0.6)	5,779 (2.2)	
BH facility	0 (0.0)	112,889 (43.4)	
Other specialty	77 (0.4)	9,911 (3.8)	
Medications	6,504 (35.5)	88,051 (33.9)	<i>P</i> <0.001

BH=Behavioral Health; PCP=Primary Care Provider; OBGYN=Obstetrics and Gynecology. *All values are per encounter. ^zGroup definitions are summarized in Table 1

Disorder (ADHD), was the most common in both The Center (59.1%) and Traditional Care (52.8%). In comparison, anxiety and stress-related disorders (F40–F48) were more common in the Traditional Care setting (23.1%) than in The Center (15.0%), *P* < 0.001. In regards to medications, significantly more patients were prescribed medications at The Center than at the Traditional Care setting (35.5% vs 33.9%; *P* < 0.001). Table 3 summarizes encounter details for both patient groups.

Discussion

This study examined service utilization trends in pediatric and obstetric patients receiving services in a PCMH versus Traditional Care settings. Results indicated that a higher proportion of racial/ethnic minority patients engaged in services at the PCMH. Although racial/ethnic group demographics were very similar across patients receiving primary health care in both the PCMH and traditional setting models, a significantly higher proportion of patients who elected to engage in BH care were African American or Hispanic/Latino within the PCMH compared with the traditional care setting. Though these findings are cross sectional, they suggest that the integration of BH within the PCMH model may contribute to increased BH service utilization by racial and ethnic minority families, and to a degree sufficient to offset and overcome historical barriers to care such as perceived stigma, lack of knowledge about BH, unavailability of BH providers, lack of resources, cost of services, or insurance restrictions (e.g.^[24-26]). Further, although the availability of Spanish speaking therapists in the community is unknown for this study population, given that bilingual clinical services were consistently available at the Center, it is possible that the linkage of patients with bilingual providers was associated with increased utilization in the PCMH.

Our findings indicated lower utilization of psychiatry services and higher engagement with psychologists in the PCMH than in the traditional setting. There are likely several factors that account for this result. In the PCMH's integrated model, the BH therapist/psychologist works alongside the prescribing pediatrician or the OB/GYN physician that collaboratively manage most BH medication needs. Additionally, the integrated model of the PCMH allows the psychiatrist to provide a faster transition to pediatricians and OB/GYNs for medication management. This is a significant strength of an integrated BH care model given that child and adolescent psychiatrists and psychiatrists with experience in obstetric care are generally scarce and expensive care resources. Similarly, doctoral level psychologists are often more scarce and expensive in the community compared with masters level providers. Thus, higher engagement with psychologists in the PCMH may be explained primarily by increased accessibility to nonpsychiatrist physician prescribers.

This study has several implications for clinical practice and research. First, this study demonstrated that traditionally marginalized patients (racial and ethnic minority children and women) engaged in behavioral health care at higher rates within PCMHs that have integrated BH services engage than in traditional care settings. Thus, PCMHs may be a useful model of care delivery to help break down structural barriers to behavioral health care for historically marginalized patient groups. In addition to the structure of the PCMH, other components of care delivery, such as availability of onsite bilingual English/Spanish providers, and utilization of psychiatry within a consultative model, are additional elements of the PCMH facility that could support patient engagement in BH services. In terms of clinical presentation of patients who engaged in care, disruptive

behaviors, ADHD, and internalizing disorders (depression, anxiety) were the most common presenting issues; thus, BH providers practicing in similar PCMH settings should have strong skill sets in provision of evidence-based practices of Parent Management Training and cognitive behavioral therapies, as well as in management of medications related to ADHD.

Efforts to enhance the quality of primary care have recently focused on the concept of the PCMH. Primary care services should be responsible for meeting the majority of patients' physical as well as mental healthcare needs. Providing such comprehensive care requires a broad team of providers including physicians, psychologists, advanced practice providers, nurse practitioners, social workers, and care coordinators to work together in a patient-centered setting. Overwhelming evidence in the literature demonstrates that mental health problems are common, however frequently go unrecognized in traditional primary care settings that they can strongly impact the treatment quality for physical health conditions, and that mental health treatment can lead to eventual well-being.^[27] While most mental health treatment is provided in primary care settings, particularly for low-income patients, PCPs typically underdiagnose these disorders.^[28,29] Especially, among racial and ethnic minorities, even when these conditions are identified, treatment delivered can be substandard with inadequate amount of follow-up^[30-33] (Kessler *et al.*, 2005). Therefore, without adequately addressing and fully managing patients' behavioral health needs, the PCMH will never achieve its intended goals.

This study has limitations with implications for future research. All results for the PCMH model are derived from only one organization that uses the PCMH model. In contrast, the traditional setting category included many settings. Thus, in this study, all results associated with use of a PCMH integrated care model for delivering behavioral health services are confounded with unmeasured variables that may be unique to the Centers for Children and Women. The generalizability of these findings to other facilities is, thus, limited. In future research, to achieve generalizability, it will essential to involve multiple sites, all of which employ the PCMH model of team-based care that integrates behavioral health into primary care. Such research likely will be more complicated and more expensive to conduct. Therefore, despite this limitation, this study represents an early model that can be incorporated into a larger process for assessing the advantages and disadvantages of the PCMH model relative to more fragmented traditional practice settings.

Another limitation of this study is the use of claims data to identify patients. Given the nature of insurance panels and this study's use of claims data as a record source, it is difficult to identify the entire population of patients that are covered by Texas Children's Health Plan within a particular period. This is because the health plan membership changes on a monthly basis. Thus, although we assume that our patient populations are similar across demographics, given that they come from the same geographical region of the greater Houston area and

have similar household incomes (i.e. qualify for public health insurance), it is impossible to perfectly define the “denominator” of the population from which both the BH Center patients and the BH Traditional Care patients came.

Finally, although this study provides insight regarding overall BH utilization in PCMH versus traditional care settings, it falls short of presenting a more narrowly focused, detailed description and analysis of patients served and of treatments rendered, e.g. specific details regarding the proportion of psychotropic medications prescribed by psychiatry versus primary care physicians, or the average number of sessions by primary diagnosis. Specific information about referrals patterns was also lacking, such as the number of psychiatry referrals compared with actual psychiatry services provided, and how the referral to service ratio may differ by type of setting. Such data could further enhance understanding of differences in BH care utilization across settings.

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Conflicts of interest

There are no conflicts of interest.

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