An Empirical Approach to Assessing Pediatric Residents' Attitudes, Knowledge and Skills in Primary Care Behavioral Health

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Abstract
This paper describes an empirical approach to assessing pediatric residents' attitudes, knowledge and skills in primary care behavioral health. Outcomes from that assessment approach are presented from two pediatric residency training programs in the northeastern United States. Thirty-six pediatric residents completed attitudes, knowledge and skills surveys. The survey was developed to align with the American Academy of Pediatrics' Policy Statement in 2009 citing aspirational competencies for pediatricians in primary care behavioral health. This alignment addressed both learner variables (attitudes, knowledge, and skills) as well as clinical presentations (ADHD, anxiety, depression, and suicide) highlighted in the policy statement. The survey specifically inquired about self-reported confidence and comfort in managing behavioral health concerns using evidence-based practice parameters (attitudes and knowledge) and their measured ability to deliver evidence-based care in response to clinical vignettes (skills). Findings largely revealed no statistically significant differences in attitudes, knowledge or skills between interns and upper-level residents. Training programs can use the approach described in this paper and the assessment instrument with some possible modifications to monitor annual progress and evaluate any changes in didactic and clinical training.

Keywords
Resident Education; Medical Education; Inter-professional Education; Pediatrics; Behavioral Health

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Importance of Pediatric Residency Training in Primary Care Behavioral Health

The task of evaluating and treating children and adolescents with behavioral health concerns (i.e., neurodevelopmental, anxiety, and depressive disorders; suicidality) most often becomes the responsibility of the primary care physician (PCP). Estimates suggest 50 to 70% of patients seen in primary care present with behavioral health concerns (Belar, 2008; Gatchel & Oordt, 2003). Given the national shortage of behavioral health providers such as child and adolescent psychiatrists, it is often difficult for PCPs to refer externally (Kim, 2003). When specialty providers (e.g., psychologists, counselors) are available, there is often poor follow-through by patients to these externally-referred services (Cummings & O'Donohue, 2011). Consequently, PCPs are often tasked with managing the patient’s behavioral health conditions “in-house”.

Despite the need to manage behavioral health conditions, PCPs report difficulty in evaluating and treating these conditions (Steele, Lochrie, & Roberts, 2010). One barrier to providing effective care is the lack of behavioral health training that PCPs receive (Serby, Schmeidler, & Smith, 2002). Most primary care residency program directors report that behavioral health training is important and should be emphasized more in their programs (Chin, Guillermo, Prakken, & Eisendrath, 2000). In fact, most directors of accredited pediatric residency programs acknowledge that the training on this topic is minimal or suboptimal in their programs (Leigh, Stewart, & Mallios, 2006).

Acknowledging the growing need to prevent and address behavioral health concerns in the medical home, the American Academy of Pediatrics (AAP, 2009) issued a Policy Statement—The Future of Pediatrics: Mental Health Competencies for Pediatric Primary Care. The policy was developed by the Committee on Psychosocial Aspects of Child and Family Health and the Task Force on Mental Health. It proposed competencies required for PCPs and recommended steps toward achieving them. Specific competencies such as attitudes, knowledge and skills were recognized as needed by PCPs to address common behavioral health conditions among youth. Prevalent conditions highlighted in the report included attention deficit hyperactivity disorder (ADHD), anxiety, depression, and suicidality. The policy statement clearly noted the aspirational nature of these competencies and recognized that attaining them will likely require innovations in future residency training. The AAP continues to emphasize that the problem of inadequate behavioral health training of pediatric residents remains a critical concern (McMillan, Land, & Leslie, 2017).

Current State of Pediatric Residency Training in Primary Care Behavioral Health

The importance of measuring attitudes, knowledge and skills in primary care behavioral health for pediatric residents stems from AAP’s call for improved training and the need to evaluate curricular innovation. While pediatric residents’ attitudes and knowledge have been previously assessed (Garfunkel, Pisani, leRoux, & Siegel, 2011), the construct of skills in service delivery to youth has only been assessed with practicing PCPs (e.g., pediatricians, family physicians), and not residents (Steele et al., 2010). Traditionally, evaluations of a learner’s skill (i.e. ability to use one's knowledge effectively and readily in execution or performance) have been difficult to measure. They often require an observer to be in the room during patient interactions, raising patient confidentiality issues. Further, without videotaping these patient interactions, it is
difficult to include the use of inter-rater scoring procedures needed to establish reliability, posing barriers to study replication.

A strength of Garfunkel et al.’s (2014) method was obtaining knowledge competency ratings (using 5-point Likert scale) with regard to specific behavioral health care roles they are most likely to undertake (e.g., consultation, joint treatment, and managing behavioral health concerns). A relative weakness of this method was its sole reliance on self-report measures, which may be subject to bias. Additionally, this study did not assess skills. A strength of Steele et al.’s (2010) method to measuring skills was their novel and replicable approach of clinical case vignettes. A relative weakness of Steele and colleagues approach was its narrow focus on determining PCP’s diagnostic accuracy with three case vignettes that were obtained from a case vignette section in the Diagnostic and Statistical Manual for Primary Care (DSM-PC; Wolraich, Felice, & Drotar, 1996). This approach evaluates the clinician’s skill in making an accurate diagnosis. However, the scope of what is being evaluated does not provide data on other relevant areas that would be meaningful for those involved in residency training such as use of evidence-based practice parameters of the AAP (2011) or the American Academy of Child and Adolescent Psychiatry (AACAP) (Acton, 2001; Birmaher & Brent, 2007; Connolly & Bernstein, 2007).

Contributions of the Present Study

There is a need for improvement in assessment approaches that pediatric residency training programs or other programs in health science education can use to quantifiably measure trainees’ skills in pertinent areas of behavioral health care. The purpose of this exploratory study was: (1) to describe a method for implementing an assessment method that builds on the work of Garfunkel et al. (2014) and Steele et al. (2010), and (2) to use that assessment method to quantify pediatric residents’ attitudes, knowledge and skills in primary care behavioral health.

Although not intended to be useful for generalizable “research” purposes without significantly larger sample sizes, the description of the novel method used to assess pertinent behavioral health constructs (see survey included in Appendix 1) may be useful for medical education and residency training faculty. Specifically, they may use this method for internal quality improvement purposes in their training programs by quantifying key knowledge areas and evaluating responses to innovations in training using the approach described herein. Medical training programs are increasingly being asked to quantifiably validate that their trainees demonstrate competency in a number of areas defined by the Accreditation Council for Graduate Medical Education (ACGME). Given the lack of a “gold standard” for assessment of behavioral health training for medical providers, the approach used in this study may be useful for programs that wish to track outcomes in a data-driven manner for knowledge particularly, but also skills.

This study builds on the work of Garfunkel et al. (2014) by assessing attitudes, knowledge and skills using both self-reported competencies as well as measured competencies using free-hand responses to clinical case vignettes that are scored in conjunction with a scoring rubric, which aligns with evidence-based practice parameters. This study also builds on the work of Steele et al. (2010) by evaluating not only evaluation/diagnostic skills using clinical case vignettes, but also treatment skills. The open-ended response options used in the present study (rather than a close-ended, forced choice approach) allow training faculty to assess for a wider breadth of
clinical competencies that can be tracked longitudinally over the course of residency.

**Methods**

This study was reviewed by the local institutional review board and was determined to be “exempt” status.

**Participants**

Thirty-six residents across two pediatric residency programs participated in the study (see Table 1). The sites of the residency programs were the flagship hospitals of two large health systems in the same northeastern state. Site 1 serves a largely rural catchment area and site 2 serves a largely urban catchment. However, based on U.S. Census Bureau (2015) statistics, the two sites are generally comparable in other relevant demographic categories including Caucasian-status population (site 1; 94.1% v. site 2; 84.2%), high school graduation rates (89.4% vs. 87.4%); disabled-status under age 65 (89.4% v. 87.4%), persons without health insurance under age 65 (7.8% v. 11.4%), median household income ($54,648 v. $56,117); and poverty rate (11.2% v. 12.8%).

Twenty-four (out of 24) participated at site 1 and 12 (out of 18) participated at site 2. Non-participators at site 2 were missing by chance (e.g., prescheduled vacations, clinical schedules). No residents declined study participation. Thirteen participants in site 1 were first-year residents (R1s), while five were R1s in site 2. The remaining were second- and third-year residents (R2/3s). When comparing R1s to R2/3s, the only significant difference was that R2/3s were slightly older. Most residents were female (site 1 - 71.4%, site 2 - 91.7%) and most trained in the United States. Residents at both sites rotate through a primary care continuity clinic during all three years of residency.

Behavioral health training at both sites consists of an ACGME-mandated 1-month block rotation in developmental-behavioral pediatrics (DPB) in which residents shadow and observe hospital-based behavioral health providers in adult psychiatry, child psychologists trained in pediatric psychopharmacological management, and social work. At the time of this study, only 5 of the residents at site 1 (out of 24) and 6 of the residents at site 2 (out of 12) had completed their DBP rotation. However, no meaningful differences were found in survey scores between residents who previously had completed the DBP rotation, compared to those who had not completed the DBP rotation.
Table 1. Participant Demographic Information

<table>
<thead>
<tr>
<th></th>
<th>R1</th>
<th>R2/3</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 1 Pediatric Residents (&lt;i&gt;n&lt;/i&gt; = 24)</td>
<td>13</td>
<td>11</td>
<td>n/a</td>
</tr>
<tr>
<td>Site 2 Pediatric Residents (&lt;i&gt;n&lt;/i&gt; = 12)</td>
<td>5</td>
<td>7</td>
<td>n/a</td>
</tr>
<tr>
<td>Total Number of Pediatric Residents (&lt;i&gt;n&lt;/i&gt; = 36)</td>
<td>18</td>
<td>18</td>
<td>n/a</td>
</tr>
<tr>
<td>Average Age (years)</td>
<td>28.7</td>
<td>31.3</td>
<td>0.05</td>
</tr>
<tr>
<td>Female (%)</td>
<td>88.9</td>
<td>72.2</td>
<td>0.21</td>
</tr>
<tr>
<td>Foreign Medical Education (%)</td>
<td>11.1</td>
<td>11.1</td>
<td>1.00</td>
</tr>
<tr>
<td>Osteopathic Medical School (%) (compared to Allopathic)</td>
<td>66.7</td>
<td>61.1</td>
<td>0.73</td>
</tr>
<tr>
<td>Natural or Life Science Major (%)</td>
<td>94.4</td>
<td>77.8</td>
<td>0.15</td>
</tr>
<tr>
<td>Humanities Major (%)</td>
<td>5.6</td>
<td>22.2</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Survey Tool Development

The Attitudes, Knowledge and Skills (AKS) Survey, developed by training program faculty, includes 29-items. Items 1-8 consist of demographic questions including items about education/training history; Items 9-21 consist of resident’s self-reporting their level of confidence in diagnosing/treating ADHD, anxiety, depression, and suicidality using evidence-based practice parameters on a 1-10 scale (1 = low confidence; 10 = high confidence) (i.e., Attitudes and Knowledge); Items 22-29 consist of open-ended questions asking residents to demonstrate their ability to deliver evidence-based care in evaluation and treatment for ADHD, anxiety, depression, and suicidality using clinical case vignettes (i.e., Skills). Participants were asked to list all steps/considerations they would employ, in an exhaustive format, in evaluating/diagnosing and treating a presenting condition based explicitly on evidence-based practice parameters in their field. These steps should take into account variables such as age, development, and severity of concerns.

The inclusion of the areas of ADHD, anxiety, depression and suicide in the skills assessment was due the inclusion of these four areas being specifically listed in the AAP (2009) policy statement on needed areas for improved training for future pediatricians. For the knowledge assessment, these topic areas were also included as well as additional topic areas deemed to be relevant in pediatric primary care practice by training program faculty (substance abuse, sleep, and developmental delays). These were not included as clinical case vignettes in the skills section due to the additional time it would require to complete the survey.

Responses to the skills items were scored based on completeness and accuracy when compared with current evidence-based practice parameters of the AAP (2011) and AACAP (Acton, 2001; Birmaher & Brent, 2007; Connolly & Bernstein, 2007). Possible scores ranged: ADHD evaluation, 0-20; ADHD treatment, 0-10; anxiety evaluation, 0-12; anxiety treatment 0-7; depression evaluation, 0-16; depression treatment, 0-9; suicide evaluation, 0-3; suicide safety plan, 0-3. A higher point total equates to a higher degree of alignment with practice parameters (i.e., for each step/consideration a clinician would perform that is explicitly listed in the practice parameters for a given clinical condition, they would earn 1 point).

Case Vignettes were adapted from Steele et al.’s (2010) study and were initially piloted with a
group of local practicing pediatricians and pediatric residents who provided extensive feedback. After participants completed the Skills items, scores were independently assigned by two members of the residency training faculty using a scoring guide. Regarding inter-rater reliability, Kappa coefficients for items 22-29 ranged from 0.64 (moderate agreement) to 0.86 (almost perfect agreement). Items in which different scores were assigned by each rater, went to a third rater who scored the item independently as a tie-breaker.

Data Collection

Surveys were administered to residents at the beginning of the July 2015-June 2016 training year. Surveys were administered separately for R1s and R2/3s. Instructions for participation were administered by a research assistant unknown to participants. A standard script was read to residents stating that participation in the study was voluntary with no penalty for declined participation. Completed surveys were collected by the research assistant who then replaced the resident name with a study ID number. Only the research assistant had access to the link between the name and study ID number.

Results

Results are derived from the 36 pediatric residents who participated in this study between both sites. Scores between the two sites are aggregated given the lack of any significant differences found between sites on demographic variables or attitudes, knowledge and skills scores. However, each item was assessed individually. Table 2 compares R1s with R2s/3s regarding their self-reported confidence (scale of 1 to 10) in their ability to identify/diagnose (hereafter referred to as “evaluate”) and treat the following six conditions using evidence-based practice parameters: ADHD, anxiety, depression/suicidality, sleep disorders, developmental delays, and substance abuse. Generally, residents appear to score themselves well above the midpoint with respect to evaluating these conditions. Scores indicate that their confidence in their knowledge of treatment practices is lower than their knowledge of evaluation practices.

Means were calculated for each section/condition by year (Table 1 & 2). Means were compared between R1s and R2/3s to determine differences in scores as a result of clinical experience and/or DBP exposure prior to the delivery of training as usual. Using STATA 14 software, t-tests were calculated for the difference between means for each item of the instrument: p-values are presented to demonstrate the statistical likelihood that these differences might be explained by chance alone. Significant differences in mean scores of each section, using t-tests, were not found between R1s and R2/3s regarding their knowledge of evidence-based evaluation and treatment practices for ADHD, anxiety, sleep disorders, developmental delays, and substance abuse. However, there was a significant difference in improvement in upper-level residents for depression/suicide evaluation and treatment. Table 2 also compares R1 with R2/3s on their measured skills in evaluating and treating ADHD, anxiety, depression, and suicide risk in response to clinical vignettes. There are no statistically significant differences in any of these skill comparisons. Other findings show that, while not statistically significant, anxiety treatment in knowledge and anxiety evaluation and ADHD treatment in skills also trend towards significance.
### Table 2. Both Sites Knowledge and Skills Scores

<table>
<thead>
<tr>
<th>Evidence-based Practice Parameter</th>
<th>R1 Mean (Confidence Interval)</th>
<th>R2/3 Mean (Confidence Interval)</th>
<th>Significance p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Reported Knowledge of Practice Parameters</strong> - comparison across years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD Evaluation</td>
<td>6.00 (5.32, 6.85)</td>
<td>6.94 (6.16, 7.73)</td>
<td>.11</td>
</tr>
<tr>
<td>ADHD Treatment</td>
<td>5.41 (4.39, 6.43)</td>
<td>6.18 (5.36, 7.00)</td>
<td>.27</td>
</tr>
<tr>
<td>Anxiety Evaluation</td>
<td>6.24 (5.57, 6.90)</td>
<td>6.94 (6.06, 7.82)</td>
<td>.22</td>
</tr>
<tr>
<td>Anxiety Treatment</td>
<td>5.06 (4.16, 5.96)</td>
<td>6.24 (5.37, 7.10)</td>
<td>.07</td>
</tr>
<tr>
<td>Depression/Suicide Evaluation</td>
<td>6.71 (5.97, 7.44)</td>
<td>8.00 (7.10, 8.90)</td>
<td>.04</td>
</tr>
<tr>
<td>Depression/Suicide Treatment</td>
<td>5.41 (4.71, 6.11)</td>
<td>6.65 (5.74, 7.54)</td>
<td>.04</td>
</tr>
<tr>
<td>Sleep Disorder Evaluation</td>
<td>5.24 (4.32, 6.15)</td>
<td>6.00 (5.03, 6.97)</td>
<td>.17</td>
</tr>
<tr>
<td>Sleep Disorder Treatment</td>
<td>4.47 (3.45, 5.49)</td>
<td>5.53 (4.49, 6.57)</td>
<td>.17</td>
</tr>
<tr>
<td>Developmental Delay Evaluation</td>
<td>6.12 (4.86, 7.37)</td>
<td>7.47 (6.73, 8.21)</td>
<td>.10</td>
</tr>
<tr>
<td>Developmental Delay Treatment</td>
<td>4.82 (3.56, 6.08)</td>
<td>6.35 (5.14, 7.56)</td>
<td>.10</td>
</tr>
<tr>
<td>Substance Abuse Evaluation</td>
<td>6.24 (5.14, 7.33)</td>
<td>6.94 (6.10, 7.79)</td>
<td>.34</td>
</tr>
<tr>
<td>Substance Abuse Treatment</td>
<td>4.88 (3.84, 5.93)</td>
<td>5.59 (4.54, 6.63)</td>
<td>.36</td>
</tr>
<tr>
<td><strong>Note.</strong> Knowledge scores range from 1 (least confident in knowledge of evidence-based practices) to 10 (most confident in knowledge of evidence-based practices)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measured Skills in Using Practice Parameters</strong> - comparison across years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD Evaluation</td>
<td>3.11 (2.40, 3.82)</td>
<td>3.41 (2.59, 4.23)</td>
<td>.59</td>
</tr>
<tr>
<td>ADHD Treatment</td>
<td>2.06 (1.60, 2.50)</td>
<td>2.71 (2.29, 3.12)</td>
<td>.06</td>
</tr>
<tr>
<td>Anxiety Evaluation</td>
<td>2.61 (1.84, 3.38)</td>
<td>2.65 (1.91, 3.38)</td>
<td>.07</td>
</tr>
<tr>
<td>Anxiety Treatment</td>
<td>2.00 (1.57, 2.43)</td>
<td>1.94 (1.50, 2.38)</td>
<td>.85</td>
</tr>
<tr>
<td>Depression Evaluation</td>
<td>3.39 (2.92, 3.86)</td>
<td>2.65 (1.91, 3.38)</td>
<td>.10</td>
</tr>
<tr>
<td>Depression Treatment</td>
<td>2.33 (1.87, 2.80)</td>
<td>2.29 (1.92, 2.67)</td>
<td>.90</td>
</tr>
<tr>
<td>Suicide Evaluation</td>
<td>1.39 (1.10, 1.68)</td>
<td>1.35 (1.11, 1.59)</td>
<td>.84</td>
</tr>
<tr>
<td>Suicide Safety Plan</td>
<td>1.28 (1.06, 1.50)</td>
<td>1.29 (1.06, 1.52)</td>
<td>.95</td>
</tr>
<tr>
<td><strong>Note.</strong> Possible scores ranged: ADHD evaluation, 0-16; ADHD treatment, 0-9; anxiety evaluation, 0-11; anxiety treatment 0-3; depression evaluation, 0-15; depression treatment, 0-8; suicide evaluation, 0-3; suicide safety plan, 0-3</td>
<td></td>
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</tr>
</tbody>
</table>

### Discussion

This study found no statistically significant differences in attitudes, knowledge or skills between interns and upper-level residents in any of the categories except for knowledge of depression/suicide evaluation and treatment practice parameters. This may be explained by the training emphasis placed on managing suicidal patients and the notion that many hospital or departmental protocols for managing these issues may be emphasized more than other behavioral...
health concerns.

A second finding is that residents reported feeling more confident in evaluating than in treating behavioral health conditions. This may stem from a training and practice emphasis on simply referring patients to the psychiatry department or specialty mental health service provider in the system once a diagnosis is made. With busy resident training schedules, residents may not believe they have adequate time to provide treatment such as supportive counseling or active support and monitoring. Therefore, it may be a matter of convenience to make a referral to a specialty behavioral health provider. It may also be the case that PCP attendings and preceptors do not feel confident in their own knowledge or skills in treating behavioral health conditions and may not feel they are able to provide a level of quality supervision. This finding has been noted in the published literature (Hampton, Richardson, Bostwick, Ward, & Green, 2015).

Regarding the two findings highlighted above, training program faculty may be positioned to perform additional qualitative data gathering in the form of interviews and feedback groups with trainees. This data may help to confirm hypotheses regarding which aspects of the current training and service-delivery structures are most conducive to learning.

These findings may potentially inform how pediatric residency programs can improve training, such as providing more exposure to behavioral health issues in general and equipping residents with knowledge and skills to manage concerns. This is important as they may eventually practice in a setting in which behavioral health referral resources are not readily available or accessible to their patients (e.g., poor, rural underserved areas). More research is clearly needed in these areas. These findings support the rationale to implement creative innovations in residency training to improve primary care behavioral health competencies for future pediatricians as cited by the AAP (2009) policy statement.

Training environments may benefit by recognizing the need for both evidence-based didactic exposure as well as in-vivo exposure in which focused training occurs in primary care ambulatory sites. It is important to be aware of the host of available educational and training modalities and approaches that can be adapted or modified to fit within very specific contexts. Examples include opportunities for interprofessional partnerships in the context of focused didactic and integrated service delivery approaches. The development of interprofessional training approaches in behavioral health must consider the numerous constraints on available residency program resources (e.g., time, flexibility in curriculum, qualified training faculty, access to behavioral health providers). Providing and emphasizing opportunities for residents to be involved in direct patient care (i.e., “hands-on”) under supervision, even if with a limited number of patients, may provide more meaningful exposure that simply relying on observational methods.

Focused didactic training on evidence-based practice parameters of AACAP or AAP may be a necessary supplement to in-vivo exposure. In addition to teaching the specific practice guidelines, there are a number of additional training tools both on-line and in-print form that can be embedded into the didactic curricula (AAP, 2017; PediaLink, https://pedialink.aap.org/visitor).
The survey instrument highlighted in this paper offers a data-driven approach to assessing attitudes, knowledge and skills in primary care behavioral health, which can be modified to fit local training needs. This data may be useful to generate targeted training initiatives to remediate those areas that are reported to be low initially and do not sufficiently improve over the course of residency. Of course, definitions of what constitutes sufficient score competencies will be decided on an individual program basis. The instrument highlighted in this paper used AACAP practice guidelines for several clinical competency areas. This may inadvertently set a bar that is too high and not expected for pediatric residents to meet. In fact, many training programs may not expect pediatric residents to do much more than provide psychoeducation, supportive counseling and/or active support and monitoring. Training program faculty in these instances may elect to use a different set of practice guidelines such as those put forth by the AAP, which may be more consistent to what a primary care physician’s role in mental health would be.

Limitations

There are study limitations that substantially reduce the external validity of the results. The sample was representative of a group of pediatric residents located in a northeastern state. Generalizability of these residents to those nationally may be limited without controlling for other demographic, educational/training, and competency covariates such as individual pediatric board exam scores, particularly the psychiatry sub-section scores. Further, the attitudes and knowledge data were self-reported and thus subject to bias. Also, it is unknown to what extent participants gave their full effort to completing the survey since it required relatively extensive written documentation of their thought process. The survey was developed by study investigators due to a lack of existing measures that focus specifically on resident’s attitudes, knowledge and skills in behavioral health, thus preexisting psychometric properties of the measure are not available. Additionally, the current study lumped 2nd and 3rd year residents into one group (“upper level” residents) which may not provide the most useful information to training program faculty; thus evaluating each residency cohort an individual basis would have been more informative.

Another limitation pertains to the “measured skills” construct in the survey, which was intended to be a proxy for a real world scenario. However, it is possible that residents may be willing to write down the expectations of the guidelines for the purposes of this evaluation, but when it comes to implementing care in actual clinic deviate from these “best practice” guidelines (e.g., continuing to fall into pattern of simply referring patients out to “specialty providers”, over-relying on psychotropic medications, etc.). In acknowledging the limitations of this initial study, future research in this area is needed. Future research should specifically evaluate the psychometric properties of the survey instrument. In light of these limitations, this study may be useful in serving as an initial step in quantifying baseline levels of attitudes, knowledge and skills for training improvement purposes.

Conclusion

Given the importance of primary care behavioral health competencies, pediatric PCPs currently have gaps in their training. This paper provides an internal quality improvement mechanism in which training program faculty can evaluate needs and curricular efforts in behavioral health.
This study’s inclusion of an assessment tool may be used by similar training programs to adapt to their local circumstances. The assessment tool can be utilized with some possible modifications to monitor annual progress due to any changed didactic clinical training.
References


Appendix 1

Pediatric Residents’ Attitudes, Knowledge, and Skills in Behavioral Health Survey

1. Full name
2. What year were you born?
3. Current residency year?
4. Sex?
5. Undergraduate major?
6. Domestic or foreign medical school?
7. Year of medical school completion?
8. Type of medical school?

9-21. How confident are you with your current knowledge of and skills in diagnosing the following conditions, applying the current behavioral health related recommendations on standards of care and the use of evidence based treatment in the pediatric population? Please indicate on a scale of 1-10, where 1 equals not at all confident and 10 equals very confident, for each of these conditions and knowledge areas.

22/23. Pediatric patient screened positive for signs or symptoms suggesting **ADHD**
   a. Please **list** steps for evaluation and treatment (as many as you can list)
   b. Your response should address what the evaluation should look like and diagnostic features you would look for (although you do **not** need to list all 18 specific symptoms)
   c. If a clinical diagnosis is made, how would you approach treatment (please take into account differences, if any, between a preschool- and school-age patient)?

24/25. Pediatric patient screened positive for signs or symptoms suggesting **Anxiety**
   a. Please **list** steps for evaluation and treatment (as many as you can list)
   b. Your response should address what the evaluation should look like and diagnostic features you would look for.
   c. If a clinical diagnosis is made, how would you approach treatment (please take into account differences, if any, between a preschool- and school-age patient)?

26/27. Pediatric patient screened positive for signs or symptoms suggesting **Depression**
   a. Please **list** steps for evaluation and treatment (as many as you can list)
   b. Your response should address what the evaluation should look like and diagnostic features you would look for (8 common characteristics/symptoms)
   c. If a clinical diagnosis is made, how would you approach treatment (please take into account differences, if any, between mild and moderate/severe depression)? Please note: There is a separate question addressing suicidality

28/29. Pediatric patient identified with signs or symptoms suggesting **Suicidality**
   a. Please list key risk factors (28) and list the steps in developing a suicide safety plan (29). We are looking for the quantity of accurate responses you can provide.
Appendix 2
Skills Scoring Guide

Instructions: Award one point for each of the below bullets

**ADHD Evaluation**
- Evaluate symptoms (do not give points for each symptom they list)?
- Screen, assess for, rule out other coexisting conditions?
- Obtain data from more than 1 setting?
- Duration of core symptoms?
- Persistence/frequency of core symptoms?
- Severity of core symptoms?
- Degree of impairment?
- Patients developmental history?
- Medical history?
- Educational history?
- Social history?
- Family history (medical, psychological, etc.)?
- Physical exam?
- Screen for sensory impairments (vision/hearing)?
- Rating scales?
- Standardized/validated rating scales (Vanderbilt/Conners, etc.)?
- Diagnostic criteria met based on DSM-5/ICD-10 criteria?
  - Has 6/9 symptoms in each category?
  - Meets age of onset criteria?
  - Causes impairment in multiple settings?

**ADHD Treatment**
- Did they make an age distinction (preschool vs school age)?
- Behavioral therapy?
- Stimulant medication?
- First line either behavioral therapy or combined treatment; 2nd line stimulants?
- School-based supports (DRC, consultation with teacher)?
- 504 plan if no academic impairment; IEP if academic impairment?
- Establish target behavioral goals?
- Follow-up evaluation/monitoring?
- Bi-weekly to monthly visits until optimal response is achieved?
- Subsequent visits occur every 3 to 6 months as deemed appropriate?

**Anxiety Evaluation**
- Evaluate symptoms?
- Screen, assess for, rule out other coexisting conditions?
- Rule out physical health conditions that may mimic anxiety symptoms (hyperthyroidism, caffeineism, migraine, asthma, seizure disorders, and lead intoxication)?
- Avoidance level?
- Distress level (SUDS, etc.)?
- Patients’ developmental/psychological history?
- Patients medical history?
- Family medical/psychological history?
- Is anxiety/fears/worries developmentally appropriate?
- Diagnostic criteria met based on DSM-5/ICD-10 criteria?
  - Must have impairment present?
  - Determine which anxiety disorder is present?

**Anxiety Treatment**
- Provide education to the child/family of child about the anxiety disorder?
- Behavioral therapy?
- Behavioral therapy as first line?
- CBT, exposure based, or desensitization?
- Psychotropic medications?
- Psychotropic medication if moderate to severe severity?
- Consider school-based interventions (accommodations, teacher consultation, etc.)?
- Follow-up evaluation and monitoring?

### Depression Evaluation
- Evaluate symptoms (if they simply list SIGECAPS, they get 1 point, if they list them out then they can get extra points depending on how many they list)?
  - SIGECAPS (1-3 = 1; 4-6 = 2; all = 3)
- Screen, assess for, rule out other coexisting conditions?
- Presence of ongoing or past exposure to negative event?
- Environment is which low moods occur?
- Social/family support?
- Developmental/psychiatric history?
- Social history?
- Educational history?
- Medical history
- Family/family psychiatric history?
- Diagnostic criteria met based on DSM-5/ICD-10 criteria?
  - Must have impairment present?
  - Impairment in at least 5 domains of SIGECAPS?
  - Occurs in same 2-week period?

### Depression Treatment
- Treatment includes acute and continuation/maintenance phase?
- Active support and monitoring?
- Behavioral therapy?
- Do they list a specific type (IPT, CBT, DBT, psychoanalytic, ACT, etc.)?
- Psychotropic medication?
- Mild severity- active support monitoring and/or behavioral therapy; moderate to severe severity = medication?
- Psychiatric consult for medication or refer to child/adolescent psychiatric if deemed appropriate?
- Follow-up monitoring/evaluation should occur?
- To consolidate the response to the acute treatment and avoid relapse, treatment should be continued for 6-12 months?

### Suicide Risk Factors
- 1-5 = 1
- 6-10 = 2
- 11 + = 3

### Suicide Safety Planning
- 1-3 = 1
- 4-6 = 2
- 7 + = 3