

Effects of health education intervention at gestation period on pregnancy outcome of diabetes mellitus patients.

Jinglan Liu[#], Xianjing Xie[#], Yuna Guo^{*}

The International Peace Maternity and Child Health Hospital of the China Welfare Institute, Shanghai, PR China

[#]These authors contributed equally to this work

Abstract

Objective: To observe and analyse the impact of health education intervention on pregnancy outcomes of pregnant women with Gestational Diabetes Mellitus (GDM).

Methods: 120 patients with GDM who treated in our hospital from January 2015 to May 2017 were selected as the subjects of this study. Patients were randomly divided into the study group and control group with 60 cases in each group. Patients in control group were treated with routine nursing measures while the study group was given health education intervention followed by routine nursing. With the implementation of different programs of care, the pregnancy outcomes in two groups were respectively observed and summarized.

Results: Study group turned out to be superior to the control group in indexes including control rate of glucose, lifestyle change and cognition rate of related knowledge on gestational diabetes; incidences of premature birth, postpartum hemorrhage, hydramnion, fetal distress, and urinary infection of study group were significantly lower than those of control group ($P < 0.05$); incidences of hyperbilirubinemia, severe asphyxia, neonatal hypoglycemia and pneumonia in perinatal baby were significantly lower in study group than in control group ($P < 0.05$).

Conclusion: Health education intervention has positive effects on pregnancy outcomes of patients with GDM.

Keywords: Gestational diabetes mellitus, Health education intervention, Pregnancy outcome, Effect.

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Introduction

As one of the most common complications during pregnancy, Gestational Diabetes Mellitus (GDM) is characterized by abnormal glucose metabolism with serious long- and short-term consequences to the mothers, fetuses, as well as newborns [1]. It has been reported that the risk of Type 2 Diabetes Mellitus (T2DM) among women with GDM is almost seven times higher than that in normal women. In addition, clinical studies have shown that about 50% of women with GDM will develop T2DM within 10 years after the onset of GDM [2]. Especially in recent years, with the continuous improved living standard, living habits and diet structure of people were also changed. Most pregnant women mainly pay attention on nutrition supplement but neglect the importance of importance of exercise, which in turn lead to the increased incidence of GDM [3-5]. The development of GDM is a complex process with various factors involved. Dietary and emotion are two important factors involved in this pathological process. Women in pregnancy tend to have more negative emotions like irritability, depression, anxiety and restlessness. Those negative factors can easily lead to elevated blood sugar level. Once the level of blood glucose is unable to be timely controlled,

negative outcomes, such as premature birth, miscarriage or even maternal fetal death will occur [6]. In view of this, an important goal for the treatment of GDM is to take strict control of blood sugar level of pregnant women. Besides blood sugar control, health education intervention, which aimed to improve knowledge of lifestyle and healthy in women with GDM, has also been shown to be able to provide promising outcomes in the treatment of GDM. However, the comprehensive studies on the effects of health education intervention on GDM still have been reported. In this study, patients with GMD were included and treated with routine nursing measures or routine nursing measures combined with health education intervention. The treatment outcomes were compared between two groups of patients. The report is as follows.

Material and Methods

General materials

A total of 120 patients with GDM who were treated in our hospital from January 2015 to May 2017 were selected. All patients were diagnosed in accordance with the diagnostic

criteria for diabetes proposed in the seventh edition of Obstetrics and Gynecology textbooks [7]. Cases complicated with hyperthyroidism or combined with epinephrine or adrenal glucocorticoid and patients with increased secretion of growth hormone or other organic disease and diseases of blood system or immune system were excluded [8]. All patients in this study enjoyed their right to know the content of experiment before the study. According to the random grouping method, patients were divided into study group and control group with 60 patients in each. In study group, the age of patients ranged from 23 to 38 y with the average age of (30.6 ± 1.2 y), the gestational age ranged from 24 to 37 w with an average value of (33.2 ± 2.5 w). In control group, the age of patients ranged from 25 to 39 y with an average age of (32.8 ± 1.5 y), the gestational age ranged from 23 to 38 w with and average value of (32.6 ± 2.8 w). No significant differences in basic information were found between two groups of patients ($P > 0.05$).

Methods

Control group was treated with routine nursing measures while study group was given health education intervention followed by routine nursing. The specific contents of health education intervention included following aspects: The strengthening of mental health education: patients, with their own special characteristics, were often subject to psychological emotions like anxiety, depression and anxiety. Therefore, the nursing staff should actively communicate with them and take patience to help them solve problems, formulate targeted and individualized psychological nursing program, dredge the negative emotion of patients and improve their confidence in the treatment [9-11]; the implement of health propaganda and education: the health education was implemented by releasing health education manuals about the gestational diabetes or organizing regular lectures on diabetes to impart related knowledge of the GDM such as pathogenesis, clinical symptoms, treatment regime and precautions and curative effects, thus allowing the patient to have a correct understanding of the disease and the ability to predict possible adverse events; Exercise intervention: the amount of exercise was appropriately increased for pregnant women, who, strictly according to the actual situation, were guided to take the exercise 1.5-2.0 h after the meal, lasting half an hour to 45 min and the exercise way included taking a walk or upper limb movement [12]; medication guidance. Currently, the main drugs for treating GDM are insulin and its analogs. If the effect of blood glucose control was not ideal, the pregnant women were required to timely receive drug treatment, which meant the patients should be guided to use insulin correctly, judge position of injection, prevent hypoglycemia and respond to adverse reaction of insulin [13]. At the same time, patients were urged to take regular monitoring of blood sugar level, medical treatment should be timely conducted once there was discomfort [14]; the strengthening of blood sugar monitoring

and control: blood sugar monitoring was performed four times every day respectively on the condition of fasting and at 1 h as well as 2 h after the first meal. The blood sugar level should be control to be 5.3 mmol/L or below in FBG and 7.8 mmol/L in PBG 1 h after the first meal and 6.7 mmol/L 2 h after the first meal [15]; obstetric education: regular examination was conducted for the patients every month to master the complications related to GDM, and grasp the actual state of fetal development and amniotic fluid. After 28 w of gestation, the patients were told to keep left-lateral position followed by everyday count of fetal movement. The pregnant women, with the number of fetal movement less than 30 times in one day or less than 4 times per hour, were needed to be treated immediately. And the pregnant women with 32 weeks of gestation were given strict monitoring of fetal heart rate and umbilical blood flow [15,16]; the control of the weight: The patients should be informed of the importance of weight control and they should ensure the body weight increased no more than 1.5k g in a month. If the woman is of normal weight before pregnancy, she would be required to maintain a weight gain of less than 12 kg at the pregnancy. For those who were overweight before pregnancy, the weight gain should be less than 10 kg [17].

Observation index

Related indexes, including recognition rate of GDM related knowledge, the control rate of blood glucose, lifestyle change, FPG, 2 h PBG, and pregnancy outcomes like premature birth, postpartum hemorrhage, polyhydramnios, fetal distress and urinary infection as well as perinatal health conditions like neonatal hyperbilirubinemia, severe asphyxia, neonatal hypoglycemia and neonatal pneumonia, were observed and compared in the two groups after treatment.

Statistical methods

ALL data were analysed and processed using SPSS21.0 statistical software. Count data were expressed as (n, %) and tested by chi square. Measurement data were expressed as ($\bar{x} \pm s$) and tested by t test; $P < 0.05$ suggested that the differences had statistical significance.

Results

Comparison of intervention effects in the two groups

As shown in Table 1, compared with control group, blood glucose control and lifestyle change were significantly improved in study group ($P < 0.05$). Before intervention, no significant differences in recognition rate of GDM related knowledge, FPG and 2 h PBG were found between two groups, while significant improvements in those factors were found in control group after intervention compared with control group ($p < 0.05$).

Table 1. Comparison of intervention effects in the two groups.

Groups	BGC	LC	RRG		FPG (mmol/L)		2 h PBG (mmol/L)	
			BI	AI	BI	AI	BI	AI
Study group (n=60)	50 (83.33)	52 (86.67)	22 (36.67)	55 (91.67)	8.12 ± 0.63	5.87 ± 0.69	12.39 ± 0.56	7.08 ± 0.54
Control group (n=60)	30 (50.00)	34 (56.67)	23 (38.33)	35 (58.33)	8.16 ± 0.73	7.34 ± 0.42	12.55 ± 0.62	8.79 ± 0.35
χ ² /t	7.48	6.50	0.11	8.42	0.23	7.69	0.09	9.63
P	<0.05	<0.05	>0.05	<0.05	>0.05	<0.05	>0.05	<0.05

Notes: BGC: Blood Glucose Control; LC: Lifestyle Change; RRG: Recognition Rate of GDM Related Knowledge; BI: Before Intervention; AI: After Intervention.

Comparison of pregnancy outcomes in the two groups

As shown in Table 2, compare with control group, incidence rates of premature birth, postpartum hemorrhage, polyhydramnios, fetal distress and urinary infection were

significantly lower in study group (p<0.05). Those results suggest that health education intervention can significantly improve pregnancy outcomes.

Table 2. Comparison of pregnancy outcomes between two groups.

Groups	Premature birth	Postpartum hemorrhage	Polyhydramnios	Fetal distress	Urinary infection
Study group (n=60)	4 (6.67)	2 (3.33)	2 (3.33)	1 (1.67)	3 (5.00)
Control group (n=60)	14 (23.33)	8 (13.33)	12 (20.00)	11 (18.33)	16 (26.67)
χ ²	10.39	8.47	12.38	14.56	11.37
P	<0.05	<0.05	<0.05	<0.05	<0.05

Comparison of perinatal health in the two groups

As shown in Table 3 below, compared with control group, significant lower incidence rates of neonatal hyperbilirubinemia, neonatal severe asphyxia, neonatal

hypoglycemia and neonatal pneumonia were found in study group (p<0.05). Those results suggest that health education intervention can significantly improve perinatal health.

Table 3. Comparison of perinatal health between two groups.

Group	Neonatal hyperbilirubinemia	Neonatal severe asphyxia	Neonatal hypoglycemia	Neonatal pneumonia
Study group (n=60)	10 (16.67)	0 (0.00)	3 (5.00)	2 (3.33)
Control group (n=60)	26 (43.33)	6 (10.00)	14 (23.33)	15 (25.00)
χ ²	13.32	8.59	14.62	10.59
P	<0.05	<0.05	<0.05	<0.05

Discussion

GDM is the first independent type of diabetes occurring during pregnancy and it has higher incidence in mid-later stage of pregnancy. Factors related to the changes in level of various hormones and lower insulin sensitivity in the body of pregnant women, may contribute to gestational diabetes mellitus [18]. GDM can induce serious metabolic disorder and cause functional or organic lesions of important organs like kidney and nervous system. What’s worse, it may lead to the decrease of immunity and the increase of secondary infection, ultimately producing various maternal and infant complications. Moreover, if the pregnant women go through cases like miscarriage, preterm delivery, puerperal infection and gestational hypertension, they will be subject to the problem of

fetal distress, neonatal asphyxia, huge fetus and congenital malformation, thus reducing the quality of baby birth and resulting in poor outcomes of pregnancy [19,20]. Therefore, patients’ blood glucose should be strictly kept under control to make it stable and normal as soon as possible, so as to effectively reduce adverse reactions and then ensure the safety of both fetus and pregnant women.

Clinical studies have shown that clinical nursing is critical for the perinatal health and safety for patients with GDM [21,22]. Health educational intervention can significantly increase the knowledge on diabetes mellitus for women with GDM, which in turn provided guidance for those women to change their life style and diet structure to improve the disease conditions and improve treatment outcomes. In this study, besides the routine

nursing measures, health educational intervention, which aimed to strengthen patients' mental health, and provided physical exercise intervention and medication guidance, has been carried out in study group. Compared with control group, blood glucose control, lifestyle change, recognition rate of GDM related knowledge, FPG and 2 h PBG were significantly improved in study group. In addition, lower incidence rates of premature birth, postpartum hemorrhage, polyhydramnios, fetal distress and urinary infection were found in study group than in control group, suggesting that health education intervention can significantly improve pregnancy outcomes. Significant lower incidence rates of neonatal hyperbilirubinemia, neonatal severe asphyxia, neonatal hypoglycemia and neonatal pneumonia were also found in study group than in control group, indicating that that health education intervention can significantly improve perinatal health. Our comprehensive study on the effects of health education intervention on GDM has shown this intervention can significantly improve the treatment outcomes of GDM. Therefore, this treatment should be popularized.

Conclusion

In summary, the application of health education intervention in patients with GDM can provide better treatment outcomes compared with conventional methods. On one hand, this treatment can be used to effectively control the blood glucose level and on the other hand it can also improve pregnancy outcome. This treatment is safe and reliable, and should be popularized in clinical practice.

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***Correspondence to**

Yuna Guo

The International Peace Maternity and Child Health Hospital
of the China Welfare Institute

Shanghai

PR China