Pediatric Consultation-Liaison: Patient Characteristics and Considerations for Training in Evidence-Based Practices

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Abstract

Consultation-liaison services are an integral part of many pediatric hospital settings, yet characteristics of this patient population have not been extensively documented. The current study is a retrospective one-year chart review of the consultation-liaison service at a large pediatric hospital in the Southwestern United States. The purpose of this study is twofold: (1) to characterize this hospital's CL population and (2) to use these characteristics to identify preliminary evidence-based practices that should be considered for CL provider training. Identifying evidence-based practice elements that align with the characteristics of consultation–liaison patient populations may inform trainings for consultation-liaison staff. This would help to ensure that youth seen in hospital consultation-liaison services are getting the best available services, which is critical given the shortened time frame available to work with this patient population.

Keywords Pediatric consultation-liaison · Consultation-liaison provider training · Pediatric patient characteristics · Evidence-based practice elements

Youth with chronic medical illnesses are at an increased risk for emotional or behavioral problems with more than 20% of youth with chronic medical conditions also having an emotional or behavioral disorder (Becker, Smith, & Hazen, 2020; Eiser, 1990; Gortmaker, Walker, Weitzman, & Sobol, 1990; Knapp & Harris, 1998; Lavigne & Faier-Routman, 1992; Pinquart & Shen, 2011). Youth with comorbid psychiatric and medical issues typically have more complex mental health diagnoses, higher health care costs, and more complicated health outcomes than youth who do not have psychiatric and medical comorbidity (Steiner, Fritz, Mrazek, Gonzales, & Jensen, 1993). Youth who are referred to inpatient consultation-liaison (CL) services have significantly more behavior difficulties than their non-referred peers (Carter et al., 2003). These difficulties can negatively impact medical outcomes, as well as the patient family's coping and adjustment with medical issues (Carter et al., 2003).

This population's complexity, coupled with often brief and unpredictable hospital visits, necessitates targeted, effective mental health services provided during the hospital visit. As a first step, it is important to accurately characterize the pediatric inpatient CL population in order to optimally apply the treatment evidence base (Bernstein, Chorpita, Daleiden, Ebesutani, & Rosenblatt, 2015). The extent to which evidence-based practices are used in pediatric CL settings is not well known (Piazza-Waggoner et al., 2013; Ruddy & House, 2005). There has been growing momentum in the field of CL services to develop standards and competencies in evidence-based practices in training and clinical practice to ensure that patients are receiving evidence-based services (De Giorgio et al., 2015; Palermo et al., 2014; Roberts, Brown, & Puddy, 2002; Sudak & Goldberg, 2012). For example, core competencies for training in pediatric consultation-liaison were recently developed by an American Academy of Child and Adolescent Psychiatry (AACAP) special interest group, a first step toward developing educational objectives and identifying "best practices" in pediatric CL (Shaw et al., 2019). In a recent review of progress in the field of pediatric CL, Becker et al. (2020) call for the development of standard training curriculum based on this work. An understanding of pediatric CL service patient characteristics and mental health concerns would clarify the targets of such a training

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curriculum and point to existing best practices in youth mental health interventions that could be leveraged for training.

Prior Pediatric Consultation-Liaison Service Patient Characterization Studies

In a survey administered by AACAP, the majority of inpatient pediatric CL services surveyed in North America reported that they had an increase in referrals in the last five years (Shaw, Pao, Holland, & DeMaso, 2016). Frequent referral concerns reported by participating services included suicide assessment, differential diagnosis of medically unexplained symptoms, depression, anxiety, and medication evaluation (Shaw et al., 2016). However, this is based on information reported by individual CL services, as opposed to chart reviews from these services. Few existing studies delineate the characteristics of inpatient pediatric CL services, specifically in terms of reason for referral to CL (referral concern) and mental health diagnosis. An understanding of the reason for referral to CL and mental health diagnosis may provide insight into the type of mental health interventions that CL providers typically provide.

With regard to referral concern, depression was among the top three referral reasons in four of eight existing studies that sought to describe characteristics of inpatient pediatric CL patients (Brosig & Zahrt, 2006; Carter et al., 2003; Olson et al., 1988; Piazza-Waggoner et al., 2013). Adjustment disorders, adjustment, or coping also appeared among the top three referral concerns for seven out of eight studies (Brosig & Zahrt, 2006; Carter et al., 2003; Drotar, 1977; Kullgren, Sullivan, & Bravender, 2018; Olson et al., 1988; Piazza-Waggoner et al., 2013; Tunick et al., 2013). One of these studies sought to compare children (youth up to 11 years old) and adolescents/young adults (12 to 24 years old) seen in their CL service, and coping/adjustment was the top referral concern for both age groups (Kullgren et al., 2018). There were significant differences between the age groups in that the second and third most common referral concerns for children were feeding problems and anxiety whereas for the adolescent/young adults they were pain and physical symptoms (Kullgren et al., 2018). One study found that concerns about the role of psychological factors in somatic symptoms was a top reason for referral to CL (Drotar, 1977), which may overlap with psychiatric symptoms more broadly. "Child psychiatric symptoms" was a top referral reason in another study (Tunick, Gavin, DeMaso, & Meyer, 2013, p. 49).

Patient mental health diagnoses were not reported consistently across the studies identified. While referral concerns inform why the patient was referred, mental health diagnoses provide information about the CL provider's own perspective on the patient's mental health functioning and could act as a guide for interventions and treatment recommendations. Identifying target interventions on which CL providers should be trained is challenging in the absence of information about the types of mental health diagnoses that are present in CL populations. More information about these variables within CL populations is necessary to more fully characterize CL populations and ensure that appropriate mental health interventions are available within the CL service.

Because insufficient information exists about pediatric CL patients in terms of their characteristics and the treatment that they receive, it is difficult to know which evidence-based practices might work well for this population (Dinwiddie, 2013). Therefore, the characterization of a given CL population is the first step to inform trainings for CL staff and could be leveraged to specifically train for evidence-based practice elements.

State of Evidence-based Practices in Consultation-Liaison Services

Despite strong research support for the benefits of evidence-based mental health treatment protocols, these interventions tend to be underused in community settings that serve youth with mental health needs (Addis, Wade, & Hatgis, 1999; Bearman & Weisz, 2015; Riemer, Rosof-Williams, & Bickman, 2005). A common critique of evidence-based practices is the mismatch between the single-disorder focus of most treatments that have been tested in randomized controlled trials and the complex and comorbid caseloads seen in most real-world settings (Bearman & Weisz, 2015). Comorbid clients may require the clinician to utilize several different evidence-based treatment protocols, and it is likely not feasible for clinicians to be trained in all of the evidence-based treatment protocols they might need for a diverse caseload. Furthermore, for any given disorder, there are several treatment protocols available that involve similar strategies (Kazdin, Bass, Ayers, & Rodgers, 1990). For example, exposure is a therapeutic technique that is common across multiple branded evidence-based anxiety treatment protocols, such as both *Coping Cat* and *Cool Kids* (Kendall & Hedtke, 2006; Rapee et al., 2006). Thus, clinicians are faced with challenges in managing and mastering the information that is available related to effective treatment protocols for common youth mental health problems (Chorpita et al., 2011).

This may be especially true for providers in pediatric CL settings. Use of evidence-based treatment protocols in CL services can be particularly challenging because the population of patients seen through these services differ from the typical population seeking outpatient services; these patients typically have somatic symptoms related to a medical issue with comorbid psychiatric symptoms that become apparent

while they are being seen for medical reasons (Lücke et al., 2017). Furthermore, CL psychology relies on the use of treatment protocols that have been studied in outpatient populations. While it is true that these interventions can be adapted and applied for use in inpatient settings, little research has been done on the use of these protocols with this population (Dinwiddie, 2013; Ernst et al., 2014). Not only has research primarily been done in outpatient settings, but the research on treatment protocols typically stems from controlled studies with stringent inclusion and exclusion criteria that results in a sample that is not generalizable to the broad outpatient population, much less inpatient hospital populations (Ali, Ernst, Pacheco, & Fricchione, 2006).

Furthermore, clinical staff working in hospital CL services have a limited duration of time and visits with their patients, and the process for deciding what treatment to engage in is often unclear. CL providers typically have to complete assessments and interviews with multiple family members and medical staff, observe patients, and discuss cases with doctors in addition to the implementation of intervention, all within provider time and practical constraints (including insurance and billing issues) while the patient is in the hospital with other medical needs (Drotar, 1995). Especially in a fast-paced medical setting, it is not feasible for CL staff to attempt to implement a full evidence-based treatment protocol, which may contribute to the underutilization of evidence-based treatment protocols in the CL setting.

A *practice elements approach* to treatment may be a more parsimonious fit with the demands of the CL setting. In a practice element approach to evidence-based practice, clinicians are trained in specific techniques that are shared among various evidence-based interventions instead of relying on one of several available treatment protocols (Chorpita, Becker, Daleiden, & Hamilton, 2007; Chorpita, Daleiden, & Weisz, 2005). A *practice element* is a therapeutic technique or approach that is a distinct component within a larger intervention (Chorpita et al., 2005). For example, exposure is a common clinical technique used to decrease anxiety symptoms and rewards are commonly used to increase motivation; "exposure" and "rewards" may both be referred to as practice elements. A process known as *distillation and matching* helps to summarize the commonalities in techniques used across evidence-based interventions to facilitate treatment selection (Chorpita et al., 2005, 2007; Chorpita & Daleiden, 2009). Distillation involves labeling practice elements that are used in evidence-based interventions to summarize the commonalities and differences across the treatment literature (Becker, Boustani, Gellatly, & Chorpita, 2018; Chorpita et al., 2005). Distillation allows for the practice elements to be communicated in a common language, thus revealing the shared clinical techniques that are used in evidence-based treatment protocols.

The matching aspect of the distillation and matching process allows for characteristics of a given population to be considered when selecting an intervention (Chorpita et al., 2005). For example, diagnosis or treatment concerns can be incorporated into the model to determine which practice elements would be the most appropriate targets for intervention for a given population. In order to match practice elements to a CL population and identify the training content that would be most relevant for providers, it is necessary to understand the features that distinguish this population.

The Current Study

The purpose of this study is twofold: (1) to characterize the reasons for CL referral and the mental health diagnosis of a CL population of a large pediatric hospital and (2) to identify preliminary evidence-based practices that target these concerns and diagnoses and should be considered for CL provider training.

Characterize the CL Population

Few existing studies outline characteristics of inpatient pediatric CL services using patient chart review. Referral concern is consistently represented in the few previous studies we located, but variables such as mental health diagnosis have previously been underrepresented in pediatric CL characterization studies. Information on mental health diagnosis was included in the current study to add to the existing knowledge about pediatric CL patient characteristics.

Identify Preliminary Evidence-Based Practices

Using a practice elements approach, information about primary diagnoses given by CL staff will allow for the initial identification of potential appropriate evidence-based practice elements. Knowledge about practice elements that target the characteristics of consultation-liaison patient populations may inform intervention trainings for consultation-liaison staff. As a starting point for identifying relevant practice elements, this study performed a secondary analysis of a database, PracticeWise Evidence-Based Services (PWEBS; PracticeWise, 2019). The PWEBS database consists of information about study characteristics and the practice elements included in each treatment protocol from randomized clinical trials of child and adolescent mental health treatments. The PWEBS database was utilized in the current study as an established source of practice elements that have been tested for youth mental health concerns to identify candidate practices for training and research directly in the pediatric CL domain. This would help to ensure that youth seen in hospital consultation-liaison services are getting services for

mental health concerns that have the most robust representation in the evidence base.

Method

Service Context

Consultation-Liaison Psychology Service Description

The hospital in the current study is a freestanding pediatric hospital located in the Southwestern United States that uses a family-centered approach and has a consulting emphasis. The CL psychology service is available to all patients through referral for various behavioral health concerns that become apparent through medical issues.

During the time of data collection, the CL psychology service operated as a separate service from psychiatry. One patient could be seen by both the CL psychology service and psychiatry services and, while the services collaborated, they were not integrated. There were a total of six providers on the CL psychology service, including: two CL licensed psychologist attendings, two licensed psychologists who provided stock coverage and supervision, and two psychology interns for two days per week (total of six different trainees across the duration of the chart review). The CL psychology service was not built into the system for routine consults. However, due to one provider's clinical expertise in eating disorders, the CL psychology service had a consistent role in mealtime and family support while patients with eating disorder diagnoses were hospitalized to become medically stable; psychiatry took the lead on the placement for these cases post discharge. CL psychology providers used mental health diagnostic codes for documentation and CPT codes for billing purposes.

Procedures

Patient data were obtained through a retrospective chart review of all youth who were referred for an initial consult visit by the hospital's CL psychology service from October 8, 2016 through October 7, 2017. Practice element data were obtained through analysis of the PracticeWise Evidence-Based Services (PWEBS; PracticeWise, 2019) database. The study was deemed exempt by the Institutional Review Boards of both affiliated institutions. Data of interest included age, gender, race, ethnicity, referral concern and mental health diagnosis. Data variables that were entered as open text in patient charts and were coded for analyses include referral concern and mental health diagnosis. These variables were double-coded by two research assistants using a coding manual described below. The first author resolved any discrepancies between the two raters.

Additional information on this process and reliability is outlined below.

Coding Manual

A coding manual was created that outlined the category options for each variable. Mental health diagnoses were coded based on categories specified in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*; American Psychiatric Association, 2013). A coding system used in a chart review by Tunick et al. (2013) was adapted to code the referral concern variable. The variables and their categories are described in more detail below.

Referral Concerns

The referral concerns variable captures the reason that the medical provider or team referred a patient to CL psychology services. The majority of the referral concern categories used by Tunick et al. (2013) in their chart review were used in the current study. However, the categories "general parent/family support" and "sibling support" were combined in the current study due to overlap in content. Additional categories of "recommendations for outpatient referral" and "provide discharge recommendations" were also added to accommodate patterns in CL staff notes that did not fit into existing categories. The categories coded for this variable include the following: coping/adaptation/traumatic stress, psychiatric symptomatology (including perceived need for coping skills, general psychosomatic symptom concerns, and symptoms of a psychological disorder such as depression or anxiety), changes in mental status, non-accidental injuries (overdose/suicide attempts, child abuse, etc.), capacity assessment, adherence concerns, parent psychopathology, general parent/family support/sibling support, recommendations for outpatient referral, family-staff conflict, anticipatory bereavement/end-of-life, other assessment, and provider discharge recommendations. If relevant, coders also indicated whether the referral concern was to help rule out a diagnosis or to help evaluate a history of one of the aforementioned categories.

Mental Health Diagnoses

The diagnostic categories in this study represent broad categories outlined in the *DSM-5* (American Psychiatric Association, 2013). Categories included: Neurodevelopmental disorders; schizophrenia spectrum and other psychotic disorders; bipolar and related disorders; depressive disorders; anxiety disorders; obsessive compulsive and related disorders; trauma- and stressor-related disorders; dissociative disorders; somatic symptom and related disorders; feeding and eating disorders; elimination disorders; sleep–wake

disorders; sexual dysfunction; gender dysphoria; disruptive, impulse-control, and conduct disorders; substance-related and addictive disorders; neurocognitive disorders; personality disorders; paraphilic disorders; other mental disorders; medication-induced movement disorders and other adverse effects of medication; other conditions that may be a focus of clinical attention (which will be referred to as other conditions); and deferred. If relevant, coders also indicated whether the diagnosis indicated was one that the CL provider indicated as a diagnosis to be ruled out, if the diagnosis was a historical diagnosis, or if the diagnosis indicated was for the patient's parent.

Coding Training

Prior to a reliability check (described below) and coding, all coders met with the first author to discuss the meaning of each variable and its categories. Initial coding training took about three hours in total, with follow-up conversations occurring as necessary throughout the coding process. During training, the team went over examples for each category. If there were any questions about the variables or their categories, the first author discussed them with experts in the field. This was done in two phases where diagnoses were coded first, and the referral concern variable was coded second.

Coding Reliability

Interclass correlation (ICC) estimates were calculated using SPSS Statistics (version 25). According to Cicchetti and Sparrow ([1981](#)), ICCs less than 0.4 indicate poor reliability, 0.40-0.59 indicate fair reliability, 0.60-0.74 indicate good reliability, and values 0.75 or higher indicate excellent reliability. Prior to each coding segment, a random sample of 20 patient charts were selected for which each of the two coders had to meet adequate reliability on the primary category codes for those variables with an expert rater (ICC > 0.60). Across the pair of coders, reliability estimates were ICC $(2,2) = 0.97$ and ICC $(2,2) = 0.98$ for referral concern; and ICC $(2,2) = 1$ for both raters for mental health diagnosis. The correlations associated with these reliability estimates are reported in Table [1](#).

Once sufficient reliability was obtained, the two coders coded data from the remaining patient charts. Both coders coded all 302 patient charts for each variable, allowing for the assessment of agreement between independent coders for the full dataset. Overall reliability estimates were ICC $(2,2) = 0.97$ for referral concern, and ICC $(2,2) = 0.94$ for mental health diagnosis. When coding for the variables was complete, the first author compared the ratings provided by each coder and resolved any discrepancies, consulting an expert in the field as needed.

Table 1 Intercorrelations between raters for all coded variables

Coded variable	Coder 1	Coder 2	Principal investigator
Diagnosis			
Coder 1	—	1	1
Coder 2		—	1
Principal investigator			—
Referral concern			
Coder 1	—	.99	.97
Coder 2		—	.96
Principal investigator			—

Practice Elements

The version of the PWEBS database analyzed for the current study included information from 1,076 papers published from 1966 to 2017 that described randomized controlled trials of psychosocial interventions in samples of youth (PracticeWise, [2019](#)). The developers of the PWEBS database used a structured coding system in which each paper is coded by two coders plus a validation judge that verified the coded results and resolved any discrepancies. The version of the coding system analyzed included 72 standardized practice element codes plus allowed for open text write-in of additional practice descriptions. For the practice element codes reported for the current analysis, prior kappa coefficients of interrater reliability were in the good to excellent range (0.68–1.0; Chorpita & Daleiden, [2009](#)).

For the purpose of the current study, PWEBS data were analyzed using two strategies to identify the set of study groups that showed favorable outcomes. A study group for the PWEBS database is defined as a discrete class or condition to which study participants might be randomly assigned and that was operationally defined by a coherent set of experimental procedures (for example, a study testing the anxiety treatment *Coping Cat* (Kendall & Hedtke, [2006](#)) versus usual care in which participants were randomly assigned to those two treatment conditions would have two study groups). For the first strategy, the authors identified a study group as yielding a "winning" treatment if that study group represented an active, nonpharmacological treatment that performed statistically significantly better than one or more comparison study groups (e.g., alternative treatment, no treatment/waitlist, or other control) at post-treatment for the primary outcome in the target symptom domain (e.g., a measure of anxiety in a population with anxiety problems). For the second strategy, the authors used an existing field in the PWEBS database that represented an algorithm to grade the strength of evidence for the treatment that considered a broader set of criteria, such as the nature of the

control group, whether the treatment protocol was manualized, and whether the outcome was replicated in multiple studies by independent investigator groups. The first two levels of this system reported here corresponded to the definitions for empirically supported treatments established by the American Psychological Association Division 12 Task Force for the Promotion and Dissemination of Psychological Procedures (1995).

Results

All analyses in the current study were calculated using SPSS Statistics (version 25). Descriptive analyses were conducted to characterize the CL population's demographic characteristics (age, gender, race, ethnicity), referral concern, and mental health diagnosis.

Characteristics of this CL Population

Demographic Characteristics

The sample consisted of 302 youth who were referred for a consult visit by CL psychology services during the specified twelve months of data collection. Of these patients, 63% were females, 61.3% Non-Hispanic/Non-Latino, 76.5% white, and the mean age was 13.4 years old. See Table 2 for a more complete description of patient demographic characteristics. During the time that data were collected, there were a total of 6,014 inpatient hospital visits for the entire pediatric hospital. Of these inpatients, 46.6% were females,

Table 2 Patient demographic characteristics

Characteristics	Patients ($N=302$) Mean (SD)
Age	13.4 (3.9)
	N (%)
Gender	
Female	191 (63%)
Male	111 (37%)
Race	
White	231 (76.5%)
Black/African American	29 (9.6%)
Asian	2 (.7%)
Other race	36 (11.9%)
Declined to specifiy	1 (.3%)
Not indicated	2 (.7%)
Ethnicity	
Non-Hispanic/Non-Latino	185 (61.3%)
Hispanic/Latino	107 (35.4%)
Not indicated	4 (1.3%)

69.3% white, and the mean age was 6.71. It is important to note that 31% were a year old or younger, which likely accounts for the large difference between the pediatric hospital and CL psychology service patients' mean age during this time. Unfortunately, ethnicity information was unavailable for 41.2% of general hospital patients during this time; of the ethnicity information available, 35.6% of patients were Non-Hispanic/Non-Latino.

Referral Concern

Three of the 302 patient charts were missing referral concerns. Of the remaining 299 patients, the top three primary referral concerns were psychiatric symptomatology ($N=149$; 49.3%), coping/adaptation/traumatic stress ($N=121$; 40.1%), and adherence concerns ($N=7$; 2.3%). Seven (2.3%) referral concerns specified they were related to a previous mental health issue and one (0.3%) to ruling out a mental health concern, rather than current concerns of the indicated problem. Figure 1 illustrates the frequency of all primary referral concerns.

Eighty of the 302 patients (26.5%) had secondary referral concerns. The top three secondary referral concerns were related to coping/adaptation/traumatic stress ($N=40$; 50%), psychiatric symptomatology ($N=21$; 26.3%), and the provision of recommendations for outpatient referral ($N=7$; 8.8%). Of these, one (1.3%) referral concern was related to ruling out a mental health concern and three (3.8%) were related to the history of a mental health issue. Only 13 (4.3%) had a tertiary referral concern. Only one patient (0.3%) had a fourth referral concern and it was related to coping/adaptation/traumatic stress.

Mental Health Diagnoses

A total of 284 patients (94%) were given primary mental health diagnoses. The three most common primary mental health diagnoses given by CL staff included trauma- and stressor-related disorders ($N=93$; 30.8%), anxiety disorders ($N=77$; 22.5%), and depressive disorders ($N=34$; 11.3%). These three primary diagnostic categories made up 64.6% of the full sample. A total of 6 (2%) of the 302 patients had diagnoses that were deferred at initial consult and a total of 11 (3.6%) of patients were not given a diagnosis during their consult visit. One (0.8%) diagnosis indicated concern about parental mental health diagnosis of anxiety and thus was not included in the total amount of cases with a primary diagnosis of an anxiety disorder. In the current study, no other variable was used in place of a mental health diagnosis when unavailable and it was considered missing data. Of the 284 patient primary diagnoses, 11 (3.6%) of them were specified as diagnoses that
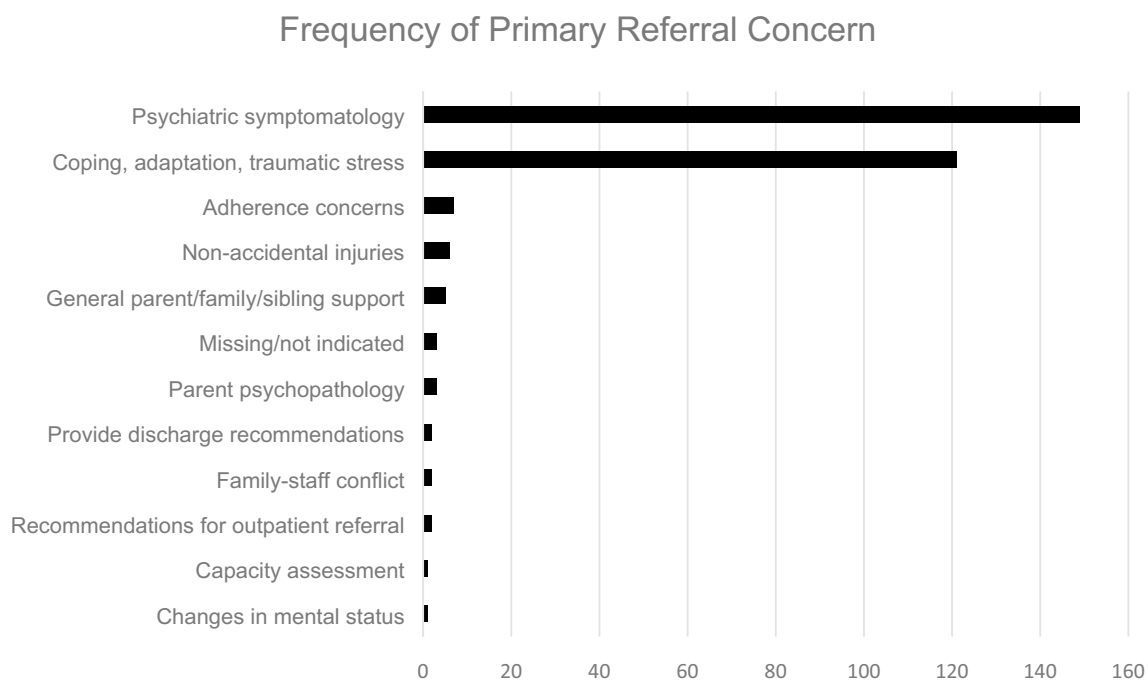
Frequency of Primary Referral Concern

Fig. 1 Frequencies of primary referral concerns

needed to be ruled out and 6 (2%) were given based on a history of the diagnosis. Figure 2 depicts the frequencies for all primary diagnoses.

One hundred twenty of the 302 patients (39.7%) were provided with a secondary mental health diagnosis. Of these 120, the three most common secondary diagnoses provided were anxiety disorders ($N = 35$; 29.2%), depressive disorders ($N = 20$; 16.7%), and trauma- and stressor-related disorders ($N = 20$; 16.7%). Of the 120 patients who were given a secondary mental health diagnosis, 31 (25.8%) of them were specified as a diagnosis that needed to be ruled out and 11 (9.2%) of them were given based on a history of the diagnosis.

Fifty-two patients (17.2%) were also given a tertiary mental health diagnosis. Of these, the most common tertiary diagnoses given were anxiety disorders ($N = 18$; 34.6%), neurodevelopmental disorders ($N = 9$; 17.3%), depressive disorders ($N = 7$; 13.5%), and trauma- and stressor-related disorders ($N = 7$; 13.5%). Of the 52 patients who were given a tertiary mental health diagnosis, 13 (25%) of them were specified as a diagnosis that needed to be ruled out and 3 (5.8%) of them were given based on a history of the diagnosis. A total of 20 (6.6%) patients received four mental health diagnoses, seven (2.3%) patients received five, three (1%) received six, two (0.7%) received seven, and only one (0.3%) received eight.

Preliminary Evidence-Based Practices to be Considered for CL Provider Training

Analysis of the PWEBS (PracticeWise, 2019) database identified 323 papers describing trials that sampled from populations representing the top three primary diagnosis categories of Anxiety, Depression, or Traumatic Stress. In these papers, a total of nine separate common practices were included in treatment protocols with high frequency (see Table 3). For anxiety disorders, the individual practice elements of exposure, cognitive restructuring, relaxation, and psychoeducation provided for the child and caregiver were shown to be the most common practices, occurring in 40–82% of "winning" treatments and 41–91% of treatments with the best research support. Traumatic stress was similar to anxiety in the most common practices, with the individual practice elements of exposure, psychoeducation to the child, cognitive restructuring, and relaxation again being the most common practices, occurring in 71–85% of "winning" treatments and 77–90% of best supported treatments, but there was more of an emphasis on cognitive restructuring and psychoeducation provided to the child than was the case for anxiety disorders. In addition, the individual practice element of narrative occurred in 62% of "winning" treatments and 63% of best supported treatments. For depressed mood, cognitive restructuring, psychoeducation provided to the child, activity
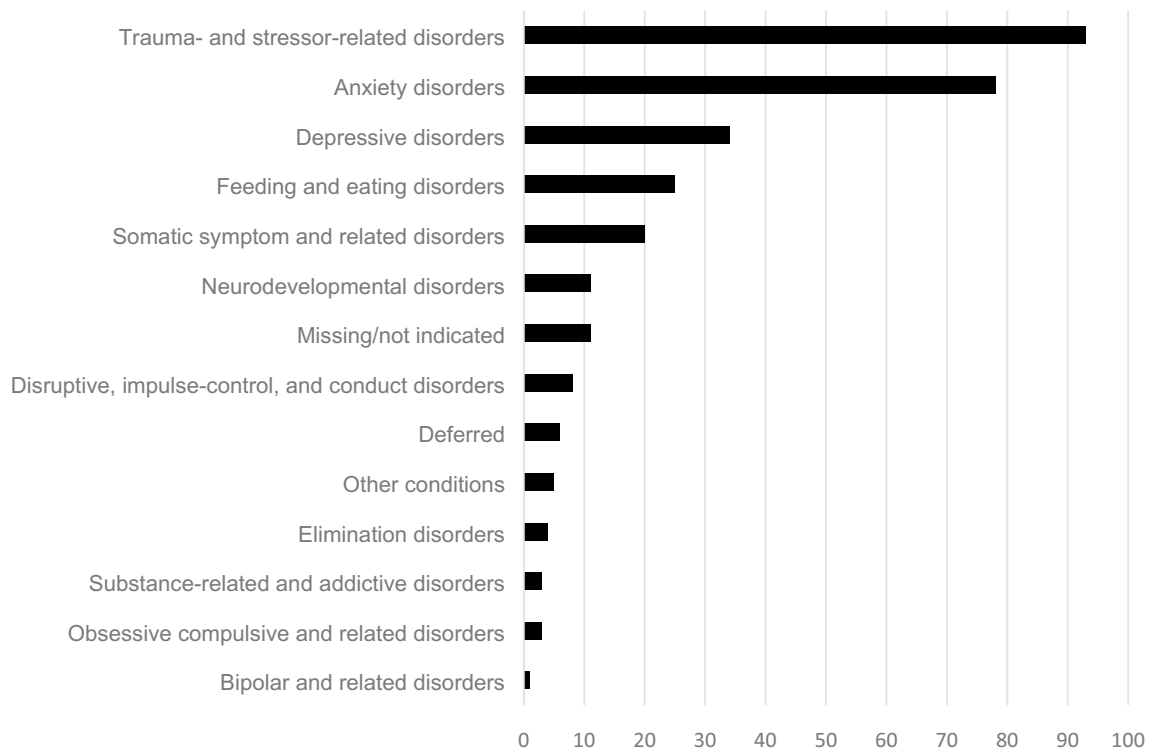
Frequency of Primary *DSM-5* Diagnosis

Fig. 2 Frequencies of primary *DSM-5* diagnoses given to patients by CL providers post-initial consult visit (American Psychiatric Association, 2013)

Table 3 Most common practice elements for anxiety, depression, and trauma disorders by level of evidence

Code by diagnosis	Percent of study groups		
	Any qualifying win	Level 2	Level 1
Anxiety	(*N*=171)	(*N*=162)	(*N*=148)
Exposure	82	86	91
Cognitive	57	59	64
Psychoeducation—child	51	52	53
Relaxation	40	43	43
Psychoeducation—caregiver	40	42	41
Depression	(*N*=58)	(*N*=54)	(*N*=38)
Cognitive	66	67	82
Psychoeducation—child	64	63	66
Activity selection	57	56	66
Maintenance/relapse prevention	48	50	55
Problem solving	48	50	53
Traumatic stress	(*N*=34)	(*N*=31)	(*N*=30)
Exposure	85	90	90
Psychoeducation—child	85	90	90
Cognitive	82	87	90
Relaxation	71	74	77
Narrative	62	65	63

Frequency information shared with permission from PracticeWise LCC (2019)
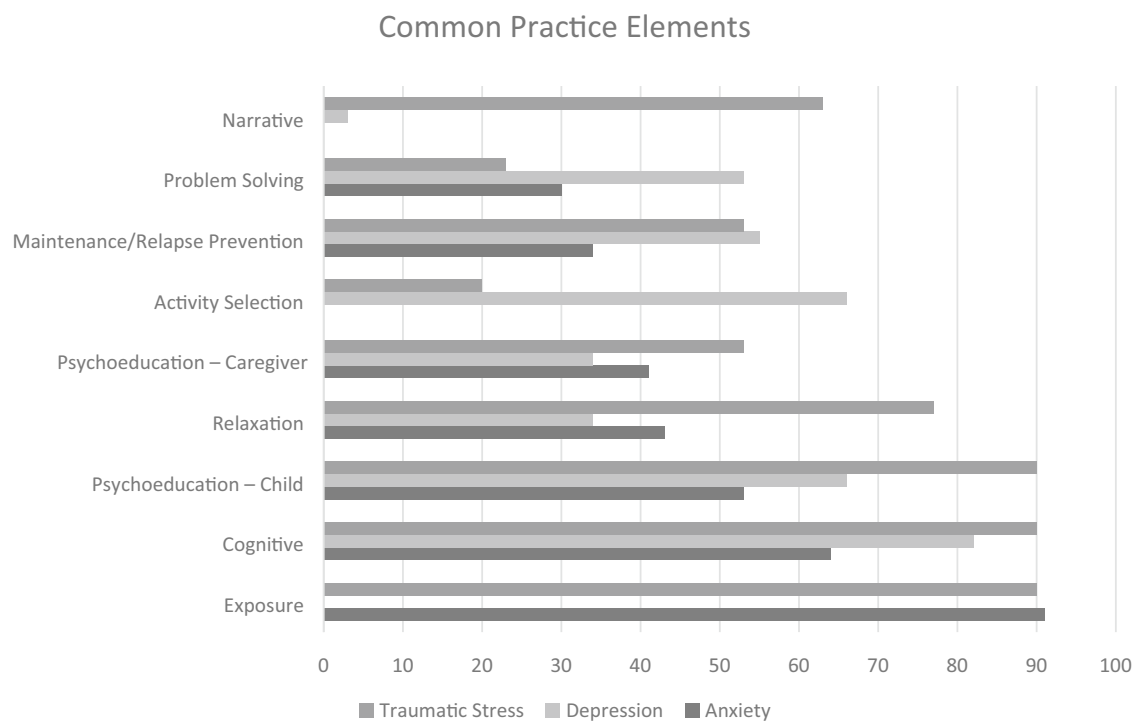
Common Practice Elements

Fig. 3 Percentage of Level 1 (best support) study groups for traumatic stress, depression, and anxiety that support these practice elements

scheduling, maintenance/relapse prevention, and problem solving were the most common practice elements, occurring in 48–66% of "winning" treatments and 53–82% of best supported treatments. The overlap between these nine unique practice elements reveal potential key training targets (see Fig. 3).

Discussion

The current study sought to characterize the CL population at a large pediatric hospital and to identify preliminary practice elements that should be considered essential targets for the use of evidence-based practices in CL interventions and therefore for CL provider training. There have only been a handful of studies on the characterization of pediatric CL service populations. To our knowledge, this is the first pediatric CL study to link CL patient population characteristics with the available information about evidence-based practice elements from the youth treatment evidence base. Nine unique practice elements were identified to inform the use of a practice elements approach to CL interventions.

Characteristics of this CL Population

Referral Concerns

In the current study, psychiatric symptomatology was the top referral concern category. This corresponds to previous pediatric characterization studies that found that psychiatric symptoms and depression were among the top referral concerns (Brosig & Zahrt, 2006; Carter et al., 2003; Olson et al., 1988; Piazza-Waggoner et al., 2013; Tunick et al., 2013). The second top referral concern of coping/adaptation/traumatic stress corresponds to the seven out of eight studies that had adjustment concerns and coping as one of the top referral concerns (Brosig & Zahrt, 2006; Carter et al., 2003; Drotar, 1977; Kullgren et al., 2018; Olson et al., 1988; Piazza-Waggoner et al., 2013; Tunick et al., 2013). These top two referral concerns also map onto the mental health diagnostic categories identified in the study, discussed below. Adherence-related concerns was the third-highest referral concern category in this chart review, which aligns with one prior chart review that had medication/treatment noncompliance as one of their top referral concerns (Carter et al., 2003) and another that included treatment compliance as a part of their overall category of psychological adaptation concerns (Drotar, 1977). These results highlight the similarities in referral concerns in the existing pediatric CL studies, suggesting that the primary types of concerns that cause

medical teams or providers to make referrals to CL services are similar across pediatric CL settings.

Mental Health Diagnoses

In the current study, the three most common primary mental health diagnoses given by CL staff at initial consult included trauma- and stressor-related disorders, anxiety disorders, and depressive disorders. While depression, coping, and adjustment concerns were among the top referral concerns in previous pediatric CL studies, only one of the previously published studies reported mental health diagnosis information (Carter et al., 2003). The top diagnoses reported by Carter et al. (2003) were adjustment disorders, psychological factors affecting physical condition, major depression, and depressive disorder not otherwise specified. Although the diagnoses by Carter et al. (2003) were based on the previous edition of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) and the current study used the *DSM-5* (American Psychiatric Association, 2013), overlaps between diagnoses are notable. The current study considered adjustment disorders to fall under the broader *DSM-5* diagnostic category of trauma- and stressor-related disorders (American Psychiatric Association, 2013). Both chart reviews also revealed depressive disorders as one of the primary diagnoses. This suggests some commonality in top diagnoses in pediatric CL patients, which would provide support for pediatric CL services emphasizing depression- and trauma-related evidence-based practice elements in their trainings. However, more research needs to be done given the lack of information about this patient characteristic in other pediatric CL services.

Preliminary Discussion of Common Elements Appropriate for this CL Population

As previously stated, the top three primary diagnoses encompass the primary concerns for 64.6% of this CL population. The top three primary and secondary mental health diagnoses given by CL staff were trauma- and stressor-related disorders, anxiety disorders, and depressive disorders. The top three tertiary mental health diagnoses included two out of these top three diagnoses (anxiety disorders and depressive disorders). This suggests that nine unique practice elements identified as occurring most frequently in evidence-based treatments with proven benefit for the treatment of trauma- and stressor-related disorders, anxiety disorders, and depressive disorders by PracticeWise (2019) would be appropriate ingredients for the treatment of more than just the 64.6% who received the three most common primary diagnoses. Furthermore, the common diagnoses between the current study and (Carter et al., 2003) support an emphasis

on trauma- and depression-related evidence-based practice elements in pediatric CL provider trainings.

Of note, the current study utilized the broader *DSM-5* diagnostic category of trauma- and stressor-related disorders, which included patients who received a diagnosis of an adjustment disorder related to their hospitalization or medical condition in this category (American Psychiatric Association, 2013). However, approaches to treatment may vary between patients with adjustment and trauma. The common practice elements that were found in the majority of "winning" treatments for trauma- and stressor-related disorders included exposure, psychoeducation to the child, cognitive restructuring, relaxation, and narrative (prolonged exposure via a trauma narrative). Some of these practice elements, such as use of a trauma narrative, may not be relevant as a treatment recommendation for a patient with a diagnosis of an adjustment disorder, or may be less appropriate given the typically brief course of treatment seen in a pediatric CL psychology service. Other identified practice elements, such as cognitive restructuring and relaxation, may be more appropriate. In a review of the literature for treatment of adjustment disorders, cognitive restructuring was listed as one common treatment component (Domhardt & Baumeister, 2018). Other components mentioned included relaxation and psychoeducation, although additional research on adjustment disorder interventions is needed and research on interventions for youth with adjustment disorder is particularly scarce (Domhardt & Baumeister, 2018). This emphasizes the utility of a practice elements approach in allowing treatment to be tailored to unique patient presentations even within broader diagnostic categories such as trauma- and stressor-related disorders.

The same nine unique elements could likely also address the majority of referral concerns. The top two referral concerns were psychiatric symptomatology and coping/adaptation/traumatic stress, which overlap with mental health diagnoses and should be considered when determining evidence-based practice element training targets. The third most common referral concern was adherence which is related to treatment compliance. Compliance generally is a key aspect of disruptive behavior disorder treatment as difficulty with compliance is a major component of disruptive behavior disorders. However, adherence concerns only made up about two percent of primary referral concerns in the current study and, thus, may not be a primary training target.

Training in full evidence-based interventions used in outpatient mental health for these three primary mental health diagnoses (trauma- and stressor-related disorders, anxiety disorders, and depressive disorders) alone would be both costly and time intensive. Training in these nine discrete common practice elements, in contrast, would allow for CL providers to have a toolbox of practices that could target the primary presenting problems for the majority of CL

patients in this population. Identification of key practice elements that can help the majority of CL patients allows for CL providers to be trained in common evidence-based practice elements that will allow them to best serve their patient population under the various constraints that are present in the hospital setting. For example, cognitive restructuring, identified as a practice element across the top three primary and secondary mental health disorders, is used to help youth manage unhelpful, distorted, or catastrophic thoughts and find more realistic and helpful perspectives. This could be applied to youth with regard to relationships, academic issues, their futures, or for CL concerns specifically, about their condition or misinterpretations of threat regarding upcoming procedures. Relaxation is likewise a practice element that is frequently used in "winning" treatments for anxiety and traumatic stress, and could help patients to manage their physiological reactions to worry or sadness. Both of these practice elements are also found in supported approaches to interdisciplinary pain management, increasing their relevance even more (Gatchel, McGeary, McGeary, & Lippe, 2014). Although these practice elements are derived from all randomized treatment trials for common youth problems, they are largely cognitive-behavioral in nature. While some CL providers may have training in CBT, research in routine mental health care settings has found that some of the most well-researched CBT strategies are not used (Borntrager, Chorpita, Higa-McMillan, Daleiden, & Starace, 2013; Smith et al., 2017), underscoring the potential benefit of a training targeting these practices.

Limitations

This study improves upon prior research by broadening the variables identified in other CL chart review studies and also demonstrates the continuity of some key variables that have been consistently reported across the few existing pediatric CL characterization studies. Despite these additions, some limitations should be noted.

Data from the current retrospective chart review were collected over a one-year period and, by nature, increasing the length of data collection could influence results. The current data are also cross-sectional in nature. Variables investigated are potentially related and it is impossible to determine what impact various factors may have on one another or how CL influences overall outcomes. Furthermore, the current study also did not document which CL provider wrote patient notes. It is possible that there are biases in the ways that different providers document initial consult visits and provide mental health diagnoses.

Another limitation of the study is that open text data were coded by two research assistants unfamiliar with CL prior to coder training. However, every variable that was coded was double-coded, coding categories were based on

previous research and input from experts in the field, and experts in the field were consulted with to resolve any coding discrepancies.

The service models and characteristics of CL services may differ in substantial ways, which underscores the importance of continuing to investigate unique CL service populations to improve understanding of different pediatric CL populations and services. During the time of data collection, this CL psychology service operated as a separate service from psychiatry. This CL psychology service model in combination with the provider makeup (six providers, two of whom were trainees and one of whom was an expert in the area of eating disorders), may have influenced the types of referral concerns that resulted in CL consults, potentially impacting the generalizability of these results to other CL services. While the CL population at this hospital may not be generalizable to every CL population, the current study examined variables that have not consistently been reported in previous pediatric CL characterization studies, adding robustness to the literature on pediatric CL patients. A matching analysis that considers the demographic characteristics of the CL population would complement this analysis and could more accurately reveal what practice elements CL providers should be trained in to match the individual characteristics of specific patients (Chorpita et al., 2005).

The current study did not report information on interventions used by the CL staff or the number of consults, as its primary purpose was to characterize the population based on information reported at initial consult. Information about referral concerns and diagnoses is critical for case conceptualization and planning for patient care. Therefore, it is this information that would be the most informative in terms of learning which evidence-based practice elements would be needed to be able to help patients in subsequent visits. However, information about what actually and typically happens during the consults would also be useful for developing an understanding of the extent to which current practices reflect the evidence base.

Future Directions

Additional characteristics of pediatric CL populations, such as CL recommendations for patient care both during and post the hospital stay should be considered to better characterize the interventions used in CL and find what is most effective within existing CL services. The impact on treatment outcomes of evidence-based practices that may already be present in usual CL practice can then be compared to the impact of non-evidence-based practice elements, as in other observational studies of usual care services (Garland et al., 2014). It may also be important to explore reasons for

inconsistencies between demographics of patients referred to CL and those who are not referred in future studies.

It would also be helpful to test the utility of practice elements training on these nine unique practice elements to confirm the proportion of the pediatric CL population that is covered by them. Patient demographic characteristics, mental health diagnoses, and referral concerns could be used to apply a full matching analysis for this population (Chorpita et al., 2005). Furthermore, it would be helpful to compare the characteristics of the CL population with those of the larger hospital to determine whether there are differences in those referred and not referred to CL psychology services.

Conclusion

The current study contributes to the limited literature on the characterization of pediatric CL populations and provides consideration of nine evidence-based practice elements that should be CL provider training targets, given the characteristics of the pediatric CL population. To our knowledge, the current study is the first study to link potential evidence-based practice elements to pediatric CL patient characteristics within the literature. The current study reveals commonalities with the few existing pediatric CL characterization studies, including similar referral concerns (psychiatric symptomatology, adjustment, and coping), and top primary diagnoses (trauma- and stressor-related and depression).

Nine unique practice elements were identified that occur frequently in evidence-based protocols for the top three primary diagnoses in the current study (trauma- and stressor-related, anxiety, and depression) through preliminary distillation analysis by PracticeWise (2019). These nine evidence-based practice elements are likely to benefit more than those given these diagnoses as their primary mental health diagnosis, given the common presence of these same three diagnoses across non-primary mental health diagnoses in the current study. The identification of these preliminary common evidence-based practice elements could provide key training targets for pediatric CL services and, in turn, may help to increase the use of evidence-based practices in pediatric CL populations.

Compliance with Ethical Standards

Conflict of interest Dr. Daleiden is a partner in PracticeWise, LLC, and financially benefits from the overall performance of the company. Amanda A. Bowling, Sarah Kate Bearman, Weixi Wang, and Leslie A. Guzman have no conflicts of interest to disclose.

Human and Animal Rights and Informed Consent The current study was determined exempt by the University of Texas at Austin Institutional Review Board. All procedures performed were in accordance with the ethical standards of the institutional review board, APA, and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The current study was granted full waiver of informed consent by the University of Texas at Austin Institutional Review Board.

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