

Among ward patients of a lying-in hospital one group of mothers had had no prenatal care; another group had made fairly good use of clinic facilities open to all. The characteristics of the negligent and the provident mothers were studied and compared to reveal findings of interest to many of us—for there lay in the findings overtones of behavior patterns that have implications for some other administrative areas as well as for M C H.

An Evaluation of Prenatal Care and its Relationship to Social Class and Social Disorganization*

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EARLY in 1951 an effort was made to answer the question: How soon after the onset of pregnancy do the women of Rochester, N. Y., seek prenatal care? Virtually all the births to women in this city occur in hospitals. Information was obtained by the community hospitals from all maternity cases over a two-month period. This amounted to 1,662 pregnancies, one-sixth of the births occurring in Rochester hospitals, annually.

Table 1 summarizes the pertinent findings: 83 per cent of the women sought prenatal care at or before the fifth month, a figure considerably more favorable than that reported from New York City.¹ The only difference between primiparas and multiparas was that the former tended to seek prenatal

care somewhat earlier in the course of pregnancy; but this difference faded after the fifth month. Six out of seven women were classified as private or semi-private patients, and 91 per cent of this group sought care at or before the fifth month. This figure compares favorably with the experience of the Health Insurance Plan of Greater New York.² One out of every seven women was classified as a "ward" patient, and a considerable number of these women received little or no prenatal care. Differences existed between individual hospitals, but they were related to the percentage of "ward" patients delivered in the hospital rather than to any other factor.

A more intensive investigation was undertaken of "ward" patients who neglected to seek prenatal care until late in pregnancy. The remainder of this report deals with their characteristics and the results of their pregnancies.

SOURCE OF MATERIAL

Because 60 per cent of all "ward" patients were delivered at one of the six

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TABLE 1

Month at Which Prenatal Care Was First Sought by Women Delivering in Rochester Hospitals, February, March, 1951, by Parity and Hospital Bed Status

	Number of Cases	Cumulative Per cent of Women Who First Sought Prenatal Care When Pregnant for Months Given			Per cent of Women with No Prenatal Care or None Until 9th Month	
		Under 3 Months	3-5 Months	6-8 Months		
All Cases	1,662	41	83	95	5	
Parity	Primiparas	478	50	88	95	5
	Multiparas	1,122	37	80	95	5
Hospital Bed Status	Private and Semi-Private	1,333	46	91	99	1
	"Ward"	229	10	39	86	14

Rochester hospitals, it was decided to limit the study to that hospital. The hospital studied is a large teaching institution which affords an excellent quality of service. It is located at the periphery of the city. The years 1949 and 1951 were chosen for study. Data were analyzed separately for each year, but, since there were no apparent differences between years, they have been combined.

"Ward" status is determined by the hospital involved on a purely financial basis, after interview with a member of the family. "Ward" status includes all clients of the Department of Social Welfare and all other families whose income qualifies them.

Of the 947 "ward" maternity cases delivered at this hospital in these two years, the records of 884 were located and reviewed. After duplications and stillbirths* had been eliminated, 207 women were considered to have received a grossly inadequate amount of prenatal care. The care which they did receive emanated from the hospital's

outpatient department or from an affiliated maternity clinic located near the center of the city. This group will be referred to hereafter as the study group. Criteria for their selection is outlined in Table 2. The 207 women delivered 208 living infants. One-third of the group saw no physician during their pregnancy, until they were in labor. The median interval between first antenatal visit and onset of labor in the remaining two-thirds was 30 days, and most of them made no more than one or two visits before the onset of labor.

"Ward" status and the hospital of delivery itself necessarily influence the characteristics of this study group. To control this influence a group of 105 "ward" maternity cases delivered at the same hospital in the same years, whose prenatal care was reasonably adequate in amount, were selected at random from the remaining 572 records. Their prenatal care emanated from the same source as that of the study group. They will be referred to hereafter as the control group. Criteria for their selection are outlined in Table 2. The 105 women delivered 105 live infants. The median interval between their first antenatal visit and onset of labor was 167 days.

* In the group of women studied, estimation of the duration of gestation was not possible. Therefore, the interval between delivery date and first visit to clinic (with allowance for birthweight) was utilized as a criterion of selection. Under these circumstances pregnancies which terminated in fetal deaths had to be eliminated from consideration.

TABLE 2
Criteria for the Selection of Control and Study Groups

<i>Control Group</i>											
(1) Gave birth to live infant											
(2) Regular visits to maternity clinic											
(3) First visit to maternity clinic at least:											
20	wks.	prior	to	delivery	with	birth	weight	2,500	gms.	or	more
18	"	"	"	"	"	"	"	"	2,000-2,499	gms.	
15	"	"	"	"	"	"	"	"	1,500-1,999	gms.	
11	"	"	"	"	"	"	"	"	1,000-1,499	gms.	
8	"	"	"	"	"	"	"	"	800-900	gms.	
<i>Study Group</i>											
(1) Gave birth to live infant											
(2) First visit to maternity clinic less than:											
8	wks.	prior	to	delivery	with	birth	weight	2,500	gms.	or	more
6	"	"	"	"	"	"	"	"	2,000-2,499	gms.	
3	"	"	"	"	"	"	"	"	1,500-1,999	gms.	
No prenatal care whatsoever								"	"	"	less than 1,500 gms.
No fetus less than 800 gms. included											

Data relating to both groups were assembled from hospital administrative and medical records, birth certificates, public health nursing records and the Central Index of the Council of Social Agencies. For certain comparative purposes the birth certificates of a random sample of live births occurring in 1949 and 1951 in hospitals other than the one studied were analyzed.

RESULTS

Both of the groups analyzed possessed characteristics known to be associated with the economically underprivileged in our society. However, there were significant differences between the two groups in their degree of economic dependency and social disorganization, and in the results of their current and prior pregnancies.

Thirty-six per cent of the study group as compared to 10 per cent of the control group ($P = < .01$) were carried on the rolls of the Department of Social Welfare before hospitalization or as the result of inability to meet hospital expenses. The median income of the remaining numbers in both groups was similar: \$2,700 per year. This figure is considerably lower than the city median of \$3,563³ and actually repre-

sents even less income because the family size of both groups was much larger than the average city family size.

Although Negroes comprise less than 5 per cent of the population of Rochester, 25 per cent of the study group and 35 per cent of the control group were Negro (P not significant). When broken down by race there were no significant differences between the study and control groups with respect to occupation of father or residential neighborhood of mother. However, the disadvantage of both groups as compared to the city population as a whole, and the special disadvantage of the Negro as compared to the white are illustrated in Tables 3 and 4. In the combined groups there are six times as many white male laborers as in the general population, but there are over 12 times as many Negro males so classified. Both Negroes and whites tend to reside in the central, oldest, most blighted sections of the city, but in the case of the Negro this tendency is accentuated.

When broken down by race, there were no differences between the control and study groups with respect to birth-place of mother. However, in both groups, the majority of the white women were native to New York State, in most

TABLE 3

Percentage Distribution by Race of Mother's Residential Neighborhood in Combined Control and Study Groups as Compared to 1950 Population Census

Neighborhood of Residence	Total Population 1950 Census (332, 448) Per cent	Combined Control and Study Groups		
		Total (312) Per cent	Negro (89) Per cent	White (223) Per cent
Neighborhood A ¹	4	26	58	12
Central City Blight Exclusive of Neighborhood A ²	15	36	30	39
Remainder of City	81	38	12	49
Total	100	100	100	100

1. Census Tracts—11, 12, 13, 14

2. Census Tracts—1, 2, 3, 4, 5, 6, 7, 9, 15, 17, 27, 28, 29, 43, 45

TABLE 4

Percentage Distribution by Race of Male Occupational Status in Combined Control and Study Groups (Married) as Compared to 1950 Population Census*

Occupation of Male	1950 Census Population (332, 448) Per cent	Combined Control and Study Groups (Married)		
		Total (242) Per cent	Negro (64) Per cent	White (178) Per cent
Group I ¹	24	1	..	2
Group II ²	5	38	64	31
All Others ³	71	61	36	67

* *Classified Index of Occupations and Industries, 1950 Census of Population.* Gov. Ptg. Office, Washington, D. C.

1. Professional, technical and kindred workers, managers, proprietors, officials

2. Laborers

3. All other occupations

cases to the City of Rochester itself; while the majority of Negro women in both groups were born in one of the southern states, as illustrated in Table 5.

In the middle of 1952, it was found that 50 per cent of the women in both groups delivered in 1951 no longer resided at the address given on the birth certificate. This figure should be compared with a 13 per cent mobility for the city population as a whole.³ The new addresses of 29 per cent of the study group and 16 per cent of the control group were unknown to the U. S. Post Office. This is a difference of borderline statistical significance because of the small number involved, but is suggestive of a real difference of social status.

A second measurement suggestive of the greater degree of social disorganization within the study group is the marital status of the mothers. Table 6 analyses this factor by race of mother. There are more than six times as many white unmarried mothers in the study group as in the control group. For Rochester as a whole, the average annual percentage of out-of-wedlock births in 1949 and 1951 was 2.6 per cent.

By means of cross-tabulation an effort was made to determine whether the three factors: welfare dependency, residence "unknown," and marital status of mother, were related to or dependent upon each other. This did not appear to be the case.

TABLE 5
Percentage Distribution by Race of Birthplace of Mother in Combined Control and Study Groups

<i>Birthplace of Mother</i>	<i>Combined Control and Study Groups</i>		
	<i>White (223) Per cent</i>	<i>Negro (89) Per cent</i>	<i>Total (312) Per cent</i>
New York State	80	19	63
Southern United States	2	77	23
Remainder of United States	9	3	8
Foreign	9	1	6
Total	100	100	100

TABLE 6
Percentage of Out-of-Wedlock Births by Race of Mother in Control and Study Groups

<i>Race of Mother</i>	<i>Both Groups</i>		<i>Control Group</i>		<i>Study Group</i>	
	<i>Total No. in Group</i>	<i>Per cent of Total O. W.</i>	<i>Total No. in Group</i>	<i>Per cent of Total O. W.</i>	<i>Total No. in Group</i>	<i>Per cent of Total O. W.</i>
White	223	19	68	4	155	26
Negro	89	28	37	22	52	33
Total	312	22	105	10	207	27

Control: Study Groups

White < 0.01
 P = Negro Not significant
 Total < 0.01

P, White: Negro, Both Groups Not significant

The age distribution of mothers in the control and study groups differed significantly from a city-wide sample and from each other. As illustrated in Table 7 the control group mother is younger than the average city mother and the study group mother is younger than control group mother. Mothers in both groups have more children than the average city mother as illustrated in Table 8. The inference that, age for age, the control group mother is more fertile than the average city mother and the study group mother more fertile than the control group mother, was borne out by a separate analysis of birth rank by age of mother for each group.*

Health and welfare agencies were or

had been active with the vast majority of women in both groups. There were no apparent differences between groups in this connection. Two-thirds of the women had been registered with the Central Index of the Council of Social

* There were no significant differences between white and Negro mothers in fertility so that both groups were considered as a whole. Although religious beliefs were not studied it is not felt that they could account for differences between the control and study group.

Significant differences of age and fertility between married and unmarried mothers existed. Married mothers tended to be older and more fertile than unmarried mothers. This factor accounts for some of the difference in age between the control and study group since there were more unmarried mothers in the study group. However, if unmarried mothers are eliminated from both groups a significant age difference still remains. Furthermore the fertility differences between the two groups, is unaffected, since eliminating unmarried mothers eliminates more first and second birth ranks from the study group than from the control group.

TABLE 7

Percentage Distribution of Age of Mother in Control and Study Groups and in a Random Sample of Rochester Births in 1949 and 1951

<i>Age of Mother</i>	<i>City-wide Sample (300) Per cent</i>	<i>Control Group (105) Per cent</i>	<i>Study Group (207) Per cent</i>
Under 20	3	10	22
20-24	25	32	27
25-29	37	21	26
30-34	23	18	15
35 and Over	12	19	10
Total	100	100	100
	Sample: Control	Sample: Study	Study: Control
Chi-square P	< 0.01	< 0.01	0.02

TABLE 8

Percentage Distribution of Birth Rank of Infant in Control and Study Groups and in a Random Sample of Rochester Births in 1949 and 1951

<i>Birth Rank of Infant</i>	<i>City-wide Sample (300) Per cent</i>	<i>Control Group (105) Per cent</i>	<i>Study Group (207) Per cent</i>
1	33	31	24
2	35	21	25
3	18	14	16
4-5	11	20	21
6 and over	3	14	14
Total	100	100	100
	Sample: Control	Sample: Study	Study: Control
Chi-square P	< 0.01	< 0.01	Not Significant

Agencies months or years before their current pregnancy. Most of them had been registered by more than one agency in addition to public health nursing and official welfare agencies. Nine out of ten women were actively carried as part of the case load of a public health nursing agency. In the study group about one-third of those carried were not known to the agency until after the current pregnancy with its inadequate care had terminated. The remaining two-

thirds had been carried in previous years and the case discharged only to be reopened again after the current pregnancy had terminated.

Some of the results of the current pregnancy in the two groups of women studied are set forth in Table 9. There were more than twice as many infants weighing less than 2,500 grams in the study group as in the control group. There were nine neonatal deaths in the study group and none in the control

TABLE 9

Number of Premature Infants and Number of Neonatal Deaths in Control and Study Groups

	Control	Study
Total Live Births in Group	105	208
B. W. < 2,500 Gms. ¹	9	41
Neonatal Deaths	0	9

1. P 0.01

group. By means of cross-tabulation it was determined that the incidence of "premature" infants and neonatal deaths were representative of the total group studied and not dependent upon race, marital status, welfare dependency or parity of mother. Although the total incidence of maternal complications

capable of affecting the fetus adversely was not significantly greater in the study than in the control group, five of the 41 premature births and three of the nine neonatal deaths in the study group were accompanied by such complications. None of the nine premature births in the control group were so accompanied. Table 10 details the prior pregnancy wastage of multiparous women in each group as compared to a city-wide sample. The numbers involved are small, but will be commented upon later.

DISCUSSION

The relationship between socioeconomic status and infant mortality has long been recognized. Reduction in in-

TABLE 10

Prior Pregnancy Wastage by Parity of Mother, in Control and Study Groups and in a Random Sample of 300 Rochester Births

Total Number of Prior Births	Number of Women in Group	Prior Pregnancy Wastage		
		Total	Total Born Alive now Dead	Born Dead ¹
<i>City-wide Sample</i>				
1	104	5	3	2
2	53	3	1	2
3-4	34	5	4	1
5 and Over	10	1
Total	201	14	8	5
<i>Control</i>				
1	22	1	1	..
2	13
3-4	21	8	4	4
5 and Over	15	8	7	1
Total	71	17	12	5
<i>Study</i>				
1	52	3	..	3
2	31	6	3	3
3-4	44	17	12	5
5 and Over	29	23	12	11
Total	156	49	27	22

1. Fetus of at least 20 weeks gestation

fant mortality rates has been achieved largely by elimination of deaths due to infection occurring after the first month of life. Until recently fetal and neonatal death rates were thought to be approaching an irreducible minimum, and to be relatively little affected by so-called environmental differences.

In one of the many excellent English studies of this problem, J. W. B. Douglas has shown that the neonatal mortality rate in the lowest social class was 60 per cent greater than in the highest social class and that this difference was greatly reduced by the exclusion of infants weighing less than five and one-half pounds at birth from both groups.⁴

Differences in the neonatal and fetal mortality rates between social classes must be a reflection of the greater number of nonviable fetuses born by women in the less fortunate groups. Birth weight is only one statistical measurement of such nonviability. Although it is generally felt to be related to duration of gestation, Gibson and McKeown have recently published data indicating that duration of gestation does not vary by social class, and that, when it is held constant, there is a significant difference in birth weight between social classes.⁵ Whether the duration of gestation or the quality of gestation accounts for birth weight differences between classes is less important to public health workers than the fact that differences in fetal viability exist, and that, theoretically, they are capable of being eliminated.

Pure economic realities must be of some importance in accounting for these social class differences. However, our data indicate that even within the least privileged social class, significant differences in birth weight and neonatal death rate exist. These differences were related to the amount of prenatal care sought. Since infant wastage could not be attributed to maternal complications

except in a small number of cases, the strictly medical aspects of such care cannot account for the differences.

Medical care was freely available to all women studied through outpatient departments. In spite of the fact that clinic care is more impersonal, inconvenient, and time-consuming than private care, a considerable proportion of women utilized it regularly. It is not unreasonable to consider failure to seek care as an outward manifestation of rejection of pregnancy, and the loss of sense of personal dignity and worth. Our study group differed from our control group in possessing characteristics that imply an unstable, irresponsible and unsuccessful family life: out-of-wedlock births, welfare dependency, abnormal mobility and excessive fertility. When such characteristics are superimposed upon low economic status, habits of living and nutrition may be expected to suffer. This deterioration can be expected to affect the fetus, and account for the differences in the outcome of pregnancy in our control and study groups.

Although the numbers involved were small, data presented in Table 10 suggest that prior fetal loss was more common in the study group, even allowing for differences in parity. This infers the continuing existence of a pattern of living that is hazardous to childbearing. No differences between study and control groups in the number of children born alive, now dead, were apparent. However, both groups had more deaths in this category than the city-wide sample. The number of children born alive, now dead, is a measure of the sum of neonatal, infant, and childhood mortality. Gibson and McKeown have recently shown that the post-neonatal death rate rises sharply with high parity in lower class families but does not change with parity in upper class families.⁶ The rise was due to infectious disease deaths and is presumably the

result of external factors such as housing and overcrowding. This external aspect of the environment of the less privileged might be expected to affect all members of the group in contrast to nutrition and living habits which would be more personal and selective within the group.

Nicholson Eastman in an analysis of "prematurity" as seen in the Johns Hopkins Hospital, 1926-1945, reached conclusions very similar to our own.⁷ He observed that clinic patients who received good prenatal care delivered less than one infant out of 14 weighing less than 2,500 grams; while clinic patients who received poor prenatal care delivered more than one out of four such infants. This difference was not dependent upon medical or obstetrical complications of pregnancy. Eastman felt that differences in the nutrition of the two groups of mothers accounted for his results.

We have pointed out that significant differences in fetal viability exist between social classes as reflected by neonatal death rates and birth weights. We have suggested that these differences may be accounted for by the presence within the lowest social class of a group of women whose attitudes and behavior affect the fetus adversely. Failure to seek prenatal care is one manifestation of such attitudes.

Strengthening of the public health program among the underprivileged groups in our society poses an administrative problem of no small magnitude. Bradley Buell and Associates have pointed out how many health and social problems are concentrated among a small minority of the population who are already receiving the bulk of the community's services.⁸ They stressed the importance of developing new techniques to deal with such groups. The fact that most of the families in both our groups were already known to public health agencies bears out these observa-

tions. The question of whether to direct limited public health resources in even more concentrated form toward this small segment of the population is not easy to answer. As the demand of the total community for public health services increases and as the program takes on new and broader aspects, the question becomes even more difficult.

The findings we have presented suggest anew the need to consider members of all groups as individuals. The ability of many economically underprivileged mothers in our society to translate their own feelings of personal worth into sound health practices challenges the community as well as the public health and social worker. For it emphasizes the double tragedy of pregnancy wastage among other mothers of similar status who must be helped to attain that sense of dignity and worth before our technics and knowledge can be effective.

SUMMARY

A study of the quantitative adequacy of prenatal care in a medium size urban community indicated that such care was sought early in the course of pregnancy by most women. A small group of women of low socioeconomic status neglected to seek care until late in pregnancy.

The characteristics of a group of women (study group) who neglected to seek care until late in pregnancy and the results of their pregnancies have been compared to those of a group of women of similar socioeconomic status whose prenatal care was adequate (control group).

Results suggest a greater degree of social disorganization within the study group as manifested by greater numbers of out-of-wedlock births, greater mobility and fertility and a greater degree of welfare dependency. The incidence of birth weights less than 2,500 grams and of neonatal deaths was significantly

higher in the study group than in the control group. Medical and obstetrical complications played only a small part in effecting these differences. The majority of the women in both study and control groups had been known to various community health and social agencies prior to their current pregnancy.

It is concluded that failure to seek prenatal care, in the case of the socially and economically underprivileged, is an outward manifestation of the rejection of pregnancy and the loss of a sense of personal dignity. These attitudes affect the fetus adversely by way of maternal nutrition and pattern of living.

The inverse relationship between social class and pregnancy wastage and birth weight is discussed. It is suggested that differences between classes, when medical care is generally available, may be due to the deterioration of attitudes and behavior in some, but not

all, members of the lower social class.

The implications of these findings to the community and to the health and welfare professions are pointed out.

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Thirty Years of Notifiable Diseases

Because of the numerous requests for data on notifiable diseases for the country as a whole or for individual states in time series, the National Office of Vital Statistics of the Public Health Service, has issued a special summary giving the reported incidence of selected notifiable diseases for the United States, by state, for the years 1920-1950. The 1920 date was selected as the starting point for the reports because figures were available from comparatively few states prior to that time. The tabulations show both trends in disease incidence and changing patterns in classifying and reporting over the years.

Copies of *Reported Incidence of Selected Notifiable Disease: United States, Each Division and State, 1920-1950* (Vital Statistics-Special Reports, Vol. 37, No. 9) are available from the Public Health Service, U. S. Department of Health, Education, and Welfare, Washington 25, D. C.