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Changes Over Time in Outcomes of School-Age Children and Parents Receiving Integrated Mental Health Care in Federally Qualified Health Centers

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ABSTRACT: ***Objective:*** **The purpose of this study is to understand change in parent-reported outcomes of mental health symptoms, health-related quality of life (QoL), and school-related functioning among children receiving mental health care at 3 federally qualified health centers engaging in a comprehensive pediatric mental health integration model.** ***Methods:*** **Trained personnel enrolled English- or Spanish-speaking families of 6- to 12-year-old children who had recently started receiving integrated mental health care and surveyed their parent/caregiver at 3 time points: entry into the cohort, 6-month follow-up, and 12-month follow-up (unique N = 51). Primary outcomes included validated measures of child symptoms, child health-related QoL, and child school-related functioning. Secondary outcomes focused on parental functioning and included validated measures of parental stress and depressive and internalizing symptoms. A multilevel mixed-effects generalized linear model was used to estimate the change in parent-reported outcomes over time, with inverse probability weights used to address attrition. Additional analyses were conducted to determine the degree to which changes in symptoms over time were associated with improvements in school-related functioning.** ***Results:*** **Over 12 months, children's mental health symptoms, health-related QoL, and school-related functional outcomes significantly improved. No changes in parental functioning were observed. In addition, improvements in mental health symptoms and health-related QoL were associated with improvements in school-related functional outcomes over time.** ***Conclusion:*** **Findings demonstrate that outcomes of children who received integrated mental health care improved over time, both in regard to mental health and school functioning.**

(*J Dev Behav Pediatr* 44:e493–e500, 2023) **Index terms:** integrated mental health care, internalizing and externalizing symptoms, mental health-related quality of life, school-related functioning, pediatrics.

Each year, approximately 13% to 20% of children and adolescents in the United States experience mental health problems,[1,2] which, if left untreated, can have a negative impact on health over a lifetime.[3] Compared with children with no mental health problems, children with mental health problems often experience lower quality of life (QoL), defined as an individual's overall physical, emotional, and social well-being.[4] Furthermore, mental health is linked to school functioning and adjustment, social relationships, and academic achievement.[5,6]

Although effective treatments have been well established,[7] unmet needs are substantial.[1,2] Service needs are especially acute for children who identify as Black and

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Received October 2022; accepted June 2023.

Funding from the TEAM UP for Children initiative was provided by the Richard and Susan Smith Family Foundation.

The authors do not have any conflicts of interest to report.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (www.jdbp.org).

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other communities of color and those from low-income families.[8,9] Barriers include cost, stigma, long waiting lists, a lack of pediatric providers trained to identify mental health problems, and a scarcity of mental health professionals who can provide language and culturally concordant care.[8,9]

To address these gaps, the Transforming and Expanding Access to Mental Health Care in Urban Pediatrics (TEAM UP) model launched in late 2015 with an aim to develop and implement a comprehensive, stepped care model of integrated mental health within primary care pediatrics at 3 federally qualified health centers (FQHCs) in the greater Boston area. Across the United States, FQHCs are uniquely designed to improve access to health care in medically underserved communities, as they serve approximately 1 in 11 Americans including over half of those living in poverty.[10,11] Therefore, collaborating with FQHCs offers an effective path to address health disparities. TEAM UP also recognizes the importance of primary care. Given that most of the children in the United States access primary care on a regular basis,[12] delivery of mental health services in primary care settings is increasingly considered a promising strategy to address service gaps.[13,14]

Core elements of the TEAM UP evaluation plan include analyses of electronic medical record (EMR) data from participating sites and analyses of claims data, which allow for comparisons with non–TEAM UP FQHCs. Analyses of EMR data demonstrate that TEAM UP is associated with improvements in screening and access to mental health care and reductions in polypharmacy without increasing avoidable health care utilization or cost.[15] Comparisons with non–TEAM UP FQHCs using claims data demonstrate that after 1.5 years of implementation, TEAM UP was associated with increases in primary care visit rates, particularly among children with mental health disorders, increases in mental health service use, decreases in psychotropic medication use, with no changes in the total cost of care, inpatient admission, or follow-up care.[16,17] Like other pragmatic studies of integrated care models,[18] these analyses rely on data from EMR and insurance claims databases, both of which can be analyzed without direct data collection from patients. However, a limitation of these data sources is that they do not capture important domains of patients' experience.

In the current study, we sought to evaluate changes over time (at preintervention/baseline and then in 6 and 12 months) in parent-reported symptoms, health-related QoL, and school-related functioning among 6- to 12-year-old children receiving integrated mental health care at 3 TEAM UP FQHCs, as well as changes in parental mental health and parenting stress. These analyses had 2 goals. The first goal was to collect more detailed data on patients' experience based on surveys than is possible based on EMR or claims data. Along these lines, although prior publications have documented associations between mental health services, QoL,[19] and school functioning,[20] we know of no such evidence pertinent to integrated mental health care models. A second goal was to determine whether parents whose children were enrolled in TEAM UP reported significant changes in child behavior, QoL, school functioning, and parent mental health over time. We hypothesized that families enrolled in TEAM UP will report improvements in the outcomes relative to baseline and that improvements in child health symptoms and health-related QoL would be associated with improved school-related functioning. Lacking a comparison condition, results that are consistent with these hypotheses may also be explained by regression to the mean and/or maturation in child development. However, inconsistent results would challenge the hypothesis of TEAM UP's effectiveness.

METHODS

Study Sample

FQHC providers approached potentially eligible families to assess interest. Interested families were referred to an on-site bilingual study research assistant to screen for eligibility. Eligibility criteria included that the parent (1) spoke English or Spanish, (2) was at least 18 years old, and (3) lived with a 6- to 12-year-old child who received care at a Transforming and Expanding Access to Mental Health Care in Urban Pediatrics (TEAM UP) site and was recently referred for integrated mental health care. On-site integrated mental health teams included therapists trained in a common factors approach to care,[21] psychiatric support and consultation for psychopharmacology, and community health workers to address social determinants of health. Interested parents provided informed consent. Research staff administered baseline surveys at enrollment (baseline) as well as 6 months and 12 months later. The Institutional Review Board of the Boston University Medical Campus approved this study. Data were collected from 2018 to 2019 and analyzed in June 2022.

Study Setting

Core components of TEAM UP include universal screening for pediatric mental health problems and social determinants of health; integration of masters-prepared licensed mental health clinicians and community health workers within primary care teams to provide prompt access to stepped care for treatment; integrated workflows and electronic medical record (EMR) systems to support team-based care; and clinical training specific to each role, including training for primary care providers on prescribing psychotropic medications, mental health clinicians on transdiagnostic modalities informed by cognitive-mental and relational therapies, and community health workers on motivational interviewing, family engagement strategies, and problem-solving skills.[15] Within the Substance Abuse and Mental Health Services Administration–Health Resources and Services Administration Framework for Levels of Integrated Healthcare, TEAM UP is a level 6, integrated care model.[22,23]

Prior publications describe implementation of the key core components of the TEAM UP model.[15–17,24] All sites implemented enhanced screening in multiple languages for all age groups. Screening rates averaged 80%, consistently surpassing state benchmarks. All sites successfully onboarded and trained integrated mental health clinicians and community health workers commensurate with the size of the population served (about 2500 patients per team). In TEAM UP's overall patient population, over half of children identified with a mental health concern were seen by a member of the integrated team on the same day.[15] A learning community provided training and supported continuous quality improvement to monitor clinical, operational, and financial outcomes through routine data collection.[24]

Although collection of detailed EMR was planned to determine service receipt at that child level, COVID-19 protocols at participating FQHCs during the study period precluded the necessary chart review. Therefore, analyses should be interpreted as reflecting intent to treat.

Study Measures

Demographic information was collected at baseline. Primary outcomes focused on child mental health and daily functioning, including:

Child Behavior Checklist

The Child Behavior Checklist (CBCL) is a 120-item parent-report questionnaire that assesses mental health symptomatology of children and adolescents aged 6 to 18 years, generating a total problems score that is composed of 2 domain scores: internalizing problems and externalizing problems.[25] All scales are reported as T scores (M = 50, SD = 10) based on the normative sample reported in the CBCL manual. Each T score was categorized into 3 ranges: normal (T score ≤65; percentile score <95th percentile), borderline (65 < T score < 70; percentile score between the 95th and the 98th percentile), and clinical (T score ≥70; percentile score >98th percentile). Both normal and borderline ranges were interpreted as nonclinical.[26] CBCL scores display high test-retest reliability (>0.80) and cross-informant agreement, and clinical classifications are highly associated with psychiatric diagnoses.[27]

Child Health Questionnaire for Parents

The Child Health Questionnaire for Parents (CHQ-PF28) is a 28-item parent-report questionnaire that measures children's physical, emotional, and social well-being using 2 summary scores: physical health and psychosocial health.[28,29] Questions assess physical activities, everyday activities such as school work, body pain, behavior in general, well-being including moods, and self-esteem. Good health-related quality of life (QoL) was defined as a psychosocial health summary score of ≥30.[28] CHQ-PF28 score distributions and discriminative validity are comparable with its longer version, CHQ-PF50. Both summary scores showed adequate internal consistency (>0.70) and acceptable retest reliability (>0.50).[29]

To assess school functioning, we asked questions about the number of missed school days due to mental or behavioral health problem in the past 30 days, the number of days that the child has been late for school in the past 30 days, and the number of times in the past 30 days that the child's school had contacted the parent or another adult in the child's household about any mental or behavioral problems at school. All surveys were answered by parents.

Secondary outcomes focused on parental functioning. *Parent depressive symptoms* were measured using the Patient Health Questionnaire (PHQ-2).[30] *Parent internalizing symptoms* were assessed with the Patient-Reported Outcomes Measurement Information System Emotional Distress-Depression and Anxiety Short Form 8a (EDA).[31] Finally, *parenting stress* was measured with the 36-item Parental Stress Index (PSI) Short Form, Fourth Edition,[32] which includes a total scale that reflects the parent stress level and perceived difficulty of child (Supplemental Digital Content 1, http://links.lww.com/JDBP/A430, for overview).

Analyses

We used a multilevel mixed-effects generalized linear model to evaluate change in outcomes over time (baseline, 6-month, and 12-month follow-up). Clustered standard errors were included to account for the correlation of observations within the child. All models controlled for measured child and family characteristics, including child age, sex, race and ethnicity, and parents' education level and marital status. We used an ordinal distribution with an identity link for ordered outcomes, a negative binomial distribution with a log link for count outcomes, and a Gaussian distribution with an identity link for continuous outcomes. Because we clustered standard errors at the patient level and found no effect of fixed effects at the site level, we did not cluster standard errors at the site level in our primary analyses.

To address attrition after baseline (Supplemental Digital Content 2–4, http://links.lww.com/JDBP/A430), we used inverse probability weights (IPWs).[33] To evaluate whether results were robust to differences in model specifications, we conducted sensitivity analyses without IPWs and without controlling for patient characteristics (Supplemental Digital Content 5–15, http://links.lww.com/JDBP/A430).

After primary analyses, additional analyses determine the degree to which longitudinal changes in symptoms were associated with improvements in school functioning. Following Singer and Willett,[34] these analyses treated changes in symptoms as a time-varying covariate.

RESULTS

Sample Characteristics at Baseline

Across Transforming and Expanding Access to Mental Health Care in Urban Pediatrics (TEAM UP) federally qualified health centers (FQHCs), 63 children were

assessed for eligibility, 60 (95% of those assessed) met eligibility criteria, and 56 enrolled and completed baseline surveys (93% of those eligible). Among these families, 40 (71.4%) completed 6-month follow-up, 42 (75.0%) completed 12-month follow-up, and 36 (64.3%) completed all assessments. The final sample included 51 unique children after excluding children without key demographic information.

Table 1 reports baseline sample characteristics. The average child age was 8.9 years (range, 6–12 years), and 53% were female. Reflecting FQHCs' patient populations, the sample was diverse with respect to race/ethnicity. Approximately half of parents reported high school education or less, and 18% were married.

Changes in Child and Parental Functioning

Table 2 displays time trends of child symptoms, health-related quality of life (QoL), and daily functioning. For each time point, Table 2 reports the number and percentage of observations in clinical, borderline, and normal ranges for child symptoms and mean and SD of other outcomes. Regression coefficients and p values for change over 6 months and change over 12 months are also shown. At baseline, total scores were elevated for 28 children (56%), internalizing scores were elevated for 32 children (64%), and externalizing scores were elevated for 30 children (60%). Means and SDs for Child Behavior Checklist (CBCL) scores are reported in the Supplemental Digital Contents 16 (http://links.lww.com/JDBP/A430). Over time, the percentage of children in the normal range increased for all scales. By 12 months, statistically significant improvements were noted for CBCL internalizing scores (Coef = −4.1; $p < 0.05$) but not for externalizing scores, with a trend toward improvement in CBCL total scores (Coef = −2.8; $p < 0.10$) when other variables in the model were held constant. To further verify possible concern that the observed improvement of CBCL scores may have been attributed to more attrition in the clinical group, we included more detailed descriptive statistics in the Supplemental Digital Contents 17–22 (http://links.lww.com/JDBP/A430), documenting changes in the number of children and the mean CBCL scores in the follow-up periods by baseline severity of each CBCL score. We confirm that there were no differential attrition rates of children by baseline severity of CBCL scores, and the mean CBCL T scores in each range of baseline severity improved over time.

Table 1. Baseline Sample Characteristics (n = 51)

Variable	Value
Child characteristics	
Age, years, mean (range)	8.9 (6–12)
Gender, n (%)	
Male	24 (47.1)
Female	27 (52.9)
Race and ethnicity, n (%)	
Non-Hispanic Black	19 (37.3)
Non-Hispanic White	3 (5.9)
Non-Hispanic other	4 (7.8)
Hispanic	25 (49)
Parent/caregiver characteristics	
Education, n (%)	
Less than high school degree	14 (27.5)
High school graduate or GED completed	13 (25.5)
Vocational, trade, or business school program or some college but no degree	21 (41.2)
Associate or bachelor's degree	3 (5.9)
Marital status, n (%)	
Married	9 (17.7)
Separated/divorced/widowed	16 (31.4)
Never married	26 (51)

GED, General Educational Development.

Health-related QoL measured by The Child Health Questionnaire for Parents (CHQ-PF28) summary scores improved over time. Specifically, the estimated increase in CHQ physical health of 4.1 points by 6 months was statistically significant ($p < 0.05$). The increase in CHQ psychosocial health of 3.9 points by 6 months was statistically significant ($p < 0.05$), as was the 8.6-point increase by 12 months ($p < 0.001$).

At baseline, children were missing school because of mental health problems at a rate of 0.5 days each month (SD = 1.3). By 12 months, they missed school at a rate of 0.1 days each month (SD = 0.8). Children were late for school about 0.8 days per month at baseline (SD = 1.8), which fell to about 0.7 days per month by the 12-month follow-up (SD = 3.2). On average, schools contacted parents 3 times per month at baseline (SD = 5.6) and about 1.7 times by 12-month follow-up (SD = 4.0). Child daily functioning tended to improve over time, with most regression coefficients showing significant diminishing trends. Compared with baseline, the number of missed school days due to mental health issue in the past 30 days decreased both at 6 months (Coef = −1.6; $p < 0.05$) and 12 months (Coef = −3.1; $p < 0.001$). Similarly, the number of days that a child was late for school in the past 30 days decreased at 12 months (Coef = −1.4; $p < 0.1$), and the number of times in the past 30 days that a child's school had contacted the parent or another adult in the child's household about any mental problems at school also decreased both at 6 months (Coef = −1.6; $p < 0.01$) and 12 months (Coef = −1.7; $p < 0.01$).

No statistically significant changes were noted in secondary outcomes, including parent Patient Health Questionnaire (PHQ-2), emotional distress-depression and anxiety (EDA), or Parental Stress Index (PSI) scores. We note that generally female, non-Hispanic White, and non-Hispanic other groups were associated with better outcomes compared with male and non-Hispanic Black groups (Supplemental Digital Content 5–15, http://links.lww.com/JDBP/A430).

Table 2. Estimation Results for Child Health, Child Daily Functioning, and Parent Health

				Change in 6 mo		Change in 12 mo	
	Baseline	6 mo	12 mo	Coef.	*p*	Coef.	*p*
Primary outcomes							
Children with clinically significant symptoms, N (%)							
CBCL total score							
Clinical	18 (36)	11 (29)	6 (15)	−0.873	0.37	−2.804^{+}	0.05
Borderline	4 (8)	5 (13)	3 (8)				
Normal	28 (56)	22 (58)	31 (78)				
CBCL internalizing score							
Clinical	9 (18)	7 (18)	4 (10)	−0.550	0.64	−4.051*	0.02
Borderline	9 (18)	3 (8)	2 (5)				
Normal	32 (64)	28 (74)	34 (85)				
CBCL externalizing score							
Clinical	14 (28)	9 (24)	8 (20)	0.003	0.1	−1.650	0.2
Borderline	6 (12)	6 (16)	3 (8)				
Normal	30 (60)	23 (61)	29 (73)				
Health-related QoL, mean (SD)							
CHQ physical health	50.5 (13.3)	54.8 (8.6)	52.7 (12.4)	4.108*	0.05	2.317	0.4
CHQ psychosocial health	34.7 (13.1)	39.7 (13.2)	43.1 (11.8)	3.937*	0.04	8.638***	0.00
Child functioning, mean frequency in the past 30 d (SD)							
Missed school days attributable to mental health	0.5 (1.3)	0.5 (2.1)	0.1 (0.8)	−1.573*	0.02	−3.103***	0.00
Days late for school	0.8 (1.8)	0.4 (0.6)	0.7 (3.2)	−1.023	0.18	−1.369^{+}	0.08
Parent contacted by school	3.0 (5.6)	1.3 (4.6)	1.7 (4.0)	−1.639**	0.00	−1.731**	0.00
Secondary outcomes							
Parent outcomes, mean (SD)							
PHQ-2	1.8 (2.0)	1.7 (1.8)	1.3 (1.6)	−0.071	0.72	−0.357	0.14
EDA	18.3 (8.5)	18.1 (8.8)	15.9 (7.1)	0.055	0.39	−0.042	0.59
PSI	129.9 (22.0)	125.6 (21.1)	131.4 (25.6)	−0.012	0.63	0.045	0.18

This table shows the means and SDs of each primary and secondary outcome variable at each time point. Changes over time were estimated based on the multilevel mixed-effects generalized linear model with inverse probability weighting for attrition. Child and family characteristics including child age, sex, race and ethnicity, and parents' education level and marital status were controlled as covariates. CBCL scores were categorized into a clinical range, borderline range, and normal range, and an ordinal distribution with an identity link was used. CHQ scores were continuous variables, and a Gaussian distribution with an identity link was used. All other outcomes were count variables, and a negative binomial distribution with a log link was used. CBCL, Child Behavior Checklist; CHQ, Child Health Questionnaire; EDA, Emotional Distress-Depression and Anxiety; PHQ-2, Patient Health Questionnaire; PSI, Parental Stress Index; QoL, quality of life. $+p < 0.1$; $*p < 0.05$; $**p < 0.01$; and $***p < 0.001$.

Association of Changes in Child Symptoms with Changes in School Functioning

Table 3 reports the results of 6 different regression models reflecting the influence of CBCL total scores and CHQ-PF28 psychosocial scores on each of the 3 different outcomes. The CBCL and CHQ-PF28 were scored dichotomously (clinical/nonclinical and low health-related QoL/high health-related QoL, respectively) and entered as time-varying covariates. Thus, interactions between these variables and time reflect the change in functional outcome associated with a change in clinical status over time.

At 12 months, improvements in clinical status on the CBCL and improvements in health-related QoL on the CHQ-PF28 were associated with decreased missed school days. Specifically, when examining the CBCL total score in association with missed school days at baseline, there was no significant difference in missed school days between those scoring in the clinical range on the CBCL vs those scoring in the nonclinical range (Coef = 0.3; $p > 0.1$). For children whose total CBCL scores remained or moved into the nonclinical range, missed school days decreased significantly both at 6 months (Coef = −1.8; $p < 0.05$) and 12 months (Coef = −20.4; $p < 0.001$) compared with baseline. Among children whose total CBCL scores remained or moved into the clinical range, there were smaller, but significant, decreases in missed school days relative to the nonclinical group at 12 months (Coef = −0.6 = −20.4 + 19.8; $p < 0.001$).

When examining the association between the CHQ-PF28 psychosocial score and missed school days, children with low health-related QoL had a higher number of missed school days at baseline than those with high health-related QoL (Coef = 2.7; $p < 0.01$). By 12 months, the number of missed school days decreased slightly more among those with high health-related QoL (Coef = −17.6; $p < 0.001$) than those with low health-related QoL (Coef = 16.5; $p < 0.001$). Likewise, by 12

Table 3. Estimation Results for Child Symptoms in Association with Child Functioning.

	TVC = CBCL Total Score			TVC = CHQ Psychosocial Score		
Outcome	**Missed School Days**	**Late for School**	**Parent Contacted**	**Missed School Days**	**Late for School**	**Parent Contacted**
Time point						
6 mo	−1.810*	−1.340^{+}	−1.158^{+}	−0.565	−1.416*	−0.990^{+}
12 mo	−20.407***	−1.740*	−1.220*	−17.583***	−2.648***	−1.638**
TVC score						
Clinical/low HRQoL	0.317	1.186	1.355*	2.731**	−0.470	1.747**
Interaction term						
6 mo × clinical/low HRQoL	1.415	−0.319	−0.495	0.135	−0.197	−1.194
12 mo × clinical/low HRQoL	19.770***	2.011^{+}	0.183	16.476***	3.702**	1.066

CBCL, Child Behavior Checklist; CHQ, Child Health Questionnaire; HRQoL, health-related qualify of life; TVC, time-varying covariate. $+p < 0.1$; $*p < 0.05$; $**p < 0.01$; and $***p < 0.001$.

months, improvements in clinical status on the CBCL and improvements in health-related QoL on the CHQ-PF28 were associated with being late for school less often and parents being contacted about any mental problems at school less often.

DISCUSSION

This cohort study documented improvements in internalizing symptoms, mental health-related quality of life (QoL), and school attendance over 12 months in a group of school-age children engaged in integrated mental health care. Moreover, improvements in internalizing symptoms and mental health-related QoL were associated with improvements in school attendance over time, suggesting that changes in mental health may be meaningfully linked to improvements in school functioning. Improvements were not found in parents' symptoms of depression or anxiety or parenting stress.

Our findings should be interpreted in light of the existing literature documenting the effectiveness of evidence-based treatments offered through integrated mental health care models in pediatric primary care settings. Systematic review and meta-analyses[13,14,35] suggest that compared with usual care, integrated or collaborative medical-mental health care models generate significantly better mental health outcomes for children and adolescents. Given the lack of a comparison group, our findings do not offer experimental evidence to support the effectiveness of integrated mental health care. However, our findings are consistent with prior studies that include comparison conditions. For example, improved internalizing symptoms among children of Transforming and Expanding Access to Mental Health Care in Urban Pediatrics federally qualified health centers are consistent with prior research,[36–40] including 1 study that documented reductions in the severity and greater remission of internalizing problems within collaborative care in pediatric primary care.[36] Likewise, our findings on improved mental health-related QoL replicate and expand on results from the prior literature in a more diverse population.[36,38]

We note that the Child Behavior Checklist (CBCL) can produce conservative estimates of effect size; for example, 1 prior study documented improvements in mental health symptoms among adolescents prescribed antidepressant medication yet failed to find significant effects using the CBCL.[39] In addition, we address potential for bias due to attrition issue by accounting for missing data for patients who did not complete follow-up assessments using inverse probability weights, which few prior studies address.[38,40]

Research on school-related functioning as it relates to pediatric mental health integration is rare. One study included a global scale of child functioning that included some school-related questions, such as whether the child had a problem with behavior at school or working at school.[37] Another study included a social adjustment scale that included school behavior.[39] By contrast, our study included specific questions regarding school attendance, tardiness, and calls home from school that are important to families. Findings demonstrate that changes in symptoms over time were significantly associated with improvements in school functioning.[5] To our knowledge, this association has not been previously examined. These findings are important because they may support a link between improvements in mental health and improvements in school functioning, which in turn are associated with benefits over a child's lifetime, including opportunities to improve work-related skills and possibly leading to future employment and higher salaries.[41]

We note several limitations. First, although a longitudinal design has advantages over cross-sectional studies in that it allows participants to serve as their own controls, lack of a robust comparison group means that maturation cannot be ruled out, and nor can regression to the mean (although participants were not selected based on the outcome and only a portion of baseline scores was in the clinical range, which would otherwise augment this effect).[42,43] Second, although all analyses controlled for observable individual sociodemographic characteristics, the effect of other confounders cannot be ruled out. Third, although our sample size was comparable to similar studies of child symptoms and

QoL,[36,37,39,40] statistical power may have limited our ability to detect additional effects. That said, statistically significant results in a small sample imply robust effect sizes, underscoring the potential clinical significance. Fourth, the study included multiple statistical tests, thereby increasing the probability that 1 or more represent a type 1 error. Nevertheless, the number of statistically significant results was above chance levels. Fifth, potential selection bias at study entry should be considered. That is, enrolled families may differ from those who did not enroll in systematic ways, such as engagement in care. Finally, school functioning was based on parent report over the past 30 days, which may be subject to recall bias (although several previous studies rely on parent recall of a full school year).[44]

Overall, findings may offer guidance to clinicians regarding expected patient outcomes of children engaged in integrated mental health services. Despite the documented benefits of integrated mental health care, evidence is lacking on longitudinal changes in valued outcomes over time, including associations with improvements in school-related functioning. Particularly, findings regarding the association between changes in internalizing symptoms and changes in school attendance—although preliminary—suggest that integrated mental health care may have the potential to improve not only children's symptoms but also to generalize to improvements in school attendance. Given the importance of education for child development, findings merit additional research.

CONCLUSION

By longitudinally tracking parent-reported outcomes, we documented improvements in children's mental symptoms, health-related quality of life (QoL), and school attendance among children referred for treatment at 3 Transforming and Expanding Access to Mental Health Care in Urban Pediatrics federally qualified health centers over time. In addition, improvements in mental symptoms and health-related QoL were associated with improvements in school-related functional outcomes over time.

ACKNOWLEDGMENTS

The authors acknowledge Codman Square Health Center, The Dimock Center, and Lowell Community Health Center for their provider and staff's time and effort supporting recruitment for this study.

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