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Service Use by Youth with Autism within a System-Driven Implementation of Evidence-Based Practices in Children's Mental Health Services

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Abstract

Public mental health (MH) systems play an important role in caring for youth with autism spectrum disorder (ASD). Like other dually diagnosed populations, youth with ASD may receive services in the context of evidence-based practice (EBP) implementation efforts within public MH systems. Little is known about service use patterns within the context of system-driven implementations efforts for this population. This case control study examined MH service patterns of 2537 youth with ASD compared to 2537 matched peers receiving care in the Los Angeles County Department of MH, the largest public MH department in the USA, within the context of a system-driven implementation of multiple EBPs. Although not the primary target of this implementation effort, youth with ASD were served when they met criteria for the services based on their presenting mental health symptoms. Comparative analyses using administrative claims data were conducted to examine differences in MH utilization patterns and clinical characteristics. Findings revealed significant differences in the volume and duration of MH services as well as differences in the service type and EBP delivered between youth with and without ASD. Results provide direction targeting implementation efforts for youth with ASD within a public MH system care reform.

Lay Abstract

Public mental health systems play an important role in caring for youth with autism spectrum disorder (ASD). Little is known about service use by youth with ASD who receive care within community mental health services implementing evidence-based practices. This study compared

mental health service patterns of 2537 youth with ASD to 2537 matched youth receiving care in the Los Angeles County Department of Mental Health where multiple evidence-based practices were concurrently implemented. Comparative analyses using service utilization data were conducted to examine differences in mental health utilization. Findings revealed significant differences between youth with and without ASD in the amount, length, service type and evidence-based practice delivered. Results provide direction targeting implementation efforts for youth with ASD within a public MH system care reform.

Keywords

autism spectrum disorder; mental health services; youth; implementation; evidence-based practices

Introduction

The estimated number of youth diagnosed with autism spectrum disorder (ASD) has risen rapidly in recent years and is currently estimated to affect 1 in 59 youth (Baio et al., 2018). Youth with ASD are commonly involved in multiple service systems (e.g., Developmental Disability/Intellectual Disability Services; Special Education, Medical, Mental Health, Vocational Rehabilitation, Juvenile/Criminal Justice) that are each intended to provide specific services to address different needs (e.g., primary care to address medical conditions, mental health services to address mental health problems co-occurring with ASD) (Brookman-Frazee, Baker- Ericzén, et al., 2009; Zablotsky, Pringle, Colpe, Kogan, Rice & Blumberg, 2015). In particular, youth with ASD have high rates of co-occurring psychiatric conditions (Joshi et al., 2010; Leyfer et al., 2006; Simonoff et al., 2012) that are associated with additional functional impairment (Factor, Ryan, Farley, Ollendick, & Scarpa, 2017), and often persist into adulthood (Simonoff et al., 2013). The mental health (MH) system represents an important system of care to address commonly co-occurring mental health concerns in youth with ASD. Since Medicaid is the largest payer of MH care, there has been growing attention specifically to improving publicly-funded MH services for youth with ASD (Brookman-Frazee et al., 2009, 2012; Mandell, Walrath, Manteuffel, Sgro, & Pinto-Martin, 2005; Maddox & Gaus, 2018). The focus of this study is to characterize publicly-funded MH service utilization patterns for youth with ASD for their co-occurring mental health problems within the context of a broader system-driven implementation of multiple evidence-based practices.

Over the past decade, there has been an accumulating body of research focused on the community MH system for youth with ASD (Brookman-Frazee et al., 2020). Data from a community study indicated that 92% of the youth with ASD receiving MH services met criteria for at least one additional MH diagnosis, with an average of 2.80 co-occurring MH disorders (Brookman-Frazee et al., 2018). Community MH providers report that due to their complex clinical needs youth with ASD are particularly challenging to treat, and providers express frustration about their lack of training in ASD and the limited treatment gains observed (Brookman-Frazee, Drahota, Stadnick, & Palinkas, 2012).

There are not well-defined policy and service guidelines for MH care provision for youth with ASD and other co-occurring mental health problems (Brookman-Frazee, Drahota, Chlebowski, Koenig, Williams et al., 2020). This is akin to challenges faced by MH systems serving other clinically complex groups (e.g., youth with substance use and co-occurring mental health disorders) wherein multiple service systems are engaged to distribute service responsibilities across sectors, rather than in a single coordinated system (Hawkins, 2009; Priester, Browne, Iachini, Clone, DeHart & Seay, 2016; Sterling, Weisner, Hinman & Parthasarathy, 2010). In the context of multiple system responsibilities for ASD, MH systems are responsible for treating qualifying MH conditions (Brookman-Frazee et al., 2009). Since youth who have both MH conditions and ASD may have complex clinical profiles, there is a critical need to better understand how youth with ASD are being served for their co-occurring, non-ASD MH conditions. Data on service utilization patterns within public MH services can help identify potential care improvement targets.

There are growing efforts to implement evidenced-based practices (EBPs) in community MH service settings (McHugh & Barlow, 2010, Brookman-Frazee, Stadnick et al., 2017). Many of these efforts are driven by systems and mandate the implementation of multiple EBPs to cover the varied needs of the client population (Cooper et al., 2008; Hoagwood et al., 2014; National Institute of Health, 2016; William T. Grant Foundation, 2016). These efforts have resulted in the accumulation of data regarding the use of EBPs in MH settings, including the number of youth receiving EBPs and their impact on treatment utilization. However, these data reflect the broad population of youth receiving care. There are limited data on how youth with ASD are being served within broader EBP implementation efforts. Health utilization data, largely from managed care plans and without specific EBP implementation efforts, have shown that youth with ASD receive more intensive MH services (psychotherapy or medication) compared to youth without ASD (Croen et al., 2006; Cummings et al., 2016; Kogan et al., 2018). There is a need to understand MH service utilization patterns for youth with ASD within the context of EBP implementation efforts. Therefore, the current study examined patterns of receipt of seven EBPs¹ implemented through the Prevention and Early Intervention (PEI) initiative within the Los Angeles County Department of Mental Health (LACDMH). The EBPs varied in the MH target of treatment, age range served, and modality (see Table 1). LACDMH has established formal practice and implementation parameters for each EBP and evidence management system (LACDMH, 2016). None of the selected practices were designed specifically to target core symptoms of ASD or to treat co-occurring MH conditions in the context of an ASD diagnosis. However, while not the main target of the PEI initiative, youth with ASD received services when they presented with a qualifying MH condition. This fits the community MH service context and guidelines of PEI eligibility wherein an ASD diagnosis cannot be the sole presenting concern and treatment target. Similar to youth with co-occurring substance

¹These EBPs included Child-Parent Psychotherapy (CPP), Cognitive Behavioral Intervention for Trauma in Schools (CBITS), Seeking Safety (SS), Trauma Focused Cognitive Behavior Therapy (TF-CBT) and Positive Parenting Program (Triple P), as well as Managing and Adapting Practice (MAP). MAP is distinct from the other practices because it is an evidence management system that includes: a direct service component that coordinates multiple evidence sources, employs practice components drawn from over 700 evidence based treatments and offers structured process management supports to guide clinical care. In LACDMH implementation, the MAP direct service model complements an array of EBPs by permitting providers to select, review, adapt, or configure promising treatments to match child characteristics anchored to the latest empirical findings (see Chorpita & Daleiden, 2018).

use, youth with ASD and other developmental disabilities are eligible for PEI services in LACDMH to address co-occurring emotional and behavioral problems. Capitalizing on this system-wide multiple EBP implementation effort within the LACDMH PEI initiative, the objective of this study was to describe and compare patterns of MH service receipt, clinical and service characteristics between youth with ASD and matched peers. Because this was an exploratory study within a novel multiple EBP implementation context, we did not assert *a priori* hypotheses.

Method

Setting

This study was conducted within the context of the Los Angeles County Department of Mental Health (LACDMH) Prevention and Early Intervention (PEI). LACDMH is the largest county-operated MH department in the United States, serving an average of more than 250,000 County residents of all ages annually. The residents served represent an ethnically and geographically diverse population. In 2010, LACDMH launched the PEI initiative which offered agencies the opportunity for reimbursement for the delivery of 52 eligible evidence-based/informed practices through a range of MH services including psychotherapy, medication management, crisis services and evaluation and assessment. The transformation occurred at a time when other state and county funding for MH services was severely curtailed, thus LACDMH amended the contracts of the 120 youth-serving agencies to offer reimbursement through PEI to preserve levels of service delivery in the county (Regan et al., 2017). This amounted to a fiscal mandate for the delivery of evidence-based/informed practices (hereafter referred to as “practices”) during the period of limited general funding. LACDMH provided implementation support (i.e., training and consultation) for selected practices to address common youth MH problems (e.g., mood disorders, anxiety, trauma).

Procedures

This study used a case-control design to analyze administrative claims data that represent approximately eight fiscal years (32 fiscal quarters) of service use within the LACDMH PEI Transformation from FY 2009–2010 (quarter 4) to FY 2017–2018 (quarter 3). A subsample of clients (described below) were drawn from the larger pool of 182,219 youth clients.

First, a subset of 2537 clients ages 18 years and younger who had ever been assigned an ASD diagnosis from a PEI provider (i.e., cases) were selected. Based on the DSM-IV (the primary version used during the majority of the time data were collected for this study), Pervasive Developmental Disorders (299.80), except Autistic Disorder (299.00) were considered a qualifying primary diagnosis. Individuals with Autistic Disorder could be served when they presented with another primary qualifying diagnosis (e.g., ADHD, Anxiety Disorders). These clients represented 1.4% of all youth receiving one of the seven PEI practices of interest. Then, a comparison group of youth without an admission diagnosis of ASD were identified and matched with the cases on the following characteristics: age (within 1 year), sex, race/ethnicity, MH setting (e.g., community MH center/office, home, school), and time of service system entry (within two fiscal quarters). The case-control

matching proceeded as follows: for a given case, all potential matched controls were first identified based on the specified characteristics and then a single matched control was randomly selected without replacement. Matching proceeded in this manner resulting in a 1:1 sample of youth with ASD and matched control youth.

Participants

The total sample of the current study consisted of 5074 youth, including 2537 youth with a qualifying mental health condition and an ASD diagnosis and 2537 matched controls without an ASD diagnosis who received PEI services. As shown in Table 2, the mean age of the sample was 9.50 years (SD = 4.37) for youth with ASD and 10.25 years (SD = 4.35) for controls, 77% male and ethnically diverse (63% Latinx) for both groups. See Tables 2 and 3 for more participant characteristics.

Measures

Administrative claims data furnished by the LACDMH were used for analyses. Data were restricted to PEI claims for the subset of seven practices of interest (i.e. those with the most claims available for this sample). Clients were eligible for PEI funding if they met specific criteria for each practice based primarily on age and presenting problem. For each unit of service claimed, providers were required to indicate the DSM-IV diagnoses assigned to the youth, the practice and service delivered using the approved Current Procedural Terminology (CPT) codes and the Level II Health Care Procedure Coding System (HCPCS) codes per the LACDMH claiming guidelines for PEI services. Each practice-specific claim was yoked to a specific client, setting, service/procedure code, and provider. There were over 60 approved codes for PEI services that the research team grouped into six categories: Psychotherapy, Medication Management, Case Management, Evaluation and Assessment, Crisis Services and Other. For example, the CPT code “90837” which represents a “Psychotherapy 60 minutes” was grouped into the Psychotherapy category. The research team used the DSM-IV and DSM-V diagnoses (over 900) that providers assigned to each claim to group the diagnoses into broader categories: Anxiety, Attention or Hyperactivity Problems, Mood, Trauma, Disruptive Behavior or Conduct Problems, Substance Use, Adjustment Disorder, Autism, Other and Missing. For example, 314.00 “Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type” and 314.01 “Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type” were grouped into the “Attention or Hyperactivity Problems” category by the research team. Regarding the EBP, providers were required to assign an approved practice to each claim as part of the LACDMH PEI claiming guidelines and to be reimbursement for the service provided.

Youth Demographic, Clinical and Service Characteristics

Youth demographic and diagnostic characteristics.—For descriptive purposes, the following demographic characteristics were extracted from claims data: youth age, race/ethnicity and sex. To characterize MH diagnoses, three diagnostic categories that represented the majority of discrete DSM-IV or DSM-V diagnoses were created: (1) Externalizing, which included diagnoses of ADHD and ODD, (2) Internalizing, which included anxiety and mood disorders and (3) Trauma disorder diagnoses. These diagnostic categories are not

mutually exclusive to best capture the diagnostic variability of each youth—that is, a youth was included in a diagnostic category if they ever had a unit of service (documented claim) associated with a specific diagnostic category. A youth was designated in one of the diagnostic categories if they had at least one claim associated with a given diagnosis at any time during the study timeframe (2009–2018). In addition, a continuous variable was calculated to indicate the number of diagnoses for which a youth was ever assigned by a PEI provider.

MH Service Utilization Patterns and Characteristics

Two variables were created to examine MH service patterns. The first variable represents the overall service volume per youth. This variable was calculated by summing the number of claims per youth. The second variable represents the duration of service receipt. This variable was calculated by determining the number of months between each youth's first and last date of service within the study period.

Service type.—Claims were categorized into six service types: psychotherapy, evaluation and assessment, case management, medication management, crisis services, and other services (e.g., team plan development, case consultation). To index the types of services youth received, proportional variables were created that represent the proportion of each service type of each youth's total claims. Proportional variables were created to capture the variation in the relative intensity of service utilization, across the specific service types received. This allowed us to distinguish predominant types of service use from overall volume of service types used.

EBP type.—To facilitate interpretation of results, the seven most common practices within the study timeframe were categorized into three groups: (1) (MAP); (2) Behavioral Parent Training practices that included Triple P, IY and PCIT; (3) Trauma practices that included CPP, SS and TF-CBT. Then, mutually exclusive dichotomous variables were created that represent the practice category to which the majority (50%) of each youth's claims were billed. For example, a youth who had 50% of their claims billed to Triple P was assigned to the Behavioral Parent Training practice category. It is noteworthy that IY and PCIT were not among the original practices selected for initial implementation support and large-scale provider training (see Regan et al., 2017 for more details). Therefore, a smaller number of providers were trained and there was less opportunity for billing to IY and PCIT.

Data Analytic Approach

Because these data were cross-classified and to facilitate interpretation of findings, claims data were aggregated to the youth-level. Descriptive analyses to characterize the sample were followed by matched analyses to compare cases and controls (paired *t-tests* for continuous variables; *McNemar* tests for nominal variables) per recommendations for matched case-control analyses (see Pearce, 2016). Matched analyses were conducted to determine differences between cases and controls regarding: the number of clinician-assigned MH diagnoses, the type of MH diagnosis (Externalizing, Internalizing and Trauma), MH service patterns (volume and duration), the proportion of services received, and the primary EBP type delivered.

Results

Table 3 includes the descriptive data and inferential statistics to compare youth clinical characteristics, mental health service utilization patterns and service characteristics between youth with ASD and their matched peers. Youth with ASD had significantly more clinician-assigned MH diagnoses ($M = 2.09$; $SD = .76$; Range: 1–6) compared to youth without ASD ($M = 1.31$; $SD = .58$; Range: 1–5). Of these MH diagnoses, youth with ASD had a significantly lower prevalence of ever being assigned an externalizing, internalizing or trauma disorder. In total, youth in the current sample had 259,751 claims across the eight fiscal years. These data were cross-classified across provider- and program-levels such that, on average, youth received services from 2.50 ($SD = 2.41$) providers within 1.97 program sites ($SD = 1.16$) in a fiscal year.

On average, youth with ASD had significantly higher volume of claims ($M = 54.85$ claims; $SD = 120.62$) compared to matched controls ($M = 47.53$ claims; $SD = 86.10$) and youth with ASD received care for significantly longer duration ($M = 15.40$ months; $SD = 18.95$) compared to matched peers ($M = 13.53$ months; $SD = 16.62$). Of the MH services delivered to youth with ASD in a fiscal year, on average, 53.34% of the services were for psychotherapy, followed by evaluation and assessment (14.18%), case management (12.08%), medication management (4.76%), crisis services (4.46%) and other services (11.19%). On average, youth with ASD had a smaller percentage of services related to psychotherapy (53.34% versus 60.99%) but a significantly greater percentage of services related to case management (12.08% versus 7.17%), medication management (4.76% versus 3.93%) and crisis services (4.46% versus 3.31%) compared to youth without ASD. There were no significant group differences in the proportion of evaluation and assessment services that youth with or without ASD received within a fiscal year. Regarding the EBP type delivered, there were significant group differences in the number and proportion of youth with ASD for whom Behavioral Parent Training practices and Trauma practice were their primary practice type delivered. Specifically, significantly more youth with ASD received a Behavioral Parent Training practice (30.3%) compared to matched controls (15.6%) whereas significantly more matched controls received Trauma practices delivered as their primary practice type (23%) compared to youth with ASD (11.6%). There were no significant differences in the number of youth for whom MAP was the primary practice delivered.

Discussion

This case-control study compared MH service use patterns and clinical and service characteristics between youth with and without ASD within the context of a system-driven implementation of multiple EBPs for youth mental health conditions. This study contributes to the ASD services literature by explicitly examining the delivery of evidence-based MH interventions to youth with ASD who qualified for services to address their co-occurring MH problems. Within this unique EBP implementation context designed for a broader population of youth to intervene earlier in the course of mental illness, approximately 1.4% had an ASD diagnosis documented in their PEI claims. Although this proportion is similar to previously reported rates of ASD in public mental health services using administrative claims, (Mandell et al., 2005), it is possible that there are additional youth with ASD in the

system. For example, clinicians may only document the primary (non-ASD) qualifying mental health condition for PEI services in the claims data. Additionally, it is possible that some youth with ASD may be referred out of PEI based on their ASD even though they have a co-occurring qualifying MH condition.

Findings from this study indicated that youth with ASD received significantly more claims (54.85 versus 47.53) and were engaged in MH care for a longer period (15.4 versus 13.5 months) compared to youth without ASD. In addition, there were group differences in the both the types of MH services received and the practices that were delivered to them. Youth with ASD received more case management, medication management and crisis services compared to peers whereas peers received more psychotherapy compared to youth with ASD. These patterns are reasonable when compared to a survey using a nationally representative sample of youth indicating that youth with ASD have higher rates of receiving treatment from a MH provider (broadly) and using medication for emotional/behavioral problems (Kogan et al., 2018).

The findings regarding differences in practices delivered to youth with and without ASD indicate that Behavioral Parent Training practices were delivered more to youth with ASD whereas practices to address Trauma were delivered more to youth without ASD. There were not significant group differences in the delivery of MAP. Overall, these practice findings are consistent with recommendations for EBPs for ASD and our previous examination of system-level reach of EBPs within LACDMH (Brookman-Frazee et al., 2016). Specifically, the observed patterns of MH services in the LACDMH implementation context that was not specifically designed to address the needs of youth with ASD are aligned with EBP recommendations specific to treatment of ASD supporting delivery of parent mediated interventions (Wong, Odom, Hume, Cox, Fetting, Kucharczyk et al., 2015). There is less evidence for the use of trauma-focused interventions for youth with ASD. Specific to the group equivalence between ASD and non-ASD youth in receipt of MAP delivery, MAP is the EBP with the highest volume represented in PEI claims in LACDMH (Brookman-Frazee et al., 2016). As an evidence-management system covering common MH symptoms (conduct, trauma, anxiety and depression) and a broad age range, it is not surprising that this practice was used similarly for children with and without ASD.

The findings regarding patterns of service type and EBP delivery may be explained, in part, by the clinical complexity of youth with ASD receiving MH services. Although we cannot infer the actual clinical needs of the youth in the sample, these data illustrate that providers had more contact (across services) when treating youth with ASD, compared to youth without ASD, especially for case management, medication management, and crisis services. Given research showing the high prevalence of multiple non-ASD co-occurring MH conditions in youth with ASD receiving MH services and the prevalence of behavior problems, specifically (Brookman-Frazee et al., 2016, Joshi et al., 2010; Stadnick et al., 2016), it is not surprising that they may receive more intensive services. These complex presentations present significant challenges to community MH therapists, who report significant motivation and need for training in specialized services for this population (Brookman-Frazee et al., 2012).

Our findings offer several pragmatic implications for community MH services, broadly, and specifically for those with targeted efforts to implement EBPs. The objective of the LACDMH PEI program is to provide a range of MH services that may reduce risk factors or stressors for the broader youth population that would require more extensive treatment and that are short (usually less than one year) and low-intensity interventions. Within these implementation parameters, our data suggest that in addition to encountering youth with ASD seeking services for their co-occurring non-ASD diagnoses, these youth have higher rates of MH service utilization across a range of MH services (e.g., case management, medication management). Despite not being the primary target of system-wide implementation efforts, our findings clearly underscore that youth with ASD utilize MH services to address their co-occurring, non-ASD MH conditions, and do so for a longer duration. Thus, it may be valuable to explicitly provide eligibility and tailored care recommendations for youth (e.g., permitting longer episodes of care, assuring a suite of services) with ASD accessing care in community MH services. The findings also highlight targets for workforce training in the community MH system. For example, there is emerging evidence to support that community mental health providers can successfully learn and deliver short-term (6-month) EBPs that engage both youth and caregivers and result in significant reduction of co-occurring emotional and behavioral problems for youth with ASD (Brookman-Frazer et al., 2012; Brookman-Frazer, Roesch, Chlebowski, Baker-Ericzen & Ganger, 2019). Although these findings were drawn from a specific EBP implementation effort within one large county in California, the recommendations for tailored ASD policy regarding service delivery parameters and workforce training in short-term evidence-based interventions to address co-occurring mental health needs are likely generalizable to other service systems (e.g., community mental health services for adults with ASD) that are planning or actively engaged in formal EBP implementation (Maddox & Gaus, 2019; Maddox et al., 2019). They may also be relevant to other clinically complex groups, such as youth with co-occurring MH and substance use conditions, who may also not be the primary target of prevention and early intervention but likely still utilize and could benefit from these services.

Several limitations are noteworthy. The primary limitation is the sole reliance on administrative claims data to examine service use patterns. A primary purpose of a claim is to document delivery of a service but it does not provide rich contextual information about the content that occurred within that service. Claims data are essentially a form of provider-report so they are subject to all of the methodological limitations inherent to self-report measures. As an example, it was not feasible to validate the MH diagnoses that were assigned and reported in the claims data. It was also not feasible to validate the practice that providers reported delivering for each unit of service. In addition, the claims data that were furnished for analysis only included the primary or secondary diagnosis associated with a specific service type. This is a limitation for two reasons. First, it is possible that youth in the matched control sample also had an ASD diagnosis but the therapist did not report ASD as the youth's primary or secondary diagnosis. This is possible because they did not consider the ASD diagnosis as relevant to qualify for PEI mental health services. Second, the sample of youth with ASD in this sample may have additional MH diagnoses that added to their clinical complexity (e.g., trauma exposure) and informed the treating provider's practice

selection (e.g., trauma-focused EBPs). Finally, since the target of PEI services is on short term, prevention-focused services, youth with ASD may be receiving MH services under other funding sources (e.g., EPSDT).

Study findings offer directions for future research and clinical implications. First, given that the interventions examined in this study were not designed for the ASD population yet delivered to youth with ASD, it may be important to pursue observational research on delivery of interventions not designed for the ASD population to examine how, if at all, community MH providers adapt these interventions for the unique clinical presentations of youth with ASD. This may be particularly important for ongoing and future efforts that involve EBP implementation.

Overall, our data add to the nascent literature that has characterized community-based service delivery for youth with ASD. Most importantly, our current results highlight key implementation and policy considerations. Our data show the importance of planning for the service needs of dually diagnosed youth populations when establishing service guidelines in public sector youth MH services and within system-driven implementation of youth EBPs. Findings also suggest that youth with ASD may require, or at least receive, a higher number of service contacts and length of service. A thoughtful approach to determining policy regarding service utilization guidelines for youth with ASD is essential, particularly with regard to allowable service visits and duration of care.

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Table 1.

Description of Practices

Practice	Age Range	MH Target	Format	General Description
CPP ¹	0–6 years	Trauma, Attachment	Caregiver or caregiver-youth sessions	Improve parent-child interactions through play
IY ²	0–12 years	Conduct	Caregiver group or individual youth sessions	Strengthen caregiver skills and involvement in youth’s activities to reduce conduct problems
MAP ³	0–21 years	Anxiety, Trauma, Depression, Conduct	Youth, caregiver, or caregiver-youth sessions	A suite of decision support tools to identify, select, and monitor evidence-based practice
PCIT ⁴	2–7 years	Conduct	Conjoint caregiver-youth sessions	Caregiver receives live-coaching as they play with their child to practice behavior management skills and improve caregiver-child interaction patterns
Seeking Safety ⁵	13–20 years	Trauma, Substance Use	Group or individual sessions	CBT, present-focused, problem oriented focused on coping skills
TF-CBT ⁶	3–18 years	Trauma	Youth, caregiver, and conjoint sessions	CBT skills related to trauma
Triple P ⁷	0–18 years	Conduct	Group or individual sessions with caregivers	Behavioral parenting skills

¹ Lieberman, A. F., & Van Horn, P. (2005). *Don't hit my mommy! A manual for child-parent psychotherapy with young witnesses of family violence*. Washington, DC: Zero to Three.

² Webster-Stratton, C., Mostyn, D., & Marie, J. S. (2005). *The Incredible Years: A trouble-shooting guide for parents of children aged 2–8 years*. Seattle, WA: Incredible years.

³ Chorpita, B. F., Daleiden, E. L., & Collins, K. S. (2014). Managing and adapting practice: A system for applying evidence in clinical care with youth and families. *Clinical Social Work Journal*, 42, 134–142.

⁴ Eyberg, S. M. & Funderburk, J. F. (2011). *Parent-child interaction therapy protocol*. Gainesville, FL: Parent-Child Interaction Therapy International, Inc.

⁵ Najavits, L. M. (2002). *Seeking safety: A treatment manual for PTSD and substance abuse*. New York: Guilford Press.

⁶ Cohen, J. A., Mammario, A. P., & Deblinger, E. (2006). *Treating trauma and traumatic grief in children and adolescents*. New York: The Guilford Press.

⁷ Turner, K. M., Markie-Dadds, C., & Sanders, M. R. (2002). *Facilitator’s manual for group Triple P (Rev. Ed.)*. Brisbane, QLD: Triple P International.

Table 2.

Child Demographic Characteristics

	ASD (n=2537)	No ASD (n=2537)
	M (SD) or n (%)	
Age ^a	9.50 (4.37)	10.25 (4.35)
Sex (male) ^a	1951 (77%)	1951 (77%)
Race/Ethnicity^a		
Latinx	1587 (62.6%)	1587 (62.6%)
African American	375 (14.8%)	375 (14.8%)
Caucasian/White	318 (12.5%)	318 (12.5%)
Asian/ Pacific Islander	93 (3.7%)	93 (3.7%)
American Indian/Alaska Native	7 (.3%)	7 (.3%)
Unknown/Other	153 (6%)	153 (6%)

^aBased on first unit of service. Case-control matched sample.

Table 3. Differences in Mental Health Service Utilization and Diagnostic Characteristics

	ASD (n=2537)		No ASD (n=2537)		<i>t</i> -test or McNemar test	<i>p</i> -value
	<i>M</i> (<i>SD</i>)	<i>n</i> (%)	<i>M</i> (<i>SD</i>)	<i>n</i> (%)		
Number of MH Diagnoses^a	2.09 (.76); 1-6		1.31 (.58); 1-5		$t(2535) = -40.33$	<.001
Clinician-Assigned Diagnosis^b		<i>n</i> (%)		<i>n</i> (%)		
Any Externalizing	1059 (41.7%)		1165 (45.9%)		$\chi^2(1) = 9.25$.002
Any Internalizing	807 (31.8%)		904 (35.6%)		$\chi^2(1) = 9.23$.002
Any Trauma	118 (4.7%)		209 (8.2%)		$\chi^2(1) = 26.91$	<.001
Total (Sum) Claims	54.85 (120.62)		47.53 (86.10)		$t(2535) = -16.97$	<.001
Service Duration (months)	15.40 (18.95)		13.53 (16.62)		$t(2535) = -3.74$	<.001
Service Type^c		<i>M</i> % (<i>SD</i>)		<i>M</i> % (<i>SD</i>)		
Psychotherapy	53.34% (34.21)		60.99% (32.75)		$t(2535) = 8.23$	<.001
Evaluation and Assessment	14.18% (23.53)		13.71% (24.01)		$t(2535) = -.71$.48
Case Management	12.08% (20.09)		7.17% (15.93)		$t(2535) = -9.53$	<.001
Medication Management	4.76% (13.14)		3.93% (12.16)		$t(2535) = -2.41$.02
Crisis Services	4.46% (16.91)		3.31% (15.01)		$t(2535) = -2.61$.01
Other Services	11.19% (15.92)		10.89% (15.24)		$t(2535) = -.69$.50
Practice^d		<i>n</i> (%)		<i>n</i> (%)		
MAP	761 (30.0%)		800 (31.6%)		$\chi^2(1) = 139$.24
Behavioral Parent Training ^e	624 (24.6%)		310 (12.2%)		$\chi^2(1) = 137.21$	<.001
Trauma ^f	439 (17.3%)		670 (26.4%)		$\chi^2(1) = 61.87$	<.001

^a Calculated based on the number of diagnostic categories that a child ever had, including an ASD diagnosis.

^b Based on whether a child ever received a primary or secondary diagnosis of each category across their claims. These categories are not mutually exclusive.

^c These data represent the average proportion of claims of each service type of each youth's total claims.

^d Each child was assigned a primary practice category based on the highest proportion of their claims.

^e Practices include Triple P, IY, and PCIT.

Practices include CPP, TFCBT and SS.
f

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