Determinants of Ambulatory Mental Health Services Use for School-Age Children and Adolescents

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Objective. To analyze a comprehensive multivariate model of the use of mental health–related ambulatory care services by children ages 6–17.
Study Setting. The 1987 National Medical Expenditure Survey, a national probability sample of the U.S. civilian noninstitutionalized population.
Study Design. A cross-sectional survey of a national probability sample of the U.S. population. Key independent variables include person-level mental health status, health care coverage, family income, and use of mental health services by other family members.
Data Collection. Four in-person interviews were conducted during 1987 using structured questionnaires. A designated family respondent was used to answer questions for other family members, including children.
Principal Findings. Children with poor mental health in high-income families were more than three times as likely to have a mental health–related visit than children with poor mental health in low-income families. The number of mental health–related visits and the likelihood of seeing a mental health specialist also increased along with family income. Mental health use by other family members was strongly associated with use.
Conclusions. The results from this study provide strong evidence that the socioeconomic status of children is an important factor in explaining unmet need for mental health services.

Key Words. Child and adolescent mental health, mental health services, ambulatory care, access to care

There is considerable evidence that children and adolescents are underserved with respect to mental health services. While estimates of the prevalence of mental health problems in children range from 12 to 20 percent (Gould, Wunsch-Hitzig, and Dohrenwend 1981; Costello, Costello, Edelbrock, et al. 1988), estimates of service use show that fewer than 1 percent of children receive inpatient care for mental health problems and between 2.2 and 5.0

percent of children receive ambulatory mental health care (U.S. Congress, Office of Technology Assessment 1986; Taube, Kessler, and Feuerberg 1984; Horgan 1985). However, reasons for the apparent gap between morbidity and service use are not well understood, primarily due to data limitations.

Most previous studies of children's mental health care utilization were based on school or community samples of children (Cohen and Hesselbart 1993; Zahner et al. 1992; Nader, Ray, and Brink 1981) or on children enrolled in specific health plans (Padgett, Patrick, Burns, et al. 1993; Dulcan, Costello, Costello, et al. 1990; Kelleher and Starfield 1990; Jacobson, Goldberg, Burns, et al. 1980). While these studies provided some important findings, the limited samples inhibit the generalizability of the findings to all children in the United States.

In addition, most previous studies have been unable to fully assess the effects of key policy variables–such as income and health care coverage–on mental health use, either because these variables are entirely absent or because there is limited variation among the study population with respect to these variables. For example, one study compared high-option and low-option Blue Cross/Blue Shield enrollees but did not include uninsured children (Padgett, Patrick, Burns, et al. 1993); another study found differences by family income in children's mental health use but did not control for health insurance coverage (Cohen and Hesselbart 1993). One of the few studies based on nationally representative data found no differences between insured and uninsured children in the likelihood of having a psychiatric visit, although differences between private and public coverage were not assessed (Angel and Angel 1993). While the same study also found no association between income and psychiatric use, it is possible that the effects of income on mental health–related use are more complex. As alluded to by Leaf, Bruce, Tischler, and colleagues (1988), it may be more appropriate to examine the interaction of income with mental health status, since one might expect use of mental

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health services to increase along with family income only for those children who are actually in need of these services.

It is vital in studies of children's utilization of health services to consider the experiences and characteristics of other family members, because decisions about children's health care use are heavily influenced by other family members, particularly the mother. More specifically, with regard to mental health use, researchers have found that mothers experiencing psychological distress and mothers who use mental health services are more likely to seek mental health care for their children (Dulcan, Costello, Costello, et al. 1990; Padgett, Patrick, Burns, et al. 1993). It is likely that this strong association reflects family problems and propensities since children's emotional and behavioral problems are frequently related to family circumstances, such as the death or divorce of parents and conflicts with parents and siblings (U.S. Congress, Office of Technology Assessment 1986; Dulcan, Costello, Costello, et al. 1990; McLeod and Shanahan 1993).

Finally, previous studies of children's use of outpatient mental health services have not examined use in all outpatient settings–mental health specialists as well as nonspecialists–nor have they examined factors that determine the choice between receiving treatment from a specialist or a general medical provider. These issues are important since there is concern about the quality and appropriateness of treatment by nonspecialty providers (U.S. Congress, Office of Technology Assessment 1986).

In sum, the limited research on children's use of mental health services has examined various aspects of use, but no researcher has ever combined all of these factors in a single study using nationally representative data. Using data from the 1987 National Medical Expenditure Survey, this article examines an overall model of children's use of ambulatory mental health–related services.

METHODOLOGY

DATA SOURCE

Data from the Household Component of the 1987 National Medical Expenditure Survey (NMES) were used in this analysis. NMES includes a nationally representative sample of the U.S. civilian noninstitutionalized population (for a detailed description of the survey design, sampling, estimation, and weighting methods, see Cohen, DiGaetano, and Waksberg 1991). Data on

household characteristics, employment, insurance, and medical care utilization and expenditures were obtained at each of four interviews, allowing for estimates of total ambulatory care use and expenditures for calendar year 1987. All questions about children's health and health care were answered by adults, in most cases by children's parents. The subsample used for this analysis includes children ages 6–17 (n = 6,216). Children ages 0–5 were excluded from this analysis because questions on mental health status–a key variable in this analysis–were not asked for children ages 0–5 and there were very few mental health–related visits in NMES for children in this age group.

DEFINITION OF MENTAL HEALTH–RELATED VISITS

Mental health–related ambulatory visits were defined as visits to any medical provider–regardless of specialty or site–that involved a mental health condition or treatment of a mental health problem. All ambulatory visits that had diagnosis codes for mental disorders were selected (these included codes 290–319 based on the Ninth Revision of the International Classification of Diseases). Sample text fields for all other ICD-9-CM codes were individually reviewed, and events from a small number of other codes were also selected (e.g., code 799.2 is "nervousness"). Regardless of the diagnosis codes, visits were also considered to be mental health–related if the main reason for the visit was to obtain psychotherapy/mental health counseling (asked for each individual visit), or if the provider was a mental health specialist (e.g., psychiatrist, psychologist, mental health counselor). Visits to mental health specialists were defined primarily on the basis of provider specialty. However, if the specialty of the provider was missing, visits were also classified as "specialty" visits if the main reason for the visit was to obtain psychotherapy/mental health counseling.

INDEPENDENT VARIABLES

Using Andersen's behavioral model as a framework, children's ambulatory mental health use is conceptualized as a function of need, enabling, and predisposing factors (Andersen 1968; Andersen and Newman 1973). Need factors include measures of children's mental and physical health status. For children age 6–17, questions were asked of parents or other knowledgeable individuals on how much of the time during the past 30 days the child seemed to (1) feel relaxed and free of tension; (2) enjoy the things that he or she did; (3) feel depressed; (4) be a happy person; and (5) feel anxious or worried. The range of responses was from 1 (none of the time) to 6 (all of the time). A mental health status index was created by first recoding responses so that high scores

on all items indicate poor mental health, and then summing the five items with the result that a high score on the index indicates more severe mental health problems. The index demonstrated good reliability as indicated by a Cronbach's alpha of .81. Due to nonresponse to questions on health status, a dummy variable indicating that children had missing data for mental health status was included in the analysis. Another measure of children's mental health status included whether the child spent any days in bed, home from school, or restricted in normal activity as a result of a mental health problem (as indicated by the conditions described above for each set of reported illness days). Perceived general health status and whether or not the child had functional limitations due to any health problems were also included in the analysis (as reported by the mother or other knowledgeable respondent). Dummy variables were also included to indicate missing responses to these two measures.

On a methodological level, these dummy variables allow the coefficients for these measures to be estimated accurately for those persons who did respond. On a conceptual level, parents who have children with mental health problems may find questions about their children's mental health to be too sensitive or stigmatizing, and therefore are less likely to respond to these questions.

Enabling factors include both family and community resources that allow persons to satisfy a need for health care use (Andersen 1968; Andersen and Newman 1973). In this study, family resources include family income as well as public and private health care coverage. Measures of community resources were obtained from the Area Resource File (Bureau of Health Professions 1992) and include the number of child psychiatrists per 10,000 children in the county of residence, and the number of family practitioners and pediatricians per 10,000 children. In addition, because the effects of certain enabling factors on use may vary depending on the level of need, the interaction of family income with the mental health index was also included in the analysis.

Predisposing factors are those that indicate the propensity of individuals to use services. The kind of mental health problems experienced by children–as well as the interpretation of these problems by parents–may differ depending on the age and sex of the child, and certain societal perceptions and norms may influence the decision to seek professional treatment for age- or sex-specific problems. Differences in utilization by race/ethnicity may also result because of differences in how mental health problems are perceived, interpreted, and acted on by the individual and the health system. Family

structure–including family size and whether or not it is a single-parent family–may also influence utilization. For instance, overall health care utilization for children is consistently lower in large families, and there is some evidence that single parents may be more likely to use the health care system as a form of proxy support (Cafferata and Kasper 1985; Wolfe 1980).

Predisposing factors also include characteristics of the mother. Theoretically, the mother is the most salient person in the family for most children and is the main decision maker regarding children's health care use. This is supported by the fact that it is the mother who usually accompanies most children to the doctor (unpublished findings from NMES). Other studies have also found mothers' characteristics to be significant predictors of children's overall health care use (Newacheck and Halfon 1986; Cafferata and Kasper 1985; Wolfe 1980).[1] A mental health status index for mothers was created by summing the responses to five mental health questions that were based on questions used in the Rand Health Insurance Study (Ware et al. 1979). A dummy variable was also included to account for missing responses to mother's mental health status. Measures of mental health use by the mother as well as mental health use by other family members were also included. These measures included any use of inpatient care, ambulatory services, or prescribed medicines for a mental health problem. Mother's employment status, education, and age were also included. Mother's age was included because perceptions about mental health problems and mental health care may change as mothers get older, or there may be cohort differences in perceptions of mental health problems. Because this effect may not be linear, an age-squared term was also included in the model.

ANALYSIS

The multivariate analysis in this study is based on the theory that the use of health care is a sequential process. The analysis assumes that an initial decision is made to seek care followed by a separate decision on where to go for care and how much care to use. This approach is consistent with the standard multipart models of health care demand, most thoroughly presented in Duan et al. (1982). First, a weighted logistic regression equation is estimated for the probability of any use of ambulatory mental health services. Then, for those persons with some mental health–related use, a weighted logistic regression equation is also estimated for whether individuals had any use of *specialty* mental health providers. A weighted least squares regression analysis is used to determine factors associated with the log of the number of ambulatory mental health visits for children who had some ambulatory mental health

service use. Because the vast majority of users have only a small number of visits (and in order to conserve space), the results of this regression for the number of visits are described only briefly in the text. The standard errors of all of the estimates were adjusted to reflect the complex nature of the NMES survey design.

FINDINGS

CHILDREN'S USE OF MENTAL HEALTH-RELATED SERVICES

Before discussing the multivariate findings, we present estimates from NMES on overall mental health–related use and expenditures for children in 1987 (Table 1). These estimates were produced by weighting the sample to reflect the U.S. population. About 5.1 percent of children ages 6–17 had some type of health care use related to a mental health problem in 1987, including ambulatory care, inpatient stays, and psychotropic drugs.[2] Ambulatory care is by far the largest component of this use; 4.8 percent of children–or 94 percent of all children using mental health services–had an ambulatory care visit for a mental health problem. The findings also show that there is substantial use of general practitioners or other nonspecialists; 2.7 percent of children had a visit to a mental health specialist, which means that 44 percent of children who had ambulatory care use for a mental health problem saw only nonspecialists (computed from Table 1). While one might expect the volume of specialty use to be much higher than the volume of use for other providers, the findings do not support this: the average number of visits to specialists for persons with specialty use (8.6) is about the same as the overall number of visits for all individuals with ambulatory mental health service use (8.5). A very small percentage of children were treated with prescribed medicines for a mental health problem (1.2 percent), and only 0.3 percent of children had an inpatient stay for a mental health–related problem in 1987.

Total expenditures for the treatment of children's mental health problems amounted to about $3.9 billion in 1987, or about $2,017 per person with an expense. Although the vast majority of mental health service use was ambulatory care, expenditures for ambulatory services amounted to only about one-fifth of all expenditures for children's mental health services ($761 million), or $430 per person with an ambulatory expense. Thus, the small number of inpatient stays for mental health problems accounts for a very large proportion of expenditures for mental health–related care. Also, while

Table 1: Use of Mental Health–Related Services by Children Ages 6–17, United States, 1987

All children ages 6–17	N = *41,616,000*
Percent with any mental health use	5.1%
Percent with any ambulatory mental health use	4.8%
Percent with any specialty ambulatory mental health use	2.7%
Average number of ambulatory mental health visits for those with use	8.6
Average number of specialty mental health visits for those with use	8.5
Percent who had prescribed medicines for mental health problems	1.2%
Percent who had an inpatient stay related to a mental health problem	0.3%
Total expenditures for mental health–related services	$3,915 (millions)
Average expenditures for children with an expense	$2,017
Total expenditures for ambulatory mental health services	$761 (millions)
Average expenditures for ambulatory mental health services for children with an expense	$430
Expenditures for mental health–related services as a percent of all health care expenditures	
• For all children	15.7%
• For children with mental health–related expenditures	79.3%

Source: Agency for Health Care Policy and Research (AHCPR). National Medical Expenditure Survey–Household Survey.

mental health services are a relatively small component of the total health care expenditures for all children (15.7 percent), mental health–related expenses make up 79.3 percent of all health care expenditures for the subset of children who incurred expenses for mental health–related services.

THE LIKELIHOOD OF AMBULATORY MENTAL HEALTH USE

Table 2 presents the results of the logistic regression analysis for the likelihood of ambulatory mental health use. The most noteworthy finding is that the interaction of the mental health index with income had a statistically significant effect on the likelihood of use, even though the main effects for these two variables were not statistically significant. More detailed discussion of this finding is presented further on. Other health status variables that had a strong association with any use include mental health disability days and the dummy variable for "missing" on the mental health status index. The latter finding indicates that children who had no response to questions on mental health status had a higher likelihood of use, possibly because these children had poor mental health and parents found these questions to be too sensitive or stigmatizing to answer.

Table 2: Results of Logistic Regression Analysis for the Likelihood of Ambulatory Mental Health Use for Children Ages 6–17, United States, 1987

	Likelihood of Ambulatory Mental Health Use	
	Coefficient	*Standard Error*
Intercept	−7.44	2.03
Children's Need Factors		
Any MH disability days	3.56**	0.37
Mental health index	−0.14	0.15
Missing on MH index	2.49**	0.51
Fair or poor perceived health status	0.34	0.26
Missing perceived health status	−0.28	0.92
Functional limitations	0.49	0.35
Missing functional limitations	−0.15	0.81
Enabling Factors		
Log of family income	−0.05	0.15
Mental health index* log of family income	0.03*	0.01
Uninsured part year	0.66	0.37
Insured all year, any private	0.58	0.32
Insured all year, public only	0.90*	0.41
Number of child psychiatrists per 10,000 children	−0.07E-1	0.09
Number of family practitioners and pediatricians per 10,000 children	0.03	0.01
Predisposing Factors		
Children's age	0.02	0.03
Male	0.36*	0.15
Black	−1.16**	0.27
Other nonwhite	−0.73**	0.26
(Family Characteristics)		
Family size	−0.10	0.07
Mother-only family	0.53**	0.18
Other family type	−0.30	0.52
Parent divorced in past year	0.58	0.41
(Mother's Characteristics)		
Mental health index	0.01	0.02
MH index missing	0.11	0.42
Age	0.05	0.06

Continued

Table 2: Continued

	Likelihood of Ambulatory Mental Health Use	
	Coefficient	*Standard Error*
Age-squared	−0.05E-2	0.08E-2
Years of education	0.03	0.03
Education missing	0.56	0.77
Weeks worked in 1987	0.01E-1	0.05E-1
Hours worked per week	−0.02E-1	0.06E-1
(Other Mental Health Use in Family)		
Any mental health use by mother/other parent	1.73**	0.16
Any mental health use by other family member	1.51**	0.22
(Geographical Location)		
Other metro areas	−0.34	0.21
Nonmetro area	−0.19	0.25
Northeast region	−0.03	0.23
Midwest region	−0.08E-2	0.21
West region	0.23	0.23
n	6,216	

* Statistically significant at the .05 level.

** Statistically significant at the .01 level.

Note: For the purposes of multivariate analysis, the categorical variables for the following groups were excluded: good or excellent perceived health, white, uninsured all year, two-parent family, 19 largest metropolitan statistical areas, South region.

Source: Agency for Health Care Policy and Research. National Medical Expenditure Survey–Household Survey.

Of the enabling factors other than income, having public health care coverage (i.e., mostly Medicaid) substantially increased the likelihood of use, while the relative supply of child psychiatrists and general practitioners had a statistically significant effect on the likelihood of use at only the .06 level of significance. Of the predisposing factors, mental health care use by the mother and other family members was one of the strongest determinants of the likelihood of children's use. Use was also strongly associated with race/ethnicity in that whites had a much higher likelihood of use than African Americans and other ethnic/minority groups. Children in mother-only families were also more likely to have a mental health–related visit than children in other family types.

One of the most interesting findings in Table 2 is the significant interaction of the mental health index with family income. Table 3 provides more detail on this finding by showing predicted probabilities of use for various levels of family income and mental health. For the mental health index, scores of "5" (no mental health problems), "10" (approximately the mean), "15" (about 1.5 standard deviations from the mean), and "20" (about 3.0 standard deviations from the mean) were used. All values of income shown on the table fall within 2.0 standard deviations of the mean family income for children ($34,867). Predicted probabilities of use for the various levels of family income and mental health were computed by setting the values of all other variables equal to their mean values.

These findings clearly demonstrate the interaction effect. While the probability of use increases with poorer mental health across all levels of family income, the rate of increase is much higher for children with higher family incomes. Similarly, higher family incomes substantially increase the probability of use only for children with poor mental health. For a child with no mental health problems (i.e., a score of "5" on the mental health index), the probability of use would increase only from 2.5 percent for children with a family income of $5,000 to 3.2 percent for children with family incomes

Table 3: Predicted Probabilities of Ambulatory Mental Health Use for Various Levels of Family Income and Mental Health Status for Children Ages 6–17, United States

	Mental Health Status Index			
	5 (No Mental Health Problem)	*10*	*15*	*20*
Family Income	*Predicted Probabilities of Ambulatory Mental Health Use*			
$ 5,000	2.5	4.2	7.1	11.8
10,000	2.6	4.9	9.2	16.3
20,000	2.8	5.8	11.8	22.1
30,000	2.9	6.4	13.5	26.2
50,000	3.1	7.2	16.1	31.9
75,000	3.2	8.0	18.4	36.9

Note: Estimates derived from Table 2 results. Predicted probabilities of ambulatory health care use were computed for the levels of family income and mental health index shown above, while setting the values of all other variables equal to their mean value. This was accomplished by computing $x\beta$ for the mean probability of ambulatory use (.048), adjusting $x\beta$ based on the values of family income and mental health index shown above, and then converting the new value of $x\beta$ back into a probability.

of $75,000. The difference in use between low and high incomes, however, becomes much greater as mental health status worsens. A child with a score of "20" on the mental health index (indicating poor mental health) and family income of $5,000 has a probability of use of 11.8 percent compared to 36.9 percent for a child with similar mental health and a family income of $75,000.

LIKELIHOOD OF SPECIALTY USE

For those children with some ambulatory mental health care, we estimated the probability of using any specialty mental health care. These results are presented in Table 4. The interaction of the mental health index with family income was not statistically significant and was not included in the final model presented here.

While the mental health index did not have a statistically significant effect on the likelihood of seeing a specialist, children with any disability days due to mental health problems were much *less* likely to have any visits to mental health specialists. Greater reliance on nonspecialists for children with disability days due to mental health problems may indicate that these children have physical health problems in addition to mental health problems for which they are receiving treatment from pediatricians or general practitioners.

Of the enabling factors, only family income had a statistically significant effect on the likelihood of seeing a mental health specialist. The findings show that the higher the family income, the greater the likelihood of seeing a specialist. Using the results in Table 4 to compute predicted probabilities of specialty use for various levels of income, the probability of seeing a specialist, given some mental health use, increases from 41.3 percent for children with family incomes of $5,000 to 64.4 percent for children with family incomes of $75,000. Specialty mental health use by the mother had a strong effect on the likelihood of children seeing a specialist, which further demonstrates the close relationship between children's and mothers' mental health use.

NUMBER OF VISITS

Although not presented here, we also estimated a weighted least squares regression equation for the log of the number of ambulatory mental health visits for children who had at least one visit. There were few statistically significant coefficients, which is probably due in part to the narrow dispersion in the number of mental health–related visits and the relatively small sample size. As was the case with the probability of any specialty mental health use presented in Table 4, the interaction of the mental health index with family income was not statistically significant.

Table 4: Results of Logistic Regression Analysis for the Likelihood of Having Specialty Ambulatory Mental Health Use for Children Ages 6–17 with Mental Health Ambulatory Use, United States, 1987

	Likelihood of Specialty Use	
	Coefficient	*Standard Error*
Intercept	−3.57	3.33
Children's Need Factors		
Any MH disability days	−1.39**	0.54
Mental health index	0.06	0.04
Missing on MH index	1.83	0.97
Fair or poor perceived health	0.67	0.57
Missing perceived health	−1.77	1.94
Functional limitations	0.06	0.50
Missing functional limitations	0.79	1.53
Enabling Factors		
Log of family income	0.35*	0.15
Uninsured part year	−1.06	0.86
Insured all year, any private	−0.33	0.79
Insured all year, public only	−0.41	0.71
Number of child psychiatrists per 10,000 children	−0.14	0.23
Number of family practitioners and pediatricians per 10,000 children	−0.04	0.04
Predisposing Factors		
Children's age	0.05	0.05
Male	−0.40	0.34
Black	0.87	0.66
Other nonwhite	0.09	0.60
(Family Characteristics)		
Family size	−0.02	0.16
Mother-only family	0.42	0.38
Other family type	0.65	0.86
Parent divorced in past year	−0.87	0.76
(Mother's Characteristics)		
Mental health index	−0.04	0.04
MH index missing	−0.83	0.69
Age	0.02	0.14
Age^2	−0.02E-2	0.02E-1
Years of education	−0.06	0.09
Education missing	−0.12	1.90

Continued

Table 4: Continued

	Likelihood of Specialty Use	
	Coefficient	*Standard Error*
Weeks worked in 1987	0.09E-2	0.01
Hours worked per week	0.01E-1	0.02
(Other Mental Health Use in Family)		
Specialty ambulatory use by mother	1.46**	0.53
Other MH use by mother	−0.22	0.55
Specialty ambulatory use by other family member	−0.19	0.76
Other MH use by other family member	0.63	0.51
(Geographical Location)		
Other metro areas	0.20	0.47
Nonmetro area	−0.13	0.50
Northeast region	1.06*	0.54
Midwest region	0.37	0.42
West region	0.11	0.50
n	282	

* Statistically significant at the .05 level.

** Statistically significant at the .01 level.

Note: For the purposes of multivariate analysis, the categorical variables for the following groups were excluded: good or excellent perceived health, white, uninsured all year, two-parent family, 19 largest metropolitan statistical areas, South region.

Source: Agency for Health Care Policy and Research. National Medical Expenditure Survey–Household Survey.

Of particular note, however, family income had a positive and statistically significant impact on the number of visits. In addition, the results showed that the number of visits also tended to be greater for children living in counties with a relatively large number of child psychiatrists.

DISCUSSION

The findings provide strong evidence that financial access problems are important with respect to children's use of mental health services. They showed that the likelihood of an ambulatory mental health visit for a child with poor mental health increased substantially along with family income. It is important to note that family income was a significant predictor of any

ambulatory mental health use only when interacted with mental health status. "Enabling" factors, such as family income, are more typically hypothesized as affecting use *independent* of measures of health status. As pointed out by Leaf and colleagues (1988), however, it is sometimes more appropriate to consider the effects of family income and other factors *given that there is a need for services.* This makes intuitive sense since one would not expect high family income to increase the likelihood of use for children who did not have any mental health problems.

For persons who use ambulatory mental health services, higher family income was also associated with a higher number of mental health–related visits and an increased likelihood of seeing a mental health specialist as opposed to visiting only a general practitioner. Unlike the findings for the likelihood of any ambulatory mental health use, however, the effects of family income on number of visits and likelihood of specialty use were statistically significant *independent* of children's mental health status (i.e., the interaction of family income and mental health was not significant and was excluded from the final models). This is understandable since the analysis that produced these findings was constrained to users of ambulatory mental health services, who for the most part already had poor mental health.

Higher incomes allow families to more easily afford the direct costs of mental health services for children. In addition, higher-income families are probably more likely to have better private insurance coverage for mental health services, although this was not directly controlled for in this analysis. Also, the findings on family income may reflect social class differences in attitudes toward mental health services. That is, the positive effect of family income on any use and on specialty use may reflect more favorable attitudes toward mental health services among higher-income families. However, this explanation seems less plausible since mother's educational attainment (another commonly used indicator of socioeconomic status) did not have statistically significant effects on any of the use measures, even when family income was excluded from the models.

Variations in use were also associated with health care coverage. Children with public coverage (mostly Medicaid) for all of 1987 were more likely to have a mental health ambulatory visit than uninsured children. There were no differences, however, between privately insured children and uninsured children in the likelihood of use. These findings suggest that Medicaid is more generous with respect to children's mental health care than are most private insurance policies, which often have stringent restrictions on the number of covered visits even if there is coverage for mental health care. Alternatively,

a higher proportion of children with Medicaid may have more severe mental health problems that result in a greater likelihood of use.

There are also significant racial and ethnic disparities in mental health care use for children. African American children and children of other racial and ethnic minorities were much less likely to have an ambulatory mental health visit than were white children. Explanations for these disparities are not clear; they may reflect differences between racial/ethnic minorities in their attitudes and perceptions of mental health care, greater reliance on family and informal providers (e.g., clergy) among some ethnic groups, differences in the way mental health problems are diagnosed by providers, or outright discrimination by providers.

The findings show that much mental health services use by children is family related. In particular, use of mental health services by the mother or other family members was one of the strongest factors associated with use by the child. It is possible that the strong relationship may be explained in part by mothers having distorted or inflated perceptions of their children's behavioral and mental health problems (and therefore being more likely to seek treatment for their children), although a recent review of research appears to dispel this argument (Richters 1992). A manual review of records where both the mother and child had mental health care use indicated that some children were undergoing therapy individually or with other family members for a family-related problem, such as divorce, death of a family member, or conflicts among family members. Thus, the effects of mothers' and other family members' use suggests that some of the mental health use by children occurs when problems are affecting multiple family members and not just the individual child. Further research should investigate the family dynamics of children's mental health problems and how such dynamics affect the health care–seeking behavior of children and their parents. For example, are children with isolated or self-contained problems less likely to receive mental health care than children whose problems are family related or shared by other family members?

As with adults, there is substantial use of non-mental health specialists for the treatment of children's mental health problems. It might be plausible to expect that specialty use would be more likely for children with serious mental health problems, either because a general practitioner refers these types of problems to specialists or because the parent goes directly to a specialist. However, the findings in this article provided little support for this notion. The mental health index did not have statistically significant effects on the decision to see a specialist. It is possible that the mental health status

measures in NMES do not adequately distinguish the more severe mental health problems (e.g., serious emotional or behavioral problems). In addition, given the relatively small proportion of children with severe mental health problems and the fact that these are often stigmatizing conditions that could be underreported by household respondents, there may be too few children in the NMES sample with these problems to have an impact on the results.

It should be noted that the findings in this study are based on data from 1987 and do not reflect the considerable growth in the number of persons enrolled in HMOs and other types of managed care plans since 1987. HMOs attempt to restrain mental health services costs in part by inserting gatekeepers into the decision to obtain specialized mental health therapy, and in part through ongoing utilization review of the number of visits. While these efforts might affect the use of mental health specialists and the intensity of use, they would not be expected to have a significant effect on the probability of some mental health use, as defined in this analysis. In addition, it is unclear whether the findings would be substantially different if more recent data were available because most of the growth in managed care since 1987 has occurred through Preferred Provider Organizations (PPOs). By contrast, HMO growth only increased from 17 percent in 1988 to 22.4 percent in 1993 (Prospective Payment Assessment Commission 1995). PPOs are more like traditional indemnity insurance plans in that they generally have fewer restrictions on utilization and choice of doctors than HMOs; thus, they would be expected to have less impact on overall use.

NOTES

1. For a small number of children not living with their mothers (about 2.6 percent), characteristics of the father or household head were used.
2. Inpatient stays related to mental health problems were identified using the same criteria as for ambulatory care.

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