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GIFTS: Mother and Child Health Study

Submission date
14/07/2014

Recruitment status
No longer recruiting

Registration date
30/07/2014

Overall study status
Completed

Last Edited
01/06/2018

Condition category
Nutritional, Metabolic, Endocrine

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
Diabetes and obesity are caused by many different factors. Family history is an important one but the rapid increase in the number of people with these disorders is largely due to lifestyle choices and how our bodies adapt to a changing environment. The epicentre of the diabetes epidemic is in South Asia, with India having the largest number of diabetics in the world. Importantly, similar increases in diabetes are seen in South Asian communities living in Europe; the number of South Asians in Europe with diabetes is 3-6 times higher than the European average. Current diabetes/obesity prevention strategies focus on adult life and target eating habits (and overeating in particular) with treatments designed to reduce the number of high-risk adults actually becoming obese. However, these strategies dont take into account a number of reasons as to why diabetes and obesity are increasing among the South Asian population. Many South Asian people, for example, experience a lack of food leading to inadequate nutrition and energy when living in their home countries, but then after moving to Europe find themselves eating more food and therefore more than the required amount of nutrition and energy needed. This can can lead to a nutritional imbalance over their life-course. This is particularly important during the early stages of pregnancy when the babies are still developing and the surrounding environment may affect the childs genetic predisposition to develop metabolic disease, such as diabetes, in later life. Women from some South Asian groups are less likely to plan a pregnancy before it happens, or take folic acid supplements in pregnancy. They are also less likely to breastfeed and more likely to feed their babies solid food earlier than is recommended. This increases the risk of rapid postnatal (just after birth) growth which may lead to childhood obesity. At present, there is no clear guidance available on how to achieve optimal conditions (the mothers weight and nutrition for example) during this reproductive and early childhood period. The aim of this study is to find out whether the health of women and babies can be improved with a complex treatment program during pregnancy, including supplementation of vitamins and minerals, diet, lifestyle and weight management advice compared with a control group which will be treated as per standard care in Dhaka.

Who can participate?
Women is the first trimester of pregnancy, aged 18-28 years old, have had a maximum of 2 previous pregnancies and are expecting a single baby.

What does the study involve?
Participants are randomly allocated into one of two groups. Those in the control group are

offered the usual nutritional and lifestyle care. Those in the intervention (treatment) group receive a number of dietary supplements (vitamins D and B12 and iron) and lifestyle advice. All participants are asked to attend antenatal clinics to donate blood samples and give body measurements. They also complete questionnaires on diet, health and their economic situation. At delivery, samples of blood are taken from the babies umbilical cord and placenta and their body measurements taken.

What are the possible benefits and risks of participating?
Participants are reimbursed for reasonable travel costs and are provided with free antenatal, natal and postnatal care. There is a very low risk of bruising or infection associated with the taking of blood samples. Potential side effects of vitamin B12 and vitamin D is fully explained to all participants and they are closely monitored throughout the study.

Where is the study run from?
The Blizard Institute, Queen Mary, university of London (UK)

When is the study starting and how long is it expected to run for?
June 2014 to June 2015

Who is funding the study?
The European Commission (Belgium) and BADAS (Diabetic Association of Bangladesh) (Bangladesh)

Who is the main contact?
Miss Virginia Govoni
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Study website
http://www.gifts-project.eu/drupal/

Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
Version 3.1, dated 03/07/2015

Study information

Scientific Title
GIFTS Work Package 3: Pilot intervention in pregnant women in Bangladesh to observe the effect of lifestyle and nutritional intervention in pregnancy and foetal outcomes relevant to metabolic diseases

Acronym
GIFTS WP3

Study objectives
A complex intervention during pregnancy in South Asians involving personalized micronutrient supplementation and lifestyle advice tailored on the nutritional status of the participant will have a positive effect on foetal outcome.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Regional Committee for Medical Research Ethics of Southern Norway, Section D, 13/09/2013, ref. 2013/845/REK sør-øst D and Ethics Committee at Diabetics Association of Bangladesh, 07/05/2011

Study design
Randomized open-label trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Other

Study type(s)
Prevention

Participant information sheet
PIS, leaflets and questionnaires are provided in Bengali

Health condition(s) or problem(s) studied
Diabetes, obesity, pregnancy

Interventions
Control Arm 1 - Usual Care:
1. Subjects: With nutritional deficiencies
2. Randomized
3. Vitamin D: as per obstetricians standard care; vitamin D is not usually measured
4. Vitamin B12: as per obstetricians standard care; vitamin B12 is not usually measured
5. Folate/iron: supplementation (400 mcg/day) throughout pregnancy and iron capsules from 2nd trimester as per obstetricians standard care
6. Lifestyle: as per obstetricians standard care

Control Arm 2
1. Subjects: Without nutritional deficiencies
2. Not randomized
3. Vitamin D: as per obstetricians standard care; vitamin D is not usually measured
4. Vitamin B12: as per obstetricians standard care; vitamin B12 is not usually measured
5. Folate/iron: supplementation (400 mcg/day) throughout pregnancy and iron capsules from 2nd trimester as per obstetricians standard care
6. Lifestyle: as per obstetricians standard care

Intervention Arm Complex Care:
1. Subjects: With nutritional deficiencies
2. Randomized
3. Vitamin D3: oral (daily dose) <30 nmol/L 4000 IU/day ≥30 nmol/L and <75 nmol/L 2000 IU/day
4. Vitamin B12: level of <200 pg/ml give B12 250 mcg parentally every 25 days
5. Folate/iron: supplementation (400 mcg/day) throughout pregnancy and iron capsules from 2nd trimester as per obstetricians standard care
6. Lifestyle: intervention based on successful intervention developed in the same community with attention to diet and lifestyle
The study will be a prospective intervention that will take place in Azimpur near Dhaka, Bangladesh. The study population will reflect a range of targeted lifestyle and nutritional interventions that will provide pilot data to enable development of tailored educational strategies in future large-scale study of South Asian people living in Europe and South Asia informed by the results of the GIFTS program. This study is not designed to test any one intervention alone (i.e. lifestyle, B12 or vitamin D supplementation) but to test the combined intervention depending on the nutritional status of the participant.

Added 17/08/2015:
Randomized subjects with nutritional deficiencies added to control arm 1 and to intervention arm. Second control arm added for non-randomized subjects without nutritional deficiencies.

Added 05/11/2014:
We have changed the form of Vitamin B we are administering from injections to tablets, these are called B126TM and contain Thiamine Nitrate (Vit-B1) 100 mg, Pyridoxine Hydrochloride (VIt-B6) 200 mg and Cyanocobalamin (Vit-B12) 200 mcg. Tablets will be taken one every 14 days to reach a daily dosage of Vitamin B12 of =14mcg

Intervention Type
Supplement

Primary outcome measure
Will be a composite based on maternal micronutrients at term by increasing total vitamin D repletion (>80 nmol/l) to 40% (compared to an estimated 10% repletion in the usual care) and decreasing vitamin B12 deficiency (<200 pg/ml) to 5% (compared to an estimated 15% in usual care)

Secondary outcome measures
Fetal (taken at delivery):
1. Cord blood insulin (this endpoint has helped inform sample size; see power calculations), C-peptide and other biochemistry
2. Anthropometric measurements including customized birthweights
3. Nutritional levels (vitamin D, vitamin B12, folate, homocystene and other detailed measurements, including leptin)
4. DNA methylome
5. Identification of ideal birth weight

Maternal (taken in the 1st trimester, at 24-28 weeks, and at delivery):
1. In those overweight a weight loss of 5% compared to usual care
2. Anthropometric measurements
3. Biochemistry, including folate, homocystene H (and detailed 1C metabolites), leptin
4. Incidence of GDM defined by local criteria
5. Identification of ideal weight gain during pregnancy
6. Change of maternal vitamin D status as a predictor of changes in fetal anthropometric and biochemical markers of cardiometabolic risk; plus as preceding but also accounting for vitamin D related genotypes
7. Change of maternal 1C status as a predictor of changes in fetal anthropometric and biochemical markers of cardiometabolic risk; plus as preceding but also accounting for genotype for instance MTHFR, FUT2

Feasibility:
1. Feasibility and acceptability of intervention
2. Ratio of pregnant women consented compared to cord bloods collect
3. Concordance with lifestyle and vitamin D/vitamin B12 dosing

Overall study start date
21/06/2014

Completion date
01/08/2015

Eligibility

Key inclusion criteria
1. Women in the 1st trimester of pregnancy
2. Age between 18 to 28 years
3. Primigravida/multigravida (maximum two previous deliveries)
4. Conception without treatment of infertility
5. Planned hospital delivery
6. Able to provide informed consent for participation in the trial
7. Singleton pregnancy
8. From middle and low socioeconomic background (less than 10,000 Taka – US $ 150, monthly

household income)
9. Presenting to antenatal clinics, in 10 locations in Azimpur near Dhaka, Bangladesh

Added 17/08/2015:
Participant criteria added (points 8 and 9)

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex
Female

Target number of participants
Between 744 and 1200 pregnant women

Key exclusion criteria
1. Pre-pregnancy diabetes (previously diagnosed or by OGTT at 12-14 weeks gestation
2. History congenital malformations
3. Planned home delivery
4. Multiple pregnancies
5. Known intolerance to any of the micronutrient supplements being administered in the trial
6. Prior history of hypercalcaemia or renal stones
7. Serum calcium >2.65 mmol/L
8. Participation in another trial/study likely to impact the results of this study
9. CKD stage 4 or worse defined by eGFR <30 mL/min/1.73m2
10. History of significant liver disease AST > 3xULN or bilirubin >2.5xULN
11. Active sarcoidosis, tuberculosis or malignancy
12. Thyroid disease
13. Medication: use of multivitamin supplements, thiazide diuretics or oral corticosteroids in the past one month

Date of first enrolment
21/06/2014

Date of final enrolment
21/06/2015

Locations

Countries of recruitment
Bangladesh

England

United Kingdom

Study participating centre
Blizard Institute
London
United Kingdom
E1 2AT

Sponsor information

Organisation
Queen Mary University (UK)

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Sponsor type
University/education

ROR
https://ror.org/026zzn846

Funder(s)

Funder type
Other

Funder Name
European Commission (FP7) (Belgium)

Alternative Name(s)
European Union, Comisión Europea, Europäische Kommission, EU-Kommissionen, Euroopa Komisjoni, Ευρωπαϊκής Επιτροπής, Европейската комисия, Evropské komise, Commission européenne, Choimisiúin Eorpaigh, Europskoj komisiji, Commissione europea, La Commissione europea, Eiropas Komisiju, Europos Komisijos, Európai Bizottságról, Europese Commissie, Komisja Europejska, Comissão Europeia, Comisia Europeană, Európskej komisii, Evropski komisiji, Euroopan komission, Europeiska kommissionen, EC, EU

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location

Funder Name
BADAS (Diabetic Association of Bangladesh) (Bangladesh)

Results and Publications

Publication and dissemination plan
Plan for publication: Abstract from preliminary or baseline data have been prepared and accepted for the 7th Asian Association for the Study of Diabetes (AASD) Scientific Meeting and ASM of the HKSEMR in Hong Kong.

Accepted abstracts are:

Abstract No.: 0018
Abstract Title: Prediction of Gestational Diabetes Mellitus at 24 to 28 Weeks of Gestation by Using First-Trimester Maternal Characteristics and Biochemical Parameters

Abstract No.: 19
Abstract Title: Anthropometric Indices of Obesity and Gestational Diabetes in Primigravid Bangladeshi Women

Abstract No.: 34
Abstract Title: Association between Folate, Vitamin B12 and Homocysteine levels in neonates of primigravid women from Bangladesh

One main paper with primary outcome will be prepared in September/October 2015 once all data have been cleaned and checked by the statistician
As this study is part of a bigger project called GIFTS, which is finishing in Jan 2016, further publications will be produced in 2016.
As part of the GIFTS Project we are also developing a free e-learning portal which will include all results and lessons learned in the project focusing on South Asians and diabetes prevention and mainly for the use of local health professionals.

Intention to publish date
01/10/2015

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article	results	24/04/2018		Yes	No