Disability in Butler County, Pennsylvania

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THE EXTENT of disability in a large population, conceived as individual inability to behave adequately in consequence of disease or injury, has received relatively little investigation.

A definition of adequate behavior should perhaps be a philosophical one. But for the purpose of measurement, we may discern forms of behavior which are attributable to a physiological handicap. For example, disease or injury may contribute to breakdowns in the interpersonal relations between the individual and members of his family. It may prevent him from carrying on his usual occupation. It may force him into restrictions of diet. It may result in motor disabilities, which are the forms with which this paper is concerned. These include the inability of the individual to feed himself, to dress and groom himself, to walk without help, and to climb or descend stairs, and the necessity of being confined to the house or bed or of having to use a wheelchair or a crutch or cane to walk.

Such disabilities present a much more tangible problem to the community than illness per se. Illnesses are important to society mainly because of their potential for causing either death or disability. It is the death or disability resulting from illness or injury, rather than the illness itself, which creates the burden of expense and the loss of productivity.

In 1954, we attempted to assess motor disability, as we have described it, in Butler County, Pa. We investigated the extent and duration of motor disability in the population and the frequency of various kinds of disability. Also, we attempted to associate a specific disease or injury with each disability.

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Method of Inquiry

The data for this inquiry were obtained as part of comprehensive health studies in Butler County. They are based on a probability sample of 3,403 residents. The sample allowed for geographic stratification and the proportionate representation of urban, rural place, and open country population.

Butler County is directly north of Allegheny County, which includes Pittsburgh. Of its total population of about 103,000, 28.1 percent live in cities; 19.4 percent, in rural places; and the remaining 52.5 percent, in open country. Ethnically, the population is relatively homogeneous, an American mixture of people with European ancestry. There is a smaller proportion of foreign-born residents than would be expected on the basis of national statistics. Housing and sanitation present few, if any, serious trouble spots.

Interviewing, editing, and coding were carried on during the summer of 1954. Interviewing was conducted by women. They spoke with only one member of each household, who was requested to report on the conditions of all other members. Questions were asked regarding chronic disease, physical impairments, acute

disorders, maternal and child health, nutrition, disabilities, sanitation, and sociological characteristics relevant to health. Specific queries were put as to whether individuals in the households in the sample had any of the motor disabilities mentioned above. When a positive answer was given, questions were asked as to the medical condition responsible for the disabilities.

Caution must be observed in the interpretation of the findings of this survey. It was impossible, for example, to determine the accuracy of statements interviewees made as to the medical reasons for the disabilities. Also, since only one member of the household was interviewed, there was no way of knowing for certain the actual status of anyone except that member. Nevertheless, comparison of the survey findings with those of the United States census of 1950 reveal close agreement on such nonmedical factors as the total number of persons in the county; the age and sex distributions of the population; the proportions of residents in open country, rural place, and urban areas; and the proportions having various amounts of education.

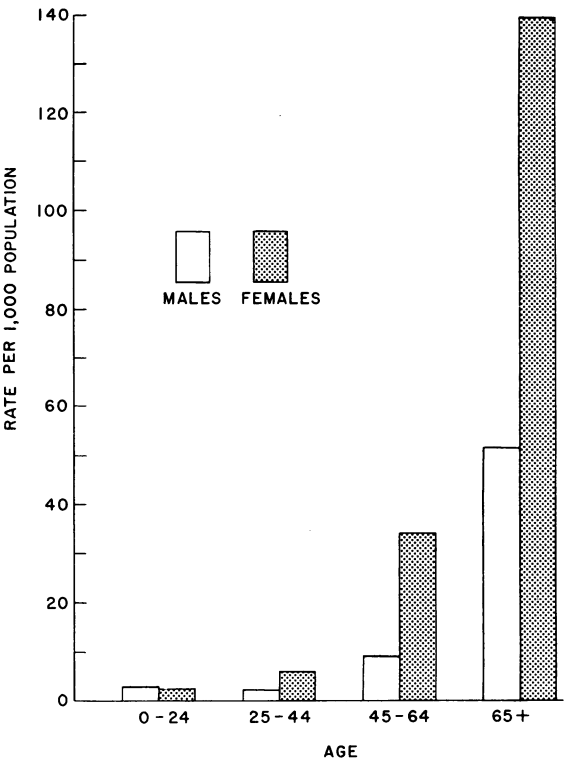
Estimated relative sampling errors for the more important statistics obtained in the health studies were as follows: a range of 3.7 to 7.7 percent for estimates of the numbers of persons in different age groups, 5.2 percent for the estimate of the number hospitalized in the year preceding the survey, and 13.2 percent for the estimate of the number of persons disabled.

Prevalence of Disability

Because of the lack of comparable data on disability in other areas, it is difficult to assess the situation in Butler County. Nevertheless, the number of people disabled, the proportion of households affected, and the duration of the disabilities found indicate that the problem is substantial.

Of the 3,403 persons in the sample, 54 had disabilities of the kinds investigated in the survey, a rate of 15.9 disabled persons per 1,000 population. These 54 people were afflicted with a total of 128 disabilities. The rate for persons with but one disability was 6.2 per 1,000 population; for those with 2 or more disabilities, it was

Figure 1. Age and sex distribution of persons having one or more motor disabilities, Butler County, Pa.



9.7. Of the 54 disabled persons, 61.1 percent had more than one disability. In sum, the prevalence rate for the disabilities examined in this study was 37.6 per 1,000 population.

The effects of disability, of course, are not confined to the individual who has it. They influence the whole family. Results of this study showed that a substantial proportion of the households in the county, 5.4 percent, had disabled persons among their members. One disabled person was found in 5.1 percent of the households, and 2 or more in 0.3 percent.

Another method of measuring disability is by its duration. If we sum the number of years each disabled person was unable to function optimally, we find that at the time of the survey 141.4 man-years per 1,000 population had been lost because of disability. About 1 person per 1,000 had been disabled 30 to 36 years. Almost 2 per 1,000 had been disabled 20 to 25 years, and about the same number had been disabled 10 to 15 years. The largest number, 6.2 per 1,000, had been disabled less than 5 years. The loss of the services of these disabled individ-

uals over many years, not to mention the fact that the community has had to support some of them, adds up to an important economic handicap.

The age and sex distribution of the 54 persons having disabilities, shown in figure 1, indicates that as age increases the proportion of persons disabled increases in rapid fashion, particularly among females. The rate of 2.6 per 1,000 for females under 25 years of age was about the same as the rate for males in this age group. However, for persons 65 and over, the female rate had increased to about 140 per 1,000, whereas the male rate had increased to only about 50 per 1,000. In every age group except the under-25-years one, more women than men were disabled. We must caution, of course, that here we are dealing with characteristics which appear relatively infrequently in the population. Estimates for prevalence by sex in the younger age groups have large relative standard deviations. However, estimates for the older age groups are more reliable, and the consistency of findings relative to sex in all age groups indicates a higher prevalence among females.

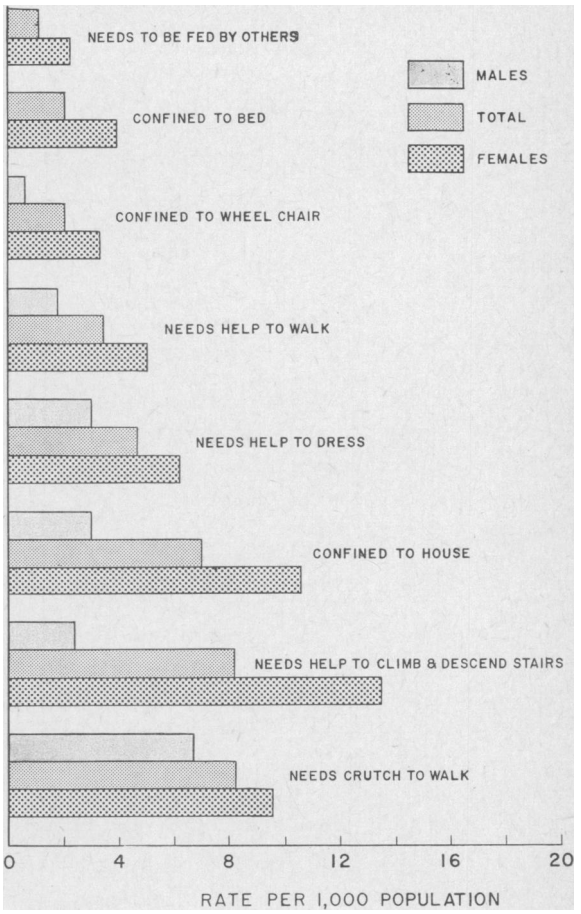
Types of Disability

Figure 2 shows the prevalence of various types of motor disability. The least frequent condition was having to be fed by another person. No males were in this category. The rate for females was 2.3 per 1,000; for all persons, it was 1.2 per 1,000.

Slightly higher was the prevalence of having to use a wheel chair; 2.1 persons per 1,000 were so incapacitated. Here again, most of the cases were found among females. Their rate of 3.4 per 1,000 was 5 times the rate for males. The rate for being confined to bed was also 2.1, and this disability existed exclusively among females.

Rates for the other disabilities increased from 3.5 for needing help to walk, to 4.7 for needing aid to dress, to 7.1 for being confined to the house, to 8.2 for having to use a crutch or cane to walk and for needing assistance in climbing or descending stairs. For every disability, the rate was higher for females than for males. The greatest difference between males and females was found for the inability to climb or

Figure 2. Prevalence of various motor disabilities, by sex, Butler County, Pa.

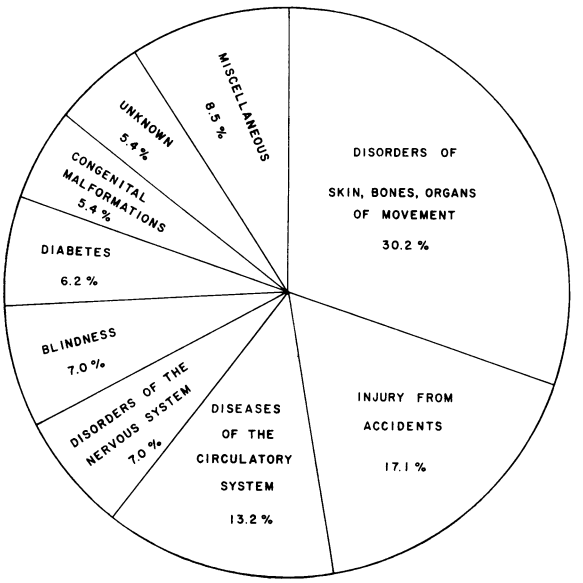


descend stairs without help. Here the rate for males was 2.5 per 1,000, and that for females, 13.6. The smallest differences between the sexes were found for the inability to dress without help and the need to use a crutch or cane to walk. For the former, the male rate was 3.1 and the female rate was 6.2; for the latter, the male rate was 6.7 and the female rate was 9.6. Again, these estimates have high relative standard deviations, and the magnitude of the rates should be interpreted with caution.

Causes of Disability

As shown in figure 3, conditions of the skin, bones, and organs of movement were mentioned as contributing to 30.2 percent of the disabilities. These conditions included pemphigus and especially arthritis. Injuries resulting from accidents were next most important, accounting

Figure 3. Medical conditions contributing to motor disabilities, Butler County, Pa.



for 17.1 percent of the disabilities. A large proportion, 13.2 percent, were attributed to conditions involving the circulatory system, particularly heart disease. Seven percent were caused by diseases of the nervous system, and the same percentage, by blindness. Diabetes was responsible for 6.2 percent of the disabilities, and congenital malformations, for 5.4 percent.

Twenty-four different types of medical conditions were cited as contributing to the motor disabilities. These conditions were mentioned as contributing to 128 disabilities in 54 disabled persons. Thus, a given medical problem in an individual caused, on the average, more than 2 motor disabilities. Four persons mentioned heart disease as causing them a total of 10 different motor disabilities. Arthritis was cited by 14 persons as contributing to a total of 26 disabling afflictions.

Summary and Conclusions

As public health scientists increasingly concern themselves with social well-being in addition to physical health, their interests will be focused more and more on problems such as the problem of disability. Disease in itself is a problem, but it is a liability to society mainly when it causes a disability of one sort or another. When disability is defined as the inability of the individual to function adequately as a member of society, it immediately becomes a matter of first concern to public health.

The study in Butler County, Pa., based on a probability sample of 3,403 residents, gives some idea of the extent of motor disability. It was found that 15.9 persons per 1,000 population were afflicted and that more than 5 percent of the households had at least one disabled member. Disability was found more frequently among women than among men and more frequently among persons over 60 years of age than among younger persons. The disabilities of highest prevalence were the need for help in climbing or descending stairs and the need to use a crutch or cane to walk, each with a rate of 8.2 per 1,000. Next came being confined to the house (7.1), needing help to dress (4.7), requiring aid in walking (3.5), having to use a wheelchair (2.1), and being confined to bed (2.1). Having to be fed by another person was the least prevalent of the disabilities studied.

Among the medical causes of these disabilities, arthritis, injuries, and heart disease were prominent. Disabilities were typically of long duration, with one-third of the disabled population functioning less than optimally for from 10 to 36 years prior to the survey. The rate of man-years lost from optimal functioning because of disability was 141.4 per 1,000 population.

Undoubtedly, these figures underestimate the prevalence of disability, for they include only the disabled persons present in the households at the time of the interview. They do not include individuals who are disabled and living in institutions. For this and other reasons, caution must be exercised in interpreting the findings on disability in Butler County.

The Butler County study constituted an exploration of a subject about which we have little quantitative information. Apparently, the problem of disability is not negligible. Before we can assess it properly, we require better data on its magnitude, on the social and physiological factors which figure in its etiology, and on its costs to society in loss of production power and long-term expenditures for medical care.