

Assessment of Dietary Intake of Overweight/obese Pregnant Women belonging to upper SES residing in North-West Delhi: A Longitudinal Observational Study

Ms. Priyanka Arora
Department of Nutrition
Institute of Home Economics
University of Delhi



RATIONALE/OBJECTIVE

- Good maternal nutrition is crucial for optimal feto-maternal health. Inadequate maternal diet which is deficient in essential nutrients cannot provide required nutrition to the growing foetus (Mousa et al 2019) and can result in increased risks of intra-uterine growth restriction (IUGR), LBW, preterm birth, prenatal and infant mortality and morbidity.
- Excess of calories and macronutrients during pregnancy may be just as damaging as their deficiency, especially among overweight and obese women, thereby increasing the risk of miscarriage, diabetes, pre- eclampsia along with obesity and type 2 diabetes among their children in adulthood (Catalano et al 2015, Bruce et al 2013).
- Since, overweight/obese is often recognised as “*over-nourished*,” dietary intake of obese population is neglected during their pregnancies.
- Increase in prevalence of maternal obesity in South-Asians countries in recent years is worrisome, henceforth, present study was planned to assess dietary intake among affluent overweight/obese pregnant women residing in North-West Delhi.

METHODS

Longitudinal Observational Study

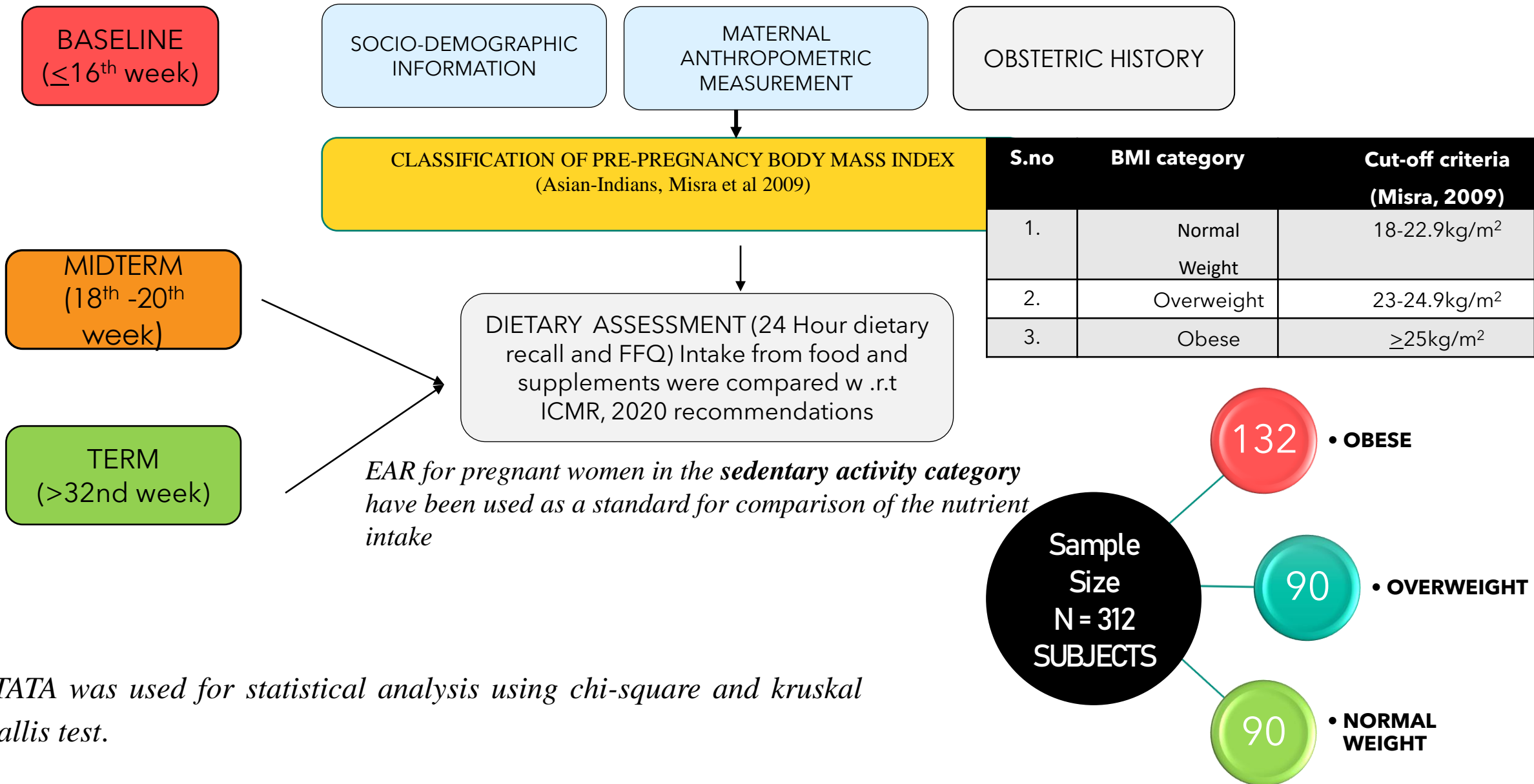


Purposive Selection Sample

INCLUSION CRITERIA	EXCLUSION CRITERIA
Pre-pregnancy Body Mass Index ≥ 18 Kg/m sq.	Age >40 years
Aged ≥ 18 years	Women undergoing Assisted Reproductive Technique
Willing to take part in the study	Physically challenged and cognitive impaired (epilepsy, bipolar disorder or any other mental disorder)
Registration at ≤ 12 th week of gestation	Subjects residing outside Delhi, NCR
Middle to Upper Socio-economic Strata	

Sample size was calculated on basis of prevalence of primary outcome of present study i.e., *macrosomia* (10.8%) among the Asian Indian pregnant women attending urban maternity centers in Chennai, India (Mahalakshmi et al 2016). The sample size was computed was using the formulae as follows: (Basu et al 2015), $N = t^2 \times P(1-p)/m$ square. t = level of confidence (90%), p = Prevalence of the macrosomia (10.8%), m = margin of error (5%). Thus, sample size was calculated as 300.

Figure: Study Design

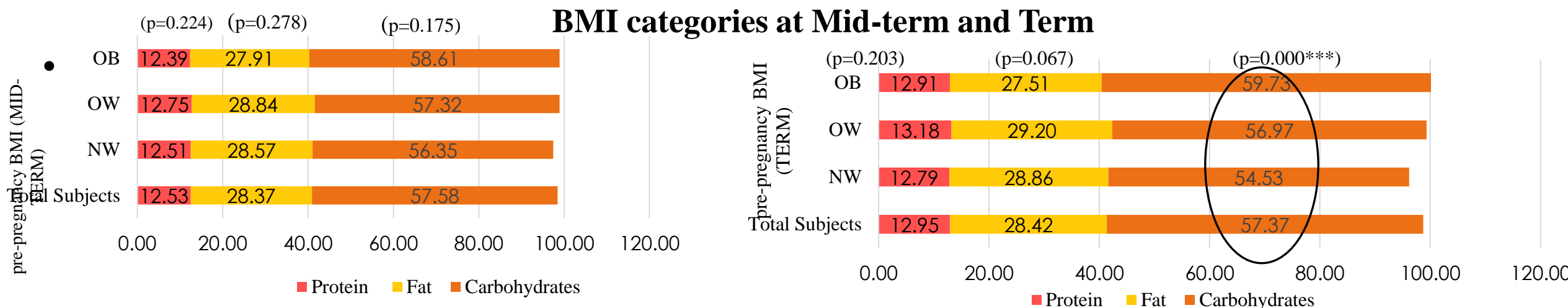


STATA was used for statistical analysis using chi-square and kruskal wallis test.

Results : Maternal characteristics and Dietary assessment

- There was a significant relationship among age, employment and BMI categories where in higher percentage of OB and OW subjects had age of 30 or more than NW subjects and more than half of OB subjects were housewives than other weight categories.
- Higher prevalence of abortions were recorded among OB (20%) subjects than other study groups (OW:16%, NW:11%) indicating about their poor obstetric history.

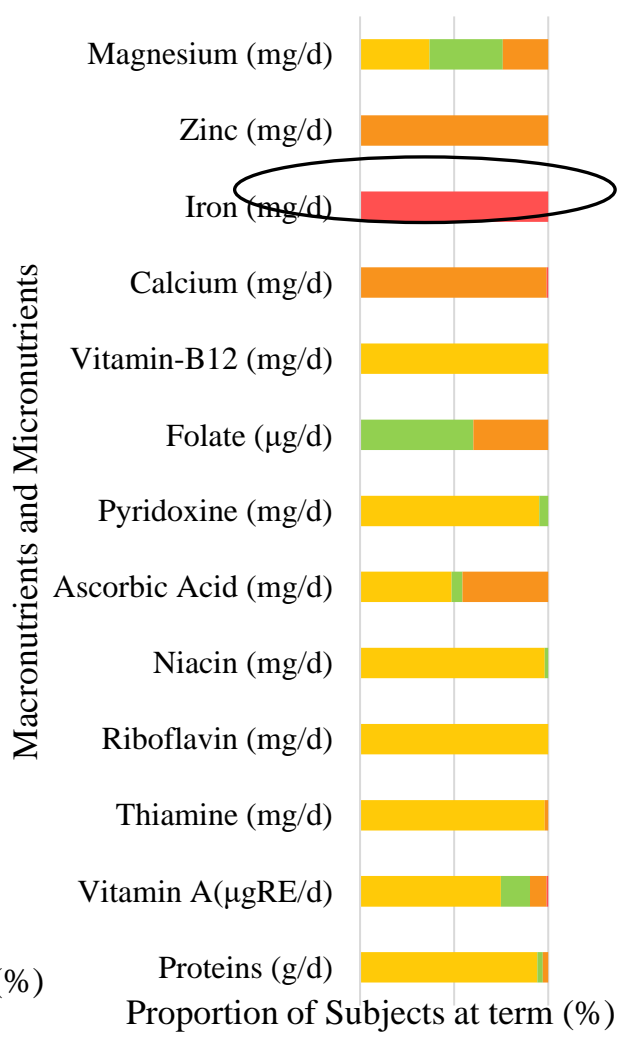
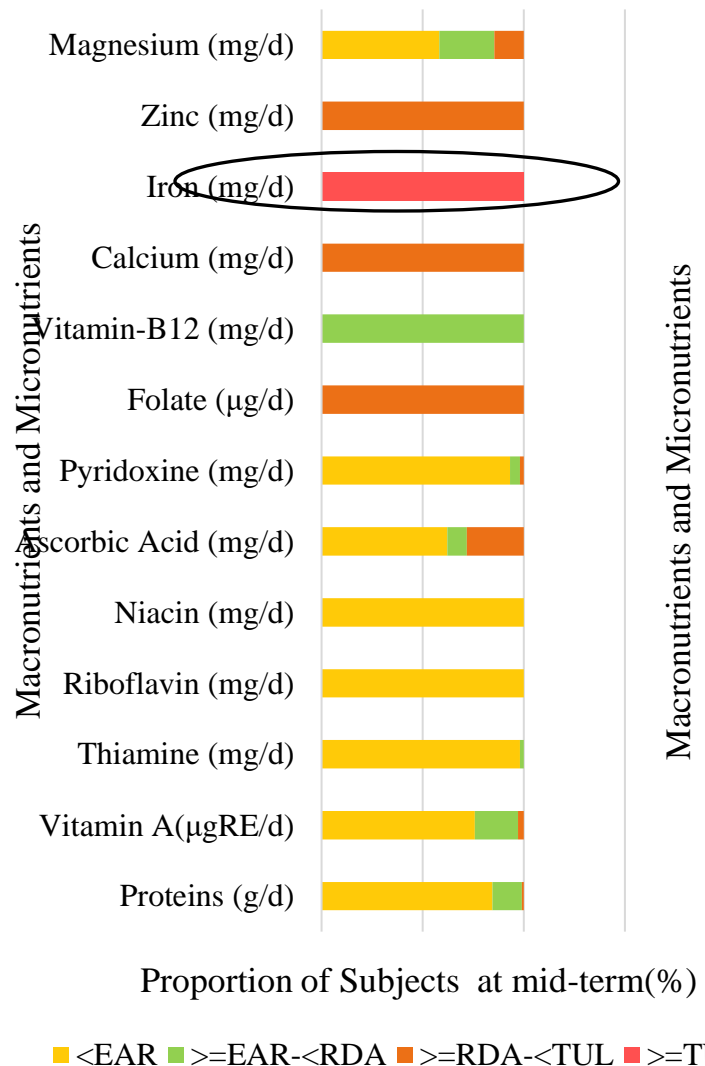
Percent energy from carbohydrates, protein and fats across different pre-pregnancy



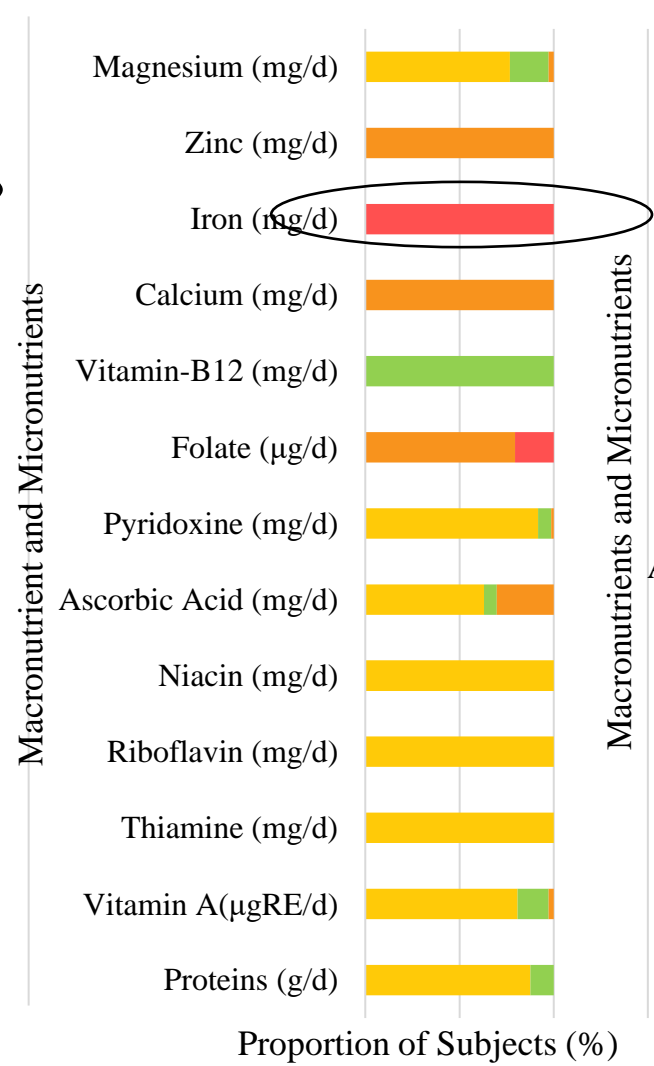
Percent energy consumed from proteins and fat was almost similar among all three study groups at mid-term and term both. The variations were only observed in carbohydrates wherein OB and OW subjects had consumed higher percentage of energy from carbohydrates. Data pertaining FFQ also indicated they OB and OW subjects had laid more emphasis on simple carbohydrates, refined cereals and processed food such as biscuits, bread, chips, kulchas, packed juices.

Distribution of subjects based on their Macronutrient Intake at mid-term and term

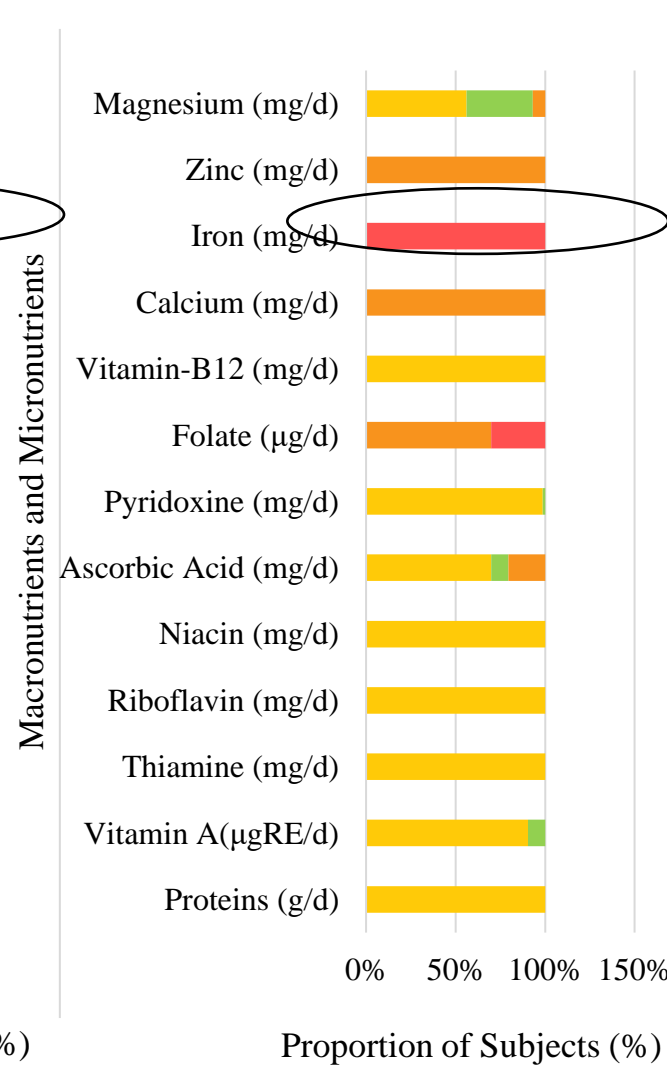
Variables			Pre-pregnancy BMI categories			p-value
Nutrient	Estimated adequate requirement (EAR)	Recommended dietary allowance (RDA)	OB (N=103)	OW (N=69)	NW (N=73)	
MID-TERM						
Energy (Kcal/d)	2010	-	1505.29±150.8	1454.52±87.76	1414.89±147.97	0.020*
Protein (g/d)	45.1	57.4	45±5.93	47.26±4.36	39.42±6.04	0.059
Carbohydrates (g/d)	-	-	225 ±24.13	223±28.38	205.12±81.06	0.697
Total Fat (g/d)	-	-	47 ±7.34	48.52±7.67	40.14 ±8.53	0.093
TERM						
Energy (Kcal/d)	2010	-	1655.78±185.40	1492±79.72	1478.23 ±85.02	0.799
Protein(g/d)	57.2	72.3	52±11.81	47.52±3.84	46.32 ±4.37	0.333
Carbohydrates(g/d)	-	-	260 ±31.2	215.58±34.63	211 ±33.92	0.000***
Total Fat (g/d)	-	-	48 ±9.54	48.62 ±7.59	44.68 ±7.43	0.382



OBESE/OVERWEIGHT SUBJECTS at MID-TERM and TERM



NORMAL WEIGHT SUBJECTS at MID-TERM and TERM



POLICY IMPLICATIONS

- Most maternal nutrition policies in South Asian countries are geared towards reducing under-nutrition.
- Results of current study underscore to expand antenatal care programmes to address overweight/obesity.
- Interventional studies are warranted to determine adequate dietary intake for overweight/obese pregnant women which can help to manage excessive weight gain, combat micronutrient deficiencies, and achieve positive pregnancy outcome.

