

Child Sex Differences in Primary Care Clinicians' Mental Health Care of Children and Adolescents

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Background: Sex differences in the medical and mental health care of adults are well established.

Objective: To study the effect of child patient's sex on whether primary care clinicians (PCCs), including pediatricians, family physicians, and nurse practitioners, found or treated mental health problems in primary care settings.

Design: The data were collected by clinicians and parents from 21 065 individual child visits (50.3% girls) in 204 primary care practices.

Methods: Each PCC enrolled a consecutive sample of approximately 55 children and adolescents aged 4 to 15 years. Parents filled out questionnaires, including the Pediatric Symptom Checklist, before seeing the clinician. Clinicians completed a survey after the visit about the psychosocial problems and recommended treatments, but

they did not see the results of the Pediatric Symptom Checklist or any other data collected from the parents.

Results: Boys were more likely to be seen for a mental health–related visit and by a clinician who identified them as “my patient.” Boys with parent-reported symptom profiles that were similar to those of girls were more likely to be identified as having attention-deficit/hyperactivity problems or behavior or conduct problems and less likely to be identified as having internalizing problems. Adjusting for parent-reported symptoms, PCCs were more likely to prescribe medications for boys. Child sex differences in referrals to mental health specialists and the provision of counseling to families were not statistically significant.

Conclusion: There are substantial sex differences in the mental health care of children in the primary care system.

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MOST CHILDREN with mental health problems do not receive evaluative services or treatment in specialty care settings; rather, they are seen in primary care settings.^{1,2} Previous studies have shown that boys are more likely than girls to receive a mental health diagnosis in the primary care setting³ and to receive specialty mental health services until late adolescence.⁴ However, these studies have not examined whether boys and girls with a similar degree and type of mental health problem are labeled similarly or receive comparable care, nor have they explored the roles of clinicians or practice-related factors in the differential care that boys and girls receive.

There are many reports of sex differences in the diagnosis and treatment of adult medical and psychiatric symptoms. For example, women with end-stage renal disease are less likely to be referred for a transplant than men with similar diagnoses or severity of illness.⁵⁻⁸ A parallel bias occurs

in the treatment of cardiovascular disease.⁹⁻¹⁷ However, physicians are more likely to prescribe activity restrictions for women with acute illnesses.¹⁸

In mental health care, women are more likely than men to receive the diagnosis of depression and anxiety for the same symptoms.¹⁹⁻²² Some assessment instruments are biased against women in the sense that they include items on which women are more likely to be scored as dysfunctional even though the items do not correlate with a gold-standard measure of dysfunction.²³ Women are also treated more aggressively with psychopharmacologic medication than men, even after adjustment for rates of health care utilization or morbidity.^{24,25}

We have few data on sex differences in the diagnosis and treatment of pediatric medical disorders with the exception of asthma; studies have reported that relative to boys, girls with this condition are underdiagnosed and undertreated.^{26,27} Sex differences in the identification and treatment of mental health problems in the pri-

METHODS

SITES AND SETTINGS

Several primary care research networks participated in this study: the Ambulatory Sentinel Practice Network (Denver, Colo),³³ Pediatric Research in Office Settings (Elk Grove Village, Ill),³⁴ the Wisconsin Research Network (Madison), and the Minnesota Academy of Family Physicians (St Paul). Of the 204 practices included in this analysis, 30% were urban, 38% were suburban, and 32% were rural.

This report includes 395 of the 401 clinicians participating in these practices (the other 6 were dropped because they followed the study procedures incorrectly). Prior research from the 2 largest networks, the Ambulatory Sentinel Practice Network and Pediatric Research in Office Settings, supports the comparability of patients, clinicians, and practices in primary care network studies with that identified in national samples.³⁵⁻³⁸ In addition, we compared participating pediatricians with a random sample of pediatricians from the American Academy of Pediatrics on demographics and practice characteristics.³⁹ We found no important differences between participants and other physicians.²⁸

SAMPLE

Each clinician enrolled a consecutive sample of approximately 55 children and adolescents aged 4 to 15 years (mean±SD, 8.8±3.2 years) requiring nonemergency care with the consent of a parent or primary caretaker. We enrolled a child only once and excluded children seen for procedures only. There were 24 183 eligible children, of whom 22 059

participated in the study. Eligible children were not recruited if the parent refused (63% of eligible but nonparticipating children), the office staff overlooked the opportunity to recruit (25%), or the family dropped out of the study (12%).

In addition, we examined clinician or practice characteristics that might affect patient participation, including clinician's discipline, geographic region, practice population size, percentage of managed care patients, and clinician's attitudes toward mental health treatment. Clinicians located in the West and South seemed to include a higher percentage of their eligible participants (89%-94% for each). None of the other measured sources of selection bias were statistically significant.

Of the 22 059 children in the study, 909 (4.1%) had missing data sufficient to preclude further analyses, resulting in a study sample of 21 065 children (10 588 girls and 10 477 boys). Children were most frequently accompanied by their mothers (86.0% of visits). The children were 6.4% African American and 7.8% Hispanic. In 55.4% of families, at least 1 parent had more than a high school education, and in 21.6%, at least 1 parent had an education above the college level. In 28.5% of families, the parents were unmarried or separated. We compared the ages and sexes of participating children with those of eligible but nonparticipating children and found no differences.

PROCEDURE

Parents filled out a parent visit questionnaire while waiting to see the clinician. The questionnaire included

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mary care setting would significantly affect the mental health services that children and adolescents receive.

We carried out a study on the effect of patient sex on primary care clinicians' (PCCs') identification of mental health problems in children and adolescents and the consequent effect on treatment recommendations. Although we have reported sex differences in earlier studies of these data (the Child Behavior Study),²⁸⁻³⁰ in this one we examined whether PCCs identified similar mental health problems in boys and girls when these children had similar parent-reported mental health symptoms. We have previously shown that when PCCs identify a child as having a mental health problem, they are equally likely to offer counseling to the family, prescribe a medication, or refer the child to a specialist.²⁹ That study showed that PCCs are unbiased with respect to sex in their treatment decision making (they are similarly unbiased with respect to race and ethnic status³¹). However, bias in the identification of problems could still result in a disparity in the treatment children receive for mental health problems. Therefore, we asked whether boys and girls with similar profiles of mental health symptoms were equally likely to receive mental health treatment regardless of whether PCCs had identified them as having a problem. We also studied factors that might help explain sex differences in PCCs' care of children's mental health problems, such as the clinician's sex,³⁰ or visit characteristics that could influence care. For example, PCCs are more likely to recognize psychosocial problems in their own patients,^{28,32} and they are more

likely to treat a problem during a visit that they perceive to be mental health related.²⁹

RESULTS

CHILD SEX DIFFERENCES IN PCC AND VISIT CHARACTERISTICS

Boys and girls had similar family demographics and insurance coverage. Children were likely to be seen by a PCC of the same sex (56.9% of girls were seen by women, and 55.7% of boys were seen by men; odds ratio [OR] = 1.66; 95% CI, 1.52-1.82). Primary care clinicians were also more likely to say that a boy was "my patient" (61.7% of boys vs 56.3% of girls; OR = 1.25; 95% CI, 1.16-1.35). One reason was that boys were more likely to be seen by male clinicians, and male clinicians described 66.0% of their patients as "my patient" compared with 51.1% for female clinicians (the OR for the association between "my patient" and child sex, adjusted for PCC's sex, was 1.16; 95% CI, 1.09-1.24).

There were also striking differences in the way PCCs characterized visits. Primary care clinicians were more likely to characterize boys' visits as being explicitly for mental health (3.7% of boys vs 1.3% of girls; OR = 1.67, adjusted for parental reports of attention problems, externalizing symptoms, and internalizing symptoms; 95% CI, 1.36-2.04). Among children in whom clinicians identified a mental health problem, for 80.5% of the boys, clinicians said that

demographic data and the Pediatric Symptom Checklist (PSC), a mental health screening instrument.^{40,41} The clinician did not see the completed PSC or other data from the parent visit questionnaire.

MEASURES

Pediatric Symptom Checklist

The PSC is a 35-item questionnaire for parents about a child's symptoms and behaviors.^{42,43} Parents rate each symptom as occurring "often" (2 points), "sometimes" (1 point), or "never" (0 points). Parents completed the PSC after providing informed consent and before their visit with the PCC. We used 3 recently developed subscales⁴⁴ of the PSC: (1) attention-deficit/hyperactivity problems (eg, "Does this child have trouble concentrating?"); (2) externalizing problems that primarily involve conflicts with others ("Does this child fight with other children?"); and (3) internalizing problems that mainly involve inner distress on the part of the child ("Does this child feel hopeless?"). These subscales have high internal consistency ($\alpha \geq .79$) and strong agreement with diagnoses based on the Screen for Child Anxiety Related Emotional Disorders⁴⁵ and Inattention/Overactivity With Aggression (IOWA) Conners⁴⁶ parent report instruments (areas under the receiver operating characteristic curves ranged from 82% to 90%).

Clinician-Identified Mental Health Problems

Clinicians completed a survey after seeing the patient. They checked whether the child "is my primary care patient" and

wrote down their understanding of the reason for the visit, including whether the visit was mental health related. Finally, the survey included a checklist of child psychosocial problems that the clinician might have found (clinicians could check more than 1 problem). For this analysis, we included only mental health problems, such as "attention-deficit/hyperactivity problems," "behavior or conduct problems," and internalizing problems (either "adjustment reaction/reaction to stress" or "other emotional problems [eg, anxiety or sadness]"). We excluded "childhood psychosis" because only 42 cases were identified. For each problem, the PCC indicated whether it was new or had been previously recognized.

Clinicians' Treatments

The clinicians also answered 3 questions about treatments administered during the visit: (1) "Was counseling provided in your office today?" (hereafter, "counseling"); (2) "Were psychotropic medications prescribed for this patient for this problem today?" ("medication"); and (3) "Did you refer this patient for mental health treatment today?" ("referral").

STATISTICAL ANALYSIS

We calculated logistic regressions using Stata statistical software version 7 (Stata Corp, College Station, Tex). Odds ratios are reported with 95% confidence intervals (CIs) instead of significance values. We examined sex differences in parent-reported symptoms by computing mixed-models analysis of variance using SAS statistical software version 8 (SAS Institute Inc, Cary, NC). All analyses included corrections for the clustering of patients within PCC.

the problem had been identified on a previous visit, vs 70.7% of the girls (OR=1.51, adjusted for parental reports of child symptoms; 95% CI, 1.29-1.76).

CHILD SEX DIFFERENCES IN THE MENTAL HEALTH PROBLEMS FOUND BY CLINICIANS

Next, we asked whether PCCs were equally likely to find mental health problems in boys and girls. **Table 1** presents the unadjusted rates at which PCCs found problems and the rates adjusted for PCC's sex, parent-reported symptoms (ie, scores on the subscales of the PSC) (**Table 2**), whether the visit was mental health related, whether the problem was previously known, and whether the clinician considered the child "my patient." Primary care clinicians were more likely to find attention-deficit/hyperactivity problems in boys than girls (adjusted OR=2.31; 95% CI, 1.95-2.73). Similarly, PCCs were more likely to find behavior or conduct problems in boys (adjusted OR=1.29; 95% CI, 1.12-1.48). However, PCCs were less likely to find internalizing problems in boys than in girls (adjusted OR=0.74; 95% CI, 0.63-0.86).

SEX DIFFERENCES IN RECEIPT OF MENTAL HEALTH TREATMENT

Table 3 indicates the proportions of children receiving referrals to mental health specialists, counseling, or medication, both unadjusted and adjusted for parent-reported

symptoms, PCC's sex, whether the visit was mental health related, whether the problem was previously known, and whether the clinician considered the child "my patient." At every age, the unadjusted data showed that boys were more likely to receive counseling, medication, or a referral to a specialist than girls. After adjusting for these factors, however, the sex differences in referral rates were not statistically significant (adjusted OR=0.95; 95% CI, 0.79-1.15). Similarly, after adjustment there were no sex differences in the rates at which children received counseling (adjusted OR=1.05; 95% CI, 0.91-1.20). Nevertheless, after adjusting for these factors, PCCs were substantially more likely to prescribe medication for boys than for girls (adjusted OR=1.67; 95% CI, 1.35-2.07).

COMMENT

SEX DIFFERENCES IN THE PRIMARY MENTAL HEALTH CARE OF CHILDREN

Prior studies of sex disparities in health care have paid little attention to visit characteristics. Compared with girls, we found that boys with similar parent-reported symptoms were more likely to have a visit that the PCC perceived as mental health related. This may have occurred because parents were more likely to label a boy's behavior as a mental health problem. Alternately, whereas parents may have labeled boys' and girls' behavior similarly, they may have been more likely to seek medical care

Table 1. Mental Health Problems Found by PCCs: Percentage by Child Sex and Age, Unadjusted and Adjusted*

Treatment	Child Sex	Age, y							
		4-6 (n = 7769)		7-9 (n = 5506)		10-12 (n = 4572)		13-15 (n = 3216)	
		U	A	U	A	U	A	U	A
Attention-deficit/hyperactivity problems	F	2.3	0.3	5.1	1.0	5.6	0.9	3.7	0.7
	M	6.4	1.5	20.7	2.2	20.2	2.1	15.5	1.7
Behavior or conduct problems	F	4.5	2.5	4.0	2.0	4.0	1.4	5.4	1.9
	M	8.3	3.2	13.2	2.6	11.5	1.8	10.1	2.4
Internalizing problems	F	3.5	2.8	5.2	2.8	6.6	3.1	9.5	3.3
	M	4.1	2.1	7.4	2.1	9.2	2.3	7.7	2.4

*N = 21 063 (age data were missing for 2 children). PCC indicates primary care clinician; U, unadjusted; and A, adjusted. Data in the U columns report the actual proportions observed in the study. Data in the A columns present these proportions adjusted for parental reports of child symptoms, the sex of the clinician, whether the clinician reported that the visit was mental health related, whether the visit was for a previously seen problem, and whether the clinician considered the child "my patient." The adjusted rates estimate the chances of being identified as having a given problem for boys and girls with identical profiles concerning these factors. Specifically, the adjusted rates are the estimated rates for a boy or girl who is at the sample mean on all adjusted factors. The adjusted rates are therefore lower than the unadjusted rates because a "typical" child (one who is at the mean on these factors) was unlikely to be identified as having a mental health problem.

Table 2. Parental Reports of Symptoms on the Pediatric Symptom Checklist*

PSC Subscale	Sex	Age, y			
		4-6 (n = 7769)	7-9 (n = 5506)	10-12 (n = 4572)	13-15 (n = 3216)
Attention-deficit/hyperactivity problems	F	2.42 (2.11)†	2.47 (2.34)†	2.21 (2.31)†	2.10 (2.32)†
	M	3.12 (2.29)	3.80 (2.77)	3.54 (2.77)	3.04 (2.71)
Behavior or conduct problems	F	3.88 (2.60)†	3.30 (2.69)†	3.12 (2.79)†	2.97 (2.68)†
	M	4.58 (2.64)	4.35 (2.91)	4.23 (3.09)	3.88 (2.99)
Internalizing problems	F	1.30 (1.44)	1.88 (1.86)†	2.11 (2.00)†	2.45 (2.18)†
	M	1.38 (1.54)	2.19 (2.02)	2.34 (2.13)	2.24 (2.21)

*Data are presented as mean (SD) for all children in each age-by-sex group. N = 21 063 (age data were missing for 2 children). The criterion scores for screening positive on each subscale are 5 or higher for attention-deficit/hyperactivity problems, 7 or higher for externalizing problems, and 7 or higher for internalizing problems. PSC indicates Pediatric Symptom Checklist.⁴⁴

†Girls and boys within this age group differed on this variable at $P < .001$.

Table 3. Mental Health Treatments Delivered by PCCs: Percentages by Child Sex and Age, Unadjusted and Adjusted*

Treatment	Child Sex	Age, y							
		4-6 (n = 7769)		7-9 (n = 5506)		10-12 (n = 4572)		13-15 (n = 3216)	
		U	A	U	A	U	A	U	A
Referral	F	1.5	1.3	2.4	1.5	2.3	1.1	3.3	1.7
	M	2.6	1.2	5.0	1.4	4.1	1.1	4.6	1.6
Counseling	F	4.6	4.1	4.9	3.9	4.9	3.0	6.1	3.0
	M	7.4	4.3	11.4	4.0	9.7	3.2	6.8	3.1
Medication	F	0.9	0.2	2.6	0.6	2.9	0.7	2.8	0.6
	M	2.6	0.3	11.0	0.9	13.1	1.1	9.6	1.0

*N = 21 063 (age data were missing for 2 children). PCC indicates primary care clinician; U, unadjusted; and A, adjusted. Data in the U columns report the actual proportions observed in the study. Data in the A columns present these proportions adjusted for parental reports of child symptoms, the sex of the clinician, whether the clinician reported that the visit was mental health related, whether the visit was for a previously seen problem, and whether the clinician considered the child "my patient."

for such behavior when exhibited by a boy. Finally, because we relied on the PCC's report, it is possible that the clinician was more likely to label the visit as mental health related when the patient was a boy.

Both sexes were more likely to be seen by a PCC of the same sex, consistent with surveys of adolescents' preferences⁴⁷ and presumably parents' preferences. We have

previously shown that PCC's sex has little direct effect on the recognition or treatment of mental illness.³⁰ However, there is a small but interesting indirect effect of clinician's sex on recognition. Boys were more likely to be seen by a clinician who identified them as "my patient." This appears to be a consequence of the tendency for children to be seen by PCCs of the same sex. Male clinicians

are more likely to practice full-time and to work in settings that permit more continuous relationships with patients.⁴⁸ Thus, sex differences in the career opportunities or choices of clinicians may have led to sex differences in patient care because patients self-selected PCCs based on this criterion.

We found that when PCCs examined boys and girls with similar levels of parent-reported problems and in a similar visit context, they were more likely to find attention-deficit/hyperactivity or behavior or conduct problems in boys. These are stereotypically “boy” problems. Similarly, they were more likely to find internalizing problems (stereotypically “girl” problems) in girls. However, we cannot say whether PCCs or parents are the source of these apparent biases. How patient sex affects the identification of disorders in children is poorly understood.^{49,50} To our knowledge, this is the first study to document this problem in child and adolescent mental health care. Future research should investigate the roles of the clinician, parent, and patient in the categorization of mental health problems.

We also found that when a boy and a girl had similar levels of parent-reported symptoms, PCCs were much more likely to provide medication to the boy. However, in previous studies we found that when a PCC had discovered a mental health problem in a child, there were no sex differences in how the problem was treated.²⁹ Hence, PCCs were not sex-biased in their treatment decision making about children. The sex differences in how children with similar levels of parent-reported symptoms were treated appeared to result from the higher rates at which PCCs found attention-deficit/hyperactivity problems and behavior or conduct problems in boys. The medication difference, in particular, was almost entirely a result of higher rates of apparent attention-deficit/hyperactivity problems among boys because stimulants were the only psychotropic medications prescribed by the PCCs.^{29,51}

LIMITATIONS

The Child Behavior Study was designed to obtain a large sample size and to be conducted in working office settings. Therefore, we were not able to use gold-standard diagnostic procedures, nor did we determine whether any of the participating PCCs were qualified to make such diagnoses; we knew that very few PCCs have such training. Thus, we cannot say whether PCCs underidentified or overidentified mental health problems for either sex. Moreover, we cannot determine whether a particular pattern of bias represents undertreatment or overtreatment of either sex (for example, are girls undertreated for attention problems, or are boys overtreated?). A report from a third party such as a teacher might have helped clarify this issue. Clinicians were aware that a study of PCC care of child psychosocial problems was in progress, and this may have affected their behavior. Finally, the participating clinicians may not be fully representative of all PCCs in the United States. Although we have some evidence that the participating pediatricians resembled larger samples of pediatricians, we have no evidence concerning family physicians or nurse practitioners.

What This Study Adds

Sex differences in the medical and mental health care of adults are well established. We also know that there are higher rates of identification and treatment of mental health problems in boys compared with girls. However, we do not know whether boys and girls with similar problems have comparable chances of being identified and treated by PCCs.

We found evidence of sex biases in the identification and treatment of children's mental health problems: boys with parent-reported symptom profiles that were similar to those of girls were more likely to be identified as having attention-deficit/hyperactivity problems or behavior or conduct problems and less likely to be identified as having internalizing (ie, depression or anxiety) problems. In addition, PCCs were more likely to provide medication for boys compared with girls with the same level of symptoms. Future research is needed to clarify whether these important sex differences result from parents' presentation of boys' and girls' problems or the way clinicians differentially process information about boys and girls.

CONCLUSIONS

We found substantial disparities in PCCs' identification of boys and girls with similar parent-reported symptoms. These disparities in the identification of mental health problems produce differences in their treatment.

Our findings do not identify the source of the apparent sex bias in the identification of mental health problems in children. The bias may result from how parents describe these children; perhaps they are more urgent in seeking services for boys. Alternately, it may result from how PCCs process information about these children in finding problems: they may see a problem as corresponding to a stereotype about sex-typical mental disorders. The bias could also result from both parent and clinician factors. These problems may be termed the *direct* consequences of child sex on PCCs' finding and treatment of mental health problems. There were also indirect consequences. We found that boys were more likely than girls to be seen during visits that PCCs viewed as mental health related and that PCCs were more likely to find and treat mental health problems during such visits. Moreover, we found that boys were more likely than girls to be seen by PCCs who considered them their own patients. This occurred in part because boys were seen by male clinicians, who are more likely to practice in a setting that supports continuity of care. Clinicians who saw their own patients were, in turn, substantially more likely to find and treat mental health problems. Thus, one component of the sex disparity in the rates at which PCCs found and treated mental health problems is an indirect result of patients' preferences to be treated by a physician of the same sex. This shows that sex differences in career opportunities for clinicians create sex equity issues for patients as well.

To remedy the disparities in the finding and treatment of children's mental health problems, we need to consider how to improve both the screening and identification processes used by PCCs and communication between parents and clinicians about these issues.⁵² To these ends,

we believe that clinicians should resist the trend toward practice patterns that depersonalize care.⁵³ Each child should be considered "my patient" by some physician, who will then be better prepared to recognize, track, and effectively treat mental health problems if they do occur.

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