Health Status of U.S. Children and Use of Medical Care

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A MAJOR THRUST of the Department of Health and Human Services at the beginning of the 1980s has been the emphasis on promoting health and preventing disease. The Office of the Assistant Secretary for Health published "Healthy People" in 1979 (*1*) and "Promoting Health/Preventing Disease. Objectives for the Nation" in 1980 (*2*). Opportunities and objectives for improving children's health were addressed in both documents and in the "Report of the Select Panel for the Promotion of Child Health" (*3*) and the report of the Surgeon General's Workshop on Maternal and Infant Health in 1981 (*4*).

These efforts by the Government are reinforced by the interest of the general public in improving and promoting their own health as documented by the General Mills American family reports (*5,6*) and by other surveys.

There appears to be a consensus, then, that good health is important. It is worth working for. Further, there appears to be general agreement that the promotion of good health should begin in childhood.

There also appears to be agreement in these recent documents and in the earlier Medicaid legislation that one avenue toward good health is good medical care for children. In some cases that relationship is demonstrably clear; innoculations for the preventable contagious diseases are probably the best-documented example. In other cases the relationship is less clear (*7*). More medical care does not necessarily mean better health, nor does less care result in poorer health as long as the child receives the care needed for his or her particular circumstances. Nevertheless, parents (*5*) and professionals (8) agree that checkups are essential even when children are healthy.

Given that good health and adequate medical care are important and that they are among the nation's objectives, it is worth examining the current situation so that a strategy for achieving the goals can be developed and so that we can implement a system to monitor progress. The purpose of this paper is to

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document parents' reporting of their children's health and the frequency with which they receive medical care. The documentation primarily is designed to provide data for those population groups thought to be at greatest risk, groups to which particular attention has been directed in the recent past, and groups which probably should be monitored to determine progress towards the goals set out in "Objectives for the Nation" (*2*).

Health Status

Measuring the health of a population is not easy. For children and youths in a modern technological society it is especially difficult. When death rates were high and infectious and parasitic diseases were the major killers of children, mere survival was considered a sufficient measure of health. The National Vital Registration System was established to monitor deaths and continues to do so. However, in the United States today death rates are extremely low and the majority of deaths of children and youths past infancy are caused, not by disease, but by accidents and violence. They tell us relatively little about the health of a population. Deaths attributed to accidents and violence, especially motor vehicle accidents, are not sufficient indicators of the health status of children.

We must turn to other sources to supplement the mortality data and draw information from studies of special populations and from the national health surveys. The United States is fortunate in having had farsighted people who, a quarter of a century ago, planned and implemented a National Health Survey program—the Silver Anniversary of the act establishing the National Health Survey was celebrated in 1981—and is even more fortunate in having officials who have continued the funding for those surveys so that data on morbidity are readily available to supplement those on mortality. It is one of those surveys, the National Health Interview Survey, that provides the data base for most of this paper.

Some researchers have thought that it would be useful to develop an index of health that would incorporate all measures of mortality; physical, mental, and emotional disability; illness; and social malfunctioning. There have been efforts to develop such indexes of child health by Eisen and co-workers (*9*) and by M. H. Boyle, S. P. Harwood, J. C. Sinclair, and G. W. Torrance—"Measuring Children's Health: A Proposed Function Classification Scheme and Symptom Problem List" (unpublished manuscript). These efforts should be encouraged. However, at this point in time, national estimates which incorporate physical, emotional, and social measures are not available for the same child from a single source. Even if they were, they might be of limited usefulness. First, problems can seldom be addressed in toto; the strategy to reduce the impact of untreated acute illness in poor children might be different from the strategy to reduce infant mortality. Second, for reasons that will become apparent, I think that it will be difficult to develop one index that is valid across cultures.

Thus, that is not my approach. Instead I have focused on indicators—individual measures of health—and on some of the variations among major demographic subgroups of the population. The data are national data. Although children in institutions, in inner-city slums, in the hills of Appalachia, or in the families of migrant workers may be in extreme poverty and ill health, special surveys and individual studies are required to document the health of those children who may have very special needs (*10–14*). Those studies are not the focus of this paper.

Some of the data for the indicators I will discuss (and for others) have been published in Volume III of the "Report of the Select Panel for the Promotion of Child Health" (*15*). That volume is the reference for statements in this paper when a specific reference is not made to another source.

However, in assessing the health of children and changes in their health, it is necessary to recognize that there is a social component (explicitly recognized by the World Health Organization charter) in health status. Thus, changes and differentials in some health status measures may be reflections of societal changes which lead to different perceptions of health, or expectations of what children's health should be.

Concurrently with the decline in death rates, there have been demographic and social changes in the United States. The post-World War II baby boom resulted in unprecedented numbers of children. The rapid decline in fertility following the baby boom has resulted in a declining population of children. At the beginning of the 1970s there were 1.6 working-age adults for every child; by 1978 there were 2.1; today there are 2.2.

It would seem that there are more adults to care for children than ever before, but the proportion of children in one-parent families has been rising steadily—primarily because of the increasing number of children involved in divorce but also because of the increasing proportion of children born out of wedlock. Almost 1 child in 5 (18.7 percent) was living in a single-parent family in 1978; of every 1,000 children, 18 were involved in divorce that year; of every 1,000 live births, 163 were to unmarried mothers.

Children, like people of all ages, are more likely to be living in urban areas. Educational levels have been rising, and labor force participation rates of mothers have been rising. Half of the children under age 18 had mothers who were in the labor force in 1978. Unfortunately, the proportion of children living below the officially designated poverty level has not declined. In the United States children are more likely to be living in poverty than people of any other age; 16 percent of all children and 51 percent of the children in households headed by women were living below the poverty level in 1978.

Social programs, especially Medicaid, have been implemented to reduce financial barriers to medical care, and the evidence indicates that differentials in the receipt of medical care between rich and poor have been reduced (*16,17*). One hope behind such a program is, of course, that health status will improve as a result of increased access to care and that differentials in health status will decrease.

Mortality Rates

Rather than dismissing mortality data, it may be helpful to look at those data, especially the changes over the past 50 years, to place a discussion of the current status of children in context.

The conditions surrounding childbirth have greatly improved over the past 50 years. In 1930, 65 out of 1,000 babies born alive died before their first birthday (*18*). Twenty years later, in 1950, the rate was less than half that—29 per 1,000. During the following 20 years, the rate of decline was much slower; in 1970, the infant mortality rate was still 20 deaths per 1,000 live births. For reasons only partly understood, the rate began to decline rapidly in the late 1960s, until by 1978 the infant mortality rate was 13.8 deaths under 1 year of age per 1,000 live births (*19*) and was 13.0 in 1979 (*20*). Data for the 12 months ending in September 1980 show the rate to be 12.7—3 percent lower than the rate of 13.2 for the comparable period ending September 1979 (*21*).

In 8 years, the infant mortality rate dropped 32 percent. More than 21,000 babies survived in 1978 who would have died if the 1970 rate had prevailed; about 52,000 babies lived who would have died according to the 1950 infant mortality rate, and 171,000 survived who would have died had the 1930 rate prevailed.

The 1970 to 1978 decline in deaths for the first 7 days after birth has been a phenomenal 38 percent. The first week of life is the period when the risk of death is greatest—58 percent of all infants who died in 1978 died during the first 7 days (*19*). These are deaths than can often be prevented by good prenatal care, by appropriate care for the woman at high risk of having her child die, and by first-rate care during delivery and immediately after birth. Part of the improvement is due to relatively fewer births to women who are at high risk because of age or parity; part is due to technical improvements in medical care and to regionalization of maternal and neonatal services. The decline in deaths in the postneonatal period (28 days to 1 year), when the environment in which the child lives is more important, has not been as great—only 14 percent from 1970 to 1978.

There is, however, no reason to believe that infant mortality rates in the United States are as low as they can be. For example, the infant mortality rate for black infants was 93 percent higher than for white infants in 1978; their mortality rate during the first 7 days was 89 percent higher. If the infant mortality rate for black infants had been as low as that for white infants, 6,129 of the 12,747 black infants who died that year would have lived.

Analyses of infant mortality rates by region reveal how much variation there is within the United States and give further indication of the possibility for improvement. In 1978 the infant mortality rate for the South was 26 percent higher than the rate for the West and the neonatality rate was 35 percent higher. Even within regions, rates in neighboring States varied greatly.

The decline in death rates for young children has also been dramatic. Of every 100,000 children 1–4 years of age, 564 died in 1930, 290 in 1940, 139 in 1950, 109 in 1960, 84 in 1970, and 69 in 1978. The provisional rate for 1979 is 63 (*20*). The infectious and communicable diseases that used to leave thousands of children dead or damaged are no longer leading causes of death. Some, such as diphtheria and poliomyelitis, are now rarely reported. Others, such as pneumonia, are still major causes of illness and hospitalization but are rarely killers, and they are less likely to leave children damaged because better treatment helps them to survive in good health. Accidents are now the leading cause of death for this age group, accounting for 42 percent of the deaths in 1978.

Older children have never had the high death rates of infants and young children. In fact, death rates in late childhood are lower than at any other age. Even for these children, however, the death rate in 1978 was only a fifth of what it was in 1930 (34 versus 172 per 100,000 children 5–14 years of age). Accidents were the cause of 51 percent of the deaths of 5–14-year-olds in 1978; 23 percent of all deaths in that age group were caused by motor vehicle accidents. The provisional rate for 1979 is higher (35 per 100,000), due entirely to a rise in the rate for white males as is the rise for the next older age group—15–24-year-olds (*20*).

At every single year of age, death rates are higher for boys than for girls (*22*). They are higher for "disease causes" and they are much higher for "external causes." For external causes—accidents, poisoning, and violence—the differential in 1976 was smallest at the beginning of life and then increased. Young boys under 6 years were 41 percent more likely to die of poisoning, accidents, or violence than young girls of the same age; young men 16–17 years of age were almost 200 percent more likely to die from accidents or violence than young women the same age.

Overall, death rates are higher for black children than for white children. In 1976, the differential was largest at the beginning of life and decreased through the school years until, for a brief period in adolescence (ages 16–17), black youths had lower death rates. After that, the rates diverged again. Young black children were more likely than white children to die of accidents, poisoning, or violence (death rates of 5.4 and 2.9 per 10,000, respectively, for preschool, and rates of 2.4 and 1.4, respectively, for elementary school-aged children). Black adolescents were less likely than white adolescents to die of these external causes (3.7 and 4.2 per 10,000, respectively) because fewer black youths were killed in automobile accidents; they were less likely to have access to cars and to have a driver's license.

Death rates among children and youths under 18 years would be reduced by one-quarter if no child died in an automobile accident. The use of restraining devices in back seats would keep small children from being thrown forward and perhaps killed. Some European countries have found that changing school hours so that they do not coincide with rush hours helps to reduce automobile accidents involving children. However, the greater potential for reducing deaths lies in reducing the number of deaths of adolescents. Raising the legal minimum age for both drinking and driving has been suggested as a way of saving the lives not only of young drivers but also of other children who may be passengers or pedestrians. This change is still a controversial issue, however (*23–25*). Designing and building safer vehicles and roadways might be a better way to reduce the risk of death for people of all ages as well as for adolescents.

Although data on socioeconomic differentials in childhood mortality are scarce, the existing data indicate that such differentials are greatest for mortality attributable to accidents. In England and Wales, where occupational class of the father is reported on children's death certificates, the standardized mortality ratio in 1970–72 for boys ages 1–14 in the lowest class was 2.2 times that of boys in the highest class for all causes of death, but 4.7 times as high for accidents, poisonings, and violence. The standardized mortality ratio for girls in the lowest class was 1.8 that for girls in the highest class for all causes and 3.4 times as high for accidents, poisonings, and violence.

Such information is not available for the United States. However, an analysis of data from the June 1975 Current Population Survey revealed that there were significant socioeconomic differentials in the mortality of people under 20 years of age and that a primary source of the socioeconomic variation was variation in mortality due to accidents (unpublished paper "Socioeconomic Effects of Child Mortality in the United States," by R. D. Mare of the Institute for Research on Poverty, Center for Demography and Ecology, University of Wisconsin, Madison). Mare's results indicate that accident prevention has the potential not only of reducing the number of early deaths but also of reducing the effects of socioeconomic differentials.

It may be well to address a side issue of the drop in mortality before turning to another topic. It has been suggested that reducing mortality will result in saving badly damaged children and will increase the prevalance of ill health and disability among children. From the data that are available over the years when infant and early childhood mortality rates have been declining rapidly, it appears that such a fear is unfounded.

Data being collected as part of an evaluation of the efficacy of regionalization of services to ensure that all pregnant women and their newborn children have rapid, sure access to an appropriate level of care indicate that there is an important parallelism between the risk factors for death and those for morbidity in surviving infants (*27*). Rather than increasing morbidity by reducing mortality, reducing the risk of mortality should also reduce the risk of morbidity.

Measures of morbidity do not generally show an increase. The proportion of elementary school-aged children in need of special services in 1963–65, for example, was almost identical to that found when the survey was replicated by the Foundation for Child Development in 1976. Special resources were recommended for about 21 percent of the children both times.

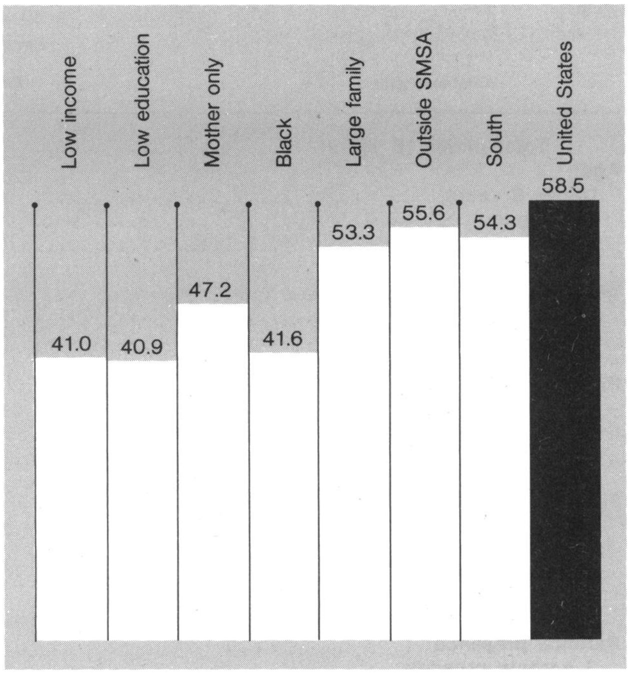
Most measures of the health of children and youths that have been obtained in the National Health Interview Survey continuously since 1957 show remarkable stability (*16,17,28,29*). The measures reflect epidemics and seasonal variation over the short term but show no time trends. There is possibly a trend in the proportion of children who are limited in activity by a chronic condition; this proportion appears to have increased from about 2 percent in the early 1960s to about 4 percent in the mid-1970s. The increase is not greater in younger than in older children, as would be expected if saving infants who would have died before the recent rapid decline in infant mortality were responsible. Nor is the apparent increase due to the increased proportion of children and youths who are adolescents and, being older, are more likely to be limited. Among other things, it could be due to increased parental awareness, better diagnosis through greater access to medical care, or decreased institutionalization of handicapped children.

Differentials in Health Status

In considering morbidity among children, I will address three questions: are there differentials in health status among children living in the community and, if so, what groups of children are likely to be in poor health? Are there differentials in receiving medical and dental care and, if so, which groups are not receiving care? Are those children towards whom the public programs are addressed, primarily the poor but also children in single-parent families, indeed in poorest health, and are they receiving their fair or equitable share of medical care?

Two measures of long-term health status and three measures of short-term disability are obtained on the National Health Interview Survey. One long-term measure is obtained in response to "Compared to other persons _________'s age, would you say that his health is excellent, good, fair, or poor?" In 1975–76, according to parental responses, 59.4 percent of the children under 18 years were in excellent health, 36.2 percent in good health, and 4.4 percent in fair or poor health. The second long-term measure is obtained from a series of questions to ascertain, first, if the person has any chronic conditions and how much the person with a chronic condition is limited in activity. Again, according to parental responses, 96.2 percent of the children and youths were not limited at all and 3.8 percent were limited—1.9 percent were limited but not in their major activity (defined as play for children under 6 and school for older children), 1.7 percent were limited in the amount or kind of major activity, and 0.2 percent were unable to carry on their major activity.

Figure 1. Percentages of U.S. children and youths under 18 years with parental rating of excellent health and not limited in activity, according to selected characteristics, 1975–76 annual average



NOTE: Low income—family income under $5,000; low education—8 years or less; large family—6 or more persons; outside SMSA—residence in nonmetropolitan county.

Ideally, all children would be in excellent health and not limited in any way. If they are not, there is a health deficit. The majority of children and youths—58.5 percent—were reported to be in excellent health and not limited by a chronic condition, but the remainder—2 children out of 5 or 41.5 percent—did not achieve that ideal (figs. 1–3 and table 1.)

By this measure the health deficit is indeed greatest for those groups of children who are usually assumed to be at greatest risk—children in poor or poorly educated families, black children, and children living without fathers. Fifty-nine percent of the children in families with an income of under $5,000 the previous year or in families whose head had not gone beyond eighth grade in school, 58 percent of the black children, and 53 percent of the children living without fathers failed to achieve "ideal" health (table 1). These same groups of children

Table 1. Limitation of activity and parental rating of health status of U.S. children and youths under 18 years, annual average 1975-76, according to selected characteristics (percent distribution)

Characteristic	*Not limited in activity*			*Limited in activity*	
	Excellent	*Good*	*Fair or poor*	*Excellent or good*	*Fair or poor*
Total under 18 years[1]	58.5	34.4	3.3	2.7	1.1
Age:					
Under 6 years	60.0	33.8	3.7	1.6	0.8
6-11 years	58.1	35.0	3.0	2.8	1.2
12-17 years	57.7	34.4	3.2	3.4	1.3
Sex:					
Male	58.9	33.8	3.2	3.0	1.1
Female	58.1	35.1	3.4	2.4	1.1
Race:					
White	61.5	31.9	2.7	2.8	1.1
Black	41.6	48.3	6.4	2.3	1.4
Other	53.2	41.7	3.0	1.4	0.7
Family income:					
Under $5,000	41.0	47.0	6.7	3.1	2.1
$5,000-$9,999	49.7	42.2	4.1	2.7	1.4
$10,000-$14,999	60.4	33.0	2.9	2.7	1.0
$15,000 or more	69.1	25.7	1.8	2.7	0.7
Parental presence:					
2 parents present	61.2	32.7	2.7	2.6	0.9
Mother only present	47.2	41.7	6.0	3.2	1.9
Neither parent present	45.5	44.3	5.2	2.9	2.0
Education of family head:					
8 years or less	40.9	49.3	5.8	2.4	1.6
9-11 years	48.8	42.4	4.6	2.8	1.4
12 years	60.9	32.5	2.7	2.9	1.0
13-15 years	68.0	26.2	2.0	2.9	0.9
16 years or more	74.9	20.7	1.4	2.4	0.6
Family size:					
3 persons or fewer	58.8	32.8	3.9	3.1	1.4
4 persons	60.9	32.4	3.0	2.7	1.0
5 persons	62.1	31.5	2.8	2.7	1.0
6 or more persons	53.3	39.6	3.6	2.5	1.1
Residence:[2]					
Within SMSA	59.5	33.5	3.2	2.7	1.1
Large SMSA	60.6	32.5	3.0	2.8	1.1
Core counties	58.1	34.4	3.5	3.0	1.1
Fringe counties	65.4	29.0	2.2	2.5	1.0
Medium SMSA	58.8	34.0	3.3	2.7	1.2
Other SMSA	57.1	36.2	3.2	2.6	1.0
Outside SMSA	55.6	37.0	3.7	2.7	1.1
Adjacent to SMSA	56.4	36.2	3.6	2.7	1.1
Not adjacent to SMSA	53.9	38.5	3.9	2.6	1.2
Region:					
Northeast	59.8	33.6	2.5	3.0	1.2
North Central	59.8	33.8	2.9	2.7	0.9
South	54.3	38.0	4.3	2.3	1.2
West	62.6	29.9	3.1	3.2	1.2

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[1] Includes children living with father only, those with family income unknown, and education of family head unknown.

[2] Residence characteristics are defined as follows:
Large SMSA—county with at least 1 million population
Core county—contains the primary central city of an SMSA
Fringe county—suburban county of an SMSA
Medium SMSA—county with 250,000–900,000 population
Other SMSA—county with less than 250,000 population
Outside SMSA—nonmetropolitan counties
Adjacent to SMSA—county contiguous to SMSA
Not adjacent to SMSA—county not contiguous to SMSA

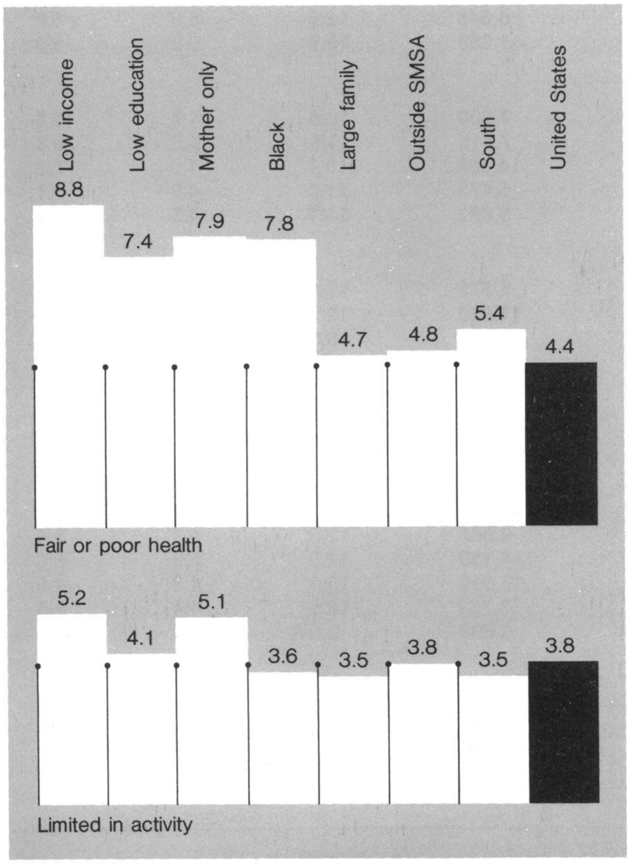
NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics. Data from the National Health Interview Survey.

were more likely than others to be reported as in fair or poor health, but they were not more likely to be reported as limited in activity. Indeed, one can see in figs. 1, 2, and 3, which summarize the health status indicators, that there is less variation among population groups if health status is measured by limitation of activity than if it is measured by rating health. Although both are measures of long-term health status and they are correlated, they reflect different dimensions. In general, the correlations between the two are higher in higher socioeconomic groups than in lower ones.

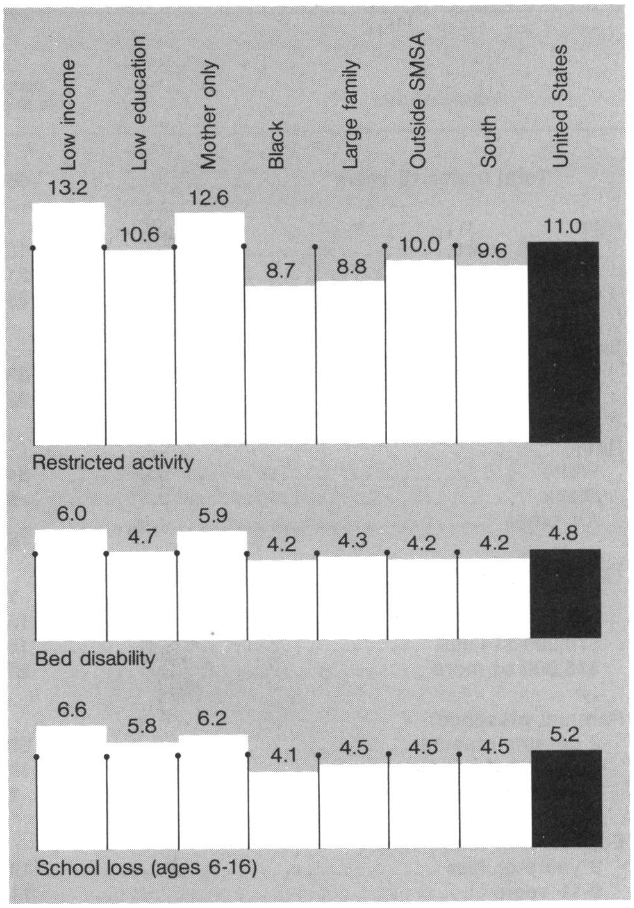
After eliciting information about impairments, acute and chronic illnesses, and injuries in the survey, the respondent is asked whether the person's activity was restricted for as much as a day during the past 2 weeks because of one of those conditions. If the answer is yes, the number of days is ascertained. The same questions are asked about days spent in bed and, for children ages 6–16, days lost from school. Both bed-disability days and school-loss days are subsets of restricted activity days, but they are not subsets of one another.

Figure 2. Percentages of U.S. children and youths under 18 years with parental rating of fair or poor health and percentages limited in activity, according to selected characteristics, 1975-76 annual average



NOTE: See footnote to Figure 1.

Figure 3. Disability days per person per year for U.S. children and youths under 18 years, according to selected characteristics, 1975-76 annual average



NOTE: See footnote to Figure 1.

On the average, children and youths in the United States in 1975–76 had 11.0 days of restricted activity and spent 4.8 days in bed because of illness or injury, and those ages 6–16 lost 5.2 days from school each year (table 2). Children in low-income (under $5,000) families and children living without fathers had more days of disability than other children. Black children, children in large families (six or more people), and children in the South had fewer. Children in poorly educated families were no more likely than other children to have days of restricted activity because of illness but, if their activity was restricted, they were more likely to miss school.

From figs. 2 and 3 it is apparent that, by all the measures, poor children and children living with their mother only were in poorer health than other children no matter how health was measured. For other groups of children the measures were inconsistent. Black children, for example, were perceived to be in poorer health than other children but have

Table 2. Disability days of U.S. children and youths under 18 years, annual average 1975-76, according to type of disability day and selected characteristics

Characteristic	U.S. population in thousands	U.S. population 6–16 years in thousands	Days per person per year of—		
			Restricted activity	Bed	School lost (ages 6–16)
Total under 18 years[1]	65,722	42,201	11.0	4.8	5.2
Age:					
Under 6 years	19,217	...	12.3	5.0	...
6-11 years	21,471	21,471	10.6	4.8	5.5
12-17 years	25,034	20,729	10.3	4.5	4.8
Sex:					
Male	33,436	21,469	10.8	4.5	4.8
Female	32,286	20,732	11.2	5.1	5.5
Race:					
White	54,967	35,419	11.4	4.9	5.3
Black	9,831	6,272	8.7	4.2	4.1
All other	924	509	9.7	5.4	6.0
Family income:					
Under $5,000	7,707	4,483	13.2	6.0	6.6
$5,000-$9,999	13,634	8,304	11.3	5.0	5.8
$10,000-$14,999	15,647	9,653	10.9	4.3	4.9
$15,000 or more	23,776	16,457	10.3	4.5	4.7
Parental presence:					
2 parents present	52,732	33,755	10.7	4.5	5.0
Mother only present	10,126	6,645	12.6	5.9	6.2
Neither parent present	2,204	1,268	12.7	5.8	5.9
Education of family head:					
8 years or less	10,945	7,600	10.6	4.7	5.8
9-11 years	11,552	7,515	11.5	5.0	5.3
12 years	23,053	14,566	10.7	4.8	5.0
13-15 years	8,946	5,473	11.0	4.8	4.7
16 years or more	10,578	6,622	11.1	4.5	4.9
Family size:					
3 persons or fewer	11,593	5,572	13.2	5.6	6.0
4 persons	18,842	11,023	12.1	5.0	5.6
5 persons	15,228	10,667	10.9	4.5	5.2
6 or more persons	20,059	14,938	8.8	4.3	4.5
Residence:[2]					
Within SMSA	47,907	30,609	11.4	5.0	5.4
Large SMSA	26,192	16,917	11.2	4.8	5.3
Core counties	17,203	10,939	11.5	5.1	5.5
Fringe counties	8,989	5,978	10.7	4.2	5.0
Medium SMSA	15,196	9,562	11.3	4.9	5.4
Other SMSA	6,519	4,130	12.0	5.8	6.0
Outside SMSA	17,815	11,592	10.0	4.2	4.5
Adjacent to SMSA	11,795	7,702	10.5	4.4	4.5
Not adjacent to SMSA	6,020	3,890	9.0	4.0	4.4
Region:					
Northeast	14,700	9,661	11.5	5.0	5.8
North Central	17,545	11,202	10.2	4.5	4.6
South	21,644	13,848	9.6	4.2	4.5
West	11,833	7,490	14.1	6.0	6.4

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[1] See footnote to table 1.

[2] See footnote to table 1.

NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics. Data from the National Health Interview Survey.

less disability. There is obviously a difference in the meaning of poor health. A cross-tabulation showed that only 17 percent of the black children in contrast with 28 percent of the white children who were reported to be in fair or poor health were also reported to be limited in activity. The differences among population groups in the relationships among the indicators of health status is my reason for thinking that a single index would not have the same meaning for children of different cultures or socioeconomic backgrounds.

Because income appears to be so important, it is appropriate to ask whether children in low-education or mother-only families and black children would have the same health status as other children if the family incomes were the same. Differences for perceived health status are decreased for all three groups and, for children living only with their mothers, they are no longer significant. However, income adjustment makes no difference in the proportion of children living without fathers who are limited in activity. There is evidence from other sources, a survey of children receiving Supplemental Security Income for example, that the proportion of disabled children living with mothers only is higher than would be expected by chance (*30*). One explanation that has been offered for this finding is that having a disabled child sometimes puts a strain on a marriage that the marriage can't survive.

In summary then, by any of the five measures of health status, children in low-income families are in poorer health than children in families with more money. After adjusting for income, children in other high-risk groups may or may not be in poorer health, depending on the measure of health.

Differentials in Health Care

My second question is: are there differentials in the receipt of health care? Again the answer is yes and, again, it is not a simple answer.

The American Academy of Pediatrics has published guidelines for the intervals at which children should be seen for routine care (*8*). The questions on the National Health Interview Survey were not designed to ascertain how many children are receiving the recommended care but an approximation was developed. If a child under 2 years had not had a contact with a physician within 6 months, a child ages 2–5 had not had a contact within a year, or a child ages 6–17 had not had a contact within 2 years, the interval indicated inadequate care. According to those standards, 14.4 percent of the children and youths in the United States in 1975–76 had inade-

Table 3. U.S. children and youths under 18 years whose interval since last contact with a physician was adequate for preventive care, according to selected characteristics, annual average 1975–76

Characteristic	*Adequate Interval (percent distribution)*	
	Yes	*No*
Total under 18 years[1]	85.6	14.4
Age:		
Under 6 years	87.9	12.1
6-11 years	86.9	13.1
12-17 years	82.9	17.2
Sex:		
Male	85.6	14.4
Female	85.7	14.3
Race:		
White	86.6	13.4
Black	80.5	19.5
Other	83.6	16.4
Family income:		
Under $5,000	81.9	18.1
$5,000-$9,999	82.3	17.7
$10,000-$14,999	85.4	14.6
$15,000 or more	89.3	10.7
Parental presence:		
2 parents present	85.8	14.2
Mother only present	85.7	14.3
Neither parent present	82.5	17.5
Education of family head:		
8 years or less	76.4	23.6
9-11 years	82.5	17.5
12 years	86.8	13.2
13-15 years	90.4	9.6
16 years or more	92.6	7.4
Family size:		
3 persons or fewer	90.9	9.10
4 persons	89.6	10.4
5 persons	86.0	14.0
6 or more persons	78.6	21.4
Residence:[2]		
Within SMSA	87.0	13.0
Large SMSA	88.4	11.6
Core counties	87.6	12.4
Fringe counties	89.9	10.1
Medium SMSA	86.1	13.9
Other SMSA	83.7	16.3
Outside SMSA	82.0	18.0
Adjacent to SMSA	82.8	17.2
Not adjacent to SMSA	80.5	19.5
Region:		
Northeast	90.0	10.0
North Central	86.1	13.9
South	82.9	17.1
West	84.6	15.4

[1] See footnote to table 1.

[2] See footnote to table 1.

NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population. Adequate was defined as within 6 months for children under age 2, within 1 year for children ages 2–5, and within 2 years for children ages 6–17.

SOURCE: Division of Health Interview Statistics, National Center for Health Statistics. Data from the National Health Interview Survey.

quate care (figure 4 and table 3). Children in low-education (8 years or less) families and large families were most likely to have received inadequate care; more than a fifth of the children in each of these categories and about a fifth of the black children had not had any contact with a physician within the stated interval. Medicaid, which helps to pay for the care of poor children with no father in the household, probably accounts for the finding that children living with their mothers and no father present were not failing to receive care and children in low-income families were not at severe risk.

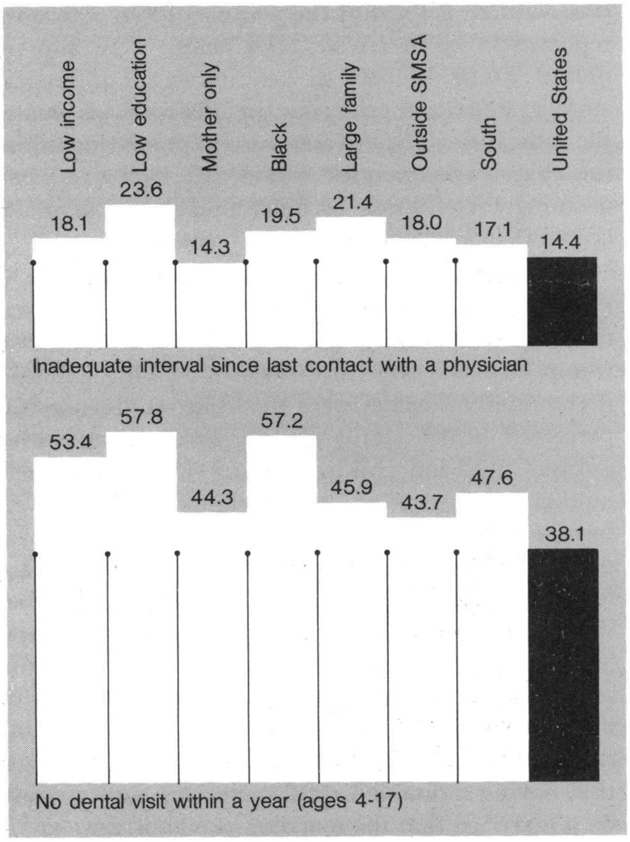
Standards for dental care are that children should begin seeing the dentist when they are 2 or 3 and then receive a dental checkup twice a year. About two out of five children age 4 or older had not seen a dentist within a year; over half of the black children in low-income families, and children in low-education families had not seen a dentist within that interval (fig. 4).

Again the question, "Are the differentials due to differences in the income distribution?" arises. While adjustment for the differing income distributions does reduce the differentials among population groups of children who have not received medical care within the stated interval, the reduction is small for most groups of children—only about a percentage point.

The reason that adjusting for income makes so little difference is that within many of the demographic categories the relationship between use of medical care and family income is curvilinear. This is the so-called Medicaid effect. Children who are just above Medicaid eligibility levels receive less medical care than those who are Medicaid eligible. Because Medicaid eligibility levels and criteria vary from State to State, the national data cannot be tabulated to show precise differences between Medicaid eligible and noneligible children, but the curvilinear relationship does occur.

Adjusting the proportion not receiving dental care within a year for differing income distributions does reduce the differentials among population subgroups. Instead of 57.8 percent of the children ages 4–17 in low-education families receiving no care, it would have been 53.1 percent if the proportions of children and youths in the 4 income categories had been the same as for the total population of children and youths. Instead of 57.2 percent of the black children, there would have been 53.9 percent. The conclusion, however, remains the same. More than half the children and youths in families whose head had not gone beyond the eighth grade and more than half the black children would not have received any dental care within a year even if the income distributions for those children had been the same as for all children and youths.

Figure 4. Use of medical care by U.S. children and youths under 18 years, according to selected characteristics, 1975-76 annual average (percent distribution)



NOTE: Low income—family income under $5,000; low education—8 years or less; large family—6 or more persons; outside SMSA—residence in nonmetropolitan county. Inadequate interval is defined as more than 6 months for a child under 2 years, more than 1 year for children 2–5 years, and more than 2 years for children 6–17 years.

Dental care is not well covered by either public or private insurance programs in the United States. The situation is changing, but dental care still has a stronger association with income than medical care.

Equity

The final question I address is that of equity. The large differentials in children's receipt of medical care that existed before the implementation of Medicaid have diminished (*31,32*). The poor have improved their position relative to the rest of the population and currently have high levels of access if the measure is number of contacts per person, but they may still receive less care relative to need.

Table 4. Contacts with a physician per person per year and disability days of U.S. children and youths under 18 years and percentages of those in good health with adequate care, according to selected characteristics, annual average, 1975–76

Characteristic	Contacts with a physician				Percent of those in excellent health with adequate care [1]
		Per 100 days of—			
	Per person per year	Restricted activity	Bed disability	School lost (ages 6–16)	
Total under 18 years[2]	4.1	37	86	60	85
Age:					
Under 6 years	6.4	52	127	...	88
6-11 years	3.3	31	69	61	87
12-17 years	3.0	29	67	60	83
Sex:					
Male	4.2	39	95	66	85
Female	4.0	36	79	55	85
Race:					
White	4.3	38	88	61	86
Black	3.2	37	76	55	80
All other	3.2	[3]44	[3]79	[3]57	83
Family income:					
Under $5,000	4.3	33	72	46	81
$5,000-$9,999	3.7	33	74	44	82
$10,000-$14,999	4.1	38	95	60	85
$15,000 or more	4.4	43	98	77	89
Parental presence:					
2 parents present	4.1	38	90	62	85
Mother only present	4.2	34	72	55	85
Neither parent present	4.3	[3]34	[3]75	[3]52	82
Education of family head:					
8 years or less	2.8	26	58	37	76
9-11 years	3.7	31	75	54	82
12 years	4.1	38	86	62	86
13-15 years	4.8	44	101	79	90
16 years or more	5.4	49	120	84	93
Family size:					
3 persons or fewer	5.9	45	105	67	91
4 persons	4.8	40	96	66	89
5 persons	3.8	35	85	63	86
6 or more persons	2.7	30	63	50	78
Residence:[4]					
Within SMSA	4.4	38	87	60	87
Large SMSA	4.4	39	92	64	88
Core counties	4.3	37	83	59	87
Fringe counties	4.8	44	112	75	90
Medium SMSA	4.3	38	88	60	86
Other SMSA	4.1	35	72	51	83
Outside SMSA	3.5	35	82	59	82
Adjacent to SMSA	3.6	34	81	59	82
Not adjacent to SMSA	3.4	37	84	58	80
Region:					
Northeast	4.5	39	89	61	90
North Central	4.1	40	91	69	86
South	3.7	39	89	59	83
West	4.5	32	75	53	84

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[1] Children with no activity limitation and parental rating of health status as excellent or good who had a physician contact in person or by telephone within an adequate interval for preventive care. Adequate interval is defined as within 6 months for a child under 2 years, within 1 year for children 2–5 years, and within 2 years for children 6–17 years.

[2] See footnote 1, table 1.

[3] Sampling error too large for statistical reliability.

[4] See footnote 2, table 1.

The use-disability ratio is one way of examining differences among population groups in the use of medical care relative to need (*32*). Such measures are shown in table 4. Differences among income groups are much greater when need is taken into account; differences between white and black children and youths are relatively smaller. Differences in the number of physician contacts between children of parents with little education and those with an above average education are large, whether need is taken into account or not. One reason for the large differential by education is that the proportion of all contacts which were reported by the household respondent as being for a "general checkup" was twice as great when the family head was a college graduate as when he or she had not gone beyond eighth grade (15 versus 7 percent). This extensive use of medical care for children of highly educated parents may reflect appropriate use of preventive services; it may also reflect overuse if the checkups are not really necessary.

Another way of looking at equity is to ask whether those children in excellent or good health and with no activity limitation due to a chronic condition have had a contact with a physician within an adequate interval with "adequate" defined by the criteria used earlier. Children with poor or poorly educated parents, black children, and children in large families are significantly less likely than other children to have received care within an adeqate interval.

Thus, when an indicator of health status is used as a measure of need for medical care, the differentials among population groups are greater then when need is not taken into account.

Poor children had as many contacts with a physician per year as children in families with more money (table 4). Relative to the number of days of disability, however, poor children had fewer contacts than children in families with more money. Thus equity—equal access according to need—has not been achieved. More important for future planning, perhaps, is that children in families where the head has not gone beyond eighth grade had very little medical care regardless of their health status or the family income. While Medicaid does appear to have helped children in families with little money—and particularly poor children without fathers in the household—receive medical care, there is an obvious need to help those children whose parent (s) do not have much education receive the care that they should have.

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SYNOPSIS

KOVAR, MARY GRACE: (National Center for Health Statistics): *Health status of U.S. children and use of medical care. Public Health Reports, Vol. 97, January–February 1982, pp. 3–15.*

By the traditional measures of health status—mortality rates—the health of children in the United States has greatly improved. From 1970 to 1979 the infant mortality rate declined from 20.0 to 13.0 per 1,000 live births. The mortality rate per 100,000 children ages 1–4 years declined from 84 to 63. The decline in mortality appears to have been accomplished without a rise in morbidity.

Despite the impressive achievements, 10 years after the implementation of Medicaid poor children were still in poorer health than children in families with more money and were still receiving less medical care relative to need. The differentials that existed before the Medicaid program had decreased, but they had not disappeared.

If the ideal is that all parents will report that their children are in excellent health and are not limited in activity by any chronic condition, 2 out of 5 children and youths under 18 years of age did not have ideal health in the mid-1970s. Less than half the children in poor or poorly educated families, black children, or children living without fathers in the household achieved that ideal.

If a goal for medical care is that children under age 2 have had a contact with a physician within 6 months, children ages 2–5 within a year, and children ages 6–17 within 2 years, 14 percent of U.S. children and youths did not achieve that relatively modest goal. About a quarter of the children in poorly educated families or families with six or more members had not had a contact with a physician that recently.

Tooth decay is one of the most prevalent problems of childhood, yet in 1975–76, 38 percent of the children ages 4–17 had not seen a dentist within a year. More than half the children in poorly educated families, black children, or children in low-income families had not seen a dentist that recently.