

Need and Unmet Need for Care Coordination Among Children With Mental Health Conditions



WHAT'S KNOWN ON THIS SUBJECT: Although care coordination has been associated with lower health care costs and improved outcomes for vulnerable children, little is known about the extent of need and factors associated with unmet need for care coordination among children with mental health conditions.



WHAT THIS STUDY ADDS: Children with mental health conditions have substantial need and unmet need for care coordination. Unmet need is more likely for families with children with anxiety disorder and less likely for those who report social support and family-centered care.

abstract

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OBJECTIVE: To determine prevalence and correlates of need and unmet need for care coordination in a national sample of children with mental health conditions.

METHODS: Using data from the 2007 National Survey of Children's Health, we identified children aged 2 to 17 years with ≥ 1 mental health condition (attention-deficit/hyperactivity disorder, anxiety disorder, conduct disorder, or depression) who had received ≥ 2 types of preventive or subspecialty health services in the past year. We defined 2 outcome measures of interest: (1) prevalence of need for care coordination; and (2) prevalence of unmet need for care coordination in those with a need. Logistic regression models were used to estimate associations of clinical, sociodemographic, parent psychosocial, and health care characteristics with the outcome measures.

RESULTS: In our sample ($N = 7501$, representing an estimated 5 750 000 children), the prevalence of having any need for care coordination was 43.2%. Among parents reporting a need for care coordination, the prevalence of unmet need was 41.2%. Higher risk of unmet need for care coordination was associated with child anxiety disorder, parenting stress, lower income, and public or no insurance. Parents reporting social support and receipt of family-centered care had a lower risk of unmet need for care coordination.

CONCLUSIONS: Approximately 40% of parents of children with mental health conditions who reported a need for care coordination also reported that their need was unmet. Delivery of family-centered care and enhancing family supports may help to reduce unmet need for care coordination in this vulnerable population. *Pediatrics* 2014;133:e530–e537

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KEY WORDS

care coordination, family-centered care, health care delivery, medical home, mental health

ABBREVIATIONS

ADHD—attention-deficit/hyperactivity disorder
CI—confidence interval
RR—relative risk

Dr Brown conceptualized and designed the study, acquired the data, analyzed and interpreted the data, and drafted the initial manuscript; Dr Green contributed to the design of the study, analyzed and interpreted the data, and revised the manuscript for important intellectual content; and Drs Desai, Weitzman, and Rosenthal contributed to the design of the study, interpreted the analysis, and revised the manuscript for important intellectual content. All authors approved the final manuscript as submitted.

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Although one-quarter of patients seen in pediatric primary care settings have a chronic mental health condition,¹ only 1 in 5 receive mental health treatment.² These children and their families are more likely to have trouble accessing specialty care for comorbid medical conditions, and they often experience social complexities that demand coordination across multiple systems of care.³ Without access to processes and services that effectively bridge their mental health, medical, and social needs, children with mental health conditions are at high risk for unnecessary hospitalizations and emergency department use,⁴ suboptimal academic outcomes,⁵ involvement with the child welfare and criminal justice systems,³ and death from suicide.^{3,5}

Through authority granted by the Patient Protection and Affordable Care Act, state Medicaid programs and providers may establish “health homes” for individuals with chronic conditions.⁶ Health homes are expected to provide a cost-effective model of interprofessional collaboration for individuals with chronic physical and mental health conditions.⁷ Care coordination, “a process that links children and youth with special health care needs and their families with appropriate services and resources in a coordinated effort to achieve good health,”⁸ has been described as an essential element of the health home. Care coordination has been shown to be cost-effective,⁹ reduce emergency department use and hospitalizations,¹⁰ improve health outcomes,¹¹ enhance efficiency of systems,¹² help patients and families more effectively use the health care system,^{12,13} and improve satisfaction with the care experience.¹⁴ Although there will be increased national investments in care coordination targeting children with mental health conditions,¹⁵ little is known about perceived need and unmet need for care coordination in this

population.¹⁶ An enhanced understanding of which patients are most likely to have suboptimal care coordination experiences is critical to help target limited resources and design coordination strategies within health homes and other service delivery settings. Accordingly, we sought to determine the prevalence and correlates of unmet need for care coordination in a national sample of children with mental health conditions.

METHODS

Data Source and Study Sample

Data were obtained from the 2007 National Survey of Children’s Health,¹⁸ a population-based, cross-sectional telephone survey that queries parents or other primary caregivers about a selected child’s health, family characteristics, and about their need for, and use of, health services. The study sample for this analysis of need and unmet need for care coordination included children aged 2 to 17 years who: (1) had at least 1 of 4 chronic mental health conditions (attention-deficit/hyperactivity disorder [ADHD], anxiety disorder, conduct disorder, or depression) that had lasted or was expected to last ≥ 12 months; and (2) used ≥ 2 health care services (preventive medical care, preventive dental care, mental health care, and subspecialty care) in the past 12 months.

The Yale School of Medicine Institutional Review Board found the study exempt from human subject review.

Measures

Need and Unmet Need for Care Coordination

The outcomes of interest were as follows: (1) prevalence of need for care coordination; and (2) prevalence of unmet need for care coordination. Parents of children who used ≥ 2 of the aforementioned services were asked

a sequence of 3 questions about provision of care coordination: “Does anyone help you arrange or coordinate care among the different doctors that the child uses?”; “During the past 12 months, have you felt you could have used extra help arranging or coordinating the child’s care among the different health care providers or services?”; and “During the past 12 months, how often did you get as much help as you wanted with arranging or coordinating care? Would you say never, sometimes, or usually?”

We created 3 mutually exclusive categories of need based on parents’ responses: no need, met need, and unmet need (Fig 1). Those who reported that no one helped them coordinate their child’s care and that they did not need extra help were categorized as having no need for care coordination. Met need was defined as either: (1) having someone who helped with coordinating care and not needing extra help; or (2) needing extra help and usually receiving as much help as wanted. Lastly, unmet need was defined as only sometimes or never receiving as much help as wanted with coordinating their child’s care.

Sociodemographic, Clinical, and Parent Psychosocial Characteristics

We examined sociodemographic, clinical, and parent psychosocial characteristics that may influence need for care coordination services.^{10,11,20} Our selection of variables was guided by the Behavioral Model for Vulnerable Populations.²¹ Sociodemographic characteristics included child’s age, gender, race/ethnicity, and insurance status (private, public, or uninsured); household income (based on percentage of the federal poverty level); primary language spoken in the home (English or non-English); and family structure (2-parent [biological or adopted], 2-parent stepfamily, single mother, or other).

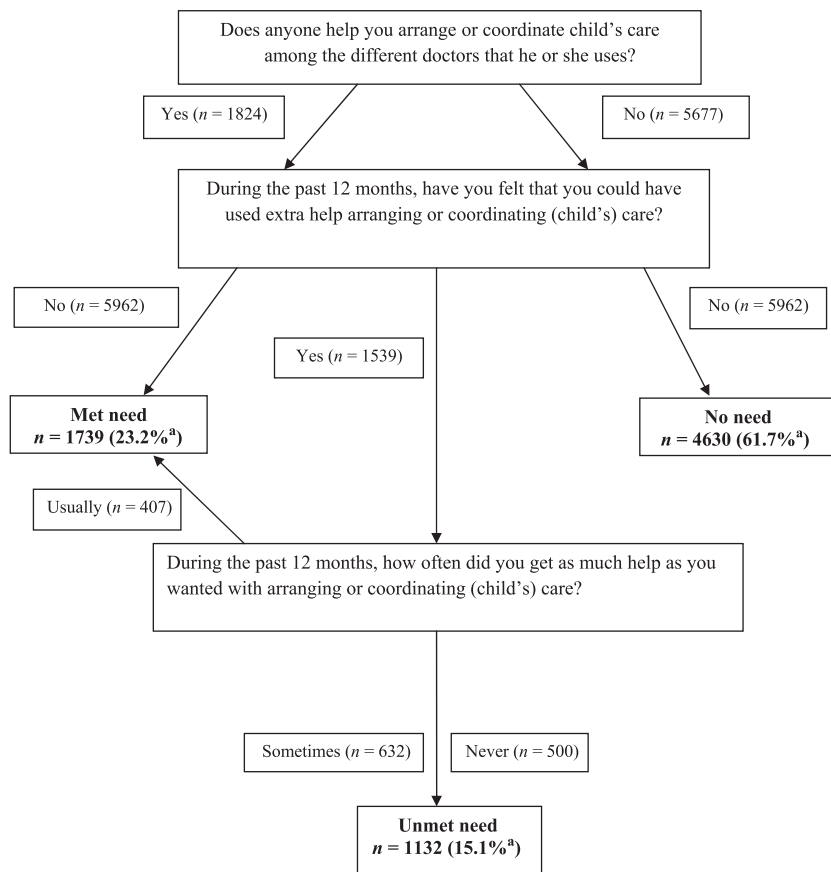


FIGURE 1 Determining the prevalence of care coordination need among children with a mental health condition ($N = 7501$). ^a Unweighted percentages are shown in parentheses.

Clinical characteristics included the 4 chronic mental health conditions (ADHD, anxiety disorder, conduct disorder, and depression), presence of ≥ 1 physical health condition (asthma, diabetes, seizure disorder, brain injury or concussion, speech problem, vision problem not corrected with glasses, and hearing problem), and presence of autism or autism spectrum disorder.

We examined parental characteristics that have been shown to be associated with a need for care coordination among children and youth.^{10,22} Parental psychosocial characteristics included ratings of maternal and paternal mental health, parenting stress, presence of social support, and maternal and paternal level of education. To determine presence of parenting stress,

parents were asked: “During the past month, how often have you felt [child] is much harder to care for than most children his/her age?” “During the past month, how often have you felt (he/she) does things that really bother you a lot?” and “During the past month, how often have you felt angry with (him/her)?” If parents answered “usually” or “always” to ≥ 1 of these questions, they qualified as having parenting stress. We measured parent social support by examining responses (“yes” versus “no”) to the question, “Is there someone you can turn to for day-to-day emotional help with parenthood/raising children?”

Health Care Characteristic

The health care characteristic that we examined was receipt of family-centered

care. The family-centered care composite indicator measures parent responses (never, rarely, sometimes, usually, or always) to 6 experience-of-care items.²³ These items include a physician or health care professional who: (1) spends enough time with child; (2) listens carefully to parents; (3) is sensitive to family values/customs; (4) provides needed information; (5) treats parents as partners in child’s health care; and (6) if needed, provides an interpreter. If parents answered “usually” or “always” to all of these questions, they qualified as having family-centered care.

Analysis

The analysis for this study proceeded in 3 steps. First, descriptive statistics were used to summarize the characteristics of the sample. Second, parents’ survey responses were analyzed to determine the prevalence of need and the proportion of unmet need for care coordination. Third, the associations between the independent variables of interest and each of the 2 outcome measures were assessed. We used binomial logistic regression and multinomial logistic regression to model, respectively, the prevalence of need and the proportion of unmet need.^{24,25} We additionally adjusted for state of residence and missing data.^{24,25} Results were interpreted as risk ratios using the method of Kleinman and Norton.²⁶ All analyses were conducted by using Stata version 12 (Stata Corp, College Station, TX) to account for the weighting and complex survey design.²⁶

RESULTS

Description of the Sample

The final analytic sample size was 7501, representing an estimated 5 750 000 children in the United States with a mental health condition potentially in need of care coordination. The majority of the children were male (67.4%),

aged 12 to 17 years (53.7%), and white (61.5%) (Table 1). Of the 4 mental health conditions, ADHD was the most common (67.4%), followed by conduct disorder (33.6%), anxiety disorder (31.2%), and depression (21.3%). Nearly one-third (31.9%) of children had a physical health condition, and 7.2% were on the autism spectrum. Nearly one-third of respondents reported family stress (31.6%), and the majority of respondents felt as though they had social support (83.0%). More than one-half of all parents had less than a high school education. More than one-half of our sample (57.2%) reported receipt of family-centered care.

Need and Unmet Need for Care Coordination

The prevalence of need for care coordination was 43.2% (Table 2), including 21.9% with met need and 18.7% with unmet need. Among those with need, the prevalence of unmet need for care coordination was 41.2%.

Correlates of Need for Care Coordination

In the bivariate analysis, children with anxiety disorder (unadjusted relative risk [RR]: 1.37 [95% confidence interval (CI): 1.19–1.55]), conduct disorder (unadjusted RR: 1.39 [95% CI: 1.21–1.57]), depression (unadjusted RR: 1.30 [95% CI: 1.11–1.49]), a physical health condition (unadjusted RR: 1.25 [95% CI: 1.10–1.39]), or autism (unadjusted RR: 1.24 [95% CI: 1.04–1.44]) were at higher risk of having a need for care coordination compared with children in our sample without these conditions (Table 3). Respondents who reported ≥ 1 type of family stress also had a higher risk of needing care coordination (unadjusted RR: 1.40 [95% CI: 1.21–1.58]). Those who received social support had a lower risk of needing care coordination (RR: 0.75 [95% CI: 0.63–0.87]).

In the adjusted model, those with anxiety disorder, conduct disorder, a physical health condition, and autism remained at higher risk of need for care coordination (Table 3). Sociodemographic variables found to be associated with higher risk of need for care coordination after adjustment were black race and respondents who reported that the child's father had less than a high school education.

Correlates of Unmet Need for Care Coordination

In bivariate analyses of correlates of unmet need for care coordination among children of respondents reporting a need, those with anxiety disorder (unadjusted RR: 1.33 [95% CI: 1.04–1.62]), conduct disorder (unadjusted RR: 1.41 [95% CI: 1.09–1.72]), and autism (unadjusted RR: 1.46 [95% CI: 1.01–1.90]) had a higher risk of unmet need. In the adjusted analyses, only those with anxiety disorder remained at higher risk of unmet need for care coordination (Table 3).

Respondents with family stress had a higher risk of unmet need (unadjusted RR: 1.47 [95% CI: 1.15–1.79]) in unadjusted analyses, but the association was not statistically significant in adjusted analyses. Those who reported having social support (RR: 0.59 [95% CI: 0.46–0.74]) and receipt of family-centered care (RR: 0.63 [95% CI: 0.55–0.72]) had a statistically significantly lower risk of unmet need; this association persisted after adjustment.

Sociodemographic variables associated with statistically significantly higher risk of unmet need for care coordination in adjusted analyses included income level between 200% and 299% of the federal poverty level, public insurance, and being uninsured.

DISCUSSION

Our national study representing >5 million children with a mental health condition demonstrated that among

TABLE 1 Description of the Sample

| Characteristic | N | Weighted % |
|---------------------------|------|------------|
| All participants | 7501 | 100.0 |
| Gender | | |
| Male | 4807 | 67.4 |
| Female | 2688 | 32.6 |
| Age, y | | |
| 2–5 | 331 | 6.0 |
| 6–11 | 2628 | 40.3 |
| 12–17 | 4542 | 53.7 |
| Race/ethnicity | | |
| White, non-Hispanic | 5339 | 61.5 |
| Black, non-Hispanic | 738 | 16.5 |
| Hispanic | 706 | 14.5 |
| Multiracial | 406 | 5.4 |
| Other | 211 | 2.1 |
| Household income | | |
| $\leq 199\%$ FPL | 2331 | 47.6 |
| 200%–299% FPL | 963 | 15.9 |
| 300%–399% FPL | 1279 | 10.8 |
| $\geq 400\%$ FPL | 2441 | 25.6 |
| Insurance status | | |
| Private | 4462 | 51.3 |
| Public | 2638 | 44.1 |
| Uninsured | 328 | 4.6 |
| Family structure | | |
| Two parents | 4651 | 56.0 |
| Single mother | 1939 | 32.8 |
| Other | 873 | 11.2 |
| Primary language | | |
| English | 7296 | 94.5 |
| Non-English | 201 | 5.5 |
| Mental health condition | | |
| ADHD | 5100 | 67.4 |
| Anxiety disorder | 2540 | 31.2 |
| Conduct disorder | 2188 | 33.6 |
| Depression | 1596 | 21.3 |
| Other health condition | | |
| Physical health condition | 2142 | 31.9 |
| Autism | 501 | 7.2 |
| Maternal mental health | | |
| Excellent | 1374 | 19.7 |
| Very good | 2527 | 32.9 |
| Good | 1775 | 26.8 |
| Fair | 799 | 16.6 |
| Poor | 190 | 4.0 |
| Paternal mental health | | |
| Excellent | 1301 | 26.1 |
| Very good | 2048 | 41.2 |
| Good | 1090 | 22.6 |
| Fair | 400 | 8.5 |
| Poor | 80 | 1.6 |
| Family stress | | |
| Yes | 2105 | 31.6 |
| Social support | | |
| Yes | 6468 | 83.0 |
| Maternal education | | |
| >High school | 568 | 12.9 |
| High school | 1504 | 28.9 |
| <High school | 4576 | 58.2 |
| Paternal education | | |
| >High school | 420 | 11.6 |
| High school | 1270 | 31.5 |
| <High school | 3208 | 56.8 |

TABLE 1 Continued

| Characteristic | N | Weighted % |
|----------------------|------|------------|
| Family-centered care | | |
| Yes | 4863 | 57.2 |

Values presented as weighted percentages may not sum to 100% due to rounding, and numbers may not sum to total due to missing data. FPL, federal poverty level.

parents of children who need care coordination, 41% have an unmet need. In addition, we found that children with anxiety disorder, those who are publicly insured, and those who are uninsured experience the greatest risk of having an unmet need for care coordination. Finally, we found that lower unmet need for care coordination was associated with receipt of social support and family-centered care.

Previous work examining care coordination in pediatric populations found that nearly one-third of children with special health care needs have an unmet need for care coordination.¹⁷ Although the literature supports strengthening care coordination for children with special health care needs more generally, our findings show that care coordination may need to be targeted to more specific subpopulations of children with mental health conditions who have highest unmet need, such as those with anxiety disorders. Anxiety disorders are among the earliest disorders to present in children.²⁷ They are frequently associated with somatic complaints (eg, abdominal pain, chest discomfort, headaches) in the pediatric population, and primary care providers may focus on managing such symptoms, resulting in a delayed diagnosis of the underlying anxiety disorder.²⁸ High rates of emergency department use and subspecialty care

among children with anxiety disorders may, in part, explain the association with perceived need for care coordination and their higher risk of unmet care coordination need.²⁹ Increased recognition of anxiety disorders and awareness of evidence-based treatment approaches by pediatric providers may lead to improved management and better coordination of care.²⁹

We did not find an association between need and unmet need for care coordination among children in our sample with ADHD, which may in part be explained by a higher comfort level with ADHD management in the pediatric primary care setting.³⁰ However, other studies have found that primary care providers believe that better care coordination is needed for children with ADHD, particularly regarding collaboration with schools, educating families, and facilitating mental health care.³¹ Further research is needed to better understand pediatric providers' perceptions of care coordination needs among children with ADHD.

Parents who reported experiencing ≥ 1 type of parenting stress were at higher risk of reporting need and unmet need for care coordination, although this association was not significant in adjusted analyses. This finding agrees in part with a previous study by Antonelli et al.¹⁰ The authors found a high prevalence of care coordination minutes used both by children with special health care needs and children without special health care needs who presented with an acute, family-based social stressor. Parental stress has been shown to be a barrier to seeking

mental health and community support services for children with behavior problems.³² Primary care providers and other care coordinators should identify psychosocial stressors among children with mental health conditions because children who experience stressors are at higher risk for having unmet need for care coordination and potentially nonreceipt of services.

Preventing unmet need for care coordination among children with mental health conditions may hinge, in part, on identifying family- and system-level attributes that keep families engaged in care and help them navigate different systems of care. Our findings showing lower unmet need for care coordination among respondents who report receipt of social support and family-centered care suggest 2 potential strategies to improve parent experiences with care coordination for children with mental health conditions. Studies have shown that patients who report having social support have higher levels of trust in the health care system, are more engaged in care, and have better self-rated health compared with patients who do not have sources of social support.³³ Parents of children with special health care needs who receive family-centered care report better family-provider communication and perceptions of partnership, which are foundational to optimizing care coordination.³⁴ Our analysis focused on predisposing, enabling, and need factors that may influence parent perceptions of need and unmet need for care coordination. Further research should explore parent perceptions of access to care among children with mental health conditions, as well as the impact of perceived access on parent perceptions of care coordination.

Several limitations of our analysis should be acknowledged. First, care coordination questions were asked only of parents who reported use of ≥ 2

TABLE 2 Prevalence of Need for Care Coordination Among Children With Mental Health Conditions

| Care Coordination Need Category | Weighted % (95% CI) |
|---|---------------------|
| Any need for care coordination | 43.2 (40.3–46.1) |
| Unmet need | 18.7 (15.6–20.1) |
| Met need | 21.9 (22.7–28.0) |
| No need | 59.4 (57.0–62) |
| Among those with any need, proportion of unmet need | 41.2 (36.7–45.8) |

TABLE 3 Association Between Independent Variables and Unadjusted and Adjusted Risk of Need and Unmet Need for Care Coordination

| Variable | Need Care Coordination (n = 2871) | | Unmet Need for Care Coordination Among Those With Need (n = 1132) | |
|--|-----------------------------------|------------------------|---|------------------------|
| | Unadjusted RR | Adjusted RR | Unadjusted RR | Adjusted RR |
| ADHD | | | | |
| Yes | 0.88 (0.75 to 1.00) | 1.07 (0.94 to 1.20) | 0.85 (0.67 to 1.04) | 0.97 (0.79 to 1.15) |
| No | Ref | Ref | Ref | Ref |
| Anxiety disorder | | | | |
| Yes | 1.37*** (1.19 to 1.55) | 1.28*** (1.13 to 1.43) | 1.33* (1.04 to 1.62) | 1.31** (1.09 to 1.53) |
| No | Ref | Ref | Ref | Ref |
| Conduct disorder | | | | |
| Yes | 1.39*** (1.21 to 1.57) | 1.19* (1.04 to 1.34) | 1.41* (1.10 to 1.72) | 1.12 (0.92 to 1.32) |
| No | Ref | Ref | Ref | Ref |
| Depression | | | | |
| Yes | 1.30** (1.11 to 1.49) | 1.16 (0.98 to 1.33) | 1.09 (0.84 to 1.33) | 0.89 (0.70 to 1.09) |
| No | Ref | Ref | Ref | Ref |
| Physical health condition | | | | |
| Yes | 1.41*** (1.22 to 1.60) | 1.25*** (1.10 to 1.39) | 0.97 (0.75 to 1.18) | 0.92 (0.76 to 1.08) |
| No | Ref | Ref | Ref | Ref |
| Autism | | | | |
| Yes | 1.51*** (1.25 to 1.77) | 1.24* (1.04 to 1.44) | 1.46* (1.01 to 1.90) | 1.15 (0.86 to 1.45) |
| No | Ref | Ref | Ref | Ref |
| Maternal mental health, excellent | | | | |
| Very good | 1.12 (0.85 to 1.39) | 0.99 (0.77 to 1.20) | 1.05 (0.59 to 1.51) | 0.98 (0.63 to 1.32) |
| Good | 1.45** (1.11 to 1.78) | 1.15 (0.89 to 1.40) | 1.45 (0.86 to 2.04) | 1.14 (0.76 to 1.53) |
| Fair | 1.72*** (1.30 to 2.13) | 1.27 (0.95 to 1.59) | 1.43 (0.78 to 2.07) | 1.01 (0.61 to 1.42) |
| Poor | 1.50 (0.93 to 2.07) | 0.98 (0.60 to 1.36) | 1.43 (0.64 to 2.22) | 0.82 (0.39 to 1.24) |
| Paternal mental health, excellent | | | | |
| Very good | 1.27 (0.95 to 1.59) | 1.21 (0.94 to 1.50) | 1.27 (0.64 to 1.90) | 1.13 (0.62 to 1.64) |
| Good | 1.49* (1.11 to 1.87) | 1.27 (0.97 to 1.57) | 1.24 (0.63 to 1.86) | 0.99 (0.57 to 1.42) |
| Fair | 1.59* (1.14 to 2.04) | 1.02 (0.74 to 1.31) | 1.80 (0.92 to 2.70) | 0.99 (0.49 to 1.48) |
| Poor | 2.18** (1.40 to 2.96) | 1.50 (0.99 to 2.01) | 1.11 (−0.0085 to 2.23) | 0.61 (−0.032 to 1.25) |
| Family stress | | | | |
| Social support | 1.40*** (1.21 to 1.58) | 1.13 (0.99 to 1.27) | 1.47** (1.15 to 1.79) | 1.19 (0.99 to 1.39) |
| Maternal education, >high school | 0.75*** (0.63 to 0.87) | 0.87* (0.74 to 0.99) | 0.60*** (0.46 to 0.74) | 0.69*** (0.55 to 0.83) |
| High school | Ref | Ref | Ref | Ref |
| <High school | 0.99 (0.84 to 1.15) | 0.87* (0.75 to 0.99) | 1.18 (0.87 to 1.48) | 0.88 (0.68 to 1.08) |
| Paternal education, >high school | 1.01 (0.74 to 1.27) | 0.72** (0.54 to 0.90) | 1.20 (0.78 to 1.62) | 0.91 (0.63 to 1.19) |
| High school | Ref | Ref | Ref | Ref |
| <High school | 1.06 (0.85 to 1.27) | 1.06 (0.91 to 1.22) | 1.25 (0.83 to 1.67) | 1.13 (0.87 to 1.39) |
| Age | 1.40*** (1.09 to 1.72) | 1.28* (1.01 to 1.55) | 1.57 (0.93 to 2.21) | 1.10 (0.76 to 1.45) |
| Age | | | | |
| 2–5 y | Ref | Ref | Ref | Ref |
| 6–11 y | 0.78 (0.56 to 1.00) | 0.85 (0.64 to 1.06) | 0.91 (0.59 to 1.23) | 0.99 (0.65 to 1.33) |
| 12–17 y | 0.79 (0.57 to 1.01) | 0.89 (0.66 to 1.12) | 0.91 (0.59 to 1.22) | 1.04 (0.67 to 1.41) |
| Race | | | | |
| White, non-Hispanic | Ref | Ref | Ref | Ref |
| Black, non-Hispanic | 1.28* (1.06 to 1.50) | 1.22* (1.02 to 1.42) | 1.11 (0.80 to 1.42) | 0.97 (0.71 to 1.23) |
| Hispanic | 1.37* (1.07 to 1.66) | 1.09 (0.85 to 1.34) | 1.14 (0.78 to 1.51) | 0.95 (0.62 to 1.28) |
| Multiracial | 1.19 (0.89 to 1.49) | 1.12 (0.90 to 1.34) | 0.76 (0.43 to 1.09) | 0.73* (0.49 to 0.97) |
| Other | 1.22 (0.88 to 1.56) | 1.07 (0.75 to 1.39) | 1.31 (0.85 to 1.78) | 1.11 (0.75 to 1.47) |
| Income | | | | |
| ≥400% FPL | Ref | Ref | Ref | Ref |
| 300%–399% FPL | 0.79* (0.63 to 0.98) | 0.80** (0.66 to 0.95) | 1.77* (1.13 to 2.41) | 1.33 (0.98 to 1.67) |
| 200%–299% FPL | 1.072 (0.85 to 1.29) | 0.971 (0.82 to 1.12) | 1.85* (1.16 to 2.54) | 1.35* (1.00 to 1.69) |
| ≤199% FPL | 1.07 (0.88 to 1.27) | 0.89 (0.75 to 1.03) | 1.73* (1.16 to 2.31) | 1.04 (0.72 to 1.35) |
| Insurance status | | | | |
| Private | Ref | Ref | Ref | Ref |
| Public | 1.15 (0.99 to 1.31) | 0.99 (0.86 to 1.14) | 1.42* (1.10 to 1.74) | 1.38* (1.05 to 1.72) |
| Uninsured | 1.20 (0.90 to 1.49) | 1.08 (0.84 to 1.33) | 2.05*** (1.45 to 2.65) | 1.86** (1.25 to 2.5) |
| Family structure | | | | |
| Two parents | Ref | Ref | Ref | Ref |
| Single mother | 1.09 (0.93 to 1.26) | 1.20 (0.76 to 1.63) | 1.21 (0.92 to 1.50) | 0.79 (0.42 to 1.17) |
| Other | 1.11 (0.89 to 1.33) | 1.25 (0.78 to 1.71) | 0.83 (0.55 to 1.11) | 0.68 (0.16 to 1.19) |

TABLE 3 Continued

| Variable | Need Care Coordination (n = 2871) | | Unmet Need for Care Coordination Among Those With Need (n = 1132) | |
|----------------------------|-----------------------------------|------------------------|---|------------------------|
| | Unadjusted RR | Adjusted RR | Unadjusted RR | Adjusted RR |
| Primary language | | | | |
| Non-English | 1.33 (0.83 to 1.82) | 0.89 (0.51 to 1.26) | 1.33 (0.84 to 1.82) | 1.08 (0.58 to 1.56) |
| Health care characteristic | | | | |
| Family-centered care | 0.63*** (0.55 to 0.72) | 0.72*** (0.64 to 0.83) | 0.39*** (0.29 to 0.48) | 0.43*** (0.35 to 0.52) |

FPL, federal poverty level.

* $P < .05$, ** $P < .01$, *** $P < .001$.

health services, defined broadly as preventive medical care, dental care, mental health care, or subspecialty care. We did not restrict our sample to children with mental health conditions who used specific combinations of these clinical services; therefore, children in our sample who may have only used preventive medical care and dental care were included in our analysis. Because these 2 services do not traditionally fall within the realm of requiring care coordination resources, it is unclear what parental perceptions of need and unmet need for care coordination mean in such cases. Further research exploring need and unmet need for care coordination for preventive and dental care services is needed. In addition, children with mental health conditions who use services that fall outside of the traditional health care system (eg, early intervention services, school-based interventions) may also require care coordination, yet they were not included in our sample. Hence, the numbers of children needing care coordination services may have been underestimated. Second, mental health diagnoses were based exclusively on

parent report with no validation of that diagnosis. Misclassification bias may have been introduced if parents failed to recognize that their child had a mental health condition or that their child needed care coordination. Conversely, parents may overreport their children's mental health diagnoses, particularly parents with an underlying mental health disorder.^{36,37} Third, our analysis did not account for comorbid mental health conditions or disease severity and may thus underestimate populations at risk for high need and unmet need for care coordination. Finally, the cross-sectional design of the data source precludes inferring causality.

Pediatricians are often the first to see children with mental health conditions; they often feel ill-equipped to not only care for such patients but also identify specialists and community-based resources that can help facilitate a coordinated system of care.¹⁵ In addition, pediatric providers cite lack of time, inadequate reimbursement, and lack of staff as reasons for limited provision of care coordination.⁹ Our results may be helpful to pediatric providers and

policymakers who seek to better understand which specific subpopulations of children with special health care needs may benefit most from care coordination, thus helping them better target time and resources devoted to care coordination activities. Also, our findings elucidate parent psychosocial characteristics that may inform satisfaction with care coordination services, which will be important to those developing care coordination quality measures.

CONCLUSIONS

Our study identified that level of unmet need for care coordination among children with mental health conditions is high, particularly among children diagnosed with anxiety disorder. Fortunately, our study identified both social support and family-centered care as protective factors. Designing and implementing interventions that identify and enhance family-based supports, as well as those that seek to strengthen family-centered care, may help to reduce unmet need for care coordination in this vulnerable population.

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