ARTICLE

Characteristics of Patients Served by a Statewide Child Psychiatry Access Program

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Objective: Maryland's Behavioral Health Integration in Pediatric Primary Care (BHIPP) is a child psychiatry access program offering child-adolescent psychiatry consultation, resource and referral networking, and direct-to-patient mental health intervention. This study investigated characteristics of patients for whom primary care providers sought BHIPP services.

Methods: Data from 6,939 unique patient contacts between October 2012 and March 2020 were collected on service type, demographic characteristics, presenting concerns, clinical severity, clinicians' diagnostic impressions, current treatments, and BHIPP recommendations. Descriptive statistics and latent class analysis were used.

Results: Of the 6,939 patient contacts, 38.6% were for direct-to-patient mental health intervention, 27.3% for child-adolescent psychiatry consultation, and 34.2% for resource and referral networking. In total, 50.3% of patients were female, 58.7% were White, and 32.7% were already receiving mental health services. Latent class analysis identified four classes of presenting concerns: anxiety only (44.2%); behavior problems only (30.7%); mood and anxiety (17.1%); and attention, behavior, and learning problems (8.0%). Compared with patients in the anxiety-only class, those in the attention, behavior, and learning problems class were more likely to receive direct-to-patient mental health intervention (OR=3.59), and BHIPP clinicians were more likely to recommend in-office behavioral interventions for those in the mood and anxiety class (OR=1.62) and behavior problems–only class (OR=1.55).

Conclusions: Patients supported through BHIPP varied in presenting concerns, condition severity and complexity, current receipt of services, and BHIPP utilization. Latent class analysis yielded more clinically useful information about the nature and complexity of patients' concerns than did consideration of individual presenting concerns.

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An obstacle to increasing access to pediatric mental health care is the significant shortage and unequal distribution of mental health professionals (e.g., child and adolescent psychiatrists) (1–3). To fill this gap, pediatric primary care providers (PCPs) are often tasked with diagnosing and treating mental health conditions (4). PCPs are a reasonable choice, given their longitudinal contact with families and that primary care represents a nonstigmatizing setting in which to address mental health concerns. The American Academy of Pediatrics recommends that PCPs play a central role in assessment and management of common mental health problems (e.g., anxiety) (5, 6). However, PCPs may lack the time and training to provide mental health care and may not be comfortable doing so (7–9).

A growing body of research supports embedded and offsite integration of mental health care with primary care to assist PCPs in meeting patients' mental health needs (10, 11). Child psychiatry access programs (CPAPs) represent one promising strategy for increasing mental health care access. These programs, now operating in >30 states (12), provide continuing education, child-adolescent psychiatry consultation (CAPC), and resource and referral networking (R/RN)

HIGHLIGHTS

- This study examined characteristics of patients served through Maryland's statewide child psychiatry access program (CPAP).
- Associations were analyzed between patient characteristics and specific type of CPAP service used, including child-adolescent psychiatry consultation, resource and referral networking, and direct-to-patient mental health intervention.
- Four clinical profiles of patient concerns were derived from the study data, which provided insight into the nature and complexity of patient needs across different types of CPAP services.

by telephone; several programs also offer limited direct-to-patient face-to-face or telehealth consultation with child-adolescent psychiatrists (13–16). Two programs (in Maryland and Michigan) offer time-limited, face-to-face mental health treatment with embedded social workers (15, 17). However, CPAP services vary across states (13, 18).

Maryland Behavioral Health Integration in Pediatric Primary Care (BHIPP), a statewide CPAP, supports PCPs in managing their patients' mental health needs through several interconnected services. PCPs' calls to BHIPP's warmline, a telephone service available Monday–Friday from 9 a.m. to 5 p.m., are answered by licensed social workers who assist with general questions and R/RN tailored to patients, as well as triaging calls for CAPC. BHIPP child-adolescent psychiatrists and licensed social workers collaborate on disposition letters sent to PCPs after a CAPC and meet twice a month to review patients served through CAPC to ensure consistency of guidance provided. BHIPP also offers continuing education to build PCP knowledge and skills. In collaboration with Salisbury University, and under supervision by licensed social workers, BHIPP also embeds master's-level social work students in primary care practices in eight rural Maryland counties to provide direct-to-patient mental health intervention (DMHI), including screening, brief treatment (i.e., four to six therapy sessions), and case management, as well as to facilitate PCPs' use of BHIPP's warmline. Families access DMHI through PCP referral or self-referral. BHIPP child-adolescent psychiatrists and licensed social workers also support DMHI through provision of monthly training and supervision for master's-level social work students and by recommending DMHI through CAPC and R/RN.

Previous research on CPAPs has primarily focused on program use, including characteristics of practices, providers, and patients served by CPAPs and provider and family satisfaction with services (19, 20). However, among studies examining patient characteristics, most have focused exclusively on CAPC, with only two studies from Michigan's CPAP examining patient characteristics both across and within CPAP service types (15, 17). Further, all studies have relied on descriptive statistics to examine patient characteristics (e.g., call rates about depression vs. attention-deficit hyperactivity disorder [ADHD]), which limits understanding of the complex and overlapping mental health needs of patients served by CPAPs. To address these gaps, this study aimed to describe the demographic and clinical characteristics of patients served across BHIPP and by BHIPP service type (i.e., CAPC, R/RN, and DMHI) and to use latent class analysis, an exploratory person-centered approach, to examine patterns of presenting concerns in order to determine whether there are distinct subgroups of patients served by BHIPP and whether subgroups differ in patient characteristics, BHIPP service received, and BHIPP care recommendations provided. Addressing these aims will yield more clinically useful knowledge about the nature and complexity of the needs of patients served through CPAPs and will inform training and consultation provided to PCPs.

METHODS

Study Sample

Between October 2012 and March 2020, a total of 9,569 patient-specific BHIPP contacts across three services (CAPC, R/RN, and DMHI) were completed. For DMHI, we restricted the sample to the first visit to avoid double counting patients (the original DMHI sample comprised 5,305 patient contacts involving 2,840 unique patients). Additionally, 165 (6%) of the 2,840 DMHI patients were excluded because they could not be connected with a PCP. Therefore, this analysis focused on 6,939 unique patients (N=1,893 in CAPC, N=2,371 in R/RN, and N=2,675 in DMHI) associated with 823 unique PCPs. Institutional review board approval was obtained from Johns Hopkins University, University of Maryland, and Maryland's Department of Health.

Variables

Service type and patient data. BHIPP service type included CAPC, R/RN, or DMHI. For descriptive statistics, a three-category variable indicated the service received. For latent class analysis, a binary variable comparing receipt of DMHI to receipt of warmline services (CAPC and R/RN) was created. Patient demographic data included gender, age, race-ethnicity, and insurance type (i.e., private, public, and none or unknown or missing).

Patient presenting concerns. During BHIPP contacts, the PCP, patient, or family describes presenting concerns, and BHIPP clinicians select from a list of 44 presenting concerns. For this study, options were grouped into six categories: anxiety (anxiety, worries-fears, avoidance, dissociation, somatic complaints, obsessions, and compulsions), mood symptoms (depressed mood, emotion dysregulation, expansive mood, and labile mood), behavior problems (parent-child conflict, behavior problems at home and school, destructive behaviors, risky behaviors, sexual acting out, truancy, aggression, hurting animals, hyperactivity, and impulsivity), attention-concentration problems, learning problems (learning problems, learning disability, and underachievement at school), and self-injury (suicidal ideation, suicide attempt, and nonsuicidal self-injury). Binary variables were created for each category: 1, any presenting concerns within that category; 0, no presenting concerns within that category. Binary variables were used in descriptive analyses and as latent class indicators.

Mental health diagnostic impressions. Diagnostic impressions regarding patients' mental health were grouped into seven categories: ADHD with or without a learning disability; adjustment disorder; anxiety disorders; depressive disorders; disruptive behavior disorder or oppositional defiant disorder; trauma and related disorders; and more serious disorder, including autism spectrum disorder, bipolar disorder, eating disorder, mood disorder not otherwise

specified, psychotic disorder, or substance use disorder. Each diagnostic impression was designated for each patient if either the PCP or BHIPP staff indicated that it was present.

Current treatments and case severity. Current mental health–related treatments reported by the PCP, patient, or family during the contact included emergency department or crisis services, residential treatment, inpatient stay or hospitalization, day hospital, intensive outpatient treatment, outpatient psychotherapy, medication treatment, assessment-evaluation, mental health consultation, in-home services, early childhood mental health clinic, Infants and Toddlers Program, special education services, early learning center, home visiting, family education and support, school-based services, case management and family navigation, ancillary services (e.g., speech therapy), and other. A binary variable was created to indicate any or no service receipt, and similar services were grouped (e.g., emergency department and inpatient stay were grouped into a higher level of care) for descriptive analyses.

Case severity was based on BHIPP clinician ratings on the Clinical Global Impressions–Severity (CGI-S) scale, a single-item assessment capturing impressions of severity on a 7-point scale, from 1, normal, to 7, extremely ill (21). The CGI-S includes the clinician's impression of the patient's level of distress, illness severity, and functional impairment and has strong reliability and validity (21, 22). BHIPP clinicians receive ongoing training on the CGI-S to promote interrater reliability. Previous CPAP research has employed similar severity measures (13, 23–25).

BHIPP recommendations. BHIPP recommendations are made to the PCP, patient, and family regarding medication evaluation or change, symptom assessment with a screening tool, provision of psychoeducational handouts to the family, behavioral interventions in the PCP's office (e.g., relaxation and behavior management), or referral of patients to mental health services or community resources. A binary variable was created to reflect whether each recommendation was made during BHIPP contact.

Statistical Analyses

Patient characteristics were examined with descriptive statistics. Latent class analysis, accounting for nesting of patients within PCPs, was conducted to identify classes of patients experiencing similar patterns of presenting concerns and to compare classes on patient characteristics, BHIPP service receipt, and BHIPP recommendations. Latent class models were estimated with Mplus, version 8.1 (26). Missing data were addressed by using full information maximum likelihood estimation. The number of latent classes was selected by comparing model fit statistics and class size. Model fit was assessed with standard fit statistics, including Bayesian information criterion (BIC) and sample size–adjusted BIC (aBIC) (27, 28). Decreases in fit statistics indicate model fit improvements. The Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR) was used to compare the relative fit of a model with k classes to a model with one fewer class. A statistically significant VLMR test indicates that the model with fewer classes should be rejected in support of the model with more classes (27). Entropy (range 0–1) was also examined; higher entropy values indicate better classification accuracy. Finally, class sizes were also examined, because research has shown that small or uncommon classes can be difficult to reliably identify and that it is important not to overextract classes (28, 29).

Once the best-fitting unconditional latent class model was identified, patient characteristics, BHIPP service type, and BHIPP recommendations were added to examine associations with class membership by using multinomial logistic regression through the auxiliary function R3step. This approach was selected because covariates were not intended to serve as latent class indicators or to directly influence the structure or size of latent classes but were hypothesized to be associated with class membership (30).

RESULTS

Characteristics of Patients for Whom PCPs Sought BHIPP Services

Table 1 presents data on patient characteristics overall and by service type. Among the 6,939 unique patient contacts, 38.6% were for DMHI, 34.2% for R/RN, and 27.3% for CAPC. Half (50.3%) of the patients were female, and 58.7% were White. The mean ± SD age of the sample was 11.3 ± 5.1 years, and 37.6% were publicly insured. The most common presenting concerns were anxiety (39.7%), behavior problems (36.5%), mood problems (26.5%), and attention-concentration problems (17.5%). At BHIPP contact, 32.7% of patients were already receiving mental health–related services. Among the patients receiving services, 60.3% were receiving medication evaluation and treatment, 14.5% outpatient psychotherapy, and 15.1% school-based services; 27.3% were already taking psychotropic medications, and of this group, 28.4% were taking multiple medications. The most common diagnostic impressions were anxiety disorders (36.8%), ADHD with or without a learning disability (28.0%), and depressive disorders (19.1%). Approximately 55.0% of patients were rated in the mild-to-moderate impairment range on the CGI-S.

In the DMHI group, 52.1% of patients were female, most (68.1%) were White, 73.4% were ages 6–18, and 44.8% were publicly insured. Notably, the largest proportion of patients in the 0-to-5-year-old range (22.5%) were seen through BHIPP's DMHI service. In the CAPC group, 52.8% were male, most (64.7%) were White, 82.2% were ages 6–18, and 30.3% were publicly insured. In the R/RN group, 51.5% were female, most were White (43.2%) or African American (24.6%), 83.5% were ages 6–18, and 35.3% were publicly insured.

The most common presenting concerns for patients receiving DMHI were behavior problems and anxiety, and

TABLE 1. Characteristics of patients for whom primary care providers sought services from Behavioral Health Integration in Pediatric Primary Care (BHIPP) and BHIPP recommendations, across all services and by service type[a]

	All patient contacts (N=6,939)		CAPC (N=1,893)		R/RN (N=2,371)		DMHI (N=2,675)	
Characteristic	N	%	N	%	N	%	N	%
Gender								
Female	3,493	50.3	877	46.3	1,221	51.5	1,395	52.1
Male	3,341	48.1	999	52.8	1,098	46.3	1,244	46.5
Other	7	.1	2	.1	2	.1	3	.1
Unknown	98	1.4	15	.8	50	2.1	33	1.2
Race-ethnicity								
African American	1,401	20.2	287	15.2	585	24.6	529	19.8
Asian	83	1.2	23	1.2	43	1.8	17	.6
Other	338	4.9	77	4.1	79	3.3	182	6.8
White	4,072	58.7	1,225	64.7	1,025	43.2	1,822	68.1
Unknown	1,045	15.1	281	14.8	639	27.0	125	4.7
Age in years								
0–5	1,010	14.6	187	9.9	221	9.3	602	22.5
6–12	2,839	40.9	757	40.0	923	38.9	1,159	43.3
13–18	2,662	38.4	799	42.2	1,057	44.6	806	30.1
>18	371	5.3	143	7.6	145	6.1	83	3.1
Unknown	57	.8	7	.4	25	1.1	25	.9
Patient insurance type								
Private	3,031	43.7	874	46.2	1,449	61.1	708	26.5
Public	2,609	37.6	574	30.3	837	35.3	1,198	44.8
None, unknown, or missing	1,299	18.7	445	23.5	85	3.6	769	28.7
Presenting concerns at BHIPP service contact[b]								
Anxiety	2,756	39.7	808	42.7	940	39.6	1,008	37.7
Attention-concentration problems	1,216	17.5	389	20.5	301	12.7	526	19.7
Behavior problems	2,534	36.5	692	36.6	651	27.5	1,191	44.5
Learning problems	456	6.6	137	7.2	97	4.1	222	8.3
Mood problems	1,839	26.5	583	30.8	784	33.1	472	17.6
Self-injury	357	5.1	145	7.7	104	4.4	108	4.0
Currently receiving any mental health–related services								
Yes	2,272	32.7	1,308	69.0	507	21.4	457	17.1
No	4,335	62.5	565	29.8	1,711	72.2	2,059	77.0
Unknown	332	4.8	20	1.1	153	6.1	159	5.9
Type of mental health–related service currently receiving[c]								
Higher level of care (e.g., emergency department or inpatient)	15	.7	3	.2	6	1.2	6	1.3
Outpatient psychotherapy	330	14.5	184	14.1	100	19.7	46	10.1
Outpatient medication evaluation and treatment	1,370	60.3	902	69.0	331	65.3	137	30.0
Mental health consultation or evaluation	18	.8	6	.5	5	1.0	7	1.5
Early childhood services (e.g., Infants and Toddlers Program)	37	1.6	12	.9	2	.4	23	5.0
School support services (e.g., Individualized Education Program)	344	15.1	157	12.0	41	8.1	146	31.9
Family support services (e.g., family navigation)	68	3.0	1	.1	1	.2	66	14.4
Ancillary services (e.g., speech therapy)	45	2.0	28	2.1	16	3.2	1	.2
Other	45	2.0	15	1.1	5	1.0	25	5.5

continued

TABLE 1, *continued*

Characteristic	All patient contacts (N=6,939)		CAPC (N=1,893)		R/RN (N=2,371)		DMHI (N=2,675)	
	N	%	N	%	N	%	N	%
Taking psychotropic medications								
Yes	1,897	27.3	1,114	58.8	367	15.5	416	15.6
No	3,860	55.6	695	36.7	1,156	48.8	2,009	75.1
Unknown	1,182	17.0	84	4.5	848	35.6	250	9.3
Polypharmacy[d]								
Yes	538	28.4	359	32.2	94	25.6	85	20.4
No	1,359	71.6	755	67.8	273	74.4	331	79.6
Clinicians' diagnostic impression of patient[b]								
ADHD with or without learning disability	1,944	28.0	870	46.0	441	18.6	633	23.7
Adjustment disorder	279	4.0	61	3.2	53	2.2	165	6.2
Anxiety disorder	2,555	36.8	914	48.3	794	33.5	847	31.7
Depressive disorder	1,328	19.1	532	28.1	581	24.5	215	8.0
Disruptive behavior disorder or oppositional defiant disorder	508	7.3	241	12.7	75	3.2	192	7.2
More serious disorder	922	13.3	436	23.0	289	12.2	197	7.4
Trauma and related disorders	267	3.8	110	5.8	51	2.2	106	4.0
Clinical severity rating by BHIPP staff[e]								
Normal	360	7.7	9	.5			350	13.2
Borderline mentally ill	964	20.5	30	1.7			923	34.7
Mildly ill	854	18.2	178	9.8			631	23.7
Moderately ill	1,729	36.8	1,022	56.4			594	22.4
Markedly ill	641	13.6	464	25.6			129	4.9
Severely ill	128	2.7	92	5.1			22	.8
Extremely ill	27	.6	17	.9			8	.3

[a] CAPC, child-adolescent psychiatry consultation; DMHI, direct-to-patient mental health intervention; R/RN, resource and referral networking.
[b] Patients could have multiple presenting concerns or diagnostic impressions.
[c] Data for this variable are for the 2,272 patients who were engaged in some form of treatment at BHIPP contact.
[d] Data on polypharmacy are for the 1,897 patients who were taking medications at BHIPP contact.
[e] Assessed with the Clinical Global Impressions–Severity (CGI-S) scale; ratings were not routinely available for patients who received R/RN services. Therefore, analysis of CGI-S ratings was based on only 4,469 patients (CAPC, N=1,812; DMHI, N=2,657).

most DMHI patients were not currently receiving mental health–related services or taking medication. For most DMHI patients, the diagnostic impression of the PCP or the BHIPP social work student was anxiety disorder or ADHD. Among patients served through CAPC, anxiety and behavior problems were the most common concerns, and at the initial BHIPP contact, most were already receiving mental health–related services, primarily through outpatient medication evaluation and treatment; about one-third were taking multiple medications. For the CAPC group, the most common diagnostic impressions were anxiety and ADHD. For the R/RN group, anxiety and mood problems were the most common presenting concerns, and most patients were not receiving mental health–related services or taking medication. For the R/RN group, the most common diagnostic impressions of PCPs or BHIPP staff were anxiety and depressive disorders. Severity ratings varied by service group; most patients receiving DMHI were rated as borderline mentally ill, mildly ill, or moderately ill (80.8%); most patients receiving CAPC were rated as moderately, markedly, severely, or extremely ill (88.0%).

Latent Class Analysis of Patient Presenting Concerns

Comparison of fit statistics (Table 2) suggested that the lowest BIC and aBIC values were obtained for the four-class model, and VLMR results indicated that a four-class model fit better than a three-class model but that a five-class model did not fit better than the four-class model. Therefore, we selected the four-class model as the best fitting model.

Profiles representing the estimated probability of the PCP, patient, or family reporting each presenting concern are shown in Figure 1. Of note, class counts and proportions were based on estimated posterior probabilities. Item endorsement patterns revealed an anxiety-only class (44.2%, N=3,069), characterized by a high probability of anxiety and a low probability of other symptoms; a behavior problems–only class (30.7%, N=2,132), characterized by a high probability of behavior problems and a low probability of other symptoms; a mood and anxiety class (17.1%,

N=1,187), characterized by a high probability of mood symptoms, moderate probability of anxiety, and low probability of other symptoms; and an attention, behavior, and learning problems class (8.0%, N=551), characterized by a high probability of attention-concentration, behavior, and learning problems and a low probability of other symptoms.

We examined associations between patient and service characteristics and class membership by using the largest class (anxiety class) as the reference. Class membership varied by covariates (Table 3). Compared with individuals in the anxiety-only class, patients in the mood and anxiety class were less likely to be male, to be younger than 8 years, or to be privately insured and more likely to have BHIPP recommend distribution of psychoeducational handouts, in-office behavioral interventions, and referral to mental health services or community resources. Compared with patients in the anxiety-only class, those in the attention, behavior, and learning problems class were more likely to be male, to be already receiving mental health–related services, to be seen for DMHI, and to have BHIPP recommend handouts and referral to mental health services or community resources and were less likely to be privately insured. Compared with individuals in the anxiety-only class, patients in the behavior problems–only class were more likely to be male, to be younger than 8 years, to be already receiving mental health–related services, and to have BHIPP recommend handouts, in-office behavioral interventions, and referral to mental health services or community resources and were less likely to be privately insured.

TABLE 2. Common model fit indices for latent class models of patient presenting concerns reported at time of BHIPP contact[a]

N of classes	BIC	aBIC	VLMR-LRT p value	Entropy	Smallest class size	
					N	%
1	39,129	39,110	na	na	na	na
2	37,538	37,497	<.001	.58	2,662	38.4
3	37,198	37,135	<.001	.59	1,207	17.4
4	37,085	36,999	<.001	.63	551	8.0
5	37,113	37,005	.206	.68	208	3.0
6	37,163	37,033	.263	.74	70	1.0

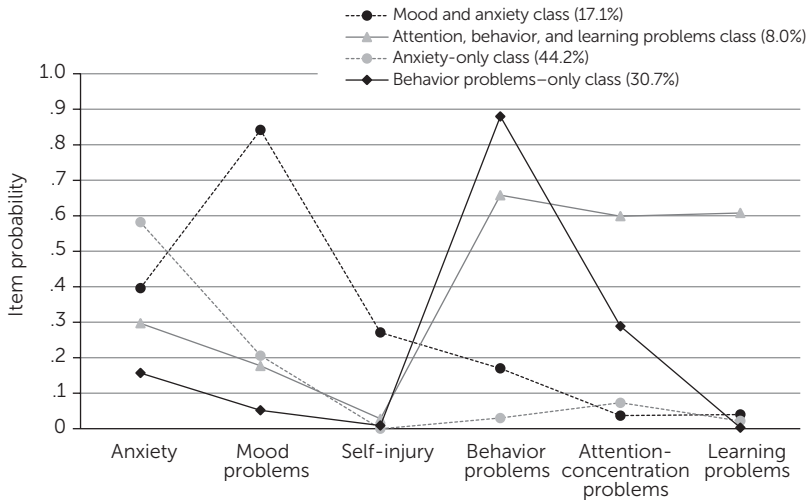
[a] The analysis was based on 6,939 unique patient contacts with Behavioral Health Integration in Pediatric Primary Care (BHIPP) with complete information on referring provider. BIC, Bayesian information criterion; aBIC, sample size–adjusted BIC; VLMR-LRT, Vuong-Lo-Mendell-Rubin likelihood ratio test. VLMR-LRT and entropy were not applicable (na) for the one-class model.

DISCUSSION

Maryland BHIPP is a CPAP supporting PCPs in managing pediatric mental health conditions through three interconnected services: CAPC, R/RN, and DMHI. Our findings indicate that DMHI was the most utilized of the three services, followed by R/RN and CAPC. The most common presenting concerns that led PCPs and families to seek BHIPP services were anxiety, behavior problems, mood problems, and attention-concentration problems. The most common diagnostic impressions recorded by PCPs and BHIPP staff were anxiety, ADHD, and depression. These findings align with the top three clinical presentations reported to most CPAPs: anxiety, depression, and ADHD (13–16, 31), which are the most common pediatric mental health conditions (32) nationwide and which the American Academy of Pediatrics has emphasized as priorities for PCPs to address (6).

One-third of the patients were already receiving mental health services before contacting BHIPP, with most receiving medication evaluation and treatment, followed by school-based and psychotherapy services, which may indicate PCPs' growing comfort with recognizing mental health problems and initiating in-office treatment or connecting families to community resources. The notable proportion of DMHI contacts underscores the important role of embedded social workers in primary care and as part of CPAP teams. BHIPP's use of DMHI is novel; only one other CPAP (in Michigan) employs a similar service. Such interdisciplinary care supports PCPs and mental health providers in providing high-quality patient care and referring patients

FIGURE 1. Conditional item probability plots for the four-class model of presenting concerns of patients who were the focus of contacts with a child psychiatry access program[a]



[a] Item responses that make up the latent classes are listed along the x-axis. The probability of endorsing each item is reported by class membership. Values shown on the y-axis indicate the probability of endorsing a particular item for participants within each latent class. The proportions of patients with Maryland's Behavioral Health Integration in Pediatric Primary Care reflected in each latent class are shown in the figure key. Class counts and proportions were based on estimated posterior probabilities. Counts for the classes were as follows: anxiety only (N=3,069), behavior problems only (N=2,132), mood and anxiety (N=1,187), and attention, behavior, and learning problems (N=551).

TABLE 3. Odds of patient characteristics and BHIPP service type as predictors of latent class membership[a]

Patient characteristic	Class		
	Mood and anxiety	Attention, behavior, and learning problems	Behavior problems only
Male	.75*	3.33**	3.28**
<8 years old	.00**	1.24	5.87**
Private insurance	.62**	.59**	.47**
Already receiving mental health–related services at time of BHIPP contact	1.25	2.61**	1.63**
Received BHIPP DMHI	.75	3.59**	1.23
BHIPP staff recommendation			
Medication evaluation or medication change	1.29	1.22	1.32
Administration of mental health screening instrument	.90	1.36	.84
Provide psychoeducational handouts	1.72*	1.74**	1.50*
In-office behavioral intervention	1.62*	1.30	1.55**
Referral to mental health services or community resources	3.30**	2.57**	1.46**

[a] Values are ORs estimated in multinomial logistic regression analysis; the reference group was the anxiety-only class. The analysis was based on data for 6,485 patients because of missing data related to age, gender, and current receipt of mental health services. BHIPP, Behavioral Health Integration in Pediatric Primary Care; DMHI, direct-to-patient mental health intervention.

*p<0.05, **p<0.01.

for other psychosocial treatments. Thus, onsite and off-site CPAP services are complementary (11).

Differences in patient characteristics among services aligned with each service's focus. For example, more young children, children with behavior problems, and those not already taking medication were seen through DMHI, an observation that is consistent with recommendations for evaluation and treatment of disruptive behavior problems (33, 34). Similarly, more patients already prescribed medication and taking multiple medications were seen for CAPC, a finding consistent with research on Washington's CPAP, which reported that 66% of CAPC patients were taking a psychotropic medication (13).

To better understand the nature and complexity of the presenting concerns of patients served by CPAPs and associations of patient factors with CPAP service type and recommendations, we used latent class analysis to identify four classes of presenting concerns: anxiety only; mood and anxiety; behavior problems only; and attention, behavior, and learning problems. These classes are consistent with mental disorders—ADHD, anxiety, and depression—that the American Academy of Pediatrics recommends PCPs achieve competency to treat (6). These classes also highlight key differences (e.g., behavior problems alone) that go beyond the most common subtype of ADHD, the combined subtype that includes both inattention symptoms and impulsivity and hyperactivity symptoms (behavioral symptoms), and emphasize key related conditions (e.g., learning problems such as a learning disability) that increase complexity of treatment needs.

The four latent classes of presenting concerns had important similarities and differences (Table 3). Consistent with epidemiological data, patients in the mood and anxiety class were more likely to be female and older, whereas patients in the two behavior problems classes were more likely to be male and younger (35). Patients in the two behavior problems classes were more likely to already be receiving mental health–related services at BHIPP contact, and those in the attention, behavior, and learning problems class were more likely to receive BHIPP's DMHI. These findings are in line with previous work suggesting that youths with behavior problems are typically referred to and access mental health services at higher rates, compared with those with anxiety and depression (36).

No between-class differences were noted in BHIPP recommendations for mental health screening or medication evaluation, which may indicate that most PCPs had already screened or conducted a medication evaluation before contacting BHIPP. Conversely, compared with patients in the anxiety-only class, patients in the other three classes were more likely to be recommended psychoeducational handouts and mental health services and community resources, and two classes were more likely to be recommended in-office intervention. Differences in BHIPP recommendations may signal the more complex needs of these subgroups compared with patients with anxiety symptoms alone. In summary, examining profiles of presenting concerns (rather than individual concerns) can improve understanding of the clinical complexity of the conditions of patients served through BHIPP. Knowledge of differences in CPAP service use by presenting mental health concern profile will inform improvements to CPAP training provided to PCPs in addressing the needs of pediatric patients with these profiles.

To our knowledge, these findings provide novel insights by describing patient characteristics within and across a broader array of CPAP services and examining profiles of presenting concerns and how they vary by service type and recommendations. However, this study had some limitations. As recommended by the American Academy of Pediatrics (6), PCPs seem to seek CPAP services for patients with more complex and severe conditions, which may have

affected the generalizability of the findings. Although CAPC and R/RN are available statewide, DMHI is available only in eight rural Maryland counties, which may have affected the demographic differences by service type in this study. Additionally, DMHI may be more expensive and difficult to implement and expand statewide, reflecting real-world limitations. Further, CGI-S ratings made during CAPC are based on provider-to-provider consultation instead of direct patient assessment. Study strengths included a sample of patients with a wide array of characteristics, which enhanced generalizability, and examination of presenting concern profiles rather than individual symptoms, which better captured co-occurring mental health conditions.

CONCLUSIONS

CPAPs are regional or statewide programs that are designed to decrease gaps between the need for and the availability of pediatric mental health services by bolstering PCPs' comfort and skill in treating these conditions. This descriptive study explored utilization of CAPC, DMHI, and R/RN provided by Maryland's CPAP. Each service appears to be serving patients with mental health needs aligned with that service's focus (e.g., greater polypharmacy among CAPC patients). To our knowledge, this study is the first to examine symptom profiles to better understand the nature and complexity of patient needs across CPAP services. This study also identified greater use of embedded DMHI, compared with CAPC and R/RN, empowering PCPs to provide comprehensive care onsite. These findings provide guidance for expansion of CPAP services across the country and considerations for adjusting and expanding training and support for PCPs to improve the quality and availability of mental health services.

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