Comorbidity of Mental Health Problems and Chronic Health Conditions in Children

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Both mental and physical health problems have significant, costly effects on children and on society, particularly through the health-care delivery system. Many years of research show more mental health problems among children with chronic health conditions, but the research is contradictory and inconclusive. This study is the first to examine the physical health status and problems of children with known mental health problems. The study compares Medicaid children with and without serious mental health problems (n = 965) using parent reports of global health status, physical functioning, and general health perceptions. Children with more serious mental health problems were significantly more likely to have chronic health conditions. The number of chronic health conditions was the most powerful variable in predicting children’s global health status, physical functioning, and general health perceptions. Children’s mental health status, however, was a significant predictor as well, and the inclusion of this variable in the analyses significantly improved the fit of the regression model. Implications for the health-care delivery system are discussed.
Longitudinal research could be helpful in determining the relationship between physical and mental health problems by clarifying temporal relationships. Cohen, Pine, Must, Kasen, and Brook (1998) studied a random sample of over 700 children from childhood (ages 1–10) to young adulthood, collecting data at several points. Psychiatric disorder was defined using the Diagnostic Interview Schedule for Children (DISC; Costello, Edelbrock, Dulcan, Kalas, & Klaric, 1984). Physical health questions were adapted from the National Health Interview Survey (NHIS; Adams & Hardy, 1989), which is an ongoing survey that provides population estimates of health and health care utilization based on representative samples. Items in the survey include general perceptions of health, functioning related to various activities, and the presence of specific diagnoses. When low socioeconomic status was controlled for, these authors found cross-sectional relationships between mental and physical health problems, with significant relationships between somatic disorders and both Major Depressive Disorder and the general “any psychiatric disorder” category. The longitudinal findings showed that poor physical health predicted future depression, independent of previous depression and demographics. Similarly, major depression predicted future poor physical health, independent of previous physical health and demographics. Significant relationships among specific disorders in the longitudinal data were limited to major depression for mental disorders and immunologically related physical disorders such as allergies and asthma. As a result, Cohen et al. (1998) emphasized the need for replication with larger samples of children.

Researchers have not examined the extent of chronic health conditions in a large population of children already identified with serious emotional disorders. Such information could be important for a fuller understanding of the relationship between these two categories of health problems, as well as for implications for health care delivery. Clearly, efforts to contain costs and improve the quality of care for children with mental and physical health problems should be based on comprehensive information about those children’s health problems and needs. The goal of the current study was to compare the relationship between mental health problems and health status in a large sample of low-income children with and without serious emotional disorders (SED). Specifically, we addressed the following questions:

1. Do low-income children with more severe levels of mental health problems have more chronic health conditions and poorer health status than a comparable group of children with no or less severe mental health problems?
2. Does the presence of SED increase the frequency of parents’ reports of physical health problems in their children, after controlling for the presence of chronic health conditions?

**Method**

**The Impact Study: Purpose and Overall Design**

The Impact Study was funded by the U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA), as part of a national study on services available through Medicaid. Data from two of the states participating in the national study (Tennessee and Mississippi) were combined to provide a sample of Medicaid children for this study. The Impact Study is a collaboration among academic, government, provider, and consumer and advocacy groups in the states of Tennessee and Mississippi. (Information on the national study is available at www.hsri.org/coord.html)

**Sample**

A stratified random sample of children who were categorically eligible for Medicaid during fiscal year (FY) 1996 (July 1, 1995–June 30, 1996) and ages 4 to 17 years (n = 443,099) was drawn to recruit participants for the study. The Medicaid population from both states was stratified based on the children’s use of mental health services. Three groups of children were identified from the FY1996 eligibility and encounter/claims data from all regions of Tennessee and Mississippi: These study groups and the number of children in the recruitment sample included (a) high users (n = 3,987), (b) low users (n = 2,397), and (c) nonusers of mental health services during that fiscal year (n = 4,638). High users of mental health services were children who had used a “high-end” mental health Medicaid service (e.g., psychiatric inpatient care, residential mental health treatment, day treatment or partial hospitalization, or mental health case management) or who had used 10 or more Medicaid mental health services in a 4-month period during FY1996. Low users of mental health services were children who had received at least one Medicaid mental health service during FY1996 but did not meet the criteria to be included in the high-user group. Nonusers were children who were categorically eligible for Medicaid during FY1996 but who had not used any mental health services during that time period. Thus, a total of 11,022 children were selected through a stratification process to be included in the recruitment process.

*Categorical eligibility* refers to the mandatory categories of persons on public assistance to whom states are required to provide health insurance coverage through the Medicaid program (e.g., Aid to Families with Dependent Children, now Temporary Assistance for Needy Families; Supplemental Security Income for blind or disabled individuals; families at or below a percentage of the federal poverty level; children of certain ages in poor families). Here the term is used to include not only the mandatory categories but also other groups to whom states have the option of extending coverage (e.g., families at poverty levels beyond the federally mandated minimum, otherwise well-off persons who “spend down” to meet poverty criteria for Medicaid coverage). However, the term specifically excludes coverage groups for “nontraditional” Medicaid populations who were folded into Tennessee’s Medicaid program as part of the 1115 Medicaid waiver
application, namely, the uninsured and uninsurable populations. The Mississippi Medicaid program covered only categorically eligible children, so there were no exclusions. In addition, these analyses excluded children who were in state custody (at the time of the baseline interview) from the sample as they were eligible for a different benefits package in Tennessee.

A two-step recruitment method was used in the Impact Study. Step one involved sending letters to the parents/caregivers of prospective participants requesting permission to contact them about joining the research study. The letters were sent by state agencies in both states in order to protect the privacy of Medicaid beneficiaries. After excluding children whose addresses in the Medicaid databases were incorrect \( (n = 1,620, 14.7\%) \), 1,890 of the parents/caregivers agreed to be contacted about the study (20.1%). Eight percent \( (n = 752) \) also responded but declined to participate, and 72% failed to respond. Follow-up phone calls to nonresponders were specifically prohibited by the Medicaid agencies, again to protect beneficiaries’ privacy. These results are similar to an earlier study (Rubin et al., 1996) that used a similar recruitment strategy for Medicaid beneficiaries and yielded a response rate of 23%. A second step focused on obtaining informed consent to participate in the project from those who had agreed to be contacted. A telephone screening determined that 250 of the 1,890 who initially agreed to participate were ineligible based on loss of Medicaid since the sample extraction, and 320 could not be contacted. At the telephone screening or in-person informed consent, 100 (7.6%) refused to participate in the interview. Of the remaining participants \( (n = 1,220) \), the first 965 parents/caregivers were interviewed. Data collection took place during fiscal years 1997 and 1998, and children were selected who were ages 4 to 17 years at the time of data collection. Once the goal of 965 had been met, no further data collection took place.

The sample was 65.4% male, with similar proportions of African American and European American children (47.4% and 48.6%, respectively). Approximately one fifth (21.8%) of the children were ages 4 to 8 years, one third (32.4%) ages 9 to 11 years, and almost half (45.8%) ages 12 to 17 years. Coming from all regions of the two states, almost one fifth (18.9%) of the children came from rural counties, with one third (33.7%) from urban counties, and the remainder from counties surrounding the urban counties yet still classified as rural.

Sources of Data

Data were collected from parents using a face-to-face structured interview that included standardized questionnaires, described below, and other items. Interviews with the parents lasted from 45 minutes to 2 hours, depending on the amount of past service use by the child and the pace of the parent’s responses.

Child Behavior Checklist (CBCL).

The CBCL (Achenbach, 1991) is an empirically derived measure completed by each child’s parent or by a caretaker who has known the child at least 3 months. For children ages 4 through 18 years, parents report on a series of 112 problem behavior items. The CBCL has been norm-referenced for large populations (Achenbach, 1991; Zima, Wells, & Freeman, 1994) and demonstrated adequate internal and test–retest reliability (Achenbach, 1991). The CBCL provides a total problem score, two broadband scores (Externalizing, Internalizing), and scale scores for eight syndromes (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior). The T-score cutoff for the clinical range designations on the CBCL \( (\geq 64 \text{ for Total, Externalizing, and Internalizing}) \) was based on T-scores normed on a clinical population (Achenbach, 1991; Armsden, Pecora, & Payne, 1996; McConaughy & Achenbach, 1988), with higher scores indicating more emotional and behavioral problems. Many studies have demonstrated the validity of the CBCL and shown the relationship between CBCL syndrome scores and diagnoses (e.g., Achenbach, 1993; Edelbrock & Costello, 1988; Rey & Morris-Yates, 1992).

Columbia Impairment Scale (CIS).

The CIS (Bird, et al., 1993) is a 13-item scale designed to provide a global measure of psychosocial impairment based on parent report. It originally was developed for the National Institute of Mental Health Methods for the Epidemiology of Child and Adolescent Mental Disorders Study (Flisher et al., 1997; Glied, Hoven, Garrett, & Moore, 1997). The scale was designed to assess four major areas of functioning: interpersonal relations, certain broad areas of psychopathology, functioning at school or work, and use of leisure time. Items are scored on a Likert scale ranging from 0 (no problem) to 4 (a very big problem); the potential total score ranges from 0 to 52. A score of 16 or greater is considered indicative of definite impairment (Bird et al., 1993); thus, higher scores indicate greater levels of impairment. It has been demonstrated that the CIS provides an adequately reliable and valid measure of impairment and also correlates highly with the clinician-determined scores of the Children’s Global Assessment Scale (Shaffer et al., 1983; Bird et al., 1993).

Determination of Serious Emotional Disorders (SED).

Federal block grant funding (Substance Abuse and Mental Health, 1993) requires that states adopt a two-part definition of serious emotional disorders (SED) for applications for federal assistance, and the definition includes both a Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994) diagnosis and an impairment in psychosocial functioning. Symptomatology or diagnosis provides a direction or category of emotional/behavioral problems and level of functioning provides the depth or degree of impairment in home, school, or community.

Federal SED status for this project was determined using scores on both the CIS and the CBCL. Taken together, these two scales measure the child’s ability or inability to function in the community in a variety of age-appropriate ways, based on parental reports. A score in the impaired range on the CIS indicated impairment in psychosocial functioning. The CBCL Total Problem T-score was used to identify...
significant emotional or behavioral problems, using the cutoff for the clinical range as a proxy for diagnosis in the two-part federal definition of SED. Therefore, children with elevated scores on both the CIS and the CBCL, indicating both serious symptoms and impaired functioning, were designated as meeting the two-part federal criteria for SED.

**Child Health Questionnaire (CHQ).** The CHQ (Baribeau et al., 1993; Starfield, 1974) provides a profile of 14 health concepts and summary indices of physical and psychosocial functioning and well-being for children 5 years of age and older. The measure also was used for 4-year-olds in the present study. The CHQ produces standardized scale scores from 0 to 100, such that higher scores indicate higher levels of functioning and fewer limitations (Landgraf et al., 1996). Three measures of health from the CHQ were used: child’s Global Health Status (parent’s assessment of the child’s health as excellent, very good, good, fair, or poor); the Physical Functioning Scale (presence and extent of physical limitations in self-care, mobility, and activities varying in strenuousness); and the General Health Perceptions Scale (parent’s assessment of overall health and illness). The scale authors report good internal consistency for each of these scales (Landgraf et al., 1996).

**Other Information From the Impact Study Interviews.** In addition to demographic information, other items used in the analyses included parent information regarding child chronic health conditions. Parents reported whether their children had ever received formal diagnoses of chronic illnesses or disabilities and, if so, the types of conditions.

**Statistical Analyses**

The relationship between children’s mental health problems and health status was first examined among four groups of children with varying levels of mental health problems:

1. those with both psychosocial impairment (CIS) and clinical-level problems on the CBCL who were designated as meeting criteria for SED ($n = 498$),
2. those with clinical-level problems on the CBCL but without psychosocial impairment ($n = 58$),
3. those with psychosocial impairment only (CIS) ($n = 119$), and
4. those who did not meet the cutoff for either psychosocial impairment or clinical-level problems ($n = 290$; see Table 1).

Differences among these four groups on health status indicators were initially examined using multivariate analysis of variance (MANOVA).

Next, ordinary least squares regression was used to determine the effects of three blocks of variables on parents’ reports of their children’s health on the three health status measures from the CHQ: Global Health Status, General Health Perceptions, and Physical Functioning Limitations. The three blocks of variables were (a) demographic variables, including child’s age, gender, and race, included primarily as control variables; (b) the number of chronic illnesses or disabilities reported by the parent; and (c) the child’s designation as meeting SED criteria or not.

**RESULTS**

A total of 37.3% of the IMPACT sample were reported by their parents to have at least one chronic health condition, with nearly half of those reporting more than one condition (see Table 1).

**Comparing Children with Varying Levels of Mental Health Problems**

Table 1 also shows the health disadvantages among children with varying levels of mental health problems. Children with SED (those both impaired on the CIS and meeting clinical cutoff on the CBCL—see the fourth column) and those with clinical-level problems on the CBCL (see the third column) were significantly more likely to have at least one chronic health condition (42.7% and 40.0%, respectively) and to have a greater number of chronic health conditions. For Global Health Status, General Health Perceptions, and Physical Functioning, children with SED consistently demonstrated significantly poorer health status than children with fewer mental health problems (columns 1–3). The results in Table 1 show the trend that children without psychosocial impairment or clinical-level mental health problems (column 1) consistently received scores indicating better health on all measures, followed by those with psychosocial impairment but without clinical-level mental health problems (column 2). Children with clinical-level mental health problems (column 3) scored consistently in the less-healthy direction, with those children meeting SED criteria (column 4) and exhibiting the most mental health problems having the poorest health status on each indicator.

**Impact of Mental Health Problems on the Prediction of Health Status Indicators**

Table 2 shows that the least squares regression model using all three blocks, including demographic, health, and mental health variables, provided the best fit for predicting the health status indicators. The demographic variables entered in Block 1 as control variables accounted for a small but statistically significant portion of the variance in each model. Block 2 tested the effects of the number of chronic health conditions reported by parents on the children’s health. As expected, this variable was the most powerful of the independent variables and had similar effects on all three measures of child health. Block 3 added the child’s designation as having SED, and this also accounted for a significant change in the $R^2$ for each health indicator, even after controlling for the effects of number of chronic health conditions. Parents’ reports of children’s health on all three measures could be predicted using the independent variables, although these variables accounted for more variance in parents’ ratings of their children’s Global Health Status and General Health
<table>
<thead>
<tr>
<th>Health measure</th>
<th>Not impaired, no problems (n = 290)</th>
<th>Impaired only (CIS) (n = 119)</th>
<th>Problems only (CBCL) (n = 58)</th>
<th>Both impaired &amp; problems (SED) (n = 498)</th>
<th>Total (n = 965)</th>
<th>F&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Significance of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children with chronic conditions</td>
<td>30.0% (87)</td>
<td>31.1% (37)</td>
<td>40.0% (23)</td>
<td>42.7% (213)</td>
<td>37.3% (360)</td>
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<td>Number of chronic conditions</td>
<td></td>
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<td>25.81</td>
<td>29.14</td>
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<td>General health perceptions</td>
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<tr>
<td>M</td>
<td>67.26</td>
<td>63.89</td>
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<td>SD</td>
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<td>21.62</td>
<td>23.45</td>
<td>22.98</td>
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<td>Physical functioning</td>
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<tr>
<td>M</td>
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<tr>
<td>SD</td>
<td>23.00</td>
<td>23.34</td>
<td>22.31</td>
<td>25.56</td>
<td>24.66</td>
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</table>

Note. CIS = Columbia Impairment Scale (Bird et al., 1993); CBCL = Child Behavior Checklist (Achenbach, 1991); SED = serious emotional disorders.

<sup>a</sup>Multivariate analysis of variance.
Perceptions than in reports of limitations in Physical Functioning.

The results of the regression including all blocks and variables are presented in Table 3. Child age was negatively related to Global Health Status and Physical Functioning: the older the child, the poorer his or her Global Health Status and level of Physical Functioning. Gender was significant at the $p < .05$ level only for Physical Functioning, with boys reported with significantly more positive Physical Functioning than girls. Race was significantly related to parents’ perceptions about their children’s health in all areas, with parents of African American children consistently rating their children’s health status lower. As mentioned above, the number of chronic health conditions reported by parents was among the most powerful of the independent variables and had similar effects on all three measures of child health. The greater the number of chronic health conditions reported, the lower the child’s health status was rated.

SED status also contributed significantly to predictions of all three health status indicators. Children with SED were rated with significantly lower health status than children who did not meet SED criteria, after controlling for number of chronic health conditions. The standardized beta coefficient indicates stronger effects of SED status on General Health Status and General Health Perceptions than on Physical Functioning.

**DISCUSSION**

**Key Findings**

The contribution of this study has been to demonstrate, on a large sample of child recipients of Medicaid, the relationship between physical health problems and serious emotional disorders. Parents of children with SED were significantly more likely to report chronic health conditions in their children than were parents of children with no mental health problems (43% vs. 30%). This is the first large study of low-income children to document such high rates of chronic health conditions among children with SED. The results of the multiple regression analyses further support this relationship; in each model, SED designation was significantly correlated with parental reports of poorer health status.

The overall proportion of 37% of children with reported physical disabilities or chronic health conditions exceeds Newacheck and Halfon’s (1998) estimate of 31% based on the 1992–1994 National Health Interview Surveys. It also well exceeds Newacheck et al.’s (1998) estimate based on the 1994 National Health Interview Survey on Disability that 18% of American children had a chronic physical, developmental, behavioral, or emotional condition and required health and related services beyond those of children generally.

There are several possible reasons for these differences. First, the wording and categorization methods in the National Health Interview Surveys were not equivalent to those employed for the Impact Study. Second, the Impact Study oversampled for children with mental health problems, who were demonstrated to show higher rates of chronic illness. Moreover, because the Impact Study included only children who were eligible for Medicaid based on low income or disability, we would expect the health of the sample to be relatively poor (see Brooks-Gunn & Duncan, 1997). (See Helfinger, Simpkins, Northrup, Saunders, & Renfrew, 2000, for a discussion on health status indicators using data weighted to be representative of the statewide Medicaid population.)

These results are consistent with previous research showing higher rates of mental health problems among children with chronic health conditions. Neither this study nor the research reviewed for it provides an explanation of the relationship between physical and mental health problems, of course; one might cause the other, or a third variable may influence both types of health problems. Indeed, the fact that both physical and mental health problems are more prevalent among children in lower-income families may suggest a prominent role for poverty for both types of problems. Longitudinal studies of large samples of children from birth would provide convincing evidence of such a relationship.

**Limitations of the Current Study**

The Impact Study offers the first data about chronic health conditions in a large sample of children with serious mental health problems. A number of limitations should be considered in interpretation of these data, however. First, the rate of one in five parents responding to the mailed recruitment raises issues of generalizability. It is well-known that when response rates are low, it is unlikely that response is random. Rather, it is likely that issues such as saliency of the issue, sociodemographics, and functional limitations are related to response. It is possible, for example, that even though all children were Medicaid beneficiaries, those who did not respond to the Impact recruitment letters were those of lesser means or those whose children were more seriously ill; these families would have less time and fewer resources to participate. If study participants tended to have children with fewer mental health problems than those who did not participate in the study, the effect would be to reduce the true relationship between physical and mental health problems.

On the other hand, given the generally low socioeconomic level of the sample and the broad range of functioning of the children, this may not be the case. Given state Medicaid agencies’ concerns about releasing the names of Medicaid recipients and the similar response rates in previous research (Rubin, Jenckes, & Shaffer, 1996), this may be a limitation in the research that cannot be overcome. This project did not have sufficient resources to conduct the extensive follow-up required to achieve high response rates in order to make this determination.

Second, reliance on parent report for chronic health conditions tends to result in higher estimates of prevalence than studies using clinical examinations, which is due largely to parents overreporting conditions with little impact on children’s functioning (see discussion in Newacheck & Halfon, 1998). Moreover, unlike the NHIS (Adams & Hardy, 1989), in which parents selected their children’s conditions from a list of conditions, in the Impact Study parents named their chil-
dren’s chronic conditions without reference to a list. It is hard to estimate how these methods might affect parents’ answers, or how parents’ reports might be affected by their children having SED.

Finally, measurements of functional limitations generally are based on individuals’ major role responsibilities, for example, employment or care of a home and family for adults. The major activities are play for younger children and school for those of appropriate age. The CHQ Physical Functioning subscale failed to include limitations on attending and participating in school, and thus it may result in underestimates of functional limitations. However, the inclusion of a number of questions about limitations in activities requiring a broad range of exertion may compensate for this limitation. For example, parents reported limitations in activities requiring “a lot of energy, such as playing soccer or running” and activities requiring “some energy, such as riding a bike or skating.” In addition, they reported limitations in getting around the neighborhood, physical activities such as walking and climbing, and self-care activities.

**Implications for Practice**

As a first step, these results clearly indicate the need to screen children with mental health problems for health concerns, and vice versa. These screenings could ensure not only that all health and behavioral health issues are identified, but also that the professionals treating the child and the family members are aware of the “big picture” and can develop plans that take all of the child’s needs into account. Preventive health care screening should include mental health issues and, in fact, is mandated through the Medicaid program (Health Care Financing Administration, 1995; National Institute for Health Care Management, 1996). Physicians should expect to identify mental health issues and know their local resources for referral. Similarly, mental health professionals must recognize the need to identify and obtain treatment for health problems, and should routinely refer their clients for preventive screens as well as follow-up with their physicians.

Next, coordination of services between physicians and mental health providers is needed. In a related study on this population of children (Hefflinger et al., 2000), parents/caregivers reported that they regularly consulted their children’s pediatricians about emotional and behavioral problems. Physicians and mental health providers should also coordinate assessment and treatment plans. Indeed, our findings support Walders and Drotar’s (1999) suggestion that coordinated services that integrate both pediatric and mental health services might be cost-effective in improving the long-term prognosis and medical course for children whose physical conditions contribute to poor mental health. Guiding principles for children’s services have included access to and coordination among a full array of services to meet the comprehensive needs of the child, including emotional and physical needs (Stroul & Friedman, 1986). Best practice guidelines also call for communication and coordination among health and behavioral health providers (e.g., American Academy of Pediatrics, 2000).

Family issues regarding children with co-occurring mental health and chronic health conditions should also be acknowledged. Families of children with chronic health problems experience high levels of stress and difficulties in caring for their children and obtaining the services their children need (Drotar, 1998), and caregiver strain associated with children’s mental health problems has similarly been demonstrated (Brannan, Hefflinger, & Bickman, 1997). The combination of physical and mental health problems likely contributes disproportionately to stress, in part because it involves negotiating two separate service delivery systems and possibly two separate financing systems. These issues should be explored by the health and behavioral health providers working with such families, and treatment and service plans should be developed accordingly. Researchers and policy makers also must work toward effective integrated service systems (Bazelon Center, 2000; Kagan, Golub, Goffin, & Pritchard, 1995).

Only recently has research begun to examine the effects of managed care on children with chronic health conditions. Managed care is a salient issue for this group of Medicaid children, as Medicaid programs across the country are adopting this method for financing health and behavioral health services (Kaiser Commission, 2001). While parents of children with special health needs report satisfaction with some aspects of managed care, such as explicit coverage of some auxiliary services.

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**Table 2**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Global health status</th>
<th>Physical functioning</th>
<th>General health perceptions</th>
</tr>
</thead>
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<tr>
<td></td>
<td>$R^2$ change</td>
<td>Cumulative $R^2$</td>
<td>$R^2$ change</td>
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<tr>
<td>Demographics</td>
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<td>.058</td>
<td>.013$^a$</td>
</tr>
<tr>
<td>Number chronic conditions</td>
<td>.121$^b$</td>
<td>.179</td>
<td>.114$^a$</td>
</tr>
<tr>
<td>SED status</td>
<td>.047$^a$</td>
<td>.226</td>
<td>.013$^a$</td>
</tr>
</tbody>
</table>

**Note.** SED = serious emotional disorders.

$^a$Change in $R^2$ significant at $p < .01$. 

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<table>
<thead>
<tr>
<th>Variable</th>
<th>Global health status</th>
<th>Physical functioning</th>
<th>General health perceptions</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>β&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Age</td>
<td>-.940 ( .283 )</td>
<td>-.102</td>
<td>-3.319</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>1.295 ( 1.774 )</td>
<td>0.22</td>
<td>.730</td>
</tr>
<tr>
<td>Race (African American)</td>
<td>-12.529 (1.700)</td>
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<td>Number chronic conditions</td>
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<tr>
<td>SED</td>
<td>-12.458 (1.740)</td>
<td>-.223</td>
<td>-7.160</td>
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</table>

Note. SED = serious emotional disturbance.

<sup>a</sup>Standardized Beta coefficient.
often not covered under other types of arrangements, they also express dissatisfaction with other aspects, such as requirements for referrals and serious limitations in the amount of mental health care allowed (Fox, Wicks, & Newacheck, 1993). Perhaps most critical, both Fox et al. (1993) and Walders and Drotar (1999) question the clear lack of coordination between mental health and pediatric care that is inherent in the “carve-out” approach that currently funds most mental health services separately from basic and specialty pediatric care.

Understanding the relationship between mental and physical health conditions takes on critical importance as managed care drives a new emphasis on cost containment. Gortmaker, Walker, Weitzman, and Sobol (1990) called attention to the fact that despite the well-established relationship between chronic health and mental health problems in children, little had been done to develop and test interventions that would prevent or treat emotional problems among children with chronic health conditions. Such remains the case, and indeed, current efforts toward cost containment, which tend to limit access to specialty care (Fox et al., 1993), may mitigate against the development of such interventions. Walders and Drotar (1999) noted that managed care was moving toward less integration of physical and mental health services, despite indications of the critical need for comprehensive, integrated services.

In conclusion, the findings of this study indicate that children with serious emotional disorders are more likely than children without such problems to suffer from chronic health conditions. These findings lend support to the need for thorough and comprehensive health assessments for children in the mental health system, and for greater efforts by providers of all kinds to coordinate with other providers as they serve these children and their families.

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References


Achenbach, T. M. (1993). Empirically based taxonomy: How to use syndromes and profile types derived from the CBCL/4-18, TRF, and YSR. Burlington: University of Vermont Department of Psychiatry.


