

NUTRITION AND MATERNAL HEALTH

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Introduction

The twentieth century has witnessed tremendous technical progress culminating in man's conquest of space and his landing on the moon. However, despite these achievements, some of the worst forms of malnutrition are haunting mankind even today. Poorly nourished mothers give birth to small infants whose neonatal, perinatal and infant mortality rates are alarming. While there is scientific evidence for the favourable effects of birth spacing and reduced family size on child health and survival, there is no knowledge regarding the role of nutrition on the reproductive capacity, gestational age, delivery, duration of labour, birth spacing and previous pregnancies. The present study aimed at gathering information regarding these aspects.

Materials and Methods

The following details related to past and present pregnancy were collected for 945 poorly fed and 891 well fed mothers.

Mean food and nutrient intake

Through a three day food weighment survey the food intake was found out for selected cooperative mothers and the nutritive value was calculated by using the figures given in the Nutritive Value of Indian Foods' by Gopalan *et al*¹.

Assessment of gestation age

Data was collected on the gestation weeks. The mothers were requested to recall the last menstrual period and one week was omitted as the non-ovulation period and gestation weeks calculated at the time of delivery. Advice was taken from the gynaecologist regarding foetal maturity at the time of delivery.

Obstetric performance

The obstetric performance of the expectant mothers was studied with reference to the duration of labour, type of delivery and complications if any at the time of delivery.

History of previous pregnancies

The performance of the mother in her previous pregnancies with reference to total number of pregnancies, miscarriages, still births and neonatal and infant mortality cases were collected with a view to assess the performance of the mothers in the earlier pregnancies.

Recording details on birth spacing

Details on birth spacing between two children were collected from both the groups of mothers.

Results and Discussion

Mean nutrient intake

Mean nutrient intake of the mothers in the two groups are presented in Table I.

TABLE I Mean Nutrient Intake of the Mothers

Nutrients	Groups		RDA ICMR (1980)
	Poorly fed N - 66	Well fed N - 54	
Energy (K.cal)	1549	2300	2500
Protein (g)	43	62	55
Calcium (mg)	505	1038	1000
Iron (mg)	26	51	40
Retinol (mcg)	394	822	750
Thiamine (mg)	1.35	1.32	1.30
Riboflavin (mg)	0.62	1.46	1.40
Vitamin C (mg)	76	131	50

A comparison of the mean nutrient intake of the two groups of mothers reveals that the nutrient intake was grossly inadequate with respect to all the nutrients for the poorly fed mothers and inadequate only slightly (-5 per cent) with respect to energy alone in the well fed group.

Gestation age

Table II presents the mean and range

of weeks of gestation for male and female infants born to the two groups of mothers

Delivery took place before 36 week of gestation for 30.9 per cent (15.4+15.5 of the poorly fed mothers, against 15 per cent of cases of premature births in the well fed group. For female babies gestation period appeared to be slightly longer specially in the poorly fed group. Eighty five per cent of the

TABLE II Mean and Range of Gestation Period of Expectant Mothers

Weeks of gestation	Poorly fed				Well fed			
	Male		Female		Male		Female	
	N	%	N	%	N	%	N	%
Below 36 weeks	67	15.4	79	15.5	24	5	35	10
36 weeks and above	369	84.6	430	84.5	425	95	315	90
Total N	436	100	509	100	449	100	350	100
Mean gestation period	36		37		38		38	

TABLE III Duration of Labour

Groups	3-6 hours	6-9 hours	Above 10 hours
<i>Poorly fed</i> Primipara (%)	14.1	72.9	12.9
2nd or 3rd Para (%)	33.6	64.2	2.2
<i>Well-fed</i> Primipara (%)	17.9	71.4	10.7
2nd and 3rd Para (%)	17.5	77.5	5.0

mothers could correctly recall their weeks of gestation.

Maternal deaths

Among the 945 poorly fed mothers eight died in the process of labour pain and delivery. The main causes of death were infective hepatitis, severe toxemia and tetanus as reported by gynaecologists. This amounts to 0.8 per cent of maternal deaths. There were no maternal deaths among the well-fed group.

Nature of delivery

Delivery was normal for 78 and 88

per cent of the mothers in the poorly fed group and well fed group respectively. Forceps and Caesarian were noted among 5.8 and 6.7 per cent poorly fed cases and 6.7 and 5.3 per cent well fed mothers. Thus the nature of delivery appeared to be independent of the food intake though complications of nutritional origin (eclampsia) and non-nutritional origin appeared among poorly fed mothers alone.

Duration of labour

In an effort to relate the food intake with the duration of labour data was collected on the time taken for delivery,

TABLE IV Birth Spacing of Expectant Mothers

Birth interval in months	Poorly fed		Well fed	
	*N	%	*N	%
Below 12 months	354	41.2	33	4.4
12 - 24 months	483	56.1	368	49.8
24 months and above	23	2.7	341	45.8
Total N	860	100	742	100
Mean Values		11.2		21.7

* Excluding primipara.

TABLE V Factors Modifying the Inter Birth Intervals

Factors	Number mentioning	Per cent
<i>Poorly fed</i>		
Female children not educated and hence got married soon	596	69.3
Responsibility to keep the husbands happy	97	11.2
Nuclear families	112	13.0
High rate of infant mortality	318	36.9
Ignorance of facts regarding family planning methods	145	16.8
Could not afford other social activities or entertainment	22	2.5
<i>Well Fed</i>		
Female children being educated resulting in late marriages	115	15.5
Being with the parents for 3-6 months after delivery	660	88.9
Low infant mortality	713	96.1
Adequate knowledge about family planning methods	185	24.9
Both husband and wife having enough social activities to engage themselves	275	37

from the mothers whose infants were alive. Table III presents the duration of labour.

While the duration of labour appeared to be similar between the two groups for the primipara, the mothers in the well fed group undergoing the second and third para of pregnancy appeared to present a longer duration of labour which may either be due to the heavier

babies they delivered or due to the stature of the mothers.

Birth spacing

Table IV highlights the birth spacing between the previous child and the present pregnancy among the mothers.

The mean birth spacing in the present study for inadequately fed group of mothers was only 11.2 months against 21.7

months in the well fed group. Birth spacing was below 12 months for 41.2 per cent of the mothers in the poorly fed group against only 4.4 per cent in the well fed group.

Factors modifying the inter birth intervals

Table V presents the list of factors modifying the inter birth intervals.

These above mentioned factors decided the inter birth interval among the mothers.

History of previous pregnancies

A pregnancy wastage of 19.8 per cent was observed among the poorly fed group against only three per cent registered by the well fed mothers. The miscarriages, still births, neonatal deaths and infant mortality were 2.4, 5.1, 6 and 6.2 per cent respectively in the poorly fed against

0.4, 0.6, 1.7 and 0.2 per cent in the well-fed group.

Summary and Conclusions

Details regarding the food and nutrient intake, gestation age, obstetric performance, history of previous pregnancy, birthspacing, maternal deaths, nature and duration of delivery and factors modifying inter birth intervals were studied. Mothers who had a better food and nutrient intake appeared to have a better obstetric performance, fuller gestation period, less failures in previous pregnancies, better birth spacing and lower maternal deaths.

These results bring out the urgent need to give high priority to programmes aimed at improving the nutritional status of population groups with special reference to expectant mothers.

REFERENCE

1. Gopalan, C., Rama Sastri, B. V. and Balasubramanian, S. C. (1930) Nutritive value of Indian Foods, National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.