

# MORBIDITY AMONG MALES AND FEMALES AT SPECIFIC AGES—EASTERN HEALTH DISTRICT OF BALTIMORE<sup>1</sup>

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**I**N THE United States, growing interest in disability and medical care insurance, as well as group plans for provision of medical service presents an increasing need for statistics on the incidence of illness among persons of opposite sex and of different ages. Since 1920 data of this type have been made available for certain population groups by special morbidity studies of families. One of the studies gives illness rates by sex and age for the population of sample areas in the United States: the Committee on the Costs of Medical Care study of 1928–1931 (1). Two other studies provide data for local areas in Maryland: one made in Hagerstown from 1921–1924 (2) and the other conducted in the Eastern Health District of Baltimore from 1938–1943.

A number of preliminary reports of the study in the Eastern Health District of Baltimore have been published (3, 4). The purpose of the present paper is to make available data from this study on illness by age and sex in more detail than has been given in the past.

## NATURE OF THE STUDY AND DATA

The method of sampling for the study has been described in previous reports (3, 5). It is sufficient to indicate here that the sample population included all white families that lived in thirty-four city blocks and were willing to cooperate in the study. The plan was to follow families that lived in houses in the sample blocks rather than to follow a selected group of families. As a result no effort was made to continue visiting families that moved out of houses in the surveyed area during the study, but new white families that moved into the area were added to the study.

Monthly visits were made to the families to obtain records

<sup>1</sup> From the Milbank Memorial Fund and the United States Public Health Service.

of the occurrence of illness. At the first interview a record was made of all illness present on the day of the visit. At subsequent interviews, records were made of all illnesses which had occurred since the preceding visit.

In studies of illness based on periodic interviews, illness is generally understood as including any affection or disturbance of health persisting for a considerable part of one or more days. However, no specific definition of illness was imposed from without the study. Records of illness were based on reports of some responsible person in the household (usually the housewife) of sicknesses she experienced, or observed in the family. Note was made in the record of whether illnesses caused disability, that is, inability to work or perform usual activities, or caused confinement to the house, or confinement to bed. Defects or impairments were recorded only if they caused disability or received medical attention.

Table 1. Age distribution of males and females in the morbidity study in thirty-four city blocks in the Eastern Health District of Baltimore compared with the age distribution of all white males and females in the District.

AGE GROUPS	SAMPLE WHITE POPULATION <sup>1</sup>		TOTAL WHITE POPULATION OF THE DISTRICT—1939 <sup>2,3</sup>	
	Male	Female	Male	Female
	PER CENT			
ALL AGES	100.0	100.0	100.0	100.0
0-4	7.6	7.1	6.9	6.3
5-9	8.2	6.9	6.9	6.9
10-14	8.2	8.0	8.9	8.2
15-19	9.9	9.3	10.1	9.7
20-24	8.7	9.2	10.0	10.3
25-34	17.4	17.2	18.0	17.3
35-44	14.6	14.9	14.2	14.2
45-54	13.2	12.5	12.7	12.6
55-64	7.3	8.2	7.3	8.0
65+	4.9	6.7	5.0	6.5
Total Population	10,282	10,550	21,295	21,988

<sup>1</sup> Excluding 8 males and 2 females of unknown age.

<sup>2</sup> Excluding 142 males and 221 females of unknown age.

<sup>3</sup> Data from Reed, Lowell J.; Fales, W. Thurber; and Badger, George F.: *Family Studies in the Eastern Health District. I. General Characteristics of the Population. The American Journal of Hygiene*, January, 1943, 37, No. 1, p. 49.

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The present analysis is based on all families observed two or more months for illness. The sample population for the analysis includes 20,832 person years of life: 10,282 males and 10,550 females. As shown in Table 1, the distribution of each sex by age was similar.<sup>2</sup> The age composition of each sex in the sample population was also representative of the age distribution of white males and white females in the Eastern Health District in 1939 (6).

The procedure of counting cases of illness for this analysis is as follows: Acute illness includes sole or primary diagnosis. Chronic illness includes all diagnoses of chronic disease; that is, a person may have arthritis and later develop heart disease. Both are counted as cases of chronic disease. If there were disability, disabling days were assigned only to the particular chronic disease which caused the disability.

The population is composed of person-years of life of people who were observed for varying time periods in the thirty-four blocks which were studied from three to five years. A person observed for five years was counted as five person-years of life. If that same person reported the presence of diabetes during the first year of the study, he was counted as a diabetic also in the subsequent four years of his observation. A more complete discussion of the statistical treatment of chronic cases is included in the preceding article, "Cause of Illness Among Males and Females."

### TOTAL MORBIDITY

During the study an average of 1,500 illnesses per 1,000 population occurred annually. As shown in Table 2, the rates of disabling and "bed" illness were 601 and 322 respectively. Illness caused 16 days of disability and 5 days of confinement to bed per person per year.

Most of the cases of illness were classed as acute but the

<sup>2</sup> As far as the white population of the Eastern Health District is concerned, the district is considered fairly representative of the localities in Baltimore in which the wage earning population lives. That is, it contains some families in relatively poor economic circumstances, relatively few families in the professional class, and no families that can be classed as wealthy.

CLASSIFICATION OF ILL- NESS AND DAYS OF ILLNESS	ALL ILLNESS <sup>1</sup>	ACUTE <sup>2</sup>	CHRONIC <sup>2</sup>
	RATE PER 1,000 POPULATION		
TOTAL ILLNESS	1,499.6	1,261.4	238.2
Nondisabling	898.2	735.5	162.7
Disabling	601.4	525.9	75.5
Bed	321.9	278.5	43.4
Disabling Days	16,387.2	5,841.3	10,545.9
Bed Days	5,001.8	1,958.7	3,043.1

<sup>1</sup> Excluding 3 cases (2 acute and 1 chronic) and 94 disabling days (93 for acute illness and 1 for chronic case) with unknown age.

<sup>2</sup> Acute illness includes sole or primary diagnoses. Chronic illness includes all diagnoses of chronic disease; that is, a person may suffer from both arthritis and heart disease; both are counted as cases. If there were disability, disabling days were assigned only to the particular chronic disease which caused the disability.

Table 2. Annual rate of illness (acute and chronic) and of sick days according to degree of severity. Eastern Health District of Baltimore, June, 1938-May, 1943.

majority of the disabling and "bed" days were due to chronic illness. Specifically, acute diagnoses were responsible for 85 per cent of all illness. They formed the same proportion of illness resulting in disability and confinement to bed, but only a third of the days of disability and confinement to bed were due to such illness.<sup>3</sup>

#### MORBIDITY BY SEX

Some dissimilarity was found in rates of illness for the two sexes (Tables 3 and 4, Appendix Tables 1-4). The rates were somewhat closer for illnesses causing disability and confinement to bed than were the rates of nondisabling illness. Excluding female genital and puerperal diagnoses, the annual rate of all illness per 1,000 population was 1,234 for males and

<sup>3</sup> The majority of the acute illnesses were minor respiratory in nature. Other important causes of acute illness were minor digestive disturbances and accidents. The chief chronic illnesses included: mental disease or mental deficiency, neurasthenia or nervous breakdown, heart disease, hypertension or high blood pressure, arthritis, diabetes, varicose veins, gall-bladder disease, ulcer of the stomach or duodenum, chronic nephritis, cancer, rheumatic disease, tuberculosis, syphilis, and anemia. These were classed as major chronic diseases. Minor chronic diseases included: neuralgia, neuritis, lumbago, hemorrhoids, chronic indigestion, chronic cold and cough, chronic bronchitis, sinusitis, asthma, chronic skin conditions, backache, and other ill-defined complaints which were reported as chronic conditions. In the present paper defects or impairments causing disability or receiving medical attention were also classed as chronic illness.

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DEGREE OF SEVERITY AND TYPE OF ILLNESS	MALE	FEMALE	FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)	RATIO OF THE FEMALE TO MALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)
	RATE PER 1,000 POPULATION			
TOTAL ILLNESS	1,234.1	1,758.4	1,661.0	1.35
Acute	1,043.3	1,473.9	1,387.4	1.33
Chronic	190.8	284.5	273.6	1.43
Nondisabling	710.7	1,081.0	1,049.1	1.48
Acute	590.1	877.2	853.6	1.45
Chronic	120.6	203.8	195.5	1.62
Disabling	523.4	677.4	611.9	1.17
Acute	453.2	596.7	533.8	1.18
Chronic	70.2	80.7	78.1	1.11
Bed	265.3	377.0	322.6	1.22
Acute	226.3	329.3	276.8	1.22
Chronic	39.0	47.7	45.8	1.17

Table 3. Annual rate of acute and chronic illness of different degrees of severity, classified by sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

1,661 for females (Table 3). The excess of the female rate over the male rate was 48 per cent for nondisabling illness, 17 per cent for disabling illness, and 22 per cent for "bed" illness (excluding female genital and puerperal diagnoses). The higher rates for females were found for both acute and chronic illness.

As indicated in Table 4, the annual rate of disabling days was 16,301 and the annual rate of "bed" days was 4,953 per 1,000 males. Corresponding rates for females were 15,344 and 4,488 if illnesses resulting from female genital and puerperal diagnoses are excluded. This was a 6 per cent lower rate of disabling days and a 9 per cent lower rate of "bed" days among females than among males. Rates for the two sexes showed even greater similarity if days resulting from female genital and puerperal diagnoses are included.

Lower rates of days of disability and confinement to bed among females than among males were found for chronic but

DEGREE OF SEVERITY AND TYPE OF ILLNESS	MALE	FEMALE	FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)	RATIO OF FEMALE TO MALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)
	RATE PER 1,000 POPULATION			
Disabling Days	16,300.7	16,471.6	15,343.5	0.94
Acute Illness	4,990.0	6,671.1	5,628.0	1.13
Chronic Illness	11,310.7	9,800.5	9,715.5	0.86
Bed Days	4,953.1	5,049.1	4,488.5	0.91
Acute Illness	1,507.4	2,398.5	1,849.5	1.23
Chronic Illness	3,445.7	2,650.6	2,639.0	0.77
	NUMBER OF DAYS			
Disabling Days	167,604	173,775	161,874	
Acute Illness	51,307	70,380	59,376	
Chronic Illness	116,297	103,395	102,498	
Bed Days	50,928	53,268	47,353	
Acute Illness	15,499	25,304	19,512	
Chronic Illness	35,429	27,964	27,841	

Table 4. Annual rate of disabling and bed days for acute and chronic illness, classified by sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

not for acute illness. For chronic illness the ratio of the female rate (excluding female genital and puerperal diagnoses) to the male rate was 0.86 for days of disability and 0.77 for days confined to bed. Corresponding ratios for acute illness were 1.13 and 1.23. In part, the relatively lower ratios for females evidenced by chronic illness were due to the fact that a smaller number of chronic illnesses of very long duration of disability were reported for females than for males.

For acute illness of different degrees of severity, the average duration of illness was similar for each sex whether or not female genital and puerperal diagnoses are included (Table 5). For example, the average number of disabling days per disabling illness was 11.0 for males and 11.2 for females (10.5 if female genital and puerperal diagnoses are excluded) and the rate of "bed" days per "bed" illness was 6.7 for males and 7.3

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DEGREE OF SEVERITY	MALE	FEMALE	FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)
Sick Days Per Illness	19.5	20.1	19.6
Disabling Days Per Disabling Illness	11.0	11.2	10.5
Days Confined to House Per Illness Confined to House	8.1	9.3	8.7
Days Confined to Bed Per Illness Confined to Bed	6.7	7.3	6.7

Table 5. Average duration of acute illness classified by degree of severity and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

for females (6.7 if female genital and puerperal diagnoses are excluded).

### MORBIDITY BY AGE AND SEX

Rates of all illness classified by different degrees of severity, shown in Table 6 and Figure 1, declined from a peak at ages under 5 years to a low level in the 15-34 year age group, and then rose in the age group 55 years and older. In comparison, rates of days of disability and confinement to bed increased sharply in old age.

As indicated earlier in the paper, most of the illnesses in each degree of severity class were due to acute causes but the majority of the days of disability and confinement to bed resulted

Table 6. Annual rate of all illness and days of illness, classified by degree of severity and by age. Eastern Health District of Baltimore, June, 1938-May, 1943.

CLASSIFICATION OF ILLNESS AND DAYS OF ILLNESS	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
	RATE PER 1,000 POPULATION					
TOTAL ILLNESS	1,499.6	2,957.1	1,729.1	1,159.6	1,307.0	1,734.8
Nondisabling	898.2	1,788.0	728.2	704.4	871.6	1,178.1
Disabling	601.4	1,169.1	1,000.9	455.2	435.4	556.7
Bed	321.9	547.5	492.9	275.3	245.8	280.1
Disabling Days	16,387.2	13,804.9	16,572.2	8,954.2	13,775.8	42,576.5
Bed Days	5,001.8	3,970.1	6,090.3	4,263.0	3,865.9	8,580.0

from chronic causes. In Tables 7, 8, 10, and 11 (Appendix Tables 1-4) and the discussion which follows, it is shown that rates of acute illness and days of acute illness were relatively high at young ages whereas rates of chronic illness and days of chronic illness increased sharply in old age.

*Acute Illness.* The annual rate of acute illness per 1,000 population (Table 7) dropped from 2,936 at ages under 5 years to 1,633 in the 5-14 year age group, and 1,055 at ages 15-34. At ages over 34 years the rate changed only slightly from the level to which it declined in the 15-34 year age group. The rate of nondisabling illness changed very little at ages above 4 years. However, the rate of disabling illness declined approximately 50 per cent at ages 15-34 and maintained about the same level at older ages.

Comparison of rates of acute illness of different degrees of severity for the two sexes by age shows that the female rate tended to be similar to the male rate up to age 15, but consistently higher than the male rate at ages over 15 years, regardless of whether female genital and puerperal diagnoses are included. From ages 15-54, the excess of the female rate over the male rate for all acute illness was from 54 to 87 per cent if female genital and puerperal diagnoses are excluded and from 76 to 100 per cent if such diagnoses are included.

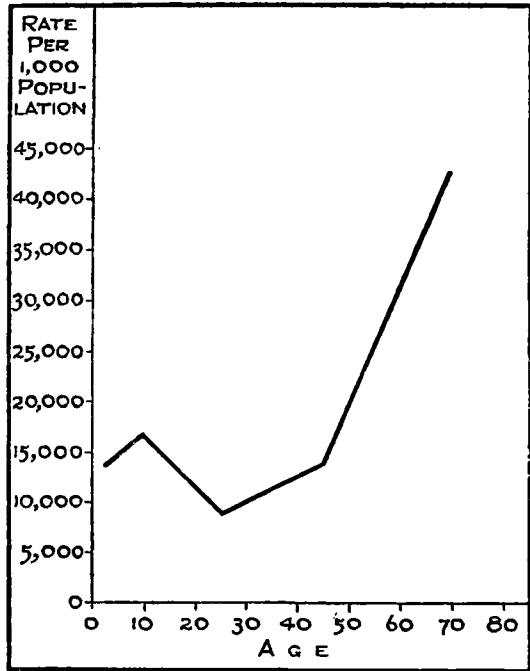


Fig. 1. Age-specific rate of disabling days per 1,000 population. Eastern Health District of Baltimore, June, 1938-May, 1943.



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DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
<b>BOTH SEXES</b>						
<b>TOTAL ILLNESS</b>	1,261.4	2,936.3	1,633.3	1,055.4	996.2	1,006.4
Nondisabling	735.5	1,775.0	675.4	631.0	647.9	694.4
Disabling	525.9	1,161.3	957.9	424.4	348.3	312.0
Confined to House	481.5	1,100.8	878.7	384.4	316.2	280.1
Confined to Bed	278.5	542.9	465.9	253.3	196.3	152.3
<b>MALE</b>						
<b>TOTAL ILLNESS</b>	1,043.3	3,043.5	1,576.1	763.8	665.3	765.7
Nondisabling	590.1	1,858.1	659.6	455.4	412.9	507.6
Disabling	453.2	1,185.4	916.5	308.4	252.4	258.1
Confined to House	408.5	1,120.2	836.6	267.8	223.3	225.5
Confined to Bed	226.3	560.1	448.2	160.5	132.5	127.5
<b>FEMALE</b>						
<b>TOTAL ILLNESS</b>	1,473.9	2,825.4	1,695.0	1,341.7	1,323.2	1,198.9
Nondisabling	877.2	1,689.2	692.4	803.4	880.2	843.9
Disabling	596.7	1,136.2	1,002.6	538.3	443.0	355.0
Confined to House	552.7	1,080.7	924.1	498.8	408.0	323.8
Confined to Bed	329.3	525.1	485.0	344.4	259.4	172.1
<b>FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)</b>						
<b>TOTAL ILLNESS</b>	1,387.4	2,824.1	1,672.6	1,173.5	1,241.4	1,194.4
Nondisabling	853.6	1,689.2	687.3	767.0	844.8	841.9
Disabling	533.8	1,134.9	985.3	406.5	396.6	352.5
Confined to House	492.6	1,079.4	911.3	370.1	365.1	321.2
Confined to Bed	276.8	525.1	479.9	227.4	224.5	169.5

Table 7. Annual rate (per 1,000 population) of acute illness of different degrees of severity, classified by age and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

To provide a comparison of acute illness for the two sexes by age not affected by the higher total rate of illness among females, Figure 2 is presented. For each sex the ratio of the rate of illness in each age group to the rate of illness for all ages (excluding female genital and puerperal diagnoses) is shown. The figure brings out the similarity of the relative morbidity for the two sexes at specific ages. However, the

ratios were somewhat higher among males than females at young ages and among females than males at older ages.

Except for a sharp peak at ages under 5 years, the rate of nondisabling days of acute illness (Table 8) changed only slightly in different age groups. However, the rate of disabling days per 1,000 population declined from 8,303 at ages 5-14 to 4,409 in the 15-34 year age group. The rate of days confined to bed also declined sharply in corresponding age groups. Above the 15-34 year age group, the rate of disabling days rose consistently, but the rate of days causing confinement to bed showed some decline.

Rates of days of acute illness of different degrees of severity were similar for the two sexes up to age 15. Above that age the female rate was considerably above the male rate even if female genital and puerperal diagnoses are excluded.

For acute illness of different degrees of severity the average duration of illness per case (Table 9) was at a low level in the 5-14 year age group and rose consistently at older ages. From ages 5-14 to 55 and older the number of disabling days per disabling illness increased from 9 to 18 and the number of "bed" days per "bed" illness rose from 6 to 10. At specific ages the average duration of illness of each degree of severity was similar for the two sexes.

*Chronic Illness.* The rate per 1,000 population of chronic illness (Table 10) rose consistently with age from 21 for ages

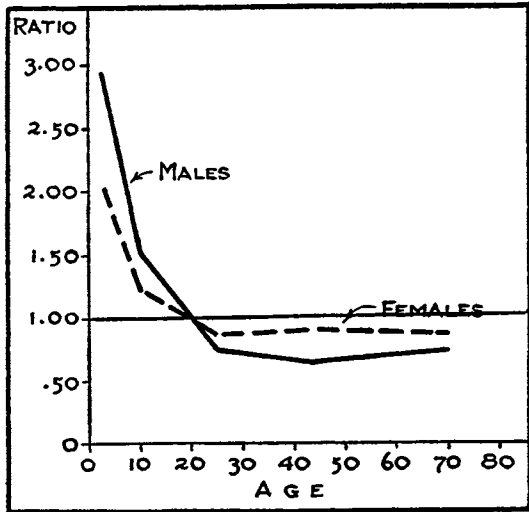


Fig. 2. Ratio of age-specific rates of acute illness to rate for all ages for males and females (excluding female genital and puerperal diagnoses). Eastern Health District of Baltimore, June, 1938-May, 1943.

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under 5 years to 104 at ages 15-34, and 728 for ages 55 and older. However, the rate per 1,000 population of disabling chronic illness reached a small early peak of 43 in the 5-14 year age group, declined to 31 at ages 15-34, and then rose to a high level of 245 at ages 55 and older.

The rate of chronic illness was lower among females than among males up to age 15, and was consistently about 45 per

Table 8. Annual rate (per 1,000 population) of days of acute illness of different degrees of severity, classified by age and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
BOTH SEXES						
TOTAL SICK DAYS	25,071.0	48,100.8	23,781.3	20,710.7	23,638.1	28,505.0
Nondisabling	19,229.7	35,425.9	15,478.8	16,301.5	19,025.6	22,927.1
Disabling	5,841.3	12,674.9	8,302.5	4,409.2	4,612.5	5,577.9
Confined to House	4,240.4	10,570.2	6,264.4	3,019.8	3,174.7	3,861.5
Confined to Bed	1,958.7	3,846.6	2,715.6	1,732.5	1,507.8	1,575.8
MALE						
TOTAL SICK DAYS	20,338.2	48,283.9	23,422.7	14,517.3	16,545.7	24,604.8
Nondisabling	15,348.2	35,393.9	15,511.5	11,451.6	12,988.4	19,526.7
Disabling	4,990.0	12,890.0	7,911.2	3,065.7	3,557.3	5,078.1
Confined to House	3,293.4	10,640.7	5,911.2	1,656.8	2,030.5	2,896.4
Confined to Bed	1,507.4	4,039.6	2,569.6	917.3	1,053.3	1,275.7
FEMALE						
TOTAL SICK DAYS	29,683.7	47,911.4	24,167.8	26,790.7	30,647.0	31,624.6
Nondisabling	23,012.6	35,459.0	15,443.5	21,062.6	24,991.7	25,646.9
Disabling	6,671.1	12,452.4	8,724.3	5,728.1	5,655.3	5,977.7
Confined to House	5,163.4	10,497.4	6,645.2	4,357.9	4,305.5	4,633.5
Confined to Bed	2,398.5	3,646.8	2,873.0	2,532.8	1,957.0	1,815.8
FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)						
TOTAL SICK DAYS	27,164.9	47,910.1	23,760.7	22,482.6	27,407.3	31,405.4
Nondisabling	21,536.9	35,457.7	15,104.0	18,851.4	22,755.8	25,489.5
Disabling	5,628.0	12,452.4	8,656.7	3,631.2	4,651.5	5,915.9
Confined to House	4,301.6	10,496.0	6,603.7	2,583.4	3,519.6	4,589.5
Confined to Bed	1,849.5	3,646.8	2,857.1	1,323.2	1,557.3	1,781.4

DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
	BOTH SEXES					
SICK DAYS PER ILLNESS	19.9	16.4	14.6	19.6	23.7	28.3
Disabling Days Per Disabling Illness	11.1	10.9	8.7	10.4	13.2	17.9
Days Confined to House Per Illness Confined to House	8.8	9.6	7.1	7.9	10.0	13.8
Days Confined to Bed Per Illness Confined to Bed	7.0	7.1	5.8	6.8	7.7	10.3
	MALE					
SICK DAYS PER ILLNESS	19.5	15.9	14.9	19.0	24.9	32.1
Disabling Days Per Disabling Illness	11.0	10.9	8.6	9.9	14.1	19.7
Days Confined to House Per Illness Confined to House	8.1	9.5	7.1	6.2	9.1	12.8
Days Confined to Bed Per Illness Confined to Bed	6.7	7.2	5.7	5.7	7.9	10.0
	FEMALE					
SICK DAYS PER ILLNESS	20.1	17.0	14.3	20.0	23.2	26.4
Disabling Days Per Disabling Illness	11.2	11.0	8.7	10.6	12.8	16.8
Days Confined to House Per Illness Confined to House	9.3	9.7	7.2	8.7	10.6	14.3
Days Confined to Bed Per Illness Confined to Bed	7.3	6.9	5.9	7.4	7.5	10.6
	FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)					
SICK DAYS PER ILLNESS	19.6	17.0	14.2	19.2	22.1	26.3
Disabling Days Per Disabling Illness	10.5	11.0	8.8	8.9	11.7	16.8
Days Confined to House Per Illness Confined to House	8.7	9.7	7.2	7.0	9.6	14.3
Days Confined to Bed Per Illness Confined to Bed	6.7	6.9	6.0	5.8	6.9	10.5

Table 9. Average duration of acute illness of different degrees of severity, classified by sex and age. Eastern Health District of Baltimore, June, 1938-May, 1943.

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DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
BOTH SEXES						
TOTAL ILLNESS	238.2	20.8	95.8	104.2	310.8	728.4
Nondisabling	162.7	13.0	52.8	73.4	223.7	483.7
Disabling	75.5	7.8	43.0	30.8	87.1	244.7
Bed	43.4	4.6	27.0	22.0	49.5	127.8
MALE						
TOTAL ILLNESS	190.8	23.0	120.8	83.5	244.3	584.9
Nondisabling	120.6	19.2	75.2	55.7	157.4	353.0
Disabling	70.2	3.8	45.6	27.8	86.9	231.9
Bed	39.0	3.8	32.6	20.3	45.2	110.8
FEMALE						
TOTAL ILLNESS	284.5	18.5	68.9	124.4	376.5	843.2
Nondisabling	203.8	6.6	28.7	90.7	289.2	588.3
Disabling	80.7	11.9	40.2	33.7	87.3	254.9
Bed	47.7	5.3	21.1	23.6	53.7	141.5
FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)						
TOTAL ILLNESS	273.6	18.5	68.9	116.2	353.0	833.0
Nondisabling	195.5	6.6	28.7	84.4	270.9	581.3
Disabling	78.1	11.9	40.2	31.8	82.1	251.8
Bed	45.8	5.3	21.1	22.0	49.9	139.6

Table 10. Annual rate (per 1,000 population) of chronic illness of different degrees of severity, classified by age and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

cent higher among females than among males at ages over 15 years (regardless of whether female genital and puerperal diagnoses are included). In Figure 3, ratios of the rate of chronic illness by age to the rate of chronic illness for all ages are shown for the two sexes (excluding female genital and puerperal diagnoses). As indicated in the figure, a rise in the male ratio over the female ratio occurred in the 5-14 year age group. Above age 15, ratios for the two sexes were generally similar.

The rate of disabling days of chronic illness (Table 11) was 8,270 per 1,000 population in the 5-14 year age group, declined to 4,545 at ages 15-34, and rose to a high level of 36,999 at age 55 and older. The rate of "bed" days of chronic illness in corresponding age groups followed the same pattern as was noted for disabling days.

At most ages, the rates of disabling days and "bed" days of chronic illness were higher among males than among females (whether or not female genital and puerperal diagnoses are included.) For disabling days, the excess of the male rate over the female rate was approximately 50 per cent at ages 5-14 and roughly 75 per cent for ages 35-54.

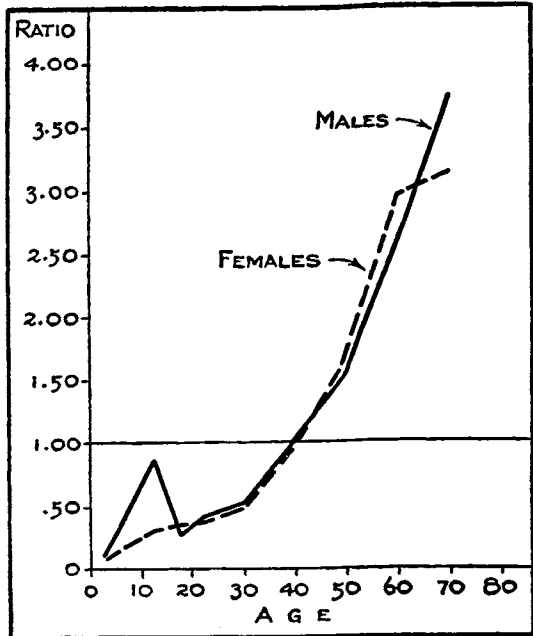


Fig. 3. Ratio of age-specific rates of chronic illness to rate for all ages for males and females (excluding female genital and puerperal diagnoses). Eastern Health District of Baltimore, June, 1938-May, 1943.

#### COMPARISON WITH OTHER STUDIES

In the Hagerstown and Committee on the Costs of Medical Care studies, rates of all illness were lower than in the Baltimore study. The rate of all illness per 1,000 population was 1,081 in the Hagerstown study and 850 in the CCMC study compared with 1,500 in the study of the Eastern Health District of Baltimore.

Rates of all illness by age in the Eastern Health District of Baltimore are compared, in Figure 4, with those reported in Hagerstown, and in the CCMC study. The age curves for the three are similar in shape but the rates obtained in the Eastern

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DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
	RATE PER 1,000 POPULATION					
	BOTH SEXES					
Disabling Days	10,545.9	1,130.0	8,269.7	4,545.1	9,163.2	36,998.6
Bed Days	3,043.1	123.5	3,374.7	2,530.5	2,358.0	7,004.2
	MALE					
Disabling Days	11,310.7	122.8	9,686.2	4,570.8	11,840.9	39,161.0
Bed Days	3,445.7	104.9	5,076.4	2,546.2	3,292.7	6,341.0
	FEMALE					
Disabling Days	9,800.5	2,172.0	6,742.8	4,519.8	6,517.1	35,269.0
Bed Days	2,650.6	142.9	1,540.5	2,515.0	1,434.4	7,534.7
	FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)					
Disabling Days	9,715.5	2,172.0	6,742.8	4,479.7	6,294.8	35,202.7
Bed Days	2,639.0	142.9	1,540.5	2,503.3	1,408.0	7,532.8

Table 11. Annual rate of disabling and bed days due to chronic illness, classified by age and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

Health District population are markedly higher than was true of either of the other studies. The differences were especially great among the very young and in the middle and old-age groups. In the middle and old age groups the level of morbidity in the Eastern Health District population was affected somewhat by the way of counting cases of chronic disease.

### SUMMARY

A study of the age specific illness experience for males and females in a sample of families in the Eastern Health District of Baltimore has been presented. The chief findings can be summarized as follows.

An annual rate of 1,500 illnesses per 1,000 population occurred, (601 disabling illnesses, and 322 "bed" illnesses). Each year 16 days of disability and 5 days in bed per person observed

resulted from sickness. Eighty-five per cent of the cases of illness of each degree of severity were classed as acute, but two-thirds of the days of disability and confinement to bed were a result of chronic illness.

Comparison of illness rates among males and females (excluding female genital and puerperal diagnoses) showed the following facts. First, rates of acute and chronic illness of different degrees of severity were somewhat higher among females than among males. The difference was greater for nondisabling illness than for more severe illness, that is, illness which caused disability. Second, rates of disabling days and "bed" days due to all illness were similar for the two sexes. However, rates of disabling days and bed days were somewhat lower among females than among males for chronic illness and were somewhat higher among females than among males for acute illness.

Rates of illness and days of acute illness of different degrees of severity were highest at young ages, especially under 5 years

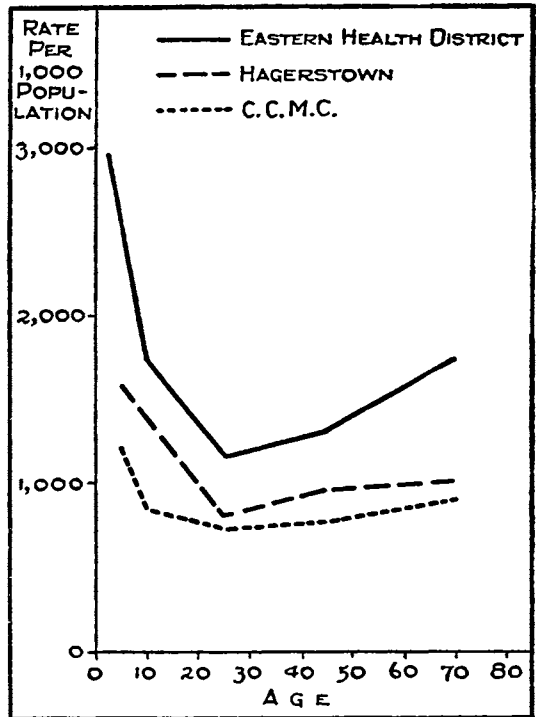


Fig. 4. Age-specific rates of illness in the Eastern Health District of Baltimore, Hagerstown, and C.C.M.C. studies. (Data taken from (1) Sydenstricker, Edgar: *The Age Curve of Illness*. *Public Health Reports*, June 10, 1927, 42, Part I, pp. 1566-1567; and (2) Collins, Selwyn D.: *Cases and Days of Illness Among Males and Females with Special Reference to Confinement to Bed*. *Public Health Reports*, January 12, 1940, 55, Part I, pp. 53-55, and Eastern Health District of Baltimore study for June, 1938-May, 1943.)



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for nondisabling illness and under 15 years for more severe illness. The rates tended to be similar for the two sexes up to age 15, but higher among females than among males at ages above 15 years, regardless of whether female genital and puerperal diagnoses are included.

Rates of illness and days of illness of different degrees of severity due to chronic causes increased sharply in old age. At ages 5–14 small rises occurred in the rates of illness and of days of illness causing disability or confinement to bed. The female illness rate was below the male rate up to age 15 and above it at older ages, even when female genital and puerperal diagnoses are excluded. For days of disabling illness, the female rate was below the male rate at most ages even if female genital and puerperal diagnoses are included.

### ACKNOWLEDGMENTS

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Appendix Table 1. Number of acute illnesses of different degrees of severity, classified by age and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
BOTH SEXES						
TOTAL ILLNESS	26,277	4,516	5,318	7,883	5,718	2,842
Nondisabling	15,322	2,730	2,199	4,713	3,719	1,961
Disabling	10,955	1,786	3,119	3,170	1,999	881
Confined to House	10,031	1,693	2,861	2,871	1,815	791
Confined to Bed	5,801	885	1,517	1,892	1,127	430
MALE						
TOTAL ILLNESS	10,727	2,380	2,662	2,826	1,898	961
Nondisabling	6,067	1,453	1,114	1,685	1,178	637
Disabling	4,660	927	1,548	1,141	720	324
Confined to House	4,200	876	1,413	991	637	283
Confined to Bed	2,327	438	757	594	378	160
FEMALE						
TOTAL ILLNESS	15,550	2,136	2,656	5,057	3,820	1,881
Nondisabling	9,255	1,277	1,085	3,028	2,541	1,324
Disabling	6,295	859	1,571	2,029	1,279	557
Confined to House	5,831	817	1,448	1,880	1,178	508
Confined to Bed	3,474	397	760	1,298	749	270
FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)						
TOTAL ILLNESS	14,637	2,135	2,621	4,423	3,584	1,874
Nondisabling	9,005	1,277	1,077	2,891	2,439	1,321
Disabling	5,632	858	1,544	1,532	1,145	553
Confined to House	5,197	816	1,428	1,395	1,054	504
Confined to Bed	2,920	397	752	857	648	266

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Appendix Table 2. Number of days of acute illness of different degrees of severity, classified by age and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
<b>BOTH SEXES</b>						
<b>TOTAL SICK DAYS</b>	522,280	73,979	77,432	154,688	135,633	80,498
Nondisabling	400,593	54,485	50,399	121,756	109,207	64,746
Disabling	121,687	19,494	27,033	32,932	26,426	15,752
Confined to House	88,337	16,257	20,397	22,555	13,223	10,905
Confined to Bed	40,803	5,916	8,842	12,940	8,655	4,450
<b>MALE</b>						
<b>TOTAL SICK DAYS</b>	209,117	37,758	39,561	53,714	47,205	30,879
Nondisabling	157,819	27,678	26,199	42,371	37,056	24,506
Disabling	51,307	10,080	13,362	11,343	10,149	6,373
Confined to House	33,863	8,321	9,984	6,130	5,793	3,635
Confined to Bed	15,499	3,159	4,340	3,394	3,005	1,601
<b>FEMALE</b>						
<b>TOTAL SICK DAYS</b>	313,163	36,221	37,871	100,974	88,478	49,619
Nondisabling	242,733	26,807	24,200	79,385	72,151	40,240
Disabling	70,380	9,414	13,671	21,589	16,327	9,379
Confined to House	54,474	7,936	10,413	16,425	12,430	7,270
Confined to Bed	25,304	2,757	4,502	9,546	5,650	2,849
<b>FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)</b>						
<b>TOTAL SICK DAYS</b>	286,590	36,220	37,233	84,737	79,125	49,275
Nondisabling	227,214	26,806	23,668	71,051	65,696	39,993
Disabling	59,376	9,414	13,565	13,686	13,429	9,282
Confined to House	45,382	7,935	10,348	9,737	10,161	7,201
Confined to Bed	19,512	2,757	4,477	4,987	4,496	2,795

Appendix Table 3. Number of chronic illnesses of different degrees of severity, classified by age and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
	BOTH SEXES					
TOTAL ILLNESS	4,963	32	312	778	1,784	2,057
Nondisabling	3,390	20	172	548	1,284	1,366
Disabling	1,573	12	140	230	500	691
Bed	904	7	88	164	284	361
	MALE					
TOTAL ILLNESS	1,962	18	204	309	697	734
Nondisabling	1,240	15	127	206	449	443
Disabling	722	3	77	103	248	291
Bed	401	3	55	75	129	139
	FEMALE					
TOTAL ILLNESS	3,001	14	108	469	1,087	1,323
Nondisabling	2,150	5	45	342	835	923
Disabling	851	9	63	127	252	400
Bed	503	4	33	89	155	222
	FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)					
TOTAL ILLNESS	2,886	14	103	438	1,019	1,307
Nondisabling	2,062	5	45	318	782	912
Disabling	824	9	63	120	237	395
Bed	433	4	33	83	144	219

Appendix Table 4. Number of disabling and bed days due to chronic illness, classified by age and sex. Eastern Health District of Baltimore, June, 1938-May, 1943.

DEGREE OF SEVERITY	AGE GROUPS					
	All Ages	0-4	5-14	15-34	35-54	55+
	BOTH SEXES					
Disabling Days	219,692	1,738	26,926	33,947	52,597	104,484
Bed Days	63,393	190	10,938	18,900	13,535	19,780
	MALE					
Disabling Days	116,297	96	16,360	16,912	33,782	49,147
Bed Days	35,429	82	8,574	9,421	9,394	7,958
	FEMALE					
Disabling Days	103,395	1,642	10,566	17,035	18,815	55,337
Bed Days	27,964	108	2,414	9,479	4,141	11,822
	FEMALE (EXCLUDING FEMALE GENITAL AND PUERPERAL DIAGNOSES)					
Disabling Days	102,498	1,642	10,566	16,884	18,173	55,233
Bed Days	27,841	108	2,414	9,435	4,065	11,819