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Correlates of Behavioral Care Management Strategies used by Primary Care Pediatric Providers

James P. Guevara, MD, MPH^{1,2}, Aileen Rothbard, ScD^{2,3}, David Shera, ScD⁴, Huaqing Zhao, MS⁴, Christopher B. Forrest, MD, PhD⁵, Kelly Kelleher, MD, MPH⁶, and Donald Schwarz, MD, MPH^{2,7}

1 Division of General Pediatrics, the Children's Hospital of Philadelphia, Philadelphia, PA

2 The Leonard Davis Institute of Health Economics, the University of Pennsylvania School of Medicine, Philadelphia, PA

3 Center for Mental Health Policy and Services Research, Department of Psychiatry, the University of Pennsylvania School of Medicine, Philadelphia, PA

4 Division of Biostatistics, the Children's Hospital of Philadelphia, Philadelphia, PA

5 Department of Health Policy and Management, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, MD

6 Department of Pediatrics, Ohio State University College of Medicine, Columbus, OH

7 Craig-Dalsimer Division of Adolescent Medicine, the Children's Hospital of Philadelphia, Philadelphia, PA

Abstract

Objective— To identify correlates of behavioral management strategies and to test whether children with more severe behavioral problems have care transferred to mental health specialists.

Methods— Secondary analysis of the Child Behavior Study. Children ages 4 to 15 years old were identified with new behavioral problems at non-urgent visits to primary care clinicians. Treatment strategies were categorized into mutually exclusive groups: primary care (psychotropic prescription and/or office-based counseling), mental healthcare (referral for or ongoing specialist mental healthcare), joint care (primary care and mental healthcare) or observation. Child-, family-, clinician-, and practice-level characteristics were assessed for association with management strategies using multivariate methods.

Results— A total of 1377 children from 201 practices in 44 states and Puerto Rico were newly identified with behavioral problems. Behavioral/conduct (41%), attentional/hyperactivity (37%), adjustment (32%), and emotional (22%) problems were most commonly identified. Children with comorbid behavioral problems were more likely to be managed with joint care than other treatment strategies. In addition, clinicians who were male or who had greater mental health orientation were more likely to provide joint care than mental healthcare only.

Conclusions— Clinicians were more likely to manage new behavioral problems jointly with mental health providers than use other strategies if children had coexisting mental health problems or if providers had stronger beliefs about psychosocial aspects of care. These results do not support the hypothesis that children with more severe behavioral problems are transferred to specialists but

Address correspondence to JG, Pediatric Generalist Research Group, The Children's Hospital of Philadelphia, 34th and Civic Center Blvd, CHOP North, Room 1531, Philadelphia, PA 19104; (215) 590-1130 (telephone); (215) 590-0426 (fax); Guevara@email.chop.edu (e-mail).

suggest that primary care and mental healthcare clinicians may benefit from collaborating on treatment plans.

Keywords

mental health; child; decision making; therapeutics

Introduction

The prevalence of behavioral problems among children at primary care practices has been estimated at 10 to 20 percent.¹⁻⁴ A recent study suggests that the number of children with recognized behavioral problems in primary care may be increasing due to increasing recognition of mental health disorders in children, reduced stigma, treatment acceptance by families, a greater array of therapies to manage these problems, and increases in poverty and other risk factors for mental illness.⁵⁻⁸ This growth in behavioral problems has resulted in significant increases in primary care clinician time and resource consumption.⁹

To manage behavioral problems, primary care clinicians have incorporated therapeutic strategies from counseling or medication prescribing to referral that reflect their competence and skills and those of the mental health specialists with whom they confer.¹⁰⁻¹² In some instances, clinicians may adopt a watchful waiting approach in which no interventions are implemented.^{3, 13} The frequencies of various strategies have been shown to vary across studies. Primary care clinicians choose to manage problems in the office with counseling, psychotropic medications, or both 11.1% to 45.4% of the time.^{12, 14, 15} They refer patients to mental health providers 16.2% to 62.3% of the time,^{12, 14, 15} but the reasons for mental health referrals may differ: to transfer care, to obtain consultation, or to share management responsibility.¹⁶ The latter two purposes reflect a joint management strategy in which primary care clinicians and mental health providers co-manage patients. In collaborative models of care, responsibilities for care are shared along a continuum that reflect who provides care, at what times, and for what purposes (e.g. consultation with a psychologist to clarify a diagnosis prior to a primary care clinician initiating psychotropic medication).^{17, 18}

Little is known regarding factors that are associated with behavioral management strategies used by primary care clinicians. Research suggests that strategies vary depending on the type of behavioral problem and physicians' comfort and experience in managing those problems. For example, pediatricians may preferentially manage patients with attention-deficit/hyperactivity disorder (ADHD) in the office setting,^{19, 20} but may refer patients with anxiety or depression to mental health providers.²¹⁻²⁴ Differences in physicians' comfort and management experience with different behavior problems may be the result of different training experiences. Clinicians who possess greater interest or advanced training in mental health problems may be more likely to provide office-based management for children with behavior problems than clinicians with lesser interest.^{7, 13} This may be related to recent changes in residency training programs which have emphasized the acquisition of knowledge and skills in behavioral management.⁵ For example, family physicians and pediatricians may differ in their training and experience in managing common childhood behavioral problems.^{14, 23} Research also suggests that children with more severe behavioral problems or family dysfunction may be more likely to be referred to mental health providers and less likely to receive primary care treatment.^{3, 12, 25-27} Finally, managed care policies that carve-out behavioral care and limit reimbursement for behavioral management by primary care providers may further limit primary care management and encourage referrals to mental health providers.²⁸

These prior studies were limited in sample sites, variables, or behavioral strategies employed by primary care clinicians. Our primary aim for this study was to identify correlates of initial behavioral management strategies among primary care clinicians participating in the Child Behavior Study, a national study of primary care pediatric providers. Previous analyses of this dataset have identified factors associated with specific types of treatments and referrals provided to children.^{11, 12} For example, Gardner et al. found that clinicians who managed their own patients were more likely to prescribe psychotropic medications.^{11, 12} We sought to extend these findings on individual treatments to identify primary care clinicians' management strategies, i.e. how clinicians manage behavioral problems vis-à-vis other providers and consultants, and to identify correlates of these different strategies. We aimed to primarily test the hypothesis that primary care clinicians would manage mild or transient behavioral problems in the primary care office, but would transfer care to mental health providers if problems were more severe or complex. We also postulated that clinicians with more recent residency training, greater interest in mental health problems, or prior knowledge of specific patients would preferentially manage problems in the office. Finally, we postulated that greater managed care penetration might shift behavioral care to mental health providers through the creation of mental health carve-outs. Our secondary aims were to identify management strategies specific to common types of behavioral problems and to see if they differ from overall management strategies. Findings from this study may contribute to a greater understanding of how behavioral management decisions are made in primary care settings.

Methods

Setting

We performed a secondary analysis of the Child Behavior Study (CBS), which was conducted in 1994–1997 in two large practice-based research networks, the Pediatric Research in Office Settings (PROS) and the Ambulatory Sentinel Practice Network (ASPN).²⁹ PROS is a pediatric research network that was established in 1986 and comprises more than 1500 clinicians in 480 practices in all 50 states and Puerto Rico. ASPN is a family medicine research network that was established in 1978 and consists of approximately 750 clinicians in 148 practices in 43 states and 6 Canadian provinces. ASPN collaborated with the two smaller networks, the Wisconsin Research Network and the Minnesota Academy of Family Physicians Research Network, to expand the number of participating providers. The patients, clinicians, practices, and clinical behaviors of physicians participating in PROS and ASPN are similar to those identified in nationally representative samples in private practice.³⁰ However, minorities and inner city populations may be underrepresented in private practices. The Child Behavior Study was approved by the institutional review boards for the American Academy of Pediatrics, the University of Pittsburgh and the ASPN network. This secondary analysis received an exemption from review by the Institutional Review Board of the Children's Hospital of Philadelphia.

Participants

The pool of potential subjects that participated in the CBS consisted of 22,059 children ages 4 through 15 years old who presented for non-emergent care at participating practices. Children were enrolled only once. Ninety-one percent of eligible children across sites participated. Children with newly identified behavior problems (N=1377) constituted the population for analysis. Children with inadequate or missing data (4.5%) were excluded. In addition, children without behavioral problems (N=17,789), children with existing behavioral problems (N=2893) and children who had Canadian health insurance (N=95) were excluded.

Clinicians completed a practice-related questionnaire assessing professional discipline, practice structure, training, and attitudes related to psychosocial problems. Families of eligible

children were approached for written consent to participate at the time of their clinic visit. Consenting parents completed a brief parent questionnaire, which assessed child functioning, behavior problems, demographics, and family social support. After completion of the visit, the clinician completed a visit-related questionnaire with information on insurance status, the reason for the visit, diagnosis, and management of psychosocial problems.

Measures

Clinicians' recognition or identification of a psychosocial problem in the CBS was considered if there was a positive response to the question, "Is there a new, ongoing, or recurrent psychosocial problem present?" Psychosocial problems were defined as any mental disorders, psychological symptoms, or social situations warranting clinical attention or intervention in the opinion of the primary care clinician. Clinicians could identify one or more of 11 categories of psychosocial problems that were developed based on the World Health Organization's International Classification of Diseases, Ninth Revision, and were refined for this study using focus groups of clinicians.³¹ These categories included children with formal psychiatric diagnoses plus additional children with behavioral symptoms who might not have undergone diagnostic evaluation and/or who might not meet the formal diagnostic criteria for a psychiatric disorder.³² Clinicians were not required to use specific instruments to assess for psychosocial problems. Clinicians also completed the modified Physician Belief Scale (PBS), a 14-item scale that assesses provider orientation to psychosocial aspects of patient care.⁷

Parents were queried on general health status and completed the Pediatric Symptom Checklist (PSC), a 35-item caregiver-reported scale that assesses a child's overall psychosocial functioning.^{33, 34} Parents also completed the Family Apgar, a 5-item scale designed to measure satisfaction with family support and family functioning.³⁵

Clinicians were asked about treatments for behavioral problems rendered at the time of the visit: counseling (clarification of problems, education, support, problem-solving, or behavioral interventions), psychotropic medications (stimulants, non-stimulants, or both), or referrals to mental health providers. Clinicians also indicated if referrals were not made, because the child was already in mental health treatment. The management strategy at the time of a visit reflected how clinicians provided treatment vis-à-vis other providers and was considered the main outcome. Treatment strategy was categorized into four mutually exclusive groups: primary care treatment only (PC), specialty mental healthcare treatment only (MH), joint treatment (JT), or observation (OB). PC refers to office-based counseling and/or psychotropic medication prescriptions provided at the primary care office visit. MH refers to new mental health referrals or lack of new referrals due to ongoing mental health treatment at the time of the visit. JT refers to both primary care treatment and mental health referrals provided or ongoing mental healthcare recognized at the time of the visit. OB was inferred if neither primary care nor mental healthcare were provided at the visit.

Analysis

Independent variables were categorized into child-, family-, provider-, or practice-level factors. Variables were assessed for collinearity using correlation matrices. Univariate associations between independent variables and management strategy, the dependent variable, were assessed using the chi-square test for dichotomous independent variables and one-way ANOVA for continuous independent variables. We selected variables with a p-value less than 0.05 for consideration in multivariate models.

We developed multinomial regression models to examine which independent variables were associated with management strategy, the dependent variable, which was constructed as a four-level unordered categorical variable (PC, MH, JT, OB). Separate logit functions are generated

for each level of the dependent variable compared to the reference category.³⁶ To test the hypothesis that more severely affected children would be preferentially managed by MH, we selected MH as the reference category and compared it to the other levels. In building the full model, we initially developed separate models for child-, family-, provider-, and practice-level independent variables. We initially excluded categories of psychosocial problems to assess problem-independent strategies, but we added these variables after we arrived at our final model. We used backward step-wise regression and examined the log-likelihood ratio ($p < 0.05$) to compare nested to full models. Independent variables that remained in each of the separate child, family, provider, and practice models at the conclusion of the step-wise process were placed into a single model, and the backward selection process was continued to arrive at a final model. Since children were clustered into specific practices, we used a cluster option to account for potential lack of independence among subjects and incorporated robust Huber-White sandwich estimators of variance to compute standard errors.^{37, 38} Next, we added categorical variables representing the 6 most common psychosocial problems into the final model in order to ascertain the explanatory effects of specific behavioral problems on treatment decisions and to explore how treatment strategies differed by the type of behavior problem. The statistical analysis was completed using Stata statistical software, version 9 (Stata Corporation, College Station, TX).

Results

Of the 22,059 children who participated, 1377 (6.2%) were identified with new behavior problems. Among children with newly recognized problems, children with behavioral/conduct problems (40.5%) or attentional/hyperactivity problems (37.3%) constituted the largest categories of children with psychosocial problems (Table 1). Other common non-mutually exclusive categories of behavioral problems included adjustment reaction/reaction to stress (31.5%), physical manifestations (27.1%), other emotional problems (21.8%), and specific developmental delays (13.2%). Other behavioral problems were uncommon.

Primary care only management (PC) consisting of office-based counseling and/or psychotropic medication prescriptions was the most common management strategy and occurred in 49% of visits. Joint (JT) strategies consisting of both primary care and mental healthcare treatments occurred in 29% of visits. Office-based counseling was present in 96% of PC visits and in 94% of JT visits and consisted of problem elicitation, restatement of issues, supportive statements, problem-solving, education, identification of positive and negative behaviors, or recommendation for behavioral interventions. Psychotropic medications were prescribed in 19% of PC visits and 29% of JT visits and consisted mainly of stimulant medications. Mental health only (MH) treatment consisting of either a new mental health referral or recognition of ongoing mental health care was present in 9% of visits. New referrals were made in 56% of MH visits and in 76% of JT visits. Children were already receiving mental health services in 44% of MH visits and in 24% of JT visits. Finally, observation (OB) without counseling, prescription medications, or specialty mental health involvement occurred in only 13% of visits.

Table 2 lists child and family characteristics associated with management strategies. Strategies varied by child characteristics and measures of child behavioral functioning. Children who received PC were more likely to be white, have commercial insurance, or to be living with both parents than children receiving other treatment strategies. Children who received MH were more likely to be either black or Hispanic. Children who received JT were slightly older than children who received other management strategies and were more likely to have Medicaid insurance. Children who received OB were more likely to be Hispanic, to lack health insurance, and to have parents with a high school education or less. When measures of behavioral functioning were examined, children who received JT were more likely to have psychiatric

comorbidities and to report fair or poor health status, psychosocial dysfunction, and impaired family functioning than children receiving other treatment strategies.

Table 3 lists provider characteristics associated with management strategies. Treatment strategies varied by provider type and the mental health orientation of providers. Pediatricians were more likely to provide JT, family physicians were more likely to provide MH, and other providers including nurse practitioners and physicians' assistants were more likely to provide OB than other strategies. Clinicians with the lowest mean PBS scores, indicative of greater psychosocial orientation, were more likely to provide PC or JT than other strategies. There was no difference in management strategy by whether providers completed training before or after 1990 or by whether they recognized patients as their own. Clinicians who were women or who completed residency training were more likely to provide children with MH than other strategies.

Table 3 lists practice characteristics associated with management strategies. Treatment strategies differed by practice structure and location. Children who received PC or JT were more likely to be seen in group practices, while children who received OB or MH were more likely to be seen in solo or multispecialty practices. In addition, children from urban practices were more likely to receive JT, whereas children from rural practices were more likely to receive OB. There was no difference in treatment strategy by the number of networks or managed care plans a practice participated in or by the region of the country.

Multivariate Analysis

In the final multivariate model, children with psychiatric comorbidities had lesser odds of OB or PC but greater odds of receiving JT than MH (Table 4). Similarly, children with psychosocial dysfunction (elevated PSC scores) had lesser odds of OB or PC than MH. These children were as likely to be managed with JT as MH. With regard to provider characteristics, clinicians who were male or who had greater psychosocial orientation had greater odds of either PC or JT than MH. Residency-trained clinicians were more likely to provide MH than JT. Non-modifiable child and family characteristics including race, gender, and family size did not remain in the model. Additionally, year of training, provider recognition of patients, and all practice-level variables were not significantly related to management strategies.

To assess the explanatory power of individual behavioral problems, we entered the six most common behavioral problems into the final model. The model R^2 increased minimally from 0.09 to 0.11. The addition of behavioral problems had little effect on the other variables in the model (data not shown). Children with behavioral/conduct or emotional problems were less likely to be managed by OB than children with other behavioral problems. Children with physical manifestations or adjustment reactions were more likely to be managed with PC or JT. Children with specific developmental delays were more likely to be managed by MH. Finally, children with attentional/hyperactivity problems were managed similar to children in the overall model. Restricting the model to children with attentional/hyperactivity problems had little effect on the point estimates of variables in the model.

Discussion

In this nation-wide study of primary care clinicians, we found that certain child and provider characteristics were associated with initial behavioral management strategies. Although clinicians managed individual behavioral problems differently, children with more severe behavioral problems, as evidenced by comorbidity, were more likely to receive joint management involving primary care and specialty mental healthcare. Similarly, clinicians who had stronger beliefs about psychosocial aspects of care or who were male were more likely to manage behavioral problems using either a joint or primary care only management approach.

Residency-trained physicians were more likely to have newly recognized behavioral problems managed by a mental health provider. Practice and managed care factors had little or no association with these management strategies.

Our finding that primary care providers adopted joint behavioral management strategies for children with more severe problems does not support our hypothesis that these children would have their care transferred to mental health providers. This finding, however, is consistent with results from studies of physical health in children. For example, Perrin et al. examined generalist and specialist care patterns for children with chronic health conditions in four state Medicaid plans and found that generalist-specialist arrangements involving joint care contained children with the highest morbidity relative to generalist only or specialist predominated care.³⁹

Why primary care clinicians chose to initially manage increasingly complex and severe behavioral problems jointly with behavioral care specialists rather than transfer care as we had hypothesized is not clear. It may be that children with more severe problems have comorbid health conditions that make management by a single provider, either mental health or primary care, difficult. It also may be that clinicians who invest time and energy in certain complex patients desire to remain involved in their care. This speculation is supported by our finding that children with more than one behavioral problem were more likely to receive joint care than all other management strategies.

Our results concerning provider psychosocial orientation suggest that certain clinician characteristics are associated with management strategies independent of child characteristics. Specifically, we found that clinicians who had a greater interest in psychosocial aspects of care were more likely to select joint care as a management strategy. These providers may recognize the importance of having mental health specialty input on their patients and/or may have developed consultative ties with specific mental health providers that facilitate shared management. Over the past few years, the Accreditation Council for Graduate Medical Education, the main governing body responsible for the accreditation of residency training, has placed greater emphasis on behavioral care knowledge and educational experiences.⁴⁰ It is not clear whether greater behavioral health training as part of graduate or continuing medical education improves provider attitudes toward behavioral management.

There are limitations to these findings that should be noted. First, our data are cross-sectional and were derived from a single ambulatory visit. We were not able to capture subsequent visits to determine how management decisions evolved over time. Second, our data did not include information on aspects of care coordination between primary care and mental health providers. As such, we do not know to what degree joint care reflects care that is collaborative involving sharing of responsibilities and information. Third, our data were somewhat dated from the mid-1990s, and we had limited information available in this dataset on managed care policies. It is possible that current managed care measures that most influence behavioral management were absent in our dataset. It is also possible that provider practices have changed in the decade since.

Despite these limitations, our results have important policy and research implications for behavioral care management. First, our finding that primary care providers were more likely to select a joint management approach for patients with more severe behavioral problems suggests that primary care and mental health care providers may benefit from collaboration on treatment plans. Better coordination of care may improve provider satisfaction and increase the likelihood that patients follow through on mental health referrals.⁴¹ Little is known regarding how collaborative care can be implemented. Research should be directed to identifying feasible collaborative models of behavioral care and testing them in real world

settings. Second, the finding that providers with greater psychosocial orientation were more likely to select a primary care or joint management strategy suggests that training experiences that promote behavioral educational experiences may encourage shared management strategies. Future research should investigate the effects of educational interventions that improve behavioral training on management strategies.

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Table 1

Categories of Behavioral Problems

| Behavioral Problem | N=1377 (%) |
|--|------------|
| Adjustment reaction/reaction to stress | 434 (31.5) |
| Behavioral/conduct problems | 557 (40.5) |
| Other emotional problems (e.g. sadness) | 300 (21.8) |
| Attention deficit/hyperactivity problems | 513 (37.3) |
| Physical manifestations (e.g. enuresis) | 373 (27.1) |
| Specific developmental delays | 182 (13.2) |
| Childhood psychosis | 13 (1.0) |
| Drug &/or alcohol abuse/dependence | 28 (2.0) |
| Mental retardation | 28 (2.0) |
| Other | 159 (11.6) |

Table 2
Child/Family Characteristics by Management Strategies

| Characteristic | Observation N=180 | Primary Care N=673 | Mental Health N=126 | Joint Care N=398 | P-value |
|---------------------------------|----------------------|-----------------------|------------------------|---------------------|---------|
| Age in years (SD) | 8.2 (3.1) | 8.1 (3.3) | 8.6 (2.9) | 8.9 (3.3) | 0.001 |
| Male (%) | 105 (58.3) | 392 (58.3) | 76 (60.3) | 238 (59.8) | 0.94 |
| Race (%) | | | | | |
| White | 136 (76.8) | 559 (83.7) | 91 (72.8) | 312 (79.0) | 0.01 |
| Black | 12 (6.8) | 42 (6.3) | 18 (14.4) | 38 (9.6) | |
| Hispanic | 20 (11.3) | 53 (7.9) | 14 (11.2) | 36 (9.1) | |
| Other | 9 (5.1) | 14 (2.1) | 2 (1.6) | 9 (2.3) | |
| Insurer (%) | | | | | |
| Private | 103 (59.2) | 487 (73.8) | 70 (57.9) | 227 (58.4) | <0.001 |
| Medicaid | 56 (32.2) | 138 (20.9) | 43 (35.5) | 146 (37.5) | |
| Uninsured | 15 (8.6) | 35 (5.3) | 8 (6.6) | 16 (4.1) | |
| Poor/fair health status (%) | 7 (3.9) | 20 (3.0) | 11 (8.7) | 35 (8.8) | <0.001 |
| Comorbidity (%) | 68 (37.8) | 298 (44.3) | 68 (54.0) | 300 (75.4) | <0.001 |
| High PSC Score (%) [*] | 34 (19.0) | 158 (23.6) | 55 (43.7) | 215 (54.0) | <0.001 |
| Low FA Score (%) [†] | 26 (14.9) | 106 (16.1) | 27 (22.5) | 109 (28.0) | <0.001 |
| Parents living together (%) | 111 (61.7) | 496 (73.7) | 65 (51.6) | 230 (57.8) | <0.001 |
| Parent Education Level (%) | | | | | |
| High School | 66 (36.7) | 188 (27.9) | 35 (27.8) | 134 (33.8) | 0.02 |
| >High School | 89 (49.4) | 355 (52.8) | 66 (52.4) | 216 (54.3) | |
| College | 25 (13.9) | 130 (19.3) | 25 (19.8) | 48 (12.6) | |

* Pediatric Symptom Checklist (PSC) is a measure of child psychosocial functioning with high scores (≥ 24 if ages 4–5 or ≥ 28 if ages 6–18 years) indicative of psychosocial dysfunction.

[†] Family Apgar (FA) is a measure of family social support with low scores (≤ 5) indicative of impaired family functioning.

Table 3
 Provider/Practice Characteristics by Management Strategy

| Characteristic | Observation N=180 | Primary Care N=673 | Mental Health N=126 | Joint Care N=398 | P-value |
|------------------------------------|----------------------|-----------------------|------------------------|---------------------|---------|
| Discipline (%) | | | | | |
| Other | 12 (6.8) | 26 (3.9) | 2 (1.6) | 13 (3.3) | 0.01 |
| Family practice | 39 (21.7) | 101 (15.0) | 30 (23.8) | 58 (14.6) | |
| Pediatrics | 129 (71.7) | 546 (81.1) | 94 (74.6) | 327 (82.2) | |
| Mean PBS score (SD) * | 28.3 (7.1) | 27.5 (6.7) | 29.5 (7.0) | 27.0 (6.6) | 0.002 |
| Male provider (%) | 98 (54.4) | 382 (56.8) | 53 (42.1) | 227 (57.0) | <0.001 |
| Mean Provider Age (SD) | 43.4 (8.9) | 44.2 (8.7) | 42.8 (6.8) | 43.4 (8.8) | 0.21 |
| Training completed after 1990 (%) | 34 (19.2) | 87 (13.9) | 12 (9.5) | 63 (16.4) | 0.08 |
| Completed Residency | 89 (49.4) | 335 (49.8) | 75 (59.5) | 171 (43.0) | 0.009 |
| Provider is PCP (%) [†] | 132 (73.3) | 533 (79.2) | 104 (82.5) | 324 (81.4) | 0.12 |
| Practice structure (%) | | | | | |
| Solo | 23 (12.9) | 68 (10.3) | 17 (13.5) | 48 (12.5) | 0.02 |
| Group practice | 77 (43.0) | 369 (55.7) | 53 (42.1) | 191 (48.4) | |
| Multispecialty | 79 (44.1) | 226 (34.1) | 56 (44.4) | 156 (39.5) | |
| Network size (SD) [‡] | 4.7 (3.7) | 4.8 (3.4) | 5.1 (4.0) | 4.9 (3.3) | 0.78 |
| High Managed Care [§] (%) | 30 (16.7) | 105 (15.6) | 14 (11.1) | 60 (15.1) | 0.57 |
| Practice Location (%) | | | | | |
| Urban, Inner-city | 19 (10.6) | 51 (7.6) | 11 (8.7) | 50 (12.6) | 0.003 |
| Urban, Non-inner-city | 23 (12.8) | 123 (18.3) | 23 (18.3) | 85 (21.4) | |
| Suburban | 66 (36.8) | 302 (44.9) | 59 (46.8) | 144 (36.2) | |
| Rural | 72 (40.0) | 197 (29.3) | 33 (26.2) | 119 (29.9) | |
| Region of country (%) | 55 (31.6) | 188 (28.6) | 34 (28.1) | 112 (29.0) | 0.40 |
| Northeast | 41 (23.6) | 178 (27.1) | 28 (23.1) | 94 (24.4) | |
| South | 36 (20.7) | 170 (25.8) | 34 (28.1) | 115 (29.8) | |
| Midwest | 42 (24.1) | 122 (18.5) | 25 (20.7) | 65 (16.8) | |
| West | | | | | |

* Physician Belief Scale (PBS) is a measure of provider psychosocial orientation with lower scores reflecting better psychosocial orientation.

[†] PCP refers to primary care provider.

[‡] Network size refers to the average number of network plans that a practice participates in and represents an indirect measure of practice volume.

[§] High managed care refers to whether 60% or more of a practice's patients are in managed care plans.

Table 4
Factors Associated with Management Strategies in Children with Newly Identified Behavioral Problems*

| Factors | Observation OR(95% CI) | Primary Care Only OR(95% CI) | Joint Care OR(95% CI) |
|-----------------------------|---------------------------|---------------------------------|--------------------------|
| Age | 0.98 (0.91–1.05) | 0.96 (0.90–1.01) | 1.02 (0.96–1.08) |
| High PSC Score [†] | 0.32 (0.18–0.58) | 0.48 (0.31–0.74) | 1.36 (0.87–2.11) |
| Psychiatric Comorbidity | 0.61 (0.36–1.05) | 0.85 (0.55–1.30) | 2.49 (1.58–3.91) |
| Insurance | | | |
| Private | Reference | Reference | Reference |
| Medicaid | 1.24 (0.67–2.30) | 0.65 (0.39–1.10) | 1.01 (0.63–1.62) |
| No insurance | 1.60 (0.56–4.58) | 0.77 (0.31–1.93) | 0.55 (0.24–1.27) |
| Living with Both Parents | 1.41 (0.83–2.40) | 2.03 (1.29–3.18) | 1.32 (0.83–2.10) |
| PBS Score [‡] | 1.35 (0.89–2.06) | 1.54 (1.10–2.14) | 1.73 (1.23–2.44) |
| Male Provider | 1.79 (1.08–2.99) | 2.05 (1.25–3.38) | 1.86 (1.10–3.14) |
| Residency Trained | 0.74 (0.41–1.33) | 0.70 (0.42–1.17) | 0.49 (0.30–0.81) |

* Multinomial model of behavioral management decisions with exclusion of behavioral conditions assuming clustering at the level of the practice and use of robust Huber-White sandwich estimators of variance. Reference group is mental health treatment alone (MT).

[†] Pediatric Symptom Checklist (PSC) is a measure of child psychosocial functioning with high scores (≥ 24 if aged 4–5 or ≥ 28 if aged 6–18 years) indicative of psychosocial dysfunction.

[‡] Physician Belief Score (PBS) is a measure of provider psychosocial orientation. PBS has been rescaled so that higher scores are indicative of greater psychosocial orientation.