

STATISTICAL SURVEY OF MEASUREMENTS OF WEIGHT, LENGTH, CIRCUMFERENCE OF HEAD AND CHEST OF NEW-BORN INFANTS AND EFFECT OF DIET SUPPLEMENTS ON THESE MEASUREMENTS

BY

INDIRA BHONSALE, M.D., F.C.P.S.

Obstetrician and Gynaecologist, Maharaja Tukojirao Hospital, Indore.

In estimation of the health of a new-born infant, we take into consideration its weight and length. It is well known that the weight and length of the infant depends on multifarious factors, and the important ones, which influence the growth of the foetus, are the build of the parents and health and nutrition of the mother.

This survey is based on the study of 3,000 cases registered in Maharaja Tukojirao Hospital, Indore, with a detailed record of each case, especially of physical conditions, diet, income and habits. Out of these, 700 cases, 350 male infants, and 350 female infants, born consecutively, are compared and studied critically and the results of the comparison are shown in graphs which reveal the following interesting points:—

- (1) The weight of the maximum number of infants varied from 6 to 7 lbs. and there was no appreciable difference in weight in male and female infants in 6 and 7 lbs. groups

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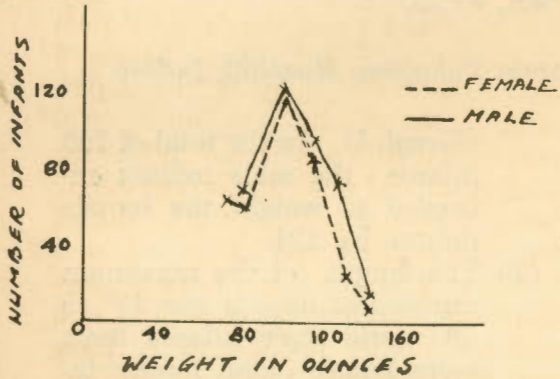
(Graph-I). In the total of 700 infants the male infants exceeded in weight the female infants by 124.

- (2) The length of the maximum number of infants was 18" to 19" and male infants have more length than female infants. (Graph II).
- (3) The circumference of the head in maximum number of infants was 13" and there was no difference in the circumference of head of male and female infants (Graph III).
- (4) The circumference of chest in the male infants was 13" and in the female infants it was 12" (Graph IV).

It will not be out of place, if the effect of diet supplements on the weight, length, and circumference of head of the infants, is discussed here. This problem was studied in 100 cases who were given iron, multi-vitamins and intravenous calcium gluconate. Special detailed forms were prepared and adequate control cases were registered for comparison. Blood calcium was estimated and blood was examined. These results shown in graphs are encouraging.

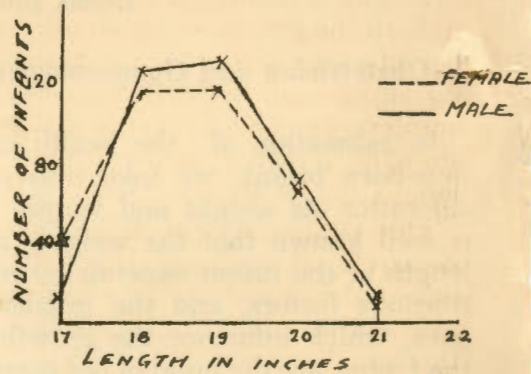
GRAPH I
WEIGHT OF NEW BORN INFANTS

THE WEIGHT OF MAXIMUM NUMBER OF FEMALE AND MALE INFANTS VARIED FROM 6LB.-7LB. IN A TOTAL OF 700 INFANTS THE MALE INFANTS EXCEEDED IN WEIGHT THE FEMALE INFANTS BY 124.



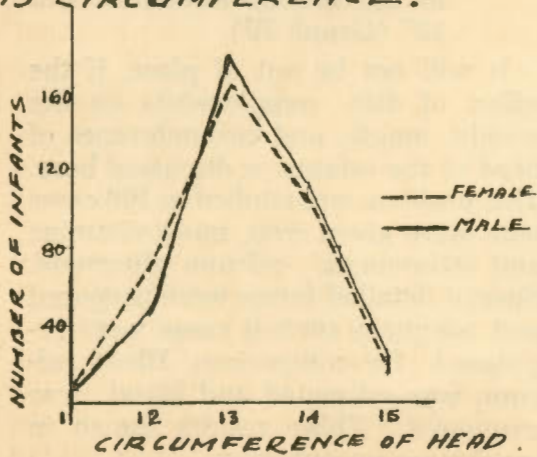
GRAPH II
LENGTH OF NEW BORN INFANT.

THE LENGTH OF THE MAXIMUM NUMBER OF INFANTS WAS 18-TO-19 AND MALE INFANTS HAD MORE LENGTH THAN FEMALE INFANTS.



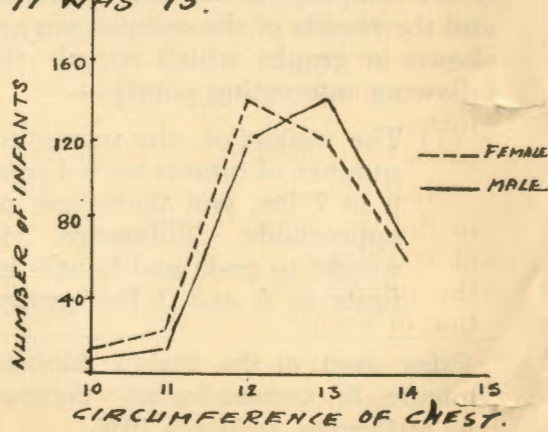
GRAPH III
CIRCUMFERENCE OF HEAD

THE CIRCUMFERENCE OF HEAD OF MALE AND FEMALE INFANTS WAS NEARLY THE SAME AND THE MAXIMUM NUMBER HAD 13" CIRCUMFERENCE.



GRAPH IV.
CIRCUMFERENCE OF CHEST

THE CIRCUMFERENCE OF CHEST WAS LESS IN FEMALE INFANTS THAN IN THE MALE INFANTS IN 140 FEMALE INFANTS IT WAS 12" AND IN 140 MALE INFANTS IT WAS 13".



1. The weight of the maximum number of infants of research group was 7 lbs. as compared to 6 lbs. in the control group (Graph V).

2. The length of the maximum number of infants of research group was 19" as compared to 18" in the control group (Graph VI).

3. The circumference of the head in both the groups in maximum number of cases was 13", and there was no appreciable difference in the circumference of head, in research group showing increase in the weight and length of the infant (Graph VII).

One is quite aware of the fact that research on a much larger scale is essential to avoid illusions from these over-enthusiastic results obtained in this small series.

The effect of diet in pregnancy in animals is shown by Wallace by experiments and he has proved that there is no effect of feeding, in earlier months of pregnancy, on the size of lambs, but the effect is markedly seen, according to the level of feeding, in the second half of pregnancy.

Burk has found close relation between the diet and foetal conditions, including the birth weight, and he says that the usual teaching, that the foetus will not suffer until the mother is very much undernourished and the foetus will be developed at the expense of its mother, is wrong.

Neal Edwards has mentioned, that in the last Bengal famine, the effect of starvation was seen in weight of the infants, and the average reduction of weight was by 5.5%.

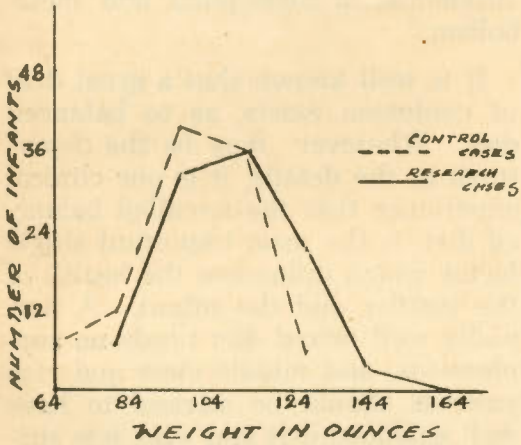
To ascertain the exact influence of maternal nutrition on the weight and length of the foetus is obviously im-

possible, because of so many variable factors in the control cases. Aleck Bourne has rightly mentioned that "Nutritional experiments only begin when the weighed diet is eaten. It is an essential preliminary step, but so often the survey stops short of measurements of absorption and metabolism."

It is well known that a great deal of confusion exists, as to balanced diet. Whatever may be the departures in the details, it is our clinical experience that the so-called balanced diet, is the most important single factor which influences the health of the mother and the infant. A normally well mixed diet needs no supplements, and middle class and rich patients should be advised to have well balanced diet and very few supplements, as many women in this group do not like milk and have not taken it. But it is a different story with poor class patients attending the free hospitals. Many of them cannot afford to have sufficient amount of milk, meat, vegetables and fruit and a few are actually starving. In such patients, it is very useful to find some way to supply them with the essential tonics within their means so that at least their children will have a good start. If one or more important nutritional factors are lacking in the food for years, it is bound to give rise to pathological conditions, and these are manifested during the stress and strain of pregnancy. These women are ailing with minor troubles throughout pregnancy and produce an underweight infant, which is always a bad start for the child, the future generation. Even we of the present generation of India cannot

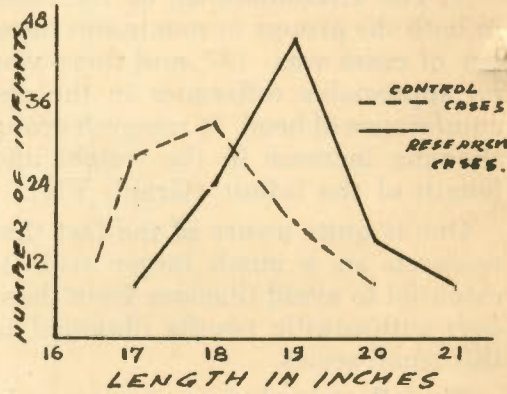
GRAPH V.

THE WEIGHT OF THE MAXIMUM NUMBER OF RESEARCH CASES WAS 7 LB, AND OF THE CONTROL CASES WAS 6 LB.



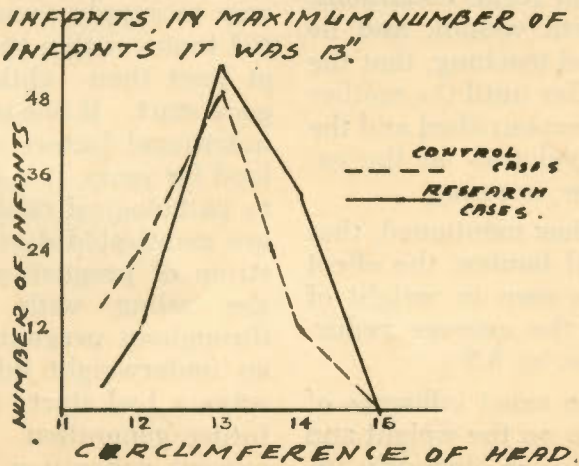
GRAPH VI.

THE LENGTH OF THE MAXIMUM NUMBER OF RESEARCH CASES WAS 19" AS COMPARED TO 18" OF THE CONTROL CASES.



GRAPH VII
CIRCUMFERENCE OF HEAD

THERE WAS NO DIFFERENCE IN THE CIRCUMFERENCE OF THE HEAD IN RESEARCH CASES WITH INCREASE IN WEIGHT AND LENGTH OF THE INFANTS, IN MAXIMUM NUMBER OF INFANTS IT WAS 13"



boast of being as healthy as those of western countries.

During the years 1951-52, the weight of the maximum number of new-born infants in Maharaja Tukoji-rao Hospital, Indore, was about 5 lbs. and during 1952-53 it was 5½ lbs. Weak infants were a problem, as infant mortality rate was high. Conditions improved in 1953-54, probably due to ante-natal care and advice in diet supplements, and the weight of the maximum number of new-born infants rose to 6½ lbs. The idea was to improve the health of the infants and it is definitely seen from the results, that the health of the infants of the cases that had the diet supplements, was improved on the whole. This is found

in the whole of the research group, so it cannot be a coincidence or accident. It is worth while trying this experiment on a large scale, as poor patients are so much benefitted by very small extra-expenditure of about Rs. 10-15 per case. Even nutritious diet will cost more than this.

Thanks are due to my staff members and especially to Miss K. R. Hingorany and Miss S. Arora, for the team work, without which it would not have been possible to undertake the study of this problem.

I would like to thank the following companies: Albert David, Burroughs Wellcome, Alta Laboratories and T.C.F., for their kind co-operation by donating the costly medicines necessary for this study.