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MATERNAL COMPLICATIONS AND NUTRITIONAL ASSESSMENT DURING PREGNANCY IN THE AREAS OF KIMS HOSPITAL, VISAKHAPATANAM

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Abstract: *Pregnancy, also called as gestation. It is the time when one or more offspring develop inside a woman. Multiple pregnancies involve more than one foetus such as twins or triplets etc. Pregnancy occurs by sexual intercourse but can also through assisted reproductive technology procedures. Gestation in singleton pregnancies lasts an average of 40 weeks (280 days) from the first day of the last menstrual period to the estimated date of delivery. In the past, the period from 3 weeks before until 2 weeks after the estimated date of delivery was considered "term''. Mostly the pregnancy related complications are considered to be resolved by the end of pregnancy outcomes or very soon after the delivery. Also if women experience any sever complications in their first pregnancy; there may be a high risk for second pregnancy in future. There are many complications during pregnancy namely the age factor, that is below 20 above 35, BMI before conceiving (underweight, obese) these in turn lead to anemia, hypertension, gestational diabetes mellitus, thyroid problems, poly cystic ovarian disease, loss of pregnancy, multiple pregnancy etc. The study was designed to understand the concept of health and health indices popularly used. The present study was an observational study which was carried out in Kim's hospital sheelanagar in Visakhapatnam, Andhra Pradesh. The sample was collected during the period of 45 days the total number of 100 samples was taken. The study was designed to investigate the complications during pregnancy in pregnant women in the age group of 20 – 35 in maximum and rare cases of teen pregnancies and aged pregnancies that is above 35years of age. The study includes women with age specification from 17 – 46 and those who are pregnant and women who entered third trimester were considered. The primary data was collected by using questionnaire and interview method. Questionnaire was framed with questions of general information like name, age, income, occupation, family history. The anthropometric measurements, biochemical parameters, clinical symptoms, dietary intake assessment were all included and the counseling was done according to the health condition of each pregnant women.*

Keywords: *pregnancy, hypertension, gestational diabetes mellitus, poly cystic ovarian disease, thyroid problems.*

1. INTRODUCTION:

Pregnancy, also called as gestation. It is the time when one or more offspring develop inside a woman (5). Multiple pregnancies involve more than one fetus such as twins or triplets etc (6). Pregnancy occurs by sexual intercourse but can also through assisted reproductive technology procedures (7). Gestation in singleton pregnancies lasts an average of 40 weeks (280 days) from the first day of the last menstrual period to the estimated date of delivery. In the past, the period from 3 weeks before until 2 weeks after the estimated date of delivery was considered "term'' (1). Mostly the pregnancy related complications are considered to be resolved by the end of pregnancy outcomes or very soon after the delivery (2-4). Also, if women experience any sever complications in their first pregnancy; there may be a high risk for second pregnancy in future. There are many complications during pregnancy namely the age factor, that is below 20 above 35, BMI before conceiving (underweight, obese) these in turn lead to anemia, hypertension, gestational diabetes mellitus, thyroid problems, poly cystic ovarian disease, loss of pregnancy, multiple pregnancy etc.

OBJECTIVES:

1. The main objective of the study is
2. To understand the concept of health and health indices popularly used.
3. Understand physiological changes in pregnancy.
4. Get acquainted with growth and development changes from conception till delivery and for one year.

2. METHODOLOGY:

The present study was conducted on an observational method from the department of gynecology in KIMS hospital, Sheelanagar, Visakhapatnam. The study was designed to assess the nutritional status of pregnant women attending for op and general checkup (frequently). The targeted age group between 20 – 35years in maximum and rare cases of teen pregnancies and aged pregnancies that is above 35years of age. The total number of samples were recorded as 100. A structured questionnaire was developed to gather all the primary data age, gender, socio economic status and nutritional status. Interview was also scheduled and diet counseling was given to the samples.

The inclusion criteria of the samples are women with age specification from 17 – 46 and those who are pregnant. Women who entered third trimester were considered. The exclusion criteria was women who are aged be above 47 years and non-pregnant. Women who are in their first and second trimesters were excluded. The main objective of the study is to find out how many women are facing complications during pregnancy in a population. All the data regarding socio economic status like monthly income, education, physical activity, occupation was recorded. Anthropometric measurements like height and weight were taken and BMI was calculated to categorize the grades of obesity. Clinical assessment, samples were interviewed on physical examination and related problems and it's been recorded.

Dietary assessment samples were interviewed on consumption of food by using 24hour recall method, food questionnaire was recorded. Patterns of consumption of food, likes and dislikes were noted. Addictions

like drinking alcohol, cigarette smoking and physical activity were noted down. The primary data was entered in Microsoft Excel spread sheet, and the variables were analyzed by using mean and median.

3. RESULTS:

A hospital-based study observed in 100 samples with complications during pregnancy with the age limit of 20- 35 years, in the gynecology department of KIMS hospital.

3.1 Socio-economic background:

The age group of 20-25 is 41%, the age group of 26-30 is 39%, 31-40 are 15% and 3% of 40-46 years and they are 2% of teen pregnancies. The distribution of families in the population is there is a greater number of Middle-Income Group (MIG) families with 87%, Low Income Group (LIG) families with 9% and High-Income Group (HIG) with 4%. The percentage of pregnant women who are employee is 13% and who are home makers are 87%. The literacy rate is the percentage of pregnant women who has done till primary education are about 23%, secondary education is about 56% and higher education are about 21%.

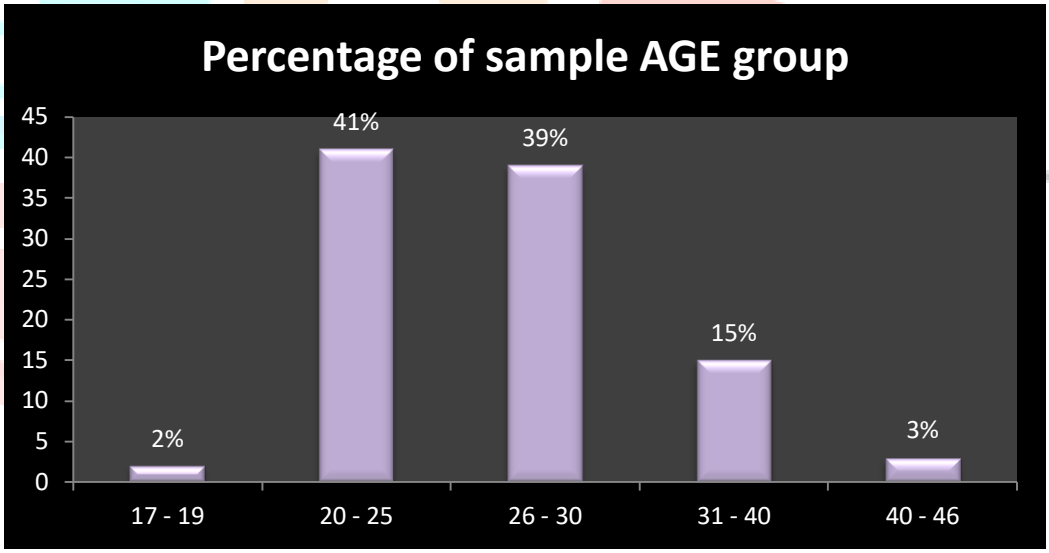

Fig: 1. Percentage of age distribution among the samples.

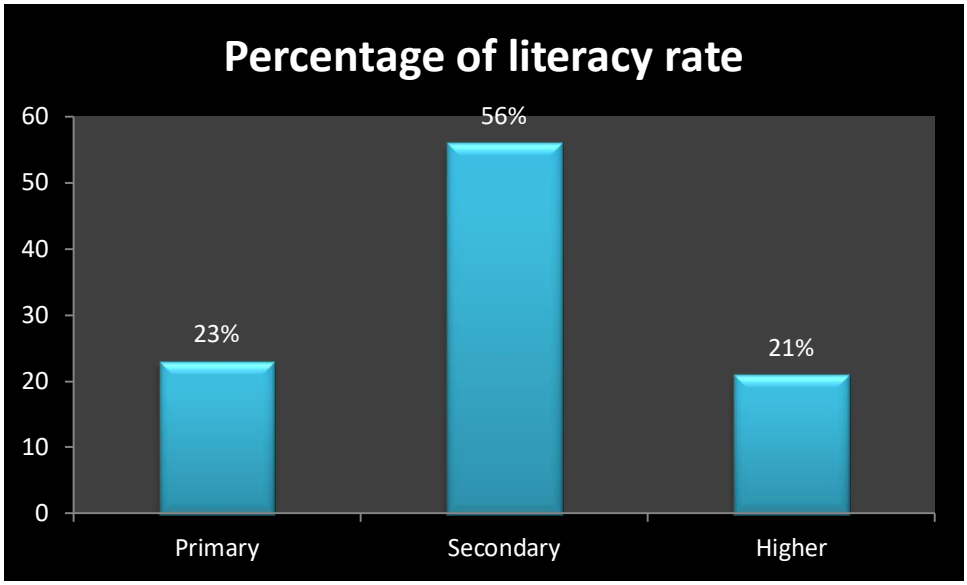

Fig: 2. Percentage of literacy rate in the sample.

3.2 Risk factors for pregnancy complications:

There are 72% of people with healthy weight, 23% of people are with overweight, 3% are obese and 2% are in underweight. There are 94% of pregnant women are normal and 6% women are with oedema. The haemoglobin percentages of people who are in normal range are 35%, iron deficient is 32% and anemic are 33%. There are 27% of mild anaemic women, 9% of moderately and 3% of severe anaemic pregnant women. The T3 and TSH levels are 99% normal and only 1% are high. The T4 levels are 65% normal and 35% high which shows hyperthyroidism.

The percentage of pregnant women with normal BP are about 13%, 77% are in low BP and 10% are high BP condition. The percentage of pregnant women with normal RBS levels are in 60%, 23% are in low level and 17% are in high level. The serum electrolyte level in the population are the sodium percentage of pregnant women who are in normal range are 66%, 17% are in low levels and 17% are in high levels. The percentage of pregnant women with normal potassium levels are 53%, 41% are in high level and 6% are in low levels. This helps in preventing the hypertensive condition and many major problems later in pregnancy.

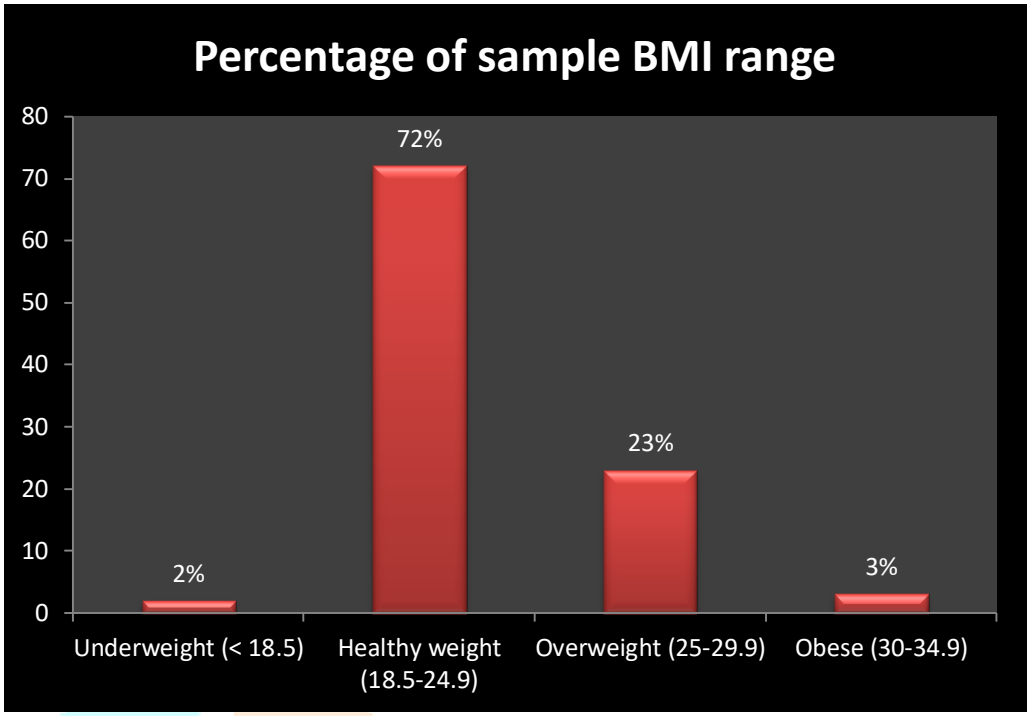

Fig: 3. Percentage of sample BMI range

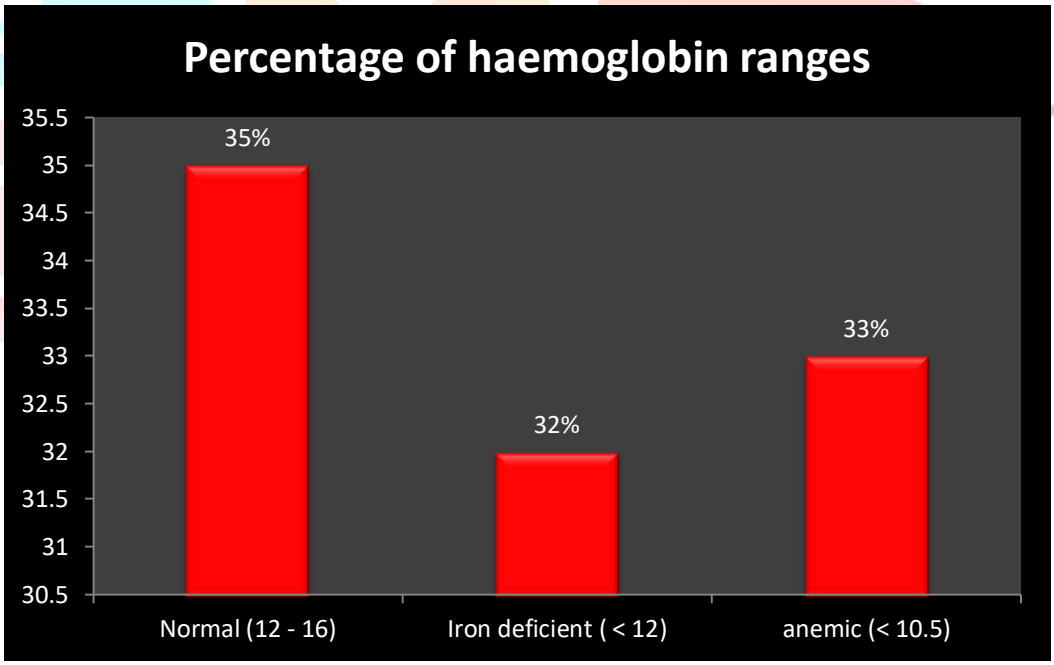

Fig: 4. Percentage of haemoglobin ranges

Table: 1. DISTRIBUTION OF ANAEMIC PERCENTAGE

ANAEMIC	PERCENTAGE
Mild anaemic (10 – 10.9)	27
Moderate anaemic (9 – 10)	9
Severe anaemic (<9)	3

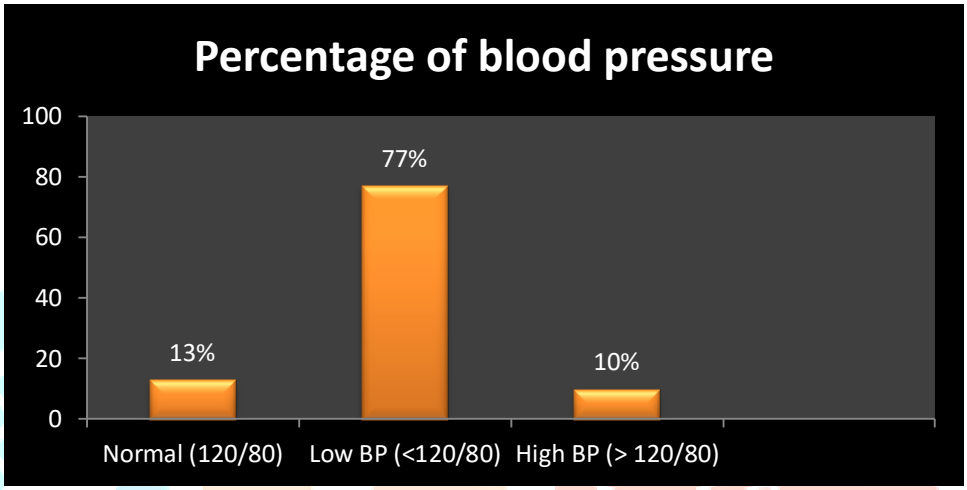

Fig: 5. Percentage of Blood Pressure (BP) in the sample

Table: 2. DISTRIBUTION OF COMPLICATIONS DURING PREGNANCY

COMPLICATIONS	NO. OF PEOPLE
PCOD	6
AMNIOCENTESIS	3
GDM	17
PRECLAMPSIA	10
HYPERTHYROID	35
ANAEMIA	39

From the above table there are 6% pregnant women with PCOD (Poly Cystic Ovarian Disease), 3% are having chromosomal disorders where amniocentesis is not clear, Gestational Diabetes Mellitus (GDM) are 17%, preeclampsia is 10%, there are 10% who are having both hyperthyroid and anemia and in total are 35% hyperthyroid and 39% anemic.

3.3 Dietary assessment and physical activity:

Table: 3. Food frequency

FOOD GROUPS	Daily	1-3Days/ week	Weekly	Monthly twice	Monthly	Never
Rice	100					
Wheat	62	32	6			
Vegetables	78	22				
Fruits	36	42	22			
Chicken/ Meat		43	14	15	10	8
Fast foods	7	42	13	8	30	
Smoking						100
Alcohol					1	99

From the above table the consumption of rice is 100% in daily; wheat is 62% daily, 32% thrice a week, and weekly 6%; vegetables 78% daily, 22% thrice a week; fruits 36% daily, 42% thrice a week, 22% weekly; chicken / meat 43% daily, 14% weekly 15% monthly twice 10% monthly, 8% never; fast foods 7% daily, 42% weekly thrice, 13% weekly, 8% monthly twice, 30% monthly; smoking 100% never; alcohol 99% never and 1% monthly.

The energy requirement for a pregnant woman is as follows

Energy (1900kcal + 350 extra kcal/day); Protein (55g + extra 23g/day); Fat(30g/day); Vitamin-A (Retinol-800mcg Beta-carotene 6400mcg/day); Vitamin-C (60 mg/day); Vitamin-D (400 IU/day); Vitamin-E (10mg/day); Vitamin B-12 (12mcg/day); Folic acid (500 mcg/day); Calcium (1200mcg/day); Iron (35mg/day); Zinc (12mg/day); Iodine (175mcg/day); Magnesium (310mg/day). Foods that are to be avoided are raw (unpasteurized) milk, partially cooked egg, raw eggs, butter, dalda, fried foods, ice cream, chocolate drinks excess, simple sugars (jam, honey), pickles and papad, raw papaya and spicy food, avoid tobacco, alcohol, caffeine, and carbonated drinks, avoid eating nonfood substances such as clay, starch, and baking soda.

Table: 4. Consumption of protein, calcium and iron rich foods.

PERCENTAGE	PULSES/ NUTS	MILK / EGG	GLV / FISH
1 time a day	88	49	36
1-3 days / week	12	51	64
Never	0	0	0

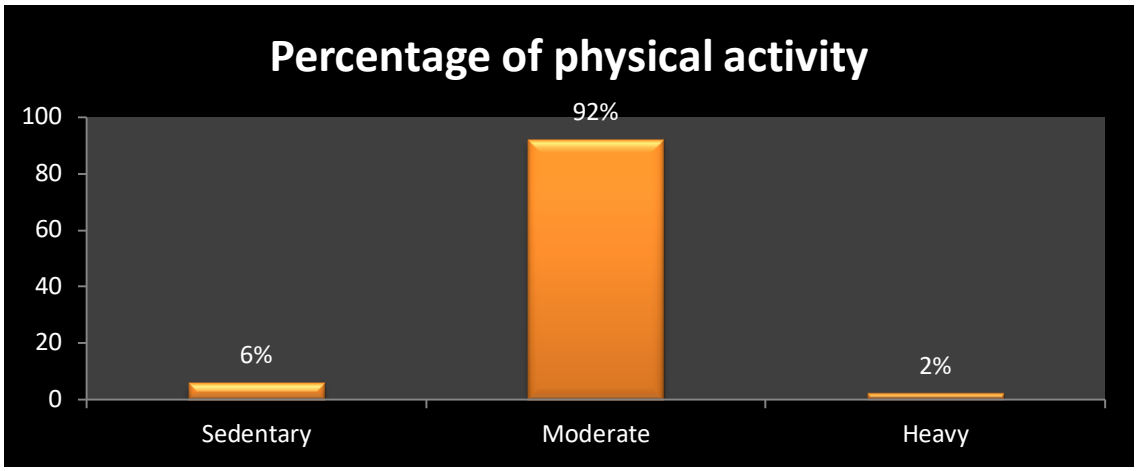

Fig: 6. Percentage of physical activity

4. DISCUSSION:

Carlo Belleni (2016) The best age for pregnancy and undue pressures, university hospital, Siena, Italy. Women's mean age of first-time pregnancy increased from 21 to 25 years in the 40 years after 1970, with a decrease of mothers younger than 20 years of age, and a sensible increase of those older than 35. Thus, delayed childbearing leads to many complications. (16)

Leticia Ribeiro et al, (2018) Obesity, gestational weight gain, and birth weight in women with gestational diabetes: the LINDA-Brasil (2014-2017) and the EBDG (1991-1995) studies, the authors compared data of 2362 women from the Lifestyle Intervention for Diabetes Prevention After Pregnancy study (LINDA) to those of 359 women from the Estudo Brasileiro de Diabetes Gestational study (EBDG). In LINDA women presented higher pregestational BMI (30.3±6.5 vs. 24.6±4.4kg/m^2) and were frequently obese (46.4 vs. 11.1%) compared to those of the EBDG. In the EBDG, gestational weight gain was larger (11.3±6.1 vs. 9.2±7.6kg) and rates of small for gestational age higher (7.5 vs. 4.5%) compared to LINDA. Improvement in gestational weight gain and rate of small for gestational age occurred over time in gestational diabetes mellitus pregnancies, accompanied by a worsening in maternal weight profile. So this conveys that it is important to avoid gestational weight gain and maintaining adequate weight before conception. (17)

Davison JM; (1997) in the article, Oedema in pregnancy. During normal pregnancy total body water increases by 6 to 8 liters, 4 to 6 liters of which are extracellular, of which at least 2 to 3 liters are interstitial. At some stage in pregnancy 8 out of 10 women have demonstrable clinical edema. (18)

Anthony Wemakor (2017) in the article Prevalence and determinants of anaemia in pregnant, Ghana, the study involving 400 pregnant women receiving antenatal care. The mean age 28.3 yrs and 10.81 g/dl respectively. About 50.8% were anaemic and the prevalence of anaemia increased with pregnancy trimester. The socio-demographic, dietary, the women's knowledge on anaemia and pregnancy trimester were low to women of the highest anaemia knowledge, women with lowest anaemia knowledge were about 3 and 2 times more likely to be anaemic respectively. (19)

Peter Anlaakuu & Francis Anto, (2016) pregnant women seeking antenatal care at the Sunyani Municipal Hospital. Out of the 316 participants, 129 (40.8%) were found to be anaemic (Hb <11.0 g/dl) at the time of their first ANC visit (mean Hb: 11.21 g/dl, range 6.8–15.1 g/dl). Seventy-nine (61.2%) of them had mild anemia (Hb 9.0–10.9 g/dl), 48 (37.2%) had moderate anemia (Hb 7.0–8.9 g/dl) whilst 2 (1.6%) had severe anemia (Hb <7.0 g/dl). (20)

Klein et al (2003), Iodine is an essential component of the thyroid hormones, triiodothyronine (T3) and thyroxine (T4), produced by the thyroid gland. The certainty of mild and overt hypothyroidism among pregnant women, who found a serum TSH level greater than 6 mIU/L in 2.5% (49 of 2,000) of women at 15–18 weeks gestation. Overt hypothyroidism (an elevated serum TSH plus a T_4 2.5 was present in 0.3% of women. Glinoer found an elevated serum TSH concentration in 2.2% of 1,900 pregnant women. (21)

Monique M. Hedderson, Assiamira Ferrara, et al; (1998) in the article High Blood Pressure Before and During Early Pregnancy Is Associated with an Increased Risk of Gestational Diabetes Mellitus. The prevalence of pregnancy induced hypertension was 33 (7.9%); of which 5 (15.2%) were gestational hypertensive, 12 (36.4%) were mild pre eclampsia, 15 (45.5%) were severe pre eclampsia and 1 (3%) eclampsia. (22)

Sally K. Hinman, MD, PhD, Kristy B. Smith, MD, et al; (2015) Exercise in Pregnancy - A Clinical Review. Benefits of exercise in pregnancy include reduction in Cesarean section rates, appropriate maternal and fetal weight gain, and managing gestational diabetes. Exercise as a means of preventing gestational diabetes, preeclampsia, or perinatal depression cannot be reliably supported. Women with a normal BMI (18.5-24.9 kg/m^2) should gain 11.5 – 16 kg, whereas overweight (BMI 25-29.9 kg/m^2) and obese (BMI >30 kg/m^2) women should aim to gain 7 – 11.5 kg and 5 – 9 kg, respectively. However, moderate- and high-intensity exercise in normal pregnancies is safe for the developing fetus and clearly has several important benefits. Thus, exercise should be encouraged according to the woman's preconception physical activity level. (23)

5. CONCLUSION:

This study concludes that there is more amount of anemic pregnant women with 39% then comes with hyperthyroid, GDM, preeclampsia, PCOD and chromosomal disorders. The main reason for such complications is improper diet pattern and lack of proper knowledge on pregnancy and its requirements. There is more than one complication in some pregnant women and some are with border line complications. The average of BMI before pregnancy is 23.7 and median is 23.8 which show that all are moderately healthy. The average level of haemoglobin is 11.2 and median is 11.25 it implies the pregnant women are in border line for iron deficiency and anemic. There are 6% of women with oedema Dietary intake is usually similar to all of the pregnant women in consuming of cereals, wheat, vegetables, fruits, and chicken/ meat but there are 8 vegetarian women who does not consume non vegetarian except egg. But in all of these the consumption of fast foods is 42% in weekly thrice and everyone are in favour to those which results in hormonal imbalance problems like Poly Cystic Ovarian Disease (PCOD). So the counseling was given to every pregnant woman in intake of good nutritious food and moderate exercise. Egg and milk are advised to take daily at daily basis and some diet modifications

are done to reduce the problem of hyperthyroid by reducing cruciferous vegetables like cabbage, cauliflower, soy etc. for oedema salt intake is advised in very minimal amounts. The PCOD and GDM can be reduced through slight exercise and so advised without any foetal disturbances. To overcome the anaemic condition pregnant women are advised to take dried beans, fortified grains, GLV and importantly vitamin-C rich foods like orange juice, citrus fruits etc for better absorption of iron.

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