

## A Comprehensive review on : Study on Preconception Counseling on Pregnancy outcomes and Maternal health

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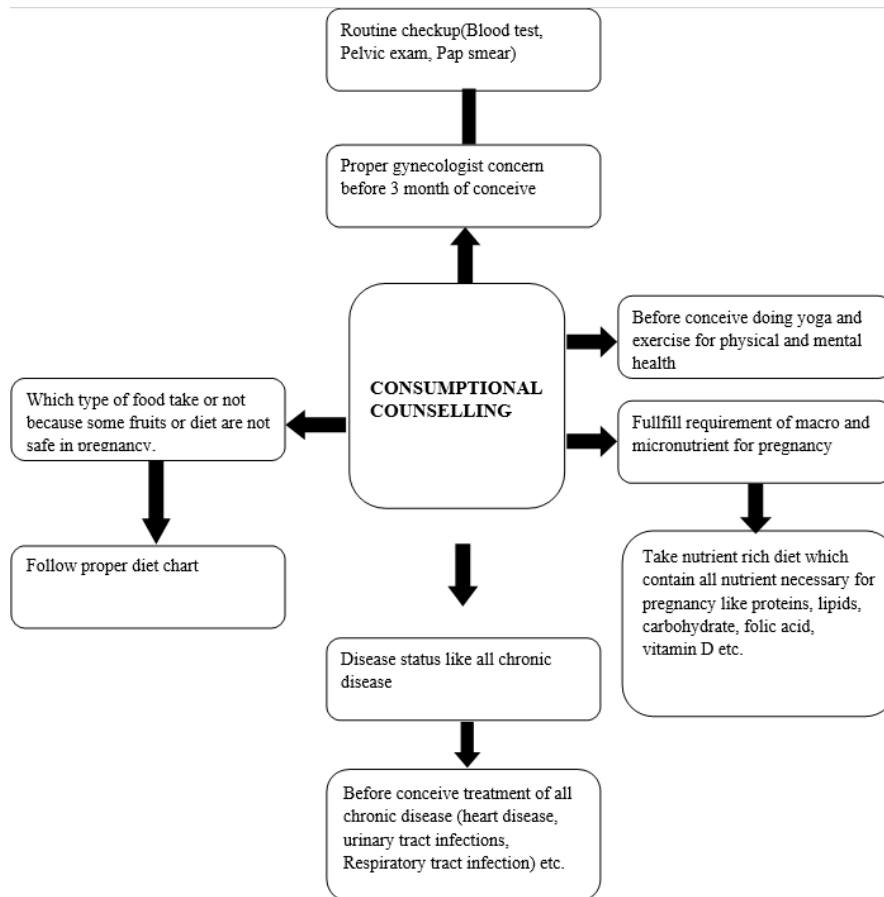
### ABSTRACT

Good reproductive health of mother is a very important factor for viable pregnancy. So preconception counseling before pregnancy is a very necessary. It involve disease history, change lifestyle, providing education to the women before pregnancy. It help to decrease impermanency of gravid and infants. It also involve emotional, social and environmental factor. The risk of maternal and fetal problems is higher for women with long-term medical issues. Women who suffer from certain illnesses during pregnancy are more likely to miscarry. PCC is a common method of pregnancy planning. With the help of PCC avoid deficiency of macro and micronutrient in pregnancy. It prevent spontaneous abortion, stillbirth, seizures, decline in the birth rate, C section, deep vein thrombosis. It is very helpful for disease free and healthy pregnancy.

**Keywords:** Viable pregnancy, disease, impermanency, gravid, infants, spontaneous abortion, stillbirth

### 1. INTRODUCTION

It is a guideline given to the couple on all aspects of planning and preparing a healthy pregnancy, mother health, nutritional requirements which affects the growth and development of baby.<sup>11</sup> Preconception counseling is a education related to the interpose, risk factor which can effect to the pregnancy, reduce risk of poor maternal health.<sup>8</sup> It involve history of pregnant lady(Genetic disease) and treatment of disease before pregnancy.<sup>17</sup> It decreases maternal and infant motility<sup>2</sup>. Preconception counseling give disease free and wellness pregnancy.<sup>6</sup> Healthy reproductive system is very important for mother and child.<sup>13</sup> Woman ages 18-45 commonly found disease like COPD, diabetes, blood pressure, leprosy, tuberculosis and conceive in disease because women do not know about obstetric complications.<sup>4</sup> So preconception counseling is very necessary .India is a developing country where women's do not have knowledge about pregnancy specially in rural area due to which the women here face a lot of problems during pregnancy .<sup>12</sup>



### Things to keep in mind before pregnancy-

Before pregnancy treatment of all chronic disease is a important step

Meditation should be done thoroughly for mental health.<sup>50</sup>

Exercise should be done thoroughly for physical health.<sup>50</sup>

Do not take any kind of stress.<sup>50</sup>

If overweight than it should be controlled.<sup>25</sup>

Healthy diet should be taken to prepare for pregnancy.<sup>25</sup>

Should not consume any kind of intoxicant like tobacco, alcohol<sup>29</sup>

Talking to gynecologist before pregnancy.

In preconception counseling medical staff like gynecologist, nurse, pharmacist fully counsel the women before conceiving.<sup>38</sup>

### Complications in pregnancy when women are suffering from following disease

**Hypertension**-It is one of the most common disease can cause the unsolved problem in perinatology. Preconceptional counselling can help to decrease maternal and embryonic mortality and morbidity.<sup>40</sup> Hypertension is a condition in which increase systolic and diastolic blood pressure from range. ACE inhibitors should be avoided in pregnancy.<sup>40</sup>

Normal range of blood pressure-120/80mmHg<sup>18</sup>

Risk factor of Hypertension include-<sup>39</sup>

Obesity

High Sodium intake

Lack of exercise

Coronary artery disease

Drinking high alcohol

Family history

Low potassium diet

**Hypertension related adverse maternal and perinatal consequences are**

Premature separation of placenta from separation, liver disease, oedema, increase rate of c-section, premature birth, excessive bleeding after childbirth(postpartum haemorrhage)

**Polycystic ovary syndrome**-Among women of reproductive maturity PCOS is one of the most prevalent endocrine disorder.<sup>37</sup> It is the primary reason for anovulatory infertility. PCOS increase complications in pregnancy and even affect the newborn's birth weight.<sup>36</sup> The majority of women with PCOS encounter related issues, like anovulation, oligomenorrhea, uncheerful, worry.<sup>36</sup> The most popular form of treatment for women with PCOS is a change in lifestyle, which includes dietary, exercise, and behavioral modifications.<sup>27</sup>

**Polycystic ovary syndrome related adverse maternal and perinatal consequences are**<sup>27</sup>

Miscarriage

Maternal diabetes

Abnormal cell growth in the endometrium

Pregnancy induced hypertension

**Cystic fibrosis**-It is a genetic disease that affects the pancreas, lungs and other organ.<sup>33</sup> It is a most common genetic disorder.<sup>20</sup> The cystic fibrosis transmembrane chloride channel in epithelial cells is abnormally affected by the gene deficiency on chromosome 7, which causes viscous discharges in glandular organs.<sup>21</sup> Cystic fibrosis related diabetes affects more than 60% of female with CF.<sup>21</sup> It may be more difficult for women with Cystic fibrosis related diabetes to regulate their blood sugar levels during pregnancy, which could lead to issues for both the mother and the unborn child.<sup>20</sup>

**Obesity**- It is the most common problem in world's populations. Sleep and grief disorders, diabetes mellitus, and coronary heart disease are all linked to obesity.<sup>19</sup> If your body mass index is 30 kgm-2 or higher, you are considered obese.<sup>6</sup> Obesity is a worldwide epidemic caused by a combination of genetic predisposition, increased availability of high-energy foods, and decreased physical activity.<sup>6</sup>

**obesity related adverse maternal and perinatal consequences are**<sup>19</sup>

Miscarriage

Pregnancy related diabetes

Dystocia

Post partum hemorrhage

Perinatal death

C section delivery

Maternal thromboembolism

**Gestational diabetes mellitus**- It is defined as carbohydrate intolerance. It is diabetes during pregnancy. Another possible cause of hyperglycemia during pregnancy is pre-existing diabetes mellitus that makes pregnancy more difficult.<sup>28</sup> Reduce the insulin response in gestational diabetes due to  $\beta$  cell malfunction. After delivery, defective insulin secretions typically continue, It is very high risk pregnancy.<sup>48</sup>

**Risk factor**-Obesity, PCOD, Hypertension, Heart disease, Family history, Vaginal infection<sup>28</sup>

**Gestational diabetes mellitus adverse maternal and perinatal consequences are**

Fetal macrosomia(large body size in the newborn)

Fetal hypoglycemia

C-section delivery

Maternal hypertension and renal disorder

Urinary tract infections

Maternal hyperbilirubinaemia

## Respiratory disease

**Asthma:** Asthma is a most common disease which may cause serious infection in pregnancy. In asthma patient has difficulty in breathing.<sup>45</sup> In asthma patient may feel dyspnea. Dyspnea is a condition in which patient may feel difficulty in breathing.<sup>44</sup>

**Asthma adverse maternal and perinatal consequences are**<sup>20</sup>

Preclampsia

Premature birth

Seizures

Maternal respiratory failure

Maternal barotrauma

**Pneumonia-**It is a infection disease that cause inflammation in lungs. The main reason for inflammation is fluid is fill in air sacs that may cause cough with pus, fever, chills. Patient may feel dyspnea.<sup>20</sup> The main cause of pneumonia is *Streptococcus pneumoniae*, *Mycoplasma pneumonia*.<sup>47</sup>

**Pneumonia adverse maternal and perinatal consequences are**<sup>47</sup>

Low birth weight

Premature birth

**Tuberculosis:** Tuberculosis ia a chronic systemic disease. It is caused by bacteria known as *Mycobacterium tuberculosis* bacteria.<sup>20</sup> Bacteria primary effect the lungs but it can spread any part of the body.<sup>46</sup>

**Tuberculosis adverse maternal and perinatal consequences are**

Abortion

Increase intra abdominal pressure

Suboptimal weight gain

## 2. FACTORS WHICH MAY INFLUENCE THE PREGNANCY

**Caffeine:** Avoid excessive amount of caffeine in pregnancy. Caffeine cross placental barrier and reaches the fetus.<sup>35</sup> High amount of caffeine cause miscarriage, premature birth.<sup>29</sup> Caffeinated foods like tea, coffee, cocoa, cola should be avoided.<sup>35</sup>

**Smoking:** Smoking should avoided in pregnancy it cause poor pregnancy outcome.<sup>29</sup> Smoking contains tobacco.<sup>41</sup> Tobacco is a very dangerous for fetus. High amount of smoking cause fetus damage, premature birth, adverse infants outcomes, infant death, placental abruption.<sup>30</sup>

**Avoid teratogenic Medications:** Lots of medications are avoid in pregnancy because lots of medicines cross placental barrier and reaches in fetus and cause serious complications in baby. This is known the teratogenic effect.<sup>43</sup> Do not any kind of medicine without doctor permission.<sup>42</sup>

**Alcohol consumptions;** Alcohol consumption in pregnancy cause premature babies, still birth, FAS(fetal alcohol spectrum) disorder. <sup>29</sup>Alcohol easily cross the placental barrier and cause the teratogenic effect the foetus and also effect the foetus growth and development.<sup>30</sup> So in pregnancy alcohol consumption should be avoided.

**Exercise, yoga and meditation:** in a duration of pregnancy lady is suffering from physical and mental changes.<sup>31</sup> Anxiety is high during the birthing process. Meditating and practicing yoga are very helpful for cultivating a good outlook and for reducing the symptoms of stress, anxiety, insomnia, and depression.<sup>29</sup> According to health guidelines, pregnant women can participate in physical activity on a regular basis.<sup>26</sup> Yoga is very beneficial for conceiving before pregnancy.<sup>26</sup>

**Taking nutrient rich diet:** It is very important to take a nutrient rich diet before or during pregnancy.<sup>5</sup> Disorders occouring during pregnancy like gestational diabetes, preterm birth, obesity related complications, gestational hypertention, preeclampsia can be avoided by following a nutrient rich diet.<sup>31</sup> The diet should be such that it is rich in micro and macronutrient.<sup>34</sup>

**Nutritional requirements-**Growth and health of fetus depend on nutritional condition of the mother

**Protein requirements-**Protein is very important macronutrient for growth and development of foetus. It is very essential for structural and functional growth. And also the source of energy. Protein source food use in pregnancy whole grains, milk, legumes.<sup>23</sup> Protein supplement powder should not be given during pregnancy. Protein range in pregnancy 75-110 g/day.<sup>25</sup>

**Fats and essential fatty acids-** Essential fatty acid is very important for child development. Mother can take from diet because human body can not synthesised in our body.<sup>24</sup> It is very essential for fetal and neonatal growth.

**Carbohydrate-**In pregnancy the carbohydrate is very important for energy source.<sup>25</sup> Diet of carbohydrate depends on obesity.<sup>22</sup> Lady who are obese or have to history of type 2 diabetes mellitus are suggest to take less carbohydrate diet.<sup>23</sup> Carbohydrate have important role for maintain glucose and lipid metabolism.<sup>23</sup> It is very important for foetus brain development.<sup>22</sup>

**Folic acid-** It is very important and prevent any congenital abnormalities. It prevent the neural tube defects and important for the development of the brain.<sup>7</sup>

Dose-0.5miligram after the 3 month the pregnancy.<sup>23</sup> It prevent the macrocytic anemia. ICMR recommend total 480 microgram/day in pregnancy.<sup>7</sup>

**Calcium and vitamin D-** It is very important for muscular skeletal development of the baby and in the most of the cases womens are suffering from the deficiency of vitamin D3. Need of calcium for growth of fetus 25-30g<sup>23</sup>

**Vitamin C-** Vitamin C supplement are not needed before or after pregnancy. Vitamin C is very important for the development of tissue, skin and organs of the fetus.<sup>25</sup> Vitamin C deficiency can be compensated by following diet. We get vitamin C mostly from citrus fruit like orange juice, straw berries, bell peppers.<sup>23</sup>

**Iron-** Before conceiving hemoglobin count should be more than 10g/dL. If hemoglobin count is less than 10g/dL, the chances of having anemia during pregnancy.<sup>25</sup> Iron supplement are taken to increase hemoglobin count. Iron is also available from diet. Iron from food comes in two form heme and non heme forms.

Heme form- Meat like red meat, sea food.<sup>23</sup>

Non heme iron-Plant food like grains, nuts, seeds, bean, lentils, broccoli.<sup>23</sup>

**List of Macro and Micronutrient and their effect on pregnancy**

Macro and Micronutrient	Effects from deficiency	Source from diet	Daily Requirement in pregnancy	References
<b>Folic acid and iron</b>	Spontaneous abortion, still birth, prevent neural tube defects	Heme form- Meat like red meat, sea food. Non heme iron-Plant food like grains, nuts, seeds, bean, lentils, broccoli.	Iron 30-60 mg/day in pregnancy Folate- 600 µg/day	Mousa Aya 2019
<b>Vitamin D</b>	Increase risk of preeclampsia, gestational diabetes, spontaneous abortion, physical deformity, rickets	Milk, cheese, yogurt,	200-600 IU/day	Garner Christine 2017
<b>Calcium</b>	Preeclampsia, premature delivery, low birth weight, poor fetal growth	Cheese, milk, yogurt, dairy products	250 mg/day	Garner Christine 2017
<b>Iodine</b>	Maternal and neonatal hypothyroidism	See weed, milk, cheese, yogurt,	220mcg /day	Garner Christine 2017
<b>Vitamin A</b>	Preterm delivery and maternal anemia, night blindness	Yellow and dark vegetables like carrots, kale, sweet potatoes	770µg/day	Mousa Aya 2019
<b>Vitamin C</b>	Pre eclampsia, high B.P with inflammation of hands, feet, and face	orange juice, straw berries, bell peppers.	60 mg/day	Mousa Aya 2019

<b>Carbohydrate</b>	Retardation of fetus brain growth	Fruits , vegetable, whole grains	175 g/day Fiber intake 28 g/day	Xue lamei 2024
<b>Protein</b>	Decrease embryo growth, embryonic loss, miscarriage, decrease child growth after birth.	Legumes, grains, nuts	1.1 g/kg/day	Elango Rajavel 2016

### 3. RESULT

In most the cases unplanned pregnancy cause many health problem of meternal and embryo. This review provide information and complications in pregnancy and also inform importance of preconsumptional counselling before pregnancy. PCC is very beneficial for a healthy and disease free pregnancy. Nutrient deficiency during pregnancy can be avoided with PCC. With its help, miscarriage and C section can be avoided. With its help, pregnancy complications like maternal disease and embryonic complications can be avoided. That is why preconsumptional counseling is very important for maternal health and healthy pregnancy.

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