

Prevention and Management of Gestational Diabetes

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Abstract:

The aim of the study was to observe the prevention and management of gestational diabetes (GDM) in pregnant women. In our observational study, a total of 30 gestational diabetic women were studied. A questionnaire was designed to collect complete patient profile. Results had indicated that Gestational diabetes is very common in pregnant women, after the age 25years, women with over weight, having family history, and hormonal changes.. For prevention of gestational diabetes usually diet plan and exercise was recommended. Gestational diabetes was managed by insulin therapy. Insulin was started after diagnosis the blood sugar level. There was no involvement of a pharmacist in the prevention and management of GDM. The calculations of doses of the insulin were done by the doctors and there was no double check on them. In conclusion ,there is a need for pharmacist intervention in the prevention and management of GDM and to train nurses about the safety precautions required for the safe handling, administration of insulin and provide guidance to the patients of GDM regarding diet plan and exercise to prevent it.

KEY WORDS: *gestational diabetes prevention, management of gestational diabetes, gestational diabetes.*

INTRODUCTION

Gestational diabetes [GDM] is defined as high blood sugar (hyperglycemia) with onset or first recognition during pregnancy.[1] Gestational diabetes is a temporary condition that occurs during pregnancy. Gestational diabetes affects two to four per cent of all pregnancies and involves an increased risk of developing diabetes for both mother and child. Gestational diabetes is also called glucose intolerance of pregnancy.

<http://www.mamashealth.com/default.asp>

Pathophysiology of gestational diabetes includes during early pregnancy, increases in estrogens, progesterins, and other pregnancy-related hormones lead to lower glucose levels, promotion of fat deposition, delayed gastric emptying, and increased appetite. As gestation progresses, however, postprandial glucose levels steadily increase as insulin sensitivity steadily decreases.[2] For glucose control to be maintained in pregnancy, it is necessary for maternal insulin secretion to increase sufficiently to counteract the fall in insulin sensitivity.[3] GDM occurs when there is insufficient insulin secretion to counteract the pregnancy-related decrease in insulin sensitivity.[4]

There are some symptoms that have been experienced but may not have attributed it to

gestational diabetes as of yet. These include: Thirsty that has increased and is constant, Increased need to urinate (which is often a symptom of pregnancy, too),A feeling of being hungry, all the time with an increased hunger pain ,Vision that becomes blurry out of nowhere as well as frequent infections of vagina, bladder and skin. [www.atkinsdiety.info/136/gestational-diabetes]

Some of the most common risks for developing gestational diabetes are a family history of diabetes in parents or brothers and sisters, Gestational diabetes in a previous pregnancy, the presence of a birth defect in a previous pregnancy. Obesity in the woman. BMI greater than 29. Older maternal age (over the age of 30). Previous stillbirth or spontaneous miscarriage, a previous delivery of a large baby (greater than 9 pounds).A history of pregnancy induced high blood pressure, urinary tract infections, hydramnios (extra amniotic fluid), and etc.

[<http://www.mamashealth.com/default.asp>]

Prompt diagnosis of GDM is important, as it carries several risks to both mother and infant.[<http://www.diabetes.ca/about-diabetes/what/gestational/>]For example, children born to mothers with GDM may be have macrosomia (large, fat baby), Shoulder

dystocia (birth trauma), Neonatal hypoglycemia (low blood sugar in the newborn), Prolonged newborn jaundice, Low blood calcium. Respiratory distress syndrome, Develop jaundice, Stillbirth, Die in infancy.

Many tests for GDM have been described, but a distinction is generally made between screening tests and diagnostic tests. In general, screening and diagnostic tests are performed between 24 and 28 weeks, because at this point in gestation the diabetogenic effect of pregnancy is manifest. Several different screening tests are in use. It seems to be inefficient to use risk factors as a screening test to identify subjects to submit to diagnostic test. [<http://www.mamashealth.com/default.asp>]

The most utilized screening test is oral glucose challenge test with 50 g of glucose. The American Diabetes Association (ADA) recommends if value after 1 hour is either 140 mg/dl (7.8 mmol/l), indicate 80% of women with GDM, or 130 mg/dl (7.2 mmol/l), which should indicate 90%. Other screening tests include fasting blood glucose and random blood glucose. Generally used cut-off values are 126 mg/dl (7.0 mmol/l) for fasting blood glucose and 200 mg/dl (11.1 mmol/l) for random blood glucose. The diagnostic test for GDM has always been the 100 gram 3 h oral glucose tolerance test (OGTT). Two abnormal values are needed for the diagnosis of GDM. At present, the most commonly used OGTT internationally is the 75 g glucose solution. This is the test recommended by the WHO and it is used in Europe. In the USA, the 100-g OGTT is still predominantly used. Different cut-off values are in use for the OGTT 100 g and 75g.

[<http://www.medscape.com/viewarticle/568728>]

GDM based on a 2-h 75-g OGTT defined by either WHO or ADA criteria predicts adverse pregnancy outcomes.[5]

Progression to diabetes is more common in women with a history of GDM compared with those without GDM history despite equivalent degrees of IGT (impaired glucose tolerance) at baseline. Both intensive lifestyle and metformin are highly effective in delaying or

preventing diabetes in women with IGT and a history of GDM. [6]

Gestational diabetes mellitus (GDM) is a form of diabetes first diagnosed during pregnancy, usually between 24 and 28 weeks. Currently, management for women with GDM consists of medical nutrition therapy with adjunctive exercise for at least 30 minutes/day. Patients who fail to maintain glycemic goals through diet and exercise therapy are given insulin injections. Several epidemiological studies have suggested a robust link between physical activity and reduced risk of GDM; however, researchers have been unable to suggest a cost-effective, easily accessible, evidence-based program with guidelines for frequency, intensity, duration, and type of activity to prevent the incidence of GDM in sedentary, at-risk populations. True effectiveness of specific structured exercise programs remains untapped in GDM prevention and treatment, and many well-controlled exercise studies are warranted. [7]

Management of GDM has traditionally been through diet and close monitoring of glucose levels, with initiation of insulin therapy when diet alone fails to maintain euglycemia. Recently, however, it has been suggested that alternative treatment modalities, such as exercise, may overcome a peripheral resistance to insulin, thus preventing GDM or controlling hyperglycemia in women with GDM. The effect of exercise in obese women was further complicated by insurance status. For some women exercise may play a role in reducing the risk that they will develop GDM during pregnancy. [8]

The management of gestational diabetes mellitus focuses on the woman's physical, psychosocial, and educational needs. Education is the basis for ensuring the best possible outcome for the mother and infant, and the nurse is an integral part of the educational process. The woman must acquire new knowledge and skills regarding diet, blood glucose monitoring, insulin therapy, and exercise. An individualized approach to treatment includes sensitivity to the woman's cultural background and learning ability.

Compliance with the treatment plan can be enhanced by rapport between the woman and health care providers.[9]

The current experience is that the short acting insulin analogs lispro and aspart are safe, but there are only limited data to support the use of long acting insulin analogs. There are randomized controlled trials which have demonstrated efficacy of the oral agents glyburide and metformin. Whilst short-term data have not demonstrated adverse effects of glyburide and metformin on the fetus, and they are increasingly being used in pregnancy, there remain long-term concerns regarding their potential for harm. [10]

Aim:

To determine the safe and effective management of GDM.

To check the blood glucose level before and after insulin administered.

To observe the patient monitoring in hospital.

To provide the information to the patient that how they manage and prevent GDM in future.

To present information in a simple way so that a pregnant woman get useful information from it.

MATERIALS AND METHODS:

This is a prospective observational study conducted in Lady Wallingdon Hospital , Lahore from 16th June to 30th June, 2010. A total of 30 patients of both sexes of gestational diabetes were studied, who received insulin or on diet plan only. A data collection form was designed to collect data related to the patient’s symptoms, diagnosis, treatment plan, insulin given or any side effect with insulin therapy.

Inclusion criteria:

Patient with gestational diabetes mellitus or those which have chances to develop gestional diabetes during later stage of pregnancy.

Exclusion criteria:

Patients having diabetes mellitus were not included.

Result:

Thirty patients of Pregnancy induced hypertension were studied. The results are represented graphically

Figure 1: shows Women having age between 20 to 30 years were suffering from GDM mainly (50%).

Figure 2: shows Women having weight more than 70 are suffering from GDM. During my studies 40% women having weight between 71to80 were suffering from GDM.

Figure 3: shows Blood sugar testing performed mainly at 6 levels (fasting, post prandial, pre-lunch, post-lunch, pre-dinner, and post-dinner).In 60% women it performed at 6 levels

Figure 4: shows Brisk walk, diet chart (including healthy diet) were recommended majority of patients, While medication (insulin) prescribed only 84% women suffering from GDM.

Figure 5: shows that during this study only 10% recovered from GDM

Figure 6: shows many women diagnosed with GDM 1st time while 13% diagnosed 2nd time

Figure 7: shows majority patients (94%) could not inject insulin (humulin) By themselves

Figure 8: shows 54% women diagnosed with GDM during 3rd trimester, 40% in 2nd trimester while it rarely be diagnosed in 1st trimester.

Figure 1
Age of patients having GDM

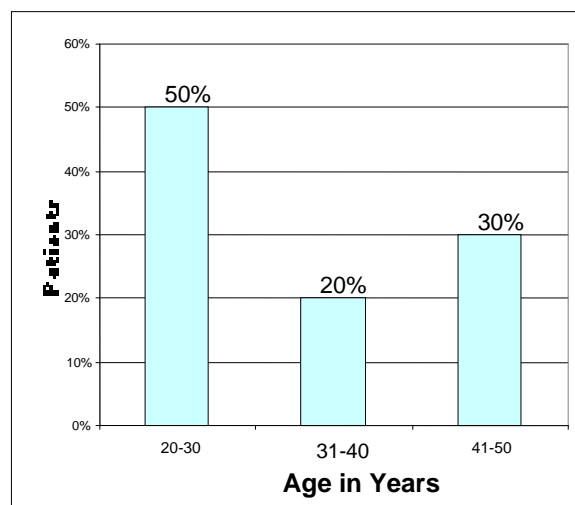


Figure 2 : Weight of Patients having GDM

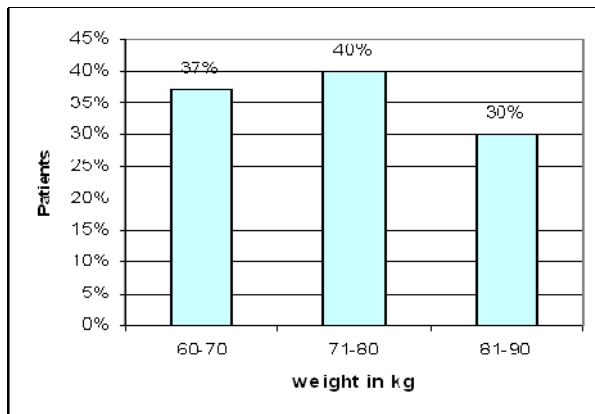


Figure 5 : patients with control GDM.



Figure 3 : Levels of blood sugar testing performed

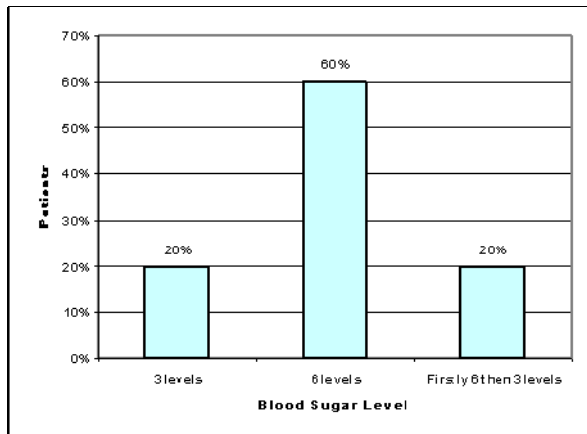


Figure 6 : Patient's frequency of having GDM

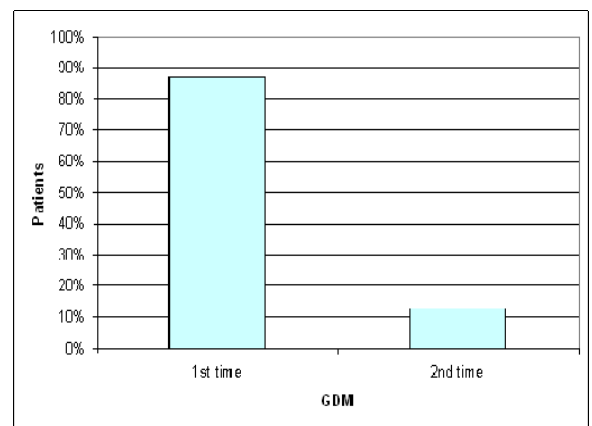


Figure 4 : Treatment plan given to patients.

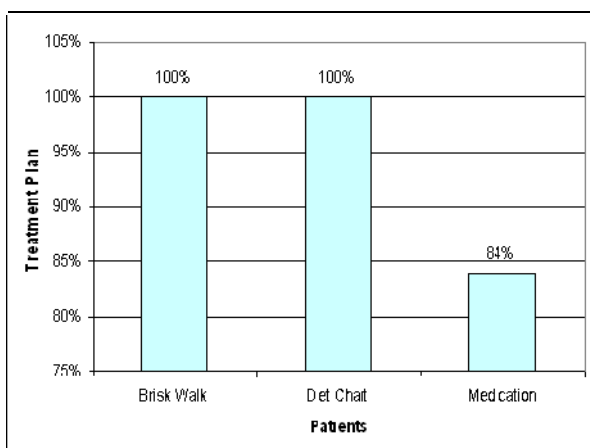


Figure 7 : Patients who can inject insulin themselves

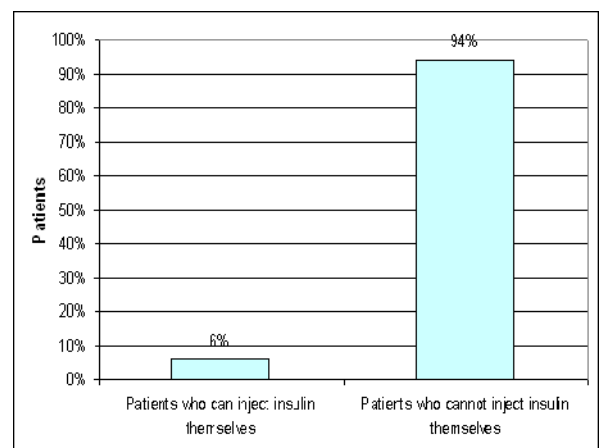
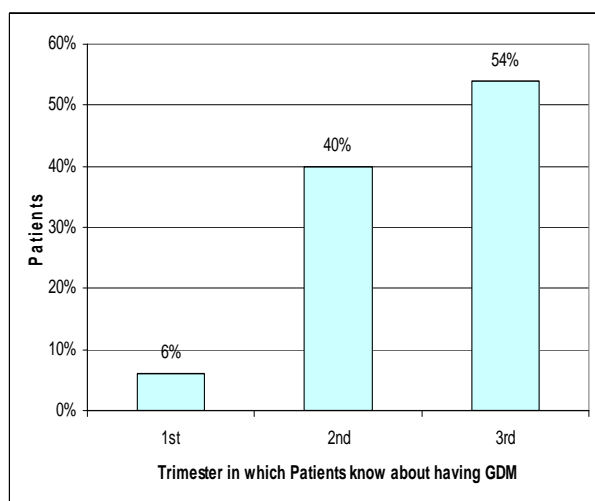


Figure 8

The trimester in which patient know about having GDM



DISCUSSION:

Ages, weight, family history, previous pregnancy with GDM, all are the risk factors of gestational diabetes. A study showed that Age, overweight and obesity, diabetes in the family, macrosomia and a history of perinatal complications were identified as risk factors for GDM.[11]

Most of the women develop GDM when they conceive after the age of 25 years. As weight gain is an important part in pregnancy and hormonal changes also contribute here, women become overweight which is also a major risk factor of developing GDM. The rate of overweight and obesity is increasing amongst the Australian obstetric population. Women who are overweight and obese have an increased risk of adverse pregnancy outcomes. In particular, obese women are at increased risk of gestational diabetes, pregnancy induced hypertension and pre-eclampsia.[12]

Having history of previous pregnancy with GDM may also cause its reoccurrence. Family history is also a major risk factor.

Mostly it is diagnosed during 24th-28th week of pregnancy as women are at average risk of developing GDM at this time. It is mostly screened by checking random and fasting blood glucose levels, glucose tolerance test and glucose challenge test. Diagnosis criteria of

GDM are made if there is at least one abnormal value (≥ 92 , 180 and 153 mg/dl for fasting, one-hour and two-hour plasma glucose concentration respectively), after a 75 g oral glucose tolerance test (OGTT).[13]

If necessary then some other tests like fetal kick count test, stress test and ultrasound examinations are also prescribed by doctors.

Gestational diabetes increases the risk of cesarean section at delivery as the baby becomes overweight. Gestational diabetes mellitus (GDM) affects about 5% of all pregnancies and results in an increased incidence of Caesarean sections, perinatal traumas and neonatal complications. Macrosomy, i.e., an excessive birth-weight is observed in newborns from these pregnancies. In the majority of cases, diabetes regression is observed directly after pregnancy termination, however, in 15-60% of these patients, diabetes mellitus develops in later years of life.[14]

Gestational diabetes can be prevented by overcome all the risk factors. One sensible starting point would be an intervention to prevent early excessive weight gain in pregnancy, which is currently being evaluated by two randomized clinical trials. In addition, early intervention could offset the need for resource-intensive GDM management or insulin therapy [15]

It is managed by meal plans, physical activity and medication (insulin). However blood sugar levels (BSL) are completely checked mostly 6 times or 3 times daily. The results are noted and managed to get the target levels. Some women get controls on their blood glucose level by complete compliance but these are very small in number.

It is very important for the patient to know about injecting insulin themselves. But only few women know how to inject the insulin. The factors are illiteracy, lack of knowledge and poor patient education in our society. Similarly most of the women cannot check their blood glucose levels themselves. Basically there is no involvement of pharmacist to remind and educate patients or women with gestational diabetes mellitus (GDM). GDM can have serious effects if not treated properly. A major

part of managing GDM involves educating the patient about diet, exercise, blood glucose self-monitoring, and insulin self-administration. A successful pharmacist-run GDM education service must have a market and prices sufficient to generate profit.[16]

CONCLUSION:

From this study it is concluded that GDM is very common in pregnant women specially after the age of 25 years. The reason behind that unhealthy diet plan and due to it gain excessive weight. Family history is also to play an important role. It can be prevented and managed as early diagnosed. By following healthy diet plan (without sugar or excess carbohydrate diet), exercise (walk) and time to time checking of BSL (blood glucose level) it can be prevented and managed. In case of high blood sugar level insulin therapy is started as physician prescribed. Patient or women education may also play an important role in this case. Unfortunately there is no involvement of Pharmacist in educating the patient and pregnant women. There is a need to involve pharmacist for better result.

RECOMMENDATIONS:

- Gestational diabetes is becoming very common worldwide. In Pakistan majority of women suffering from gestational diabetes. The reason behind this is a strong family history, over weight, Elder age, not proper diet intake and so on.
- The prevention and management of GDM is most important. Although there are no guarantees to prevent it but by adopting healthy habits in early pregnancy is better than cure.
- Women who are at risk must eat healthy food which low in fat and calories. They should take more fruits, vegetables and whole grains.
- Exercising before and during pregnancy has shown to protect from developing GDM.
- Weight reduction by remembering the benefits like healthier heart, more energy

and improved self –stress and help in prevention of GDM is also necessary.

- But as GDM is diagnosed then it is important to educate women how they managed it to protect their babies to harm as well as developing diabetes in future.
- Usually insulin is prescribed and preferred because oral anti diabetic agent can cross the placenta so necessary to educate the patient and her attendant that how to administered the insulin.
- The primary role of the pharmacist in GDM management is patient education. Education for a woman with GDM can include dietary counseling, technique and demonstration of insulin utilization.
- Pharmacist can also educate the women about hypoglycemic conditions after injecting insulin like cold sweating, dizziness; hunger shakiness so in this state must eat any type of sweet thing.
- Basically by providing pharmaceutical care pharmacist can help greatly in treating patient illness.
- Unfortunately in Lady Wallingdon Hospital there was no contribution of pharmacist in prevention and management of GDM.
- So there is a need to identify and utilize role of pharmacist, it will be very helpful in improving patient's health related quality of life.

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