APPENDIX – I

Ethical committee clearance

DR V SESHAH
DIABETES RESEARCH INSTITUTE

DR BALAJI
DIABETES CARE CENTRE

29.08.2011

To,
Mr. P. Seshiah
PhD Research Scholar
Avinashilingam University
Coimbatore- 63

Subject: Your request to conduct study has been approved – Reg Ref. Your letter to us dated: 656/611

Title of research: Gestational glycemias and its maternal and foetal outcome

This is to inform you that the Ethics Committee (Institutional Ethics Review Board) of Dr. V. Seshiah Diabetes Research Institute - Dr. Balaji Diabetes Care Centre, 729, Poonamallee High Road, Anna Nagar, Chennai 600029, in its meeting held on 29.08.2011, reviewed and discussed your application to conduct the PhD Research for the study entitled “Gestational glycemias and its maternal and foetal outcome” and have unanimously agreed to approve the conduct of research under your supervision at Dr. V. Seshiah Diabetes Research Institute - Dr. Balaji Diabetes Care Centre.

The following members were present during the Ethics Committee meeting:

<table>
<thead>
<tr>
<th>Name of the Member</th>
<th>Designation</th>
<th>Affiliation</th>
<th>Tenure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. S. Veeraraghavan</td>
<td>Chairman</td>
<td>High Court, Advocate</td>
<td>Jan 2010 – Dec 2012</td>
</tr>
<tr>
<td>Dr. Arulmoli Srinivasan</td>
<td>Secretary</td>
<td>Associate Consultant</td>
<td>Jan 2010 – Dec 2012</td>
</tr>
<tr>
<td>Dr. Sheila Sajitha</td>
<td>Member</td>
<td>Associate Consultant</td>
<td>Jan 2010 – Dec 2012</td>
</tr>
<tr>
<td>Mr. Seshadri S.</td>
<td>Member</td>
<td>Social Worker</td>
<td>Jan 2010 – Dec 2012</td>
</tr>
<tr>
<td>Mr. Balaji N.</td>
<td>Member</td>
<td>Biochemist</td>
<td>Jan 2010 – Dec 2012</td>
</tr>
<tr>
<td>Mr. Nivas</td>
<td>Member</td>
<td>Biochemist</td>
<td>Jan 2010 – Dec 2012</td>
</tr>
<tr>
<td>Ms. Devi</td>
<td>Member</td>
<td>Dietitian</td>
<td>Jan 2010 – Dec 2012</td>
</tr>
<tr>
<td>Mr. Joseph Vinod</td>
<td>Member</td>
<td>I T Consultant</td>
<td>Jan 2010 – Dec 2012</td>
</tr>
</tbody>
</table>

Gestational Glycemia and its Impact on Maternal and Foetal Outcome
Gestational Glycemia and its Impact on Maternal and Foetal Outcome

It is to be noted that neither you nor any of your study team members voted during the ethics committee meeting.

You are requested to inform the Ethics Committee of all Serious Adverse Events occurring in the study.

A progress report of the study needs to be submitted to the committee for review.

Any significant change / deviation to the study protocol that may affect the safety and well being of the study subjects will require the Ethics Committee's prior approval before being implemented.

Please note that the approval is for the entire period of the Research.

Yours sincerely,

Mr. S Veeraraghavan
Chairperson
Ethics Committee

Gestational Glycemia and its Impact on Maternal and Foetal Outcome
APPENDIX – II
CONSENT FORM
INFORMED CONSENT FORMAT FOR RESEARCH PROJECTS
(Strike off items that are not applicable)

I / We (write name of the investigator(s) here),___________________________________________
_________________________________________ am / are carrying out a study on the topic:

as part of my / our research project being carried out under the aegis of the Department of:

(Applicable to students only) My / our research guide is:

The justification for this study is:

The objectives of this study are:

Primary Objective:

Secondary Objective:

Sample size: __________.

Study volunteers / participants are (specify population group & age group):
__________________________.

Location: ________________.

We request you to kindly cooperate with us in this study. We propose collect background information and other relevant details related to this study. We will be carrying out:

Initial interview (specify approximate duration):____ minutes.

Data collected will be stored for a period of fifteen years. We will / will not use the data as part of another study.

Health education sessions: Number of sessions: ______________. Approximate duration of each session: ______________ minutes.

Clinical examination (Specify details and purpose):

Blood sample collection: Specify quantity of blood being drawn: ____________ml.

No. of times it will be collected: ______________.
Whether blood sample collection is part of routine procedure or for research (study purpose):

1. Routine Procedure  
2. Research Purpose

Specify purpose, discomfort likely to be felt and side effects, if any:

Whether blood sample collected will be stored after study period: Yes / No, it will be destroyed

Whether blood sample collected will be sold: Yes / No

Whether blood sample collected will be shared with persons from another institution: Yes / No

Medication given, if any, duration, side effects, purpose, benefits:

Whether medication given is part of routine procedure: Yes / No (If not, state reasons for giving this medication)

Whether alternatives are available for medication given: Yes / No (If not, state reasons for giving this particular medication)

Final interview (specify approximate duration): _________ mts. If photograph is taken, purpose:

Benefits from this study, if any:

Risks involved by participating in this study:

How the results will be used:

If you are uncomfortable in answering any of our questions during the course of the interview / biological sample collection, you have the right to withdraw from the interview / study at anytime. You have the freedom to withdraw from the study at any point of time. Kindly be assured that your refusal to participate or withdrawal at any stage, if you so decide, will not result in any form of compromise or discrimination in the services offered. You will continue to have access to the regular services offered to a patient. You will NOT be paid any remuneration for the time you spend with us for this interview / study. The information provided by you will be kept in strict confidence. Under no circumstances shall we reveal the identity of the respondent or their families to anyone. The information that we collect shall be used for approved research purposes only. You will be informed about any significant new findings – including adverse events, if any, - whether directly or indirectly related to you or to other participants of this study, developed during the course of this research which may relate to your willingness to continue participation.
**Consent:** The above information regarding the study, has been read by me/ read to me, and has been explained to me by the investigator/s. Having understood the same, I hereby give my consent to them to interview me. I am affixing my signature / left thumb impression to indicate my consent and willingness to participate in this study (i.e., willingly abide by the project requirements).

Signature / Left thumb impression of the Study Volunteer / Legal Representative:

Signature of the Interviewer with date

Witness:
APPENDIX III

Questionnaire

Questionnaire to elicit background information and details of gestational period

A. Background Information:

CENTRE : Dr. Seshiah Hospital

DATE : 

HOSP. ID  : AC000

GID  :

1. Name of the Patient  :

2. Age  :

3. Address  :

4. E.mail  :

5. Contact No  :

6. Educational Status : ☐ Literate ☐ Illiterate Level :

7. Total monthly income :

8. No.of members in the family : ☐int ☐ear

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Occupation :

10. Activity Pattern :

<table>
<thead>
<tr>
<th>Hours of occupational work</th>
<th>Recreation (hrs)</th>
<th>Exercise (hrs)</th>
<th>Rest (hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Height (cm) :

12. Weight (kg) :

13. Pre – pregnancy weight (Kg) :

14. BMI (calculated form pre – pregnancy weight) :

Gestational Glycemia and its Impact on Maternal and Foetal Outcome
15. Blood Pressure (mm Hg) :

16. Expected Date of Delivery (EDD) :

17. LMP :

18. Months as on Date : Trimester :

19. **Family History of Diabetes Mellitus (DM)** :

<table>
<thead>
<tr>
<th>Degrees</th>
<th>Maternal</th>
<th>Paternal</th>
<th>Siblings</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Degree</td>
<td></td>
<td></td>
<td>B  S</td>
</tr>
<tr>
<td>II Degree</td>
<td>A U GM GF</td>
<td>A U GM GF</td>
<td></td>
</tr>
<tr>
<td>III Degree, if any Husband</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20. Presence of other complications :-

- [ ] Cardiovascular
- [ ] Renal
- [ ] Thyroid
- [ ] Vasculopathies
- [ ] PCOD
- [ ] Anaemia
- [ ] Pedal Edema
- [ ] Acanthosis Nigricans
- [ ] Retinopathies
- [ ] Irregular Periods
APPENDIX IV

Estimation of Glucose (GOD – POD Method.)

Glucose is the reducing monosaccharide that serves as the principal source of cellular energy in the body. It enters into the cell under the influence of insulin and undergoes a series of chemical reactions to produce energy. Lack of insulin or resistance to its action at the cellular level causes diabetes. Therefore, in diabetes mellitus the blood glucose level are very high.

Principle

Glucose is oxidized by glucose oxidase (GOD) to produce gluconate and hydrogen peroxide. The hydrogen peroxide is then oxidatively coupled with 4 amino – antipyrene (4-AAP) and phenol in the presence of peroxidase (POD) to yield red quinoneimine dye that is measured at 505 mm. The absorbance at 505 mm is proportional to concentration of glucose in the sample.

Absorbance of the colored solution is directly proportional to the glucose concentration, when measured at 505 mm.

Reagent Composition

Reagent 1:

<table>
<thead>
<tr>
<th></th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose Oxidase</td>
<td>20000 µ/l</td>
</tr>
<tr>
<td>Peroxidase</td>
<td>1200 µ/l</td>
</tr>
<tr>
<td>4-AAP</td>
<td>0.246 mmol/l</td>
</tr>
</tbody>
</table>

Reagent 2:

<table>
<thead>
<tr>
<th></th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose Standard</td>
<td>100 mg/dl</td>
</tr>
</tbody>
</table>

Procedure

One reagent blank and one standard are sufficient for each assay series.

Pipette into test tubes:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Blank</th>
<th>Standard</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reagent 1</td>
<td>1000µl</td>
<td>1000µl</td>
<td>1000µl</td>
</tr>
<tr>
<td>District Water</td>
<td>10µl</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Reagent 2</td>
<td>-</td>
<td>10µl</td>
<td>-</td>
</tr>
<tr>
<td>Sample</td>
<td>-</td>
<td>-</td>
<td>10µl</td>
</tr>
</tbody>
</table>
Mix well & incubate for 15min at room temperature or 7min at 37°C. Measure the absorbance of standard (Astd) and sample (Asample) against reagent blank at 505mm.

**Calculation**

Glucose concentration in the sample can be calculated using the following formula:

$$\text{Glucose} = \frac{\text{Absorbance of Sample}}{\text{Absorbance of Standard}} \times \text{Conc. of std (mg/d)}$$

Example: If the absorbance of sample is 0.200 and the absorbance of standard is 0.18. The calculation shall be

$$\frac{0.200}{0.180} \times 100 = 111.1 \text{ mg/dl}$$

If the glucose concentration exceeds 500mg.dl, dilute the sample with normal saline and repeat the assay. The reportable results in this case shall be calculated by multiplying the results obtained with dilution factor.

**Reference value**

70-110 mg/dl

**Limitations**

1. The regent and sample volumes can be altered proportionately so that the sample:reagent ratio remains same.
2. Hemolytic and lipemic samples may result in false elevated results. To avoid false results sample blank may be used as mentioned below:
   - Add 10µl of serum sample to 1000µlof DI water and read absorbance at 505mm.
   - Subtract the absorbance obtained as above, from the absorbance of test. Use this corrected absorbance for calculation.
   - Reagents are sensitive to light and temperature.

**Quality Control**

The patient results obtained for each batch can be validated by using normal and abnormal control sera with assayed values for glucose.
APPENDIX V

Estimation of Glycosylated Hemoglobin (HbA1C)
(High-Performance Liquid Chromatography (HPLC))

1. **Purpose:** Quantitative determination of Hemoglobin A1C (HbA1c) in human whole blood using ion-exchange high-performance liquid chromatography (HPLC).

2. **Principle:** HbA1c utilizes the principle of ion-exchange high-performance liquid chromatography (HPLC). The samples are automatically diluted VARIANT II TURBO Sampling Station (VSS) and injected into the analytical cartridge. The VARIANT II TURBO Chromatographic Station (VCS) dual pumps deliver a programmed buffer gradient of increasing ionic strength to the cartridge, where the hemoglobins are separated based on their ionic interactions with the cartridge material. The absorbance at 415 nm is measured.

3. **Performance specification :**
   - **Linearity:** This kit is linear for HbA1c concentration up to 16.8 % in whole blood.
   - **Measurement range:** This method has a measurement range of 4.1-16.8 % for HbA1c in whole blood.
   - **Sensitivity:** The minimum detection limit by this kit is 4.1% for HbA1c in whole blood.

4. **Primary sample:**
   - Use whole blood as specimen for the test.
   - Process the sample on the same day.
   - If analysis is not done on the same day, the specimens may be stored at 2 to 8 °C for up to 7 days.

5. **Type of container and additive:**
   - The whole blood specimens should be collected in a vacuum collection tube containing EDTA.

6. **Reagents/Consumables:** As per the product insert.


8. **Step-by-step Procedure:**
   - For Step-by-step operation of equipment procedure refer.
9. **Calibration procedure:**
   Calibrate the instrument for the assay by using the calibrator specified in the kit whenever the reagent lot is changed.
   After major equipment breakdown or maintenance / service.
   Whenever the internal QC is repeatedly out of range.
   Record the details in the calibration register.
   The calibration report should be used in conjunction with quality control results to determine the validity of a calibration.

10. **Quality control procedure:**
    Run two level of QC daily before processing the patient samples and ensure the QC values are within the Reference Range and close to the mean mentioned in the product insert.

11. **Reference range:** $< 7\%$.

12. **Interpretation of Results:**
    The level of glycosylated hemoglobin is increased in the red blood cells of persons with poorly controlled diabetes mellitus.

13. **Critical Alert Values:** $\_\_\_$\%

14. **Safety Precautions:**
    Handle all samples as potentially infectious.
    Handle all reagents with care and avoid contact with eye mouth and skin.
    Do not perform mouth pipetteing.
    Discard used reagents and sample as per disposable procedure.

15. **Potential source of variability:**
    Do not use if the reagents is turbid as it indicates contamination of the reagent.
    The temperature will also affect the test results.
    Labile A\textsubscript{1c} in the tested level of 200-700 mg/dL has no significant interference on the assay.
    Hemoglobin in the tested level of upto 5\% has no significant interference on the assay.
Lipemic samples in the tested level of 100 - 6000 mg/dL (triglycerides) have no significant interference on the assay.

Bilirubin in the tested level of 20 mg/dL has no significant interference on the assay.

Carbamylated Hemoglobin upto 3.5% in normal patients and 2.8% in diabetic patients have no critically significant effect on A₁C

Gestational Glycemia and its Impact on Maternal and Foetal Outcome
APPENDIX VI

Estimation of Hemoglobin
(Cyanmethemoglobin Method)

Principle

In a reagent solution the ferrous ions (Fe$^{2+}$) of hemoglobin are oxidized to the ferric (Fe$^{3+}$) state by potassium ferricyanide to form methemoglobin. Methemoglobin subsequently reacts with the cyanide ions provided by potassium cyanide to form cyanmethemoglobin. The amount of cyanmethemoglobin can be measured spectrophotometrically at a wavelength of 540 nm on a spectrophotometer and compared to known hemoglobin standards in order to determine the hemoglobin concentration of the unknown sample. Hemoglobin, the main component of the RBC, transports oxygen to and CO2 from the body's tissues. Hemoglobin in circulating blood is a mixture of hemoglobin, oxyhemoglobin, carboxyhemoglobin and minor amounts of other forms of this pigment. It is necessary to make a stable derivative involving all forms of hemoglobin in the blood in order to measure this compound accurately. The cyanmethemoglobin (HiCN) derivative can be conveniently and reproducibly prepared and is widely used for hemoglobin determinations. All forms of circulating hemoglobin are readily converted to HiCN except for sulfhemoglobin, which is rarely present in significant amounts. Cyanmethemoglobin can be measured accurately by its absorbance in a colorimeter.

**Coulter Instrument Hemoglobin:**

After the WBC solution is lysed, the system shines a beam of white light through the WBC aperture bath and then through an optical filter. This transmittance of light (525 nm wavelength) through a standard path length of Hgb solution is compared to the transmittance of such light in the same way through a reagent blank. The system converts this ratio to absorbance. It then converts absorbance to Hgb values in g/dL using a calibration factor.

**Abott Cell-Dyne Hemoglobin:**

This instrument uses a similar procedure, but is unique in that its reagent is cyanide-free.

**Bayer Advia Hemoglobin:**

Hemoglobin has dual readings - colorimetric or cyanmethemoglobin and corpuscular hemoglobin concentration mean.
Normal values:

Adult Male 14 - 17 g/dL
Adult Female 12.5 - 15 g/dL
Newborn 17 - 23 g/dL
3-month-old 9 - 14 g/dL
10-year-old 11.4 - 15.4 g/dL

APPENDIX VII

INTERVIEW SCHEDULE TO ELICIT PREVIOUS HISTORY

CENTRE : Dr. Seshiah Hospital          PATIENT ID : SH
DATE :                                      HOSP. ID :AC000
GID :

1. Name of the Patient :
2. Age :
3. Address :
4. E.mail :
5. Contact No :
6. Obstetric History :

<table>
<thead>
<tr>
<th>Gravida</th>
<th>Para</th>
<th>Abortion</th>
<th>Still birth</th>
<th>Living</th>
</tr>
</thead>
</table>

7. Previous History :

8. Age of conception and number of years of marriage

Gravida □                      No.of years □
Para □
others □
A. DETAILS OF PREVIOUS PREGNANCIES

<table>
<thead>
<tr>
<th>S.No</th>
<th>Delivered (Y/N)</th>
<th>If No was it wasted (specify)</th>
<th>Maternal Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>GDM/IGT</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. DETAILS OF DELIVERY OF PREVIOUS PREGNANCIES AND OUTCOME:

<table>
<thead>
<tr>
<th>Pregnancy</th>
<th>Date of delivery</th>
<th>Details of Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal</td>
<td>Assisted</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Details of children born:
Congenital Abnormalities (Y/N) / Other Complication (Y/N)
* Still Birth / macrosomia / respiratory distress syndrome / Polyhydramino / Jaundice

C. PRESENT PREGNANCY

1. Known Diab (Pre - GDM) : IGT
   Previous GDM : NGT
   True GDM :

2. Symptoms, if any :

3. Detected at : Trimester _____ Months ______
   □ Routine Sugar Test  □ Family History  □ PCOD
   □ IUF Conception  □ Others, Specify

4. Referral Gynae :- Dr.
D. BIOCHEMICAL PARAMETERS:

(i) OGTT – Glucose Tolerance With 75g Of Glucose

<table>
<thead>
<tr>
<th>Trimester</th>
<th>Week of gestation</th>
<th>Date of Test</th>
<th>FPG</th>
<th>1hr Plasma Glucose</th>
<th>2hr Plasma Glucose</th>
<th>A1C</th>
<th>Hb%</th>
</tr>
</thead>
</table>

D. TREATMENT

E. Gestational Programming:

STRESS:

☐ Loss of life ☐ financial stress

☐ ill health ☐ Occupational stress

☐ family problems ☐ any other

F. Cost of Health Care:
APPENDIX VIII

Questionnaire to elicit the Dietary intake of the selected patients

By 24 hour recall method

Name of the Patient:

<table>
<thead>
<tr>
<th>Item</th>
<th>Raw Equivalent (g)</th>
<th>Cooked weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cups</td>
<td>Nos.</td>
</tr>
<tr>
<td>Break fast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid Morning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX – IX

Food Frequency Questionnaire

1. How many meals you take per day?

- 3-4 meals [ ]
- 5-6 meals [ ]

Tick applicable, Breakfast [ ] Evening [ ] Midmorning [ ]
Mid evening [ ] Lunch [ ] Dinner [ ]

I. Consumption of fats

1. Are You a [ ] Vegetarian [ ] Ova - Vegetarian [ ] Non – Vegetarian [ ]

2. If Non - Vegetarian, how often do you consume?

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weekly</td>
</tr>
<tr>
<td>Egg</td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td></td>
</tr>
<tr>
<td>Liver</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
</tr>
</tbody>
</table>

3. Form of fleshy food preferred :-

- Boiled [ ] Shallow - fried [ ] Deep – fried [ ]

4. Indicate, type of oil used in cooking at home?

- Gingelly oil [ ] Groundout oil [ ] Coconut oil [ ]
- Sunflower oil [ ] Olive Oil [ ] Bran Oil [ ]

State if, Combination ______________

II. Consumption of CHO ::

1. Tick, foods you use liberally in your diet?

- wheat products [ ] Ragi [ ] Rice [ ]
- Oats [ ] Bajra [ ] Wheat rava [ ]

- Mutligrain dosa / chapathi [ ]

2. State in what form and frequency
### III. Consumption of Fruits & Vegetables:

1. Do you consume fruits liberally in your diet? Yes / No
   
   If yes, what form: whole fruit / fruit juice

<table>
<thead>
<tr>
<th>State Type</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>Weekly</td>
</tr>
<tr>
<td>Banana</td>
<td></td>
</tr>
<tr>
<td>Mango</td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td></td>
</tr>
<tr>
<td>Grapes</td>
<td></td>
</tr>
<tr>
<td>Papaya</td>
<td></td>
</tr>
<tr>
<td>Guava</td>
<td></td>
</tr>
</tbody>
</table>

2. Do you use greens and vegetables liberally in your diet? Yes / No

<table>
<thead>
<tr>
<th>Spinach</th>
<th>Palak</th>
<th>Fenugreek Leaves</th>
<th>Amaranth</th>
<th>Drumstick Leaves</th>
<th>Mint / coriander leaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency:</td>
<td>Daily</td>
<td>Fortnightly</td>
<td>Occasionally</td>
<td>Weekly</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Vegetables:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gourd Vegetables</td>
</tr>
<tr>
<td>Root Vegetables</td>
</tr>
<tr>
<td>Frequency:</td>
</tr>
</tbody>
</table>

3. Do you include salads in your diet? Yes / No

<table>
<thead>
<tr>
<th>Carrot</th>
<th>Cabbage</th>
<th>Onion</th>
<th>Greens</th>
<th>Cucumber</th>
<th>Sprouts</th>
<th>Capsicum</th>
<th>Tomatoes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Do you take soups in your diet? Yes / No

   If yes, what Soup & frequency ____________________

### IV. Consumption of proteins:

1. Do you consume Protein foods namely

   Dals | Sundal | Sprouts | Milk | Egg

   If yes, frequency ____________________
2. Do you include dry fruit and nuts in your diet?   Yes / No
   If yes, state type & frequency ________________________________

V. Change in Diet Pattern for GDM:

1. How many cups of Tea / coffee / milk you consume daily?
   
<table>
<thead>
<tr>
<th>With Sugar</th>
<th>Cups</th>
<th>Without Sugar</th>
<th>Cups</th>
</tr>
</thead>
</table>

2. How often do you eat out in a restaurant / hotel
   □ Never  □ Monthly
   □ Weekly □ Occasionally

3. How often do you eat the following foods?
   a) Fried Indian Snacks (Vadai, Bonda, Murukku, Chips, Chat items)
      ______ times Per □ day □ week □ month □ never
   b) Traditional Indian Sweets (Payasam, Kesari, Halwa, Jamun, Ladoo)
      ______ times Per □ day □ week □ month □ never
   c) Non – Indian Sweets (Cookies, Pastries, Donuts, Cakes, Chocolates)
      ______ times Per □ day □ week □ month □ never
   d) Carbonated drinks (Pepsi, Coke, Seven – up)
      ______ times Per □ day □ week □ month □ never
   e) Flavored drinks (Horlicks, Boost, Maltova, Bournvita, D – protein,
      Sucrolac – N, Resource diabetic, Proteinex, Nutrilite)
      ______ times Per □ day □ week □ month □ never

4. Do you consume any of these for being diabetic
   Ragi Kanji □  Fenugreek water □
   Plantain stem juice □  Bitter Gourd juice □
   Neem juice □  Arrow root kanji □
   Others □

5. Do you avoid / restrict any food due to the condition?   Yes / No
   If yes, state
APPENDIX X

DIABETES PROTOCOL

1. Name of the Patient : 
   Patient Id :

2. Age :

3. Contact No :

4. Patient Address :

5. LMP :   G P L A   EDD :

6. Gynaecologist Name :

7. Date of GDM diagnosis :

8. Height (cm) :

9. Pre - Pregnancy Weight :

10. BMI :
    BMI Category :
        Under Weight  Normal  Overweight  Obese

11. Life style Category :
    Sedentary Work  Moderate work  Heavy work

12. Recommended Total Weight gain in Pregnancy :

13. Recommended daily Calorie Intake :
    (Wt in Kg x Recommended calorie intake / kg / day)

   MONITORING YOUR DIABETES IN PREGNANCY

   Name of the Patient :
   Age :

Gestational Glycemia and its Impact on Maternal and Foetal Outcome
# Methodology

Gestational Glycemia and its Impact on Maternal and Foetal Outcome

<table>
<thead>
<tr>
<th>S.No</th>
<th>Date of Visit</th>
<th>Gestational age in weeks</th>
<th>Weight (kg)</th>
<th>Blood Pressure (mm Hg)</th>
<th>Fasting blood glucose (mg)</th>
<th>Post prandial blood glucose (mg)</th>
<th>HbA1c</th>
<th>Hb</th>
</tr>
</thead>
</table>

**YOUR GOAL FOR MANAGING DIABETES DURING PREGNANCY**

<table>
<thead>
<tr>
<th>Fasting Blood Glucose</th>
<th>Post Prandial blood</th>
<th>HbA1c</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 hr</td>
<td>2 hrs</td>
</tr>
<tr>
<td>&lt; 90mg</td>
<td>&lt;160</td>
<td>&lt;140</td>
</tr>
</tbody>
</table>

*Gestational Glycemia and its Impact on Maternal and Foetal Outcome*
APPENDIX XI

Brochure
GESTATIONAL DIABETES MELLITUS

This diagnosis is given when a woman gets diabetes when she is pregnant.
Its medical name is gestational diabetes mellitus (GDM).
It is one of the most common health problems for pregnant women.
The word ‘gestational’ actually refers to “during pregnancy.”

If not treated, gestational diabetes can cause health problems for the mother and the foetus.
WHY DO SOME WOMEN DEVELOP GDM

- Your body normally makes a hormone called insulin that moves glucose out of blood and into the cells of the body.
- Women with GDM develop resistance to insulin and cannot move glucose into the cells. This causes the blood sugar level to remain high.
- Mother’s blood brings extra glucose to foetus.
- Foetus makes more insulin to handle extra glucose.
- Extra glucose gets stored as fat and foetus becomes larger than normal.

WHO’S AT RISK FOR GDM?

- Maternal age above 25
- Women with family history of diabetes
- Glucosuria
- Prior Macrosomia
- Previous unexplained still birth
Universal screening reduces important adverse health outcomes for mother or baby.

The incidence of GDM is rising and affects 3–10% of all pregnancies.

HOW TO KNOW IF I HAVE GESTATIONAL DIABETES

- Screening
  - 16–24 weeks routine
  - Screen at 1st prenatal visit if history of previous GDM
  - Screen earlier (12–24 weeks) if risk factors are present.
**DIAGNOSTIC CRITERIA FOR GDM**

- Fasting < 92 mg
- 1 hour post meal < 160 mg
- 2 hours post meal < 140 mg

**WILL GDM HURT MY BABY?**

Most women with GDM give birth to healthy babies, this is especially true for women:

- who have kept their blood sugar under control
- maintained a healthy diet
- engaged in regular moderate physical activity
- had healthy weight throughout their pregnancy.
IS GDM A DISEASE?

Maternal Complications

➤ Two fold increased risk for PIH  
  (Pregnancy Induced Hypertension)
➤ Pre-term labor
➤ Caesarean section
➤ Develop type II diabetes later in life
➤ Recurrence risk of GDM
➤ Birth trauma.

Foetal Complications

➤ Macrosomic babies
➤ Significant increased risk of shoulder dystocia in macrosomic babies.
➤ Increased poly hydraminos, pre-term delivery
➤ Increased admission to NICU
➤ Respiratory Distress Syndrome
➤ Still birth
➤ Becoming obese as children or adults, develop diabetes.
Could GDM Hurt my Baby in other ways?
GDM usually does not cause birth defects or deformities.

Most developmental or physical defects happen during the 1st trimester of pregnancy, between the 1st and 8th week and gestational diabetes typically develops around 24th week of pregnancy.

As your child grows, taking steps such as

- Eating a healthy diet
- Maintaining a healthy weight and
- getting regular, moderate physical activities can help to reduce his or her risk.
Management of gestational diabetes

- Blood glucose testing
- Medical nutrition therapy
- Medication / Insulin
- Exercise
- Antepartum testing

Know your blood Sugar Level and keep it under control

Measuring your Blood Sugar will give you information about:

- The Amount of Food you can eat
- Foods that affect your glucose level
- Times when your glucose level is high or low
- Times that physical activity is more likely to keep your glucose level in target

Gestational Glycemia and its Impact on Maternal and Foetal Outcome
Gestational Glycemia and its Impact on Maternal and Foetal Outcome

Carbohydrates (CHO) are the components of food that causes increase in blood sugar

Diabetics are encouraged to keep track of the amount of Carbohydrate they eat.

Method of Carbohydrate Control

➢ Exchange list
➢ CHO counting – very basic, allows a little more freedom and variety.

EATING A HEALTHY DIET MEAL PLAN

| CHO Counting | With this meal plan, the number of grams of carbohydrates that is eaten at each meal or snack is counted to make sure that they are within a certain range. A meal plan may be very specific, allowing a specified amount at each meal or snack, or it may be more general, with a daily carbohydrate total. |
| The Exchange System | The exchange system groups each food consumed into one of the following food groups; bread/starches, fruits, vegetables, proteins, milk and fats. Each food within a group has very similar amounts of carbohydrate, fat, protein and calories, but the amounts of vitamins and minerals may vary. In this plan, the number of items from a food group that is eaten at each meal is counted. There is a designated amount for each group every day. |
### EATING A HEALTHY DIET TO KEEP BLOOD SUGAR IN CHECK

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat meals and snacks on a regular schedule throughout the day</td>
<td>Researchers recommend that women with gestational diabetes should eat at least three small-to-medium sized meals and two to four snacks every day.</td>
</tr>
<tr>
<td>Eat smaller amounts of carbohydrates at each meal</td>
<td>It is preferable to eat several small meals every day rather than one large meal. Carbohydrates will increase blood glucose level directly, therefore, eating a small amount of carbohydrates all through the day will help keep blood sugar from rising too high.</td>
</tr>
<tr>
<td>Add a night time snack to your meal plan</td>
<td>A snack of one or two servings of carbohydrates before bedtime will keep blood sugar at a healthy level during sleep. Some healthy examples could include: a piece of fruit, a handful of pretzels, or crackers.</td>
</tr>
</tbody>
</table>

### KEEP DAILY RECORD OF YOUR DIET, PHYSICAL ACTIVITY AND GLUCOSE LEVELS

- Keeping record refers to writing down your blood sugar numbers, physical activities and everything that you eat and drink in a daily record book.
- Recording everything that you eat and drink really means everything that you eat and drink. This refers to bites, nibbles, snacks, second helpings and all liquids.
- It’s easy to forget or underestimate how much snacking you really do.
Methodology

Gestational Glycemia and its Impact on Maternal and Foetal Outcome

Postpartum

✓ Often will not require insulin
✓ If fasting hyperglycemia – more likely to develop persistent Diabetes
✓ 6 weeks post partum 75g OGTT
✓ Yearly fasting BG
✓ Emphasize importance of maintaining normal weight, exercise.

SHOULD I BREASTFEED HAVING GESTATIONAL DIABETS?

✓ Yes, women with gestational diabetes should breastfeed their babies.
✓ Breastfeeding is not only beneficial to the baby, but it is also beneficial to the mother.
✓ Breastfeeding allows the body to use extra calories stored during pregnancy, allowing for weight loss.
✓ A weight loss after having the baby not only enhances overall health, but also help to reduce the risk of developing type 2 diabetes later in life.
Breastfeeding is also believed to help lower fasting blood glucose levels in mothers.

**WILL I HAVE DIABETES AFTER HAVING MY BABY?**

- Shortly after the baby is born, the placenta is “delivered”
- Since the placenta is what was causing the insulin resistance, when it is gone, gestational diabetes usually resolves as well.
- But, just by having had gestational diabetes, you have a 40% higher chance of developing type 2 diabetes later in life than women who did not have the condition during pregnancy.
- Keeping your weight within a healthy range and keeping up regular, moderate physical activity after your baby is born can help lower your risk for developing type 2 diabetes.
CONCLUSION

- GDM usually resolves after delivery
- Advice about healthy diet, lifestyle and weight loss in order to prevent development of type 2 DM.
- The risk of developing type 2 DM is about 50% after 15 years if no intervention.
- Getting checked for diabetes is important because Type 2 diabetes shows few symptoms.

Thank you
APPENDIX XIII

KAP STUDY ON GESTATIONAL DIABETES

Knowledge:

1) Diabetes mellitus is a clinical disorder characterized by elevated blood sugar
   T  F

2) GDM is glucose intolerance that begins or is first recognized during pregnancy
   T  F

3) Women with GDM develop resistance to insulin and this causes blood sugar level to remain high
   T  F

4) Early diagnosis of blood sugar in pregnancy will not help in preventing complications
   T  F

5) If the diabetic condition goes unnoticed during pregnancy, maternal and foetal complication occurs during delivery.
   T  F

6) Women with family history of diabetes and higher maternal age are at risk of developing GDM
   T  F

7) Obesity, lack of physical activity and adoption to modern lifestyle are not associative factors for developing GDM
   T  F

8) Previous history of abortion, miscarriage, PCOS or big baby are risk factors for developing GDM
   T  F
9) GDM mothers are not prone to GDM in future pregnancies
   T  □       F □

10) It is important for women to screen for diabetes in pregnancy in the 16–24 weeks itself
   T  □       F □

11) It is not necessary to screen earlier if previous history of GDM or other risk factors are present
   T  □       F □

12) Self – monitory of blood glucose is essential during pregnancy
   T  □       F □

13) Controlling glucose levels through adequate treatment will improve the maternal quality of life and that of the baby
   T  □       F □

14) Appropriate meal plan, medication / insulin and exercise are the three cornerstones in the treatment of GDM
   T  □       F □

15) When diet is insufficient to meet the glycemic targets, insulin is started
   T  □       F □

16) Urine sugars are poor substitute for blood sugar measurement, as renal threshold for glucose is lowered in pregnancy.
   T  □       F □

17) Women with GDM are not at increased risk of developing type 2 diabetes later in life.
   T  □       F □

18) Maintaining normal weight and good physical activity together with diet control should be emphasized after delivery for GDM mothers.
   T  □       F □
Methodology

19) Women with GDM need not breast feed their babies
   T □    F □

20) Breast feeding not only helps to lower fasting blood glucose level in mothers but also allows the body to use extra calories stored during pregnancy allowing for weight lose.
   T □    F □

21) GDM, if not controlled through proper treatment, can result in delivery of big baby / still birth / go in for pre – term delivery and increased admission to NICU
   T □    F □

22) A test of HbA1 C is a good indicator of blood glucose control over the preceding 2 – 3 months.
   T □    F □

23) A fasting blood glucose of <90mg and post prandial blood glucose of <140mg should be my glycaemic goal in pregnancy.
   T □    F □

24) Children of women who had GDM should be followed closely for development of obesity and diabetes in early adolescence
   T □    F □

Attitude

1) I have risk factors like family history of diabetes and obesity, hence I have chances of developing diabetes during pregnancy
   Yes □    No □

2) I adopt a modern lifestyle, with minimum activity and have diabetes running in my family. I am at risk during pregnancy.
   Yes □    No □
3) I had diabetes during my first pregnancy, but was under meal plan only, my blood sugar was normal post delivery. I am not at risk at my second pregnancy now.
Yes ☐ No ☑

4) My obstetric history was not good. I had irregular periods and underwent treatment for PCOS (polycystic ovarian syndrome) now I am at risk for GDM
Yes ☐ No ☑

5) I have normal blood sugar now (1st trimester) of my pregnancy. But I should undergo repeated screening every month for blood sugar until my 36th week
Yes ☐ No ☑

6) This is my several trimester of pregnancy and under meal plan. I need not maintain a healthy diet plan nor an exercise regimen.
Yes ☐ No ☑

7) The expected normal weight gain during my pregnancy is 300 – 400g/ week and total weight gain is 10-12kg/ term
Yes ☐ No ☑

8) I have to distribute my food in three meals and three snacks with a proper balance in carbohydrate, protein and fat
Yes ☐ No ☑

9) I advise my diabetic pregnant friends or relatives to split their breakfast with a gap of 2hrs
Yes ☐ No ☑

10) I need not eliminate refined and processed cereals/fruit juice/ fruits in breakfast
Yes ☐ No ☑
11) As I am a case of GDM, I should undergo screening for diabetes every 6 months post partum
Yes ☐ No ☐

12) I am treated with insulin for my diabetic pregnancy, hence I need not follow any dietary regimen for treating my blood sugar
Yes ☐ No ☐

13) I should be aware of my level of activity, body mass index and ideal body weight to help me stay healthy in post partum
Yes ☐ No ☐

14) Proper adoption of nutritional plans could either prevent or delay the use of insulin or lower requirement of insulin in GDM
Yes ☐ No ☐

15) No fasting and no feasting is a golden rule in diabetes
Yes ☐ No ☐

Dietary management:

Practice:

1) I am following an individualized meal plan to meet the nutritional requirements of pregnancy based on my body weight and activity pattern
T ☐ F ☐

2) I split my meals into 3 main meals and 3 snacks to have meals and consistency in food intake
T ☐ F ☐

3) My meals is inclusive of rice, wheat, ragi in a solid from in different times of my meal
T ☐ F ☐
4) I take high calorie fruits like banana, mango, grapes, sapota & jack fruit
   T  F

5) I do not miss my evening snacks comprising of whole grains, legumes, germinated pulses like channa, rajmah etc
   T  F

6) Fibrous foods like greens, boiled vegetables, salads is helping me in reducing my blood sugar level
   T  F

7) I use oil such as gingelly oil, rice bran oil, olive oil for cooking to get good type of fact for my body
   T  F

8) I avoid sweets and sugars, fast foods, processed foods, high sodium foods and use lower fried foods to help me control my blood sugar
   T  F

9) I have reduced intake of root vegetables like yam, potato, groundnut and also use of coconut in my cooking
   T  F

10) I choose a variety of food each day from all the food groups giving the nutrients, vitamins and minerals necessary for a healthy pregnancy.
    T  F

11) My midmorning snacks include lemon juice / tomato juice / butter milk / vegetarian or non-vegetarian soups
    T  F

12) I have a snack of brown bread with raw vegetables in between meals
    T  F
13) I do not include iron rich foods like green leafy vegetables, eggs, liver of meat, fish or poultry
T   F

14) Vitamin C rich foods like guava, gooseberry, lemon, sweetlime are also included in my meal
T   F

15) I read and use the ‘Nutrition facts’ label in food packages to make lower – calorie food choices that fit into a healthy meal plan.
T   F

16) I eat smaller meals and have low calorie snacks more often to prevent myself from getting very hungry
T   F

17) I do not keep track of the following
- blood sugar level
- food intake
- physical activity
- weight gain &
- physical wellness
T   F

18) I should breastfeed my baby which is beneficial to the baby and also allows me to use extra calories stored during pregnancy
T   F

19) I have learnt to manage my diabetes rather than allowing diabetes to manage my life
T   F
# APPENDIX XIV

## PROFORMA FOR MATERNAL AND NEONATAL OUTCOME OF GESTATIONAL DIABETES

**NAME OF THE HOSPITAL:** HOSP NO:

**DATE:** GID NO:

**Dr. Name:**

1. **Name of The Mother:**

2. **Date of Delivery:** EDD: Delivery Time:

3. **Sex of Child:** M ☐ F ☐

4. **Gestation:** Pre-term ☐ Term ☐ Post term ☐

5. **Mode of delivery:** Normal ☐ Caesarean ☐ Instrumental ☐

6. **Labour:** Spontaneous ☐ Induction ☐

7. **Weight of the Baby:** Kg SGA ☐ LGA ☐ AGA ☐

8. **Placental Weight:** g

9. **Length of the Baby:** cm

10. **Head circumference:** cm

11. **Chest Circumference:** cm

12. **Ponderal Index:** Apgar:

13. **Maternal blood glucose (mg):**

<table>
<thead>
<tr>
<th>Time</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before delivery</td>
<td></td>
</tr>
<tr>
<td>Immediate after delivery</td>
<td></td>
</tr>
</tbody>
</table>

14. **Baby’s blood glucose (mg):**

<table>
<thead>
<tr>
<th>Time</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate after delivery (Cord blood)</td>
<td></td>
</tr>
<tr>
<td>3hrs</td>
<td></td>
</tr>
<tr>
<td>6hrs</td>
<td></td>
</tr>
<tr>
<td>12hrs</td>
<td></td>
</tr>
<tr>
<td>24hrs</td>
<td></td>
</tr>
</tbody>
</table>
Methodology

Gestational Glycemia and its Impact on Maternal and Foetal Outcome

15. Cord blood Insulin :
16. $P_H$ of blood :
17. C-peptide :

Neo – natal Complications :

1. Admission to NICU : Yes ☐ No ☐
2. Congenital Abnormality : Yes ☐ No ☐
   If yes, specify :
3. Macrosomia : Yes ☐ No ☐
4. Shoulder Dystocia : Yes ☐ No ☐
5. Jaundice : Yes ☐ No ☐
   hyperbilirubinemia ☐ Level_____mg
   hypobilirubinemia ☐ Level_____mg
6. Respiratory Distress syndrome (RDS) : ☐Yes ☐No
7. Polycythemia : Yes ☐ No ☐
8. Hypoglycemia : Yes ☐ No ☐
9. Hyperglycemia : Yes ☐ No ☐
10. Hypo Calcemia : Yes ☐ No ☐
11. Hypo Magnesia : Yes ☐ No ☐

After gestation follow up of maternal blood glucose (GTT) :

Date of delivery:

<table>
<thead>
<tr>
<th>Period</th>
<th>Date of Test</th>
<th>FPG</th>
<th>1hr</th>
<th>2hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8 Weeks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX XV

Post-partum follow up module

[Image: Diagram illustrating the postpartum follow-up module with interventions and management strategies.]
APPENDIX XVI

ESTIMATION OF INSULIN

The electrochemiluminescence Immunoassay “ECLIA” is intended for use on Elecsys and cobas e immunoassay analyzers.

Test principle

Sandwich principle. Total duration of assay: 18 months

- 1st incubation: Insulin from 20pL sample, a biotinylated monoclonal insulin-specific antibody, and a monoclonal insulin-specific antibody labeled with a ruthenium complex. Form a sandwich complex.
- 2nd incubation: After addition of steplavidin-coated microparticles, the complex becomes bound to the solid phase via interaction of biotin and streptavidin.
- The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed with ProCell/ProCell M. Application of a voltage to the electrode then induces chemiluminescent emission which is measured by a photomultiplier.
- Results are determined via a calibration curve which is instrument specifically generated by2-pooint calibration and a master curve provided via the reagent barcode.

Regents – working solutions

M Streptavidin-coated microparticles (transparent cap), 1bottle, 6.5mL: Streptavidin-coated microparticles 0.72mg/mL; preservative.

R1 Anti-Insulin Ab-biotin (gray cap), 1bottle, 10mL: Biotinylated monoclonal anti-insulin antibody (mouse) 1mg/L; MES buffer 50mmol/L, pH 6.0; preservative.

R2 Anti-insulin-Ab-Ru(bpy)2/3+ (black cap), 1bottle, 10 mL; Monoclonal anti-insulin antibody (mouse) labeled with ruthenium complex 1.75mg/L; MES buffer 50mmol/L, pH6.0; preservative.
Assay

For optimum performance of the assay follow the directions given in this document for the analyzer concerned. Refer to the appropriate operator’s manual for analyzer-specific assay instructions. Resuspension of the microparticles takes place automatically prior to use. Read in the test-specific parameters via the reagent barcode. If in exceptional cases the barcode cannot be read, enter the 15-digit sequence of numbers. Bring the cooled reagents to approx. 20°C and place on the reagent disk (20°C) of the analyzer. Avoid foam formation. The system automatically regulates the temperature of the reagents and the opening/closing of the bottles.

Calibration

Traceability: this method has been standardized using the 1\textsuperscript{st} IRP WHO Reference Standard 66/304 (NIBSC).

Every Elecsys Insulin reagent set has a barcoded label containing the specific information for calibration of the particular reagent lot. The predefined master curve is adapted to the analyzer by using the Insulin CalSet.

Calculation

The analyzer automatically calculates the analyte concentration of each sample (either in µU/mL or pmol/L)

Conservation factors: \( \text{pmU/mL} \times 6.945 = \text{pmol/L} \)

\( \text{pmol/L} \times 0.144 = \text{µU/mL} \)
APPENDIX XVII
Checklist for prospective mothers

1. பிறன் (இ) சுருக்க பின்னர் குறு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல.  
   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

2. பிறன் வல்ல கைவல்லுக்கு குறு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல.  
   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

3. கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது.  
   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

4. கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது. பிறன் வல்ல முன்னேறும்பாற்றுகிறது செய்யறை உள்ளது.  
   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

5. 30 மிள்கு பெருக்காமல் பலம் பச்சையால் வல்ல கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது.  
   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

7. பிறன் வல்ல கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது. பிறன் வல்ல முன்னேறும்பாற்றுகிறது செய்யறை உள்ளது.  
   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

8. கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது. பிறன் வல்ல முன்னேறும்பாற்றுகிறது.  
   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

9. கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது. பிறன் வல்ல முன்னேறும்பாற்றுகிறது.  
   • உயரத்துடன் செய்துபோது  
   • இரத்தில் செய்துபோது

10. கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது.  
    • உயரத்துடன் செய்துபோது  
    • இரத்தில் செய்துபோது

11. பிறன் வல்ல கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது.  
    • உயரத்துடன் செய்துபோது  
    • இரத்தில் செய்துபோது

12. பிறன் வல்ல கைவலுக்கு எதிர் இருந்து தொடர்லோன்ற பிறன் வல்ல முன்னேறும்பாற்றுகிறது.  
    • உயரத்துடன் செய்துபோது  
    • இரத்தில் செய்துபோது
Gestational Glycemia and its Impact on Maternal and Foetal Outcome

Methodology

1. \[ \text{血糖} (G) \text{ 水平を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

2. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

3. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

4. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

5. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

6. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

7. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

8. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

9. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
   \[ \text{および} \text{ 分析} \text{ する} \]

10. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
    \[ \text{および} \text{ 分析} \text{ する} \]

11. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
    \[ \text{および} \text{ 分析} \text{ する} \]

12. \[ \text{血糖} \text{ 水平} \text{ を観察} \text{ する} \]
    \[ \text{および} \text{ 分析} \text{ する} \]
Pamphlets on GDM awareness and education

APPENDIX XVIII

1. Tamil Awareness Pamphlet:

Tamil pamphlet contains information about pregnancy-induced hyperglycemia. The pamphlet contains information about the following:

- Type 1 Diabetes (DM)
- Type 2 Diabetes (DM)
- Gestational Diabetes (GDM)
- Polycystic Ovary Syndrome (PCOS)

2. Tamil Education Pamphlet:

The pamphlet contains information about the importance of diabetes during pregnancy. The pamphlet includes:

- Healthy diet
- Regular exercise
- Monitoring blood sugar levels
- Taking medications

3. Tamil Awareness Pamphlet on Diabetes During Pregnancy

- Early diagnosis
- Regular check-ups
- Proper medication
- Balanced diet

Gestational Glycemia and its Impact on Maternal and Foetal Outcome
Methodology

Gestational Glycemia and its Impact on Maternal and Foetal Outcome

- Conducted a comprehensive review of literature on gestational glycemia and its impact on maternal and foetal outcome.
- Evaluated the prevalence of gestational glycemia in the study population.
- Assessed the association between gestational glycemia and adverse maternal and foetal outcomes.
- Conducted an analysis of risk factors associated with gestational glycemia.

5. Universal Screening

- Screened all pregnant women for gestational glycemia using a universal screening protocol.
- Identified women with gestational glycemia and assessed their risk of adverse outcomes.

6. Screening Protocol

- Evaluated the effectiveness of the screening protocol in identifying women with gestational glycemia.
- Assessed the impact of the screening protocol on maternal and foetal outcomes.

7. Screening and Management

- Conducted OGTT (oral glucose tolerance test) to confirm the diagnosis of gestational glycemia.
- Managed women with gestational glycemia based on their risk of adverse outcomes.
- Provided education and support to women with gestational glycemia.

8. Follow-up and Monitoring

- Followed up women with gestational glycemia regularly to monitor their condition and outcomes.
- Provided ongoing support and education to women with gestational glycemia.

Gestational Glycemia and its Impact on Maternal and Foetal Outcome
• கண்கூறு க்குரையாத இருக்கும் பிள்ளை மதிப்பில் இருந்து அளவு சர்க்கர் நோய்க்கைகளை கண்கூறு அளவில் பரிசோற்றுத்து அளிக்கின்றது.

9. தெரசன் (வெளிப்புறம்) நோய்களுக்கு ஒளிப்பாறை?
• கண்கூறுப் பின்னர் செயல்பாடுகளை நோய்கள் ஒளிப்பாறை
• ஒசிப்பிட்டிக் நோய்களில் தெரசன் அளவில் ஒளிப்பாறை, அதிக ஒசிப்பிட்டிக்கத்தில் பயன்கருகில் ஒளிப்பாறை ஒளிப்பாறை.
• பாய்த்து, விமர்சிக் ஒளிப்பாறை
• தெரசன் மிள்கு ஒளிப்பாறை (Mid Meal Snacking)
• மக்கள் குற்று தொல்லியலில் செய்யக்கூறில் ஒளிப்பாறை. ஆண், பெண், குழந்தை பரிமாற்றத் தொல்லியலிலும் செய்யக்கூறில் ஒளிப்பாறை தொல்லியலில் ஒளிப்பாறை ஒளிப்பாறை நோய்கள்.
• காட்சி, குழந்தை பரிமாற்றத் தொல்லியலில் ஒளிப்பாறை ஒளிப்பாறை
• பெருந்தீவு குற்று தொல்லியலில் ஒளிப்பாறை

10. கல்லான குறித்து கூறப்பட்ட ஒரு தரமான அசத்துக்கூறாக அவர்கள்?
வரும் மேலும் செய்யக்கூறில் அதாவ செய்யக்கூறில்
• தடங்கள் சாதாரணமைப்
• அலகுதான் பூங்கை
செய்யப்பட்டதுடன் குறித்து ஒரு தரமான அசத்துக்கூறில் என்று எடுக்கவும் அசத்துக்கூறில் என்று எடுக்கவும் வேளாண்மை வேளாண்மை

ஒருகாலக்குறிக்கு குறித்து வெளிப்புற வெளிக்கூறினாத நோய்கள் பட்டியல் அடுக்கு வெளிப்புறக் குறிக்கூறினாத நோய்கள்


P.சேது
Dr.S.பானைக்கிராமி
அறிக்குறிப்பிட்டு பல்கலைக்கழகம்
புகழ்பெண்ண - 43.
Appendix XIX

Power point presentation for prospective mothers - English
APPENDIX XX

Power point presentation for prospective mothers - Tamil