

(RESEARCH ARTICLE)



Trajectory of gestational weight gain in patients with gestational diabetes mellitus

Wesam Kurdi, Ayana Alyousef, Asma AlKhaibary and Mohannad Ali *

Department of Obstetrics and Gynecology, King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia.

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Abstract

Introduction: Weight gain in pregnancy is a significant modifiable factor that impacts immediate and future health of the mother and her fetus. Hence, worldwide guidelines are developed about weight gain in pregnancy. In a recent study patients with abnormal glucose tolerance test and diagnosed with gestational diabetes had less deviation from expected gestational weight gain.

Purpose: The aim of our study is to look at the trajectory of gestational weight gain for women diagnosed with gestational diabetes followed at the King Faisal Specialist Hospital and Research Centre (KFSH&RC)

Methods: Our study population included 215 pregnant women with singleton pregnancy diagnosed with diabetes mellitus who attended the obstetrics outpatient clinic and family health clinics from first antenatal visit until delivery.

Results: From among the 215 women in the study cohort, the total number of weight gain was 143. The number of patients who lost weight was 48, and the number of patients who remained stable were 24. Overall, the amount of weight gain for women in this study was comparable to the expected.

Conclusion: In our study we found the patients diagnosed with gestational diabetes mellitus have a wide range of changes in their weight gain trajectory from previously expected parameters in the healthy population, which might be explained by other factors like adherence to diet, exercise and medications designed control the metabolism.

Keywords: Weight gain; GDM; Pregnant; Maternal health; Fetal health.

1. Introduction

Weight gain in pregnancy is an important modifiable factor that impacts health outcomes for mothers and babies. Women counseling and awareness regarding adequate weight gain is a rising issue and highly recommended during antenatal follow up. Gestational weight gain, whether high or low, is associated with some adverse maternal, fetal and neonatal outcomes. Hence, worldwide guidelines are developed about weight gain in pregnancy¹.

In 1990, the US Institute of Medicine (IOM) has published guidelines recommending gestational weight gain threshold based on a woman's pre-pregnancy body mass index (BMI)². In 2009, the IOM modified the 1990 guidelines and provided specific recommendations regarding the ideal gestational weight gain to include a higher proportion of women from racial/ethnic subgroups, and pre-pregnancy body mass index (BMI) and gestational weight gain (GWG) have increased among all population subgroups³. The new guidelines differ from those in 1990 in two ways. First, they are based on the World Health Organization (WHO) cutoff points for the BMI categories. Second, new guidelines include a specific, relatively narrow range of recommended gain for obese women³.

* Corresponding author: Ayana Alyousef

Physiological weight gain in pregnancy can be attributed to weight of the developing fetus, placenta, and maternal body water and fat.⁴

Maternal weight gain above the IOM target is associated with short and long term negative health outcomes for maternal and fetal health such as large for gestational age fetus, macrosomia, increased rate of cesarean section delivery and maternal postpartum weight retention leading to increased rates of multiple adverse health outcomes such as: hypertension, diabetes, ischemic heart disease and other obesity related morbidities.^{3,4} On the other hand, weight gain below IOM target range may amplify the risk of preterm birth, small for gestational age fetus and intrauterine growth restriction. The IOM guideline made an important note that “these guidelines are intended for use among women in the United States. They may be applicable to women in other developed countries. However, they are not intended for use in areas of the world where women are substantially shorter or thinner than American women.”³

Many institutes in different countries started to investigate this issue, namely whether the IOM guidelines are applicable to their population or not⁵⁻⁸. In developing countries, a woman might attend late for her antenatal care, so her pre-pregnancy BMI may be unknown, hence making it difficult to apply the IOM pre-pregnancy BMI target ranges, then complicating antenatal care that may be based on gestational weight gain⁹. Women with the same BMI still might have different heights and weights and they can differ significantly in the way they gain weight during pregnancy⁸.

Surprisingly, in a study women who had abnormal glucose tolerance test and diagnosed with gestational diabetes had less deviation from expected gestational weight gain. Liu et al.¹⁰ discussed similar findings in their study; outcomes and interpretation of this are that women with GDM are more likely to be under strict glycemic and dietary control. And our study is focused on exploring the trends in this special population.

2. Material and Methods

An observational retrospective cohort study was conducted at the King Faisal Specialist Hospital and Research Centre (KFSH&RC) city of Riyadh, Kingdom of Saudi Arabia and approved by the ethical board review. Our study population included 215 pregnant women with singleton pregnancy diagnosed with diabetes mellitus who attended obstetrics outpatient clinics and family health clinics from the first antenatal visit until delivery. We identified our subjects by the medical records database ICIS system®. Once we identified the study subjects, the medical records were reviewed through the electronic PowerChart® files and patient hardcopy files. All patient’s names and other identifiers were kept anonymous. Only the medical record number was used as an identifier and later was assigned case numbers. Collected data were entered directly into a REDCap software system.

2.1 Inclusion criteria

- Pregnant women with singleton pregnancy follow up at the KFSH&RC.
- Diagnosed as Gestational diabetes mellitus.

2.2 Exclusion criteria

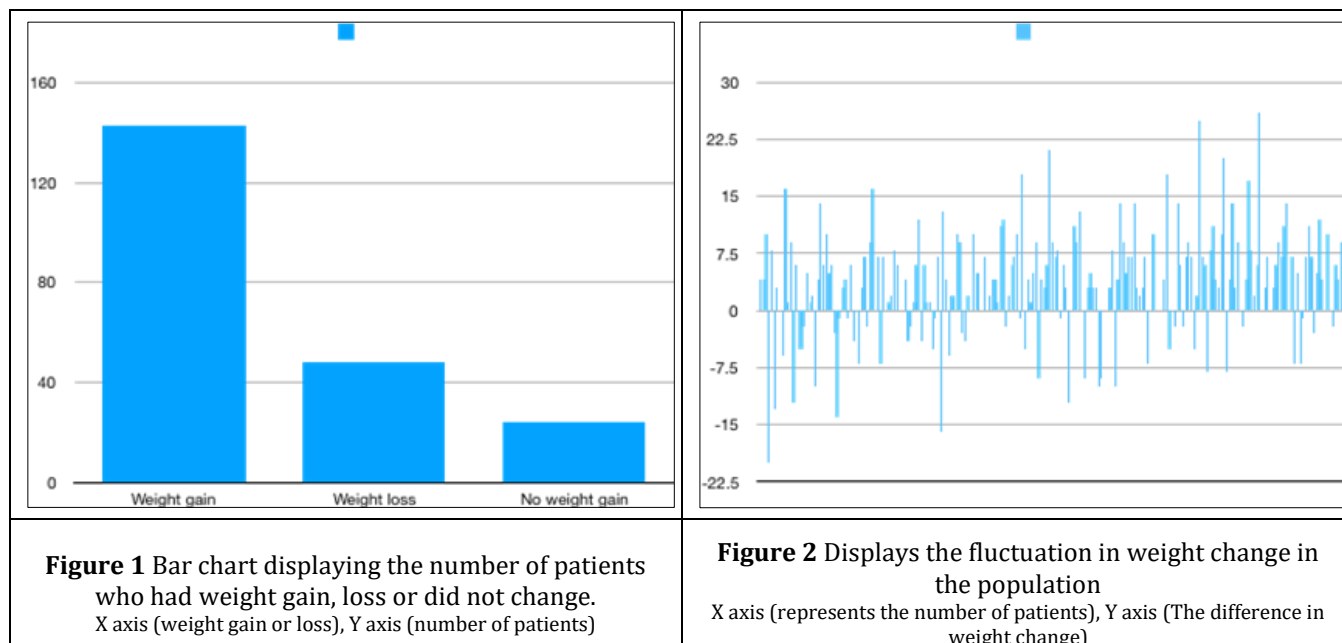
- Patient with multiple pre-existing medical problems.
- Patient delivered outside KFSH&RC.

3. Results

From among the 215 women in the study cohort, the total number of weight gain was 143. The number of patients who lost weight was 48, and the number of patients who remained stable were 24.

The patients who gained weight had a minimum weight gain of 1 kg to a maximum of 26 kg throughout the pregnancy, with the average 7 kg. And the sample that had lost weight had a minimum of 1 kg loss and maximum loss of 20 kg with the average being 6 kg.

Overall, the amount of weight gain for women in this study was comparable to the expected. The average deviation was 0.022 (SD = 0.240) and with a 95% confidence interval of (-0.008, 0.052).



4. Discussion

Controlling weight gain during pregnancy is a challenge for both the clinicians and expectant mothers. The IOM guidelines are a useful tool that aids clinicians in regards to GWG recommendations and follow up. Weight gain within these guidelines decreases adverse pregnancy outcomes. In our unit, IOM guidelines were implemented during antenatal follow up and from our findings gestational weight gain and pregnancy outcome did not deviate from these recommendations.

In modern medicine prevention of excessive weight gain in pregnancy is not only one of the clinician's concerns but the patient's as well. Expecting mothers are becoming more aware about healthy life style and are eager to have a positive pregnancy experience. Adherence to IOM recommendations seems to achieve that goal.

In our study we found the patients diagnosed with gestational diabetes mellitus have a wide range of changes in their weight gain trajectory from previously expected parameters in the healthy population, which might be explained by other factors like adherence to diet, exercise and medications designed control the metabolism.

Our study has its limitations. First, it was a retrospective single tertiary center study. Second, the sample size was small. Being a tertiary center, this limited the number of subjects that fits our inclusion criteria. A third limitation is the lack of generalization to KSA and beyond. A fourth limitation is that the data were obtained from medical records which tends to have incomplete documentations.

5. Conclusion

In our study we found the patients diagnosed with gestational diabetes mellitus have a wide range of changes in their weight gain trajectory from previously expected parameters in the healthy population, which might be explained by other factors like adherence to diet, exercise and medications designed control the metabolism.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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