

SOCIAL AND ENVIRONMENTAL FACTORS IN ILLNESS¹

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IT seems proper to open this discussion of social and environmental factors in illness by citing a statement made by Sydenstricker (1) in 1933 in his book *HEALTH AND ENVIRONMENT*:

The entire or total environment of an individual or of a population is a complex of so many and so varied conditions that it is impossible to express it in simple terms or by means of a single index. The student of the relation of environment to health, by whatever index health itself is designated, is apt to confine himself rather closely to some one phase of environment, such as the economic, the occupational, or the geographic, instead of environment in its entirety. We have as a result a highly specialized series of inquiries on health and environment. . . . The danger in these highly specialized studies is that other aspects of environment, which may have a direct bearing on the particular phase under consideration, are not taken into proper account.

The purpose of this paper is to present some of the most recent data drawn from various sources which illustrate the breadth or the limits of our knowledge of the relationship of illness to various social and environmental conditions.

Data of total morbidity have been obtained only through special investigation of samples of population groups. Those which will be referred to particularly are: the National Health Survey in 1935-1936 of slightly more than 2,000,000 persons in 917,000 households in urban communities in various parts of the United States² (Negro families were included in this survey); a study of farm families in Michigan; and the morbidity study which was conducted over a period of five years in

¹ From the Milbank Memorial Fund.

² The urban surveyed population was so distributed as to give a sample which was, in general, representative of cities in the United States, according to size and region.

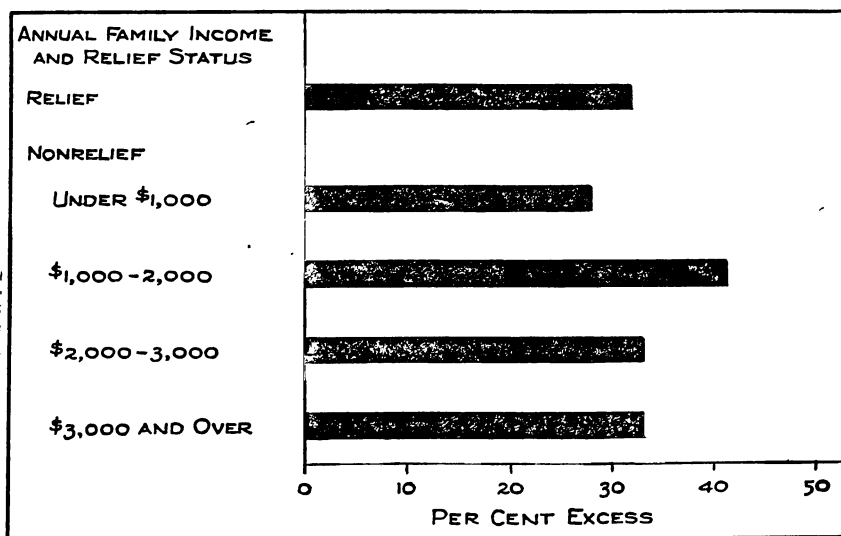
some 2,000 white families living in the Eastern Health District of Baltimore.

In all of these studies of morbidity, information was obtained concerning certain aspects of the environment of the family, such as age and sex of the population under consideration, size of community, income, amount of rent or value of owned homes, certain data on housing conditions, and occupation of employed members of the family. In addition to these, educational level of the family members was included in the Eastern Health District Study. Also, for the National Health Survey population, information was obtained as to whether the head of the household had moved to the city from a farm during the ten years preceding the survey. Thus it is possible to consider morbidity in relation to some of these factors.

RURAL-URBAN MIGRATION

In the past there has been speculation as to causes of the differential mortality between urban and rural areas. One suggestion has been made that the migrants from rural to urban areas are composed of the more physically fit. The National

Fig. 1. Excess of disabling illness among migrants over that of the total urban sample. (Data from Freedman, Ronald: Health Differentials for Rural-Urban Migration. *American Sociological Review*, October, 1947, 12, No. 5.)



Health Survey included information as to whether the head of the household had moved from a farm during the ten years prior to 1935-1936.

Freedman has studied the disabling illness among 85,264 urban persons who were classed as rural-urban migrants and compared their rates with those of the entire urban sample (2). The excess of disabling illness among migrants over that of the total sample classified according to annual income of the family is shown in Figure 1. There was a substantial excess in every income class. These excesses were not due to the effects of an excess of Negro migrants or to differential age distribution. Freedman concluded that "the data in this study are not consistent with the hypothesis that rural-urban migrants are healthier than the general urban population."

ILLNESS BY AGE

Statistics of illness at adult ages portray conditions and disease as manifestations of impaired vitality. The frequency of all illness is highest in childhood, due chiefly to respiratory diseases and the acute communicable diseases, lowest in the ages 15-24, and increases gradually after age 25.

That the increase of illness with age is a manifestation of impaired vitality may be illustrated by a study of the prevalence of the more serious chronic diseases among some 1,200 husbands and their wives in the Eastern Health District of Baltimore (3). As shown in Figure 2, at ages 20-34, about 4 per cent had chronic disease; in each of the next two age groups the rate more than doubled; and at ages 65 and over, 43 per cent had chronic disease. Chronic disease here includes conditions which are leading causes of death: cardiovascular disease, hypertensive vascular disease, cancer, and diabetes, as well as conditions such as the psychoneuroses and arthritis, which cause a great amount of disability.³ It is a significant

³ The diseases or affections which are included are as follows: tuberculosis, malignant neoplasms, diabetes, psychoses, psychoneuroses, heart disease, hypertensive vascular disease, varicose veins, peptic ulcer, gall-bladder disease, chronic nephritis, arthritis, hernia, and asthma. *Only cases diagnosed by a private physician, clinic, or hospital are included.*

fact that at ages 45–64, which should be a most productive period of life, slightly more than one-fourth of these husbands and wives had chronic illness. The fact that the prevalence of

the chronic diseases increases rapidly as age increases and that such conditions occur most frequently within well-defined age limits might be taken to constitute presumptive evidence that some environmental condition, either external or internal, peculiar to middle and old age is necessary for their development. The usual explanation is that the “aging process” is common to those specific ages and that chronic

disease is associated with the “aging process.” This explanation is not entirely satisfactory and is cited only to emphasize the complexity of the problem of studying environment and disease.

Chronic disease is not a result of age *per se* inasmuch as it occurs at relatively young ages in some people and not all persons at advanced ages develop the same chronic condition. Thus it would seem that a particular setting or background is involved. The study of the 1,200 spouses offers some suggestive evidence on this point.

The association of chronic disease without respect to cause was studied for husbands and their wives in four different age groups. In each age group the observed number of instances where both the husband and his wife had a chronic disease was

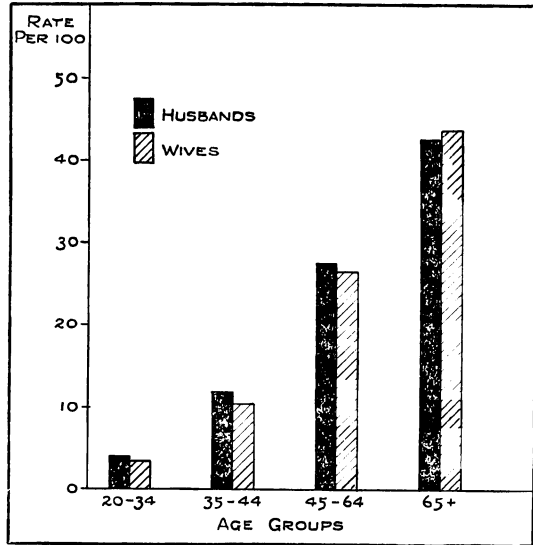


Fig. 2. Prevalence of chronic disease among 1,289 husbands and their wives. (Data from Downes, Jean: Chronic Diseases Among Spouses. The Milbank Memorial Fund Quarterly, October, 1947, xxv, No. 4.)

considerably greater than the number expected to occur concurrently if such conditions occurred at random among husbands and wives. These differences were statistically significant.

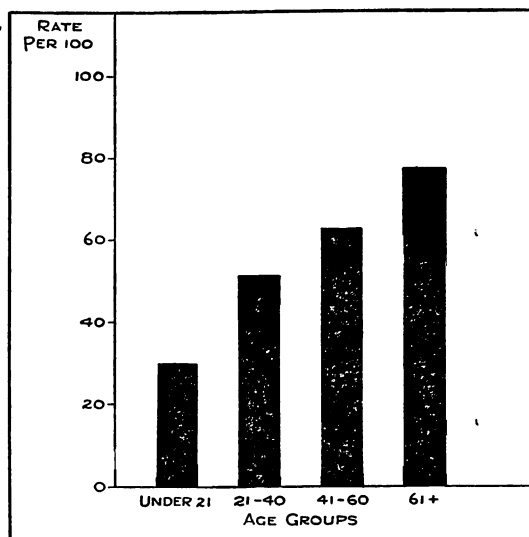


Fig. 3. Per cent of 1,219 persons in farm families reporting positive symptoms of illness. (Data from Hoffer, Charles R.: *Medical Needs of the Rural Population in Michigan. Rural Sociology*, June, 1947, 12, No. 2.)

Chronic disease by specific cause was considered only for the married pairs 45 years of age and over. A significant association of illness in both husband and wife was found for all circulatory diseases combined, for hypertensive vascular disease and for arthritis. These spouses had shared the same environment over a period of years and the results suggest that the immediate domestic

environment may be a factor of some importance in the occurrence of certain chronic diseases.

A study of significant symptoms and complaints among 1,219 persons in a carefully selected sample composed of 308 farm families in rural Michigan showed that the proportion having such symptoms increased markedly with age (+). (Figure 3.) These data are not comparable with the usual statistics of morbidity since they include some impairments and complaints without overt illness.⁴ Approximately every sixth

⁴ The most frequent symptoms or complaints reported were:

| | Per Cent |
|----------------------------|----------|
| Toothache | 10.0 |
| Persistent Pain in Joints | 10.0 |
| Poor Vision | 8.0 |
| Persistent Headaches | 7.5 |
| { Persistent Backache or | 6.1 |
| { Repeated Hernia | 4.1 |
| Severe Shortness of Breath | 3.4 |
| Fatigue (Unexplained) | 3.3 |

(Continued on page 371)

family was asked to have a clinic examination made by a physician from the Medical School of the University of Michigan. In eight out of ten cases there was agreement in the physicians' findings and the reported illness or complaint. These data are significant with respect to the proportion affected at different ages and it is evident that the prevalence of persons with symptoms and complaints increases as age increases.

ILLNESS AMONG NEGROES AND WHITE PERSONS

It is recognized that in any community in which Negroes form a part of the population the Negroes generally live under less favorable environmental conditions than does the white population. The majority of them belong to the lowest income group. The National Health Survey has made available general morbidity data for a sample of Negroes and white families living in the same communities (5). The data are presented for a total of four cities: Atlanta, Cincinnati, Dallas, and Newark, New Jersey.

For all ages combined (Figure 4) there was an excess of 31 per cent in the prevalence of disabling illness among Negroes compared with that among white persons. Six out of one hundred Negroes and slightly more than four out of one hundred white persons were disabled by illness on the day the family was visited. The chart indicates that this excess was due to higher rates among adult Negroes. At these ages the prevalence of disabling illness was from 62 to 77 per cent higher than among white persons.

The incidence of disabling illness—disabled seven days or longer during a twelve-month period—showed differences between Negroes and white persons somewhat similar to those noted for prevalence. After age 15 the rates among Negroes were from 24 to 43 per cent higher than those for white persons at the same ages.

| | |
|--|-----|
| Persistent Swelling of Ankles | 2.4 |
| Asthma | 2.3 |
| Repeated Nose Bleeds (Not Due to Injury) | 2.2 |
| Continued Loss of Appetite | 2.5 |
| Unexplained Loss of Weight | 1.9 |

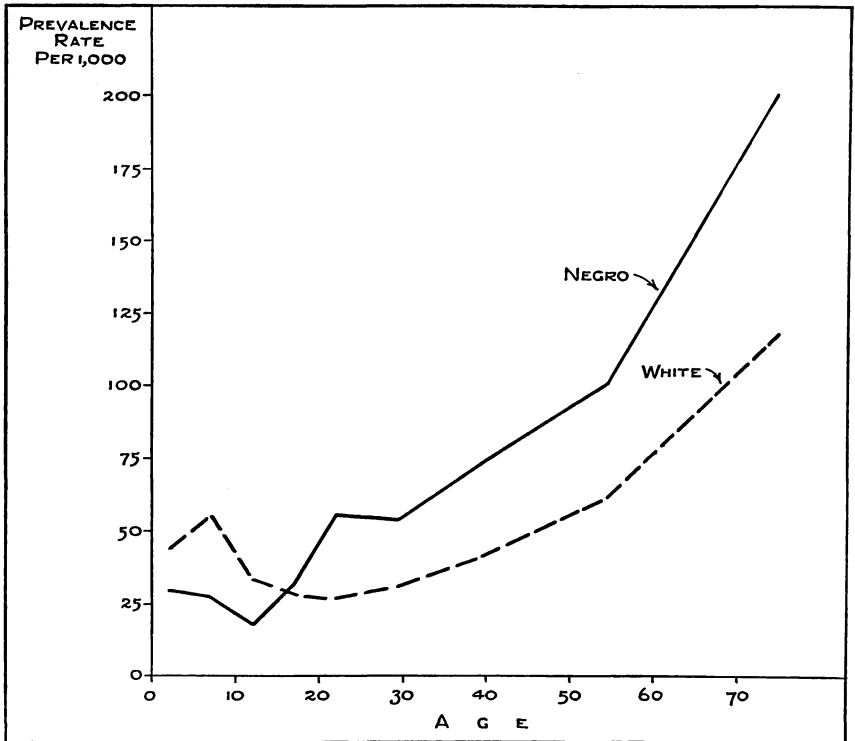


Fig. 4. Prevalence of illness among white persons and Negroes in four cities. (Data from Holland, Dorothy F. and Perrott, G. St.J.: *Health of the Negro*. *The Milbank Memorial Fund Quarterly*, January, 1938, xvi, No. 1.)

When certain important causes of disabling illness are considered (disabled seven days or longer during a twelve-month period), it is apparent (Figure 5) that the excess among Negroes was present for every cause except for illness due to the puerperal state (6). These differences in illness rates can hardly be attributed to true racial differences; in all probability they reflect wide differences in income and other aspects of social environment. Figure 5 is based upon data of the National Health Survey for New York City.

If the differences between Negroes and white persons with respect to morbidity are due to differences in the social and economic environment of the two groups, it is noteworthy that the results of environmental influences are most evident after adult life has been reached.

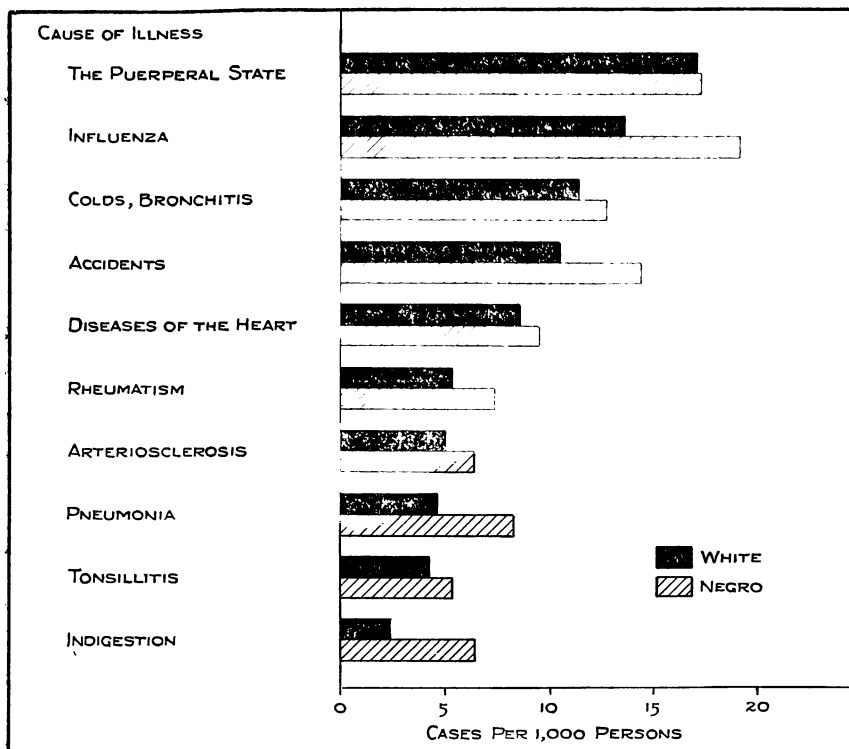


Fig. 5. Case rates of selected causes of disabling illness in whites and Negroes in New York City. (Data from Holland, Dorothy F. and Altenderfer, Marian E.: *Sickness in a Metropolitan Community: Some Results of a Health Survey of New York City*. United States Public Health Service, 1946.)

ILLNESS BY INCOME GROUPS

The earliest studies of morbidity indicated a negative correlation of illness with economic status; the lowest income group had the highest morbidity rate and the higher income groups had lower rates of illness. More recent studies have confirmed and added to these findings. It is of interest to consider data only recently available, morbidity by income for farm families; also, chronic illness and certain specific diagnoses by income class.

Figure 6 shows the proportion of persons in specific income groups who reported significant symptoms and complaints. These data are based upon the 1,219 persons from the 308 farm families in rural Michigan. "Income" is the gross farm income

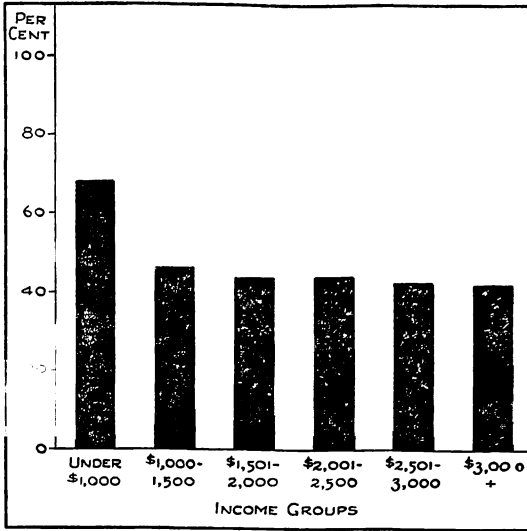


Fig. 6. Per cent of 1,219 persons reporting symptoms classified according to gross farm income in 1945. (Data from Hoffer, Charles R.: *Medical Needs of the Rural Population in Michigan*. *Rural Sociology*, 12, No. 2.)

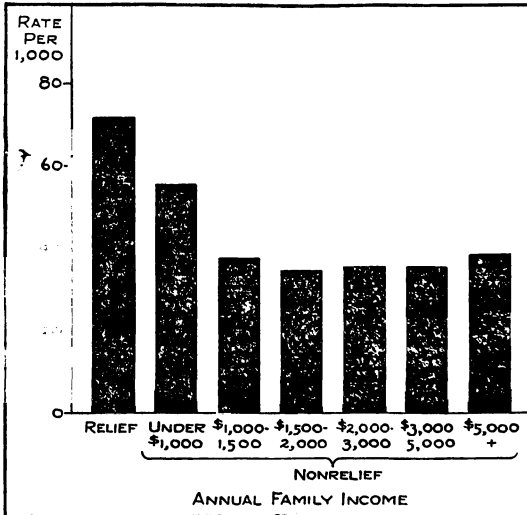


Fig. 7. Annual frequency of chronic illness—disabling one week or longer. (Data from Britten, Rollo H.; Collins, Selwyn D.; and Fitzgerald, James S.: *The National Health Survey: Some General Findings as to Disease, Accidents and Impairments in Urban Areas*. *Public Health Reports*, March 15, 1940, 55, No. 11.)

of the family in 1945 (4). In these farm families there was an inverse association between the amount of gross income and the prevalence of persons with symptoms and complaints of illness. However, for those income classes where income was \$1,000 or more, the variation in the proportion complaining of ill health was slight, though consistently downward as the amount of income increased.

Figure 7 shows the occurrence of disabling illness (three months or longer) from chronic disease among the National Health Survey urban population classified according to income (7). Here again the highest rate of illness was found to be among persons in the lowest income classes. In the classes where income was \$1,000 and above there was little varia-

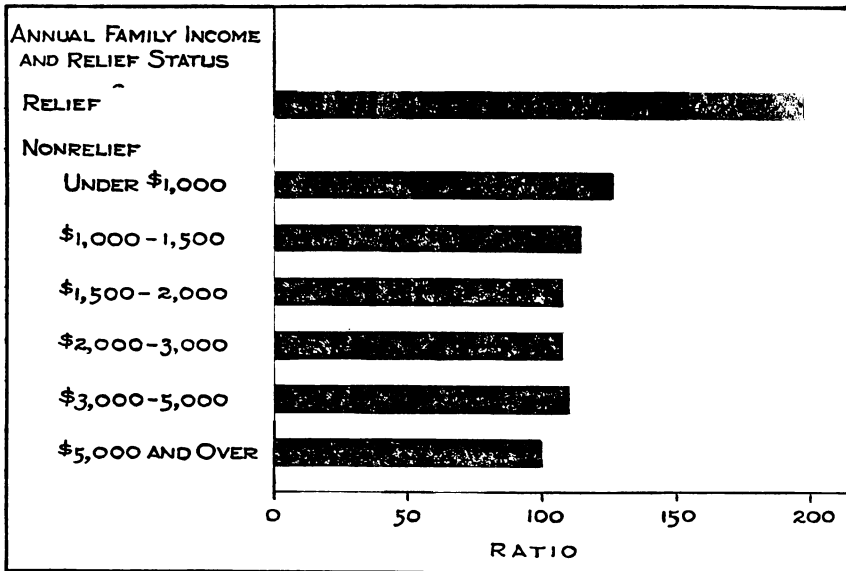


Fig. 8. Ratio of the case rate of pneumonia of each income group to that of the highest income group. (Data from Britten, Rollo H.: *The Incidence of Pneumonia as Recorded in the National Health Survey. Public Health Reports*, October 2, 1942, 57, No. 40.)

tion in the rate of chronic illness. Except for the lowest income groups there seems to be little association between all chronic illness and family income. This is not surprising since chronic disease is common to so many of the older adults.

Certain specific illnesses, however, do show a more marked association with family income. Illness from pneumonia (Figure 8) illustrates this fact (8). The lower the income the higher was the frequency of this disease.

Rheumatic fever which is considered a chronic disease also shows a marked association with income (9). Figure 9 illustrates this fact. These data are from a special investigation made by Collins and which was a part of the National Health Survey. The population included some 800,000 white persons 5-19 years of age drawn from eighty-four cities. Collins' interpretation of Figure 9 is as follows:

It is seen that the prevalence rate (disabled at any time during the year) among families on relief stands out as exceptionally high but the incidence rate (new cases) for this group is not so

exceptionally high. . . . However, the relative increase in the rates as income decreases, aside from the high relief rate, is slightly greater in new cases than in total prevalence. This latter

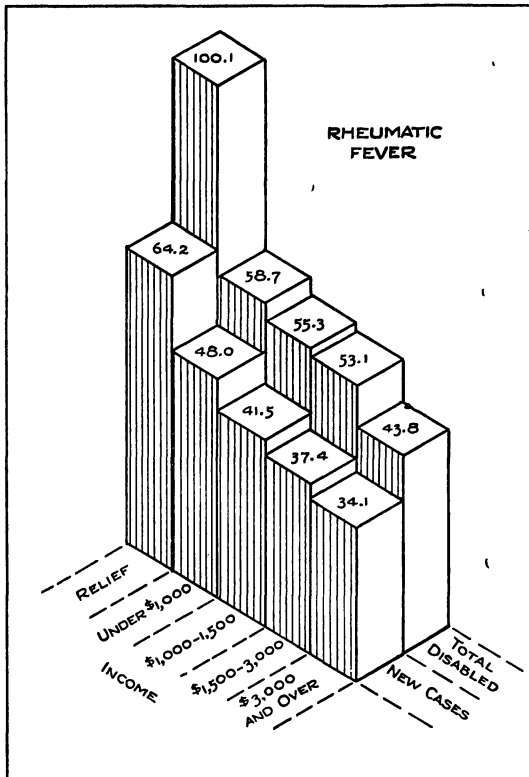


Fig. 9. Incidence and prevalence of disabling rheumatic fever according to income of the family. (Data from Collins, Selwyn D.: The Incidence of Rheumatic Fever as Recorded in General Morbidity Surveys of Families. Special Supplement to *Public Health Reports*, 1947.)

suggests that the environment which accompanies low income may be an active factor in producing the disease, but the former suggests that these serious diseases may also be the reason for securing relief or the cause of poor economic status; relief in some cases follows rather than precedes the onset of the illness.

Both the morbidity from pneumonia and rheumatic fever show a closer association with economic environment than does total disabling chronic disease or all illness as expressed in symptoms and complaints.

ILLNESS AND CROWDING

One environmental factor, crowding; that is, the number of persons who occupy a dwelling unit in relation to the number of rooms in the unit, has been studied in relation to illness by Britten (10). The data presented are based upon a population of about 1,700,000 white persons from the National Health Survey. As shown in Figure 10, there are three "crowding"

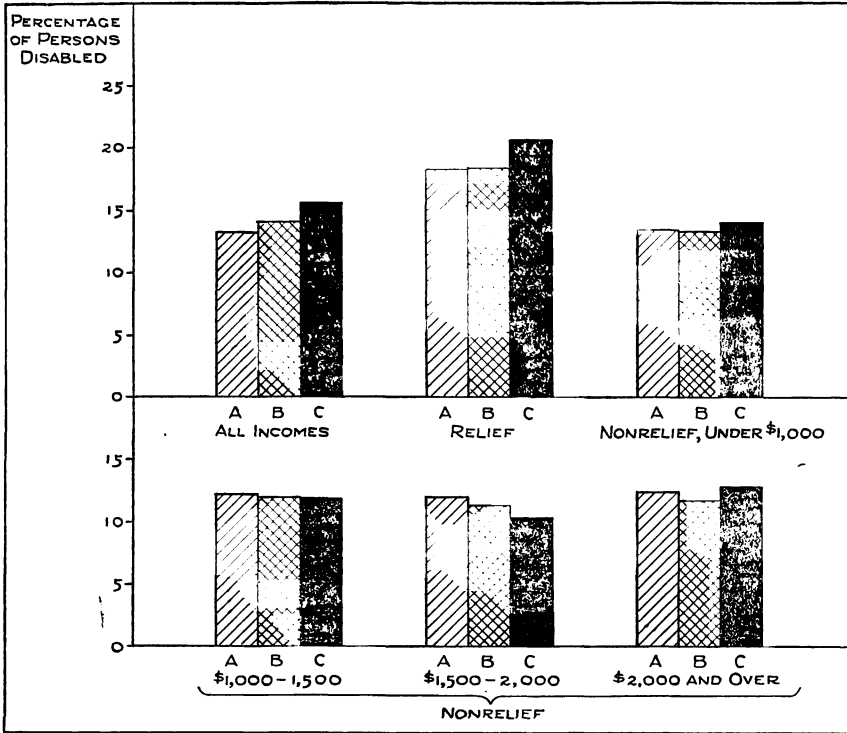


Fig. 10. Percentage of persons disabled for a week or longer during one year, by degree of crowding and economic status. (Data from Britten, Rollo H. and Altman, Isidore: *Illness and Accidents Among Persons Living Under Different Housing Conditions*. *Public Health Reports*, March 28, 1941, 56, No. 13.)

classifications: "A", one person or less per room; "B", more than one person but not more than 1.5 persons per room; and "C", more than 1.5 persons per room.⁵ Crowding is a crude measure of economic status; the inverse correlation between income and crowding is high. The effect of income is partially eliminated by making comparison of disabling illness rates within fairly specific income groups. In general, the relative increase in the percentage of persons with disabling illness varied inversely with income. That the ratios of the rates in Category "C" to those in Category "A" were lower for specific income groups than for the population as a whole, according to Britten, is explained by the interaction of two factors: (1) the higher

⁵ The data of illness are adjusted to the age and household-size distribution of the total white population studied.

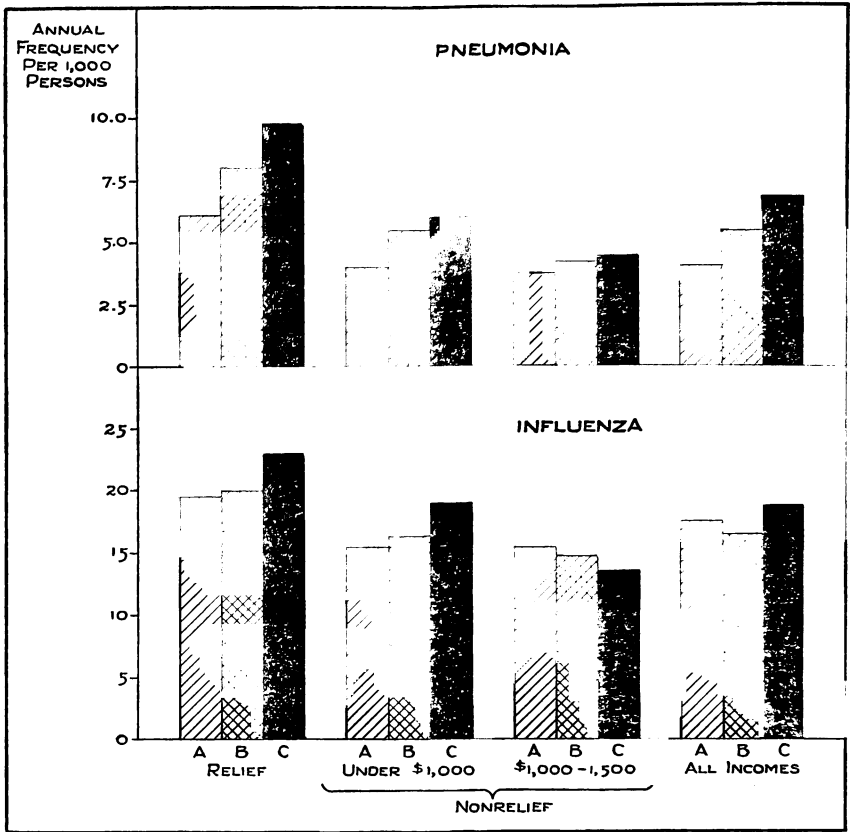


Fig. 11. Annual frequency among persons of two diagnoses by degree of crowding and economic status. (Data from Britten, Rollo H. and Altman, Isidore: *Illness and Accidents Among Persons Living Under Different Housing Conditions*. *Public Health Reports*, March 28, 1941, 56, No. 13.)

illness rates in the low-income classes, and (2) the greater concentration of these low-income groups in the categories of increased crowding.

Figure 11 summarizes the frequency with which pneumonia and influenza disable persons in different economic groups and living under different degrees of crowding. The marked increase in the frequency of pneumonia as crowding increased is noteworthy. Figure 12 shows data for tuberculosis and rheumatism. Here the increase of illness with increase in crowding is more marked for tuberculosis than for rheumatism.

Britten concludes that the data presented in his report, of

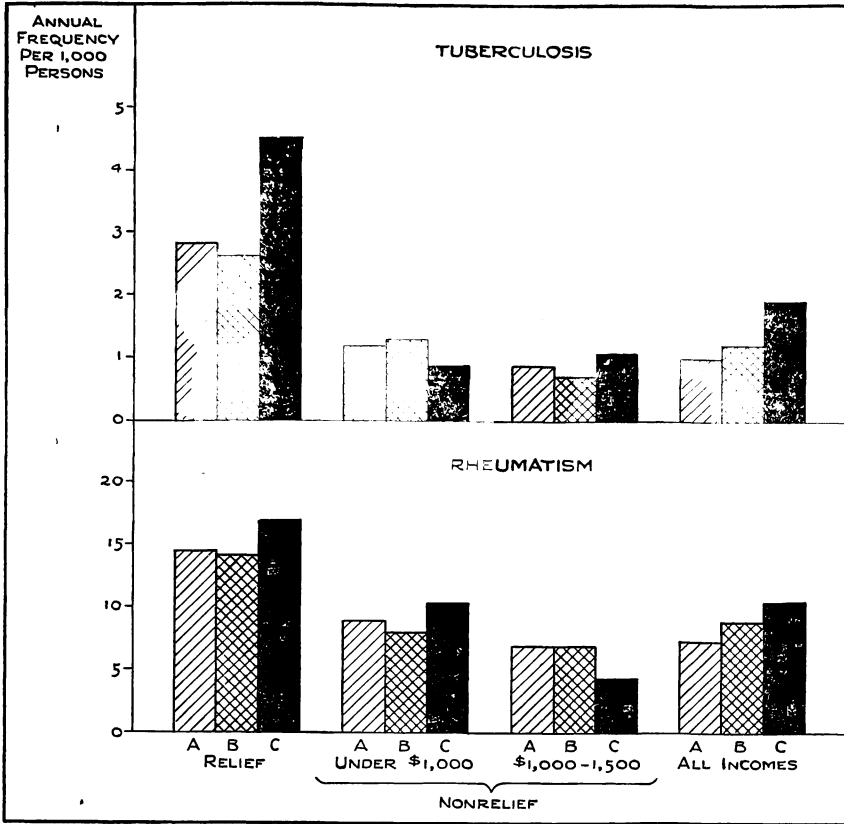


Fig. 12. Annual frequency among persons of two diagnoses by degree of crowding and economic status. (Data from Britten, Rollo H. and Altman, Isidore: *Illness and Accidents Among Persons Living Under Different Housing Conditions*. *Public Health Reports*, March 28, 1941, 56, No. 13.)

which only a small part has been shown here, has established an important broad association between housing and health. He discusses the difficulties in interpretation of the results as follows:

Complicating factors, such as differences of income, of race, of educational and intelligence level, constitute a serious limitation upon the interpretation of the data. The most serious limitation perhaps lies in the element economic status. Sometimes disease or impairments cuts down income, or prevents entirely the earning of a livelihood and so forces families into poor housing, the only kind they can afford. Sometimes low income causes or per-

petuates disease by making impossible an adequate diet, proper medical care, and other essentials of healthful living. Persons badly housed have excessive rates of illness and mortality quite apart from the influence of the housing conditions themselves.

Britten explains that the degree-of-crowding classification was employed with no intention of fixing an exact line of demarcation between crowded and uncrowded households. To establish such a line of demarcation, factors such as size of rooms, size of household, and the age and sex composition of its membership would have to be considered.

CHRONIC DISEASE AS AN ENVIRONMENTAL FACTOR

A study of illness among school-age children may be used to illustrate the possible influence of social factors other than age, income, or crowding which may affect the rate of morbidity. The data presented are based upon a sample which includes 214 families in the Eastern Health District of Baltimore observed for illness over a period of from three to five years (11). In each of these families there was one or more children of school age, and a school-age child formed the basis of selection of the family for special study. Also, in each family there was one or more cases of chronic disease, usually among the adult members of the family.

It was possible to classify the school-age child who brought the family into the study (the index case) according to his sickness record during a particular twelve-month period. Sixty-three of the 214 children had three or more illnesses; the remaining 151 children either suffered no illness or had less than three illnesses during the year under consideration.⁶

Examination of the illness rates of the school-age siblings of each of these two groups of children revealed a striking difference between them. Siblings in the families selected on the basis of a child who had three or more illnesses had an annual illness rate three times as great as the rate among siblings of the index

⁶ Attacks of acute communicable diseases, infectious skin conditions (ring worm, impetigo, and scabies) and tonsillectomies are excluded; also chronic disease is excluded.

cases in the other families. This was true for disabling illness as well as for all illness.

Further study indicated that there was a tendency for children to remain at about the same sickness level over a period of five years; that is, sickly children remained sickly. There were sickly families and healthy families as judged by morbidity among the children in them.

This question is pertinent: Were there wide differences between these two groups of families with respect to certain social and environmental conditions which may be related to the differences in the rate of illness of the child population? It was possible to study the following environmental conditions: size of family, degree of crowding, income, educational level of the head of the household, and the type of chronic disease in the family.

There were no important differences between the "sickly" and "nonsickly" families with respect to size or degree of crowding. The median size of family was similar in both groups—5.3 and 5.6, respectively. A relatively high proportion of the families in both groups were graded as crowded; that is, having an unsatisfactory number of rooms in relation to the number, age, and sex constitution of the family members. Thirty-six per cent of the "sickly" families were crowded and 35 per cent of the "nonsickly" were so classified.

There were no important differences between the two groups of families with respect to annual income. Only about one-fourth of the families in each group had an income of \$2,000 or more per year.

In about 60 per cent of the families in each group the head of the household had less than an eighth-grade education, very few had any high school education, and there were none who had any college or other advanced schooling.

The head of the household had chronic disease in 44 per cent of the "sickly" families compared with 49 per cent in the "nonsickly" group. Most of this chronic disease was nondisabling. The proportions where the head of the household was disabled

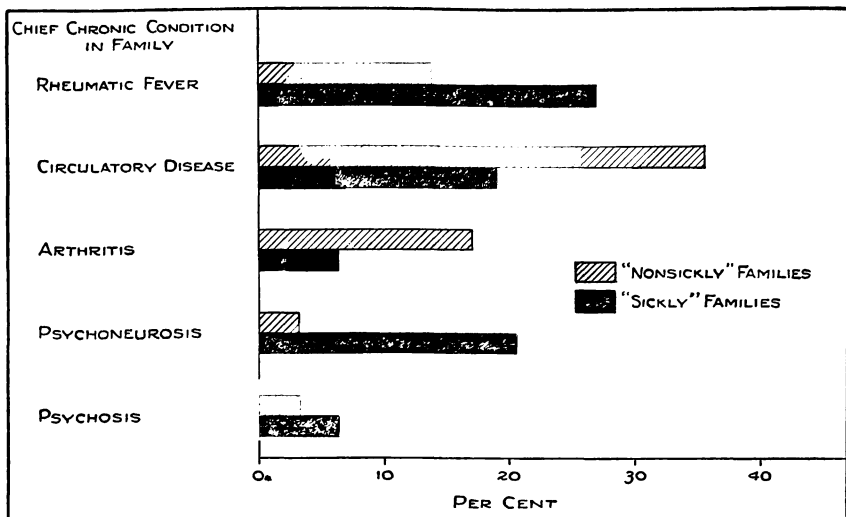


Fig. 13. Per cent of families, "sickly" and "nonsickly" with specified chronic condition.

were as follows: "sickly" group 5 per cent; "nonsickly" group 3 per cent.

However, there was a greater concentration of adults with chronic illness in the "sickly" families. The housewife had chronic disease in 80 per cent of the "sickly" compared with 45 per cent of the "nonsickly" group. Both husband and wife were affected in 32 per cent of the former compared with 16 per cent of the latter group.

When type of chronic disease in the family is considered there are striking differences between the two groups. Figure 13 shows the proportion of families in each group in which certain selected chronic conditions were present. In the "sickly" families there was a higher proportion with rheumatic fever, psychoneuroses, and psychoses than was noted for the "nonsickly" group. Fifty-three per cent of the "sickly" families had such cases of illness compared with 20 per cent of the families classed as "nonsickly."

It is not surprising that classification of a family by frequent illness of a child member has selected a relatively large number of "rheumatic fever" families into the "sickly" group. It is

recognized that in these families more than one child may be rheumatic and these children are especially susceptible to attacks of respiratory illness and other ailments.

Chronic disease in either the husband or the wife creates an atmosphere in the family which can be detrimental to the other members of the family, especially the children. One can hardly escape the conclusion that a child's reaction to the atmosphere created by a psychoneurotic parent is apt to be frequent illness. Otherwise, we should not expect such a high proportion of these families in the "sickly" group.

This small investigation has been used to illustrate the point that the usual indices of social and environmental conditions are not sufficient for a precise explanation of variations in illness. We must find more searching techniques for studying environmental influences in the production of ill health.

SUMMARY

Economic status as expressed by annual income of the family is an important index of environment because it determines to a considerable extent the paucity or abundance of so many conditions conducive to healthful living: food, housing, medical care, education, and recreation. Yet the relationship of family income to *all illness* is clear-cut only for the very poorest, those with an annual income of less than \$1,000. Part of the reason for this is because a relatively high proportion of *all illness* is composed of attacks of the acute respiratory illnesses and the acute infectious diseases, mainly those of childhood. For example, at ages under 15 these illnesses account for 60 to 70 per cent of the total; at ages 15-44, 50 per cent, and at ages 45 and over they account for 30 to 40 per cent of all illness (12). These illnesses generally do not select only those living under poor environmental conditions. They are fairly common to all population groups irrespective of their level of living.

However, when specific illnesses such as pneumonia, rheumatic fever, or tuberculosis are considered, their relationship to poor environment as defined by annual income is more

clear-cut. Undoubtedly, a poor environment tends to lower nonspecific resistance to these and other diseases and thus is an active factor in their production. Yet we do not know precisely the particular factor or factors responsible.

The relationship of family income to *all chronic disease* also is clear-cut only for the very poorest groups in the population. The probable explanation for this is entirely different from that of *all illness* and economic status. It is true that chronic disease affects a relatively high proportion of the middle and old-age population and persons with these conditions are evidently common to all income groups. However, the chronic diseases may be in the process of development over a long period of time and thus their appearance may be one expression of an accumulation of past experience. Information on income as obtained in morbidity studies is related to one particular period of time; that is the present. It is recognized that our population is not static with respect to level of income. Some families with a present income of \$2,500 per year may have been in a much lower income class over a period of years; some may have previously been in a higher income class. In a study of social and cultural factors in chronic disease and delayed recovery, Ruesch found that 45 per cent of the cases of delayed recovery were "static"; that is they had remained in the same social class over a period of time; 39 per cent were "climbers"—they had moved from a lower to a higher social class; and the remainder, 16 per cent, were "decliners" or "mixed" (13). To find out whether one type or level of social environment is more productive of the chronic diseases than another type will require either retrospective data on an entire study population or continued observation over a very long period of time.

It seems just to conclude that the study of morbidity in relation to the usual indices of social and environmental conditions is of value because such investigation indicates a particular part of the population most in need of public health and medical care. However, if preventive medicine is to function more fully in the control of morbidity, most of which is of un-

known etiology, more searching techniques must be employed for evaluating the precise influence of specific environmental conditions in the production of ill health.

REFERENCES

1. Sydenstricker, Edgar: *HEALTH AND ENVIRONMENT*. New York, McGraw-Hill Book Company, Inc., 1933.
2. Freedman, Ronald: Health Differentials for Rural-Urban Migration. *American Sociological Review*, October, 1947, 12, No. 5.
3. Downes, Jean: Chronic Disease Among Spouses. The Milbank Memorial Fund *Quarterly*, October, 1947, xxv, No. 4, pp. 334-358.
4. Hoffer, Charles R.: Medical Needs of the Rural Population in Michigan. *Rural Sociology*, June, 1947, 12, No. 2, pp. 162-168.
5. Holland, Dorothy F. and Perrott, G. St.J.: Health of the Negro. The Milbank Memorial Fund *Quarterly*, January, 1938, xvi, No. 1, pp. 5-38.
6. Holland, Dorothy F. and Altenderfer, Marian E.: Sickness in a Metropolitan Community: Some Results of a Health Survey of New York City. Washington, United States Public Health Service, 1946.
7. Britten, Rollo H.; Collins, Selwyn D.; and Fitzgerald, James S.: The National Health Survey: Some General Findings as to Disease, Accidents and Impairments in Urban Areas. *Public Health Reports*, March 15, 1940, 55, No. 11, p. 453.
8. Britten, Rollo H.: The Incidence of Pneumonia as Recorded in the National Health Survey. *Public Health Reports*, October 2, 1942, 57, No. 40.
9. Collins, Selwyn D.: The Incidence of Rheumatic Fever as Recorded in General Morbidity Surveys of Families. Special Supplement to *Public Health Reports*, 1947.
10. Britten, Rollo H. and Altman, Isidore: Illness and Accidents Among Persons Living Under Different Housing Conditions. *Public Health Reports*, March 28, 1941, 56, No. 13, pp. 615 and 625.
11. Downes, Jean: Sickness as an Index of the Need for Health Supervision of the School Child. *American Journal of Public Health*, June, 1945, 35, No. 6.
12. Collins, Selwyn D.: Age Incidence of Specific Causes of Illness. *Public Health Reports*, October 11, 1935, 50, No. 41.
13. Ruesch, Jurgen: *Chronic Disease and Psychological Invalidism: A Psychosomatic Study*. The American Society for Research in Psychosomatic Problems, New York, 1946.