

Factors Related to Underweight in a Selected Group of 100 Children in New York City

ETHEL MASLANSKY AND NORMAN JOLLIFFE, M.D., F.A.P.H.A.

The inescapable conclusion reached in this study—that diet education alone, in the conventional sense, cannot resolve the difficulties of underweight children—is one that calls for frequent reiteration. We accept it but too often fail to apply it.

✿ This is a report of the epidemiologic factors found in a study planned by the staff of the lower East Side nutrition clinic in 1947. At that time the clinic undertook to study the growth patterns of a group of children considered underweight by the arbitrary standards of the Faber weight and height charts. The boys and girls selected were of the Caucasian race and in the prepubertal period (seven–nine years inclusive); they had an I.Q. of 90–120 and lived on the lower East Side of Manhattan.

The children were referred by the medical personnel of the Health Department operating in the schools in that section. They represent children generally referred to nutrition clinics because of real or suspected malnutrition.

The routine clinic procedure for the study group consisted of: (1) a complete medical examination for diagnosis. Thenceforth, there were periodic medical examinations; (2) I.Q. determination to rule out those below or above the range of 90–120; (3) periodic finger tip blood for hemoglobin determination, and venous puncture for serum protein level, carotene, vitamin A, ascorbic acid levels, and phosphatase activity; (4)

periodic anthropometric measurements, including Wetzel grid recordings; and (5) periodic recall diet histories.

Referrals to this special project were made from February, 1947, to July, 1948, and there were 188 who were eligible by the standards we set up. One hundred and five of these continued regularly with the project for a period of a little over two years, of whom the first 100 are included in this report.

Diet histories for two or three days made use of the recall method with the aid of food models of known amounts. The amount and kinds of food consumed were further delineated by checking them against the average consumption of the various groups of foods during a week. Thus, it was possible to determine whether the recall histories for the period of two or three days represented a typical dietary pattern. Three such detailed diet histories were taken, one during the second visit to the clinic and the subsequent ones at yearly intervals.

Findings

Dietary Studies—Reported as percentages of the National Research Council's Recommended Dietary Allowances the dietary studies are summarized in Table 1. While there seemed to be some improvement in the dietaries in Periods I and II, notably in calories, calcium, vitamin A and thiamine, the gains are not spectacular. The regression noted in Period II with respect to some of the

Table 1—Summary of Dietary Status of 100 Children for a Period of Two Years

Nutrients Represented as Percentages of NRC Recommended Dietary Allowances	Initial Period (on Second Visit to Clinic) Number of Children	Period I (One Year Later) Number of Children	Period II (Two Years Later) Number of Children
Calories 75% and above	66	78	74
below 75%	34	22	26
Protein 75% and above	93	94	96
below 75%	7	6	4
Calcium 75% and above	78	87	81
below 75%	22	13	19
Iron 75% and above	76	81	86
below 75%	24	19	14
Vitamin A 75% and above	76	90	84
below 75%	24	10	16
Thiamine 75% and above	77	90	84
below 75%	23	10	16
Riboflavin 75% and above	94	95	94
below 75%	6	5	6
Niacin 75% and above	76	75	86
below 75%	24	25	14
Ascorbic acid 75% and above	61	64	67
below 75%	39	36	33
All nutrients 90% and above	20	27	30

nutrients would seem to be due to the failure to account satisfactorily for the effect of age. This is accomplished to some extent by the NRC Dietary Allowances, but there were 14 children in Period II who were just below 13 years of age but whose nutrient standard was placed at 14, mid-point of the 13-15 age group.

Food as a Factor—When the project began the responsibility of the nutritionist seemed clear. It was to improve the eating habits of these children so that they would eat more of a better balanced diet. It soon became apparent, however, that food availability alone was not the deciding factor causing their underweight. Nutritious food was available to many children, but they refused

to eat it. In many instances other children in the family were of normal size. In 28 of these families at least one child was overweight; 46 mothers and 33 fathers were overweight. An emphasis on diet in many of the cases served to increase the mother's anxiety about her underweight child.

Given an opportunity the mothers, themselves, frequently furnished a clue

Miss Maslansky is nutritionist in, and Dr. Jolliffe is director of, the Bureau of Nutrition, Department of Health, City of New York.

This paper was presented before a Joint Session of the American School Health Association and the Dental Health, Food and Nutrition, Maternal and Child Health, and School Health Sections of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 13, 1954.

for their children's underweight status. They described not only the meals the children ate, but also many relevant ramifications of their eating behavior—the individual eating idiosyncracies, the onset of eating difficulties—likes and dislikes, and whether they dawdled or bolted their food. This kind of discussion often led quite naturally to discussions of other areas of behavior, school and social adjustment, and family relationships. We kept a detailed log of the mothers' feelings and reactions, as well as factual data. Some of the facts about children's developmental history and early behavior were vague or forgotten. On the other hand, feelings and attitudes about the husband, preoccupations with children's present problems were real and pressing and highly significant to the eating difficulties presented.

Economic Setting—The majority of the families in the group came from the lower income brackets, with about 15 per cent on relief; the others had a family income of \$45–\$60 a week. They lived for the most part in old tenements of the lower East Side, but some few lived in housing projects. The economic situation seemed pressing for many of them, especially where the father was out of the home, when the children were young and when welfare subsistence seemed the only resource. Although many of the mothers were excellent and resourceful managers, the financial limitations seemed to create unbearable pressures. In families where there was a father who was employed or employable there was always the hope that the future might be better.

Mother's Attitude Toward Patient's Underweight—Most of the mothers had some feelings about the patients' weight. Sixty-two expressed anxiety by word or deed, evident in various ways. There were siblings, relatives, and neighbors' children who were so well developed by comparison. There were fathers who

blamed mothers for the children's eating difficulties, and then there was the child who because he was "thin and underfed looking" might become "ill" or "die."

Anxiety often leads to coerciveness. Forty-five mothers said they had been coercive at one time or another; 22 indicated they left the children to their own devices in the eating situation; and in 33 the information was not shared with us. Coerciveness may include outright force or more mild and subtle deviations. A mother told us when describing her child's early eating habits the "motto" of the family was "feed her while she is unconscious" (meaning half asleep). We are all too familiar with the spectacle of mothers entertaining their children during meal time to divert their attention and force down a few teaspoons of a disliked food. Rewards and punishment are frequent expressions of coerciveness and their uses are varied and numerous. The mother's concern about her "thin" child was accentuated by the community's concern. At least 26 of these 100 children were in a health improvement class. Many more children might have been placed in these classes were it not for the fact that they attended parochial schools which do not have them. At least five of these children were sent for special convalescent care during the winter season by community agencies.

About a third of the mothers did not express anxiety about their children's thinness; some of whom felt that their children were thin but healthy and did not present serious eating problems that concerned them. This may have been true for some mothers did not share any other information with us beyond the dietary histories. There were, however, a number of mothers who seemed unconcerned about their children's eating habits because they lacked the capacity for concern and not because the children ate well.

Parental Relationships—In attempting

to evaluate the home situation of these children, using objective facts as far as possible, we found that 18 of the children came from families from which the fathers had deserted or the parents were separated or divorced. In six additional families, either the father or mother was institutionalized for physical or mental illness (three mental illness and three tuberculosis). In 10 families the father had died; in nine of the 10, death occurred during the children's preschool period and the loss according to the mothers had had a traumatic effect on the children. In 11 families the mothers struggled with the problem of serious alcoholism on the part of the fathers. In 12 families the mothers talked freely about their marital difficulties. Thus, 34 of the children came from broken homes and 11 more from alcoholic homes, and another 12 came from homes where serious marital discord was expressed.

Of the other 43 families, we cannot speak with certainty. Some of them undoubtedly were well adjusted and others, we suspect, were not. The mothers either did not choose to discuss such problems with us, or they did not see their relevancy to the child's eating difficulty. A suspicion of parental difficulty on our part did not warrant making the judgment that this was so.

Attitude Toward Pregnancy—About a third of the mothers readily and freely stated that they were distraught when they discovered that they were pregnant. Six of the children were conceived or born out of wedlock; several of the mothers were very young at the time—15 or 16 years old. For the mothers it often meant exclusion from her family and home, for four of the children it meant institutionalization, or haphazard foster home care. In six instances our patients were conceived when the mother was over 40. These children were from 10 to 12 years younger than the youngest sibling; three of these mothers said that they had been troubled

by fibroids of the uterus and the pregnancies, when they learned of them four to five months later, were completely unexpected. In the other 22 families the mothers related that the pregnancies were unplanned for various reasons such as alcoholism, illness, or economic pressures.

A good many mothers did not freely verbalize their feelings with respect to these pregnancies but it seemed obvious, judging by the total family setting and relationships, that another pregnancy at that time was received with mixed feelings.

Mother's Feelings About Her Underweight Child—Tendency on the part of mothers to make comparisons of one child to another is well known. These comparisons may not necessarily reflect a preference. They may be used to delineate a child's behavior or characteristics or a mother's feelings and attitudes toward one child as compared with another.

About two-thirds of the records indicated that the mothers seemed either more or less involved with the children under our care as compared with other siblings. We can best illustrate this point by quoting verbatim from statements made by mothers. One mother said to us "he is just like his father, always a chip on his shoulder." "Danny (his sibling) is more affectionate, more attached to me." A mother, in comparing one of our patients to her obese sibling, said of patient, "she is timid and shy and not as bright as her sister, she (the patient) is just like me." Another mother indicated that our patient was "the father's favorite," her behavior reminded her of her own and she wanted to "knock it out of her," "she was the worst child in the world," but her brother was "the best child in the world." We were impressed in studying these relationships by the frequency with which mothers identified the child-patients with themselves or their husbands with

an unfavorable or derogatory connotation. They seemed more preoccupied and troubled by our patients when compared with siblings, more uncomfortable about their behavior and mannerisms and frequently more irritated by them. Yet, at the same time, closer to them in a way that rendered our patients dependent on them.

Characteristics of the Children—To summarize some of the outstanding characteristics of the 100 children: there were 51 boys and 49 girls; the median age was 8.8 years; three were only children; 35 were first-born; 37 were the youngest—12 of whom were from five to 12 years younger than their next sibling. As a group these children seemed shy, retiring, and uncommunicative with adults as evidenced by their clinic and school behavior. Reports from the schools and mothers indicated that about two-thirds of these children were "good," i.e., well-behaved, quiet, and unaggressive. There were very few children whose behavior in the classroom was aggressive or obstreperous; many, however, were restless and fidgety, talked excessively, or teased other children. The mothers not infrequently told us that the children were sensitive to the teacher's attitude and whenever they encountered a stern, critical teacher, the children became fearful and cringing.

A number of these children seemed excessively conscientious about school—fearful of being late or absent, spending three to four hours a day on homework; many of these overly conscientious children would not touch food before going to school in the morning. A number of these children fell below average in performance in spite of the fact that their intelligence was within average range. The teachers complained that they were inattentive and restless or did not work to capacity. There were at least five or six children who could not learn to read and were referred to remedial reading classes.

Perhaps the most impressive characteristics of the group, as a whole, was their dependence on their mothers. A number of children would insist on sitting on their mothers' laps or leaning against their mothers during clinic interviews, although chairs were always provided for them. Some of the children refused to have psychometric examinations unaccompanied by mothers. In any number of instances the mother reported sleeping with our patient, whether or not he was the youngest child. There were a number of children who had difficulty starting school; several of them stayed out of school six months or longer and one child, when she finally went to school, had to be placed in her sister's class. There were many children in this group who refused to go to camp. One mother told us she sent our patient to a small camp where there were only nine children of the same ethnic group with whom she and our patient were acquainted, and after a short period he was brought home because he was frightened, refused food, and had lost seven pounds. Another child dreaded going to museums and outings with his class because it meant being away from his mother for the entire day.

Mothers frequently voiced resentment and dismay over the way the children clung to them, refused to play in the streets with other children, and had few friends. In other ways, too, these children frequently demonstrated infantile behavior; there were many with nocturnal enuresis and two who had diurnal enuresis. There was one boy of eight who insisted on being wheeled in the baby carriage after school. There were any number of children who insisted on being fed and many more whom the mothers insisted on feeding because they dawdled or ate less than the mothers expected. Mothers frequently characterized these children as "nervous and fidgety," poor sleepers, and nail biters.

Nature of the Eating Problem—We found that about one-third of the children had what we considered serious food dislikes. About 10 of the children drank less than two glasses of milk a day. On the other hand, there were a number of children who drank excessive amounts of milk, as much as two quarts, and excluded meats and vegetables. The tendency to depend on liquid or semi-solid foods was far from uncommon. A number of children in this group (about 20) disliked meat, or limited their choice to one or two, mostly hamburgers and perhaps cold cuts.

Vegetables were beyond doubt the most widely disliked group of foods. The rejection sometimes extended to all vegetables, raw or cooked, or the choice was limited to only one or two. There were several children who refused to eat any protein foods of animal origin. Another characteristic of some in the group of children was that they limited their eating pattern with a determined inflexibility to a few foods—milk and starches, or meats and starches, or soups and milk. A number of children seemed inordinately fond of sweets.

Mothers frequently complained of a lack of interest in eating on the part of these children and described them as being too "lazy" to eat, or "picky" or "fussy." They were erratic in their eating habits, sometimes insisting on the same food for several days. One mother said her son ate only waffles for three consecutive days. Another aberration that characterized the eating habits of a group of children, and these groups are not mutually exclusive, was not expressed in terms of a limited choice of foods, but by the eating behavior. For example, a child of seven or eight, or even nine, often insisted on being fed by the mother, either for the whole meal or when eating foods that he did not like. Several children who had young siblings reverted to eating baby foods. Meal-time often became a period of fuss and

fury, a tug of war between mother and child, with threats if the child refused to eat and unfavorable comparisons with siblings and cousins and neighbors' children. The children ate little, daddled, cried, wrangled promises from mothers for movies, bars of chocolate, and whatnot.

There was a group of children who seemed to eat well and the diet histories indicated no serious dislikes. Some of them ate heartily and in a few instances mothers said even gluttonously. There was one little boy whose three sisters were well developed and the mother was not only concerned about his size, but equally concerned about a persistent cough for which there seemed to be no physical basis. This child had a very difficult time in school because his two older sisters were excellent students. He was somewhat less than average in his performance and the teachers did not spare him. It was interesting to observe that during the summer he gained nicely, and when he was transferred to another school his mother was very much pleased with his physical progress. His cough incidentally abated during the period he came to the clinic.

Mother's Concept of Origin of Eating Difficulty—Twenty mothers indicated that their children did not present eating difficulties, and the dietaries of many of these children seemed completely satisfactory, or were somewhat below NRC Recommended Dietary Allowances in only one or two nutrients, notably A and C; 21 mothers steadfastly maintained that they always had eating problems with their children. This concept was consistently expressed in terms of "he was a poor eater from the day he was born," or "he was a colicky baby, he cried day and night and refused food," and similar statements. Many of these mothers mentioned difficulty in finding proper formulas, or difficulty in adjusting to a formula after a short period of breast feeding. Seven moth-

ers attributed their children's eating problems to the period of weaning at which time milk was refused and the pattern continued. Eighteen mothers traced the eating problems to periods of illness. Actually, 15 of these 18 children were hospitalized for a period varying from several days to 13 months. Some of these children also were sent away for convalescent care after the period of hospitalization.

Twelve mothers felt that the eating problem had its onset at about the age of two, or at the age of about five, when the child was sent to a play school, or to elementary school. Several mothers had to give up their jobs because their preschool children would not eat in the play school. A few mothers told us that they could get their youngsters to go to school only if they bribed them with candy bars. Twenty-two mothers had no idea just when the eating difficulty started.

Discussion

At this point it might be well to clarify what this study does not pretend to represent. It is not a highly scientific effort with carefully balanced control and study groups set up to measure clearly defined variations in response to a set of conditions. Nor is this a psychiatric study of the dynamics of the eating behavior in all its subtle ramifications. Instead, it represents a joint effort on part of the clinic and mothers to examine the factors that seemed to have a bearing on the children's underweight.

It is well established from clinical observation and psychiatric practice that the infant's life is centered around his biologic need for food and love. The first emotional relationship between mother and child is formed through the feeding process. This biologic need for food becomes a vehicle for the expression of feelings and the formation of

attitudes for the child. And the process of feeding the baby has emotional components for the mother. Mother and food become inextricably related for the infant and disturbances in the mother-child relationship may be reflected in eating difficulties.¹ According to Spock² anxiety on part of the mother is chiefly responsible for the development of feeding problems and even the relatively stable mother may become overanxious particularly during periods of stress or when overwhelmed by rigid and authoritative advice.

The emphasis which the anxious mother tends to bring to the feeding situation, her need to stress the mechanical aspects of feeding, her concern about the amount of food her child eats, and her coerciveness may provoke a series of responses from the child. He may use eating or rejecting food as a basis for his relationship with his mother. He soon learns that it is a forceful weapon and can be utilized to achieve power over his mother. Spock and Huschka³ stated that in response to coerciveness "the baby's obstinacy and hostility become aroused and overdeveloped and will tend to persist. He learns to prefer to fight even if he has to go hungry to do it."

Lurie⁴ reporting on a group of underweight children and Bruch⁵ studying the family frame of overweight noted that disturbed family relationships characterized these homes. The mother because of inner tensions and unhappiness may tend to be overprotective, to prolong the period of infancy, and create a milieu for the child where food fads are developed and the eating behavior disturbed. Eating disorders generally occur in the first two years of life, according to Spock.² They may be aggravated at later periods. Lehman⁶ stated that changes in the mode of feeding may engender eating problems, particularly when the child is not ready for them—a change from breast to bottle,

weaning, or the introduction of solid foods. Emotional stress such as separation from a parent or birth of a sibling may cause lessened appetite. Illness or convalescence is another occasion when feeding problems and specific food dislikes may occur.

Many of these circumstances are common experiences of all children. The manner in which these experiences are handled by the parents is crucial.

Summary and Conclusions

We have reported on our experience with a group of 100 underweight children whose growth patterns were studied at the nutrition clinic. We found this physical syndrome constituted a problem to the mother, child, and community regardless of its clinical significance. Diet education alone, in the conventional sense, could not resolve this problem. Indeed, it often heightened the mother's anxiety about her underweight child.

A search for more effective ways of dealing with the problem led to the exploration of some of the conditioning factors. Ignorance and economic pressures undoubtedly were involved, but it is difficult to evaluate to what extent, for

often they were complicated by physical and social ills that impaired the mother's capacity to function adequately.

What emerges most clearly from our study is that most of these children presented eating problems that began in infancy or early childhood and were rooted in the social, cultural, and psychologic complexities of their environment. A better understanding of the individual, the family setting, and the factors that motivate eating behavior will stimulate the development of new approaches to the problems of nutrition education, to the end of improving our services to those who seek our help.

REFERENCES

1. Rabinovitch, R. D., and Fischhoff, J. Feeding Children to Meet Their Emotional Needs. *J. Am. Dietet. A.* 28:614-621 (July), 1952.
2. Spock, B. Occasions When Feeding Problems Begin. *Nerv. Child.* 3:162-164 (Apr.), 1944.
3. Spock, B., and Huschka, M. "The Psychological Aspects of Pediatric Practice." In *Practitioners Library of Medicine and Surgery*. Edited by G. Bloomer. New York: Appleton-Century. Vol. Supplement-Index. 1938, pp. 757-779.
4. Lurie, O. R. Psychological Factors Associated with Eating Difficulties of Children. *Am. J. Orthopsychiat.* 11:452-463 (July), 1941.
5. Bruch, H., and Touraine, G. Obesity in Childhood. V. The Family Frame of Obese Children. *Psychosom. Med.* 2:141-206 (Apr.), 1940.
6. Lehman, E. "Feeding Problems of Psychogenic Origin." In *the Psychoanalytic Study of the Child*. Edited by Anna Freud. New York: International Universities Press, Vol. 3-4, 1949, pp. 461-488.