YOUR GENETICS LOAD THE GUN.
YOUR LIFESTYLE PULLS THE TRIGGER.

Educational Programmes for Obese Pregnant Women of Kurdistan Region in Iraq

1. INTRODUCTION

Obesity can have negative effects on the mother and the baby during the pregnancy, childbirth and postpartum in developing countries such as Kurdistan. Awareness of such a link and obesity-related problems, especially among women,

Healthy and Adverse Pregnancy Outcomes

A) Risks for the Mother
- Preeclampsia
- Gestational diabetes
- Postpartum haemorrhage
- Early birth
- Preterm birth
- Congenital abnormalities

B) Risks for the Baby
- Macrocephaly
- Preterm delivery
- Oligohydramnios
- Intrauterine growth restriction

2. AIMS OF THE STUDY

1. To assess the influence of an educational programme on the pregnancy outcomes of obese women.
2. To explore obese women’s awareness of an educational programme and pregnancy outcomes.

PREGNANCY OUTCOMES MEASUREMENTS

A) Primary Outcomes (all groups of study)
1. Maternal outcomes
   - preeclampsia
   - gestational diabetes
   - weight gain and preterm birth
   - labour outcomes
   - mode of delivery (cesarean, vaginal)
   - induction of labour
   - mode of delivery (cesarean, vaginal)
   - baby outcomes
   - mode of delivery (cesarean, vaginal)
   - mode of delivery (cesarean, vaginal)

B) Secondary Outcomes (intervention group only)
- Quality of life
- Knowledge about pregnancy
- Attitude towards pregnancy
- Perceived benefits and limitations of the educational programme

3. METHODOLOGY (MIXED METHODS)

A) Quantitative Method
- Randomized controlled trial (RCT)
- Questionnaires
- Educational sessions (intervention group)
- IOPS 12

B) Qualitative Method
- Phenomenology: Focus group (intervention group)
- Focus groups
- Thematic analysis

4. KEY FINDINGS

Qualitative Arm
The following themes emerged:
- "realities of pregnancy"
- "life experiences"
- "daily struggle"
- "interpersonal relationship"

5. CONCLUSIONS AND RECOMMENDATIONS (PROVISIONAL)

The following recommendations are made:
- Increase awareness among obese women of the risks associated with obesity during pregnancy.
- Implement educational programmes to provide information on healthy lifestyle choices and improve maternal and neonatal outcomes.
- Encourage regular prenatal care and close monitoring of high-risk pregnancies.
- Support postpartum care to enhance recovery and reduce complications.
- Promote community involvement and support for women undergoing pregnancy.

REFERENCES
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### Apgar score

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<tr>
<td>Heart rate</td>
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<td>Respiratory rate</td>
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<tr>
<td>Muscle tone</td>
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<tr>
<td>Reflex irritability</td>
<td>No response</td>
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<tr>
<td>Skin color</td>
<td>Blue, pale</td>
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### 2.1 Guidelines for critiquing research study Adapted from Coughlan et al (2007)

<table>
<thead>
<tr>
<th>Elements influencing the believability of the research</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing style</td>
<td>Is the article well written - concise, grammatically correct, avoids use of jargon? Is it well laid out and organized?</td>
</tr>
<tr>
<td>Title</td>
<td>Is the title clear, accurate and unambiguous</td>
</tr>
<tr>
<td>Abstract</td>
<td>Does the abstract offer a clear overview of the study including the research problem, sample, methodology, findings and recommendations?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elements influencing the robustness of the research</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose/research problem</td>
<td>Is the purpose of the study/research problem clearly identified?</td>
</tr>
<tr>
<td>Logical consistency</td>
<td>Does the research report follow the steps of the research process in a logical manner? Do these steps naturally flow and are the links clear?</td>
</tr>
<tr>
<td>Literature review</td>
<td>Is the review logically organized? Does it offer balanced critical analysis of the literature? Is the majority of the literature of recent origin? Is it mainly from primary sources and of an empirical nature?</td>
</tr>
<tr>
<td>Theoretical framework</td>
<td>Has the conceptual or theoretical framework been identified? Is the framework adequately described? Is the framework appropriate?</td>
</tr>
<tr>
<td>Aims/objectives/research question/hypotheses</td>
<td>Have aims, objectives, a research question or hypothesis been identified? If so are they clearly stated? Do they reflect information presented in the literature review?</td>
</tr>
<tr>
<td>Sample</td>
<td>Has the target population been clearly identified? How were the sample selected? Was it a probability or a non-probability sample? Is it an adequate size? Are the inclusion/exclusion criteria clearly identified?</td>
</tr>
<tr>
<td>Ethical considerations</td>
<td>Were the participants fully informed about the nature of the research? Was the autonomy/confidentiality of the participants guaranteed? Were the participants protected from harm? Was ethical permission granted for the study?</td>
</tr>
<tr>
<td>Operational definitions</td>
<td>Are all the terms, theories and concepts mentioned in the study clearly defined?</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>Is the instrumentation used to assess subjects described? Were instrument reliability and validity discussed?</td>
</tr>
<tr>
<td>Procedures</td>
<td>Is there a description of the procedures used to administer the instrument? Are any of the study's administrative or procedural limitations discussed?</td>
</tr>
<tr>
<td>Variables</td>
<td>Are variables adequately described? Was a rationale provided for their use? Were the variables chosen appropriate for answering the research question(s)?</td>
</tr>
<tr>
<td>Data analysis/results</td>
<td>What type of data and statistical analysis was undertaken? Was it appropriate? How many of the sample participated? Were tables and graphs presented in clear and understandable fashion? Significance of the findings?</td>
</tr>
<tr>
<td>Discussion</td>
<td>Are the findings linked back to the literature review? If a hypothesis was identified was it supported? Were the strengths and limitations of the study including generalizability discussed? Was a recommendation for future research made?</td>
</tr>
<tr>
<td>References</td>
<td>Were all books, journals and other media alluded to in the study accurately referenced?</td>
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</table>
## Guidelines for Critiquing a Qualitative Research Study

### Elements influencing the believability of the research

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<th>Elements</th>
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<td>Writing style</td>
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<td>Does the abstract offer a clear overview of the study including the research problem, sample, methodology, finding and recommendations?</td>
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### Elements influencing the robustness of the research

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<td>Is the purpose of the study/research problem clearly identified?</td>
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<td>Literature review</td>
<td>Is the review logically organized? Does it offer balanced critical analysis of the literature? Is the majority of the literature of recent origin? Is it mainly from primary sources and of an empirical nature?</td>
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<tr>
<td>Theoretical framework</td>
<td>Has the conceptual or theoretical framework been identified? Is the framework adequately described? Is the framework appropriate?</td>
</tr>
<tr>
<td>Method and philosophical underpinnings</td>
<td>Has the philosophical approach been identified? Why was this approach/method chosen? Does the author describe or reflect upon their role or positionality?</td>
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<tr>
<td>Research setting</td>
<td>Was the setting properly and completely described? Were the circumstances under which the data was collected described?</td>
</tr>
<tr>
<td>Sample</td>
<td>Is the sampling method and sample size described? Is the sampling method appropriate? Were the participants properly and completely described? Were the participants suitable for informing the research purpose as described?</td>
</tr>
<tr>
<td>Ethical considerations</td>
<td>Were the participants fully informed about the nature of the research? Was the autonomy/confidentiality of the participants guaranteed? Were the participants protected from harm? Was ethical permission granted for the study?</td>
</tr>
<tr>
<td>Data collection/data analysis</td>
<td>Are the data collection strategies described? Are the strategies used to analyze the data described? Did the researcher follow the steps of the data analysis method identified? Was data saturation achieved?</td>
</tr>
<tr>
<td>Rigor</td>
<td>Does the researcher discuss how rigor was assured? Were credibility, dependability, and transferability described?</td>
</tr>
<tr>
<td>Findings/discussion</td>
<td>Are the findings presented appropriately? Was sufficient descriptive information given to allow the reader to conclude that the author’s interpretations were grounded in the data? Does the researcher address internal validity through “triangulation,” that is, verification of the findings via member checks/other documentation/other sources/other researchers? Does the author acknowledge the lack of generalizability of the study findings, and/or suggest a replication of the study? Has the original purpose of the study been adequately addressed?</td>
</tr>
<tr>
<td>Conclusions/implications and recommendations</td>
<td>Are the importance and implications of the findings identified? Are recommendations made to suggest how the research findings can be developed?</td>
</tr>
<tr>
<td>References</td>
<td>Were all books, journals and other media alluded to in the study accurately referenced?</td>
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</table>
2.2 Data extraction format

Data extraction format

Title of the study:

Aims of the study:

Method of the study:

Bias:

Relevant to the study:

Strength points of the study:

Weakness of the study:
<table>
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<tr>
<th>Studies</th>
<th>Method</th>
<th>Participants</th>
<th>Intervention</th>
<th>Outcome</th>
<th>Bias</th>
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<tr>
<td>Althuizen et al., 2013</td>
<td>RCT, 8 midwifery practices in The Netherlands from February 2005 to May 2006</td>
<td>246 randomised, 219 analysed.</td>
<td>Intervention group: counseling (5 x approximately 15 minute sessions on weight, physical activity and diet) (n = 106). Interventions were face-to-face at 18, 22, 30, and 36 weeks’ gestation, with a telephone session at 8 weeks postpartum</td>
<td>Primary outcomes were excessive weight gain, BMI, postpartum weight retention, birth weight, macrosomia, preterm birth, gestational diabetes</td>
<td>Unclear</td>
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<tr>
<td>Angel et al., 2011</td>
<td>RCT conducted at San Francisco General Hospital, USA between 2006 and 2009 (abstract only)</td>
<td>64 randomised.</td>
<td>Intervention group: low glycaemic load diet. Control group: low fat diet</td>
<td>Excessive weight gain, excessive fat gain</td>
<td>Unclear risk</td>
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<tr>
<td>Asbee 2009</td>
<td>RCT, set in resident obstetric clinic in Charlotte, North Carolina, USA</td>
<td>Inclusion criteria: prenatal care established at 6-16 weeks of gestation, age 18-49 years, all prenatal care received at the Resident Obstetrics Clinic, English-speaking, Spanish speaking, or both, and singleton pregnancy. Exclusion criteria: BMI higher than 40, pre-existing diabetes, untreated thyroid disease, or hypertension requiring medication or other medical conditions that might affect body weight, delivery at institution other than Carolinas Medical Center Main, pregnancy ending in premature delivery (less than 37 weeks), and limited prenatal care (fewer than 4 times).</td>
<td>Intervention group (n = 57) received consistent program of dietary and lifestyle counseling. At the initial visit, participants met with a registered dietician to receive a standardized counseling session, including information on pregnancy-specific dietary and lifestyle choices. The counseling consisted of recommendations for a patient-focused caloric value divided in a 40% CHO, 30% protein, and 30% fat fashion. Participants were instructed to engage in moderate-intensity exercise at least 3 times per week and preferably 5 times per week. They also received information on the appropriate weight gain during pregnancy using the IOM guidelines. Each participant met with the dietician only at the time of enrolment. At each routine obstetrical appointment, the healthcare provider informed the participant whether her weight gain was at the appropriate level. If her weight gain was not within the IOM guidelines, the participant’s diet and exercise regimen were reviewed and she was advised on increasing or decreasing her intake and increasing or decreasing exercise. Control group (n = 43) received routine prenatal care, weight gain, caesarean delivery, pre-eclampsia, shoulder dystocia. Total weight gain was defined as weight just before delivery minus prepregnancy weigh.</td>
<td>Low risk</td>
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including an initial physical examination and history, routine laboratory tests, and routine visits per ACOG standards. The only counseling on diet and exercise during pregnancy was that included in a standard prenatal booklet. The healthcare provider did not counsel the participant regarding any changes in diet or lifestyle.

Barakat 2011  RCT, set in Hospital de Fuen-labrada, Madrid, Spain.  80 women randomised.  Inclusion criteria: healthy pregnant women (age, 23-38 years), had uncomplicated, singleton pregnancies  Exclusion criteria: any type of absolute obstetric contraindication to aerobic exercise during pregnancy, which included other contraindications that the authors considered to have a relevant influence on maternal perception of health: significant heart

Intervention group: (40 randomised) moderate physical activity, included a total of 35-to 45-min weekly sessions 3 days each week from the start of the pregnancy (weeks 6-9) to the end of the 3rd trimester (weeks 38-39), an average of 85 training sessions, exercise intensity was light-to-moderate. Exercise was supervised by a fitness specialist and was in groups of 10-12 women. Control group: (40 randomised) routine care

Weight gain, caesarean, birth weight < 4000 g, birth weight > 4000 g  High risk
<p>| Bisson 2014 | RCT conducted at Centre Mere Enfant CHU de Quebec, Laval University, Quebec City, Canada | 37 randomised, 4 withdrawals. Numbers in each group not stated. Inclusion criteria: obese pregnant women &lt; 15 weeks. Exclusion criteria: NR | Intervention group: 12 week supervised moderate exercise program consisting of 3 weekly 1-hr sessions in a hospital-based setting from 15th to 28th week. Control group: routine care. | &quot;perinatal and maternal outcomes. | Unclear risk |</p>
<table>
<thead>
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<th>Design Type</th>
<th>Details</th>
<th>Intervention</th>
<th>Primary Outcome</th>
<th>Risk Evaluation</th>
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</table>
| Bogaerts et al., 2012 | 3-arm RCT conducted in University hospital, Leuven and East Limburg Hospital Belgium | Inclusion criteria: obese pregnant women.  
Exclusion criteria: NR. | Counselling involving psycho-education (4 sessions) vs a brochure vs control  
Control group: routine care | GWG and psychological vulnerability (depression and anxiety) | Unclear risk |
| Clapp et al., 2002 | A prospective randomised design | 20 healthy women with uncomplicated pregnancy | The participants were enrolled prior to pregnancy and placed on a regular regimen of supervised exercise and began a weight maintaining diet (low glycaemic sources of CHO). At 8 weeks’ gestation, they were randomised to either diet containing low glycaemic CHO sources (n = 10) (aboriginal CHO diet) or high glycaemic CHO sources (n = 10) (cafeteria CHO diet). All continued the same exercise regimen throughout pregnancy | Weight gain.  
Total weight gain was defined as weight at delivery minus pre-pregnancy weight | Unclear risk |
<p>| Cordero et al., 2014 | open-label RCT conducted at Hospital Puerta de | 342 randomised, 257 women analysed. Included pregnant women in Spain at 10-12 weeks according to ultrasound, with no medical | Intervention group (101 women): a supervised exercise program consisting of aerobic and toning exercises for 3 sessions per week. 2 weekly sessions were performed on land (60 min) and 1 session was aquatic based (50 min). | GDM (primary outcome, diagnosed by fasting GTT before 30 weeks’ gestation, according to medical records) | Unclear risk |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Design, Location and Duration</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Outcomes</th>
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<tr>
<td>Hierro, Madrid, Spain</td>
<td>RCT at antenatal clinic</td>
<td>General population, 154 randomised, 120 analysed. Inclusion criteria: pregnant at 6-13 weeks’ gestation (median 8 weeks). Women were excluded if they had any significant maternal condition Exclusion criteria: any significant maternal condition including essential hypertension, thyroid diseases, gestational diabetes, miscarriages, preterm births, multiple pregnancies with more than 2 fetuses, maternal BMI ≤</td>
<td>Excluded women with medical or obstetric contraindications.</td>
<td>Program commenced from 10-14 weeks to the end of the third trimester. Sessions were supervised by a qualified fitness specialist and an obstetrician. Control group (156 women): routine care.</td>
<td>Excessive GWG, gestational age at delivery, mode of delivery, Birth weight and length, SGA, macrosomia</td>
<td>Weight gain, birth weight.</td>
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<tr>
<td>Di Carlo 2014</td>
<td>RCT at antenatal clinic in Italy from January 2010 to January 2011</td>
<td>Inclusion criteria: pregnant at 6-13 weeks’ gestation (median 8 weeks). Women were excluded if they had any significant maternal condition Exclusion criteria: any significant maternal condition including essential hypertension, thyroid diseases, gestational diabetes, miscarriages, preterm births, multiple pregnancies with more than 2 fetuses, maternal BMI ≤</td>
<td>Intervention group: dietary intervention (personalised diet plan with monthly dietician supervision) (n = 77; 59 in final analysis). Control group: brochure on healthy eating (n = 77; 61 in final analysis)</td>
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<tr>
<td>Study</td>
<td>Setting</td>
<td>Inclusion Criteria</td>
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<td>Intervention</td>
<td>Primary Outcome Measures</td>
<td>Risk Level</td>
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<tr>
<td>Dodd et al., 2014</td>
<td>RCT at 3 public maternity hospitals, Adelaide in Australia from June 2008 to December 2011</td>
<td>High risk (overweight and obese), 2212. Inclusion criteria: women with a singleton pregnancy, between 10 + 0 and 20 + 0 weeks' gestation, and BMI ≥ 25</td>
<td>Exclusion criteria: women with type 1 and 2 diabetes were ineligible</td>
<td>Intervention group: comprehensive dietary and lifestyle intervention (counselling) (n = 1108) Intervention involved meetings and home visits with advice on dietary, exercise, and Behavioural strategies delivered by a dietician and trained research assistants. Exercise advice primarily encouraged women to increase their amount of walking and incidental activity, Control group: routine care (n = 1104). A nested RCT was also conducted in which women randomised to the intervention group were further randomised to receive written/verbal education about physical activity (n = 295) or to participate in a supervised walking group of moderate intensity 3 times per week for 40 mins (n = 287)</td>
<td>incidence of infants born LGA (birth weight ≥ 90th centile for gestation and sex). Secondary outcomes included birth weight &gt; 4000 g, hypertension, pre-eclampsia, and gestational diabetes</td>
<td>Low risk</td>
</tr>
<tr>
<td>Guelinckx 2010</td>
<td>RCT, set in the prenatal clinic, University Hospital of Leuven, Belgium</td>
<td>Inclusion criteria: obese (BMI &gt; 29.0 according to IOM criteria), white women consecutively attending the prenatal clinic before 15 week of gestation</td>
<td>2 intervention groups: the passive group (n = 37): received a brochure during the 1st prenatal consultation. This brochure was specifically designed for the study and provided advice on nutrition and on physical activity and tips to limit pregnancy-related weight gain. The active</td>
<td>Excessive weight gain (weight gain more than the upper limit recommendation for overweight women; &gt; 11.2 kg)</td>
<td>Excessive weight gain (weight gain more than the upper limit recommendation for overweight women; &gt; 11.2 kg)</td>
<td>Low risk</td>
</tr>
</tbody>
</table>
| Exclusion criteria: pre-existing diabetes or developing GDM, multiple pregnancy, recruitment after 15 weeks of gestational age, premature labour (delivery before 37 week of gestation), primary need for nutritional advice in case of a metabolic disorder, kidney problems, Crohn’s disease, allergic conditions, and inadequate knowledge of the Dutch language. | Group (n = 42): received the same brochure and women were actively counseled by a trained nutritionist in 3 group sessions. A maximum of 5 women were brought together in these 1-hour sessions, which were scheduled at 15, 20, and 32 weeks of pregnancy. The sessions provided participants with recommendations on a balanced, healthy diet, based on the Official National Dietary Recommendations (9%-11% of the energy should come from proteins, 30%-35% from fat, and 50%-55% from CHOs). | Control group (n = 43): received routine prenatal care. (Energy intake was not restricted in any group.) | Gestational weight gain. Obstetrical and neonatal outcome: pre-eclampsia, induction of labour, caesarean section, birthweight > 4000 g. Average energy intake. Weight gain was defined as weight at birth minus prepregnancy weight. Total physical activity score at 3rd trimester. For analysis 3.10 and 4.10 a physical activity score was calculated by using a questionnaire including a total 16 questions classified into 3 domains: work, sports, and nonsports leisure-time activities, scored on a 5-point scale, ranging.
<table>
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<tr>
<th>Study</th>
<th>Design</th>
<th>Participants</th>
<th>Interventions</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haakstad 2011</td>
<td>Parallel-arm RCT at Norwegian School of Sport Sciences in Norway from September 2007-March 2008</td>
<td>General population, 105. Inclusion criteria: ability to speak Norwegian; nulliparous, sedentary women whose exercise levels did not include participation in a structured exercise program including brisk walks for the past 6 months were eligible for the trial, and must be in their first 24 weeks of pregnancy Exclusion criteria: history of more than 2 miscarriages,</td>
<td>Intervention group: exercise (60 min supervised aerobic dance at least twice a week for a minimum of 12 weeks) ( n = 52 ). Women in the exercise group were advised to have moderate, self-imposed physical activity on the remaining weekdays ,Control group: routine care ( n = 53 )</td>
<td>Infant birth weight, excessive weight gain, postpartum weight retention. Maternal weight gain and the proportion of women with excessive weight gain according to IOM recommendations (used self-reported pre-pregnancy weight as baseline)</td>
</tr>
<tr>
<td>Harrison 2013</td>
<td>RCT at 3 large tertiary hospitals in Victoria, Australia.</td>
<td>High risk, 228 randomised; 203 analysed. Inclusion criteria: women 12-15 weeks of gestation, overweight (BMI ≥ 25 or ≥ 23 kg/m²) if high risk ethnicity (Polynesian, Asian, African populations) or obese (BMI ≥ 30 kg/m²), and at the increased risk for intervention group: lifestyle counselling intervention program (individual 4 sessions based on Social Cognitive Theory provided by a health coach) (n = 121) Intervention provided dietary advice, simple healthy eating, and physical activity messages “and weight gain self-monitoring. Also included’” regular self-weighing as a key behavioural strategy”. Control group: routine care (n = 107)</td>
<td>The primary outcome was GWG with secondary outcomes including GDM screening</td>
<td>Low risk</td>
</tr>
<tr>
<td>Hawkins 2014</td>
<td>Parallel arm pilot RCT. Conducted at medical centres in Western Massachusetts, USA. Recruitment from April 2010 to Aug 2011</td>
<td>developing GDM identified by validated risk prediction tool. Exclusion criteria: exclusion criteria included multiple pregnancies, diagnosed type 1 or 2 diabetes, a BMI ≥ 45 kg/m², a pre-existing chronic medical condition, and non-English speaking women.</td>
<td>68 high-risk (overweight and obese) pregnant women randomised. Overweight and obese pregnant Hispanic women (pre-pregnancy BMI &gt; 25 kg/m²) aged 18-40 years, with a gestational age of &lt; 18 weeks, and who self-reported participating in &lt; 30 mins of moderate-intensity activity per week. Excluded if history of Type 2 diabetes, hypertension, heart disease or chronic renal disease; current.</td>
<td>A lifestyle intervention (n = 33), consisting of a culturally and linguistically modified, motivationally targeted, individually tailored 6-month prenatal programme. Educators encouraged women to achieve guidelines for physical activity, decrease saturated fat and increase dietary fibre. The intervention consisted of 6 monthly in-person behavioural counselling sessions and 5 telephone booster sessions with follow-up to 6 weeks postpartum. Women were encouraged to achieve ≥ 30 min of moderate-intensity activity on most days of the week through walking and developing a more active lifestyle. Controls had routine care (n = 35).</td>
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medications that adversely influence glucose tolerance; contraindications to participating in moderate-intensity physical activity or a low-fat/high-fibre diet; self reported participation in > 30 min of moderate-intensity exercise on > 3 days/week or > 20 min of vigorous-intensity exercise on > 1 day/week; or 6) multiple gestation (e.g. twins)

<p>| Hui, 2012 | RCT at Tertiary hospital, Winnipeg, Canada, from July 2004 to February 2010 | General population, 224 randomised, 190 completed the study (88 controls and 102 interventions) Inclusion criteria: non-diabetic pregnant women living in Winnipeg, &lt; 26 weeks’ gestation, signed informed consent. Exclusion criteria: medical or obstetric | Intervention group: lifestyle intervention (diet counselling and an exercise program) (n = 112) Intervention included &quot;a community-based exercise program specifically designed for pregnant women was provided&quot;. An exercise regimen, 3 to 5 times per week including a weekly exercise session and multiple home sessions of mild-to-moderate exercise for 30 to 45 mins was recommended. Program started between 20-26 weeks. Group exercise sessions including aerobics were held in community | Primary outcome - prevalence of excessive GWG and measures of physical activity and food intake between the 2 groups. Other measures included physical activity, gestational diabetes, weight-related obstetric procedures, | Low risk |</p>
<table>
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<tr>
<th>Study</th>
<th>Design</th>
<th>Interventions</th>
<th>Outcomes</th>
<th>Risk</th>
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<tbody>
<tr>
<td>Hui, 2014</td>
<td>Parallel arm RCT conducted in Winnipeg, Canada between May 2009 and December 2011</td>
<td>Lifestyle intervention (diet counselling and a supervised exercise program) (n = 57) vs control (n = 56). Intervention included “a community-based exercise program specifically designed for pregnant women was provided”. An exercise regimen, 3 to 5 times per week including a weekly exercise session and home sessions with DVD instruction of mild to moderate aerobic exercise for 30 to 45 mins was recommended. Program started between 20-26 weeks and continues to 36 weeks. Group exercise sessions including aerobics were held in community centres and instructors were licensed fitness trainers. 2 dietary interviews with dietician counselling using a Food Choice Map were provided (baseline and 2 months later). Control group received standard care</td>
<td>Gestational weight gain, the prevalence for LGA and birth weights</td>
<td>Low risk</td>
</tr>
<tr>
<td>Kong 2014</td>
<td>RCT at Low State</td>
<td>Obese/overweight pregnant women, 42 randomised.</td>
<td>Intervention group: exercise intervention (unsupervised walking program on treadmill or Activity, weight gain, pregnancy risks and</td>
<td>Unclear risk</td>
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</table>

Contraindications to exercise during pregnancy: centres and instructors were licensed fitness trainers. 2 dietary interviews with counselling were provided. Control group: routine care (n = 112).
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<tr>
<th>Study</th>
<th>Setting</th>
<th>Participants</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
<th>Intervention</th>
<th>Outcomes</th>
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<tr>
<td>University in USA (accrual dates not stated)</td>
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<td>Inclusion criteria: maternal age between 18 and 45 years, singleton pregnancy, nonsmoker, self-reported overweight (BMI ≥ 25 kg/m²) or obese (BMI ≥ 30 kg/m²) before pregnancy, no prior history of chronic diseases (including type 1 diabetes, cardiovascular disease, thyroid, or lung disorder), and no prior history of gestational diabetes. Only enrolled women with ≤ 3 30-min episodes of physical activity in previous 6 months</td>
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<td></td>
<td></td>
<td>Labour procedures, infant birth outcomes</td>
</tr>
<tr>
<td>Korpi-Hyovalti 2011</td>
<td>RCT, set in 2 hospitals in rural municipalities</td>
<td>60 women randomised. Inclusion criteria: women at high risk of gestational diabetes: women had 1 or</td>
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<td>Weight gain, GDM, birth weight.</td>
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<td>other setting for a minimum of 150 min/week) (n = 18)</td>
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<td></td>
<td>Unclear risk</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Country</td>
<td>Inclusion Criteria</td>
<td>Exclusion Criteria</td>
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<tr>
<td>(Kauha-joki and Lapua) in Finland</td>
<td>more risk factors (BMI &gt; 25 kg/m², previous history of GDM or birth of child &gt; 4.5 kg, age &gt; 40 years, family history of diabetes or the venous plasma glucose concentration after 12 hours fasting in the morning was 4.8-5.5 mmol/L and 2-hour OGTT plasma glucose &lt; 7.8 mmol/L) Exclusion criteria: women who were diagnosed as having GDM in this study and women who had risk factors for GDM or whose fasting venous plasma glucose was 4.8-5.5 mmol/L but who for personal or professional reasons did not wish to participate in the trial</td>
<td>Women were encouraged to eat a diet rich in vegetables, berries and fruits, and to use low-fat. Moderate-intensity physical exercise during pregnancy was encouraged, 6 sessions for exercise counselling. Control group: close follow-up group (n = 30). All women were given general information on diet and physical activity to decrease the risk of GDM during pregnancy as part of routine care</td>
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<p>| Louie 2011    | Parallel-arm RCT conducted in Australia | 99 randomised, 92 analysed. Inclusion criteria: women with GDM diagnosed by | Dietary intervention: low GI diet (n = 47) vs conventional high-fibre, moderate GI diet (n = 45). Intervention included 3 face-to-face visits with the study dietician | Birth weight, LGA, SGA, caesarean section, macrosomia, GWG. | Low risk |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Country</th>
<th>Sample Size</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Risk Status</th>
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<tbody>
<tr>
<td>Moses 2014</td>
<td>Parallel-arm RCT</td>
<td>Australia from Feb 2010 to Sept 2012</td>
<td>691 randomised, 576 analysed</td>
<td>A low glycaemic diet (n = 354) or a conventional healthy diet (n = 337) from 12 to 16 weeks’ gestation for the remainder of pregnancy</td>
<td>Primary outcomes: prevalence of LGA at birth (more than 90th centile); prevalence of childhood obesity as determined by BMI Secondary outcomes: prevalence of gestational diabetes; ponderal index; prevalence of SGA; GWG</td>
<td>Low risk</td>
</tr>
<tr>
<td>Murtezani 2014</td>
<td>A parallel arm RCT</td>
<td>Republic of Kosovo</td>
<td>72 pregnant women randomised, 63 analysed</td>
<td>Intervention (n = 30) involved an exercise training program that started in the second trimester and was continued until the end of pregnancy. Each session consisted of 40-45 min of aerobic and strength exercise. Individuals were supervised by certified aerobic instructors, and each session included a maximum of 10 participants. Intensity was moderate to vigorous; supine postures and</td>
<td>GWG, neonatal weight, Apgars, macrosomia</td>
<td>Unclear risk</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Setting and accrual dates</td>
<td>High risk: Overweight or obese, n</td>
<td>Inclusion criteria</td>
<td>Exclusion criteria</td>
<td>Intervention</td>
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<tr>
<td>Nascimen to 2012</td>
<td>RCT conducted at an antenatal outpatient clinic in Brazil from August 2008 to March 2010</td>
<td>High risk. Overweight or obese, 82 randomised. Inclusion criteria: pregnant women ≥ 18 yrs, pre-gestational BMI ≥ 26 kg/m², gestational age 14-24 weeks. Exclusion criteria: multiple pregnancy, exercising regularly, and conditions that contraindicate exercise, such as cervical incompetence, severe arterial hypertension, diabetes with vascular disease and risk of abortion</td>
<td>Intervention group: supervised exercise program (n = 40). Intervention consisted of an exercise program guided by a trained physical therapist in weekly classes with light to moderate intensity exercise for 40 mins. It also included home exercise counselling which was to be performed 5 times per week (consisting of a sequence of 22 exercises or walking).</td>
<td>Control group: routine prenatal care program (n = 42)</td>
<td>Primary outcomes were GWG and excessive weight gain. Secondary outcomes were increased arterial blood pressure, perinatal outcomes and QoL (WHOQOL)</td>
<td>Low risk</td>
</tr>
<tr>
<td>Petrella 2013</td>
<td>RCT in Italy (setting and accrual dates NR)</td>
<td>High risk. Overweight or obese. 61 randomised. Inclusion criteria: women with BMI ≥ 25 at 1st trimester, ≥ 18 years with</td>
<td>Intervention group: lifestyle intervention involving a caloric restricted low GI diet (1500 kcal/day) and prescribed moderate-intensity exercise 30 min/day, 3 times per week. Pedometers were to be worn (n = 33). Control group: routine care with a nutritional brochure</td>
<td>GDM, GWG, hypertension, and preterm delivery.</td>
<td>Low risk</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Participants</td>
<td>Intervention</td>
<td>Outcomes</td>
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<tr>
<td>Phelan 2011</td>
<td>RCT, 2 arms with individual randomisation stratified by pre pregnancy weight, set in 6 obstetric offices in Providence, Rhode Island, USA from 401 women randomised.</td>
<td>Inclusion criteria: gestational age between 10 and 16 weeks, BMI between 19.8 and 40, nonsmoking, adults (aged &gt; 18 yr), fluency in English, access to a telephone, and a singleton pregnancy. Exclusion criteria: major health or psychiatric diseases, weight</td>
<td>Intervention group: standard care plus a behavioural lifestyle intervention. The Fit for Delivery intervention included a face-to-face visit with an interventionist at the onset of treatment who discussed appropriate weight gains during pregnancy, physical activity (30 min of walking most days of the week), and calorie goals (20 kcal/kg); emphasis was placed on decreasing high fat foods, increasing physical activity, and daily self-monitoring of eating, exercise, and weight. Body-weight scales, food records, and pedometers 94 Diet or</td>
<td>Excessive weight gain, low weight gain, preterm birth, pre-eclampsia or eclampsia, caesarean delivery rate, high birth weight, low birth weight, maternal weight retention</td>
<td>Unclear risk</td>
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<tr>
<td>Year Range</td>
<td>Conditions</td>
<td>Intervention Details</td>
<td>Control Group</td>
<td>Outcome Measures</td>
<td>Risk Level</td>
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<td>2006 to 2008</td>
<td>Loss during pregnancy, or a history of ≥ 3 miscarriages</td>
<td>Exercise, or both, for preventing excessive weight gain in pregnancy (Review) were provided to promote adherence to daily self-monitoring. Automated postcards that prompted healthy eating and exercise habits were mailed weekly. In addition, after each clinic visit, women were sent personalised graphs of their weight gains with feedback. All women in the intervention received 3 brief (i.e. 10-15 min) supportive phone calls from the dietitian during the intervention. Women who were over- or under weight gain guidelines during any 1 month interval received additional brief, supportive phone calls (2 calls/month) that provided structured meal plans, and specific goals until weight gains returned to appropriate amounts</td>
<td>Routine care. Women received standard nutrition counselling provided by physicians, nurses, nutritionists, and counsellors. As part of routine care women were weighed by nurses at each clinical visit; weight graphs were not provided</td>
<td>Fitness (VO2 max, BP, heart rate at rest, and other parameters)</td>
<td>Low risk</td>
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<tr>
<td>Pinzon 2012</td>
<td>RCT conducted in Colombia with General population. 64 women randomised.</td>
<td>Intervention group: exercise intervention (n = 33) involved a supervised exercise program 3 times a week for 12 weeks. Exercise sessions</td>
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<tr>
<td>Study</td>
<td>Recruitment</td>
<td>Inclusion criteria</td>
<td>intervention</td>
<td>Outcomes</td>
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<tr>
<td>Pollak 2014</td>
<td>Pilot RCT with ratio 2:1, conducted in 2 antenatal clinics in USA in 2012</td>
<td>overweight and obese women randomised. Included if 18 years or older, English-speaking, registered for prenatal care at participating clinics, pre-pregnancy BMI of 25-40, 12-21 weeks’ gestation, and having a cell phone</td>
<td>SMS texting intervention (n = 22) targeting weight-related behaviours including increasing daily steps to 10000, avoiding sweetened drinks, eating 5 fruit and veg per day, and eliminating fast food intake. Tests were sent 3 times per week and women were asked to text back their self-monitored weight measurement. Control intervention (n = 11) was a general &quot;text4baby&quot; intervention with general information about pregnancy with few tests.</td>
<td>Weight at 40 weeks, eating habit scores, physical activity scores. Follow-up surveys were conducted at approximately 22 and 32 weeks’ gestation and women weighed. In addition, weights were obtained from clinical sources.</td>
<td>Unclear risk</td>
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with an unlimited texting plan for the next 5 months Excluded if pre-existing diabetes, limited mobility or inability to walk, impaired cognition or mental health with inability to provide consent related to healthy eating or physical activity Women were asked to wear a pedometer. records from baseline and delivery

| Polley 2002 | RCT, set in an obstetric clinic for low-income women at a hospital in Pittsburgh, PA, USA | Polley 2002 | Inclusion criteria: pregnant women before 20 weeks of gestation. (Women were recruited into 4 cells: normal and overweight, black and white.) Exclusion criteria: underweight women, younger than 18 years, 1st prenatal visit > 12 weeks’ gestation, high-risk pregnancy (i.e. drug abuse, chronic health problems, previous complications during pregnancy, current | Polley 2002 | Intervention (n = 57): the intervention was provided at regular scheduled clinic visits by staff with training in nutrition or clinical psychology. Education about weight gain, healthy eating, and exercise and individual graphs of their weight gain. Shortly after recruitment, written and oral information were given in the following area: appropriate weight gain, exercise, healthy eating. Newsletters prompting healthy eating and exercise habits were mailed bi-weekly. After each clinic visit, women were sent a personalised graph of their weight gain. Those exceeding weight gain goals were given additional individualised nutrition and behavioural counselling using the format listed; a stepped care approach. Control | Polley 2002 | Excessive weight gain, total weight gain, low weight gain. Low birthweight infants, macrosomia infants, preterm delivery, caesarean delivery, preeclampsia, weight retention at 4 weeks” postpartum. Total weight gain was based on self-reported pre pregnancy weight and weight at last clinic visit prior to delivery | Polley 2002 | Unclear risk |
multiple gestation) (n = 53): usual care: standard nutrition counselling provided by the physicians, nurses, nutritionists and WIC counsellors. This counselling emphasised a well-balanced dietary intake and advice to take a multivitamin/iron supplement.

Poston 2013

A pilot RCT conducted at multiple tertiary and university hospitals in the UK with recruitment from March 2010 to May 2013. (UPBEAT study)

183 randomised, 154 analysed.

Inclusion criteria: BMI ≥30 kg/m² and singleton pregnancy; gestational age > 15 weeks and < 17 weeks’ gestation

Exclusion criteria: unable or unwilling to give written informed consent; gestation < 15 weeks and > 17 weeks, pre-existing diabetes, pre-existing hypertension (treated), preexisting renal disease, multiple pregnancies; systemic lupus erythematosus

Intervention group: a lifestyle intervention (diet plus exercise) (n = 94) involving 1 1-to-1 session with a health trainer and then weekly group sessions for 8 consecutive weeks from 19 weeks’ gestation. Sessions delivered by health trainers involved diet and exercise advice informed by psychological models of health behaviour. Dietary advice focused on increased consumption of foods with a low dietary GI, and reduction of saturated fats.

Physical activity advice encouraged women to increase daily walking activity at moderate intensity level, setting goals monitored by a pedometer. Women also received a DVD of a pregnancy specific exercise regimen

Control group: routine care (n = 89).

Primary outcome: GDM. Others were GWG, macrosomia, LGA, dietary and exercise parameters, anxiety and depression

Low risk
| Study | Design | Setting | Sample Size | Inclusion Criteria | Exclusion Criteria | Intervention | Outcomes | Risk
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<tbody>
<tr>
<td>Quinlivan 2011</td>
<td>RCT</td>
<td>Maternity service of a public general hospital serving a socio-economically disadvantaged area in Melbourne, Australia</td>
<td>132 randomised.</td>
<td>Pregnant with a fetus with no known anomalies, spoke English, did not intend to relinquish their infant, did not have a multiple gestation, were able to attend hospital for antenatal care and were overweight (BMI 25-29.9) or obese (BMI &gt; 29.9)</td>
<td></td>
<td>Intervention group: a 4-step multidisciplinary protocol of antenatal care which had the following 4 criteria: (i) continuity of care provider; (ii) weighing on arrival; (iii) brief dietary intervention by a food technologist at every antenatal visit; and (iv) psychological assessment. Women attended special study clinics</td>
<td>Weight gain, preterm delivery</td>
<td>Unclear risk</td>
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<tr>
<td>Rae 2000</td>
<td>RCT</td>
<td>Diabetes Service, King Edward</td>
<td>Inclusion criteria: gestation &lt; 35 weeks and 6 days, &gt; 110% of ideal body weight for height (adjusted for</td>
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<td>Intervention (n = 63): the intervention comprised instruction in a moderately energy restricted diabetic diet providing between 1590-1776 kcal (70% RDA)</td>
<td>Weight gain, pre-eclampsias, induction of labour, caesarean delivery, shoulder</td>
<td>Low risk</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Population</td>
<td>Inclusion Criteria</td>
<td>Exclusion Criteria</td>
<td>Intervention</td>
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<td>Outcome Variables</td>
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<td>Rauh 2013</td>
<td>Cluster-RCT, open-label at 8 gynaecological practices in Germany from February 2010 to August 2012</td>
<td>General population. 250. Inclusion criteria: older than 18, 1 live fetus, &lt; 18 weeks' gestation, BMI ≥18.5 kg/m² and able to speak sufficient German</td>
<td>Exclusion criteria: if they had any condition preventing physical activity, such as cervical incompetence, placenta praevia, or persistent bleeding. Prepregnancy diabetes or uncontrolled</td>
<td>Intervention group: lifestyle counselling (n = 167) Intervention consisted of 2 individually delivered counselling sessions focusing on diet, physical activity and weight selfmonitoring, delivered at the 20th (60 min) and 30th week (30 min) by trained researchers</td>
<td>Control group: routine care (n = 83).</td>
<td>The primary outcome was the proportion of pregnant women exceeding weight gain recommendations of the IOM. The secondary outcome variables were maternal weight retention at 4 months postpartum and short-term obstetric and neonatal outcomes</td>
<td>Unclear risk</td>
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<td>Memorial Hospital for Women, Perth, Western Australia</td>
<td>expected pregnancy weight gain and using a BMI of 25 as equal to 100% ideal body weight), OGTT with fasting plasma glucose &gt; 5.4 mmol/L and/or 2-hour plasma glucose &gt; 7.9 mmol/L</td>
<td>Exclusion criteria: not stated</td>
<td>Control (n = 54): the control group were instructed in a diabetic diet which was not energy restricted, providing approximately 2010-2220 kcal a day</td>
<td>Dystocia, birth weight &gt; 4000 g, birth weight &gt; 90th centile, assisted delivery. Weight gain was calculated as the difference between pre pregnancy weight and delivery weight</td>
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<tr>
<td>Renault2014</td>
<td>3-arm RCT at 1 hospital in Hvidovre in Denmark from March 2009 to March 2012</td>
<td>High risk. Obese. 425 randomised. 389 analysed. Inclusion criteria: pregnant women with a prepregnancy BMI of 30 kg/m² or greater. Age older than 18 years, a singleton pregnancy, and a normal scan in weeks 11-14, gestational age at inclusion of less than 16 weeks, and an ability to read and speak Danish. Exclusion criteria: multiple pregnancy, pregestational diabetes, or other serious diseases limiting their level of physical activity, previous bariatric surgery, or alcohol or drug abuse.</td>
<td>Comparison of 3 groups. Intervention groups: intervention 1: physical activity and diet (n = 130); intervention 2: physical activity only (n = 125). The physical activity intervention included encouragement of increase physical activity, aiming at a daily step count of 11,000, monitored by pedometer assessment on 7 consecutive days, every 4 weeks. Dietary intervention included follow-up on a hypocaloric Mediterranean-style diet. Instruction was given by a dietician every 2 weeks with alternating outpatient visits and phone calls, including weight measurement, encouragement and correcting advice. Control group: routine care (n = 134).</td>
<td>Primary outcome: GWG. Secondary outcomes: complications of pregnancy and delivery and neonatal outcome. Low risk</td>
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<td>Rhodes 2010</td>
<td>RCT (pilot study), set in Beth Israel Deaconess Medical Center, Boston, MA, and Children’s Hospital Boston, Boston, MA, USA</td>
<td>Inclusion criteria: pregnant women with prepregnancy or 1st trimester BMI equal to or greater than 25 kg/m² and less than 45 kg/m², singleton pregnancy, willing to consume the diets for duration of pregnancy, participant to be at week 28 or less of pregnancy at baseline visit. Exclusion criteria: smoking during pregnancy, major medical illness (e.g. diabetes mellitus, hypertension, thyroid disease), taking prescription medication known to affect body weight, alcohol consumption during pregnancy, intention to deliver infants in the environment outside of Beth Israel Deaconess Medical Center, Boston, USA</td>
<td>Intervention group 1: nutrition education, dietary counselling, and a low-GI diet. Intervention group 2: nutrition education, dietary counselling, and a low-fat diet.</td>
<td>Maternal outcome: weight change. Infant outcome: macrosomia, large-for-gestational age, caesarean delivery</td>
<td>Low risk</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Recruitment Details</td>
<td>Study Details</td>
<td>Outcomes</td>
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<td>Rolo 2012</td>
<td>RCT conducted at a maternity hospital in Ireland with recruitment from January 2007 to January 2011</td>
<td>800 randomised, 759 analysed. Inclusion criteria: secundigravid women whose first baby was macrosomic (birthweight &gt; 4.0 kg). Exclusion criteria: underlying medical disorders, previous history of gestational diabetes, those on any drugs, and those unable to give full informed consent, age less than 18 years, gestation greater than 18 weeks, and multiple pregnancy</td>
<td>Low GI dietary intervention (n = 394) involving 1 dietary education session lasting 2 hours in groups of 2-6 women with a dietitian at baseline. Follow-up reinforcement sessions were held at 28 and 34 weeks' gestation. Women received written resources about low GI foods. Control group: routine care (n = 406)</td>
<td>Primary outcome: birthweight. Secondary outcomes: GWG, maternal GI and dietary intake.</td>
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<tr>
<td>Ronnberg 2014</td>
<td>Registered, open-label, parallel assignment RCT</td>
<td>general population: 445 women randomised, 374 analysed. Included if &gt; 18 years old, Swedish speaking, BMI ≥</td>
<td>Intervention group: a motivational exercise intervention that included a personalized weight graph, GWG monitoring at each antenatal visit, and prescribed exercise to be at a &quot;moderate level of exertion for approximately</td>
<td>GWG (1990 IOM guidelines), weight retention up to 1 year, fetal and maternal complications in</td>
<td>Low risk</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Population</td>
<td>Inclusion Criteria</td>
<td>Exclusion Criteria</td>
<td>Intervention</td>
<td>Control Group</td>
<td>Outcomes</td>
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<tr>
<td>Ruchat 2012</td>
<td>RCT of 2 interventions compared with historical control in Canada</td>
<td>General population, 73 recruited, 49 analysed</td>
<td>Normal weight women with singleton pregnancies between 16 and 20 weeks’ gestation</td>
<td>Maternal age &lt; 18 years or &gt; 40 years, smoking, multiple pregnancy, presence of chronic disease, or other contraindications to exercise</td>
<td>2 lifestyle interventions vs an historical control. Intervention groups: interventions were moderate-intensity exercise plus diet (n = 26), vs low-intensity exercise plus diet (n = 23). The low-intensity exercise intervention consisted of a walking program that corresponded with 30% HRR (oxygen consumption reserve) whereas the moderate-intensity program corresponded with a 70% HRR. The exercise was performed 3 to 4 times per week, with 1 session per week supervised. Participants wore an HR monitor to ensure they were exercising within the predetermined target HR zone. Control group: control group were 45 normal weight women with singleton pregnancies who did not participate in a structured exercise program. All participants received a diet plan based on a modified diabetic diet</td>
<td>Control group were 45 normal weight women with singleton pregnancies who did not participate in a structured exercise program. All participants received a diet plan based on a modified diabetic diet</td>
<td>G WG, maternal weight retention 2 months postpartum, infant birth weight</td>
<td>WG, maternal weight retention 2 months postpartum, infant birth weight</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Population</td>
<td>Inclusion Criteria</td>
<td>Intervention</td>
<td>Primary Outcome</td>
<td>Secondary Outcomes</td>
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<tr>
<td>Ruiz 2013</td>
<td>RCT at 3 primary care hospitals in Madrid, Spain, from September 2007-January 2011</td>
<td>General population, 962 randomised and analysed. Inclusion criteria: women who were sedentary (not exercising for &gt; 20 mins on &gt; 3 days a week), with singleton and uncomplicated gestations, not at high risk of preterm delivery (i.e. previous preterm birth) and not participating in any other trial were able to participate. Exclusion criteria: women with any obstetric contraindication to exercise were not eligible to participate</td>
<td>Intervention group: exercise intervention (n = 481). The intervention included light- to moderate-intensity aerobic and resistance exercises performed 3 days a week (50-55 mins per session) from 9 weeks to weeks 38-39. Exercise sessions included 8-10 participants. Control group: routine care (n = 481).</td>
<td>Primary outcome: GWG. Secondary outcomes: Maternal and fetal outcomes, including Birth weight, gestational age, type of delivery (caesarean, etc), Apgar scores, childbirth, gestational diabetes and hypertension.</td>
<td>Low risk</td>
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<tr>
<td>Santos 2005</td>
<td>Randomised clinical trial, set in a referral centre prenatal clinic in Porto</td>
<td>Inclusion criteria: healthy, nonsmoking pregnant women, aged 20 years or more, of gestational age less than 20 weeks, having a</td>
<td>Intervention (n = 37): the intervention consisted of a program of supervised physical exercise of 60 mins duration, performed 3 times per week for 12 weeks. Each session consisted of 5-10 mins of warm up, 30 mins of</td>
<td>Weight gain, low birth weight, prematurity.</td>
<td>Weight gain was calculated from different between weight at</td>
<td>High risk</td>
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<tr>
<td>Study</td>
<td>Setting</td>
<td>Inclusion Criteria</td>
<td>Intervention</td>
<td>Outcomes</td>
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<td>Stafne 2012</td>
<td>Alegre, Brazil, during the period 2000-2002</td>
<td>BMI between 26 and 31 kg/m² (corresponding to a prepregnancy BMI of 25-30 kg/m²) (overweight), and without diabetes or hypertension</td>
<td>Heart rate-monitored aerobic activity, 10-15 mins of exercise involving upper and lower limbs, and 10 mins of stretching and relaxation. Aerobic activities were always performed between 50% and 60% of the maximum predicted heart rate, never exceeding 140 beats per min. The exercises followed the recommendations concerning physical activity practice during pregnancy according to the American College of Sports Medicine, and the ACOG Control (n = 35): the control group participated in once-weekly sessions that included relaxation (respiratory exercises and light stretching but no aerobic or weight-resistance exercises) and focus group discussions concerning maternity. Control participants were neither encouraged to exercise nor discouraged from exercising.</td>
<td>Baseline and weight after 12 weeks of intervention</td>
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<tr>
<td>Stafne 2012</td>
<td>RCT conducted at St Olavs Hospital, Trondheim University Hospital, and</td>
<td>855 randomised, 702 analysed. Inclusion criteria: white women aged 18 years or older with a singleton live fetus</td>
<td>Intervention group: 12 weeks regular standardised exercise program including aerobic activity, strength training, and balance exercises. The exercise program followed standard recommendations and included moderate-intensity to high-intensity activity 3 or more days per week. Physiotherapist-</td>
<td>Primary outcome: GDM, insulin resistance. Secondary outcomes: maternal weight, BMI, newborn weight, gestational age, Apgar</td>
<td>Low risk</td>
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<tr>
<td>Study</td>
<td>Location</td>
<td>Inclusion Criteria</td>
<td>Exclusion Criteria</td>
<td>Intervention</td>
<td>Control</td>
<td>Risk Status</td>
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<tr>
<td>Thornton 2009</td>
<td>Morristown Memorial Hospital, St Luke’s-Roosevelt Hospital</td>
<td>Pregnant with a single fetus between 12 and 28 weeks of gestation that had a BMI greater than or equal to 30 kg/m²</td>
<td>Women with pre-existing diabetes, hypertension, or chronic renal disease</td>
<td>Monitored group: counselled in nutrition by a registered dietitian and given a more detailed dietary intake protocol. The nutrition program for the monitored women followed dietary guidelines similar to those used in women with the diagnosis of gestational diabetes. The women in this group were asked to record in a diary all of the foods and beverages eaten during each day.</td>
<td>Routine care (women were not discouraged from exercising)</td>
<td>Low risk</td>
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<td>Center, and Jamaica Hospital Medical Center. Each study site was an urban, public clinic of a teaching hospital, New York Medical College</td>
<td>macrosomal infant (＞4500 g). Weight gain was weight difference between the baseline(12-28 weeks) pregnancy weight and weight before delivery</td>
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<td>Vesco 2013 Parallel-arm RCT conducted by Harvard Medical School, USA</td>
<td>160 planned, 114 randomised so far. Inclusion criteria: women aged 18 or older, who were obese at the beginning of pregnancy (BMI ≥ 30 kg/m²); 10-20 weeks’ gestation. Exclusion criteria: gestational age &gt; 20 weeks, multifetal pregnancy, anticipated</td>
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<td>Intervention group: lifestyle intervention (diet plus exercise) (n = 56). Following randomisation, all participants receive a 45-min dietary consultation. They were encouraged to follow the Dietary Approaches to Stop Hypertension diet (DASH) without sodium restriction and received an individualised calorie intake goal, a second individual counselling session and attend weekly group meetings (90 min) with weigh-ins, food and</td>
<td>Primary outcomes: GWG, excessive weight gain, postpartum weight retention at 1 year (mean difference between postpartum and baseline weight), proportion of LGA neonates Secondary outcomes: feasibility and acceptability of the</td>
<td></td>
<td>Low risk</td>
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<tr>
<td>Study</td>
<td>Design</td>
<td>Participants</td>
<td>Interventions</td>
<td>Outcomes</td>
<td>Risk Category</td>
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<tr>
<td>Vinter et al 2011</td>
<td>RCT conducted at 2 university hospitals in Odense, Denmark from October 2007 to October 2010</td>
<td>360 randomised, 304 analysed. Included obese women aged 18-40 years, 10-14 weeks’ gestation, BMI of 30-45 kg/m². Excluded if chronic medical conditions, prior serious obstetric complications, alcohol/drug abuse, non-English speaking, plans to move within the year, type 1 or 2 diabetes mellitus (or gestational diabetes), and other medical conditions that require specialised nutritional care (e.g. history of bariatric surgery) or conditions that may affect weight gain (e.g. severe hyperemesis gravidarum)</td>
<td>Intervention group: a lifestyle intervention consisting of dietary counselling and exercise (n = 180). The intervention involved dietary advice on 4 occasions (15, 20, 28 and 35 weeks) by a dietician. Energy requirements were personalised for each participant. Exercise intervention included a pedometer, free gym membership for 6 months, encouraged to do 30-60 min moderate physical activity daily. At 6 months postpartum, encouraged to do 30-60 min moderate physical activity daily. At intervention, maternal dietary intake and physical activity, and infant birth weight, feeding patterns, and growth during the first year of life</td>
<td>GWG, pre-eclampsia, hypertension, GDM, macrosomia, LGA, admission to NICU, maternal weight retention at 6 months postpartum, infant and childhood weight</td>
<td>Low risk</td>
<td></td>
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<tr>
<td>Vitolo 2011</td>
<td>RCT (pilot study), set in primary care settings in Porto Alegre, Brazil</td>
<td>Inclusion criteria: gestational age between 10 and 29 weeks; women attending the prenatal care unit of the health unit. Exclusion criteria: positive testing for HIV, previous diagnosis of diabetes, hypertension, anaemia or another condition that needed a special diet and age over 35 years</td>
<td>Intervention group: (159 women) weight and diet were assessed at recruitment. The aim of the intervention was to improve diet and encourage weight-appropriate weight gain in pregnancy. For low weight women, the priority was increasing the energetic density of the meals. For normal weight women, daily consumption of vegetables, greens, fruit and water were encouraged and women were advised to restrict consume of fat-rich foods and oil in cooking. For the overweight women, the intervals between meals were prioritized and women were encouraged to restrict their consumption of snacks. Women received a further interview 1 month later to reinforce messages. Control group: (162 women) women did not receive any special intervention but were informed about their weight and nutritional status and advised to seek professional help if they were under or overweight. Their doctors were also provided</td>
<td>Weight gain</td>
<td>Unclear risk</td>
<td></td>
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</tbody>
</table>
with the results of the nutritional evaluation

| Wilkinson 2011 | RCT conducted at a maternity hospital in Australia with recruitment from August 2010 to March 2011 | Randomised 360, analysed 242. Included if attending their booking visit at the MH research site and were 18 years or older (or under 18 years, with the consent of a parent or guardian) Excluded if unable to read and speak English at a level that allowed completion of penand-paper surveys | Intervention group: a lifestyle intervention (diet plus exercise, smoking cessation, etc) (n = 178) consisting of a 1-hour “Healthy start to pregnancy” workshop with a 12 page booklet with evidence based information, with goal setting and self-monitoring activities Control group: routine care (n = 182). | Good nutrition, PA, GWG awareness, number of cigarettes smoked, BMI | Low risk |
| Wolff 2008 | RCT, set in Copenhagen, Denmark | Inclusion criteria: pregnant obese women (BMI > 30 kg/m²), nondiabetic non-smoking and Caucasian recruited at 15 ± 3 weeks of gestation. Exclusion criteria: smoking, age < 18 or > 45, multiple pregnancy, or medical | Intervention (n = 23): restriction of GWG to 6-7 kg by 10 consultation of 1 hour each with trained dietitian. The women were instructed to eat a healthy diet according to the official Danish dietary recommendations (% fat, protein, CHO, 30, 15-20, 50%-55%). The energy intake was restricted based on individually estimated energy requirements and estimated energetic cost of fetal growth | Weight gain, weight retention at 4 weeks” postpartum, pre-eclampsias, caesarean delivery. Weight gain was calculated as difference between self-reported prepregnancy weight and weight just before delivery | Low risk |
| complication | Control (n = 27): the control group had no consultations with the dietitian and had no restrictions on energy intake or GWG. All participants followed the routine clinical schedule. |  |  |
3.1 Pre Study questionnaire

Study title: Influence of an education programme on the Pregnancy Outcomes of Obese Women in Kurdistan region of Iraq

(Questionnaires 1= data information sheet (initial antenatal visit))

Code no

Socio-demographic data:
Age:
Height cm
Weight kg
BMI

Weeks of pregnancy age week (s

Woman’s occupation

Husband’s occupation

Family socioeconomic status

☐ Higher managerial, administrative or professional
☐ Intermediate managerial, administrative or professional
☐ Supervisory or clerical and junior managerial, administrative or professional
☐ Skilled manual workers
☐ Semi and unskilled manual workers
☐ Casual or lowest grade workers, pensioners and others who depend on the state for their income

Woman’s level of education
1. post graduate
2. Bachelor's degree
3. Diploma
4. Secondary level
5. Primary school
6. No education

Husband’s level of education
1. post graduate
2. Bachelor's degree
3. Diploma
4. Secondary level
5. Primary school
6. No education

Gynaecological

Obstetrical history:
LMP

EDD

Tell me how was this pregnancy?

Did anything unusual happen?
How did you feel during this pregnancy?

Past Pregnancy History

Number of pregnancies

Number of full term deliveries

Number of premature deliveries

Number of abortions

Number of miscarriages

Number of living baby

Number of preterm labour

Mode of previous deliveries

a. Normal
b. c/s
c. both

Place of delivery

Definition of normal as defined by health centre

Person completing this form

Medical note reference number
3.1 Educational programme

Influence of an educational programme on the pregnancy outcomes of obese women in Kurdistan region of Iraq

Programme Description

The innovation is to use an antenatal group model to deliver interventions to promote healthy living and minimum weight gain during pregnancy. The six week programme will address a gap in service provision for women who are vulnerable and unlikely to access services for help. The women will be identified by health care providers in the centre who can refer women onto the programme.

The key features of the programme will be on:


The programme will run in Mala A Fandi health centre and will be for women from booking who have a BMI of 30 or more.

Objectives

- This project will help women keep healthy during pregnancy and highlight the importance of not gaining too much weight during pregnancy.
- It will help women to understand what makes them choose the foods they eat and how to change their lifestyle.
- To increase women confidence and self-esteem.
- It will help women have a better knowledge the importance of a balanced diet and enhance cognitive function.
- One of the most important functions of the development will be to enable women to build up networks and new friends and have the confidence to change their eating habits and increase exercise.

Project plan:

A rolling programme of 6 sessions is proposed. The model will then repeat for new clients over a study.
Women can access the programme directly via the health centres. The sessions will be for 2 hours each in a safe comfortable environment at Mala A Fandi Health Centre.

The educational programme plan will be as following:

<table>
<thead>
<tr>
<th>Sessions Contents</th>
<th>Aims/Objectives</th>
<th>Outcomes</th>
</tr>
</thead>
</table>
| • Your pregnancy and your health, body change and minor discomfort during pregnancy.  
  • Proper nutrition during pregnancy, difficult  
    ➢ Salt  
    ➢ Fats  
    ➢ Sugar  
    ➢ Vitamin D and calcium | • To increase women’s knowledge about physiological change during pregnancy and the proper nutrition for mum and baby during pregnancy.  
  • Tips and advice.  
  • To increase women’s knowledge about proper nutrient during pregnancy | • Women will have the knowledge about their body change and good nutrition during pregnancy.  
  • Women will have knowledge about proper diet for her and her baby |
| □ Obesity and pregnancy  
 □ BMI  
 □ Recommended weight gain according to mother weight.  
 □ Foods to avoid during pregnancy | To increase women's awareness about 1- the effect of increased weight gain on mother and baby 2- recommended weight gain during pregnancy.  
 To increase women awareness about avoided food during pregnancy. | Women will have the knowledge about obesity and its complication on pregnancy as well as the recommended weight gain according to their body weight.  
 Women will have the knowledge about avoided food. |
| Simple exercise and physical activity during labour | To increase women skill about physical activity during pregnancy. | Women will have proper skill and knowledge about physical activity and exercise |
| Labour, stage of labour, labour quiz and what happened in each stage | To increase women’s knowledge about stage of labour and what happen in each session. | Women will have knowledge about labour and stage of labour |
| Coping with beginning of labour at home (non-pharmacological pain relief) | Increase women knowledge and skill to cope with the labour | Women will have knowledge about coping strategies during her labor |
| ▶ Feeling healthier after birth  
 ▶ Postnatal reunion | Increase women knowledge about healthy living and good body image. | Women will have knowledge about healthy and wellbeings postnatal |

At every session a recap on the key messages around managing obesity and healthy living was discussed.

**Place:** Mala Afandi health center  
**Total number of classes:** 6 sessions  
**Time:** 1:30-2hr.

**Audiovisual aids:** Lap top, pictures, pamphlets and postures.  
**Teaching methods:** Power-point, explanation, discussion.  
**Evaluation methods:** Post-test Feedback (at the end of the programme).  
**Instrument used in the programme:** weighing scale
3.1 Pre Study questionnaire

Study title: Influence of an education programme on the Pregnancy Outcomes of Obese Women in Kurdistan region of Iraq

(Questionnaires 1= data information sheet (initial antenatal visit))

Code no

Socio-demographic data:
Age:
Height cm
Weight kg
BMI

Weeks of pregnancy age week (s)

Woman’s occupation

Husband’s occupation

Family socioeconomic status

☐ Higher managerial, administrative or professional
☐ Intermediate managerial, administrative or professional
☐ Supervisory or clerical and junior managerial, administrative or professional
☐ Skilled manual workers
☐ Semi and unskilled manual workers
☐ Casual or lowest grade workers, pensioners and others who depend on the state for their income

Woman’s level of education
1. post graduate
2. Bachelor's degree
3. Diploma
4. Secondary level
5. Primary school
6. No education

Husband’s level of education
1. post graduate
2. Bachelor's degree
3. Diploma
4. Secondary level
5. Primary school
6. No education

Gynecological

Obstetrical history:
LMP

EDD

Tell me how was this pregnancy?

Did anything unusual happen?
How did you feel during this pregnancy?

<table>
<thead>
<tr>
<th>Past Pregnancy History</th>
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</thead>
<tbody>
<tr>
<td>Number of pregnancies</td>
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<tr>
<td>Number of premature deliveries</td>
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<tr>
<td>Number of miscarriages</td>
</tr>
<tr>
<td>Number of preterm labour</td>
</tr>
<tr>
<td>a. Normal</td>
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<td>b. c/s</td>
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<tr>
<td>c. both</td>
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</tbody>
</table>

Definition of normal as defined by health centre

Person completing this form

Medical note reference number
3.2 Post Study questionnaire

Influence of an education programme on the Pregnancy Outcomes of Obese Women in Kurdistan region of Iraq

**Second questionnaire (after birth)**

<table>
<thead>
<tr>
<th>Code no.</th>
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<tbody>
<tr>
<td>Mother's weight at onset of labour</td>
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<tr>
<td>Mother's height at onset of labour (In previous questionnaire)</td>
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<tr>
<td>Gestational age at onset of labour</td>
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<tr>
<td>Modes of delivery</td>
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<tr>
<td>Normal Vaginal Delivery (NVD)</td>
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<td>Assisted delivery</td>
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<td>Caesarean section</td>
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<td>Birth weight</td>
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<td>Apgar score in:</td>
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<td>1st mint</td>
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<td>First 5th mint</td>
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<tr>
<td>Length of</td>
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<td>Place of birth</td>
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</table>

<table>
<thead>
<tr>
<th>Pregnancy outcomes</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
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</thead>
<tbody>
<tr>
<td>Gestational diabetes (Random glucose test more than 200 g/dl or fasting glucose test more than 126 g/dl)</td>
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<td>Pregnancy associated hypertension (blood pressure &gt; 140/90 mmHg)</td>
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<td>Preterm birth (the birth of a baby of less than 37 weeks gestational age)</td>
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<td>Prolonged pregnancy (A pregnancy that exceeds 42 complete weeks (294 days) after last menstrual period)</td>
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<td>Labour induction (The process of starting labour by artificial means)</td>
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<td>Caesarean birth</td>
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<td>Still birth (death after 20 weeks gestation)</td>
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<td>Macrosomia (birth weight more than 4000-4500g)</td>
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<td>Low birth weight (birth weight less than 2,500g)</td>
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<tr>
<td>Congenital abnormalities</td>
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<tr>
<td>Weight gain</td>
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<tr>
<td>Episiotomy (incision on perineum to assist delivery of infant)</td>
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<td>Primary PPH (Loss of blood &gt;500 ml, from the genital tract, within 24 hours of delivery)</td>
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<td>ARM (process in which the fetal amniotic sac is ruptured to facilitate labour by using forceps)</td>
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<tr>
<td>Precipitate labour (labour lasting less than 3 hr)</td>
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</table>
Prolonged second stage (Nullipara >2 h  Multipara >1 h)
Prolonged labour (more than 14 hr in primi and 8 hr in multigravida)
Prolonged second stage (Nullipara and Multipara > 30 mint).
Other pregnancy complications (please specify)

Other pregnancy complications (please specify)  

Person completing this form  

Medical note reference number
3.2 Likert Type Scale

“Healthy Living in Pregnancy” SELF-EVALUATION QUESTIONNAIRE

Please read the following statements and indicate on the scale below each sentence how you are feeling at this present time – 1 being „not very” and 10 being „definitely”:

Code no

<table>
<thead>
<tr>
<th>3.1.1</th>
<th>How much do you recognise the importance for you to make lifestyle changes to improve you and your family’s health?</th>
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<tbody>
<tr>
<td>1.</td>
<td>2.</td>
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</table>

<table>
<thead>
<tr>
<th>3.1.2</th>
<th>Do you feel you have the right amount of knowledge and skills to make these changes?</th>
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<th>3.1.3</th>
<th>How motivated are you to make the necessary lifestyle changes to improve your health?</th>
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5. How confident are you on your ability to make a difference to you and your family’s health?

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<th>3.1.4</th>
<th>How prepared do you feel for the birth?</th>
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Comments:

Please feel able to make any further comments about your experiences here:

Thank you for completing this short questionnaire.
3.4 Topic guide and invitation
Invitation focus group

1- Opening for the session; Focus group interviews transcripts

Researcher: Hello
Welcome again

Hi, this is me again Aveen Haji Mam. I am conducting a focus group after your delivery of the baby for you because you were received in an educational programme and I want to see what are the predisposing factors for you to not attend the sessions completely. I want to remind you that the data gathered in this group discussion will be confidential and nothing you say will be divulged by the researcher and nothing will be added or deleted by the researcher. The interviews will be anonymous and the tape will be erased as soon as the study is completed. And it will not be played for anyone except me and supervisors if necessary. This group discussion takes 30 minutes. If you have any questions, please feel free to ask.
Focus group questions

Q1/ Tell me what you think about the education programme you have received.

Q2/ What have you most enjoyed?

Q3/ What have you least enjoyed?

Q4/ what key messages will you take away with you from this course?

Q5/ Do you think the programme has helped you in any way. If so, how?

Q6/ has the programme changed your behaviour. If so, how?

Q7/ Thinking about the programme content what have you founds most helpful and least helpful.

Q8/ Thinking about the way in which the programme has been delivered, what activities have you most enjoyed and what activities have you least enjoyed?

Q9/ Thinking about the organization of the classes

Q10/ Thinking about the timing of the classes.

Q11/ Do you have any other advice about the program?

Ending

Thank you for your participation in the study. If you would like to see the results, please let me know and I can leave a copy of the results in the health centre, and you can collect them if you so desire. If you want to contact me for any reason, please call me or email me at the address in the information sheets.
3.5 Ethical approvals De Montfort University

17th July 2012

Aween Fatah Haij Moeen
PhD Candidate
Faculty of Health & Life Sciences

Dear Aween,

Re: Ethics application – PhD: Influence of an education programme on the Pregnancy Outcomes of Obese Women in Kurdistan region of Iraq (ref: 944)

I am writing regarding your application for ethical approval for a research project titled to the above project. This project has been reviewed in accordance with the Operational Procedures for De Montfort University Faculty of Health and Life Sciences Research Ethics Committee. These procedures are available from the Faculty Research and Commercial Office upon your request.

I am pleased to inform you that ethical approval has been granted by Chair’s Action for your application. This will be reported at the next Faculty Research Committee, which is being held on 18th October 2012.

Should there be any amendments to the research methods or persons involved with this project you must notify the Chair of the Faculty Research Ethics Committee immediately in writing. Serious or adverse events related to the conduct of the study need to be reported immediately to your Supervisor and the Chair of this Committee.

The Faculty Research Ethics Committee should be notified by e-mail to HSERO@dmu.ac.uk when your research project has been completed.

Yours sincerely,

Dr Richard Davies
Deputy Chair
Faculty of Health and Life Sciences
Research Ethics Committee
3.6 Ethical approval Hawler Medical University

18th November 2012

To: Aven Fatuh Haji Mamed
PhD Candidate
Faculty of Health Life Sciences

Re: Ethics application PhD thesis

I am writing regarding the application for ethical approval for research titled "Influence of an education programme on the Pregnancy Outcomes of Obese women in Kurdistan region of Iraq". This project has been reviewed by the Ethical committee of research in college of nursing/Hawler Medical University regarding confidentiality and anonymity of participants. I am pleased to inform you that the ethical approval has been granted by chair's Action for your applicant.

Dr. Noor Al Shaker
Deputy Chair
College of Nursing
Research Ethics Committee

[Signature]

[Stamp]

Date: 07/12/02
Dear Sir/Madam,

This is to certify that (Directorate of Health, Mala Alfandi Primary Health center, Erbil, Kurdistan region [Iraq]) approved and ready to support PhD student [Aven Patsah Hajj Malli] to undertake some research in the "Influencing the educational programme on the pregnancy outcomes of obese women in Kurdistan region of Iraq at (Mala Alfandi Primary Health center).

I understand this will involve running educational programmes at the center with obese pregnant women. I understand that Hawler Medical University will cover any costs involved in running these courses, and will provide insurance cover in relation to any potential harm to patients which may arise as a result of this intervention.

Best Regards,

Dr. Ardzlan Hussein Kani
Directorate of Health - Erbil
ART Department
Erbil, Iraq
TO: DEMONT FORT University/ UK

Dear Sir/ Madam,

This is to certify that college of Nursing, Hawler Medical University, Kurdistan Region, Iraq, approves and ready to support PhD student Anees Haje Moin to undertake some research in (Influence of an Educational Programme on the Pregnancy Outcomes of Obese Women in Kurdistan Region of Iraq) at (Main Afendi Primary Health Centre).

I understand this will involve running education programmes at the health centre with obese pregnant women. Hawler Medical University will cover any costs involved in running those courses, and will provide insurance cover in relation to any potential risk or harm to patients which may arise as a result of this intervention.

Best Regards

Dr. Vimeo Allan Razakbandi
The Dean
College of Nursing
Hawler Medical University
Erbil, Iraq

Cc - Journal File
3.8 Information sheets for obese women and normal weight women

Information Sheet A

Study title: Influence of an education programme on the pregnancy outcomes of obese women in Kurdistan region of Iraq.

Invitation paragraph

You are being asked to take part in a research study. Before you decide whether to take part or not, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please feel free to ask if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part.

What is the study about?

You are being invited to participate in a research project conducted by Aveen Haji Mam PhD student within the Faculty of Health and Life Sciences at De Montfort University, Leicester. The overall aim of this study is to assess the influence of an education program on pregnancy outcomes. By taking part you will be helping the researcher to compare pregnancy outcomes of normal weight pregnant women with pregnant women who are obese.

Why have I been chosen?

You have been being invited to participate because you are a healthy pregnant woman of normal weight receiving maternity care at this health centre, which is the target population for this study.

Do I have to take part?

No, the study is entirely voluntary. Whether you choose to take part or not, this will not affect your care in any way. If you decide to take part, you will be given this information sheet to keep and you will be asked to sign a consent form now. You are still free to withdraw from the study at any time and do not need to give a reason if you choose to withdraw.

What will happen to me if I take part?
If you are willing to participate, information about your current pregnancy will be collected from your medical records following your first antenatal visit at the health centre and following the birth of your baby. You care will continue as normal.

What are the possible benefits of taking part?

You may not personally benefit from your participation in this study. However you can help inform the care of other women in the future.

What happens to the information?

All the information extracted from your medical records will be anonymised prior to inclusion in the study. No one will be able to identify you from the study. The data collected will be put into a computer, which is password protected, to be analysed. The notes taken by researchers will be kept safely in locked offices at the University and only the researcher will see them. Notes and transcripts will only have codes and not names in order to safeguard confidentiality. All questionnaire data will be kept for a period of five years and then destroyed. All data will be treated in accordance with the current Data Protection Act. All information collected will only be used for the purposes of this study.

When we are concerned about your health.

Care is not affected by participating in this study. In the event that something does go wrong in ensuring anonymity and confidentiality during the research study there are no special compensation arrangements. If you are harmed by any inappropriate disclosure of information and this is due to someone’s negligence then you may have grounds for a legal action for compensation against the researcher.

Who has reviewed the study?

The Ethics Committee of the Faculty of Health and Life Sciences, De Montfort University has reviewed and approved the research proposal for this study including the contents and use of this letter of information and accompanying informed consent form.

What should I do if I want to take part?
If you are interested in participating in the study, please contact Aveen Haji Mam (the researcher) on 07504624581, or you can use email aveen4581@yahoo.com or Badiaa Muhammad Najib. Iraq, 0754888059, profbadia@gmail.com. Prior to any information being collected from your medical records you will be asked to sign a consent form.

What will happen to the results of the study?

The results of the study will be published in a PhD thesis. Information will also be presented to local health care providers, at conferences, and in peer reviewed journals. A paper summarising the results of the study can be provided for you if you wish. Please let the researcher know.

Who is organising and funding the study?

The study is organised by researcher Aveen Fattah Haji Mam, PhD student at De Montfort University. Aveen’s PhD studies are funded by the Ministry of Higher Education, Kurdistan-region Iraq.

Contact for further information

If you would like any further information about the study or need to ask any questions please contact, the researcher: Aveen Fattah Haji Mam UK (0044) 07874627920 Iraq (00964)07504624581 aveen4581@yahoo.com.

If you have any questions or concerns about this study, you should discuss them with the researcher leading the study. If you have any concerns about the way the study is being conducted, you are welcome to contact Dr. Tina Harris Uk (0044) 0116 257 7804, tiharris@dmu.ac.uk or Badiaa Muhammad Najib. Iraq, 0754888059, prof.badia@gmail.com.

Thank you for taking the time to read this information sheet. We are very grateful for your participation in this study. You will be given a copy of this information sheet and a copy of the signed consent form to keep.

Researcher

Aveen

* Information Sheet A = normal weight pregnant women or baseline group.
Information Sheet B

Study title:

Influence of an education programme on the pregnancy outcomes of obese women in Kurdistan region of Iraq.

Invitation paragraph

You are being invited to take part in a research study. Before you decide whether to take part or not, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please feel free to ask if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part.

What is the study about?

You are being invited to participate in a research project conducted by Aveen Haji Mam PhD student within the Faculty of Health and Life Sciences at De Montfort University, Leicester. The overall aim of this study is to assess the influence of an education program on pregnancy outcomes in women with a body Mass Index (BMI) of 30 and above (equals a person’s weight in kilograms divided by height in meters squared or BMI=kg/m2). By taking part you may help health professionals to understand if an education programme influences pregnancy outcomes.

Why have I been chosen?

You have been being invited because you are a healthy pregnant woman with a BMI of 30 or more and receiving maternity care at this health centre, which is the target population for this study.

Do I have to take part?

No, the study is entirely voluntary. Whether you choose to take part or not, this will not affect your care in any way. If you decide to take part, you will be given this information sheet to keep and you will be asked to sign a consent form now. If you decide to take part, you are still free to withdraw.
from the study at any time. You do not need to give a reason if you choose to withdraw.

What will happen to me if I take part?

If you agree to take part in the study, you will be randomly allocated into one of two groups. If you are allocated to group one (known as the control group) you will continue receiving care from your health care providers and information about your current pregnancy will be collected from your medical records following the initial antenatal visit to the centre and following the birth of your baby. If you are allocated to group two (intervention group) you will continue receiving care from your health care providers and information about your current pregnancy will be collected from your medical records following the initial antenatal visit to the centre and following the birth of your baby. In addition, you will be invited to attend 6 sessions of an educational programme which will run every week commencing immediately. Each session will take approximately 1 ½ hours and will be held in the Malat Fandi primary health centre. The educational programme will include advice on healthy eating, exercise, pregnancy, and labour. If you participate, you will also be invited to evaluate the programme at two events; one at the end of the programme itself and the second at an reunion event scheduled 4-8 weeks following the birth of your baby. This will include completing an anonymised questionnaire and participating in a group discussion which will be audio taped.

What are the possible benefits of taking part?

You may or may not personally benefit from your participation, but you can help us to assess pregnancy outcomes for obese pregnant women. Those who attend the educational programme with those who do not attend. The results will indicate the efficacy of the educational program and it will be applied for future obese pregnant women if beneficial.

What happens to the information?

All the information extracted from your medical records will be anonymised prior to inclusion in the study. Data gathered from the questionnaire and focus group will be anonymous in any published reports. No one will be able to identify you from the study. The data collected will be put into a computer, which is password protected, to be analysed. The notes taken by researchers, the record, and the transcripts will be kept safely in locked offices at the University and only the researcher will see them. Notes, records, and transcripts will only have codes and not names in order to safeguard confidentiality. The audio files and transcripts of the focus groups together with questionnaire data will be kept securely for a period of five
years and then destroyed. All data will be treated in accordance with the current Data Protection Act. All information collected will only be used for the purposes of this study.

When we are concerned about your health.

Care is not affected by participating in this study. For those of you in group 1 there are no specific safety issues. However, in the event that something does go wrong in ensuring anonymity and confidentiality during the research study there are no special compensation arrangements. If you are harmed by any inappropriate disclosure of information and this is due to someone’s negligence then you may have grounds for a legal action for compensation against the researcher. For those of you in group 2 a safe private women only environment within the health centre will be used for the education programme. The education facilitator will be appropriately qualified to deliver the sessions. Talking about your weight may sometimes be distressing. If you or anyone in the class becomes distressed your will be referred to your health care provider for support and advice.

Who has reviewed the study?

The Ethics Committee of the Faculty of Health and Life Sciences, De Montfort University has reviewed and approved the research proposal for this study including the contents and use of this letter of information and accompanying informed consent form.

What should I do if I want to take part?

If you are interested in participating in the study, please contact Aveen Haji Mam (the researcher) on 07504624581, or you can use email aveen4581@yahoo.com or Badiaa Muhammad Najib. Iraq, 0754888059, prof.badia@gmail.com. Prior to any information being collected from your medical records you will be asked to sign a consent form.

What will happen to the results of the study?

The results of the study will be published in a PhD thesis. Information will also be presented to local health care providers, at conferences, and in peer
reviewed journals. A paper summarising the results of the study can be provided for you if you wish. Please let the researcher know.

Who is organising and funding the study?

The study is organised by researcher Aveen Fattah Haji Mam, PhD student at De Montfort University. Aveen’s PhD studies are funded by the Ministry of Higher Education, Kurdistan-region Iraq.

Contact for further information

If you would like any further information about the study or need to ask any questions please contact, the researcher: Aveen Fattah Haji Mam

UK  (0044) 07874627920           Iraq  (00964)07504624581
aveen4581@yahoo.com.

If you have any questions or concerns about this study, you should discuss them with the researcher leading the study. If you have any concerns about the way the study is being conducted, you are welcome to contact Dr. Tina Harris UK (0044) 0116 257 7804, tiharris@dmu.ac.uk or Badiaa Muhammad Najib. Iraq, 0754888059, prof.badia@gmail.com

Thank you for taking the time to read this information sheet. We are very grateful for your participation in this study. You will be given a copy of this information sheet and a copy of the signed consent form to keep.

Researcher

Aveen

* Information Sheet B = obese pregnant woman intervention and control group)
### 3.9 Consents form for obese, control and baseline groups

**Consent form (Baseline Group)**

**Title of study:** Influence of an education programme on the pregnancy outcomes of obese women in Kurdistan region of Iraq

**Researcher:** Aveen Fattah Haji Mam

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<td>1</td>
<td>I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to ask questions and consider information and have had satisfactory answers (in case participant can’t read there will be one family member or friend to read the information for her).</td>
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<td>2</td>
<td>I understand the purpose of the study.</td>
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<td>3</td>
<td>I understand that I may withdraw my agreement at any time, and that my care will not be affected by taking part or withdrawing from the study</td>
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<tr>
<td>4</td>
<td>I understand and agree that information about current pregnancy will be extracted from my medical record.</td>
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<td>5</td>
<td>I agree for medical notes to be used anonymised used as direct quotations in the presentation of the research report and in any publications arising from the research</td>
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Consent form for obese groups

**Title of study:** Evaluation of an education programme on the pregnancy outcomes of obese women in Kurdistan region of Iraq

**Researcher:** Aveen Fattah Haji Mam

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<td>I confirm that I have read and understood the information sheet for the above study. I have had the opportunity to ask questions and consider information and have had satisfactory answers (in case participant can’t read there will be one family member or friend to read the information for her).</td>
<td>Please initial box</td>
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<td>2</td>
<td>I understand that my participation is voluntary and that I have right to withdraw any time without giving any reason, without my legal rights being affected.</td>
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<td>3</td>
<td>I understand and agree that information about current pregnancy will be extracted from my medical record.</td>
<td></td>
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<tr>
<td>4</td>
<td>I agree to participate in a focus group and for that focus group to be recorded.</td>
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<tr>
<td>5</td>
<td>I agree for my medical notes, questionnaire responses and words to be anonymous and used as direct quotations in the presentation of the research report and in any publications arising from the research</td>
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<td>6</td>
<td>I agree to take part in the above study.</td>
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<td>Name of a behalf of participant</td>
<td>Signature of participant</td>
<td>Date</td>
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<tr>
<td>Name of person taking consent</td>
<td>Signature of participant</td>
<td>Date</td>
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1 for pregnant woman 1 for researcher 1 to be kept within the hospital
3.10 Focus group transcripts
First focus group interviews

Description of the group
This focus group was held on 15th July 2013 at Mala Fundi Medical Center. I called eight postnatal women to participate. Three of them participated this focus group. All women gave birth in the last 4-5 weeks and A1 and A2 gave birth normally, but A3 delivered by cesarean section. They were housewives. Two of them were illiterate. A1 graduated from secondary school. All of their ages were between 20-30 years old.

Q/ Tell me what you think about the education programme you have received.
A1: It was good in the beginning. I just took one session which was about diet during pregnancy but after that I could not attend because my condition was become worse. I had antenatal bleeding and the doctor advised me not to go out and stay in reclining position. A2: I don’t how I can thank you about what you taught us. I found it helpful actually from my 3rd month of my pregnancy till I gave birth, I prayed for you many times.

Q/ Tell me about the most enjoyable and least enjoyable point in the programme?
Q/ Thinking about the way in which the programme has been delivered, what activities have you most enjoyed and what activities have you least enjoyed?
A1: A basket of different fruit was enjoyable for me.
A2: Eating dates for my contractions as you told me. I will never forget that.

Q4 Behavioural changes
A1: No responses to the questions
A2: Eating dates for my contraction as you told me. I will never forget that. And my reclining during delivery when I remembered you advised us to put our chin on our thoraxes and push with contraction otherwise pushing is pointless. I had three kids, but I struggled with them during delivery, and I faced difficulties during their birth, but this time was so different and easy. I was really surprised how my baby was easily born this time. I don’t know how. Maybe because my position was very good this time.

Q/ What key messages will you take away with you from this course?
A2: Exercise during pregnancy was good. It came to my mind theoretically and practically. A
basket of fruit. Many times I told myself you have to have more than one type of fruit. It’s the first time in my life which I know that birth has 4 stages. Oh, and the baby rotates during delivery and they are tired as well. Oh, oh my God.

Q6 How was the content of the programme (teaching style, place and environment)?

A1: It was good.
A2: It was good of course.

Q/ Discuss your thoughts on the timing of the classes.

A1: It was good.
A2: No no, it was good.

Q/ Do you have any other advice about the program?

A1: You mentioned all important things, but something I feel is important is that all pregnant women are eager to know about the effect of hooves on their pregnancy, pregnancy and normal sleep duration, as well as pregnancy and high-lighting our hair.

A2: I am not happy with some physicians who did miss diagnose. They told me that my urethra is inside my uterus. After that she said do you know why I scared you? I purposely sacred you because I want to forced you to have the last CS. They make me scary to not have another pregnancy. Why are doctors like that? I don’t know why.

Second focus group interviews Description of the group

This focus group was held on 23rd July 2013 at Mala Fundi Medical Center. I called eight postnatal women to participate. Three of them participated in this focus group. All the women had given birth in the last 4-5 weeks. B1 and B2 had gave birth normally, but B3 had a cesarean section. They were housewives. Two of them were illiterate, and one had graduated from secondary school. All of them were between 20-30 years old.

Q/ Tell me what you think about the education programme you have received.
B1: It was good.

B2: It was all about good diet and exercise during pregnancy, but generally it was good.

B3: It was good.

Q2 Q/ Tell me about the most enjoyable and least enjoyable point in the programme?

Q3/ Thinking about the way in which the programme has been delivered, what activities did you most enjoy and what activities did you least enjoy?

(Long pause)

B1/ It was good.

B2/ I found it useful. B3/ I found it helpful.

Q3/ Q/ What key messages will you take away with you from this course?

B1: When you explained how exercise helps our health as a pregnant woman. Waking up early to take deep nice, fresh breath. As well as types of fruits that have good effects on our health and the baby’s health.

B2: I don’t know. I don’t know, swear to God.

B3/ The video about exercise during pregnancy was so helpful and interesting.

B1: I prayed for you when you gave us the CD about exercise which helped us to do exercise at home.

Q4/ Q/ Has the programme changed your behaviour? If so, how?

Q/ Thinking about the programme content, what have you found most helpful and least helpful?

Q/ Do you think the programme has helped you in any way? If so, how?

B1: It was good. I liked and enjoyed when you advised us to walk around, but I don’t know why I had a C/S. Also I was so tired in this pregnancy.

B2: No response.

B3 and B4 had no responses.

Q5

B1: At that time I did what you mentioned at the sessions, but now I ignore the advice. I don’t know why. (Laughs)

B2: (Laughs) We gave birth and now we don’t need education any more. (Laughs)
B3: No, no. It’s important for us to have knowledge about diet and health, especially now because I am doing breastfeeding and my family and relatives continuously encourage me to have more and more sweet like tea because they say it will make my milk stronger in quantities. Do you think it’s important for a breastfeeding mother to eat as much as I am doing now? No, no, I don’t think so.

Q6 Q/ Discuss your thoughts on the timing of the classes. B1/ About the time, it was good. Nothing was wrong with it. B2/ Yes, of course, it was good. B3/ I didn’t have any problems because we don’t have kids in school. It was generally good.

Q9/ Do you have any other advice about the program?
B1: Keep going with it. It was good. No need to add anything more. B2: Nothing was wrong with it. It was okay.
B3/ It was very good. No comments. Third focus group interviews Description of the group

This focus group was held on 10th October 2013 at Azadi Health Center. I called 10-12 postnatal women to participate. Five of them participated this focus group. All of the women gave birth within the last 2-5 weeks. C1 and C2 gave birth normally, but C3 had a cesarean section. They were housewives. Two of them were illiterate. One of them graduated from secondary school. All of them were between ages 20-30 years old.

Q1 Q/ Tell me what you think about the education programme you received?
C1: Yes it was about diet and exercise during pregnancy. Normal range weight gain for pregnant women.
C2: It was good, all about food and diet.
C3: Food and obesity and how we prevent ourselves from gaining more weight than normal, wasn’t it? (Laughs)
C5: It was about diet and obesity and delivery, isn’t that right?

Q/ Thinking about the way in which the programme was delivered, what activities did you most enjoy and what activities did you least enjoy?
C1: Labour stages was a very useful and interesting discussion. C2: When I did exercises, my kids did them as well. It was fun.
C3: It was the first time that I know how I can cope with delivery. Wow, so painful.
C4: Fruits and doing simple duties at home is good for my weight and pregnancy.
C5: Those papers you gave us were so useful, and I enjoyed them and I often looked at them. I could not attended all the session because I have another baby that is 10 months and my husbands had work and I tried a lot but I didn’t attended all of them.

Q/ What key messages will you take away with you from this course?
C1: Of course I changed during my pregnancy and during delivery. I remember the day of my delivery. I ate a plate of dates and I walked around
and I had a warm bath. I found it helpful. I went to delivery room they didn’t give me an injection and my pain was so strong and painful. It was so painful, wow I’ll never forget.
(Laughs) About exercises, I was unable to do them because I was busy all the time with my small kids and my home stuff.
C3: I changed my life toward a healthy diet and I got used to using a small amount of oil and sugar and it was good for my baby.
C2: I tried but I had a CS because I was scared from episiotomy.
C5: Healthy diet. I got used to having it at my home. It was the first time I heard of it when you told us.
C1: I explained to my friend, especially labour stages pain and contraction during delivery and how we can cope with it and they asked me to give them all papers and I promised I would give it to them in the future.
C2: Fruit is the most important point for me. I will never forget your advice about water and fruit. It’s very useful for pregnant women.
C3, C4: I don’t know.

Q/ Discuss your thoughts on the timing of the classes.
C1, C2, C3, C4: The time was perfect because we have enough energy to come to your session.
The place was good as well. The morning session was good for us.
Q/ Do you have any other advice about the program?
C1: If this programme is offered to all pregnant women, and all women have
sessions every other week, it will be so exciting and good for us. Then we can
use it in our home too and it will become a habit for us.

C3: Sleeping duration and pregnancy was a very good point. What about
pregnant women using steps and ladders? Because we thought that ladders
are not safe for women and we have not been using it. Do you think it’s all
right or not?.

Fourth focus group interviews Description of the group
This focus group was held on 20th November 2013 at Azadi Medical Center. I called
7-8 postnatal women to participate. Five of them participated in this focus group. One
of them had to excuse herself for an appointment to do a scan, so she left the session.
All the women gave birth within the last 4-5 weeks and three of them, D1, D2, and
D4, gave birth normally, and D3 had a cesarean section. Three of them, D1, D2, and
D3, were housewives and their educational level was graduation from primary
schools and higher secondary school while D4 was a teacher at a higher secondary
school and had graduated from university. All of them were between 27-
37 years old.

Q/ Tell me what you think about the education programme you have received?
D1: Even though I only came once, it was good.
D2: It was good and it was about food and exercise during pregnancy, labor, pregnancy and
obesity, weight gain during pregnancy, and the factors behind increasing blood pressure and
blood sugar.
D3: It was good, but I was not able to attend all the sessions. In general it was good as it was
about nutrition during pregnancy, obesity and exercise during pregnancy.
D4: The session was good as it was about how to prepare healthy food for ourselves at home,
how to look after our weight gain during pregnancy, taking care of our baby inside our tummy,
providing a safe environment and rest for my baby.

Q/ Tell me about the most enjoyable and least enjoyable point in the programme?
Q/ Thinking about the way in which the programme was delivered, what activities did you most enjoy and what activities did you least enjoy?

D4: Really, swear to GOD, I don’t know. All the information which I received from you made me extremely happy because I already have pre knowledge regarding the information you provided. However, scientifically, as I studied Biology, I found your information supportive to my existing knowledge. All the sessions I attended were so interesting. I loved all your sessions and all the topics you explained. I even put all the educational handouts in a safe place. I want to use your handouts in order to educate my pregnant friend. Regarding less enjoyable information/activities, I felt ashamed and embarrassed when you asked about our weight gain, because obesity is so attached to my mind. I wanted to be thinner once I gave birth. Regarding exercise during pregnancy, I didn’t do it because I was already busy at home and doing simple activities.

D1: No no. It was so interesting. All parts and sessions, nothing was wrong with it, especially when you explained about putting five different fruits in a basket. It became a habit to prepare same basket for my kids.

D2: All the parts were beneficial. I founded it helpful. I really loved your sessions. It was a nice atmosphere. I did most of the exercises with my husband. We usually went around near the park together with my kids as well.

D3: It was good. Nothing was wrong with them. They were all about how you become safe with your baby during pregnancy and labor. To a great extent, I benefited from all your sessions.

D4/ What key messages will you take away with you from this course?

D1: Labor stages, how we cope with delivery pain and what we have to do during labor contractions.

D2: Me too. Most of your advise is still in my mind. I haven’t forgot the information which you provided.

D3: All of the sessions were beneficial and is still in my mind. Particularly the information about exercises which help our labor.

D4: Stages of labor was very interesting to me. I still explain this information to my pregnant relatives and friends. I particularly enjoyed this part on stages of labor. That’s what I still explain to some of my friends who are lecturers at university even though they haven’t got
enough knowledge about labor and stages. Despite that, they don’t have time to search for information about labor; they asked me to explain about this topic at a specific time.

Q/ Has the programme changed your behaviour? If so, how?

Q/ Thinking about the programme content, what have you found most helpful and least helpful?

Q/ Do you think the programme has helped you in any way? If so, how?

D4: Yes, of course. Until I gave birth, I looked at papers continuously. This time made a difference. On the day of my labor, I was busy with cleaning around the house. I already prepared food. While I was still cleaning the cooker, I felt some pain in my abdomen, but I didn’t care. I carried on cleaning the cooker. I held myself on the cooker. I felt that my labor was about to start but I decided to postpone going to the hospital. I waited at home. Despite all difficulties surrounding me I had to take care of my little daughter. Then after 2-3 hours, I called my sister to see what she said and I told her about my condition.

D2: You wouldn’t believe how your session made changes to our behavior. For instance, during my labor, I remembered your advice when I was pushing, pushing with contraction and taking rest between contractions

D3: No response

D1: I felt the changes especially the how to prepare food and now I know which type of food is good for us a human beings.

D1: As I said yes, yes of course. This is first time I understand that delivery is not 1 stage; it is 4 stages and the baby has to travel during the delivery stages. It was a nice story but painful.

(Laughs)

D2: Yes, absolutely. (She agrees with D1).

D3: Yes, of course. (She agrees with D1).

D4: Yes, my thinking has changed a lot towards the physicians role in delivery suite. I realized that I have to help them to give birth safely and easily; shouting doesn’t change anything. I didn’t shout a lot. I tried to help my baby, myself and the delivery staff. Finally, they thanked me for being patient during the process of delivery even though they don’t know me. They appreciated how I organized myself prior to delivery time.
Q/ Discuss your thoughts on the place of the programme.

D4: It was good, but the place was not convenient because the room conditions were not as good as they should be. In the winter, it was very cold whereas in the summer it was so hot.

D2: The place was good, but my home is far away from this center. Therefore I couldn’t attend the sessions as much.

D1: The place was good and I am still praying for you. I appreciate your advice.

D3: Generally the place was good.

Q8/Organization of the programme

D4: All the sessions were well organized, but we were not organized. Every one attended in different times. We were not committed to attend the sessions.

D1, D2, D3: Yes it was like that. (Agreeing with D4).

Q/ Thinking about the timing of the classes. D1, D2, D3 and D4: Yes, the time was very good.

Q/ Do you have any other advice about the program?

D4: The hospital has to take this kind of training seriously because it serves pregnant women’s health and safety. Maybe you contacted the women several times, but they didn’t think it is important for their health. And they think it’s pointless to attend these sessions. Maybe their husband don’t allow them or trust them to participate in these sessions. If these women were contacted by the hospital formally, it would be much better rather than being contacted by one person informally. It could be possible that the family prevents these women from attending these sessions. They might say, „Don’t go, it’s not worth it. Why didn’t they contact our neighbor? She is also pregnant. Does your baby have any health problem?” Finally, our women do not have the same level of education.

D1: My husband told me, „You will kill my baby eventually. You are not going anywhere, and stay at home and look after your baby. I want this little man to be safe. Please listen to me.”

Fifth focus group interviews Description of the group

This focus group was held on 22nd November 2013 at Azade Medical Center. I called 10-12 postnatal women to participate. Four of them participated this focus group. All of the women gave birth in the last 4-5 weeks, and all of gave birth normally. They were housewives. Two of them had
graduated from primary school, E3 and E4. The other two participants, E1 and E2, had graduated from an institute. All of their ages were between 30-40 years old.

Q/ Tell me what you think about the education programme you have received?

E1: Oh, I attended four sessions. It was so good. I found it helpful, especially when you mentioned the advantages of exercise during pregnancy, even though I couldn’t practice very much because I felt tired when I tried to do it.

E2: I was very close to the center. That is why it was very easy to attend the sessions. I was really excited during the sessions even though I already had some knowledge, but I wasn’t sure whether it was reliable or not. So I felt comfortable and confident while I was attending the class.

E3: It was very good. The session was mostly about how you prepare healthy food and exercises during pregnancy.

Q/ Tell me about the most enjoyable and least enjoyable point in the programme.

Q/ Thinking about the way in which the programme was delivered, what activities did you most enjoy and what activities did you least enjoy?

E1: Of course all the sessions were good, and I benefited from them. I enjoyed all parts of your sessions. I learnt every bit of your advice. It’s my habit to watch any health programme on TV and pay attention to it.

E2: It’s good to see I’m being looked after by doctors. That is what I personally noticed from your course. I felt that somebody else is concerned about my health condition. It really made me feel good, especially when you explained the delivery stages which were very painful, but your facial expression was encouraging to us. And your facial expressions during the session were helpful for us to accept your advice. You are not a snobby person. I never saw someone as kind as you because in our country, doctors are usually arrogant.

E3: I feel the same way. (Agrees with E2).

Q/ What key messages will you take away with you from this course?

E1: Nutrition during pregnancy and what should be avoided in my meals during my pregnancy. For instance, I got used to having a very large plate of rice every day, but when you explained that fruits were better than rice for us then I decided to have more fruits and less rice in my
meals. Now I cook rice 2-3 per week.

E2: Fruits during pregnancy and their important role for pregnant women. It became a habit since I attended your session to have plenty of water and have more fruits than before. When I was having my meals, I always remembered your advice about healthy diet during pregnancy. I tried to do my best to have at least some food even if it was a small amount.

Q/ Has the programme changed your behaviour? If so, how?

Q/ Thinking about the programme content, what have you found most helpful and least helpful?

Q/ Do you think the programme has helped you in any way? If so, how?

E1: Yes, of course. In general I felt that some of my behavior has been changed over time. I got used to having 2-3 bottles of fizzy drinks, but when I learned it’s not good for your body, I felt frustrated with myself and I pressed myself to not have it anymore. So your advice stayed in my mind.

E2: I found it helpful, and I realize that some of my behavior has improved. This made restrict my weight gain. As a result, I gave birth easily. I felt that your sessions had an impact on my daily life. It naturally became a habit to get up early in the morning and have a fresh deep breath. I really enjoyed that a lot as you recommended.

Discuss your thoughts on the place of the programme.

E1: There is no complaint about your session, but when I compared my size with other women in the sessions, I felt embarrassed and I realized that I have the largest size within the group. I was blaming myself and wondering when and how I can lose my weight, especially in my waist which a big issues for me.

E2: My behavior toward nutrition and what you have to eat during pregnancy has changed and I found it helpful.

Q Discuss the teaching style.

E1: The teacher’s teaching style was so brilliant.

E2: As I told you before, when I started the course I felt comfortable straight away, which made me keep going. The tutor’s way of teaching and friendly manner has motivated us to attend the session regularly.
Q/ Discuss your thoughts on the timing of the classes.

E1: I couldn’t attended all sessions properly as I couldn’t sleep during night because of my small child. I would usually go to sleep during your morning session times.

E2: To be honest with you, your session times was not suitable, as you know better than me that Kurdish women have to finish their house chores in the morning. For example, looking after 4-5 kids, preparing them for school and preparing food for our husband is difficult to be managed in the space of few hours. But, if your sessions were running in the afternoon, then it will be more suitable. We could enjoy the session similar to visiting our friends or relative’s home.

Q/ Do you have any other advice about the program?

E1: It’s also useful to explain about normal sleep duration for pregnant women in your programme. As you aware, most pregnant women in our society have this issue during their pregnancy. For example, when my neighbor’s daughter-in-law was pregnant, she used to sleep over 3-4 hours during the day as she thought that sleeping was useful for pregnant women.

E2: Listen to me, if you used different ways in advertising for your programme, you may have more women participating in your programme such as Mass Media, TV and Imam in order to advertise your programme at mosque. Nowadays, people are eager to learn and more flexible to accept changes. It is not like old days. People used to refuse this type of education and these kinds of changes. Finally, I want to tell you something: in our country there is no room for respecting a human being. Let alone the women.

Sixth focus group interviews (F)

Description of the group

This focus group was held on 25th December 2013 at Nazdar Bamami Health Center. I called eight postnatal women to participate. One of them participated this focus group. That woman had given birth in the last six weeks and she delivered normally. She was a housewife and a graduate from primary school. She was 27 years old.

Q/ Tell me what you think about the education programme you have received?

F: It was good.

F: It was about diet and how we prepare healthy food and labour stages as well as about the normal weight gain during our pregnancy.
Q/ Tell me about the most enjoyable and least enjoyable point in the programme?

Q/ Thinking about the way in which the programme has been delivered, what activities did you most enjoy and what activities did you least enjoy?

Yes the CD about exercise, I enjoyed the video. Also, the benefit of good nutrition and walking during pregnancy. (Laughs) It was good and I found it helpful. And I don’t think there was anything less enjoyable in the programme.

Q/ What key messages will you take away with you from this course?

F: It became a habit for me to think about your advice regarding preparing healthy food and as well as our discussion and your explanation about labour stages.

Q/ Has the programme changed your behaviour? If so, how?

Q/ Thinking about the programme content, what have you found most helpful and least helpful?

Q/ Do you think the programme has helped you in any way? If so, how?

F: Yes yes, of course. I felt a change in my way of thinking every minute. Before I start to cook, I would think about what a mother must do during labour. Delivering the baby is not just fate. We have to do our best to take care of ourselves. It needs our effort and I explained this to my relatives and friends even though they were not pregnant.

Q6

F: Yes, I felt changes to my behaviour. I benefited a lot, but I was not good with labour pain. I tried to make a plan for my delivery, but my labour started one week early so at that time I was busy with house cleaning and tidying up. I didn’t believe that it’s my delivery time. Wow… It was so scary. (Laughs). In the last months of my pregnancy, my sister called me frequently and she advised me to walk around and have a warm bath as you told me as well. By the way, she advised me to see doctor in last month frequently to examine my uterus and said it would enhance and develop my delivery early and my cousin has a positive experience with this practices. So we had our baby soon beforehand (laughs).

Q/ Thinking about the timing of the classes.

F: The time was good. Usually my husband was at work so I was free to come to the sessions.

Q/ Do you have any other advice about the program?
The papers and video were very helpful. I looked at them at home frequently. My husband and I usually watched the video together. It had a nice atmosphere and we saved the video on our laptop.

I don”t know why we”re like that. We are not like European women, just eating and going to bed. I always think of European women and I think they go to classes with their husband. What a nice feeling if your husband sits in the class.

But you know what, during the video when I copied the ladies who did the exercise, my husband told me I wasn”t doing it like them. (Laughs). He was funny and tried to motivated me (Laughs). What a nice feeling. But in our country we have to stay at home to do cleaning, tidying, washing, cooking and sleeping. For shopping, we have to find someone to come with us like our husband, mum or sister to buy things but if they don”t have time then you have to wait. I waited one month for my sister because she has no time to come. She had some exams.

But you know, I am very busy with make-up (laughs). This is my hobby.
phone interviews

Tele (1): It was good, all you mentioned was good and the time was good as well. I didn’t attend the last 2 sessions because I currently have two children whom I look after. One of them is a one-year-old and the other is old enough to be in private school. I have to help the older one with his school work. And this prevented me from attending all the sessions. However I think the advice I received at the sessions I attended was very good. Furthermore, the time for sessions was in the summer and hot and my home was far from centre.

Tele (2): Yes I found it helpful and especially healthy diet and weight gain within normal. I keep eye on my weight gain and I put a plan for myself. I couldn’t attend because at the morning as you know we have to clean the house and tidy things up and wash. About the exercise and the video, I liked it because it was like a video and we like videos so much and it is still in my mind because you can see the video had a very nice atmosphere.

Tele (3): I attended approximately four sessions and I found them helpful. I used the advice in my actual life, especially during my birth how you told us. I had a baby before, but this time was different because I helped myself and my baby as well. But because I have kids at school, I didn’t have enough time to come to attend all the sessions. One thing that is still in my mind is to do things even if you are pregnant. Pregnancy is normal; it is not
a disease. And there is another thing you know that fruits are usually offered in the
evening but after your advice, I got used to having different fruits in any time. It
was good in general of course.

**Tele (4):** The sessions were useful for controlling my blood pressure, especially the
type of diet and what’s good for us and not. The time was good, but I am far from
the centre and I have to prepare food for the family. This was the reason for not
attending all the sessions.

Tele (5 a & b): Swear to God, the sessions were very nice, especially the CD which
you presented to us. It was so interesting. I watched it many times, and I did with
my husband. I couldn’t attend because my child was in a bad condition and I was
busy with him for a month. The sessions were useful, but for now I wouldn’t be
able to attend because I have two kids now and I have to look after them and my
home is far from centre. But all around me, they encourage me to eat more rice,
sawar, sweet tea to have more milk and I am very stressed because I don’t want to
eat more, so it will make me obese which I am not interested in (sighs).

**Tele (6):** Swear to God, it was very good but you know whenever someone met me,
they would say, “Oh, you have to do CS. you cannot get birth easily because you
are large and have swelling. I remember when you explained for us the importance
of exercise, especially the one which was the pelvic exercise and other types. The
time was not good. If it was in the afternoon, it would be better because in the
morning we don’t have time to go out and we have to look after our kids and prepare
foods and clean the house.

**Tele (7):** Swear to God, trust me, seriously, I made use of all the advised exercise.
It was good, but I forget everything. Do you know why? Because I have a very
hyperactive baby. I couldn’t sleep at night and now I feel tired. He doesn’t sleep
very well. I have to wake up at night and give him milk, and I went to my mum after delivery and its far from the centre so I couldn”t come after delivery.

**Tele (8):** Yes I benefitted a lot, especially when you advised me to have a deep breath between contractions and the position of my delivery. The time was not convenient for me. It”s better if you changed it to afternoon, because I wake up at 8 and I start to do my home cleaning from 9 to 11. After that, I have to prepare food.

**Tele (9):** It was very good, all about diet and obesity and healthy environment for baby. The exercise was very good I got used to doing it. I found it helpful. I couldn”t attend all of the sessions because my husband is a teacher and he has to go to school and my kids were small and I have to look after my mother-in-law as well. My comments about the next programme are if you can explain sleep and pregnancy. They say it is not good for you go to bed too much. Is that right?

**Tele (10):** My sister had to have time and then she could come with me. This was the reason for not attending all the sessions. They had exams, so they couldn”t come with me. I didn”t come to the centre to get a vaccine for my baby as well. About the food, I couldn”t control myself because I have an appetite.

**Tele (11):** Doctor, I am very busy with my baby. This is the reason for not coming for this session. It was good, especially exercise and if you start before pregnancy and after delivery before breast feeding it will be fanatic, because now all around us advises us to have more to eat to have more milk in our breast. It”s a disaster I think. I hate to become obese and I want to make myself thin for my next pregnancy to not have a complication of obesity us you advised us. I always advised my friend about what you told us, different fruit was interesting and a new thing for me. An afternoon session is better because of our role in the morning as you know.

**Tele (12):** Swear to GOD, it was very good. Yes, of course especially during labour
stages but if it was afternoon then maybe we could attended because I have to clean and look after my mother-in-law. About the healthy diet, it was so interesting. I prayed for you.

**Tele (13):** It was good. I couldn’t attended because I am living with my husband’s family and they told me, “You don’t need to go there. What is the point? Please sit down.”

**Tele (14):** Of course I benefitted, but because I have other kids which I have to look after them and my home is far from centre, but it was enjoyable when we shared the same thing, especially when I felt that there is another person who has the same problem like me and its normal to have headache during pregnancy. The time was not good because my husband was at work nobody can picked me up.

**Tele (15):** I swear to GOD, of course, especially labour stages and exercise during pregnancy I found helpful. This time I had the baby easily. I said it was an angel who saved me from this critical time. God bless you. I benefitted so much. Thank you and all time. I prayed for you. The time was not very good now because I have to take nap in the morning session because I could not sleep at night because of my small child.

**Tele (16):** Exercise and the CD were so helpful, but I could not come after birth because I had a CS for this baby and it’s too cold. If I came outside maybe my wound would become worse and become swollen because of cold.
### 4.1 Codes of qualitative data

Primary nodes for the focus groups (will be move to appendix)

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<tr>
<th>Nodes</th>
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<tr>
<td>Attendance</td>
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<tr>
<td>1- Bad attendance</td>
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<tr>
<td>2- Good attendance</td>
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<tr>
<td>3- Rational for not attending</td>
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<td>become worse</td>
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<td>Caring</td>
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<td>Coping</td>
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4.2- Characteristics of focus groups participants’ age, parity, education, time taken, time of focus group and land mark of the status of participants and focus group in general

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<th>Name (Pseudonym)</th>
<th>Age group</th>
<th>Parity</th>
<th>Education</th>
<th>Time taken</th>
<th>Times of group discussion</th>
<th>Status of focus group</th>
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<td>Secondary school</td>
<td>30 minute</td>
<td>4-5 weeks postnatal</td>
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<td>Secondary school</td>
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<td>3 weeks postnatal</td>
<td>active discussion</td>
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<td>Prim parity</td>
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<td>Party</td>
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<td>Age</td>
<td>Duration</td>
<td>Additional Notes</td>
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<td>30-40 years</td>
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<tr>
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<td>Multiparty</td>
<td>primary school</td>
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<td>6 weeks postnatal</td>
<td>quiet; no focus group but interview</td>
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Characteristics of phone interviews participants' age, parity, education, time taken, time of
interviews and land mark of the status of interviews as general

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<th>Name (Pseudonym)</th>
<th>Age</th>
<th>Parity</th>
<th>Education</th>
<th>Time taken</th>
<th>Times of interview</th>
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