



## ORIGINAL ARTICLE

# Preconception care in diabetes: Predisposing factors and barriers<sup>☆</sup>

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## KEYWORDS

Pregestational diabetes;  
Preconception care;  
Pregnancy;  
Folic acid

## Abstract

**Background and objective:** Preconception care has been shown to decrease the risk of pregnancy-related complications in women with diabetes, but many women do not plan their pregnancies. Our aim was to identify the associated factors and barriers related to the involvement of these women in preconception care.

**Material and methods:** Fifty women with pregestational diabetes (28 with type 1 diabetes) and 50 non-diabetic pregnant women were consecutively enrolled at our hospital. They completed a questionnaire, and their medical histories were reviewed.

**Results:** All 33 patients with diabetes who received preconception care had a similar current age ( $34.3 \pm 5.3$  years) and age at diagnosis ( $20.3 \pm 11.3$ ) to those with no preconception care ( $n = 17$ ) ( $31.8 \pm 5.3$  and  $19.1 \pm 10.6$  years respectively;  $p > 0.1$ ), but were more frequently living with their partners (97% vs. 70.6%;  $p = 0.014$ ), employed (69.7% vs. 29.4%;  $p = 0.047$ ), and monitored by an endocrinologist (80.6% vs. 50%;  $p = 0.034$ ), had more commonly had previous miscarriages (78.6% vs. 10%;  $p = 0.001$ ), and were aware of the impact of diabetes on pregnancy (87.5% vs. 58.8%;  $p = 0.029$ ). The frequency of preconceptional folic acid intake was similar in pregnant women with and without diabetes (23.8% vs. 32%;  $p > 0.1$ ).

**Conclusions:** Preconception care of diabetic patients is associated with living with a partner, being employed, being aware of the risks of pregnancy-related complications, having had previous miscarriages, and being monitored by an endocrinologist. Pregnancy planning is infrequent in both women with and without diabetes.

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**PALABRAS CLAVE**

Diabetes  
 pregestacional;  
 Control  
 preconcepcional;  
 Gestación;  
 Ácido fólico

**Control preconcepcional en la diabetes: factores predisponentes y barreras****Resumen**

*Antecedentes y objetivo:* El control preconcepcional ha demostrado reducir el riesgo del embarazo asociado a la diabetes, pero muchas mujeres siguen quedando gestantes sin planificación previa. Nuestro objetivo fue identificar los factores predisponentes y las barreras relacionadas con la realización de control preconcepcional.

*Material y métodos:* Se incluyeron, de forma consecutiva, 50 mujeres con diabetes pregestacional (28 tipo 1) y 50 gestantes sin diabetes que acudían a nuestro centro. Se les pidió que cumplimentaran un cuestionario y se revisaron sus historias clínicas.

*Resultados:* Las 33 pacientes con diabetes y control preconcepcional tenían una edad actual ( $34,3 \pm 5,3$  años) y al diagnóstico de la diabetes ( $20,3 \pm 11,3$  años) similares a las 17 pacientes sin control ( $31,8 \pm 5,3$  y  $19,1 \pm 10,6$  años, respectivamente;  $p > 0,1$ ), pero estaban con más frecuencia viviendo en pareja (97% vs. 70,6%;  $p = 0,014$ ), laboralmente activas (69,7% vs. 29,4%;  $p = 0,047$ ), eran seguidas por un/a endocrinólogo/a (80,6% vs. 50%;  $p = 0,034$ ), habían tenido abortos previos (78,6% vs. 10%;  $p = 0,001$ ), y conocían la repercusión de la diabetes en el embarazo (87,5% vs. 58,8%;  $p = 0,029$ ). No hubo diferencias significativas en la toma de ácido fólico pregestacional entre las gestantes con y sin diabetes (23,8% vs. 32%;  $p > 0,1$ ).

*Conclusiones:* En las pacientes con diabetes, acudir a control preconcepcional se asoció con vivir en pareja, estar laboralmente activas, conocer el riesgo de complicaciones, tener abortos previos y ser seguidas por un/a endocrinólogo/a. Existe un bajo porcentaje de preparación de la gestación, también en el grupo sin diabetes.

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**Introduction**

The global prevalence of diabetes is approximately 8.3%,<sup>1</sup> and the number of diabetic individuals is expected to double over the period 2000–2030. Although the prevalence of the disease is similar in males and females, there are comparatively more diabetic women,<sup>2</sup> and the prevalence of pregestational diabetes has increased in recent years.<sup>3,4</sup> A study published in 2016 found 1% of all pregnant women to have pregestational diabetes mellitus, and in the course of the 17 years of the study the prevalence was seen to have increased 162% in the case of type 1 diabetes and 354% in the case of type 2 diabetes.<sup>4</sup> Diabetes has been shown to increase the risk of preeclampsia, assisted delivery, cesarean section, macrosomia, preterm delivery, fetal and perinatal death,<sup>5</sup> and congenital malformations.<sup>5,6</sup> Furthermore, from the perspective of psychological wellbeing, diabetic women are more often affected by anxiety and depression both during pregnancy and after birth.<sup>7</sup> Pregnancy also has an impact upon diabetes, since it can favor specific vascular complications such as retinopathy<sup>8–10</sup> or even interfere with regular diabetes treatment, the latter requiring adjustments due to variations in insulin requirements during pregnancy.<sup>11</sup>

There is evidence that women with diabetes who receive preconception care have better blood glucose control, and that their offspring suffer fewer congenital malformations and other serious adverse events such as fetal or perinatal death.<sup>12–14</sup> In addition, they run a lesser risk of admission to a neonatal Intensive Care Unit, in comparison with patients who do not receive preconception care.<sup>12</sup>

A systematic review published in 2012 concluded that preconception care in diabetes lowers the risk of congenital malformations from 7.4% to 1.9%, and decreases the perinatal mortality rate by 66%. It has been estimated that a one-point increase in the HbA1c level in turn increases the risk of such complications by 5–6%.<sup>14</sup> The timing of the start of pregnancy control is also important, since women who report during the first three months of pregnancy suffer a lesser incidence of adverse events such as preterm delivery or fetal death than those who first report for pregnancy control at a later date.<sup>15</sup> Despite the established benefits of preconception control, many women with pregestational diabetes have unplanned pregnancies.<sup>16</sup> In a study of 85 women, 59% had unplanned pregnancies, despite the fact that 68% of them were aware of the advisability of prior control.<sup>17</sup>

The objective of this study was to identify the predisposing factors and barriers related to preconception control visits in patients with pregestational diabetes seen at our center.

**Material and methods****Participants and procedure**

A cross-sectional, descriptive observational study was carried out at the Department of Gynecology and Obstetrics of *Hospitalario Universitario Insular Materno-Infantil de Gran Canaria* (Spain), following approval by the local Ethics Committee. The patients were invited to participate when they reported for routine medical visits between November 2016 and January 2017. A total of 102 patients were

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