# MATERNAL AND NEWBORN NUTRITION STUDIES AT PHILADELPHIA LYING-IN HOSPITAL*

## NEWBORN STUDIES. IV. CLINICAL FINDINGS AT BIRTH AND ONE MONTH FOR BABIES OF MOTHERS RECEIVING NUTRIENT SUPPLEMENTS

ALEXANDER RANDALL, IV, M.D.,[1] J. PERLINGIERO RANDALL, M.D.,[1] RICHARD V. KASIUS,[2] WINSLOW T. TOMPKINS, M.D.,[3] AND DOROTHY G. WIEHL[2]

THE effect of nutritional supplementation of the mother's diet during pregnancy upon her infant was one of the topics of major interest of the Nutrition Study at the Philadelphia Lying-in Hospital. This effect has been investigated in terms of the infant's size at birth and his growth during the subsequent three months (1) and, in a preliminary report, by analysis of the observations from the physical examination of each infant during the first few days of life (2). The present report will deal in more detail with the results of the examinations at birth as well as those at one month of age and will relate these results to the nutritional supplements taken by the mother.

The Study population was composed of the women who came to the Clinic of the Hospital during the first sixteen weeks of pregnancy. They were referred to the Nutrition Clinic where they were assigned to one of four groups, on a random basis controlled for race, age, and gravida. One group was designated as the control and given no nutritional supplement, the second group was given vitamins only, the third group was given only a protein supplement, and the fourth group received both vita-

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[1] Formerly Pediatric Fellow, Nutrition Studies.
[2] Milbank Memorial Fund.
[3] Formerly Pennsylvania Hospital, Director of Nutrition Studies.

mins and the protein supplement.[4] All women on their first visit to the Clinic were given the same diet instructions, which were re-emphasized on subsequent visits.

The babies included in this Study were born between 1949 and 1952. Those weighing less than 5.5 lbs. at birth have been excluded from this analysis since most of them were in the premature nursery and not available for examination. Twins and infants of mothers with syphilis or a severe chronic desease[5] have also been excluded. The babies were subject to the routine nursery care of the Hospital and no distinction was made between the Study babies and the rest of the infants in the nursery.

The newborn physical examination was carried out in the nursery during the first few days after birth—79 per cent being performed within the first seventy-two hours of life. Almost all of the examinations were performed by two pediatricians; one (A.R.) doing about 76 per cent, and the other (J.R.) about 21 per cent, most of the latter being done during the first part of the Study. In addition, a third physician did the examinations on a small group of thirty babies toward the end of the program. Birth examination records are available for 992 infants, of whom 732 are white and 260 Negro. The Study group to which the mother of the baby belonged was not known to the physician at the time of the examination.

During the birth examination the physician checked on forty-eight attributes of the baby. Some of them were of the type usually included in a pediatric examination; many of the others, not commonly recorded, were believed to be related in some manner to the nutritional status of the mother or infant.[6] Dur-

[4] The nutrient supplements used in this study are: Therapeutic polyvitamin concentrate (Upjohn's Zymacaps and E. R. Squibb & Sons' Theragran) three capsules per day; Protein concentrate (Mead Johnson & Company's Protenum), to furnish 50 gms. of protein daily if taken as advised.

[5] Patients with chronic disease or syphilis referred to the Nutrition Research Clinic were carried but have been excluded from tabulations in this report. Chronic diseases excluded are essential hypertension, chronic heart classified II-a or higher, chronic nephritis, and chronic pyelitis.

[6] The list of conditions was selected by the following advisory committee: Dr.

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ing the examination the pediatrician would note the presence or absence of each condition; and, if present, whether to a slight, moderate, or severe degree. The information was recorded by a secretary at the time of examination on a standard form. Some items were added to the examination schedule as the study progressed, so that the number of infants observed is not the same for all conditions.

The examination at one month was performed in much the same manner. A few of the conditions looked for at birth were not included in this examination, while a few others were added to the list. Since the infants had to be brought to the Clinic for this examination there was less uniformity with respect to age at examination. A few were seen as early as the middle of the second week of life and some as late as the end of the fifth week, but most were examined between twenty-six and thirty-four days of age. The number of babies examined at one month was 912—639 white and 273 Negro. About 63 per cent of the examinations were done by one pediatrician (J.R.) and 33 per cent by the second (A.R.), with the remainder being done by other staff physicians.

## Results of the Examinations at Birth

The occurrence of each of the conditions on the newborn physical examination is shown in Table 1, which gives the percentage of babies in whom each condition was observed in any degree of severity and the percentage in whom the condition was considered moderate or severe. Two items are not included in the table, masses in abdomen and spleen palpable, of which there were 0 and 1 occurrences, respectively. For certain findings there was sufficient difference in prevalence between the white and Negro infants to justify a separation by race. A more frequent occurrence among white than among Negro babies was noted for overlapped sutures, abnormal hair distribution, skin

Joseph Stokes, Jr., Dr. Charles C. Chapple, and Dr. Thomas F. M. Scott, of Children's Hospital, Philadelphia; Dr. Edwards A. Park, Baltimore; Dr. Harry D. Kruse, Academy of Medicine, New York City; and W. M. Krogman, University of Pennsylvania.

Table 1. Prevalence of conditions on newborn physical examination.

| Condition | Per Cent with Condition | | | | | | | | Number of Infants Observed | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Any Degree | | | | Moderate or Severe | | | | | | | |
| | Total | Case Number | | | Total | Case Number | | | Total | Case Number | | |
| | | Under 1,000 | 1,000–1,599 | 1,600 and Above | | Under 1,000 | 1,000–1,999 | 1,600 and Above | | Under 1,000 | 1,000–1,599 | 1,600 and Above |
| *Abdomen* | | | | | | | | | | | | |
| Liver Palpable | 3.5 | 8.9 | 0.3 | 0.4 | 0 | 0 | 0 | 0 | 989 | 370 | 372 | 247 |
| Diastasis Recti—White | 24.0 | 40.2 | 16.8 | 9.1 | 19.7 | 35.3 | 11.5 | 7.8 | 699 | 266 | 279 | 154 |
| Diastasis Recti—Negro | 28.3 | 46.3 | 26.6 | 17.2 | 20.5 | 34.3 | 16.0 | 15.1 | 254 | 67 | 94 | 93 |
| Lungs—Rales | 0.4 | 0.9 | 0.3 | 0 | 0 | 0 | 0 | 0 | 928 | 324 | 360 | 244 |
| Lymph Nodes—Enlarged | 0.7 | 1.9 | 0 | 0 | 0.1 | 0.3 | 0 | 0 | 980 | 367 | 366 | 247 |
| *Genitalia* | | | | | | | | | | | | |
| Hypertrophy | 68.7 | 55.6 | 64.1 | 79.4 | 37.8 | 25.0 | 35.9 | 44.4 | 693 | 72 | 373 | 248 |
| Pigmentation—White | 33.7 | 21.4 | 32.0 | 41.3 | 6.3 | 3.6 | 6.1 | 7.7 | 489 | 56 | 278 | 155 |
| Pigmentation—Negro | 97.0 | 93.8 | 95.7 | 98.9 | 90.1 | 81.3 | 87.2 | 94.6 | 203 | 16 | 94 | 93 |
| Undescended Testes | 2.8 | 5.4 | 1.0 | 1.5 | 0 | 0 | 0 | 0 | 536 | 205 | 200 | 131 |
| Vaginal Discharge | 23.2 | 34.2 | 18.6 | 15.7 | 4.4 | 3.4 | 4.1 | 6.1 | 436 | 149 | 172 | 115 |
| Hydrocele | 2.6 | 3.4 | 3.0 | 0.8 | 0.2 | 0 | 0.5 | 0 | 538 | 207 | 201 | 130 |
| Bleeding | 0.7 | 2.0 | 0 | 0 | 0 | 0 | 0 | 0 | 434 | 148 | 171 | 115 |
| Breast Engorgement | 68.9 | 50.0 | 70.3 | 72.5 | 19.3 | 6.9 | 22.2 | 18.6 | 689 | 72 | 370 | 247 |
| *Skeleton* | | | | | | | | | | | | |
| Rib Beading | 69.6 | 60.8 | 79.4 | 68.1 | 20.1 | 20.8 | 24.4 | 12.5 | 991 | 370 | 373 | 248 |
| Congenital Dislocation of Hips | 0.3 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 988 | 368 | 373 | 247 |
| Bowed Legs | 75.8 | 42.5 | 93.6 | 98.4 | 34.6 | 7.0 | 45.8 | 58.9 | 990 | 369 | 373 | 248 |
| Hyperextension of Knees | 0.6 | 1.2 | 0.5 | 0 | 0 | 0 | 0 | 0 | 949 | 332 | 370 | 247 |
| *Head* | | | | | | | | | | | | |
| Moulding—White | 14.4 | 16.6 | 13.2 | 12.4 | 2.8 | 3.0 | 3.3 | 1.3 | 722 | 296 | 273 | 153 |
| Moulding—Negro | 19.7 | 21.4 | 15.4 | 22.6 | 7.1 | 8.6 | 5.5 | 7.5 | 254 | 70 | 91 | 93 |
| Overlapped Sutures—White | 17.0 | 25.6 | 15.9 | 4.0 | 1.0 | 0.8 | 1.4 | 0.7 | 690 | 262 | 277 | 151 |
| Overlapped Sutures—Negro | 9.2 | 18.2 | 10.9 | 1.1 | 0 | 0 | 0 | 0 | 251 | 66 | 92 | 93 |
| Open Sagittal Suture—White | 82.1 | 75.1 | 84.6 | 89.7 | 39.5 | 41.9 | 32.6 | 47.7 | 699 | 265 | 279 | 155 |
| Open Sagittal Suture—Negro | 89.3 | 86.4 | 87.2 | 93.5 | 45.5 | 50.0 | 37.2 | 50.5 | 253 | 66 | 94 | 93 |
| Open Posterior Fontanelle | 81.5 | 74.9 | 83.9 | 87.5 | 32.7 | 30.1 | 30.6 | 39.9 | 987 | 366 | 373 | 248 |
| *Eyes* | | | | | | | | | | | | |
| Hyperemia—Lids | 89.0 | 86.2 | 90.9 | 89.9 | 53.5 | 45.2 | 59.9 | 55.1 | 953 | 334 | 372 | 247 |
| Hyperemia—Sclera | 43.7 | 49.2 | 43.8 | 42.1 | 7.5 | 7.7 | 9.6 | 4.3 | 654 | 65 | 354 | 235 |
| Discharge | 15.3 | 16.5 | 15.7 | 13.0 | 4.3 | 2.9 | 5.5 | 4.2 | 916 | 315 | 362 | 239 |
| Hemorrhage—Sclera—White | 7.5 | 8.9 | 7.1 | 6.0 | 1.0 | 0.5 | 1.6 | 0.7 | 617 | 213 | 255 | 149 |
| Hemorrhage—Sclera—Negro | 13.7 | 14.5 | 19.0 | 8.0 | 1.3 | 0 | 3.6 | 0 | 226 | 55 | 84 | 87 |
| Circumcorneal Injection | 12.0 | 20.6 | 10.9 | 4.3 | 0.8 | 1.2 | 0.6 | 0.9 | 828 | 252 | 341 | 235 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Tongue* | | | | | | | | | | | | |
| Red or Purple | 50.8 | 54.7 | 51.7 | 44.4 | — | — | — | — | 954 | 333 | 373 | 248 |
| Papillae Hypertrophy | 46.0 | 36.8 | 50.7 | 51.2 | 15.7 | 10.9 | 18.3 | 18.3 | 946 | 329 | 371 | 246 |
| Papillae Atrophy | 10.3 | 12.7 | 10.7 | 6.5 | 1.2 | 1.2 | 1.1 | 1.2 | 950 | 331 | 373 | 246 |
| Fissures | 0.8 | 1.8 | 0.3 | 0.4 | 0.1 | 0 | 0 | 0.4 | 952 | 333 | 373 | 246 |
| Swollen | 44.8 | 39.2 | 44.2 | 53.2 | 12.4 | 6.3 | 15.0 | 16.5 | 953 | 332 | 373 | 248 |
| Ankyloglossia | 2.3 | 3.7 | 1.6 | 1.6 | 0.7 | 0.9 | 0.5 | 0.8 | 940 | 327 | 367 | 246 |
| *Gums* | | | | | | | | | | | | |
| Red or Very Red | 6.0 | 10.8 | 3.8 | 2.8 | — | — | — | — | 952 | 332 | 373 | 247 |
| Hypertrophy | 75.3 | 67.6 | 74.0 | 79.4 | 19.9 | 21.1 | 19.8 | 19.8 | 692 | 71 | 373 | 248 |
| Pigmentation—White | 1.0 | 1.9 | 0.7 | 1.3 | 0 | 0 | 0 | 0 | 485 | 53 | 278 | 154 |
| Pigmentation—Negro | 13.8 | 12.5 | 10.6 | 17.2 | 1.5 | 0 | 2.1 | 1.1 | 203 | 16 | 94 | 93 |
| *Central Nervous System* | | | | | | | | | | | | |
| Moro Reflex | 96.2 | 94.0 | 97.8 | 97.2 | 2.6 | 6.3 | 0.8 | 0 | 982 | 365 | 371 | 246 |
| Abnormal Cry | 4.7 | 7.8 | 3.5 | 2.0 | 0.1 | 0.3 | 0 | 0 | 973 | 357 | 370 | 246 |
| Hyperactivity | 1.4 | 2.2 | 0.8 | 1.2 | 0.1 | 0 | 0.3 | 0 | 936 | 322 | 369 | 245 |
| Drowsiness | 4.0 | 8.4 | 2.2 | 0.8 | 1.6 | 3.1 | 1.1 | 0.4 | 934 | 321 | 368 | 245 |
| *Skin* | | | | | | | | | | | | |
| Abnormal Hair Distribution—White | 74.7 | 64.4 | 83.2 | 79.2 | 0.8 | 1.0 | 1.1 | 0 | 723 | 295 | 279 | 149 |
| Abnormal Hair Distribution—Negro | 56.5 | 46.6 | 63.4 | 57.3 | 0 | 0 | 0 | 0 | 255 | 73 | 93 | 89 |
| Dehydration—White | 26.5 | 28.3 | 19.4 | 36.1 | 8.4 | 12.5 | 4.0 | 9.0 | 705 | 272 | 278 | 155 |
| Dehydration—Negro | 50.0 | 52.2 | 37.2 | 61.3 | 23.6 | 28.4 | 13.8 | 30.1 | 254 | 67 | 94 | 93 |
| Edema | 1.7 | 2.4 | 1.9 | 0.4 | 0.2 | 0.3 | 0.3 | 0 | 950 | 329 | 373 | 248 |
| Bleeding in Creases | 12.2 | 8.3 | 12.3 | 17.3 | 1.7 | 0.3 | 2.1 | 2.8 | 948 | 327 | 373 | 248 |
| Eruptions—White | 8.3 | 14.2 | 5.0 | 3.2 | 0.4 | 0.7 | 0 | 0.6 | 722 | 289 | 279 | 154 |
| Eruptions—Negro | 3.5 | 2.8 | 6.4 | 1.1 | 0 | 0 | 0 | 0 | 259 | 72 | 94 | 93 |
| Toxic Erythema—White | 11.8 | 15.1 | 9.3 | 11.1 | 1.6 | 1.6 | 0.7 | 3.3 | 684 | 252 | 279 | 153 |
| Toxic Erythema—Negro | 4.0 | 4.9 | 2.1 | 5.4 | 1.2 | 0 | 1.1 | 2.2 | 248 | 61 | 94 | 93 |
| Hives | 2.3 | 4.2 | 2.7 | 1.2 | 0.4 | 1.4 | 0.5 | 0 | 690 | 72 | 373 | 245 |
| Hemangioma—Lids—White | 30.3 | 60.7 | 26.3 | 26.6 | 5.1 | 16.1 | 4.3 | 2.6 | 488 | 56 | 278 | 154 |
| Hemangioma—Lids—Negro | 20.2 | 50.0 | 14.9 | 20.4 | 2.5 | 6.3 | 3.2 | 1.1 | 203 | 16 | 94 | 93 |
| Hemangioma—Forehead | 9.5 | 17.1 | 10.0 | 6.5 | 1.9 | 2.9 | 1.9 | 1.6 | 686 | 70 | 370 | 246 |
| Pilonidal Dimple | 84.3 | 70.2 | 90.9 | 95.2 | 0.8 | 1.1 | 0 | 1.6 | 984 | 363 | 373 | 248 |
| Jaundice—White | 35.4 | 72.0 | 24.1 | 21.4 | 8.1 | 16.1 | 6.9 | 2.6 | 571 | 143 | 274 | 154 |
| Jaundice—Negro | 21.1 | 57.6 | 12.9 | 16.3 | 2.8 | 9.1 | 1.1 | 2.2 | 218 | 33 | 93 | 92 |

eruptions, toxic erythema, hemangioma of the lids, and jaundice, while the greater prevalence was found in Negro babies for diastasis recti, skull moulding, genital pigmentation, gum pigmentation, hemorrhage of the sclera, and dehydration. The differences in prevalence by race for the observations on pigmentation are large, as would be expected, while those on maturation of the skull are of only "borderline" significance. The other conditions mentioned refer primarily to the skin and may reflect either a real difference by race or only a variation in the ease with which such conditions may be observed in babies of the two races. For none of the conditions was a difference in prevalence by sex observed.

Two other types of variation were also found in the observations, which limit their value to some degree. One was a change in the relative frequency of occurrence of many conditions during the course of the Study. The second was an apparent difference between the physicians in their definition of a "positive" finding for a number of the conditions being observed. The change during the Study in the percentage of infants showing each condition is illustrated in Table 1, which gives the percentages for three groups of infants classified on the basis of their case numbers, which were assigned serially to the mothers as they entered the Study.[7] The trends of the percentages during the Study are not uniform for all conditions, but several patterns of change may be observed. For some findings such as hyperemia of the lids and moulding of the skull no change was found. A consistent increase was noted for some items (hypertrophy of the genitalia or gums), and a downward trend for others (diastasis recti and circumcorneal injection). Evidence of initial overreading (liver palpable and jaundice) or underreading (pilonidal dimple and bowed legs) is found for some conditions in which the percentage of occurrence was markedly higher or lower in the first group of infants than in the following two groups.

[7] The "under 1,000" group includes infants with case numbers between 400 and 999 since the physical examinations of infants with case numbers under 400 were not based on the itemized list of conditions used in the later examinations.

There is no basis for deciding whether these trends represent real changes in the prevalence of these conditions during the Study or whether they reflect changing definitions by the examiners of a positive occurrence. Probably both these factors enter into the explanation of the changes in level of occurrence, but the second is likely of greater importance. If that be so, the prevalence observed in the later groups in the Study, representing the increased experience of the examiners, is probably the best index of the presence of these conditions in the Study population.

The second source of variation in the estimate of prevalence of these conditions, the apparent difference between the examining pediatricians in their definition of a positive finding, is demonstrated in Table 2. This table shows the occurrence of each condition for infants classified by examining physician, and is restricted to those infants with case numbers under 1,300 since one of the pediatricians performed almost no newborn examinations after this point in the program. For many items the agreement between the two pediatricians is good, but for some the difference is disturbingly large. In the latter category are such conditions as diastasis recti, open sagittal sutures, open posterior fontanelle, hyperemia of the sclera, and red gums. However, as the Study continued, close consultation between the two doctors resulted in improved conformity to the same standards in defining the occurrence of many conditions. Since no criteria are available to select the examination results of one physician over those of the other, the estimates of prevalence have been based on the combined observations of both doctors.

The observations of the prevalence of these conditions in a moderate or severe degree are also subject to these same types of variation. In addition, since the definitions of a moderate or severe occurrence were not explicitly stated, it is difficult to establish just what this classification means. For most items, the prevalence of moderate or severe occurrence is under 10 per cent, but for a small group of conditions it is considerably larger. For genital pigmentation in Negro infants and diastasis recti

this classification of severity accounts for almost all of the total prevalence. It is possible that the relative frequency of mod-

Table 2. Prevalence of conditions on newborn physical examination by examining physician, for infants with case numbers under 1,300.

| Condition | Per Cent with Condition | | | | Number of Infants Observed | |
|---|---|---|---|---|---|---|
| | Any Degree | | Moderate or Severe | | | |
| | Physician | | Physician | | Physician | |
| | A | B | A | B | A | B |
| *Abdomen* | | | | | | |
| Liver Palpable | 2.3 | 11.9 | 0 | 0 | 343 | 210 |
| Diastasis Recti—White | 24.8 | 51.1 | 22.3 | 36.5 | 274 | 137 |
| Diastasis Recti—Negro | 23.6 | 62.7 | 18.2 | 37.3 | 55 | 51 |
| Lungs—Rales | 0.6 | 1.2 | 0 | 0 | 334 | 163 |
| Lymph Nodes—Enlarged | 1.2 | 1.5 | 0 | 0.5 | 341 | 205 |
| *Genitalia* | | | | | | |
| Hypertrophy | 62.7 | 72.6 | 35.4 | 40.0 | 161 | 95 |
| Pigmentation—White | 20.0 | 47.0 | 5.2 | 7.6 | 135 | 66 |
| Pigmentation—Negro | 88.5 | 96.6 | 84.6 | 79.3 | 26 | 29 |
| Undescended Testes | 3.1 | 5.3 | 0 | 0 | 191 | 113 |
| Vaginal Discharge | 26.0 | 37.9 | 4.1 | 2.3 | 146 | 87 |
| Hydrocele | 3.1 | 4.3 | 0 | 0.9 | 192 | 115 |
| Bleeding | 0.7 | 2.3 | 0 | 0 | 146 | 86 |
| Breast Engorgement | 65.8 | 64.1 | 16.1 | 22.8 | 161 | 92 |
| *Skeleton* | | | | | | |
| Rib Beading | 74.4 | 57.1 | 27.6 | 21.4 | 344 | 210 |
| Congenital Dislocation of Hips | 0.3 | 1.0 | 0 | 0 | 344 | 208 |
| Bowed Legs | 64.5 | 47.4 | 19.2 | 8.6 | 344 | 209 |
| Hyperextension of Knees | 0.9 | 0.5 | 0 | 0 | 331 | 182 |
| *Head* | | | | | | |
| Moulding—White | 19.1 | 12.9 | 5.2 | 0.7 | 288 | 147 |
| Moulding—Negro | 25.5 | 11.8 | 9.1 | 3.9 | 55 | 51 |
| Overlapped Sutures—White | 21.0 | 31.9 | 1.5 | 1.5 | 271 | 135 |
| Overlapped Sutures—Negro | 14.5 | 16.3 | 0 | 0 | 55 | 49 |
| Open Sagittal Suture—White | 93.5 | 43.0 | 49.8 | 11.9 | 275 | 135 |
| Open Sagittal Suture—Negro | 94.5 | 74.0 | 52.7 | 30.0 | 55 | 50 |
| Open Posterior Fontanelle | 91.0 | 50.2 | 34.7 | 19.3 | 343 | 207 |
| *Eyes* | | | | | | |
| Hyperemia—Lids | 89.8 | 84.8 | 55.9 | 38.0 | 333 | 184 |
| Hyperemia—Sclera | 53.3 | 21.5 | 13.2 | 4.3 | 152 | 93 |
| Discharge | 10.0 | 33.3 | 3.1 | 4.5 | 319 | 177 |
| Hemorrhage—Sclera—White | 6.1 | 16.7 | 0.9 | 1.7 | 228 | 120 |
| Hemorrhage—Sclera—Negro | 11.9 | 22.4 | 0 | 6.1 | 42 | 49 |
| Circumcorneal Injection | 14.3 | 28.3 | 0.7 | 0.7 | 272 | 152 |

| Condition | Per Cent with Condition | | | | Number of Infants Observed | |
|---|---|---|---|---|---|---|
| | Any Degree | | Moderate or Severe | | | |
| | Physician | | Physician | | Physician | |
| | A | B | A | B | A | B |
| *Tongue* | | | | | | |
| Red or Purple | 49.5 | 69.1 | — | — | 329 | 188 |
| Papillae Hypertrophy | 34.7 | 55.9 | 8.9 | 21.5 | 329 | 186 |
| Papillae Atrophy | 10.6 | 18.3 | 2.1 | 0.5 | 329 | 186 |
| Fissures | 0 | 3.2 | 0 | 0 | 329 | 188 |
| Swollen | 47.1 | 31.6 | 10.0 | 8.0 | 329 | 187 |
| Ankyloglossia | 0.3 | 7.2 | 0 | 1.7 | 326 | 181 |
| *Gums* | | | | | | |
| Red or Very Red | 1.8 | 21.4 | — | — | 329 | 187 |
| Hypertrophy | 75.2 | 50.0 | 18.6 | 22.3 | 161 | 94 |
| Pigmentation—White | 0 | 1.6 | 0 | 0 | 134 | 64 |
| Pigmentation—Negro | 7.7 | 13.8 | 0 | 0 | 26 | 29 |
| *Central Nervous System* | | | | | | |
| Moro Reflex | 96.2 | 94.1 | 2.6 | 8.3 | 342 | 205 |
| Abnormal Cry | 5.9 | 7.1 | 0 | 0.5 | 341 | 197 |
| Hyperactivity | 2.2 | 0 | 0 | 0 | 324 | 179 |
| Drowsiness | 8.0 | 2.8 | 3.1 | 1.1 | 325 | 177 |
| *Skin* | | | | | | |
| Abnormal Hair Distribution—White | 72.0 | 64.3 | 1.0 | 1.3 | 286 | 154 |
| Abnormal Hair Distribution—Negro | 42.9 | 55.4 | 0 | 0 | 56 | 56 |
| Dehydration—White | 25.3 | 23.7 | 9.0 | 8.6 | 277 | 139 |
| Dehydration—Negro | 52.7 | 35.3 | 21.8 | 19.6 | 55 | 51 |
| Edema | 1.2 | 4.3 | 0.3 | 0.5 | 327 | 186 |
| Bleeding in Creases | 6.2 | 15.6 | 0.6 | 1.1 | 325 | 186 |
| Eruptions—White | 7.7 | 18.2 | 0.3 | 0.7 | 286 | 148 |
| Eruptions—Negro | 1.8 | 9.1 | 0 | 0 | 56 | 55 |
| Toxic Erythema—White | 12.9 | 14.3 | 0.7 | 2.4 | 271 | 126 |
| Toxic Erythema—Negro | 1.9 | 6.5 | 0 | 2.2 | 54 | 46 |
| Hives | 5.0 | 4.2 | 1.2 | 1.1 | 161 | 95 |
| Hemangioma—Lids—White | 41.5 | 44.6 | 9.6 | 7.7 | 135 | 65 |
| Hemangioma—Lids—Negro | 26.9 | 24.1 | 3.8 | 0 | 26 | 29 |
| Hemangioma—Forehead | 13.7 | 16.3 | 3.7 | 0 | 161 | 92 |
| Pilonidal Dimple | 79.1 | 69.1 | 0.6 | 1.0 | 340 | 207 |
| Jaundice—White | 50.0 | 43.0 | 10.6 | 10.0 | 188 | 100 |
| Jaundice—Negro | 38.2 | 26.3 | 0 | 10.5 | 34 | 38 |

erate or severe occurrence is a better index of the level of these conditions in the Study population than is that of "any degree," but the analysis in this report will be based on the latter classification.

Table 3. Classification of conditions on newborn physical examination by estimated prevalence.

| Site of Condition | Under 10.0 Per Cent | 10.0 to 34.9 Per Cent | 35.0 to 64.9 Per Cent | 65.0 to 89.9 Per Cent | 90.0 Per Cent and Over |
|---|---|---|---|---|---|
| Abdomen | Liver Palpable | Diastasis Recti—White and Negro | | | |
| | Lungs—Rales<br>Lymph Nodes—Enlarged | | | | |
| Genitalia | Undescended Testes<br>Hydrocele<br>Bleeding | Vaginal Discharge | Pigmentation—White | Hypertrophy | Pigmentation—Negro |
| | | | | Breast Engorgement | |
| Skeleton | Congenital Dislocation of Hips<br>Hyperextension of Knees | | | Rib Beading | Bowed Legs |
| Head | Overlapped Sutures—Negro | Moulding—White and Negro<br>Overlapped Sutures—White | | Open Sagittal Suture—White and Negro<br>Open Posterior Fontanelle | |
| Eyes | Hemorrhage—Sclera—White | Discharge<br>Hemorrhage—Sclera—Negro<br>Circumcorneal Injection | Hyperemia—Sclera | Hyperemia—Lids | |
| Tongue | Fissures<br>Ankyloglossia | Papillae Atrophy | Red or Purple<br>Papillae Hypertrophy<br>Swollen | | |
| Gums | Red or Very Red<br>Pigmentation—White | Pigmentation—Negro | | Hypertrophy | |
| Central Nervous System | Abnormal Cry<br>Hyperactivity<br>Drowsiness | | | | Moro Reflex |
| Skin | Edema<br>Eruptions—White and Negro<br>Toxic Erythema—Negro<br>Hives | Dehydration—White<br>Bleeding in Creases<br>Toxic Erythema—White<br>Hemangioma—Lids—White and Negro<br>Hemangioma—Forehead<br>Jaundice—White and Negro | Abnormal Hair Distribution—Negro<br>Dehydration—Negro | Abnormal Hair Distribution—White | Pilonidal Dimple |

The effect of the variations with time and by physician is to make difficult any exact estimate of the prevalence of most of these conditions in the Study population. However, it does seem feasible to classify the items into one of several groups based on broad ranges of prevalence (Table 3). For most conditions this classification is not difficult, although the prevalence of a few items is on the borderline between two groups and here the assignment has been rather arbitrary. Those conditions, such as bowed legs or jaundice, for which observed prevalence varied widely during the Study, have been classified on the basis of their occurrence during the latter portion of the program.

The greater number of the conditions investigated on the newborn physical examination are of relatively infrequent occurrence. The prevalence of over one-third of the items is under 10 per cent and is under 35 per cent for over one-half of them. Only four conditions were noted in over 90 per cent of the infants examined.

During the first days after birth, there is a progressive change in the rate of occurrence of some of these conditions. For those conditions for which the prevalence seemed to change during the first week of life, Table 4 gives the per cent of infants with a positive finding by the day after birth on which the examination was done. This table includes the results of a second examination which was done on an unselected group of infants and, hence, the total number of babies observed is higher than the corresponding numbers in the the preceding tables. A downward trend in prevalence during the first week of life seems to occur for those conditions which refer to the genitalia, head, and eyes. There is a decrease in the occurrence of atrophy of papillae and an increase in hypertrophy of papillae of the tongue. The skin conditions listed, with the exception of dehydration, show lowest prevalence during the first day of life followed by an increased and fairly constant prevalence after this time, a reflection of the commonly accepted fact that the skin undergoes change during the first days of life due to the drastic shift

Table 4. Prevalence of selected conditions on newborn physical examination by age at examination.

| Condition | Case Number | Age at Examination (Days) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Per Cent with Condition in any Degree | | | | Number of Infants Observed | | | |
| | | Under 1 | 1–2 | 3–4 | 5 and Above | Under 1 | 1–2 | 3–4 | 5 and Above |
| Genitalia—Hypertrophy | Under 1,000 | 72.2 | 55.8 | 61.4 | 45.5 | 18 | 43 | 44 | 22 |
| | 1,000–1,599 | 72.5 | 64.0 | 62.2 | 57.5 | 102 | 211 | 201 | 80 |
| | 1,600 and Above | 83.1 | 78.8 | 73.3 | 78.6 | 59 | 156 | 90 | 14 |
| Genitalia—Pigmentation—White | Under 1,000 | 38.5 | 19.4 | 31.4 | 18.8 | 13 | 36 | 35 | 16 |
| | 1,000–1,599 | 22.8 | 38.1 | 29.9 | 25.0 | 79 | 168 | 147 | 56 |
| | 1,600 and Above | 45.9 | 41.9 | 27.8 | 22.2 | 37 | 93 | 54 | 9 |
| Genitalia—Vaginal Discharge | Under 1,000 | 28.3 | 38.0 | 16.2 | 19.5 | 53 | 92 | 68 | 41 |
| | 1,000–1,599 | 20.8 | 22.4 | 13.8 | 8.3 | 48 | 98 | 94 | 24 |
| | 1,600 and Above | 17.9 | 24.4 | 15.4 | 14.3 | 28 | 78 | 39 | 7 |
| Head—Moulding | Under 1,000 | 30.3 | 11.5 | 4.5 | 5.9 | 122 | 226 | 157 | 118 |
| | 1,000–1,599 | 29.4 | 7.8 | 5.7 | 2.6 | 102 | 205 | 194 | 76 |
| | 1,600 and Above | 25.4 | 13.5 | 13.5 | 15.4 | 59 | 155 | 89 | 13 |
| Head—Overlapped Sutures—White | Under 1,000 | 32.2 | 20.8 | 13.6 | 10.7 | 90 | 159 | 125 | 75 |
| | 1,000–1,599 | 32.1 | 13.1 | 9.0 | 1.8 | 78 | 168 | 145 | 55 |
| | 1,600 and Above | 5.7 | 1.1 | 3.4 | 0 | 35 | 91 | 58 | 8 |
| Eyes—Hyperemia—Lids | Under 1,000 | 90.9 | 84.0 | 73.9 | 59.0 | 110 | 206 | 161 | 100 |
| | 1,000–1,599 | 98.0 | 89.5 | 81.2 | 76.3 | 102 | 210 | 202 | 80 |
| | 1,600 and Above | 94.9 | 91.0 | 83.3 | 78.6 | 59 | 155 | 90 | 14 |
| Eyes—Hyperemia—Sclera | Under 1,000 | 70.6 | 39.5 | 32.5 | 23.8 | 17 | 38 | 40 | 21 |
| | 1,000–1,599 | 61.5 | 39.7 | 23.4 | 16.3 | 91 | 204 | 196 | 80 |
| | 1,600 and Above | 67.9 | 35.1 | 19.8 | 16.7 | 53 | 148 | 91 | 12 |
| Eyes—Discharge | Under 1,000 | 24.0 | 13.9 | 5.2 | 3.1 | 104 | 194 | 154 | 96 |
| | 1,000–1,599 | 28.0 | 12.3 | 6.6 | 8.9 | 100 | 204 | 198 | 79 |
| | 1,600 and Above | 32.1 | 8.7 | 2.2 | 0 | 56 | 149 | 90 | 14 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Tongue—Papillae Hypertrophy | Under 1,000 | 28.8 | 39.7 | 58.4 | 54.2 | 111 | 199 | 161 | 96 |
| | 1,000–1,599 | 44.1 | 52.9 | 59.8 | 55.0 | 102 | 210 | 199 | 80 |
| | 1,600 and Above | 44.8 | 48.4 | 58.9 | 66.7 | 58 | 155 | 90 | 12 |
| Tongue—Papillae Atrophy | Under 1,000 | 18.9 | 11.4 | 6.2 | 4.1 | 111 | 202 | 161 | 98 |
| | 1,000–1,599 | 17.6 | 11.4 | 5.0 | 5.0 | 102 | 211 | 201 | 80 |
| | 1,600 and Above | 8.6 | 5.1 | 3.4 | 0 | 58 | 156 | 89 | 14 |
| Gums—Pigmentation—Negro | Under 1,000 | 0 | 0 | 11.1 | 33.3 | 5 | 7 | 9 | 6 |
| | 1,000–1,599 | 4.3 | 11.6 | 16.7 | 12.5 | 23 | 43 | 54 | 24 |
| | 1,600 and Above | 9.1 | 16.1 | 22.6 | 33.3 | 22 | 62 | 31 | 6 |
| Skin—Abnormal Hair Distribution—Negro | Under 1,000 | 30.4 | 54.5 | 45.7 | 50.0 | 23 | 44 | 35 | 22 |
| | 1,000–1,599 | 43.5 | 64.3 | 75.9 | 66.7 | 23 | 42 | 54 | 24 |
| | 1,600 and Above | 40.9 | 57.4 | 56.7 | 50.0 | 22 | 61 | 30 | 6 |
| Skin—Dehydration—White | Under 1,000 | 34.1 | 24.7 | 16.7 | 5.3 | 91 | 166 | 132 | 76 |
| | 1,000–1,599 | 26.6 | 16.8 | 6.8 | 10.9 | 79 | 167 | 146 | 55 |
| | 1,600 and Above | 30.8 | 43.6 | 23.3 | 14.3 | 39 | 94 | 60 | 7 |
| Skin—Dehydration—Negro | Under 1,000 | 71.4 | 43.9 | 25.0 | 10.5 | 21 | 41 | 32 | 19 |
| | 1,000–1,599 | 47.8 | 51.2 | 22.6 | 0 | 23 | 43 | 53 | 24 |
| | 1,600 and Above | 63.6 | 65.1 | 41.9 | 33.3 | 22 | 63 | 31 | 6 |
| Skin—Bleeding in Creases | Under 1,000 | 1.8 | 11.1 | 12.7 | 13.5 | 109 | 199 | 158 | 89 |
| | 1,000–1,599 | 2.9 | 15.2 | 23.3 | 12.5 | 102 | 211 | 202 | 80 |
| | 1,600 and Above | 3.4 | 20.5 | 24.4 | 14.3 | 59 | 156 | 90 | 14 |
| Skin—Toxic Erythema—White | Under 1,000 | 8.1 | 19.5 | 16.9 | 18.3 | 86 | 154 | 124 | 71 |
| | 1,000–1,599 | 1.3 | 11.9 | 10.1 | 14.3 | 79 | 168 | 148 | 56 |
| | 1,600 and Above | 5.4 | 16.3 | 5.2 | 0 | 37 | 92 | 58 | 8 |
| Skin—Jaundice—White | Under 1,000 | 51.6 | 77.7 | 68.6 | 67.9 | 31 | 94 | 86 | 53 |
| | 1,000–1,599 | 10.4 | 31.7 | 32.2 | 27.8 | 77 | 167 | 146 | 54 |
| | 1,600 and Above | 0 | 25.8 | 27.6 | 25.0 | 37 | 93 | 58 | 8 |

Table 5. Prevalence of conditions on physical examination at one month.

| Condition | Per Cent with Condition | | | | | | | | Number of Infants observed | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Any Degree | | | | Moderate or Severe | | | | | | | |
| | Total | Case Number | | | Total | Case Number | | | Total | Case Number | | |
| | | Under 1,000 | 1,000–1,599 | 1,600 and Above | | Under 1,000 | 1,000–1,599 | 1,600 and Above | | Under 1,000 | 1,000–1,599 | 1,600 and Above |
| *Abdomen* | | | | | | | | | | | | |
| Liver Palpable | 18.7 | 35.6 | 8.4 | 6.2 | 0.1 | 0.3 | 0 | 0 | 900 | 360 | 297 | 243 |
| Spleen Palpable | 0.6 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 898 | 358 | 297 | 243 |
| Diastasis Recti—White | 43.2 | 44.2 | 43.8 | 40.6 | 32.8 | 41.9 | 31.9 | 16.7 | 613 | 265 | 210 | 138 |
| Diastasis Recti—Negro | 62.1 | 57.7 | 59.1 | 67.6 | 61.4 | 56.3 | 59.1 | 66.7 | 264 | 71 | 88 | 105 |
| Lungs—Rales | 0.2 | 0 | 0.7 | 0 | 0 | 0 | 0 | 0 | 904 | 361 | 300 | 243 |
| Lymph Nodes—Enlarged | 17.8 | 22.2 | 13.0 | 17.3 | 6.4 | 6.6 | 4.7 | 8.2 | 908 | 365 | 300 | 243 |
| *Genitalia* | | | | | | | | | | | | |
| Hypertrophy—Male | 67.9 | 58.7 | 72.5 | 65.7 | 46.7 | 34.8 | 51.0 | 46.0 | 336 | 46 | 153 | 137 |
| Hypertrophy—Female | 49.1 | 32.4 | 46.9 | 57.7 | 25.1 | 8.8 | 24.8 | 30.8 | 283 | 34 | 145 | 104 |
| Pigmentation—White Male | 29.4 | 16.2 | 41.0 | 20.9 | 6.6 | 2.7 | 9.5 | 4.7 | 228 | 37 | 105 | 86 |
| Pigmentation—White Female | 11.2 | 4.0 | 12.5 | 12.0 | 0 | 0 | 0 | 0 | 179 | 25 | 104 | 50 |
| Pigmentation—Negro Male | 89.7 | 80.0 | 89.6 | 91.8 | 81.3 | 60.0 | 83.3 | 83.7 | 107 | 10 | 48 | 49 |
| Pigmentation—Negro Female | 58.8 | 87.5 | 68.3 | 47.2 | 40.2 | 25.0 | 46.3 | 37.7 | 102 | 8 | 41 | 53 |
| Meatal Ulcer | 4.0 | 1.5 | 5.2 | 6.3 | 0.8 | 1.0 | 0.6 | 0.8 | 477 | 196 | 154 | 127 |
| Undescended Testes | 1.0 | 1.0 | 1.9 | 0 | 0 | 0 | 0 | 0 | 481 | 199 | 154 | 128 |
| Vaginal Discharge | 0.5 | 0.7 | 0.7 | 0 | 0 | 0 | 0 | 0 | 389 | 148 | 144 | 97 |
| Hydrocele | 9.0 | 8.6 | 11.7 | 6.3 | 0.2 | 0 | 0.6 | 0 | 480 | 198 | 154 | 128 |
| Breast Engorgement | 28.7 | 31.6 | 28.4 | 28.2 | 11.5 | 13.2 | 10.0 | 13.0 | 581 | 76 | 289 | 216 |
| *Skeleton* | | | | | | | | | | | | |
| Rib Beading—Male | 51.0 | 40.8 | 58.8 | 57.2 | 11.8 | 11.4 | 10.5 | 13.8 | 492 | 201 | 153 | 138 |
| Rib Beading—Female | 42.9 | 33.1 | 48.6 | 50.5 | 7.7 | 10.8 | 7.5 | 2.9 | 417 | 166 | 146 | 105 |
| Congenital Dislocation of Hips | 0.4 | 0.6 | 0.3 | 0.4 | 0.1 | 0 | 0 | 0.4 | 896 | 357 | 300 | 239 |
| Bowed Legs—Male | 79.5 | 60.0 | 91.6 | 94.2 | 33.3 | 11.0 | 44.5 | 52.9 | 493 | 200 | 155 | 138 |
| Bowed Legs—Female | 73.9 | 52.4 | 87.7 | 88.6 | 23.0 | 7.2 | 28.8 | 40.0 | 417 | 166 | 146 | 105 |
| *Head* | | | | | | | | | | | | |
| Moulding | 3.5 | 4.7 | 3.3 | 3.6 | 0.4 | 0.6 | 0.3 | 0.7 | 903 | 362 | 301 | 140 |
| Open Sagittal Suture—White | 35.9 | 36.5 | 44.6 | 21.2 | 9.1 | 9.4 | 8.9 | 8.8 | 616 | 266 | 213 | 137 |
| Open Sagittal Suture—Negro | 41.7 | 54.2 | 47.2 | 28.6 | 15.8 | 19.4 | 16.9 | 12.4 | 266 | 72 | 89 | 105 |
| Open Posterior Fontanelle—White | 34.1 | 31.1 | 46.0 | 21.9 | 12.7 | 11.2 | 16.0 | 10.9 | 636 | 286 | 213 | 137 |
| Open Posterior Fontanelle—Negro | 51.3 | 58.2 | 56.2 | 41.9 | 30.8 | 34.2 | 28.1 | 30.5 | 273 | 79 | 89 | 105 |
| *Eyes* | | | | | | | | | | | | |
| Hyperemia—Lids | 5.4 | 2.7 | 6.4 | 7.9 | 1.0 | 0.3 | 1.0 | 2.1 | 872 | 333 | 299 | 240 |
| Hyperemia—Sclera | 2.6 | 3.7 | 2.0 | 2.9 | 0.6 | 1.2 | 0.7 | 0.4 | 617 | 81 | 296 | 240 |
| Discharge | 4.6 | 5.1 | 3.0 | 5.8 | 0.5 | 0 | 0.3 | 1.3 | 872 | 335 | 297 | 240 |
| Hemorrhage—Sclera | 0.6 | 1.2 | 0.3 | 0 | 0 | 0 | 0 | 0 | 870 | 333 | 298 | 239 |
| Circumcorneal Injection | 6.6 | 13.0 | 4.7 | 0 | 0.9 | 1.2 | 1.3 | 0 | 867 | 331 | 298 | 238 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Tongue* | | | | | | | | | | | | |
| Red or Purple | 20.0 | 28.1 | 13.9 | 16.1 | — | — | — | — | 882 | 338 | 302 | 242 |
| Papillae Hypertrophy | 48.0 | 36.7 | 58.5 | 50.6 | 18.5 | 11.7 | 27.4 | 16.7 | 870 | 332 | 299 | 239 |
| Papillae Atrophy—White | 15.3 | 14.7 | 15.5 | 16.2 | 3.7 | 1.9 | 4.8 | 5.1 | 602 | 259 | 207 | 136 |
| Papillae Atrophy—Negro | 22.7 | 21.7 | 21.2 | 24.8 | 6.3 | 2.9 | 2.4 | 11.9 | 255 | 69 | 85 | 101 |
| Swollen—Male | 47.2 | 31.7 | 52.9 | 61.3 | 12.8 | 2.2 | 22.6 | 16.1 | 475 | 183 | 155 | 137 |
| Swollen—Female | 58.1 | 36.4 | 63.4 | 81.9 | 14.7 | 5.3 | 20.7 | 20.0 | 401 | 151 | 145 | 105 |
| Fissures | 1.4 | 3.3 | 0.3 | 0 | 0 | 0 | 0 | 0 | 859 | 331 | 291 | 237 |
| *Gums* | | | | | | | | | | | | |
| Red or Very Red | 4.1 | 4.5 | 3.6 | 4.1 | — | — | — | — | 877 | 333 | 302 | 242 |
| Hypertrophy | 79.0 | 79.3 | 79.9 | 77.6 | 41.4 | 56.1 | 46.8 | 29.5 | 618 | 82 | 299 | 237 |
| Pigmentation—White | 0.5 | 0 | 0 | 1.5 | 0 | 0 | 0 | 0 | 406 | 63 | 209 | 134 |
| Pigmentation—Negro | 37.4 | 42.1 | 46.1 | 29.1 | 15.2 | 21.1 | 20.2 | 9.7 | 211 | 19 | 89 | 103 |
| Swollen | 5.7 | 13.3 | 1.3 | 0.8 | 0.3 | 0.6 | 0.3 | 0 | 870 | 332 | 298 | 240 |
| Teeth | 0.4 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 455 | 166 | 126 | 163 |
| *Lips* | | | | | | | | | | | | |
| Fissures | 15.1 | 38.3 | 1.0 | 0 | 2.5 | 6.2 | 0.3 | 0 | 876 | 337 | 297 | 242 |
| Blisters | 61.6 | 53.1 | 59.7 | 66.9 | 35.6 | 19.8 | 36.0 | 40.5 | 623 | 81 | 300 | 242 |
| Swollen | 2.4 | 5.3 | 0.3 | 0.9 | 0.2 | 0.6 | 0 | 0 | 870 | 337 | 300 | 233 |
| *Central Nervous System* | | | | | | | | | | | | |
| Moro Reflex | 35.6 | 39.6 | 31.2 | 35.0 | 3.6 | 2.0 | 2.1 | 8.1 | 882 | 356 | 292 | 234 |
| Hyperactivity | 0.6 | 0.9 | 0 | 0.8 | 0 | 0 | 0 | 0 | 869 | 335 | 298 | 236 |
| *Skin* | | | | | | | | | | | | |
| Abnormal Hair Distribution—White | 69.4 | 66.1 | 78.7 | 61.5 | 1.8 | 3.1 | 0.9 | 0 | 627 | 286 | 211 | 130 |
| Abnormal Hair Distribution—Negro | 54.9 | 55.8 | 63.6 | 47.9 | 0.8 | 2.6 | 0 | 0 | 261 | 77 | 88 | 96 |
| Scaling | 13.0 | 18.0 | 9.4 | 10.2 | 1.1 | 1.1 | 1.0 | 1.3 | 883 | 350 | 297 | 236 |
| Eruptions—White | 54.4 | 59.9 | 56.6 | 39.4 | 8.6 | 8.0 | 11.3 | 5.8 | 636 | 287 | 212 | 137 |
| Eruptions—Negro | 40.4 | 44.3 | 40.4 | 37.5 | 7.7 | 3.8 | 10.1 | 8.7 | 272 | 79 | 89 | 104 |
| Cradle Cap | 10.7 | 12.3 | 11.1 | 9.6 | 4.1 | 3.7 | 4.4 | 3.8 | 616 | 81 | 296 | 239 |
| Hemangioma—Lids—White | 30.7 | 36.9 | 28.4 | 31.3 | 7.9 | 12.3 | 7.2 | 6.7 | 407 | 65 | 208 | 134 |
| Hemangioma—Lids—Negro | 16.0 | 22.2 | 13.5 | 17.1 | 2.4 | 0 | 0 | 4.8 | 212 | 18 | 89 | 105 |
| Hemangioma—Forehead | 12.5 | 18.3 | 12.2 | 10.8 | 2.1 | 3.7 | 2.4 | 1.3 | 617 | 82 | 295 | 240 |
| Diaper Rash—White | 18.5 | 13.8 | 20.9 | 17.0 | 4.9 | 1.5 | 6.3 | 4.4 | 406 | 65 | 206 | 135 |
| Diaper Rash—Negro | 5.2 | 0 | 6.7 | 4.8 | 0.9 | 0 | 0 | 1.9 | 212 | 18 | 89 | 105 |

Table 6. Prevalence of conditions on physical examination at one month by examining physician and case number groups.

| Condition | Per Cent with Condition | | | | | | | | Number of Infants observed | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Any Degree | | | | Moderate or Severe | | | | | | | |
| | Under 1,300 | | 1,300 and Above | | Under 1,300 | | 1,300 and Above | | Under 1,300 | | 1,300 and Above | |
| | Physician | | | | Physician | | | | Physician | | | |
| | A | B | A | B | A | B | A | B | A | B | A | B |
| *Abdomen* | | | | | | | | | | | | |
| Liver Palpable | 21.5 | 32.5 | 2.5 | 8.5 | 0 | 0.4 | 0 | 0 | 209 | 277 | 81 | 294 |
| Spleen Palpable | 0.5 | 1.4 | 0 | 0 | 0 | 0 | 0 | 0 | 208 | 276 | 81 | 294 |
| Diastasis Recti—White | 28.1 | 58.3 | 7.8 | 52.0 | 25.6 | 45.1 | 7.8 | 33.5 | 160 | 206 | 51 | 173 |
| Diastasis Recti—Negro | 28.9 | 75.4 | 23.3 | 76.0 | 28.9 | 73.8 | 23.3 | 76.0 | 38 | 65 | 30 | 121 |
| Lungs—Rales | 0 | 0 | 0 | 0.7 | 0 | 0 | 0 | 0 | 214 | 275 | 81 | 295 |
| Lymph Nodes—Enlarged | 18.1 | 20.9 | 2.5 | 18.6 | 3.3 | 9.4 | 0 | 8.1 | 215 | 277 | 81 | 296 |
| *Genitalia* | | | | | | | | | | | | |
| Hypertrophy—Male | 64.6 | 75.0 | 74.4 | 63.2 | 25.0 | 55.6 | 41.0 | 50.3 | 48 | 72 | 39 | 163 |
| Hypertrophy—Female | 36.5 | 53.7 | 47.6 | 53.1 | 5.8 | 25.9 | 16.7 | 35.9 | 52 | 54 | 42 | 128 |
| Pigmentation—White Male | 45.9 | 27.8 | 46.2 | 17.6 | 13.5 | 1.9 | 11.5 | 3.9 | 37 | 54 | 26 | 102 |
| Pigmentation—White Female | 20.5 | 2.7 | 28.0 | 2.9 | 0 | 0 | 0 | 0 | 44 | 37 | 25 | 68 |
| Pigmentation—Negro Male | 90.0 | 94.4 | 92.9 | 89.8 | 80.0 | 83.3 | 85.7 | 83.1 | 10 | 18 | 14 | 59 |
| Pigmentation—Negro Female | 87.5 | 82.4 | 94.1 | 39.0 | 62.5 | 29.4 | 94.1 | 25.4 | 8 | 17 | 17 | 59 |
| Meatal Ulcer | 2.1 | 3.1 | 5.1 | 5.8 | 1.0 | 0.6 | 0 | 0.6 | 97 | 160 | 39 | 156 |
| Undescended Testes | 3.0 | 0.6 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 160 | 39 | 156 |
| Vaginal Discharge | 1.0 | 0.9 | 0 | 0 | 0 | 0 | 0 | 0 | 105 | 112 | 41 | 121 |
| Hydrocele | 10.1 | 9.4 | 15.4 | 6.4 | 0 | 0 | 2.6 | 0 | 99 | 160 | 39 | 156 |
| Breast Engorgement | 37.4 | 17.5 | 50.0 | 23.0 | 18.2 | 5.0 | 15.9 | 9.6 | 99 | 120 | 82 | 261 |
| *Skeleton* | | | | | | | | | | | | |
| Rib Beading—Male | 55.4 | 41.0 | 55.3 | 61.8 | 12.9 | 11.2 | 2.6 | 14.5 | 101 | 161 | 38 | 165 |
| Rib Beading—Female | 47.0 | 31.9 | 54.8 | 48.5 | 13.7 | 6.9 | 4.8 | 4.6 | 117 | 116 | 42 | 130 |
| Congenital Dislocation of Hips | 0.9 | 0 | 1.2 | 0.3 | 0 | 0 | 0 | 0.3 | 212 | 274 | 81 | 292 |
| Bowed Legs—Male | 71.3 | 70.0 | 90.0 | 93.3 | 24.8 | 16.9 | 62.5 | 49.7 | 101 | 160 | 40 | 165 |
| Bowed Legs—Female | 69.2 | 54.3 | 97.6 | 91.5 | 16.2 | 9.5 | 57.1 | 30.8 | 117 | 116 | 42 | 130 |
| *Head* | | | | | | | | | | | | |
| Moulding | 5.6 | 2.9 | 8.6 | 1.4 | 0 | 0.7 | 1.2 | 0.3 | 215 | 275 | 81 | 294 |
| Open Sagittal Suture—White | 76.7 | 13.7 | 70.6 | 13.1 | 16.6 | 3.9 | 17.6 | 6.3 | 163 | 205 | 51 | 175 |
| Open Sagittal Suture—Negro | 87.2 | 21.5 | 90.3 | 25.6 | 33.3 | 7.7 | 29.0 | 11.6 | 39 | 65 | 31 | 121 |
| Open Posterior Fontanelle—White | 57.6 | 21.2 | 68.6 | 16.0 | 14.7 | 11.5 | 19.6 | 10.3 | 177 | 208 | 51 | 175 |
| Open Posterior Fontanelle—Negro | 70.7 | 44.1 | 87.1 | 40.5 | 31.7 | 29.4 | 16.1 | 33.9 | 41 | 68 | 31 | 121 |
| *Eyes* | | | | | | | | | | | | |
| Hyperemia—Lids | 7.0 | 0.8 | 30.5 | 1.4 | 0.5 | 0.4 | 6.1 | 0.7 | 199 | 266 | 82 | 293 |
| Hyperemia—Sclera | 3.0 | 0.8 | 8.5 | 0.7 | 1.0 | 0.8 | 1.2 | 0.3 | 100 | 124 | 82 | 291 |
| Discharge | 2.0 | 6.7 | 0 | 5.5 | 0 | 0.4 | 0 | 1.0 | 198 | 268 | 81 | 293 |
| Hemorrhage—Sclera | 1.5 | 0.7 | 0 | 0 | 0 | 0 | 0 | 0 | 197 | 268 | 82 | 292 |
| Circumcorneal Injection | 2.6 | 15.7 | 2.4 | 2.4 | 0 | 1.5 | 1.2 | 0.7 | 196 | 267 | 82 | 291 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Tongue* | | | | | | | | | | | | |
| Red or Purple | 17.8 | 28.5 | 8.5 | 17.6 | — | — | — | — | 202 | 270 | 82 | 295 |
| Papillae Hypertrophy | 37.4 | 48.3 | 51.2 | 54.1 | 12.6 | 19.5 | 17.1 | 22.9 | 198 | 267 | 82 | 292 |
| Papillae Atrophy—White | 11.6 | 16.8 | 3.9 | 21.1 | 1.9 | 3.0 | 0 | 7.6 | 155 | 202 | 51 | 171 |
| Papillae Atrophy—Negro | 13.5 | 23.8 | 10.0 | 29.1 | 0 | 3.2 | 3.3 | 10.3 | 37 | 63 | 30 | 117 |
| Swollen—Male | 48.9 | 27.1 | 50.0 | 63.0 | 11.7 | 5.2 | 15.0 | 20.6 | 94 | 155 | 40 | 165 |
| Swollen—Female | 50.5 | 36.0 | 73.8 | 80.6 | 13.3 | 7.9 | 26.2 | 19.4 | 105 | 114 | 42 | 129 |
| Fissures | 4.1 | 1.5 | 0 | 0 | 0 | 0 | 0 | 0 | 194 | 267 | 81 | 285 |
| *Gums* | | | | | | | | | | | | |
| Red or Very Red | 0 | 7.5 | 0 | 5.4 | — | — | — | — | 201 | 266 | 82 | 295 |
| Hypertrophy | 92.2 | 72.2 | 96.3 | 72.3 | 59.8 | 46.0 | 44.4 | 33.2 | 102 | 126 | 81 | 289 |
| Pigmentation—White | 0 | 0 | 2.0 | 0 | 0 | 0 | 0 | 0 | 83 | 91 | 49 | 169 |
| Pigmentation—Negro | 52.6 | 40.0 | 51.6 | 30.0 | 26.3 | 20.0 | 16.1 | 11.7 | 19 | 35 | 31 | 120 |
| Swollen | 19.5 | 2.6 | 0 | 1.4 | 0.5 | 0.4 | 0 | 0.3 | 200 | 266 | 82 | 291 |
| Teeth | 1.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 181 | 32 | 75 | 136 |
| *Lips* | | | | | | | | | | | | |
| Fissures | 22.4 | 31.3 | 0 | 0.7 | 1.0 | 7.1 | 0 | 0.3 | 201 | 268 | 79 | 296 |
| Blisters | 58.4 | 54.8 | 58.5 | 68.4 | 30.7 | 28.6 | 30.5 | 43.5 | 101 | 126 | 82 | 294 |
| Swollen | 5.4 | 1.5 | 1.2 | 0 | 0.5 | 0.4 | 0 | 0 | 202 | 269 | 82 | 285 |
| *Central Nervous System* | | | | | | | | | | | | |
| Moro Reflex | 12.1 | 60.2 | 30.5 | 34.0 | 0 | 3.8 | 0 | 7.7 | 215 | 264 | 82 | 285 |
| Hyperactivity | 1.0 | 0 | 1.2 | 0.3 | 0 | 0 | 0 | 0 | 202 | 266 | 81 | 289 |
| *Skin* | | | | | | | | | | | | |
| Abnormal Hair Distribution—White | 67.6 | 71.2 | 84.3 | 66.5 | 0.6 | 4.8 | 0 | 0 | 176 | 208 | 51 | 164 |
| Abnormal Hair Distribution—Negro | 33.3 | 75.0 | 61.3 | 53.1 | 0 | 2.9 | 0 | 0 | 39 | 68 | 31 | 113 |
| Scaling | 14.1 | 19.6 | 3.7 | 10.0 | 1.0 | 1.1 | 2.5 | 0.7 | 206 | 271 | 81 | 290 |
| Eruptions—White | 51.4 | 61.1 | 60.8 | 49.1 | 5.6 | 10.1 | 29.4 | 4.6 | 177 | 208 | 51 | 173 |
| Eruptions—Negro | 39.0 | 47.1 | 35.5 | 39.7 | 4.9 | 7.4 | 6.5 | 9.9 | 41 | 68 | 31 | 121 |
| Cradle Cap | 11.9 | 8.8 | 13.6 | 10.7 | 2.0 | 3.2 | 4.9 | 5.2 | 101 | 125 | 81 | 289 |
| Hemangioma—Lids—White | 33.7 | 25.8 | 29.4 | 32.9 | 8.4 | 6.5 | 11.8 | 7.8 | 83 | 93 | 51 | 167 |
| Hemangioma—Lids—Negro | 16.7 | 8.6 | 16.1 | 19.0 | 0 | 0 | 3.2 | 3.3 | 18 | 35 | 31 | 121 |
| Hemangioma—Forehead | 18.8 | 11.0 | 8.8 | 12.8 | 5.9 | 1.6 | 1.3 | 1.4 | 101 | 127 | 80 | 289 |
| Diaper Rash—White | 20.7 | 17.4 | 24.0 | 16.0 | 6.1 | 4.3 | 6.0 | 4.7 | 82 | 92 | 50 | 169 |
| Diaper Rash—Negro | 11.1 | 2.9 | 3.2 | 5.0 | 0 | 0 | 3.2 | 0.8 | 18 | 35 | 31 | 121 |

from the ante to the post-natal environment. Most of the other changes in prevalence during the first week of life are also of the type which would be expected. It should be noted that these trends are not always uniform over all three case number groups and that the percentages are sometimes based on a small number of observations.

### Results of the Physical Examinations at One Month

The prevalence of each condition on the examination of the infants at approximately one month of age is shown in Table 5. Omitted from this table are three conditions which were observed in none of the infants, hyperextension of knees, craniotabes, and drowsiness, and two conditions which were each observed in only one infant, masses in abdomen and pharyngeal infection.

The differences by race at one month are similar to those noted on the birth examination. A higher prevalence was found among the white infants for certain skin conditions, abnormal hair distribution, eruptions, hemangioma of the lids, and diaper rash, while a more frequent occurrence was noted among Negro babies for diastasis recti, genital pigmentation, open sagittal suture, open posterior fontanelle, atrophy of papillae, and gum pigmentation. In addition, some differences by sex which were not observed at birth were found at one month. The prevalence was higher among males for genital hypertrophy, genital pigmentation, rib beading, and bowed legs, and it was lower among males for swollen tongue. The differences by sex in the two genital conditions may be expected, but the other differences are most likely the occasional random difference which appears to be of statistical significance.

The apparent change in prevalence for some conditions during the course of the Study which was noted in the results of the newborn examinations, is also present in these results (Table 5) as are the differences between the examining physicians in the relative number of infants observed with certain conditions. The prevalence of each condition by examining

physician is given in Table 6, and the differences between the physicians are of much the same magnitude as those found for the newborn examination. To gain comparability with Table 2, only two case number groups are used in this table, above and below number 1,300.

The classification of the conditions at one month into broad categories of prevalence is shown in Table 7. The most frequent prevalence is under 10 per cent, as was found for the results at birth, but a relatively larger number of items fell in the 35 to 64.9 per cent range at one month than at birth, and at one month only one condition was observed in over 90 per cent of the infants. An estimate of the change in prevalence during the first month of life of the conditions observed on both examinations is afforded by Table 8, which is a cross-classification of Tables 3 and 7. The prevalence of most items either remained about the same or decreased during this one-month period. An increase in prevalence between the two examinations is found for enlarged lymph nodes, diastasis recti, pigmentation of the gums in Negroes, swollen tongue in females, and skin eruptions, but the change in the first two items, enlarged lymph nodes and diastasis recti, may be attributed primarily to the differences in the observations of the examining pediatricians. Of the conditions which showed the most marked decreases in prevalence, hyperemia of the lids and sclera, breast engorgement, open posterior fontanelle in white infants, genital pigmentation in Negro females, and Moro reflex, only the changes in hyperemia of the lids and sclera and Moro reflex appear to be real changes, relatively unaffected by differences in the readings of the two physicians.

## The Influence of the Nutritional Supplements

In this Study the evaluation of the effect of the nutritional supplements taken by the mother during pregnancy upon the physical status of her infant has utilized two approaches. The first, presented in an earlier paper in this series, was in terms of the infant's size at birth and his growth during the subsequent

Table 7. Classification of conditions on physical examination at one month by estimated prevalence.

| Site of Condition | Under 10.0 Per Cent | 10.0 to 34.9 Per Cent | 35.0 to 64.9 Per Cent | 65.0 to 89.9 Per Cent | 90.0 Per Cent and Over |
|---|---|---|---|---|---|
| Abdomen | Liver Palpable<br>Spleen Palpable | | Diastasis Recti—White and Negro | | |
| | Lungs—Rales | Lymph Nodes—Enlarged | | | |
| Genitalia | Meatal Ulcer<br>Undescended Testes<br>Vaginal Discharge<br>Hydrocele | Pigmentation—White Male and Female | Hypertrophy—Female<br>Pigmentation—Negro Female | Hypertrophy—Male<br>Pigmentation—Negro Male | |
| | | Breast Engorgement | | | |
| Skeleton | Congenital Dislocation of Hips | | Rib Beading—Male and Female | Bowed Legs—Female | Bowed Legs—Male |
| Head | Moulding | Open Posterior Fontanelle—White | Open Sagittal Suture—White and Negro<br>Open Posterior Fontanelle—Negro | | |
| Eyes | Hyperemia—Lids<br>Hyperemia—Sclera<br>Discharge<br>Hemorrhage—Sclera<br>Circumcorneal Injection | | | | |
| Tongue | Fissures | Red or Purple<br>Papillae Atrophy—White and Negro | Papillae Hypertrophy<br>Swollen—Male | Swollen—Female | |
| Gums | Red or Very Red<br>Pigmentation—White<br>Swollen<br>Teeth | | Pigmentation—Negro | Hypertrophy | |
| Lips | Fissures<br>Swollen | | Blisters | | |
| Central Nervous System | Hyperactivity | | Moro Reflex | | |
| Skin | Diaper Rash—Negro | Scaling<br>Cradle Cap<br>Hemangioma—Lids—White and Negro<br>Hemangioma—Forehead<br>Diaper Rash—White | Abnormal Hair Distribution—Negro<br>Eruptions—White and Negro | Abnormal Hair Distribution—White | |

Table 8. Classification of conditions on physical examination at birth and one month by estimated prevalence.

| Prevalence on Examination at One Month | Prevalence on Newborn Examination | | | | |
|---|---|---|---|---|---|
| | Under 10.0 Per Cent | 10.0 to 34.9 Per Cent | 35.0 to 64.9 Per Cent | 65.0 to 89.9 Per Cent | 90.0 Per Cent and Over |
| Under 10.0 Per Cent | Liver Palpable<br>Spleen Palpable<br>Lungs—Rales<br>Undescended Testes<br>Hydrocele<br>Congenital Dislocation of Hips<br>Hyperextension of Knees<br>Hemorrhage—Sclera—White<br>Tongue—Fissures<br>Gums—Red or Very Red<br>Gums—Pigmentation—White<br>Hyperactivity<br>Drowsiness | Vaginal Discharge<br>Head—Moulding—White and Negro<br>Eyes—Discharge<br>Hemorrhage—Sclera—Negro<br>Circumcorneal Injection | Hyperemia—Sclera | Hyperemia—Lids | |
| 10.0 to 34.9 Per Cent | Lymph Nodes—Enlarged | Papillae Atrophy—White and Negro<br>Hemangioma—Lids—White and Negro<br>Hemangioma—Forehead | Genitalia—Pigmentation—White Male and Female<br>Tongue—Red or Purple | Breast Engorgement<br>Open Posterior Fontanelle—White | |
| 35.0 to 64.9 Per Cent | Eruptions—White and Negro | Diastasis Recti—White and Negro<br>Gums—Pigmentation—Negro | Papillae Hypertrophy<br>Tongue—Swollen—Male<br>Abnormal Hair Distribution—Negro | Genitalia—Hypertrophy—Female<br>Rib Beading—Male and Female<br>Open Sagittal Suture—White and Negro<br>Open Posterior Fontanelle—Negro | Genitalia—Pigmentation—Negro Female<br>Moro Reflex |
| 65.0 to 89.9 Per Cent | | | Tongue—Swollen—Female | Genitalia—Hypertrophy—Male<br>Gums—Hypertrophy<br>Abnormal Hair Distribution—White | Genitalia—Pigmentation—Negro Male<br>Bowed Legs—Female |
| 90.0 Per Cent and Over | | | | | Bowed Legs—Male |

Table 9. Comparison of the prevalence of selected conditions in the "vitamin" and "no vitamin" groups on newborn physical examination.

| Condition | Case Number | Per Cent with Condition in any Degree | | | | | | Number of Infants Observed | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | | Without Protein | | With Protein | | Total | | Without Protein | | With Protein | |
| | | No Vitamins | Vitamins | No Vitamins | Vitamins | No Vitamins | Vitamins | No Vitamins | Vitamins | No Vitamins | Vitamins | No Vitamins | Vitamins |
| Genitalia—Hypertrophy | Under 1,000 | 45.9 | 66.7 | 60.9 | 57.1 | 21.4 | 75.0 | 37 | 30 | 23 | 14 | 14 | 16 |
| | 1,000–1,599 | 61.0 | 68.2 | 55.1 | 70.4 | 72.1 | 65.7 | 195 | 151 | 127 | 81 | 68 | 70 |
| | 1,600 and Over | 78.0 | 80.2 | 82.1 | 84.7 | 67.7 | 73.0 | 109 | 96 | 78 | 59 | 31 | 37 |
| | Total | 64.8 | 72.2 | 64.9 | 74.7 | 64.6 | 69.1 | 341 | 277 | 228 | 154 | 113 | 123 |
| | Probability | .05–.10 | | .05–.10 | | .40–.50 | | | | | | | |
| Breast Engorgement | Under 1,000 | 43.2 | 63.3 | 52.2 | 64.3 | 28.6 | 62.5 | 37 | 30 | 23 | 14 | 14 | 16 |
| | 1,000–1,599 | 67.5 | 74.5 | 67.5 | 81.5 | 67.6 | 66.2 | 194 | 149 | 126 | 81 | 68 | 68 |
| | 1,600 and Over | 68.5 | 76.0 | 69.2 | 78.0 | 66.7 | 73.0 | 108 | 96 | 78 | 59 | 30 | 37 |
| | Total | 65.2 | 73.8 | 66.5 | 78.6 | 62.5 | 67.8 | 339 | 275 | 227 | 154 | 112 | 121 |
| | Probability | .02–.05 | | .01–.02 | | .40–.50 | | | | | | | |
| Gums—Pigmentation—Negro | Under 1,000 | 25.0 | 0 | 40.0 | 0 | 0 | 0 | 8 | 8 | 5 | 4 | 3 | 4 |
| | 1,000–1,599 | 13.0 | 5.7 | 16.7 | 5.3 | 6.2 | 6.2 | 46 | 35 | 30 | 19 | 16 | 16 |
| | 1,600 and Over | 24.4 | 12.9 | 20.0 | 16.7 | 36.4 | 7.7 | 41 | 31 | 30 | 18 | 11 | 13 |
| | Total | 18.9 | 8.1 | 20.0 | 9.8 | 16.7 | 6.1 | 95 | 74 | 65 | 41 | 30 | 33 |
| | Probability | .02–.05 | | .10–.20 | | .10–.20 | | | | | | | |
| Gums—Red or Purple | Under 1,000 | 15.6 | 6.6 | 14.1 | 4.0 | 18.8 | 11.5 | 147 | 152 | 99 | 100 | 48 | 52 |
| | 1,000–1,599 | 4.6 | 3.3 | 3.9 | 3.7 | 5.9 | 2.9 | 195 | 151 | 127 | 81 | 68 | 70 |
| | 1,600 and Over | 3.7 | 3.1 | 3.9 | 3.4 | 3.2 | 2.7 | 108 | 96 | 77 | 59 | 31 | 37 |
| | Total | 8.0 | 4.5 | 7.3 | 3.8 | 9.5 | 5.7 | 450 | 399 | 303 | 240 | 147 | 159 |
| | Probability | .01–.02 | | .02–.05 | | .10–.20 | | | | | | | |
| Skin—Eruptions—White | Under 1,000 | 16.5 | 7.9 | 17.6 | 8.5 | 14.3 | 6.7 | 127 | 127 | 85 | 82 | 42 | 45 |
| | 1,000–1,599 | 6.0 | 3.4 | 6.2 | 3.2 | 5.8 | 3.7 | 149 | 116 | 97 | 62 | 52 | 54 |
| | 1,600 and Over | 3.0 | 1.5 | 2.1 | 2.4 | 5.0 | 0 | 67 | 65 | 47 | 41 | 20 | 24 |
| | Total | 9.3 | 4.9 | 9.6 | 5.4 | 8.8 | 4.1 | 343 | 308 | 229 | 185 | 114 | 123 |
| | Probability | .01–.02 | | .05–.10 | | .10–.20 | | | | | | | |

three months. The second approach is by comparison of the prevalence of the various conditions among the groups of infants classified according to the nutritional supplement taken by the mother.

To estimate the effect of the vitamins and of the protein supplement the following comparisons of prevalence rates were made for each condition for each examination and each case number group:[8]

Effect of vitamins:

1. Control and "protein only" groups vs. "vitamin only" and "protein and vitamin" groups.
2. Control group vs. "vitamin only" group.
3. "Protein only" group vs. "protein and vitamin" group.

Effect of protein supplement:

1. Control and "vitamin only" groups vs. "protein only" and "protein and vitamin" groups.
2. Control group vs. "protein only" group.
3. "Vitamin only" group vs. "protein and vitamin" group.

Each of these comparisons for each condition consisted of three pairs of percentages of occurrence, one for each case number group, and the series of three differences between the pairs was tested for statistical significance.[9]

The conditions which seemed to be influenced at birth by the vitamins taken by the mother are shown in Table 9 and those

[8] Excluded from these comparisons are the babies of mothers who were given the protein supplement but took less than a total of 20 lbs. compared with a scheduled maximum of 45 to 50 lbs.

[9] This test followed a procedure given by Cochran (3). The sum of the weighted differences in the proportions (percentages) was computed, divided by its standard error, and the result referred to a table of the normal distribution. Algebraically, the procedure was

$$\frac{\bar{d}}{\text{S.E.}} = \frac{\Sigma w_i d_i}{\sqrt{\Sigma w_i \hat{p}_i \hat{q}_i}}$$

where

$p_{i1}$ and $p_{i2}$ = the proportions for the $i^{th}$ comparison

$$d_i = p_{i1} - p_{i2}$$

$$w_i = \frac{n_{i1} n_{i2}}{n_{i1} + n_{i2}}$$

(Continued on page 345)

Table 10. Comparison of the prevalence of selected conditions in the "protein" and "no protein" groups on newborn physical examination.

| Condition | Case Number | Per Cent with Condition in any Degree | | | | | | Number of Infants Observed | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | | Without Vitamins | | With Vitamins | | Total | | Without Vitamins | | With Vitamins | |
| | | No Protein | Protein | No Protein | Protein | No Protein | Protein | No Protein | Protein | No Protein | Protein | No Protein | Protein |
| Genitalia—Pigmentation —White | Under 1,000 | 21.4 | 17.4 | 27.8 | 27.3 | 10.0 | 8.3 | 28 | 23 | 18 | 11 | 10 | 12 |
| | 1,000–1,599 | 32.1 | 30.2 | 28.9 | 25.0 | 37.1 | 35.2 | 159 | 106 | 97 | 52 | 62 | 54 |
| | 1,600 and Over | 51.7 | 27.3 | 54.2 | 35.0 | 48.8 | 20.8 | 89 | 44 | 48 | 20 | 41 | 24 |
| | Total | 37.3 | 27.7 | 36.2 | 27.7 | 38.9 | 27.8 | 276 | 173 | 163 | 83 | 112 | 90 |
| | Probability | .05–.10 | | .20–.30 | | .10–.20 | | | | | | | |
| Papillae Hypertrophy | Under 1,000 | 36.7 | 40.4 | 40.2 | 54.2 | 33.3 | 27.5 | 196 | 99 | 97 | 48 | 99 | 51 |
| | 1,000–1,599 | 45.9 | 61.3 | 46.0 | 65.7 | 45.7 | 57.1 | 207 | 137 | 126 | 67 | 81 | 70 |
| | 1,600 and Over | 54.4 | 50.7 | 46.8 | 48.4 | 64.4 | 52.8 | 136 | 67 | 77 | 31 | 59 | 36 |
| | Total | 44.7 | 52.2 | 44.3 | 58.2 | 45.2 | 46.5 | 539 | 303 | 300 | 146 | 239 | 157 |
| | Probability | .05–.10 | | <.01 | | >.90 | | | | | | | |
| Toxic Erythema—White | Under 1,000 | 11.7 | 22.0 | 11.8 | 31.6 | 11.6 | 13.6 | 145 | 82 | 76 | 38 | 69 | 44 |
| | 1,000–1,599 | 8.8 | 8.5 | 8.2 | 13.5 | 9.7 | 3.7 | 159 | 106 | 97 | 52 | 62 | 54 |
| | 1,600 and Over | 6.8 | 20.9 | 8.5 | 15.8 | 4.9 | 25.0 | 88 | 43 | 47 | 19 | 41 | 24 |
| | Total | 9.4 | 15.6 | 9.5 | 20.2 | 9.3 | 11.5 | 392 | 231 | 220 | 109 | 172 | 122 |
| | Probability | .01–.02 | | <.01 | | .40–.50 | | | | | | | |

affected by the protein supplement in Table 10, while the total occurrence in each supplement group of each condition is given in Appendix Table 1. The striking point about these tables is how few conditions, many of which were included on the physical examinations on the advice of the advisory group, because they were believed to be related to the nutritional status of the mother or child, seem to be influenced by the nutritional supplements.

Five conditions seem to be related to some degree at birth with the taking of vitamins by the mother during pregnancy. If the entire "vitamin" group is compared with the "no vitamin" group, regardless of whether the mother received the protein supplement, it is found that breast engorgement and genital hypertrophy are more frequent in the "vitamin" group and red or purple gums, skin eruptions in white babies, and gum pigmentation in Negro babies, are less frequent. The differences in prevalence of genital hypertrophy are not quite at the level of statistical significance. The comparisons between the "vitamin" and "no vitamin" groups of babies also considering whether or not the mother received the protein supplement show that the differences in prevalence for four of these five conditions are statistically significant or approach this level when the mother did not take the supplement, while the differences are not significant when the protein was taken. However, the pattern of differences for red and purple gums, skin eruption in white babies, and possibly gum pigmentation in Negro babies, among the groups with protein are in the same direction as in the groups without protein, and the failure to reach a statistically significant level may be due primarily to the smaller number of infants in the protein supplemented groups.

The protein supplement appears to affect only three condi-

$n_{i1}$ and $n_{i2}$ = the number of observation on which $p_{i1}$ and $p_{i2}$ are based

$$\hat{p}_i = \frac{n_{i1}\, p_{i1} + n_{i2}\, p_{i2}}{n_{i1} + n_{i2}}$$

$$\hat{q}_i = 1 - \hat{p}_i$$

Statistical significance in this paper implies $P \leq .05$.

Table 11. Comparison of the prevalence of selected conditions in the "vitamin" and "no vitamin" groups on physical examination at one month.

| Condition | Case Number | Per Cent with Condition in any Degree | | | | | | Number of Infants Observed | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | | Without Protein | | With Protein | | Total | | Without Protein | | With Protein | |
| | | No Vitamins | Vitamins | No Vitamins | Vitamins | No Vitamins | Vitamins | No Vitamins | Vitamins | No Vitamins | Vitamins | No Vitamins | Vitamins |
| Hyperemia—Sclera | Under 1,000 | 2.5 | 5.6 | 4.0 | 5.6 | 0 | 5.6 | 40 | 36 | 25 | 18 | 15 | 18 |
| | 1,000–1,599 | 0.6 | 3.4 | 1.1 | 1.6 | 0 | 5.5 | 154 | 119 | 90 | 64 | 64 | 55 |
| | 1,600 and Over | 1.8 | 4.7 | 1.2 | 3.9 | 3.3 | 5.7 | 112 | 86 | 82 | 51 | 30 | 35 |
| | Total | 1.3 | 4.1 | 1.5 | 3.0 | 0.9 | 5.6 | 306 | 241 | 197 | 133 | 109 | 108 |
| | Probability | .02–.05 | | .30–.40 | | .05–.10 | | | | | | | |
| Gums—Pigmentation—Negro | Under 1,000 | 45.5 | 37.5 | 50.0 | 50.0 | 33.3 | 25.0 | 11 | 8 | 8 | 4 | 3 | 4 |
| | 1,000–1,599 | 58.1 | 28.6 | 65.4 | 30.0 | 47.1 | 26.7 | 43 | 35 | 26 | 20 | 17 | 15 |
| | 1,600 and Over | 26.5 | 22.6 | 32.4 | 10.0 | 8.3 | 45.5 | 49 | 31 | 37 | 20 | 12 | 11 |
| | Total | 41.7 | 27.0 | 46.5 | 22.7 | 31.3 | 33.3 | 103 | 74 | 71 | 44 | 32 | 30 |
| | Probability | .02–.05 | | <.01 | | .80–.90 | | | | | | | |

Table 12. Comparison of the prevalence of selected conditions in the "protein" and "no protein" groups on physical examination at one month.

| Condition | Number | Per Cent with Condition in any Degree | | | | | | Number of Infants Observed | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Total | | Without Vitamins | | With Vitamins | | Total | | Without Vitamins | | With Vitamins | |
| | | No Protein | Protein | No Protein | Protein | No Protein | Protein | No Protein | Protein | No Protein | Protein | No Protein | Protein |
| Rib Beading—Female | Under 1,000 | 28.7 | 41.9 | 25.9 | 35.0 | 31.5 | 47.8 | 108 | 43 | 54 | 20 | 54 | 23 |
| | 1,000–1,599 | 40.3 | 61.4 | 42.6 | 66.7 | 36.7 | 55.6 | 77 | 57 | 47 | 30 | 30 | 27 |
| | 1,600 and Over | 48.5 | 54.5 | 53.2 | 53.8 | 38.1 | 55.6 | 68 | 22 | 47 | 13 | 21 | 9 |
| | Total | 37.5 | 53.3 | 39.9 | 54.0 | 34.3 | 52.5 | 253 | 122 | 148 | 63 | 105 | 59 |
| | Probability | <.01 | | .05–.10 | | .02–.05 | | | | | | | |
| Gums—Swollen | Under 1,000 | 15.3 | 7.4 | 17.2 | 6.5 | 13.6 | 8.2 | 202 | 95 | 99 | 46 | 103 | 49 |
| | 1,000–1,599 | 2.6 | 0 | 3.3 | 0 | 1.6 | 0 | 154 | 121 | 90 | 65 | 64 | 56 |
| | 1,600 and Over | 1.5 | 0 | 0 | 0 | 3.8 | 0 | 134 | 65 | 82 | 29 | 52 | 36 |
| | Total | 7.6 | 2.5 | 7.4 | 2.1 | 7.8 | 2.8 | 490 | 281 | 271 | 140 | 219 | 141 |
| | Probability | .01–.02 | | .02–.05 | | .10–.20 | | | | | | | |
| Gums—Hypertrophy | Under 1,000 | 72.7 | 87.9 | 76.9 | 80.0 | 66.7 | 94.4 | 44 | 33 | 26 | 15 | 18 | 18 |
| | 1,000–1,599 | 79.4 | 80.2 | 78.0 | 84.8 | 81.3 | 74.5 | 155 | 121 | 91 | 66 | 64 | 55 |
| | 1,600 and Over | 72.2 | 85.5 | 71.6 | 85.2 | 73.1 | 85.7 | 133 | 62 | 81 | 27 | 52 | 35 |
| | Total | 75.6 | 82.9 | 75.3 | 84.3 | 76.1 | 81.5 | 332 | 216 | 198 | 108 | 134 | 108 |
| | Probability | .05–.10 | | .05–.10 | | .30–.40 | | | | | | | |

tions at birth. In the comparison of the total "no protein" group with the "protein" group, toxic erythema in white babies and papillae hypertrophy are more frequent among the latter group of infants and genital pigmentation in white babies is less frequent. The differences for these last two conditions are not quite significant. In the comparison for the effect of the protein supplement, taking into account the presence or absence of vitamins in the mother's supplement, the greater prevalence in the "protein" group of toxic erythema and papillae hypertrophy is highly significant when no vitamins were taken, while for none of these conditions were there significant differences between the "protein" and "no protein" groups when the mother also received vitamins. The differences with respect to toxic erythema may be indicative of minor allergic tendencies in the mothers receiving the protein supplement.

These few conditions which seem to be influenced by the nutritional supplements refer primarily to the tongue, skin, or genitalia. It should be noted that for some conditions the effect of either the protein or vitamins seems to occur only in the absence of the other supplement and that although one of the supplements may appear to influence the occurrence of a condition, its presence or absence accounts for only a portion of the total prevalence of that condition.

On the examinations at one month two conditions appear to be affected by the vitamin supplement (Table 11) and three by the protein supplement (Table 12). The prevalence of all conditions on the one-month examination by study group is given in Appendix Table 2. Hyperemia of the sclera is more prevalent among babies in the "vitamin" group and gum pigmentation in Negro babies is less prevalent. The latter condition is the only one which seemed to be related to either supplement at both birth and one month of age. For hyperemia of the sclera the greater differences between the "vitamin" and the "no vitamin" groups are found when the mother also received the protein supplement, while for gum pigmentation the differences are significant only in the absence of the protein.

The protein supplement is related to an increased prevalence of rib beading among female infants at one month of age, regardless of whether the mother also took vitamins. It should be noted with respect to this observation that the protein supplement contained calcium. This supplement is also associated with a significantly lower frequency of swollen gums and a higher prevalence of gum hypertrophy which is on the borderline of statistical significance.

In an earlier paper in this series, it was concluded that the nutritional supplements taken by the mother had little effect upon the physical status of her infant as measured by size at birth and growth during the next three months. The material presented above leads to a similar conclusion, that the nutritional supplements have only a minor influence upon the occurrence of those conditions included in the physical examinations at birth and one month of age. Although for a few conditions variation in prevalence is associated with the nutritional supplements, the number of such conditions is relatively small, and the magnitude of the variations, though statistically significant, is in most cases not great. It is possible that association between the supplements and some conditions has been obscured by the changes in prevalence during the program noted for certain conditions and by the differences between the physicians in the relative frequency with which some conditions were observed. On the other hand, in a series of tests for statistical significance, such as was done here, about 5 per cent may be expected to appear to be significant when the differences are really due only to chance variation. In a population with more overt evidence of nutritional deficiency the observed differences would probably have been greater. Even so, the changes noted could be interpreted as indicating that minor degrees of deficiency exist in at least some mothers in the control population.

## References

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Appendix Table 1. Prevalence of conditions on newborn physical examination in each nutrient supplement group.

| Condition | Per Cent with Condition | | | | | | | | Number of Infants Observed | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Any Degree | | | | Moderate or Severe | | | | | | | |
| | Control | Vitamins Only | Protein Only | Vitamins and Protein | Control | Vitamins Only | Protein Only | Vitamins and Protein | Control | Vitamins Only | Protein Only | Vitamins and Protein |
| *Abdomen* | | | | | | | | | | | | |
| Liver Palpable | 4.2 | 4.4 | 2.6 | 2.4 | 0 | 0 | 0 | 0 | 312 | 252 | 151 | 164 |
| Diastasis Recti—White | 24.6 | 26.3 | 24.1 | 20.5 | 21.0 | 20.1 | 20.5 | 16.4 | 224 | 179 | 112 | 122 |
| Diastasis Recti—Negro | 31.3 | 19.7 | 37.1 | 36.8 | 23.8 | 16.4 | 20.0 | 28.9 | 80 | 61 | 35 | 38 |
| Lungs—Rales | 0.3 | 0.4 | 0.7 | 0 | 0 | 0 | 0 | 0 | 296 | 232 | 139 | 156 |
| Lymph Nodes—Enlarged | 0.3 | 0.8 | 0.7 | 1.2 | 0 | 0 | 0.7 | 0 | 311 | 249 | 150 | 161 |
| *Genitalia* | | | | | | | | | | | | |
| Hypertrophy | 64.9 | 74.7 | 64.6 | 69.1 | 36.4 | 40.9 | 31.0 | 43.9 | 228 | 154 | 113 | 123 |
| Pigmentation—White | 36.2 | 38.9 | 27.7 | 27.8 | 8.0 | 6.2 | 6.0 | 2.2 | 163 | 113 | 83 | 90 |
| Pigmentation—Negro | 96.9 | 100.0 | 93.3 | 97.0 | 92.3 | 90.2 | 90.0 | 81.8 | 65 | 41 | 30 | 33 |
| Undescended Testes | 2.5 | 2.2 | 6.9 | 0 | 0 | 0 | 0 | 0 | 159 | 137 | 87 | 92 |
| Vaginal Discharge | 24.0 | 27.5 | 16.4 | 20.6 | 4.7 | 2.8 | 1.6 | 4.4 | 150 | 109 | 61 | 68 |
| Hydrocele | 2.5 | 2.9 | 3.4 | 2.2 | 0.6 | 0 | 0 | 0 | 160 | 137 | 88 | 92 |
| Bleeding | 0.7 | 0 | 0 | 1.5 | 0 | 0 | 0 | 0 | 149 | 109 | 61 | 67 |
| Breast Engorgement | 66.5 | 78.6 | 62.5 | 67.8 | 21.6 | 21.4 | 16.1 | 18.2 | 227 | 154 | 112 | 121 |
| *Skeleton* | | | | | | | | | | | | |
| Rib Beading | 68.8 | 69.7 | 72.8 | 76.2 | 19.7 | 22.3 | 25.2 | 17.7 | 314 | 251 | 151 | 164 |
| Congenital Dislocation of Hips | 0 | 0.4 | 0.7 | 0.6 | 0 | 0 | 0 | 0 | 313 | 250 | 151 | 163 |
| Bowed Legs | 78.7 | 70.8 | 80.1 | 76.2 | 33.1 | 32.0 | 37.1 | 34.8 | 314 | 250 | 151 | 164 |
| Hyperextension of Knees | 0.3 | 0.4 | 0 | 2.5 | 0 | 0 | 0 | 0 | 303 | 238 | 145 | 160 |
| *Head* | | | | | | | | | | | | |
| Moulding—White | 19.1 | 12.4 | 8.0 | 15.4 | 5.2 | 0 | 2.7 | 4.1 | 230 | 185 | 113 | 123 |
| Moulding—Negro | 22.5 | 17.7 | 25.0 | 10.8 | 11.3 | 8.1 | 2.8 | 2.7 | 80 | 62 | 36 | 37 |
| Overlapped Sutures—White | 19.6 | 14.0 | 20.5 | 16.7 | 1.4 | 0 | 1.8 | 0.8 | 219 | 178 | 112 | 120 |
| Overlapped Sutures—Negro | 11.3 | 13.3 | 8.6 | 5.4 | 0 | 0 | 0 | 0 | 80 | 60 | 35 | 37 |
| Open Sagittal Suture—White | 79.8 | 85.5 | 81.3 | 78.7 | 38.1 | 41.3 | 42.9 | 38.5 | 223 | 179 | 112 | 122 |
| Open Sagittal Suture—Negro | 83.8 | 93.3 | 91.4 | 84.2 | 50.0 | 38.3 | 40.0 | 44.7 | 80 | 60 | 35 | 38 |
| Open Posterior Fontanelle | 79.2 | 84.5 | 79.5 | 77.3 | 31.9 | 31.5 | 30.5 | 35.6 | 313 | 251 | 151 | 163 |
| *Eyes* | | | | | | | | | | | | |
| Hyperemia—Lids | 91.5 | 84.9 | 89.7 | 89.9 | 59.0 | 47.5 | 53.4 | 52.2 | 305 | 238 | 146 | 159 |
| Hyperemia—Sclera | 49.1 | 38.9 | 37.3 | 40.2 | 7.9 | 4.9 | 6.4 | 12.0 | 214 | 144 | 110 | 117 |
| Discharge | 18.2 | 13.7 | 10.3 | 15.5 | 4.8 | 3.1 | 1.4 | 7.7 | 291 | 227 | 145 | 155 |
| Hemorrhage—Sclera—White | 8.1 | 7.5 | 4.7 | 8.7 | 1.5 | 0.6 | 0.9 | 0 | 197 | 160 | 106 | 104 |
| Hemorrhage—Sclera—Negro | 11.1 | 14.8 | 16.1 | 11.8 | 1.4 | 1.9 | 3.2 | 0 | 72 | 54 | 31 | 34 |
| Circumcorneal Injection | 12.9 | 5.7 | 13.3 | 13.9 | 0.4 | 1.4 | 0 | 2.2 | 263 | 209 | 135 | 137 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Tongue* | | | | | | | | | | | | |
| Red or Purple | 52.3 | 50.0 | 49.0 | 55.6 | — | — | — | — | 304 | 240 | 147 | 160 |
| Papillae Hypertrophy | 44.3 | 45.2 | 58.2 | 46.5 | 16.0 | 11.7 | 21.2 | 18.5 | 300 | 239 | 146 | 157 |
| Papillae Atrophy | 11.2 | 11.8 | 6.2 | 11.3 | 1.3 | 1.3 | 0 | 1.9 | 303 | 237 | 146 | 160 |
| Fissures | 0.7 | 1.3 | 0.7 | 0.6 | 0 | 0 | 0 | 0 | 303 | 239 | 147 | 160 |
| Swollen | 43.2 | 43.3 | 49.0 | 47.5 | 10.6 | 11.3 | 15.0 | 12.5 | 303 | 240 | 147 | 160 |
| Ankyloglossia | 2.7 | 2.5 | 2.1 | 1.9 | 0.7 | 0.8 | 0 | 0 | 297 | 238 | 143 | 159 |
| *Gums* | | | | | | | | | | | | |
| Red or Very Red | 7.3 | 3.8 | 9.5 | 5.7 | — | — | — | — | 303 | 240 | 147 | 159 |
| Hypertrophy | 75.4 | 74.7 | 78.8 | 68.0 | 21.1 | 16.2 | 19.5 | 18.9 | 228 | 154 | 113 | 122 |
| Pigmentation—White | 0.6 | 0 | 0 | 1.1 | 0 | 0 | 0 | 0 | 161 | 112 | 81 | 90 |
| Pigmentation—Negro | 20.0 | 9.8 | 16.7 | 6.1 | 1.5 | 0 | 3.3 | 3.0 | 65 | 41 | 30 | 33 |
| *Central Nervous System* | | | | | | | | | | | | |
| Moro Reflex | 96.2 | 95.2 | 96.6 | 97.5 | 3.5 | 2.8 | 2.1 | 2.5 | 314 | 252 | 146 | 161 |
| Abnormal Cry | 4.5 | 5.7 | 4.8 | 3.1 | 0 | 0.4 | 0 | 0 | 310 | 247 | 147 | 160 |
| Hyperactivity | 1.0 | 1.3 | 2.1 | 2.6 | 0 | 0 | 0.7 | 0 | 300 | 239 | 142 | 155 |
| Drowsiness | 3.0 | 5.0 | 5.0 | 2.6 | 1.0 | 2.1 | 2.1 | 1.3 | 300 | 239 | 141 | 154 |
| *Skin* | | | | | | | | | | | | |
| Abnormal Hair Distribution—White | 75.8 | 70.8 | 79.6 | 79.8 | 1.3 | 0.5 | 0.9 | 0.8 | 231 | 185 | 113 | 124 |
| Abnormal Hair Distribution—Negro | 58.8 | 51.6 | 61.8 | 65.8 | 0 | 0 | 0 | 0 | 80 | 64 | 34 | 38 |
| Dehydration—White | 24.4 | 31.7 | 23.2 | 23.6 | 8.9 | 9.4 | 4.5 | 5.7 | 225 | 180 | 112 | 123 |
| Dehydration—Negro | 53.8 | 50.8 | 48.6 | 36.8 | 25.0 | 26.2 | 25.7 | 18.4 | 80 | 61 | 35 | 38 |
| Edema | 2.3 | 1.7 | 2.0 | 1.3 | 0.3 | 0 | 0 | 0.6 | 302 | 238 | 147 | 160 |
| Bleeding in Creases | 11.9 | 12.7 | 10.2 | 12.5 | 1.3 | 1.7 | 1.4 | 2.5 | 302 | 237 | 147 | 160 |
| Eruptions—White | 9.6 | 5.4 | 8.8 | 4.1 | 0.4 | 0.5 | 0.9 | 0 | 229 | 185 | 114 | 123 |
| Eruptions—Negro | 1.2 | 4.8 | 5.6 | 5.1 | 0 | 0 | 0 | 0 | 81 | 63 | 36 | 39 |
| Toxic Erythema—White | 9.5 | 9.3 | 20.2 | 11.5 | 1.8 | 0.6 | 1.8 | 1.6 | 220 | 172 | 109 | 122 |
| Toxic Erythema—Negro | 5.1 | 0 | 11.8 | 5.3 | 1.3 | 0 | 5.9 | 0 | 79 | 58 | 34 | 38 |
| Hives | 2.2 | 1.9 | 1.8 | 4.1 | 0 | 0.6 | 0.9 | 0.8 | 226 | 154 | 112 | 123 |
| Hemangioma—Lids—White | 30.7 | 30.4 | 28.0 | 34.4 | 3.7 | 3.6 | 4.9 | 10.0 | 163 | 112 | 82 | 90 |
| Hemangioma—Lids—Negro | 23.1 | 19.5 | 16.7 | 18.2 | 4.6 | 0 | 3.3 | 3.0 | 65 | 41 | 30 | 33 |
| Hemangioma—Forehead | 9.7 | 9.7 | 12.8 | 6.5 | 1.8 | 1.3 | 3.7 | 1.6 | 226 | 154 | 109 | 123 |
| Pilonidal Dimple | 85.2 | 79.0 | 88.1 | 87.7 | 1.0 | 0.8 | 0.7 | 1.2 | 311 | 248 | 151 | 163 |
| Jaundice—White | 29.6 | 41.1 | 37.1 | 36.6 | 3.8 | 9.2 | 11.2 | 8.9 | 186 | 141 | 89 | 101 |
| Jaundice—Negro | 16.2 | 23.4 | 33.3 | 20.0 | 2.9 | 4.3 | 9.1 | 0 | 68 | 47 | 33 | 35 |

Appendix Table 2. Prevalence of conditions on physical examination at one month in each nutrient supplement group.

| Condition | Per Cent with Condition | | | | | | | | Number of Infants Observed | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Any Degree | | | | Moderate or Severe | | | | | | | |
| | Control | Vitamins Only | Protein Only | Vitamins and Protein | Control | Vitamins Only | Protein Only | Vitamins and Protein | Control | Vitamins Only | Protein Only | Vitamins and Protein |
| *Abdomen* | | | | | | | | | | | | |
| Liver Palpable | 17.0 | 22.4 | 17.8 | 19.0 | 0 | 0.4 | 0 | 0 | 283 | 228 | 146 | 142 |
| Spleen Palpable | 0 | 2.2 | 0 | 0 | 0 | 0 | 0 | 0 | 283 | 227 | 145 | 142 |
| Diastasis Recti—White | 39.3 | 42.3 | 49.0 | 45.7 | 38.7 | 39.7 | 48.1 | 43.8 | 191 | 156 | 104 | 105 |
| Diastasis Recti—Negro | 64.3 | 62.9 | 74.4 | 62.2 | 61.9 | 62.9 | 74.4 | 62.2 | 84 | 62 | 39 | 37 |
| Lungs—Rales | 0.4 | 0 | 0.7 | 0 | 0 | 0 | 0 | 0 | 282 | 229 | 146 | 146 |
| Lymph Nodes—Enlarged | 15.5 | 18.6 | 17.7 | 16.4 | 4.2 | 5.2 | 9.5 | 7.5 | 283 | 231 | 147 | 146 |
| *Genitalia* | | | | | | | | | | | | |
| Hypertrophy—Male | 68.8 | 68.5 | 67.2 | 65.2 | 48.4 | 42.5 | 48.4 | 39.4 | 93 | 73 | 64 | 66 |
| Hypertrophy—Female | 47.1 | 50.8 | 52.2 | 48.8 | 20.2 | 34.4 | 30.4 | 20.9 | 104 | 61 | 46 | 43 |
| Pigmentation—White—Male | 27.7 | 36.0 | 34.8 | 17.4 | 6.2 | 6.0 | 6.5 | 4.3 | 65 | 50 | 46 | 46 |
| Pigmentation—White—Female | 4.8 | 16.2 | 12.1 | 15.6 | 0 | 0 | 0 | 0 | 62 | 37 | 33 | 32 |
| Pigmentation—Negro—Male | 96.4 | 86.4 | 94.4 | 90.0 | 89.3 | 81.8 | 72.2 | 85.0 | 28 | 22 | 18 | 20 |
| Pigmentation—Negro—Female | 54.8 | 55.0 | 61.5 | 72.7 | 38.1 | 40.0 | 38.5 | 45.5 | 42 | 20 | 13 | 11 |
| Meatal Ulcer | 5.3 | 4.0 | 3.7 | 3.5 | 2.3 | 0.8 | 0 | 0 | 131 | 125 | 81 | 85 |
| Undescended Testes | 2.3 | 0 | 2.5 | 0 | 0 | 0 | 0 | 0 | 132 | 124 | 80 | 86 |
| Vaginal Discharge | 0.7 | 0 | 1.7 | 0 | 0 | 0 | 0 | 0 | 141 | 91 | 60 | 58 |
| Hydrocele | 6.9 | 11.3 | 10.0 | 8.1 | 0 | 0.8 | 0 | 0 | 130 | 124 | 80 | 86 |
| Breast Engorgement | 26.9 | 26.2 | 26.7 | 28.7 | 11.3 | 11.5 | 10.5 | 7.9 | 186 | 122 | 105 | 101 |
| *Skeleton* | | | | | | | | | | | | |
| Rib Beading—Male | 46.3 | 57.6 | 54.8 | 43.0 | 12.5 | 14.4 | 10.7 | 9.3 | 136 | 125 | 84 | 86 |
| Rib Beading—Female | 39.9 | 34.3 | 54.0 | 52.5 | 6.8 | 9.5 | 9.5 | 8.5 | 148 | 105 | 63 | 59 |
| Congenital Dislocation of Hips | 0.4 | 0 | 0 | 1.4 | 0.4 | 0 | 0 | 0 | 277 | 228 | 147 | 144 |
| Bowed Legs—Male | 80.9 | 71.4 | 82.1 | 83.7 | 33.1 | 35.7 | 34.5 | 31.4 | 136 | 126 | 84 | 86 |
| Bowed Legs—Female | 80.4 | 68.6 | 71.9 | 64.4 | 23.6 | 22.9 | 26.6 | 16.9 | 148 | 105 | 64 | 59 |
| *Head* | | | | | | | | | | | | |
| Moulding | 3.9 | 4.0 | 0.7 | 5.6 | 0.4 | 1.3 | 0 | 0 | 283 | 227 | 147 | 144 |
| Open Sagittal Suture—White | 32.5 | 41.0 | 37.5 | 34.0 | 6.3 | 13.5 | 7.7 | 8.5 | 191 | 156 | 104 | 106 |
| Open Sagittal Suture—Negro | 38.8 | 41.3 | 28.2 | 48.6 | 20.0 | 12.7 | 12.8 | 18.9 | 85 | 63 | 39 | 37 |
| Open Posterior Fontanelle—White | 30.3 | 33.1 | 44.9 | 32.4 | 8.1 | 12.9 | 20.6 | 13.9 | 198 | 163 | 107 | 108 |
| Open Posterior Fontanelle—Negro | 43.7 | 51.5 | 55.0 | 63.2 | 31.0 | 27.3 | 37.5 | 36.8 | 87 | 66 | 40 | 38 |
| *Eyes* | | | | | | | | | | | | |
| Hyperemia—Lids | 5.5 | 5.5 | 5.0 | 5.6 | 0.7 | 1.4 | 1.4 | 1.4 | 271 | 217 | 141 | 142 |
| Hyperemia—Sclera | 1.5 | 3.0 | 0.9 | 5.6 | 0 | 2.3 | 0 | 0.9 | 197 | 133 | 109 | 108 |
| Discharge | 4.1 | 2.8 | 4.9 | 7.1 | 0.4 | 0 | 0.7 | 0.7 | 271 | 217 | 142 | 141 |
| Hemorrhage—Sclera | 0.7 | 0 | 2.1 | 0 | 0 | 0 | 0 | 0 | 270 | 217 | 143 | 141 |
| Circumcorneal Injection | 6.3 | 6.0 | 9.2 | 5.7 | 1.1 | 0.5 | 0.7 | 0.7 | 269 | 216 | 142 | 141 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Tongue* | | | | | | | | | | | | |
| Red or Purple | 21.0 | 22.3 | 21.7 | 13.3 | — | — | — | — | 276 | 220 | 143 | 143 |
| Papillae Hypertrophy | 50.7 | 44.0 | 45.7 | 51.4 | 21.5 | 14.4 | 20.7 | 15.0 | 274 | 216 | 140 | 140 |
| Papillae Atrophy—White | 12.8 | 14.7 | 18.0 | 15.8 | 3.7 | 3.8 | 4.0 | 2.0 | 187 | 156 | 100 | 101 |
| Papillae Atrophy—Negro | 19.3 | 19.7 | 31.6 | 15.2 | 3.6 | 1.6 | 10.5 | 6.1 | 83 | 61 | 38 | 33 |
| Swollen—Male | 43.2 | 38.3 | 51.9 | 53.0 | 15.2 | 10.8 | 7.4 | 15.7 | 132 | 120 | 81 | 83 |
| Swollen—Female | 58.5 | 58.6 | 60.7 | 60.3 | 12.0 | 17.2 | 14.8 | 15.5 | 142 | 99 | 61 | 58 |
| Fissures | 0.7 | 1.9 | 0.7 | 0 | 0 | 0 | 0 | 0 | 268 | 214 | 140 | 136 |
| *Gums* | | | | | | | | | | | | |
| Red or Very Red | 4.7 | 5.0 | 2.8 | 4.2 | — | — | — | — | 274 | 219 | 142 | 142 |
| Hypertrophy | 75.3 | 76.1 | 84.3 | 81.5 | 38.9 | 39.6 | 38.0 | 48.1 | 198 | 134 | 108 | 108 |
| Pigmentation—White | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 128 | 89 | 77 | 76 |
| Pigmentation—Negro | 46.5 | 22.7 | 31.3 | 33.3 | 19.7 | 18.2 | 3.1 | 13.3 | 71 | 44 | 32 | 30 |
| Swollen | 7.4 | 7.8 | 2.1 | 2.8 | 0 | 0.9 | 0.7 | 0 | 271 | 219 | 140 | 141 |
| Teeth | 0 | 0 | 3.0 | 0 | 0 | 0 | 0 | 0 | 137 | 123 | 66 | 73 |
| *Lips* | | | | | | | | | | | | |
| Fissures | 13.2 | 19.7 | 15.5 | 15.5 | 2.2 | 3.7 | 4.2 | 5.6 | 273 | 218 | 142 | 142 |
| Blisters | 61.6 | 65.7 | 61.3 | 58.2 | 35.9 | 35.1 | 37.8 | 34.5 | 198 | 134 | 111 | 110 |
| Swollen | 2.2 | 5.5 | 0.7 | 0.7 | 0.4 | 0.9 | 0 | 0 | 271 | 218 | 140 | 141 |
| *Central Nervous System* | | | | | | | | | | | | |
| Moro Reflex | 35.8 | 32.4 | 39.7 | 39.2 | 3.6 | 2.3 | 4.3 | 4.2 | 274 | 222 | 141 | 143 |
| Hyperactivity | 0.4 | 0 | 1.4 | 0.7 | 0 | 0 | 0.7 | 0 | 270 | 215 | 142 | 143 |
| *Skin* | | | | | | | | | | | | |
| Abnormal Hair Distribution—White | 67.0 | 68.3 | 75.0 | 74.5 | 1.5 | 1.9 | 1.0 | 2.8 | 194 | 161 | 104 | 106 |
| Abnormal Hair Distribution—Negro | 59.5 | 52.5 | 60.0 | 48.6 | 0 | 3.3 | 0 | 0 | 84 | 61 | 40 | 37 |
| Scaling | 12.3 | 13.2 | 16.4 | 12.1 | 0.7 | 1.8 | 1.4 | 0 | 277 | 219 | 146 | 141 |
| Eruptions—White | 52.3 | 52.1 | 50.5 | 49.5 | 6.1 | 8.6 | 3.7 | 6.5 | 197 | 163 | 107 | 107 |
| Eruptions—Negro | 37.9 | 42.4 | 40.0 | 42.1 | 5.7 | 6.1 | 7.5 | 7.9 | 87 | 66 | 40 | 38 |
| Cradle Cap | 9.2 | 12.9 | 11.8 | 7.3 | 3.6 | 7.6 | 2.7 | 0.9 | 195 | 132 | 110 | 110 |
| Hemangioma—Lids—White | 38.1 | 25.6 | 24.1 | 26.9 | 8.7 | 8.9 | 5.1 | 6.4 | 126 | 90 | 79 | 78 |
| Hemangioma—Lids—Negro | 14.3 | 9.1 | 21.9 | 29.0 | 1.4 | 2.3 | 0 | 3.2 | 70 | 44 | 32 | 31 |
| Hemangioma—Forehead | 13.8 | 14.9 | 12.6 | 16.8 | 2.0 | 2.2 | 4.5 | 1.9 | 196 | 134 | 111 | 107 |
| Diaper Rash—White | 17.2 | 25.6 | 20.8 | 16.9 | 4.7 | 6.7 | 6.5 | 3.9 | 128 | 90 | 77 | 77 |
| Diaper Rash—Negro | 2.9 | 4.5 | 9.4 | 3.2 | 0 | 0 | 6.3 | 0 | 70 | 44 | 32 | 31 |