

# Child Health Status and Parental Employment

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**Objective:** To understand the relationship between several measures of child health status and the employment of parents.

**Design:** A cross-sectional study using 1994 National Health Interview Survey on Disability data.

**Participants:** A nationally representative sample of children and their parents.

**Outcome Measures:** Maternal and paternal employment (measured separately).

**Intervention:** We use a series of logistic regression models with maternal and paternal employment as the dependent variables and the health status of the child with the poorest health status in the family as the primary independent variable. Models additionally include socio-demographic correlates of employment.

**Results:** Having a child with poor health status, as measured by general reported health, hospitalizations, activity limitations, and chronic condition or disability status, is associated with reduced employment of mothers and fathers. For example, the odds ratios of being employed for having a child with an activity limitation are 0.75 for mothers (95% confidence interval, 0.67-0.85) and 0.66 for fathers (95% confidence interval, 0.53-0.82).

**Conclusions:** Having a child with poor health status is associated with reduced maternal and paternal employment. Further studies are needed to determine whether poor child health status causes reductions in parental labor force participation. If such a causal relationship exists, it has important implications for social policy, employment policy, and clinical anticipatory guidance.

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**T**HE EPIDEMIOLOGY of childhood chronic conditions has changed considerably in the past 3 decades. Improved medical and surgical technologies and access to these technologies during the last few decades have notably changed survival rates.<sup>1-5</sup> Several childhood conditions have increasing prevalence (eg, acquired immunodeficiency syndrome, asthma, and attention-deficit/hyperactivity disorder),<sup>6-11</sup> and the prevalence of activity-limiting chronic conditions doubled between 1960 and 1981 and tripled by the mid 1990s.<sup>12,13</sup> Child health status, especially chronic illness, may have an important effect on parental employment. Recent trends in employment and family structure make this a timely issue. In recent years, labor force participation of mothers who have children younger than 6 years doubled.<sup>14</sup> A rise in the divorce rate and the rate of childbearing outside marriage has led to increases in single-parent families.<sup>15</sup>

Concurrent with these changes, opportunities to care for children with chronic conditions in the home have expanded.<sup>16</sup>

Medicaid home and community care waivers provide additional services to keep children out of institutional facilities and in the home or community, without requiring families to "spend down" to Medicaid eligibility levels.<sup>17</sup> Increasing cost-consciousness among insurers and health care providers has led to shorter hospital stays and a reduction in institutionalization. Several legal changes, such as the Education for All Handicapped Children Act,<sup>18</sup> the Individuals With Disabilities Education Act,<sup>19</sup> and the Americans With Disabilities Act,<sup>20</sup> enhance the civil rights of children with disabilities and support some parents' desires to keep children at home.

Major public programs make assumptions about the impact that having a child with a chronic condition has on the family, yet few data are available to support these assumptions. For example, the Supplemental Security Income program supplies a cash benefit to children who meet income and disability criteria. One justification for the cash benefit is that having a child with a disability reduces labor force participation of family members, although recent reviews of the child and ado-

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## SUBJECTS AND METHODS

### DATA SOURCE

The 1994 NHIS-D provides the most comprehensive national survey on disability ever undertaken in this country.<sup>30</sup> The US Bureau of the Census conducted the field operations for the survey. The noninterview rate was 5.9%.<sup>31</sup> The survey uses a multistage sample designed to represent the civilian noninstitutionalized population of the United States.

### SAMPLE

We included all families with children and adolescents younger than 18 years and a parent 18 years or older living in the household as the base sample. We then merged information on each child with the parent's information using the household identifier and information on the relationships of the household members with that of the respondent. Parenthood is determined by self-reporting and likely includes biological, adoptive, and stepparents. We excluded parents younger than 18 years and parents who are not coresidents in the household. We had difficulty identifying parent-child pairs in some households with extended families (eg, a grandparent as the primary respondent with 2 sisters living in the same household, each of whom had children). Within a family, we used the health information of the child with the poorest health status for each measure (see the "Variable Description" section) and created 2 separate analysis groups for fathers and mothers.

### VARIABLE DESCRIPTION

#### Employment

The NHIS-D records whether adults worked for pay at a job or business in the past 2 weeks. We coded parents who currently had a job as employed and other parents as not employed.

#### Sociodemographic

We chose commonly used covariates of employment to include in our logistic regression models. Parental demographic characteristics include self-identified race (white, African American, and other), ethnicity (Hispanic/Latino vs not), age, and educational level. Family characteristics included the number of children in the household (continuous variable), the age of the child with the poorest health status (when  $\geq 2$  children had equal health status, we randomly choose one of the children to measure child's age), and marital status of the parent. We further examined

whether the parent lived in a central city, a noncentral city urban area, or a rural area.

#### Child Health

Child and adolescent health status measures include parent's report of the child's general health status (excellent, very good, good, fair, poor) and whether the child had any functional limitation. The functional limitation questions queried whether the child was limited in play activities compared with children of a similar age and whether the child was limited in school activity (for children aged 5-17 years). We also examined whether the child was identified as having a chronic condition using a consequences-based criterion. This definition was based on the conceptual work of Stein and colleagues<sup>32</sup> and operationalized in NHIS data to correspond with the items on the Questionnaire for Identifying Children With Chronic Conditions.<sup>33</sup> We included one measure of health care utilization, whether the child was hospitalized (this includes children hospitalized for a variety of reasons), since hospitalization may be associated with unique time demands of parents.

### DATA ANALYSIS

We examined means and frequencies for all dependent and independent variables from the 2 populations. We used logistic regression to determine the relationships between sociodemographic characteristics, child health status, and parental employment. We used separate models for fathers and mothers, married and unmarried parents, and each of the 4 measures of health status. This approach resulted in 12 logistic regression models that examined associations with maternal employment and 12 with paternal employment. We chose to stratify analyses by the marital status of the parent because of the large increase in single-parent families and because we anticipated a greater effect on parental employment if the family had 2 coresident parents available to share earning and caregiving roles. Each regression includes the age of the child whose health status is measured, parent's age, parent's education, whether the parent is married (in the model of all women and all men only), race and ethnicity, urban residence, and the number of children in the household. We built models by examining the relationships of the covariates and health status measures with parental employment separately. We then combined these 2 types of variables into 1 model. We included all of the covariates regardless of whether they were statistically significant. All analyses were weighted using weights supplied by NHIS-D, and the regression models were corrected for the sampling structure using statistical software.<sup>34</sup> This project received approval from the Massachusetts General Hospital Institutional Review Board.

lescent Supplemental Security Income program have disputed the extent of its effect.<sup>21</sup> Families, clinicians, and employers could benefit from increased information about how child health status affects employment.

Previous studies<sup>22-26</sup> of the relationship of maternal labor force participation and child health status have used small and unrepresentative samples. These studies generally find decreased labor force participation of mothers when the family includes a child with a chronic health

condition. A study<sup>27</sup> of single mothers found poor child health status had a net association with maternal employment. One study<sup>28</sup> that used nationally representative but old (1972) data found a 10% decrease in maternal employment among white families with a chronically ill child. A second nationally representative study<sup>29</sup> that used recent data found that children with conditions likely to require substantial parental care had increased odds of having fewer than 2 parents working (for 2-parent

**Table 1. Employment, Sociodemographic, and Child Health Characteristics of Households With Children Younger Than 18 Years\***

Characteristic	Mothers (n = 13 394)	Fathers (n = 10 930)
Employed, %	63.8	91.4
Race, %		
White	81.8	86.7
African American	13.6	8.3
Other	4.6	5.0
Ethnicity		
Hispanic, %	12.6	11.9
Mean No. of children	1.9	1.9
Mean age of parent, y	35.5	38.1
Mean years of parent's education	13.0	13.4
Married, %	88.1	96.8
Parent-reported general health of child, %		
Excellent	47.9	49.9
Very good	27.8	28.2
Good	18.5	16.9
Fair or poor	4.2	3.4
Missing	1.6	1.6
Child has an activity limitation, %	10.9	9.3
Child has chronic condition status, %	23.1	22.2
Child hospitalized in the past year, %	5.5	5.2

\*The measures of child health status indicate the health status of the child in the family with the poorest health status on each measure. Data are from the 1994 National Health Interview Survey on Disability. Results are weighted.

households) and no parent working (for single-parent households). No known studies examine paternal employment or compare different measures of child health status to parental employment.

We examined a nationally representative sample survey of households using the 1994 National Health Interview Survey on Disability (NHIS-D).<sup>30</sup> The NHIS-D has rich data on child disability. We used the 1994 NHIS-D data rather than a more recent NHIS survey because the NHIS-D has richer data on child health status. We hypothesized that having a child with poor health status would be associated with reduced parental employment and that measures of health status that imply greater caregiving requirements by parents would have a stronger relationship with employment than other measures. We further hypothesized that married parents would have a stronger association between child health status and parental employment because the second adult can provide health insurance and income in 2-parent families.

## RESULTS

**Table 1** gives weighted means and percentages for dependent and independent variables for the sample of mothers and fathers separately. The child health status figures are worse than national figures because we use the child with the worst health status for each measure. Still, in general, these children have excellent health status. There is substantial overlap between the measures of health status, with agreement among all 4 health status measures for about 80% of each sample.

**Table 2** gives the results of 12 logistic regression models for maternal employment. Each number shows

the odds ratio (OR) for the health status measure from a separate regression that controlled for other predictors of employment. The results for these covariates (not shown) generally follow expected findings. The ORs for child health status are all statistically significant ( $P < .05$ ), and all indicate that poor child health status is associated with reduced maternal labor force participation for all mothers. For married women, the same general pattern holds. For unmarried women, the general health status measure, chronic condition status, and activity limitations are statistically significant.

**Table 3** gives the results of the parallel 12 logistic regression models for fathers. For the sample of all fathers, the same general relationship holds as for mothers; that is, ORs for child health status measures are consistently lower than 1.0 and are statistically significant in all cases. There is no consistent pattern of ORs for married or unmarried fathers. Married fathers are less likely to be employed if they have a child who had poor general health status, who was hospitalized, or who has an activity limitation. Unmarried fathers are less likely to be employed if they have a child with worse general health status, a chronic condition or disability, or an activity limitation. The ORs for the analyses of paternal employment are consistently smaller than those for maternal employment.

## COMMENT

These analyses show that poor child health status as measured by activity limitations, hospitalizations, general health status, and disability or chronic condition status is associated with reduced maternal and paternal employment. Among all mothers and all fathers, each of the 4 measures of health status is associated with a statistically significant decrease in parental employment. The measure of activity limitation has the strongest association among mothers (OR, 0.75). Hospitalizations have the strongest association among fathers (OR, 0.58). In general, indicators of a condition with more potential for an effect on the family (activity limitations and hospitalizations) have lower ORs than the measures that are more broad (general health status and the measure of chronic condition or disability). This finding suggests that there may be a relationship between the caregiving responsibilities associated with different health status measures and parental employment.

There may be a slightly greater association of child health status on employment for married mothers compared with unmarried mothers. (Analyses of all mothers that include the interaction of marital status and child health status confirm this [data not shown].) This is consistent with the hypothesis that married mothers will have increased options to choose employment because of the presence of another potential wage earner in the household. Among fathers, the differences between married and unmarried fathers are less clear.

The primary limitation of this study is the use of cross-sectional data, which only measure associations. Our hypotheses infer that the primary directionality is that of child health status influencing parental employment, although the reverse could operate in some circum-

**Table 2. Association of Child Health Status and Maternal Employment by Maternal Marital Status\***

Child Health Characteristics	Odds Ratio (95% CI)		
	All Mothers (n = 13 394)	Married Mothers (n = 11 800)	Unmarried Mothers (n = 1594)
Had an activity limitation	0.75 (0.67-0.85)	0.80 (0.69-0.92)	0.60 (0.49-0.74)
Respondent-reported general health (high = poorer health)	0.92 (0.88-0.95)	0.96 (0.92-0.99)	0.81 (0.75-0.88)
Chronic condition status	0.84 (0.77-0.93)	0.88 (0.79-0.99)	0.73 (0.60-0.89)
Hospitalized in past year	0.82 (0.69-0.96)	0.79 (0.66-0.95)	0.92 (0.64-1.32)

\*Results are from 12 logistic regression models. The logistic regression also controls for the age of the child whose health status is measured, mother's age, mother's education, whether the mother is married (in the model of all women only), race and ethnicity, urban residence, and the number of children in the household. The results are weighted, and confidence intervals (CIs) account for changes in the SEs owing to the sampling structure using National Health Interview Survey on Disability 1994 data.

**Table 3. Association of Child Health Status and Paternal Employment by Paternal Marital Status\***

Child Health Characteristics	Odds Ratio (95% CI)		
	All Fathers (n = 10 930)	Married Fathers (n = 10 580)	Unmarried Fathers (n = 350)
Had an activity limitation	0.66 (0.53-0.82)	0.80 (0.69-0.92)	0.60 (0.49-0.74)
Respondent-reported general health (high = poorer health)	0.85 (0.79-0.90)	0.96 (0.92-0.99)	0.79 (0.73-0.86)
Chronic condition status	0.81 (0.66-0.99)	0.85 (0.70-1.04)	0.54 (0.29-0.99)
Hospitalized in past year	0.58 (0.42-0.80)	0.79 (0.67-0.95)	0.91 (0.63-1.31)

\*Results are from 12 logistic regression models. The logistic regression also controls for the age of the child whose health status is measured, father's age, father's education, whether the father is married (in the model of all men only), race and ethnicity, urban residence, and the number of children in the household. The results are weighted, and confidence intervals (CIs) account for changes in the SEs owing to the sampling structure using National Health Interview Survey on Disability 1994 data.

### What This Study Adds

Previous studies have shown an association between child health status and maternal employment status. This study finds that this relationship is robust across multiple measures of child health status. It also finds an association between paternal employment and child health status. Clinicians should be aware of the implications of health conditions on both children and their families. Further studies are needed to determine whether poor child health status causes reductions in parental labor force participation. If such a causal relationship exists, social policies might support income supplements to parents of children with poor health status, employers might design flexible work schedules or sick-leave policies to allow parents to work if their child is sick, and clinicians might inform families when they provide anticipatory guidance.

stances. In particular, having parents who are not employed will on average reduce family income, which may in turn have a detrimental effect on child health status. A second limitation is that the reference time for the employment question was 2 weeks. Although the question specifies that temporary breaks (eg, a vacation) are not considered as lack of labor force participation, parents who are reacting to an immediate child health issue may report that they are not employed even if they are taking a temporary leave. Third, several potential confounding factors may explain the results. Most important, parents who are ill may be less likely to be employed and more likely to have a child with poor health status.

Further studies are needed to determine whether poor child health status causes reductions in parental labor force participation. If such a causal relationship exists, it has important implications for social policy, employment policy, and clinical anticipatory guidance.

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### Correction

**Error in Abstract.** In the article titled "Impact of Problem-Based Learning on Residents' Self-directed Learning," in the June issue of the ARCHIVES (*Arch Pediatr Adolesc Med.* 2001;155:669-672), there was an error in the "Results" section of the abstract. The phrase "5 or more hours of independent study (2% vs 7%)" should have read "5 or more hours of independent study (26% vs 7%)."  
The journal regrets the error.