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Access to care for children with emotional/behavioral difficulties

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Abstract

Emotional/behavioral difficulties (EBD) are increasingly diagnosed in children, constituting some of the most common chronic childhood conditions. Left untreated, EBD pose long-term individual and population-level consequences. There is growing evidence of disparities in EBD prevalence by various demographic characteristics. This paper builds on this research by examining disparities in access to medical care for children with EBD. Using data on sample children aged 4-17 from 2008-2011 of the United States National Health Interview Survey (n=29,493), we investigate: 1. Whether having EBD affects access to care (modeled as delayed care due to cost and difficulty making an appointment); and 2. The role demographic characteristics, health insurance coverage, and frequency of service use play in access to care for children with EBD. Results indicate that children with EBD experience issues in accessing care at more than twice the rate of children without EBD, even though they are less likely to be uninsured than their counterparts without EBD. In multivariable models, children with EBD are still more likely to experience delayed care due to cost and difficulty making a timely appointment, even after adjusting for frequency of health service use, insurance coverage, and demographic characteristics.

Keywords

Access to care; children; emotional/behavioral difficulties; insurance

Emotional and behavioral difficulties (EBD) are among the most common chronic conditions in children (Pastor et al., 2012), and children with chronic health conditions have elevated risks of experiencing EBD (Hysing et al., 2009). Without timely and appropriate treatment, children with EBD face significant risks. For example, higher risks of poor health and structural barriers associated with educational attainment lead to lower rates of employment and higher rates of social welfare use among children with EBD (Wagner and Newman, 2012; Wei and Yu, 2012). Access to a variety of health services could improve the lives of children with EBD. Some of the benefits of accessing services and early intervention include reduction of symptoms, decrease in likelihood of future disability and dependency, and a reduction in the future use of intensive services (Wilmshurst, 2002; Dunlap et al., 2006). On average, children with EBD and related conditions have higher rates of utilization of health services compared to their counterparts without EBD (Schieve et al., 2012). However, there is evidence that despite greater health care utilization, families of children

with EBD and related conditions are more likely to report unmet health care needs compared to families without children with special needs (Chiri and Warfield, 2012; Schieve et al., 2012). This suggests that there might be insufficient access to care among children with EBD.

Socioeconomic and demographic factors shape the distribution of EBD and health care access. Higher rates of emotional and behavioral problems have been documented among children whose families experience economic deprivation (Singh and Ghandour, 2012). There is also evidence of an association between race and EBD (Pachter et al., 2006; McLeod and Nonnemaker, 2000), however, findings are inconsistent. For example, while results from the California Health Interview Survey suggest that African American parents were most likely to perceive emotional difficulties among their children (Banta et al., 2013), a recent report using nationally-representative data from the National Health Interview Survey (NHIS) documents similar rates of EBD among 4-17 year old non-Hispanic White and non-Hispanic Black children, but comparatively lower rates among Hispanic children (Federal Interagency Forum on Child and Family Statistics, 2013). This report also found higher EBD rates among male and older children.

Demographic factors play a role in access to health services among children with special needs more generally. In a national sample of children, those with special needs who belong to racial minority groups had more difficulty obtaining medical care, lacked a usual source of care, and were more likely to experience gaps in access to health care (Newacheck et al., 2002). In another nationally-representative sample, Mayer, Skinner, and Slifkin (2004) found higher odds of unmet need for routine care among children living below the federal poverty level and among uninsured children. Finally, being uninsured is associated with greater need for care (Newacheck et al., 2000) and insurance has been shown to significantly increase access to care (Hoffman and Paradise, 2008).

Children with EBD may need additional medical services and have special health care needs that are associated with underlying etiologic and chronic conditions, making access to care critical. For example, they are more likely to have comorbid asthma (Blackman and Gurka, 2007), or underlying conditions such as seizures and cardiac problems (Prassouli et al., 2008) that often require immediate access to medical care. Yet, the greater burden of disease may limit access by depleting family resources. Families may become more likely to forgo additional medical care because of greater out-of-pocket expenses in the form of copays, deductibles, and costs associated with travel and child care. In addition, families may be too over-burdened to deal with complexities related to referrals for EBD-specific care (Koroloff et al, 1996). These barriers to care are likely to be exacerbated among low-income families with limited resources who are disproportionately more likely to have children with EBD.

In general, children with special health needs experience socio-demographically patterned problems in accessing health care (Inkelas et al., 2007; Piper et al., 2010). Little is known about how these factors shape access to care among children with EBD, and how these compare to patterns observed among children without EBD. Children with EBD receive less research and policy attention than children with other special needs and are less likely to receive treatment even though EBD significantly impacts families and communities (Centers

for Disease Control and Prevention, 2001; Kauffman et al., 2007). To eliminate negative health outcomes and other long-term harms of EBD, evaluating the impact of EBD on access to care and assessing structural factors associated with health care access is important.

Current study

This study explores the impact of EBD on access to health care and identifies socio-demographic factors associated with access. While previous studies have documented access problems associated with special needs including EBD, research that specifically focuses on the role of demographic factors in access problems among children with EBD, in particular, is limited. We add to the existing literature by describing current trends in the association between EBD and access to care using nationally-representative data. Then, we investigate whether socio-demographic characteristics, health insurance coverage, and frequency of service use contribute to differences in accessing care for children with and without EBD.

Methods

Sample

Data are from the Integrated Health Interview Series (IHIS), created from National Health Interview Survey (NHIS) to facilitate analysis of the health of the United States (U.S.) population (Minnesota Population Center and State Access Data Assistance Center, 2012). The NHIS is an annually-administered cross-sectional survey of the U.S civilian, non-institutionalized population. The pooled sample includes children aged 4-17, whose parents were surveyed between 2008-2011. All respondents were surveyed only once during this period. There were no missing observations for age, gender, ethnicity, family size, and region. There was less than 1% missing for EBD, delayed care, race, insurance status, and frequency of office visits. Parental education was missing for 4.5% of observations and poverty status was missing for 7.5% of observations. Little's "missing completely at random" test (Little, 1988) confirmed that data were not missing completely at random ($p < 0.001$). Under missing-not-at-random assumptions, we addressed the potential bias introduced by missing data by using imputed income files provided by the NHIS to construct poverty thresholds. Analyses were conducted in Stata using the "mi estimate" family of commands. We dropped respondents with missing on any analytical other variable from our analysis, resulting in a total sample size of 31,631 (out of an original 33,749). Because parental education was missing in less than 5% of cases, we did not impute it in our final model (Fichman and Cummings, 2003). However, we conducted sensitivity analyses using mean-based imputation for parental education and found that our results were consistent.

Outcome measures

We use two indicators of access to care. In the NHIS, parents were asked whether medical care had been delayed in the past 12 months for the sample child because of concerns about cost. An affirmative response to this question indicates access difficulty due to cost. The second indicator is an affirmative response to whether medical care had been delayed in the past 12 months for the child due to difficulty getting a timely appointment.

Key exposure variable

Emotional/behavioral difficulty is assessed by parent report. The measure comes from the 33-question Strengths and Difficulties Questionnaire-Extended (SDQ-EX). Parents were asked, "Overall, do you think that [your child] has difficulties in any of the following areas: emotions, concentration, behavior, or being able to get along with other people?" Response choices included "No," "Yes, minor difficulties," "Yes, definite difficulties," and "Yes, severe difficulties" (Goodman, 1999). All respondents were asked the same question (regardless of the child's age). The measure we use is the only measure from the SDQ consistently included in the NHIS from 2008-2011 and the only SDQ measure included in 2008-2009. The SDQ-EX is a valid and reliable instrument for use in children and adolescents (Goodman, 2001) and this single question is a valid screener for mental and behavioral health problems in children and adolescents (Pastor et al., 2012). A dichotomous measure was created, with EBD=1 if the parent answered yes to "definite" or "severe" difficulties (Pastor et al., 2012). The NHIS also includes measures on diagnosis of attention deficit/hyperactivity disorder (ADHD) and learning disorders. However, we chose the broader EBD measure using parental report to avoid underrepresenting children who have difficulties but who have not been formally diagnosed with a disorder or who do not have activity limitations as a result of their difficulties. Further, subclinical levels of EBD may still be associated with adverse outcomes and merit examination, especially in an effort to prevent worsening EBD and comorbidities.

Covariates

Demographic characteristics include age (categorical: 4-8, 9-12, and 13-17), sex, race/ethnicity (White, Black/African American, Hispanic, Asian/Other, highest parental education attainment (less than a high school degree, high school degree, some college, college degree or more), ratio of family income to the poverty threshold, family size, and region (Northeast, North Central/Midwest, South, and West). In our analytical sample, family size ranged from 2-16. Most children (94%) lived in families with six or fewer people. We treat family size as a dummy variable in regression analyses, with categories of two people, three-four people, five-six people, and seven or more people. We use a family size of three-four as the reference category in the dummy variable. Analyses also include insurance status (uninsured, participation in the public Children's Health Insurance Program (CHIP), vs. private/other coverage), and the number of office visits to a health care provider in the past year. Frequency of visits to a doctor or other health care provider (excluding dental visits, emergency room visits, hospitalizations, home visits, and telephone consults) is included to account for the fact that children with EBD may require more health care than children without, and therefore face more opportunities to experience delayed care.

Analysis

Bivariate analyses with chi-squared tests of significance were used to test for significant differences between children with EBD and those without. Multivariable logistic regression models were used to assess the relationship between EBD and each type of delayed care, adjusting for relevant socio-demographic characteristics. Survey weights are employed to

provide nationally-representative estimates. Analyses are conducted using “svy” commands in Stata ver.12 (StataCorp, 2011) to account for the complex sampling design of the NHIS.

Results

Five percent of children in this sample have EBD (Table 1). In bivariate analyses, children with EBD were more likely to be older, male, White, and living in poverty than those without EBD. And, children with EBD were less likely to have had a parent earn a college degree. Children with EBD were less likely to be uninsured than children without EBD and were more likely to receive coverage from CHIP. Finally, children with EBD had higher rates of health service usage than children with EBD; 30% of children with EBD had 8 or more visits in the past year (vs. 6% of those without EBD).

Children with EBD were more likely to experience both types of delayed care than those without EBD (Figure 1). More than 10% of children with EBD experienced delayed care due to cost and difficulty making an appointment in the past 12 months, while fewer than 5% of children without EBD experienced either type of delayed care. In both cases, differences were significant at $p<0.001$.

Table 2 lists odds ratios for delayed care due to cost and difficulty making an appointment. After adjusting for all covariates, children with EBD have 2.35 times the odds of experiencing delayed care due to cost, compared with children without EBD. Having EBD is associated with 1.83 times the odds of having delayed care due to difficulty making an appointment. In both models, having lower income, living outside of the Northeast, and having more frequent office visits were associated with higher odds of delayed care.

Discussion

Children with EBD account for approximately 5% of the study population, consistent with other research on serious EBD (Pastor et al., 2012). Also consistent with previous research, we find disparities in rates of EBD between various demographic characteristics (Pastor et al., 2012; McLeod et al., 2000). In particular, we find that being older and having lower family income are significantly associated with higher rates of EBD in bivariate models and with higher odds of delayed care due to cost in multivariable models. These findings may be due to demographically-patterned disparities in socioeconomic status and insurance access that impact financial resources for health care.

Similarly, being African American, Hispanic, poor, and living outside of the Northeast are associated with higher odds of delayed care due to difficulty making an appointment. Hispanic ethnicity had stronger associations with difficulty making an appointment than with delayed care due to cost. This may be related to language difficulties contacting and communicating with office staff, which may indicate a need for linguistically and culturally appropriate means of scheduling care (Fulkerson et al., 2013). It is also interesting to note that lower family income had an association both with delayed care due to cost and with difficulty making an appointment. One explanation for the latter finding may be constrained time schedules of low-income parents who may work multiple jobs or have non-standard work arrangements, making it difficult to align with doctor's office schedules. Perhaps, more

flexible appointments need to be available to accommodate different work schedules (e.g., shift work or parents working multiple jobs) and greater attention should be paid to means of scheduling appointments for families who may not have reliable phone or Internet access. It is also interesting to note that children living below 100% of the federal poverty threshold had slightly lower odds of delayed care due to cost than children living at 100-199% of the poverty threshold and that children with parents who had high school degrees or some college had higher odds of delayed care due to cost than children whose parents had less than a high school degree. The findings on poverty status may be an indication that publicly-funded health insurance and health services programs (e.g., CHIP and free clinics) are more successful in improving access among the poor than among the near-poor. Finally, the finding about geographic region should raise particular concern about regional variation in access to necessary care.

In addition to our findings on the socio-demographic correlates of delayed care, we add information on insurance status and health services use to the literature. While children with EBD are less likely to be uninsured than children without EBD, they are more likely to experience difficulty accessing care. This should raise concern, as delayed care in this population may lead to increased costs, for individuals and families, as well as for society generally. Policies and programs must pay attention to this vulnerable population and address issues of access that go beyond health insurance alone. Given that CHIP enrollment appears to account for some of the difference in insurance status between children with EBD and the overall sample, one means of intervening would be to assess public coverage for behavioral health services under Medicaid.

While this study finds disparities in access to care for children with EBD, it does have limitations. First, our measure of EBD is derived using one question and parental self-report. Therefore, it may miss some children who would meet diagnostic criteria. However, because children with EBD experience disparities in access to care, it is also possible that they experience disparities in access to a formal diagnosis. And, for children as young as four who may have limited exposure to formal school systems, parents may be best able to identify emotional/behavioral problems. Second, since the NHIS is a repeated cross-sectional survey, we are unable to determine the causal direction of these associations. Regardless, the associations between EBD and access to care should raise concern. Future research could use longitudinal data to analyze these relationships over time and to evaluate the individual and societal costs of delayed or foregone care for children with EBD.

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Figure 1.
Differences in Delayed Care in Past Year

Table 1

Sample characteristics, National Health Interview Survey 2008-2011, ages 4-17

	Overall	Children with emotional/behavioral difficulty	Children without emotional/behavioral difficulty	Chi-square statistic*	P-Value
Emotional/behavioral difficulty	0.05	--	--		
Age				637.79	<0.001
4-8 years old	0.36	0.28	0.37		
9-12 years old	0.28	0.33	0.28		
13-18 years old	0.36	0.39	0.35		
Female	0.49	0.36	0.50	1353.45	<0.001
Race/ethnicity				828.30	<0.001
White	0.58	0.63	0.57		
Black/African American	0.15	0.18	0.15		
Hispanic	0.22	0.15	0.22		
Asian/Other	0.06	0.04	0.06		
Ratio to federal poverty threshold				2664.43	<0.001
<100%	0.19	0.31	0.19		
100-199%	0.23	0.25	0.23		
200-399%	0.30	0.26	0.30		
400% or greater	0.28	0.18	0.28		
Family size				145.37	0.094
2 people	0.05	0.06	0.05		
3-4 people	0.52	0.52	0.52		
5-6 people	0.35	0.33	0.35		
7 or more people	0.08	0.09	0.08		
Highest parental education				871.19	<0.001
Less than high school	0.13	0.13	0.13		
High school degree	0.20	0.22	0.20		
Some college/vocational school	0.32	0.39	0.31		
Bachelor's degree and beyond	0.35	0.26	0.36		
Region				141.73	0.065
Northeast	0.17	0.16	0.17		
North Central/Midwest	0.24	0.26	0.24		
South	0.35	0.38	0.35		
West	0.24	0.20	0.24		
Insurance status				237.06	0.002
Private/other coverage	0.85	0.86	0.85		
Children's Health Insurance Program	0.06	0.08	0.06		
Uninsured	0.09	0.06	0.09		
Total number of office visits in past 12 months				0.00	<0.001
No visit	0.11	0.05	0.11		

	Overall	Children with emotional/ behavioral difficulty	Children without emotional/ behavioral difficulty	Chi- square statistic*	<i>P-Value</i>
1 visit	0.23	0.10	0.24		
2 to 3 visits	0.38	0.27	0.39		
4 to 7 visits	0.20	0.28	0.20		
8 to 12 visits	0.05	0.15	0.04		
13 or more visits	0.03	0.15	0.02		

Pooled sample, 2008 - 2011. Weighted population size: size: 54,313,620; sample n: 31,631

Table 2

Odds of Delayed Care (Odds Ratios and 95% Confidence Intervals)

	Due to Cost		Due to Difficulty Making an Appointment	
Emotional/behavioral problem	2.35 ^{***}	(1.80, 3.08)	1.83 ^{***}	(1.44, 2.32)
Age (Ref: 4-8 years old)				
9-12 years old	1.26 [*]	(1.04, 1.52)	0.93	(0.78, 1.10)
13-17 years old	1.40 ^{***}	(1.18, 1.67)	1.05	(0.89, 1.24)
Female	1.06	(0.92, 1.22)	1.13	(0.98, 1.29)
Race/ethnicity (Ref: White)				
Black/African American	0.96	(0.79, 1.16)	1.46 ^{***}	(1.21, 1.77)
Hispanic	1.01	(0.84, 1.22)	1.52 ^{***}	(1.29, 1.80)
Asian/Other	0.71 [*]	(0.51, 0.99)	1.26	(0.95, 1.68)
Ratio to federal poverty threshold (Ref:400% or greater)				
<100%	2.52 ^{***}	(1.84, 3.45)	1.54 ^{***}	(1.21, 1.95)
100-199%	3.47 ^{***}	(2.57, 4.69)	1.38 ^{**}	(1.09, 1.74)
200-399%	2.36 ^{***}	(1.83, 3.05)	0.94	(0.77, 1.16)
Family size (Ref: 3-4 people)				
2 people	1.52 ^{***}	(1.22, 1.89)	1.04	(0.85, 1.28)
5-6 people	1.03	(0.88, 1.21)	0.95	(0.82, 1.10)
7 or more people	1.01	(0.65, 1.59)	0.85	(0.63, 1.14)
Parental education (Ref: Less than high school)				
High school degree	1.54 ^{**}	(1.20, 1.97)	0.92	(0.74, 1.14)
Some college	1.99 ^{***}	(1.59, 2.48)	1.14	(0.93, 1.39)
College degree or more	1.81 ^{***}	(1.36, 2.40)	0.95	(0.75, 1.21)
Region (Ref: Northeast)				
North Central/Midwest	1.32 [*]	(1.01, 1.72)	1.48 ^{***}	(1.19, 1.84)
South	1.40 ^{**}	(1.10, 1.79)	1.40 ^{**}	(1.13, 1.73)
West	1.71 ^{***}	(1.36, 2.16)	1.80 ^{***}	(1.46, 2.23)
Insurance status (Ref: Private/other coverage)				
Children's Health Insurance Program	0.93	(0.69, 1.26)	1.13	(0.88, 1.45)
Uninsured	9.19 ^{***}	(0.77, 10.89)	1.12	0.88, 1.44)
Number of office visits	1.02 ^{***}	(1.01, 1.03)	1.03 ^{***}	(1.03, 1.04)
F-statistic	60.98 ^{***}		15.95 ^{***}	
Degrees of freedom	300		300	

Pooled sample, 2008 - 2011. Weighted population size: 54,313,620; sample n: 31,631

* $p < 0.05$,

**
 $p < 0.01$,

 $p < 0.001$

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