

# Association of physical activity with GD (Gestational Diabetes Mellitus)

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## ABSTRACT:

**Background:** Gestational Diabetes Mellitus is a medical problem that develops during pregnancy and results in various maternal and neonatal complications. There is no single evident cause of maternal hyperglycemia. Patient with GDM present with different risk factors. Prevalence of GDM is increasing in Pakistan so we wanted to study the actual risk factors of it. Being a physical therapist we wanted to assess the association of GDM with physical activities, reduce obesity and prevent GDM.

**Objective:** The main objective of the study was to find out the effects of sedentary and active life style in gestational women with GDM in order to determine the association of physical activities with GDM.

**Methodology:** It was a cross sectional survey done in Pakistan Railway Hospital from November 2013 to January 2014 on 81 Gestational women who were in their second or third trimester between the age of 18 to 40 years having GDM. Data was collected through structured questionnaire i.e. Modified Kaiser Physical Activity Survey Form and analyzed using SPSS.

**Results:** 42(51%) Patients with GDM reported to do routine cleaning, dusting, laundry, vacuuming or changing linens on daily basis that is more than once a week. 36 (44%) women do the physical activity of caring a child or children less than 2 years of age more than 20 hrs a week. 66 (81%) women with GDM never did heavy outdoor work. 66 (81%) never do grocery shopping or pushing a shopping cart. 43 (51%) women with GDM reported that they never do proper walk of 15 min at a time while 28 (35%) do it once a month. It shows that these patients don't do proper walk on daily basis. Only 5 (6%) women walk from 30 to 45 min daily to or from work.

**Conclusion:** From the results it is concluded that women do routine physical activity but develop GDM. While they don't do proper and planned walk not even for at least 15 min in a routine which is considered to be a risk factor for developing GDM

**Keywords:** Gestational diabetes, Maternal Hyperglycemia, Physical Activity, Walk

## INTRODUCTION:

When women have high blood glucose level during pregnancy, and they are not diabetic before pregnancy, are said to have gestational diabetes mellitus. Due to various fetoplacental hormones during pregnancy like progesterone, cortisol etc. insulin resistance increases in body [1] The pancreas normally compensate by increasing insulin secretion, but when it fails to do so, or when insulin secretion decreases due to a beta-cell function impairment then GDM develops [1,2]. Gestational diabetes starts when the body is not able to make and use all the insulin it needs for pregnancy. Glucose cannot leave the blood and be changed to energy without enough insulin. Glucose builds up in the blood to high levels. This is called hyperglycemia. [3]

There are usually no symptoms of GDM. So it is recommended to have glucose screening test in between 24 to 28 weeks of pregnancy. A gestational woman is at high risk if she is obese that is BMI more than 30 or have strong family history of diabetes or have diabetes in previous pregnancy.

In most cases, gestational diabetes develops in the third trimester that is after 28 weeks which usually disappears after the baby is born. However, women who develop gestational diabetes are more likely to develop type 2 diabetes later in life.

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According to latest research new diagnostic criteria for GDM based on the 2 h 75 g OGTT: a fasting glucose  $\geq$  5.1 mmol/L (92 mg/dl), or a one hour result of  $\geq$  10.0 mmol/L (180 mg/dl), or a two hour result of  $\geq$  8.5 mmol/L (153 mg/dl). [3][4]

It is becoming important that rising levels of obesity worldwide have caused an increase in the numbers of obese women who become pregnant, and who develop GDM. Pregnancy complicated by obesity is characterized by higher adverse maternal and fetal outcome rates, especially in GDM patients.

It is also known that physical activity reduces glucose and insulin resistance in diabetic patients that's why helping them to control their weight, so it may be useful in combination with other treatment methods in GDM women. Hence we conducted this study to find out the life style of GDM patients whether they are physically active or not.

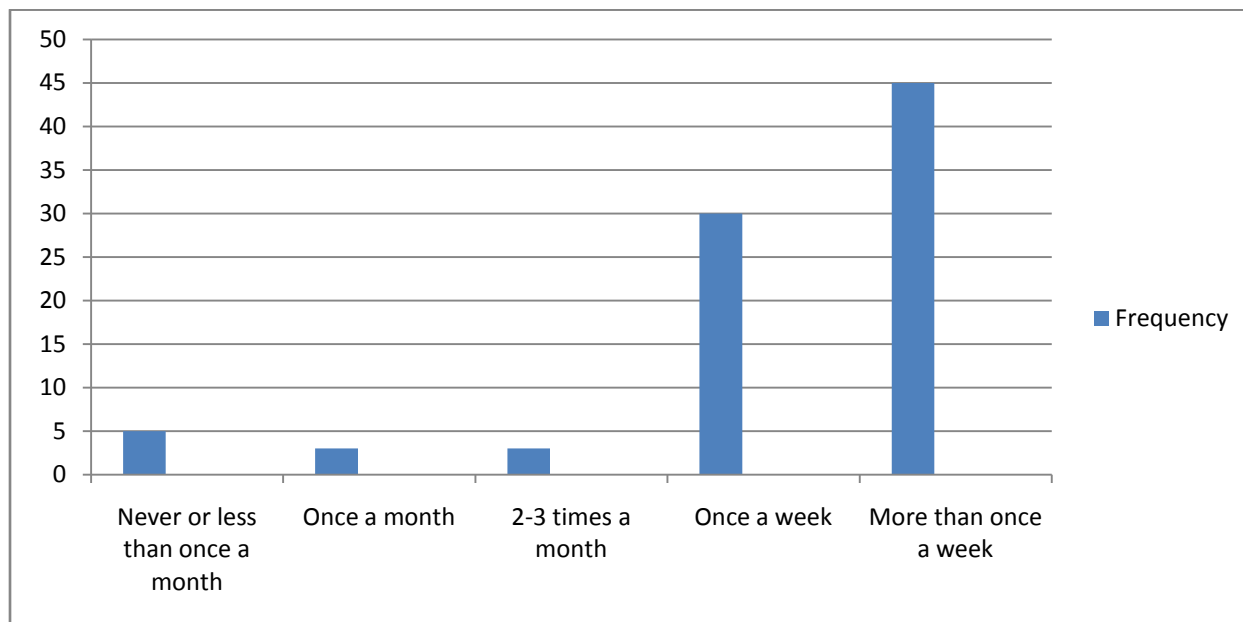
## **MATERIALS & METHODS:**

Cross sectional survey has been conducted in Pakistan Railway Hospital Rawalpindi in duration of 2 months. Convenience sampling technique was used on population of 81 on the basis of inclusion and exclusion criteria i.e inclusion of Gestational women in second or third trimester between the age of 18 to 40 years having GDM and exclusion of those not having GDM.

## **RESULTS:**

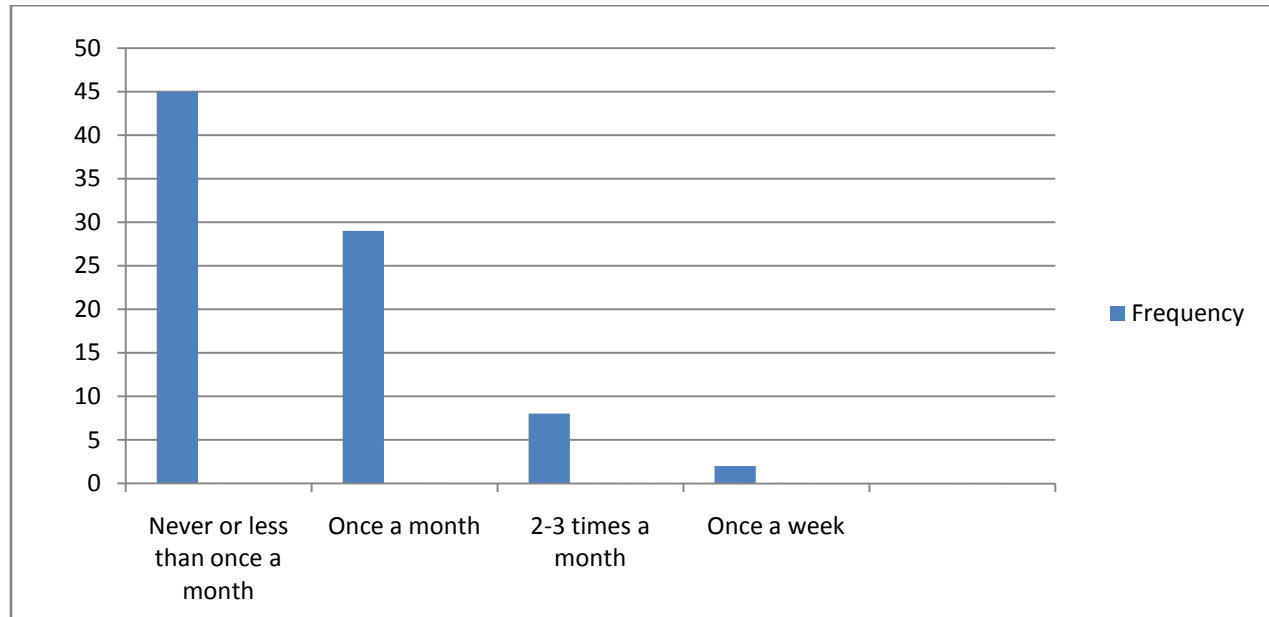
It is found that GDM is more common in patients between the age of 26 and 30 years. 40 (49.4%) gestational women pointed out that they do major cleaning or shampooing carpets, washing walls or windows once a month while only 5 (6.2%) do such activity once a week. From this it is concluded that patients who developed GDM do not do such home activities causing lots of body exertion and fatigue. 42 (51.9%) Patients with GDM reported to do routine cleaning, dusting, laundry, vacuuming or changing linens on daily basis that is more than once a week. 28 (34.6%) do routine cleaning once a week while only 3 (3.7%) do it once a month. It is concluded that patients with GDM do their routine cleaning at home almost daily. 43 (53.1%) women with GDM reported that they never do proper walk of 15 min at a time while 28 (34.6%) do it once a month. Only 5 out of 81 (6.2%) women walk from 30 to 45 min daily to or from work. It shows that majority of these patients don't do proper walk on daily basis.

Routine cleaning dusting, laundry, vacuuming or changing linens



Routine cleaning dusting, laundry, vacuuming or changing linens

Walk at least 15 min a time



## DISCUSSION:

The actual risk factors and causes of GDM need to be emphasized so that means of preventing and treating it get determined. A study published in the March 2010 issue of Obstetrics & Gynecology found an association between excessive weight gain during pregnancy – particularly in the first trimester – and the risk of gestational diabetes [5,6]. Researchers found the risk highest in women who were overweight to begin with and in nonwhite women. In Pakistan there is a great tendency of weight gain during pregnancy due to improper diet and myths of taking lots of rest, which eventually results in reduction of physical work and exercise which we think is the reason for developing GDM. We conducted this survey to evaluate the relation of mothers' physical activities with their gestational diabetes and found that they have active life style in terms of routine house hold activities like cleaning laundry and taking care of children but when they were asked about proper walk got negative response that only 6 % walk 30 to 45 min daily while 28% walk 15 min once a month.

The ADA (American Diabetic Association) suggests that women without medical or obstetric contraindications should be encouraged to start or continue a program of moderate exercise as part of their treatment for GDM. [7][8]

The Fourth IWC statement on GDM says that, “a planned physical activity of 30 min/day is recommended.”[9][10] However, when exercise was studied in terms of its capacity to reduce plasma glucose and delay or prevent the need for insulin therapy, the results were inconclusive.

The Cochrane study concluded that there is insufficient evidence to either recommend or advise against enrolling GDM patients in exercise programs, although several epidemiological studies have shown a link between physical activity and a lower risk of GDM. [11]

Women who participated in any recreational physical activity during the first 20 weeks of pregnancy, as

compared with inactive women, experienced a 48% reduction in risk of GDM (odds ratio [OR] = 0.52; 95% confidence interval [CI] 0.33-0.80). [12]

The major objective of our study was to find the association of physical activity with GDM in GDM population. We got the data supporting its association but needs to be more specific in house wives and working women. Secondly more research should be done to determine actual walk pattern required to maintain glucose level stable in mothers.

## CONCLUSION:

From the results it is concluded that women do physical activity at home like caring of children, dusting, laundry is least associated with developing GDM as they do such activities sufficiently but still get GDM. While they don't do proper and planned walk not even for at least 15 min in a routine which is considered to be a risk factor for developing GDM.

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