



## Study Of Serum Protein Profile Of Bengalee Hindu Women Of West Bengal During Pregnancy And Lactation

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**ABSTRACT-** Energy requirement during pregnancy and lactation is greatly increased. There is increased maternal body metabolism. During these periods dietary protein requirement is greatly increased for the rapid growth of the foetus and placenta. Protein and vitamin deficiencies are common feature in pregnant women belonging to lower socioeconomic group. As malnutrition is a major problem in India, hence the study is done. **Materials and methods :-** 40 antenatal mothers in each trimester (total 120 antenatal mothers) and 80 lactating months (40 in 1-3 month and another 40 in 3-6 months post partum period. 40 Healthy non pregnant women served as control.

### **Aims**

Estimation of serum protein profile in pregnancy and lactation period in Bengalee Hindu women of West Bengal. This may be a useful guide for assessment of malnutrition during pregnancy and lactation. This may be an important guide for proper development of foetus during pregnancy and baby during lactation and also be helpful for prevention of maternal morbidity due to malnutrition.

**Result –** TSP level significantly increased during 1<sup>st</sup> & 2<sup>nd</sup> trimester.

SA increased in 1<sup>st</sup> trimester.

SG increased in all the three trimesters.

In lactation period.

SA decreased and SG level significantly, increased during lactational period.

**KEY WORDS :-** TSP, SA, SG, Malnutrition, pregnancy, Lactation.

Received 29 Jun, 2018; Accepted 14 July, 2018 © The Author(S) 2018. Published with open access at [www.questjournals.org](http://www.questjournals.org)

### **I. INTRODUCTION**

Energy requirements during pregnancy and lactation is greatly increased, much of the energy requirement in pregnancy and lactation is associated with high food consumption (1). There is increased maternal body metabolism (2). During these periods dietary protein requirement is also increased for rapid growth of the foetus and placenta (3). Protein and vitamin deficiencies are common feature in pregnant women belonging to lower socioeconomic groups. Socioeconomic status affects serum protein concentration (4). Protein status is usually assessed by measuring level of Total serum protein (TSP), Albumin (SA) and Serum Globulin (SG) (5). It is a biosynthetic function of liver. A direct relationship of quantity and quality of dietary proteins with decreased plasma proteins in cases of protein malnutrition has been reported and maternal malnutrition may be aggravated by pregnancy (6). Variations in the level of serum proteins may occur between racial groups under physiological and pathological conditions (7,8,9).

The pattern so far reported are not complete agreement with each other (10, 11). We report changes in serum protein pattern in consequence to advancing gestation and lactational period in Bengalee Hindu women, as malnutrition is a major problem in India – hence the study. Estimation of protein level may be a useful guide for supplementation of proteins during pregnancy and lactation.

## II. MATERIALS AND METHODS

120 primigravidae and 80 lactating mothers attending antenatal and postpartum unit of OPD were the cases. They were between 22-30 years of age having normal past menstrual history, normal past medical and surgical history. There was no history of Jaundice, anemia, oedema. Apparent nutritional status was good. BP was within normal limit (120/70 mm of Hg). 40 nonpregnant healthy women within the same age group served as control.

Among 120 pregnant mothers, 40 antenatal mothers were selected for each trimester. Lactating mothers were divided into 2 groups (40 post natal mothers were in each group) :

1<sup>st</sup> group : 1-3 months after child birth and 2<sup>nd</sup> group : 3-6 months after delivery. History taken to ensure normal and uninterrupted breast feeding to one child only. Serum total protein and albumin was estimated by Biuret reagent and Bromocresol green respectively using standard kit in the semiautoanalyzer machine Transasia. Serum Globulin was estimated by subtracting serum albumin from total serum protein.

## III. RESULT:

**Table-ASTP, SA & SG in study Population during pregnancy.**

	STP Mean ± SD	SA Mean ± SD	SG Mean ± SD
Group A (N=40)	6.82±0.20	3.93±0.09	2.9 ±0.22
Group B (N=40)	7.08 ± 0.24	4.12 ± 0.09	3.06 ± 0.2
Group C (N=40)	7.49 ± 0.12	3.85 ± 0.78	3.58 ± 0.14
Group D (N=40)	6.94 ±0.29	3.88 ±0.11	3.13 ± 0.3

Group A-Control, nonpregnant healthy women.

Group B- Pregnancy in 1<sup>st</sup> trimester.

Group C- Pregnancy in 2<sup>nd</sup> trimester.

Group D- Pregnancy in 3<sup>rd</sup> trimester.

**Table –A1 Statistical analysis**

	TSP	SA	SG
Gr A vs B	<0.001	<0.001	<0.001
Gr A vs C	<0.001	>0.05	<0.001
Gr A vs D	>0.05	>0.05	<0.001

<0.001 – Significant

**Table – B STP, SA & SG in study population during lactation**

	STP Mean±SD	SA Mean±SD	SG Mean±SD
A	6.82 ± 0.26	3.93 ± 0.18	2.9 ± 0.22
B1	7.15 ± 0.28	3.77 ± 1.15	3.44 ± 0.3
C1	7.1 ± 0.13	3.75 ± 0.19	± 0.23

A- Control, non pregnant healthy women.

B1 -Lactational period (1-3 months after delivery)

C1 – Lactational Period (3-6 months after delivery)

**Table B1 Statistical analysis**

	STP	SA	SG
Gr A vs B1	<0.001	<0.001	<0.001
Gr A vs C1	<0.001	<0.001	<0.001

\*P values were done by student's t- test.

#### IV. DISCUSSION AND CONCLUSION

Table A shows STP, SA & SG level in comparison with the control group and A1 shows its statistical analysis. TSP in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> trimester of pregnancy was  $7.18 \pm 0.24$ ,  $7.49 \pm 0.12$  and  $6.94 \pm 0.29$  respectively as compared with the control  $6.82 \pm 0.26$ .

SA level were  $4.12 \pm 0.09$ ,  $3.85 \pm 0.78$  and  $3.88 \pm 0.11$  in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> trimester respectively where as in control group  $3.93 \pm 0.18$ . SG level in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> trimester was  $3.06 \pm 0.2$ ,  $3.58 \pm 0.14$  and  $3.13 \pm 0.3$  as compared with control group  $2.9 \pm 0.22$ . Table B shows Serum protein profile in Lactational period upto 6 months after delivery as compared with control non pregnant women and B1 be its statistical analysis. STP was  $7.15 \pm 0.28$  and  $7.1 \pm 0.13$  as compared with the control group  $6.82 \pm 0.26$ . SA level decreased during lactational period  $3.77 \pm 0.15$  and  $3.75 \pm 0.19$  as compared with control  $3.93 \pm 0.18$ . SG level increased from  $2.9 \pm 0.22$  in control and  $3.44 \pm 0.3$  and  $3.22 \pm 0.23$  in lactational period. In our study TSP is significantly increased in 1<sup>st</sup> and 2<sup>nd</sup> trimester significantly. This increase may be due to increase in metabolic need of mother and developing foetus. SA level is increased in 1<sup>st</sup> trimester but insignificantly decreased in 2<sup>nd</sup> and 3<sup>rd</sup> trimester. SG level is increased in all the 3 trimesters.

In lactational period –

SA level significantly decreased and SG level significantly increased during lactational period compared with the controls. Decrease in TSP in 3<sup>rd</sup> trimester due to haemodilution, there is significant increase in SA in 1<sup>st</sup> trimester but NO significant change in 2<sup>nd</sup> and 3<sup>rd</sup> trimester. SG level is increased significantly in all the three trimesters. In lactation – SA is significantly decreased and SG is significantly increased in lactation.

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B. Mukhopadhyay, Mds" Study Of Serum Protein Profile Of Bengalee Hindu Women Of West Bengal During Pregnancy And Lactation." *Quest Journals Journal of Medical and Dental Science Research* 5.4 (2018): 04-06.