SUMMARY AND CONCLUSION

Phase I

Screening for thyroid dysfunction

- Screening of pregnant women for thyroid dysfunction during early gestation revealed that 28% women were at low risk (TSH >2.5 mIU/l) and 5.5% women were at high risk (TSH >5.0 mIU/l) of developing hypothyroidism.

Phase II

Dietary intake of pregnant women

- Calorie and protein intake of pregnant women was quite low, which resulted in low weight gain (5.4 kg) during entire pregnancy.

Iron status

- Mean hemoglobin during first, second and third trimester indicated moderate IDA. Prevalence of IDA during first, second and third trimester was found to be very high (I-97.26%, II-94.52% and III-91.78%). An improvement in mean hemoglobin and iron status was found with advancing gestation.

Iodine status

- Median urinary iodine during first, second and third trimester showed adequate intake by the population. Prevalence of iodine deficiency during first, second and third trimester was found to be low (I-23.29%, II-30.14% and III-19.18%). An increase in median urinary iodine levels was found from first to second trimester, while from second to third trimester a minor decrease was found which was non-significant. With urinary iodine data we can presume that median urinary iodine levels more or less remained same during pregnancy with slight fluctuations.

Thyroid dysfunction

- Mean TSH, FT4, TT4 and TG were falling under normal range (adult reference value). Thyroid dysfunction was found in 32.88%, 43.84% and 31.51% during first, second and third trimester respectively. There was an increase in mean TSH, FT4 and TG with advancing gestation; however FT4 decreased from first to second trimester and then increased from second to third trimester. These fluctuations in FT4 levels could be due to changing concentrations of TBG during entire pregnancy.

Importance of trimester specific reference intervals

- Different trimester specific reference intervals results in different prevalence of thyroid dysfunction. With method 1, most of the pregnant women were falling under normal category, with method 2, most of pregnant women were found to have hypothyroidism and with method 3 most of pregnant women were found to have hypothyroxinemic. Hence choosing a right method is very important.

Impact of KAP

- Knowledge of pregnant women regarding two major micronutrients (iodine and iron) was poor.
- A positive impact of NHE was found with respect to Knowledge, Attitude and Practices of pregnant women regarding iodized salt.

Food frequency

- Consumption of iron rich foods, vitamin C rich foods and non vegetarian food items were not appreciable.

Maternal and child health indicators

- Maternal health indicators and performance indicators for maternal health services revealed a better status and performance than NHFS 3 findings.
- Colostrums feeding and exclusive breast feeding was done by almost all women. Child care indicators reveal that as time

progressed mothers became careless in availing immunization services for their child.

Phase III

Screening of neonates

- Raised CBTSH was found in 12.60% neonates and low CBFT4 was found in 9.25% neonates.
- Respite a low weight gain by pregnant women, mean birth weight was above normal. However, mean gestational age was found to be 35.57 weeks; this low mean gestational age could be due to wrong reporting of last menstrual period by pregnant women.

Phase IV

Postpartum status of women

- Dietary intake of women during lactation was even poorer than during pregnancy.
- Like pregnancy, moderate IDA was also found during lactation.
- Median urinary iodine levels during lactation indicated adequate iodine intake by the population.
- There was a huge difference in prevalence of thyroid dysfunction during pregnancy and postpartum period. Most of women became normal after pregnancy. This indicates that these women were not able to maintain euthyroid state during pregnancy.
- After comparing 2 diagnostic tests for testing hypothyroidism; 1) with TSH upper limit as 2.5 and 2) with TSH upper limit as 5.0, we found that method 1 had better sensitivity, specificity and positive predictive value.
- Mean hemoglobin, FT4 and TG were found to be highest during postpartum period. After pregnancy there was a slight fall in mean TSH and TT4, which is indicative of reversibility of pregnancy induced changes in thyroid status.

Infant status

- Median urinary iodine of infants indicated adequate iodine intake and none of the infants were found to have urinary iodine levels below normal value.
- Overall nutritional status of infants was found to be below normal, this could be due to poor dietary intake of their mothers during pregnancy and lactation. However, their status with respect to under nutrition and wasting was improved from six months to twelve months but recovery in case of stunting and head circumference for age was not observed, thereby indicating compromised brain development and therefore lower IQs as the child grows.

Impact of DFS supplementation

- There was a significant increase of 0.22 g/dl in hemoglobin in experimental group, while in control group there was a significant decrease in hemoglobin of 0.17 g/dl. Median urinary iodine increased by 78 μg/l ($p<0.05$) in experimental group and in control group it decreased by 16 μg/l ($p=0.964$).
- It can be concluded that, DFS helps in sustaining iron and iodine levels in lactating women. DFS, if supplemented from the adolescent period till twelve months postpartum, along with modifications in dietary habits, will improve the iron and iodine status of women during the most critical periods of their life, that is, pregnancy and lactation.

Effect of thyroid dysfunction during early gestation on infant development

- A significant difference of 0.2 and 0.4 was found between mean BDSTI scores of both groups (with thyroid dysfunction and with normal thyroid function) at 6 months and 12 months respectively.
- This difference is an indicator of effect of early gestation thyroid dysfunction on mental and psychomotor development of the infant.