

ON THE ASSOCIATION BETWEEN HEALTH AND SOCIAL PROBLEMS IN THE POPULATION

II. THE INFLUENCE OF MEDICAL CARE PROBLEMS

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IN THE preceding paper of this series² we examined data on a sample of families in the Arsenal Health District of Pittsburgh to determine the extent to which families with health problems, as defined, have social-welfare problems, i.e., are known to the social agencies of the community. These families had been canvassed in July, 1951, and again in June, 1952. In the total sample of 2,370 families, 231, or nearly 10 per cent, were currently in contact with agencies, i.e., were "active cases" between June, 1950, and December, 1951; 504, or approximately 21 per cent, had had contact with social agencies prior to June, 1950.

Among families with reported illnesses, accidental injuries and hospitalizations in both surveys, 12 per cent were currently in contact with social agencies in contrast to only 5 per cent among families with no reported illness, accident, or hospitalization in either survey. When consideration of contact is not limited to active cases, it was found that 43 per cent of the families in the first group were known to the agencies, while in the second group this figure is only 28 per cent.

Following our expressed intention to report systematically the steps taken in the study of the problem of association between the health status of the families of a community and the number and kinds of their problems that have required attention by community agencies we shall discuss in this paper data bearing on the nature of these problems. In pursuing further the central question as to whether or not families with health

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² A. Ciocco, P. M. Densen, and D. G. Horvitz. *Milbank Memorial Fund Quarterly*, July, 1953, xxxi, p. 265.

problems have more social-welfare problems than those without, thought must be given to the possibility that the observed association may simply be a reflection of the activities of social agencies in providing medical care. On the other hand, the association may come about through the operation of other factors which result in a larger number of families "known to social agencies" among families with health problems. We have, therefore, examined our data to determine how much of the association observed could be considered as due directly to sickness as an immediate requirement for assistance from social agencies. The degree to which this possibility actually exists will determine what significance to attach to the association. This paper presents the findings on this point.

MATERIAL AND METHOD

The sources and the methods of collecting the data have all been described in detail in earlier publications. The basic data presented in this paper relate primarily to 231 families who were known to social agencies and were active cases between June, 1950, and December, 1951, although the data on 504 additional families whose cases were closed on the books of the agencies prior to June, 1950, are also examined. For all the families, we wish to determine how much of the relationship between health and social-welfare status is due to the frequency of medical care problems which are the main reason for contact with the social agency.

In classifying the reasons for contact we have utilized the system of reporting developed by the Family Service Association of America. On the basis of this system we have classified the problems into the following major categories: I. Family (marital, parent-offspring, other); II. Behavior (juvenile delinquency, adult delinquency, other juvenile and adult behavior problems); III. Employment (unemployment and other); IV. Medical Care; V. Other.

NATURE OF SOCIAL-WELFARE PROBLEMS

The frequency of various categories of social-welfare prob-

CATEGORY OF PROBLEM	FAMILIES	
	Number	Per Cent
Medical Care, Only	62	26.8
Behavior and Family, Only	79	34.2
Employment, Only	13	5.6
Medical Care, Behavior and Family	20	8.7
Medical Care, and Employment	30	13.0
Behavior and Family and Employment	8	3.5
Medical Care, Behavior and Family and Employment	19	8.2
ALL	231	100.0

Table 1. Social-welfare problems among Arsenal study area families known to Pittsburgh social agencies. Cases open June, 1950–December, 1951.

lems among the 231 families in contact with social agencies between 1950 and 1951 is shown in Table 1. The Behavior category has been combined with the Family category because of smallness of numbers.

The data of Table 1 show that medical care problems alone or in combination with other classes of problems occur in more than half of the families. Behavior and family problems, alone or in combination with other problems, are found also in approximately half of the families. In sum, these broad classes of problems constitute the most frequent reasons for which assistance from the social agencies has been requested.

We may examine the medical care problems in terms of major groups of health conditions to which they are alleged to be related according to the records of the agencies. The data on this point, shown in Table 2, reveal that among families currently in contact with social agencies for medical care problems only or for these and employment problems, the most frequent reason for the medical care problem is chronic illness. On the other hand, pregnancy is the most frequent reason for the majority of medical care problems among families in which these and behavior and family problems are the stated reasons for contact with social agencies.

The relationships shown in Table 2 do not of themselves

REASON FOR MEDICAL CARE PROBLEM SHOWN IN AGENCY RECORD	NUMBER OF FAMILIES WITH SOCIAL WELFARE PROBLEM				
	Medical Care, Only	Medical Care, and Family, and Behavior	Medical Care and Em- ploy- ment	Medical Care and Behavior and Family and Employ- ment	Total
Mental and Allied Disorders	5	2	3	3	13
Physical Handicaps	4	1	1	1	9
Chronic Disease and Old Age	44	2	16	4	66
Acute Illness and Accidents	4	4	6	2	16
Pregnancy	5	11	2	9	27
TOTAL	62	20	30	19	131

Table 2. Reasons for medical care problems among families in contact with Pittsburgh social agencies. Arsenal study area. Cases open June, 1950-December, 1951.

constitute a true measure of the association between health and social welfare problems. Such relationships could be merely an indication of the kinds of illnesses that occur to persons having the age and sex characteristics of persons in contact with social agencies for the stated reasons. The table provides no information on the kinds of illnesses among persons not having contact with the social agencies. Nevertheless the data do provide some clues as to how such association might come about if it exists. Thus, chronic illness affects the employability of the individual, so that we would expect an association resulting from the sequence: chronic illness—employment problem. Or, the association between pregnancy and behavior and family problems could result from a sequence in the reverse order: Behavior and family problems—pregnancy—medical care problems. Whatever the sequences may be, the main purpose of our study of the association between health status and social-welfare status is to examine further the elements which are possibly related to the association in order to identify the patterns by which the sequences of events result in the association noted.

SOCIAL-WELFARE PROBLEMS	HEALTH STATUS							
	All Families in Sample		No Health Problems Survey I and II		Health Problems Survey I or II		Health Problems Survey I and II	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
All Families in Arsenal Area Sample	2,370	100.0	508	100.0	915	100.0	947	100.0
Known to Social Agencies— Cases Open 6/50–12/51	231	9.7	26	5.2	87	9.5	118	12.5
1. Medical Care, Only	62	2.6	6	1.2	27	3.0	29	3.0
2. Behavior and Family, Only	79	3.3	12	2.4	34	3.7	33	3.5
3. Employment Only	13	.6	4	.8	4	.4	5	.5
4. Medical Care, Behavior and Family	20	.8	—	—	8	.9	12	1.3
5. Medical Care and Employment	30	1.3	2	.4	7	.8	21	2.2
6. Behavior and Family and Employment	8	.3	1	.2	2	.2	5	.5
7. Medical Care, Behavior and Family and Employment	19	.8	1	.2	5	.5	13	1.4

Table 3. Health status and category of social-welfare problems. Arsenal study area. Families known to Pittsburgh social agencies with cases open June, 1950–December, 1951.

HEALTH STATUS AND CATEGORY OF SOCIAL-WELFARE PROBLEMS

The difficulties inherent in understanding the meaning of the observed association between health and social-welfare status are further brought out when we examine the data of Table 3 and Figure 1. This table presents the frequency with which families with health status as defined from our surveys have had contact during 1950–1951 with the social agencies for the several categories of social-welfare problems.

In Table 3 we note that there are families with medical care problems among those with no health problems according to our surveys. This is due in part to differences in definition of health problems as used on the surveys and as stated by the agencies. Included among the nine families with medical care problems and no health problem there are two for whom pregnancy is the reason for medical care although pregnancy is

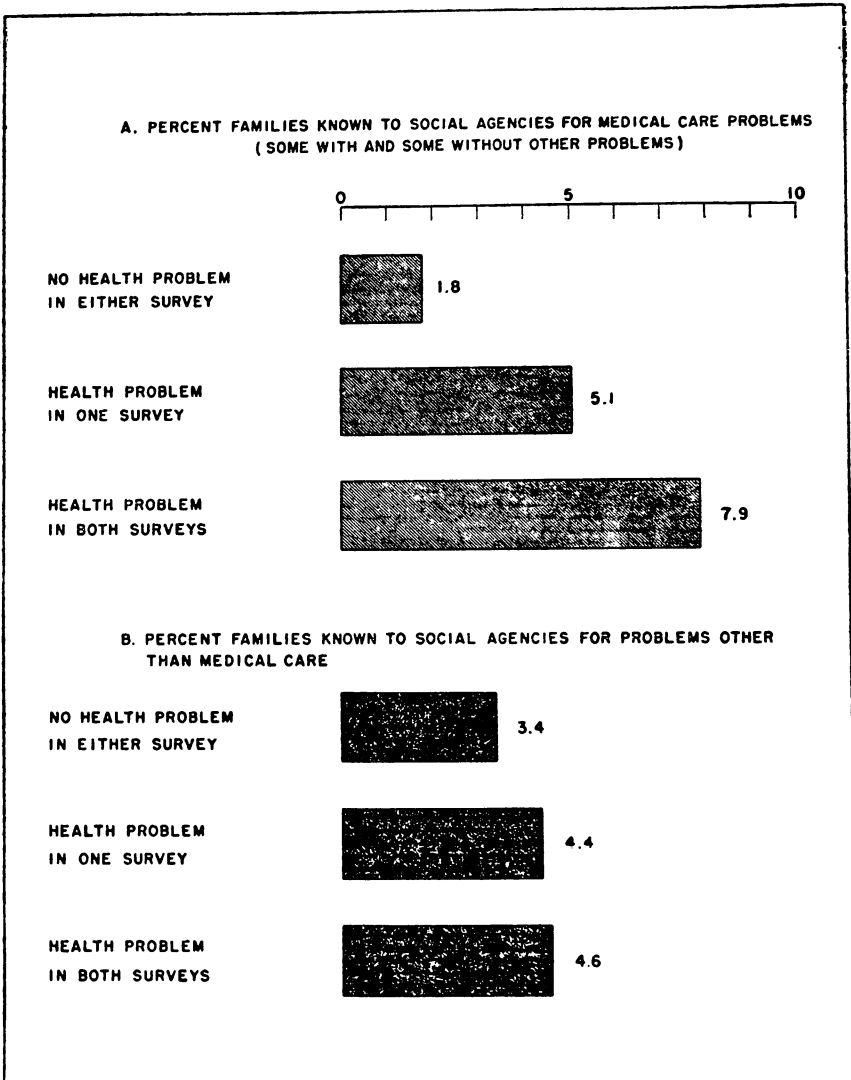


Fig. 1. Health status on survey, and social-welfare problems. Per cent families known to social agencies for medical care problems (some with and some without other problems).

not included as a health problem in the classification of health status. Among the remaining seven families, the medical care problems are related to mental and allied conditions in three, and chronic diseases associated with old age in four. Thus, we see reflected here the inability to obtain from household

canvasses data on conditions which have social stigma or which are not regarded as disease entities.

The important findings apparent in Table 3 and Figure 1 are that among the families with health problems approximately 8 per cent have contact currently with social agencies for medical care alone or in combination with other reasons. In contrast, only 2 per cent of the families with no health problems are in contact with social agencies for these reasons. The difference between the two groups of families is not so marked when we examine the frequency of contact with social agencies for behavior, family or employment problems without medical care problems. Among families with health problems in both surveys 4.6 per cent had contact with the social agencies for these reasons compared to 3.4 per cent with no health problems in either survey. Thus, the greatest difference between families who have no health problems in either survey and those that have health problems in both surveys is found for social-welfare problems which include medical care. On this basis, we could infer that the observed association is primarily due to medical care requirements of persons who have illnesses and turn to social agencies, and that if social agencies were not involved in providing assistance for medical care there would be little or no association.

Before such an inference is drawn it is well to examine its implications further. If all of the observed association is due to the existence of a medical care component in the program of the agency, then when families in contact with social agencies for reasons other than medical care are compared with families not known to the social agencies, the frequency of health problems (as found in the surveys) should be the same for the two groups. Furthermore, the frequency of health problems should be the same for both the families known to the social agencies for medical care problems only and those in contact for medical care problems in combination with other types of problems.

That neither of these hypotheses is correct is brought out by the data of Table 4 and Figure 2. It is seen in Figure 2 that the

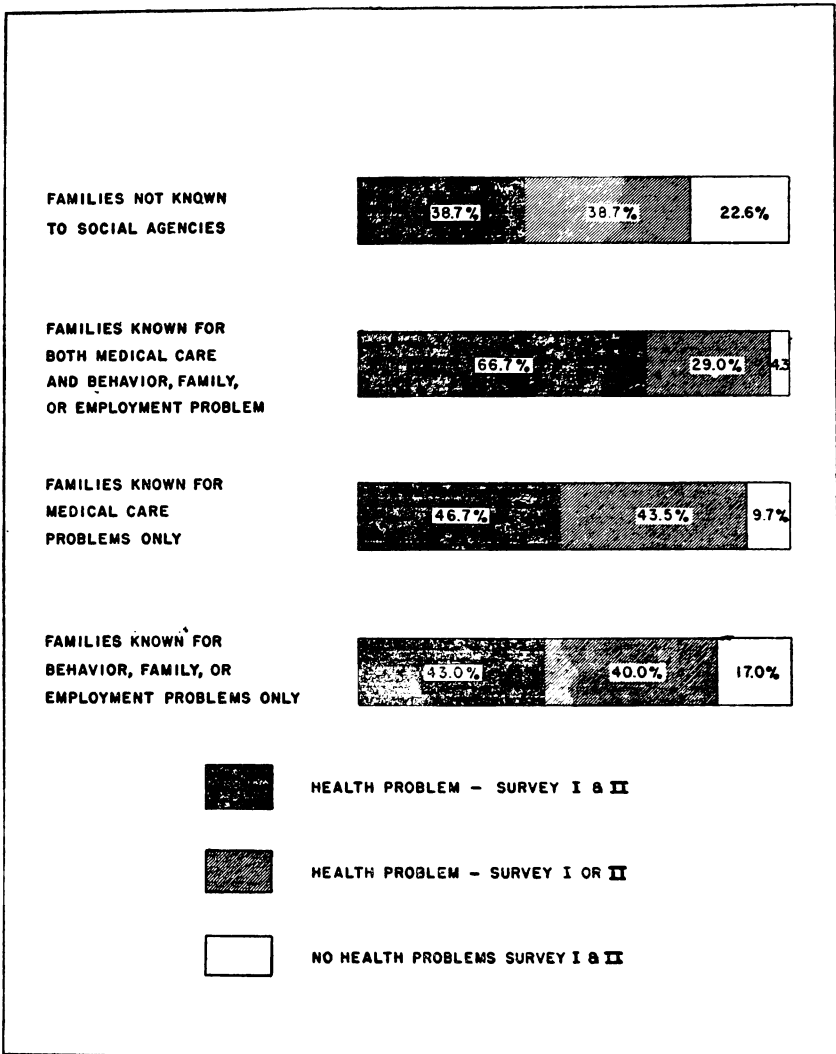


Fig. 2. Health status among families known to social agencies for designated class of social-welfare problem and health status among families not known to social agencies.

proportion of families having health problems in one or both surveys is greater among those families known to the social agencies for behavior, family or employment reasons than among families not known to social agencies. Furthermore, the contrast with the families not known to social agencies for the group having medical care problems only is different from that

SOCIAL WELFARE STATUS		HEALTH STATUS			
Family, Behavior and Employment Problems	Medical Care Problems	No Health Problems Survey I and II	Health Problems Survey I or II	Health Problems Survey I and II	Total
No	No	482 22.6% ^a	828 38.7%	829 38.7%	2,139
	Yes	6 9.7%	27 43.5%	29 46.7%	
Yes	No	17 17.0%	40 40.0%	43 43.0%	100
	Yes	3 4.3%	20 29.0%	46 66.7%	69
TOTAL		508 21.4%	915 38.6%	947 40.0%	2,370

^a All percentages expressed in terms of the row totals.

Table 4. Families of Arsenal study area classified by health status and two types of social welfare problems (data of Table 3).

for the group having medical care problems in combination with other problems.

Although the differences for some of the comparisons in Figure 2 are likely to occur by chance, it will be noted that they are consistent in direction. Taken as a whole the data of Table 4 show that the frequency of families with behavior, family, and employment problems is greater among families found to have health problems on the surveys than would be expected by chance alone even where medical care status in the agencies records is taken into consideration.³

³ The likelihood ratio criterion λ (see, e.g. Mood, A. M.: INTRODUCTION TO THE THEORY OF STATISTICS, p. 281., McGraw-Hill, 1950) was used in making a significance test. The hypothesis tested was that the distribution of the families in the two-way classification, medical care status versus health status, does not depend upon the classification of families with respect to behavior, family, and employment problems. The 2,370 families in Table 4 were regarded as a sample from a multinomial population with cell probabilities $P_{1jk} = P_{1j} P_r$, i.e.: the probability that a family falls in a particular one of the six cells obtained when health status and presence or absence of medical care problems are cross tabulated (p_{1j}) is not affected by the family's status with respect to behavior, family or employment problems (p_r).

For large samples $-2 \log \lambda$ is approximately distributed as X^2 and the test in this instance was made by reference to the X^2 table with 5 degrees of freedom. The observed value of $-2 \log \lambda$ was beyond the 1 per cent point of the X^2 distribution resulting in rejection of the hypothesis.

Further evidence on this point is obtained by examining in greater detail the records of families in which a medical care problem and some other problem are found together to determine whether or not the medical care problem brought the family to the social agency. Among the sixty-nine families in contact with the social agencies for medical care and some other reason, fifty had been brought to the attention of the social agency primarily for a medical care problem and the remainder primarily for other reasons.

Addition of the fifty families to the sixty-two with medical care problems only, and of the nineteen to the 100 with other problems only, allows us to segregate the 231 families into two groups on the basis of the *primary* reason for contact: (1) Medical Care Problem, (2) Other, *i.e.*: Behavior, Family and Employment Problems. The frequency with which these two groups of families are found among the families with no health problem in either survey, with health problem in one or the other survey, with health problem in both surveys is summarized in Table 5 and shown in Figure 3.

It is seen from Table 5 that the percentage of families in contact with the social agencies primarily for medical care problems increases from 1.8 among families with no health problem

Table 5. Health status and social-welfare problems that first brought family to social agencies. Arsenal study area families known to Pittsburgh social agencies with cases open June, 1950–December, 1951.

PRIMARY-SOCIAL WELFARE PROBLEMS	HEALTH STATUS							
	All Families in Area Sample		No Health Problems Survey I and II		Health Problems Survey I or II		Health Problems Survey I and II	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
All Families in Arsenal Area Sample	2,370	100.0	508	100.0	915	100.0	947	100.0
Known to Social Agencies—								
Cases Open 6/50–12/51	231	9.7	26	5.2	87	9.5	118	12.5
Medical Care	112	4.7	9	1.8	41	4.5	62	6.5
Family and Behavior								
Employment	119	5.0	17	3.4	46	5.0	56	6.0

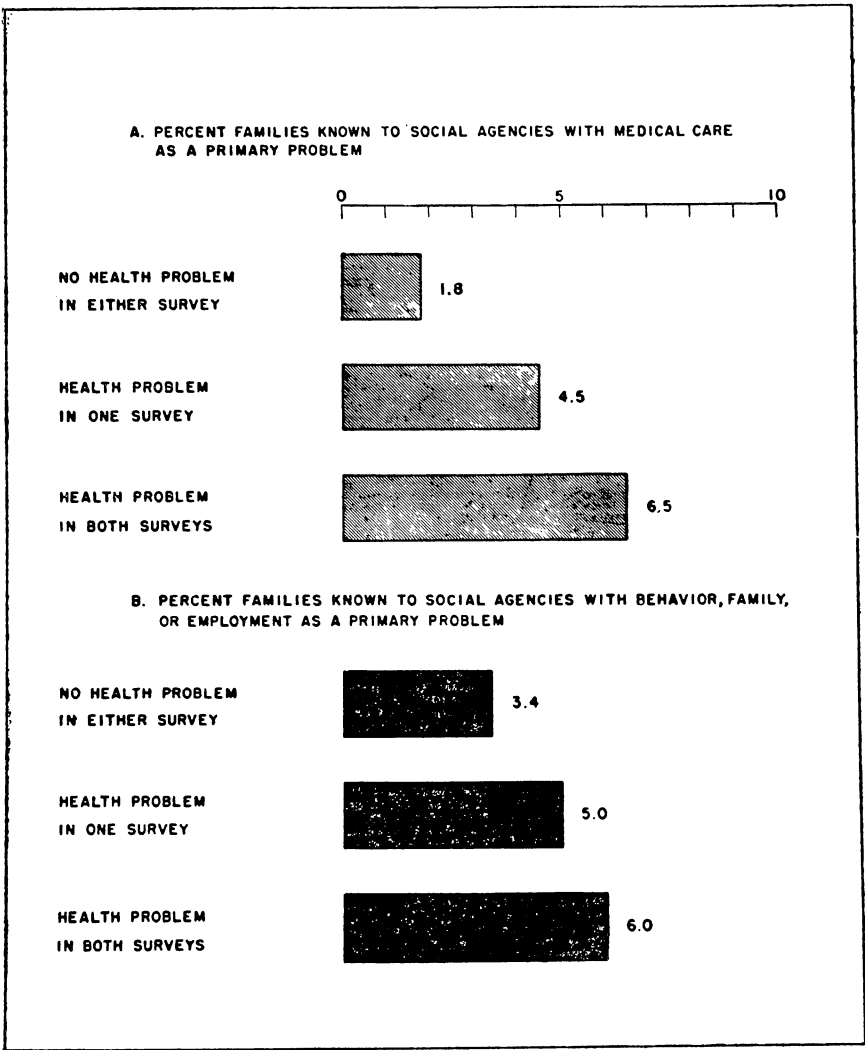


Fig. 3. Health status on survey, and primary social-welfare problems. Per cent families known to social agencies with medical care as a primary problem.

in either survey to 6.5 among families with health problems in both surveys. A parallel increase is observed in the percentage of families whose contact with the social agencies was initiated because of some problem other than medical care. Among families with no health problem 314 per cent had contact with social agencies primarily for behavior, family or employment prob-

lems, while among families with health problems in both surveys this percentage is 6.0. If medical care problems were entirely responsible for the association one would not expect any trend of this kind.⁴

The inference that the observed association between health and social-welfare status is due entirely to the medical care aspect of the activities of the social agencies does not appear justified. On the contrary, it appears that more families with health problems are known than families without health problems when the reason for contact with the social agencies involves other than the need for medical care.

NATURE OF THE PROBLEM IN PRIOR CONTACT WITH SOCIAL AGENCIES

The examination of cases "currently" in contact with social agencies represents an analysis of the association between health status and social-welfare status as it exists at a particular point in time. This association must, however, be the result of the operation of many forces over some time interval. Until the sequence of events which leads to the observed association is more fully understood, the true significance of any observed association remains a matter for conjecture.

The analysis of the data on families who have had contact with the social agencies prior to 1950 should provide some clue to the sequence of events leading to associations between health and social-welfare status. Such analysis must take into account the length of time families have been in existence and "at risk" of coming into contact with social agencies. The methods by which this may be done are being explored. In the meantime,

⁴ If we regard the families with health problems on both surveys and those with no health problems on either survey as samples from two populations we may test the hypothesis that the observed difference in proportions in contact with the agencies for medical care problems represents only sampling fluctuation for samples drawn from two populations with a common value for this proportion. The observed difference, 4.7 per cent, leads to a normal deviate of 4.3 which falls beyond the 1 per cent point of the normal distribution resulting in rejection of the hypothesis. A similar test of the difference in proportions of families contacting the agencies for behavior, family and employment problems in the two groups, 2.6 per cent, also leads to rejection of the hypothesis at the 1 per cent level of significance.

SOCIAL-WELFARE PROBLEMS	HEALTH STATUS							
	All Families in Sample		No Health Problems Survey I and II		Health Problems Survey I or II		Health Problems Survey I and II	
	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent	Num-ber	Per Cent
All Families in Arsenal Area Sample	2,370	100.0	508	100.0	915	100.0	947	100.0
Known to Social Agencies— Cases Closed 6/50	504	21.3	83	16.3	195	21.3	226	23.9
1. Medical Care, Only	65	2.7	4	0.8	30	3.3	31	3.3
2. Behavior and Family, Only	233	9.8	44	8.7	86	9.4	103	10.0
3. Employment, Only	20	0.8	5	1.0	3	0.3	12	1.3
4. Medical Care and Behavior and Family	94	4.0	14	2.8	38	4.2	42	4.4
5. Medical Care Employment	21	0.9	1	0.2	13	1.4	7	0.7
6. Behavior and Family and Employment	42	1.8	9	1.8	18	2.0	15	1.6
7. Medical Care and Behavior and Family and Employment	29	1.2	6	1.2	7	0.8	16	1.7

Table 6. Health status and social-welfare problems. Arsenal study area. Families known to Pittsburgh social agencies with cases closed by June, 1950.

we shall examine the data at hand to inquire whether or not medical care problems account for the differences observed among families with contact prior to 1950 when they are classified according to health status.

The results of this examination are summarized in Table 6 in which families with no health problems are compared with those having health problems in one or the other or both surveys. It is found that:

- (1) In the former group fewer families had contact with social agencies in the past than in the latter.
- (2) Also, fewer families in the former group had contact with the agencies for behavior and family problems alone than in the latter group.
- (3) There does not appear to be much difference between the two groups with respect to employment problems or a combination of employment and behavior and family problems.

In sum, it would appear that a larger number of families with health problems have had contact with social agencies in the past for reasons connected not only with medical care problems but also for behavior and family problems. These findings are consistent with those of the preceding section and, in addition, point to the potential value of inquiring further into the meaning of the past history of behavior and family problems for current health problems.

DISCUSSION

In the introduction to the first paper of this series it was pointed out that a relationship is expected to exist between health and "socio-economic" status from the many studies which indicate that, (1) some illnesses are found more frequently, have longer duration of disability in one or the other social or economic segments of the population, (2) a large proportion of persons on public assistance has health problems. It was also pointed out that to clarify further the relationship between social and health characteristics, the specific factors which are involved in this relationship should be identified and their mode of operation determined.

It has been shown that among families with health problems, as determined from a household canvass of a sample of the population, relatively more are known to social agencies than among families without health problems. In part this association results from the medical care activities of the social agencies. However, it has also been found that more families with health problems have contact with social agencies for reasons other than medical care than do families without health problems. The observed association, therefore, appears not to be solely the reflection of the medical care activities of the social agencies but to some extent must be regarded as independent of these activities and programs.

The significance of these findings cannot be assessed without further knowledge of the dynamics which result in the association. Such knowledge requires information on the sequence of

events which produces the association. Do health problems precede social-welfare problems or vice versa? Is the sequence always the same? If not, in what kinds of situations does one precede the other? These are some of the questions which it is hoped to explore further.