Abstracts

ORAL PRESENTATIONS

OP-1
Abstract Title
Obese Nulliparous Women and the Risk for Maternal and Fetal Complications

Authors
Hussein Attia Sharara; Lamana Naji Abdul Rahman; Firdous Ummunnisa; Dr. Naseera Aboubaker; Dr. Maisa Mohammed Abdullah; Maisa Mohammed Abdullah; Nissar Shaikh Al-Khor Hospital, Hamad Medical Corporation, Qatar

Objectives/Aims of Study
Aim of our study was to know the prevalence of obesity in nulliparous women and its impact on pregnancy as well as fetus.

Methods (Study Design)
All nulliparous women with single pregnancy and gestational age of 37 weeks and above was included in the study. Primigravida with multiple pregnancies, fetal abnormalities, and gestational age less than 37 weeks were excluded. Patients were divided into normal overweight and obese group according to their prepregnancy body mass index (BMI).

Results of Study
Total 2243 nulliparous women were included in the study, majority (56.8%) of patients was in the normal BMI group and only 24.8% were obese. But a significantly higher of obese nulliparous women were in the age group of 18 to 29 years (P<0.05).

Interpretation of Results
Comorbidities were significantly higher in obese primigravida. The incidence of gestational diabetes and pregnancy induced hypertension was significantly higher (P<0.05) in obese nulliparous women. Overweight and obese nulliparous patients required significantly higher emergency caesarean section and assisted vaginal deliveries compared to the normal BMI nulliparous women (P<0.03).

Conclusions
Maternal obesity leads to prepartum, peripartum as well as fetal complication. Obese pregnant patients had a significantly risk to developing gestational diabetes and pregnancy induced hypertension. In these patients the prevalence of assisted vaginal and caesarean deliveries is significantly high.
Abstract Title

A three-year review of diabetic ketoacidosis in pregnancy – causes and outcomes

Authors

Khaled Ahmed Baagar*; Aida Aboudi+; Heba Khalidi+; Buthaina Alowinati*; Abdul Badie Abou-Samra*; Stephen Lindow **

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Objectives

Diabetic ketoacidosis in pregnancy (DKP) incidence varies between 0.5% and 8.9%, and the associated fetal mortality is (9 - 36%). The aim of this study was to; 1) assess the incidence, causes and outcomes of DKP. 2) identify factors associated with favorable outcomes.

Methods

A retrospective chart review of 20 DKP hospital admissions of 19 females, from 3679 diabetic pregnancies delivered between June 2012 and May 2015 was conducted. Two groups were compared, group A, with successful DKP management and group B, where the baby was delivered or was an intrauterine fetal death (IUFD) during treatment.

Results

Overall, 13 cases had diabetes type 1 and 6 had type 2, including 2 with undiagnosed diabetes. The commonest precipitating factors were vomiting (55%) and insulin non-compliance (45%). Plasma glucose was < 200 mg/dl in 50% of the patients. There was no maternal mortality, but there was one fetal death (5%). A comparison of 14 admissions who were successfully treated (group A) versus 6 with emergent delivery or IUFD (group B), showed significant difference only in the mean gestational age 21.8 ± 11.0 and 33.7 ± 4.6 weeks (p= 0.005).

Conclusions

The incidence of DKP was 0.5%. It can complicate both types of diabetes. Fetal mortality was 5% but no associated factors were identified. The incidence of DKP was similar to the lowest recorded in previous case series and the fetal mortality was less. Antenatal diabetes screening, patient education and compliance to insulin may prevent many cases.
OP-3

Abstract Title:
Perinatal outcome in patients with diabetes in pregnancy with one previous caesarean section

Authors
Joohi Ramawat, Hiba Satti, Khalid Ali E Ashawesh, Dr Mohannad Chehab, Dr Sindu Jacob, Dr Kamal Atta, Dr Tarekh Abdel Kreim, Dr Khaled Dukhan, Dr Stephen Fedrick, Dr Mohammed Dagash, Vincent Boama*

Al Wakra Hospital, Hamad Medical Corporation, Doha, Qatar, *Sidra Medical and Research Center

Objectives: To determine the perinatal outcome in patients attending Joint obstetric and diabetic clinic (JODC) who had diabetes and previous one caesarean section (CS)

Study design
A prospective study was conducted in a secondary care hospital. Patients attending JODC, from July 2015 to July 2016, were considered for the study.

55 patients with diabetes and previous one CS, out of 358 patients who attended the clinic, were identified. The perinatal care, including time and mode of delivery, indication of CS and maternal and neonatal outcome were studied.

Results of Study:
Total patients 55
8 (15%) have Type 2 DM
47 (85%) have Gestational DM
Antenatal plan for Mode of delivery – 23 (41%) were planned for VBAC and 32 (59%) for elective CS
Final mode of delivery, risk factors and outcome:
7 (13%) had VBAC, but had no additional risk factors and delivery was uneventful. 48 (87%) had CS (elective, 60% & emergency, 27%). 11 (75%) out of 15 emergency CS patients had additional risk factors. Most of the maternal complications 13/55 (23%) were in CS group and majority in emergency CS group 15/55 (27%). and were IUGR, PET, eclampsia, abruption, PPH. Similarly all neonatal complications 14/55 (25%) were in CS group (2 small for date, 6 RDS, 6 LGA). Among the 8 type 2 DM patients, 7 delivered by CS (4 emergency and 3 elective) and only one had VBAC. All 4 these emergency CS had additional risk factors.

Conclusions:
Normal delivery was associated with better maternal and fetal outcome as compared to CS group. Presence of additional risk factors may increase the risk of emergency CS, and worsen maternal and neonatal adverse outcome. Patients with pre gestational diabetes (TYPE 2) may be at increased risk of developing additional risk factors and a higher rate of CS deliveries.
Abstract Title:
Comparison of neonatal outcome in women with Gestational Diabetes on different combinations of pharmacological intervention, delivered at term.

Authors:
Sindu Christian; Kamal Atta; Mohannad Chehab; Joohi Ramawat; Vincent Boama*; Hiba Satti; Mohammed Dagash; Khaled Dukhan; Stephen Beer; Khaled Ashawesh; Tarik Elhadd
Al Wakra Hospital, Hamad Medical Corporation, *Sidra Medical and Research Center

Objectives/ Aims of Study:
Though many studies have looked at the neonatal outcomes in patients of gestational diabetes on different medication, there is no consensus on the preferred medication for initiation of therapy. We aim to compare the neonatal outcome in our cohort to determine if any one modality was superior to the other.

Methods (Study Design):
This study is a prospective observational study from 1-07-2015 to 31-04-2016. The data of all gestational diabetic patients referred to the Joint Diabetic Clinic, in a local secondary Hospital, who required pharmacological intervention were entered into an excel spreadsheet. This included their antenatal, intrapartum and postnatal details taken from their Electronic Medical Record.

Results of Study:
The total number of patients studied was 107. There were 58 (54.21%) patients treated with Metformin only. The average birth weight of the neonates of this group was 3287.78gm. There were 9 (15.51%) Neonatal ICU admissions in this subgroup.

17 (15.89%) patients were commenced on insulin. The average birth weight in this subgroup was 3409.24gm with 2 (11.76%) NICU admissions

32 (29.90%) of our patients required Metformin and insulin. In this subgroup, the average birth weight was 3494.56gm with 5(15.62%) requiring NICU admission

Interpretation of Results:
The least birth weight was observed in the subgroup with Metformin alone (54% of our patients). The subgroups with insulin showed a higher neonatal birth weight. The least NICU admissions were in the insulin only group.
Conclusions:

Whether the increase in birth weight seen in patients on insulin, is indicative of uncontrolled blood sugars or due to the direct effect of insulin as shown in some studies, requires further evaluation. Further analysis of the ongoing cohort is needed before we can recommend any one mode of treatment as the preferred choice in our setting.

OP-5

Abstract Title:

The effect of maternal obesity in macrosomia and related adverse pregnancy outcomes among women attending Ibrahim Malik Maternity Hospital - Khartoum- Sudan

Authors:

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Background:

The association between macrosomia and adverse perinatal outcomes has been thoroughly examined in previous studies, as has the relationship between maternal obesity and adverse pregnancy outcomes, including macrosomia. We believe that the combined effect of maternal obesity and fetal macrosomia will further increase the risk for related adverse outcomes.

Objectives:

The overall aim was to assess effect of maternal obesity in macrosomia and related adverse pregnancy outcomes among women attending Ibrahim Malik Hospital in Khartoum- Sudan

Methodology

It was descriptive ,prospective and cohort study carried out at Ibrahim Malik Maternity Hospital n Khartoum - State-Sudan during the period from January 2016 to July 2016. Two hundred and fifty pregnant women were enrolled in this study. Women were divided into three groups depending on their BMI. Group (A) 100 women had normal BMI (18.50-24.99 kg/m2) . Group (B) 100 women had BMI between 40.00 and 44.99 kg/m2. Group (C) 50 women had BMI ≥ 45.00 kg/m2.

Results:

Six percent of infants whose mothers had a normal BMI (18.50-24.99 kg/m2) were macrosomic (birthweight ≥ 90th percentile) compared to 18.3% of infants of mothers whose BMI was between 40.00 and 44.99 kg/m2, and 30.4% of infants born from mothers with a BMI ≥ 45.00 kg/m2. The rate of caesarian delivery increase with increasing BMI, from 26.3% in women of normal weight, to 39.2% in women between 40.00 and 44.99 kg/m2 and 44.2% in women with BMI ≥ 45.00 kg/m2.

Conclusion:
The results of this study convincing evidence of the positive relationship between maternal obesity and fetal macrosomia. Obese mothers are more likely to be induced and to require Cesarean section for delivery and increase intra partum and postpartum complications.

Key words: Obesity, Fetal macrosomia, adverse pregnancy outcome, Association.

OP-6

Abstract Title:

Outcomes of high risk Cohort with GDM, report from a tertiary hospital

Authors:

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3- Sidra Medical research Centre.
4- Diabetes Education, Women’s Hospital

Background:-

A previous study from 2011 described the outcomes of GDM in Qatar in 262 unselected groups of patients. Since then, universal screening programs have been embraced resulting in more patients diagnosed with diabetes in pregnancy. Based on the pathway for diagnosis and management of patients with GDM, patients who fail on diet and exercise are referred to the diabetes in pregnancy service in the Women’s Hospital (HMC) to be commenced on pharmacotherapy. Globally, it is estimated that only 10-15% of patients with GDM need pharmacotherapy intervention. This group is considered at higher risk for maternal and fetal complications.

Aim

To report on baseline characteristics and some pregnancy outcome in patients with GDM who required pharmacotherapy intervention.

Methods

A prospective study of women with GDM, diagnosed based on 75 grams OGGT, who required pharmacotherapy attending the Diabetes in Pregnancy Antenatal Clinic in the Women’s Hospital, Hamad between March 2015 and June 2016. Only those with pregnancy outcomes are reported here.

Results

Two hundred and Seventy-three patient (273) with confirmed GDM were included, of which 107 (44.0%) were Qatari. At booking, the mean age was 33 years. The mean BMI for the cohort was 32.8 kg/m²; 38% were class I Obesity, 24.3% class II obesity and 12.3% class II obesity. The Qatari cohort were more obese with 25.2%, 30.8% and 16.2% had class I, II and III obesity. At
baseline, 30.8% of the patients were pre-diabetic (HBA1c >=5.7%). The life birth rate was 99.3%, with 1 miscarriage and 1 case (0.36%) with IUFD. C-section was the mode of delivery in 114/271 (46.9%). The mean Gestational age at delivery was 37.8 weeks. Sixteen (6.6%) of the neonates were Macrosomic 39 (16.2%) (birth weight >4000g), were LFD (Large for Date) and 24 (9.9%) were SFD (Small for Date) was seen in 16 Pre-term delivery (<37 weeks) was reported in 47/271 (19.5%).

**Conclusion**

In this high risk cohort with GDM, our study shows a very high rate of obesity , similar to the rate that we have reported in the patients with type 2 Diabetes Mellitus , particularly among the Qatari cohort. The rate of C-section was higher than the previous report of similar number of GDM patients in Qatar, yet the rates of macrosomia was IUFD were much lower indicating an overall improvement in screening and management of GDM. More analysis will follow.

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**OP-7**

**Title of abstract**

How well are we managing our patients?: Use of HbA1c and New Born weight as surrogate markers in Pregnant women with pre-existing diabetes.

**Authors:**
Kamal Atta; Sindu Jacob; Muhannad Hassan; Joohi Ramawat; Vincent Boama; D Dagash; Hiba Satti; Khalid Dukhan; Khalid Ashawesh, Tarek Elhadd; Stephen Beer.

Al Wakra Hospital, Hamad Medical Corporation.

**Objective of the study**

Many studies have clearly shown a direct association between diabetic control and newborn weight. Serial HbA1c measurements is one of the best ways to monitor long term control of diabetes apart from its direct correlation with risk of fetal anomaly.

Using HbA1c as a marker and new born weight for mothers delivered at term, we aim to:

- A. Measure compliance with HMC guidelines of HbA1c testing in the joint diabetic clinic
- B. Evaluate any correlation between ANC HbA1c level and BMI and fetal weight at term delivery for women with Pre-existing diabetes.

**Method:**

This prospective source evaluation of diabetic pregnant women who were managed in JDC over a 12 month period.Excel data sheet was used to capture ANC intrapartum and maternal variable option from CERNER Electronic Medical Records.

**Results**

Total number of patient included in this study were 200, from july 2015 to june 2016Out of this 136 (68%) of this patients with gestational diabetes.
64 (32%) of this had pre-existing diabetes mellitus.
9(4.5%) patients had type 1 DM, 55 (27.5%) of these patient had type 2 DM.
In 76.5 % of the patients with gestational diabetes had HBA1c testing in compliance with HMC guidelines. In 23.5% HbA1c testing were not compliant with the guidelines.
In patients with pre-existing diabetes 92.5% had HBA1c test in compliance with guideline.

Maternal BMI;
1. Average maternal BMI at the end of pregnancy for patients with HBA1c equal or less than 6.5 (Normal HbA1c) was 34.6 which accounted for 76.4 % of the total number of patients with pre-existing diabetes at JDC during study period.
2. Average maternal BMI at the end of pregnancy for patients with HBA1c between 6.5 and 9.5 was 36.5 which accounted for 20 % of the total number of patients with pre-existing diabetes at JDC during study period.
3. Only 2 patients (3.6%) of the total patients seen during study period had HBA1c greater than 9.5 with average BMI of 36.
4. The average newborn weight for mothers whose HBA1c was less than 6.5 was 3078 gms.
5. The average newborn weight for mothers whose HBA1c was between 6.5 and 9.5 was 2296 gms.
6. The average newborn weight for mothers whose HBA1c was greater than 9.5 was 2874 gms.

Interpretation of Results
From our study patients with normal HBA1c of 6.5 or less had the lowest BMI, compared to patients whose HBA1c was greater than 6.5.
Majority of our patients (76.4%) had good control of diabetes as reflected by normal HBA1c.
However the average newborn weight of mothers with normal HBA1c was greater than newborn weight of mothers whose HBA1c was greater than 6.5 at the end of pregnancy. In the normal HbA1C patients, there were no macrosomic or low birth weight babies. This is indicative of excellent diabetic control in the majority of these patients who all happened to have Type 2 Diabetes.
Fifty five (86%) of the preexistant diabetes patients were those of type 2 diabetes and overwhelming majority of these patients had a normal HBA1c at the end of pregnancy.

Conclusion
This study indicates that even though compliance with HBA1c testing is high, it must be improved to achieve 100% compliance as mandated by HMC Guideline.
Majority of the patients had excellent diabetes control during the pregnancy as reflected by normal HBA1c levels and Normal fetal birth weight in our cohort of patients.
Further studies requiring larger numbers of patients with Type 1 Diabetes specifically may need to be done to compare neonatal outcomes with those of type 2 DM.
Abstract Title:
Outcomes of patient with Type 2 Diabetes in pregnancy, report from a tertiary hospital

Authors:
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Background:-
Little is known about the characteristics and outcomes of patients with type 2 diabetes mellitus in pregnancy in Qatar.

Aim:-
To report on characteristics and pregnancy outcomes in patients with type 2 DM who attended a tertiary referral centre.

Methods:-
A prospective study of women with type 2 DM attending the Diabetes in Pregnancy Antenatal Clinic in the Women’s Hospital (HMC) between March 2015 and June 2016. Only those with pregnancy outcomes are reported here.

Results:-
Two hundred and Ninety-Seven patients (297) patients with type 2 DM were included, of which 137 (46.2%) were Qatari. At booking, the mean age 34.2 years of age. The mean BMI was 34.4kg/m²; 31.3% had class I Obesity, 24.6% had class II Obesity and 17.8% had class III obesity. Among the Qatari the rates were 28.5%, 29.9% and 21.2% respectively. The mean HBA1C was 7.1%; 125 (42%) patients conceived with a HBA1C > 7.0% and 21 patients (7.1%) conceived with HBA1C ≥10%. The rate of life birth was 269/297 (90.1%) with 26 (8.7%) reported miscarriages and 2 (0.7%) IUFD. The mean gestational age at delivery was 37.1 weeks. C-section was the mode of delivery in 169 (56.9%). Sixteen (5.4%) of neonates were Macrosomic (>4kg), 61 (22.7%) Large for date (LFD), and 17 (6.3%) were small for date (SFD). Pre-term delivery (<37 weeks) was reported in 72 (26.8%).

Conclusion:-
The first report shows that the prevalence of obesity in this cohort was quite high compared to other international cohorts. However, the neonatal outcomes are comparable. More analysis will be performed to study the high rates of C-section and pre-term delivery.

**OP-8B**

**Abstract Title:**

Outcomes of patient with Type 1 Diabetes in pregnancy, report from a tertiary hospital

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4. Clinical Pharmacist, Women’s Hospital
5. Diabetes Education, Women’s Hospital

**Background:**

Little is known about the characteristics and pregnancy outcomes of patients with type 1 diabetes mellitus in Qatar.

**Aim**

To report on the physical characteristics and pregnancy outcomes in patients with type 1 DM who attended a tertiary referral centre.

**Methods**

A prospective study of women with type 1 DM attending the Diabetes in Pregnancy Antenatal Clinic in the Women’s Hospital in Doha between February 2014 and June 2016. Only those with pregnancy outcomes are reported here.

**Results**

Sixty-two patients with type 1 DM were included, of which 38 (61.3%) were Qatari. At booking, the mean age was 29 years. The mean BMI for the cohort was 28.3 kg/m\(^2\); 25.8% were obese (BMI>30). Among the Qatari cohort, 38.9% were obese. The mean HBA1C was 7.9%; 62.9% conceived with a HBA1C > 7.0% and 13.0% conceived with HBA1C of ≥10%. There were 2 miscarriages (3.5%) and 1 (1.75%) IUFD due to severe congenital malformations. C-section was the mode of delivery in 37 (59.7%). The mean gestational age at delivery was 36.5 weeks. Five (9.3%) neonates were Macrosomic, 15 (25.4%) were LFD (Large for Date) and only 1 (1.9%) was SFD. Pre-term delivery (<37 weeks) was reported in 28 (51.9%).

**Conclusion**

This first report shows that our cohort was overall overweight and the rate of obesity was unexpectedly high (compared to international cohorts), however the neonatal outcomes were in keeping with international figures. More analysis is needed to look at the high rates of pre-term deliveries and C-section.
OP-9

Obesity in the Pregnant Diabetic Population and Delivery Outcomes

Authors
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Introduction
Diabetes is the most common pre-existing medical condition in pregnancy in the UK. The global obesity epidemic has led to an increase in the incidence of Type 2 Diabetes in pregnancy as well as Gestational Diabetes. Obesity may also affect susceptibility to Type 1 Diabetes. Children of diabetic mothers are in turn pre-disposed to Type 2 Diabetes in adult life, perpetuating the cycle.

Objective
To determine the prevalence of obesity among the diabetic population in our maternity unit and correlate BMI with pregnancy outcomes.

Method
Retrospective study using maternal records.

Results
103 cases were identified. Age range was 15 to 43 years. Gestational Diabetes n=45, Type 1 Diabetes n=50 and Type 2 Diabetes n=8. BMI was not recorded in 10 cases. BMI range 22-54

67% were clinically obese. [Class 1 obesity = 30%, Class 2 obesity = 20.5% and Class 3 obesity = 14%]. 20.4% were overweight. Only 12.6% had BMI of 25 or less.

In the Obese group the Caesarean section rate was 57% (30% Elective and 27% Emergency). Spontaneous vaginal delivery rate was 31% and 12% had assisted vaginal delivery compared to a Caesarean section rate of 50%, Vaginal delivery rate of 38.2% and assisted vaginal delivery rate of 11.8% in the non obese group.

8% of all babies had intra uterine growth restriction. 45% were normal centile for gestation and 48% were above the 95th centile. (Range 1.7 - 5.4 Kilograms). This resulted in 1 case of severe shoulder dystocia and Erb's palsy. There was 1 intrauterine death at 24 weeks. There were 2 cases of congenital malformation in the obese group and only 1 in the non obese group.

Conclusion
Obesity is strongly associated with both pre-existing and Gestational Diabetes in Pregnancy. The incidence of operative delivery is increased. A significant proportion of babies born to these women were macrosomic with attendant neo-natal morbidity.

OP-10

Abstract title:

Caesarean section surgical site Infection Reduction Project, 2013-2016

Authors:

Yousra Shehada Siam; Ms. Feah Altura – Visan; Ms. Jenalyn C. Castro

Objective(s):

Description of Surgical Site Infection (SSI) among Elective and Emergency Cesarean Section surgeries done in Al Wakra Hospital and interventions implemented overtime to reduce the rates and provide optimal quality patient experience. It highlights SSI prevention bundles and supplementary evidence-based practices implemented in Al Wakra Hospital including establishment of CS SSI reduction team, antenatal MRSA Nasal Screening and Patient Education, postoperative Wound Assessment on Day 10 and Chlorhexidine gluconate washcloth for wound cleaning.

Study methods:

The study is done in a general hospital in Qatar, following the National Healthcare Safety Network (NHSN) monitoring until 30 days post operatively. Patients are risk indexed by duration of surgery, wound classification and ASA scores. Rates are computed after reviewing all cesarean sections for microbiology results, follow up surveys and wound assessments, then computed per risk index and compared to the target of 50th percentile NHSN rate.

Results:

The study covered 3642 cesarean sections and by interventions done SSI Risk Index 0 was effectively reduced from 8.66% in 2nd Quarter 2013 to 1.66% in 2nd Quarter 2016, thereby nearing the gap to reach the target of 1.07%. Following strict prevention bundles, patients with higher risks did not develop SSI.
It is observed that patients with gestational diabetes and high BMI range are developing SSI. Hypothesis is that abdominal flaps covers the surgical site, chlorhexidine rinse-free washcloths and wound assessment post operatively after discharge were done to ensure that surgical site are properly cleaned and disinfected; the SSIs have decreased from 3.26% to 2.16%.

Conclusion(s):

Being a new mom comes with a lot of changes and challenges, the physical and emotional toil that a woman experiences welcoming a child is huge and with it a roller coaster experience. Internationally, hemorrhage and infection are the leading causes of maternal death after cesarean section. It prolongs hospitalization with direct cost and health implications. This project highlights the importance of preventing cesarean section SSIs by enthusiastic staffs, well-engaged patients and a healthcare delivery system that puts patient care and safety in the forefronts of their services.

OP-11

Abstract title:

Is Gestational Diabetes a risk factor for Perinatal Depression? A prospective study in Qatar

Authors

Eman Abuhuzaimah M.D., Madeeha Nasir M.D., Javaid Sheikh M.D., Margaret Altemus M.D. Weill Cornell Medical College in Qatar

Objectives/ Aims of Study:

Gestational Diabetes Mellitus(GDM) is associated with significant comorbidities for both the mother and the offspring. Although genetic risk cannot be modified, prevention efforts should focus on modifiable risk factors for GDM. A prospective study of perinatal depression in Qatar was used to compare demographic, depression, activity and sleep variables between women who developed gestational diabetes and those who didn't.

Methods (Study Design):

716 women were recruited in the 1st trimester from the perinatal clinics in the PHCCs and women’s hospital. Follow up visits were conducted in the 2nd and 3rd trimesters. Medical history, Demographics, sleep, activity and depression information were collected at each visit. Depression was measured with Edinburgh Postnatal Depression Scale and MINI Diagnostic Interview. Sleep measures included Berlin sleep apnea questionnaire, Pittsburgh Sleep Quality
Index and International Restless Legs Scale. Activity was measured by pedometer for 3 days. Women diagnosed with diabetes mellitus prior to pregnancy were excluded.

Results of Study:

17.6 % (N=99) of subjects developed GDM. As expected, GDM was associated with BMI, low educational status and age, but there was no relation between GDM and activity, sleep measures or depression. Activity fell from 3413 steps/day in first trimester to 3372 steps/day in 3rd trimester. GDM was less common in women from South East Asia (9.6%) than women from the Gulf Arab countries, Middle East and South Asia.

Interpretation of Results and Conclusions:

Rates of GDM are high in women from Gulf Arab countries (19.4%), women from other countries the Middle-East (21.7%) and Pakistan/India (16.9%). Efforts to increase walking and to reduce depression are unlikely to prevent development of GDM.