



Gestational Diabetes and Dietary Management

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ABSTRACT

Gestational diabetes and dietary management was studied with 180 sample which were collected through purposive sampling. Among 180 GDM patients were categorized into 2 groups i.e, Experimental group and control group. Experimental group further categorized into three groups i.e, supplementation (n=45), only split meal technique group (n=45) and supplementation with split meal technique (n=45) and control group consists of (n=45). Anthropometric measurements, Biochemical assessment, diet survey and nutritional knowledge estimation were taken as parameters. A diabetic powder was prepared and supplemented for 4 months to the selected subjects and it consists of ragi, soyabean, curry leaves, fenugreek leaves. Positive results were obtained in three experimental groups. Significant decrease observed in weight, BMI, blood sugar and urine sugar in I, II, and III groups. The results were decreased (from 162.53 to 135.27 mg/dl in fasting blood sugar, 2.60 -0.48 mg/dl in urine sugar, 68.27 -64.69 kg in body weight) in Exp I group. In exp group II the results are decreased (from 160.11 to 133.36 mg/dl in fasting blood sugar, 2.25 -0.35 mg/dl urine sugar, 67.58 -64.11 kg in body weight). In exp group III the results were decreased (from 154.60 to 128.27 mg/dl blood sugar, 2.55 – 0.20 mg/dl urine sugar and 62.98 – 58.38 kg in body weight). From the results it was clear that when compared to group II group I and III has shown better results.

KEYWORDS

Gestational diabetes mellitus, Biochemical assessment, Anthropometric measurements, Split meal technique.

INTRODUCTION

Gestational diabetes is a form of diabetes which affects pregnant women. It is believed that the hormones produced during pregnancy reduce a women's respectively to insulin, leading to high blood sugar levels. Gestational diabetes affects about 4 percent of all women (Marie, 2009).

Gestational Diabetes Mellitus has an effect on the mother and child. The major cause of morbidity infants is attributable to GDM is macrosomia with high rates of cesarean sections and birth trauma. Woman with GDM has had a significant risk of developing GDM in subsequent pregnancy, and type-2 DM (50-60%) postpartum (Langer, 1988).

Women with unmanaged gestational diabetes are at increased risk of developing type-2 diabetes mellitus after pregnancy as well as having a higher incidence of preeclampsia and cesarean section their offspring are prone to develop child hood obesity, with type-2 diabetes later in life.

Difficult to have normal delivery, this is due to baby may grow larger than normal if women have diabetes during pregnancy. This means that could need a cesarean. At if baby grow larger than normal this can make labor and birth more difficult, and can increase the risk of shoulder dystocia.

Gestational diabetes can harm women and their baby, so they were need to consider about it seriously and start caring at once. The main aim of gestational diabetes treatment is to keep blood glucose levels equal to those of normal pregnant woman. It need a planned meal and scheduled physically activity, even blood glucose testing and insulin injection if required (Manju, 2007).

OBJECTIVES OF THE STUDY:

- 1) To identify and assess the prevalence of diabetes in pregnant women (gestational diabetes) at gynecology department in St Joseph's Hospital, Guntur General Hospital (GGH) and Hyma multi-specialty family hospital in Guntur city.
- 2) To see nutritional status of GDM patients.
- 3) To develop, supplement and see the effect of a diabetic powder on GDM patients

- 4) To see the effect of split meal technique on GDM patients.

HYPOTHESIS

The following hypothesis was stated for this study.

Hypothesis: There will be a statistically significant difference on the effect of dietary management and supplemented diabetic powder in Gestational Diabetes and outcome of pregnancy.

Null Hypothesis: There will be no significant difference on the effect of dietary management and supplemented diabetic powder in Gestational Diabetes and outcome of pregnancy.

Gestational diabetes mellitus has multiple causes centering around an imbalance between hormone and energy out (calories expended in the basal metabolic rate and physical activity). Gestational diabetes most likely results from an interaction of a) genetic factors, b) eating habits, c) Physical activity, d) endocrine factors, e) age, and f) obesity.

In addition to lack of exercise, excess dietary fat and lifestyle habits that adversely influence insulin resistance, such as smoking and certain drugs, could have an important influence.

MATERIALS AND METHOD

Selection of subjects

A sample of 180 GDM patients was selected purposively from 3 hospitals in Guntur, AP. The sample were identified and categorized into experimental group and control group. Experimental group is again categorized into supplementation group (n=45), split meal technique group (n=45), supplementation with split meal (n=45), and control group (n=45).

Assessing the nutritional status of the GDM patients

Anthropometric measurements, biochemical estimation, clinical examination and diet survey were used to assess the nutritional status of the GDM patients.

Anthropometric measurements

Heights and weights of the GDM patients were accurately

recorded, before and after the supplementation period of 4 months. Anthropometric measurements were recorded in the height, weight, and BMI was calculated as per the formula.

Body Mass Index =weight in (kgs) / Height in m²

Conduct of diet survey

A formulated questionnaire was prepared to collect the information about dietary pattern, previous pregnancy history, frequency of food intake, likes and dislikes of the different foods were noted. 24 hour recall method was used to know the respondent had eaten on a day, before the day. Information regarding family size, type of family and occupational status was collected from the subjects. And information regarding psychological, social and emotional problems of the subjects was also collected.

Biochemical parameters

Biochemical tests are considered as the most effective objective measures for assessment of the nutritional status of an individual. Blood sugar, urine sugar before and after supplementation.

The experimental groups were carefully monitored for ensuring the consumption of this diabetic powder throughout the experimental period. The effect of supplementation was evaluated through assessment of blood sugar and urine sugar levels using suitable biochemical parameters namely glucose tolerance test for blood sugar, and benedicts test for urine sugar.

Supplementation of diabetic powder

Diabetic powder consists of ragi, soya bean, curry leaves and fenugreek leaves. Diabetic powder provides fewer calories and less fat, leading to weight loss, or maintaining a healthy weight much easier. The aspects of diet composition, including high protein, low fat, in take may play a role in reducing weight and controlling blood sugar levels.

Split meal technique

The split meal technique suggested for two experimental groups. Group counseling sessions was conducted for weekly ones duration of 30 minutes. The split meal technique suggested for these pregnant women are small meals in small intervals.

RESULTS AND DISCUSSION

Back ground information

The prevalence rate was high in middle income women between 16-25 years age. Prevalence of GDM women was high in nuclear families in both 16-25 and 26-35 years age in 4 groups i.e, 51.11 percent in control group, 71.11 percent in exp1, 55.55 percent in exp2, and 42.22 percent in exp3 in age between 16-25 years. 40 percent in control group, 22.22 percent in exp1, 42.22 percent in exp2 and 48.88 percent in between 26-35 years. About 20percent of GDM women were having grade 1 obesity in all 4 groups between 16-25 years. More than 40 percent of GDM women in control, exp1, exp2, and exp3 groups were living sedentary life style between 16-25 years and 15 percent in 26-35 years. Above 40 percent were having family diabetic history in 4groups between 16-25 years and 11 percent in 26-35 years. Prevalence of GDM is high in women having family diabetic history compare to none family diabetic history. More than 20 percent GDM women were not doing any yoga or exercise in all 4 groups and in two age groups.

ANTHROPOMETRIC MEASUREMENTS

Table no: 1 The means of weights were compared before and after intervention.

Group	Mean/std deviation	Before weight	After weight
control	Mean	68.60	66.13
	Std deviation	7.901	8.047
Group I	Mean	68.27	64.69
	Std deviation	11.631	11.689
Group II	Mean	67.58	64.11
	Std deviation	13.011	12.844
Group III	Mean	62.98	58.38
	Std deviation	11.468	11.334

Total	Mean	66.86	63.33
	Std deviation	11.30	11.419

Before intervention and after intervention excess weight was gradually controlled in GDM patients. Weight for age and height for age is the reliable indicator of clinical nutrition. The increase in body weight in patients due to high consumption of oil foods, deep fat fried food, sweets, excess sugar intake. Group I, II and III groups showed at 5 percent significance in weight reduction.

BIO CHEMICAL PARAMETER

Table no:2

Group	Mean/std	Before FBS	After FBS	Before US	After US
Control	Mean	161.33	138.78	2.578	0.711
	Std deviation	27.038	16.161	0.5834	0.7575
Group I	Mean	162.58	135.27	2.600	0.489
	Std deviation	21.697	11.590	0.4954	0.505
Group II	Mean	160.11	133.36	2.289	0.356
	Std deviation	17.004	10.174	0.6949	0.4841
Group III	Mean	154.60	128.27	2.556	0.200
	Std deviation	13.945	9.519	0.5459	0.4045
Total	Mean	159.66	133.92	2.506	0.439
	Std deviation	20.58	12.62	0.59	0.50

Bio chemical parameters like blood sugar and urine sugar of the selected subjects are indicated in table no : 4. The means of blood sugar and urine sugar were compared before and after intervention.

Blood sugar

Supplementation brought about the significant improvement in blood sugar level of supplementation with split meal technique and other experimental groups. The statistical analysis revealed that there was mean difference in the decrease of blood sugar in group III.

Urine sugar

Urine sugar levels were highly mean difference in group III. When compared to other experimental groups. Thus group III seemed to have the effect in controlling urine sugar levels.

Summary of one way ANOVA on change in blood sugar and urine sugar in 4 groups.

	Group	N	Mean	Std deviation	F value	P value
Change in Fasting blood sugar	Control	45	-22.555	16.9793	1.186	.316
	Group I	45	-27.311	13.75538		
	Group II	45	-26.755	9.54892		
	Group III	45	-25.7388	13.32254		
Change in urine sugar	Control	45	-1.866a	0.86865	3.679*	.013
	Group I	45	-2.11a	0.57296		
	Group II	45	-1.93a	0.83666		
	Group III	45	2.3555	0.74332		

SUMMARY AND CONCLUSION

From the results, it is clear that supplementation of diabetic powder with split meal technique is the best method to reduce the risk of GDM patients. A period of 4 months brought about significant, improvement in biochemical profile like blood sugar and urine sugar levels. And it is also significant to control abortions and safety outcome of pregnancy. Supplementation with split meal technique is more effective than other methods however only diabetic powder supplementation on par with the effect of supplementation and split meal

technique but comparatively less. So that supplementation of diabetic powder and split meal technique was advisable to maintain normal glucose levels and safely outcome of pregnancy.

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