

# What do women with pre-gestational diabetes know about pregnancy care?

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Women with diabetes represent a high-risk population during pregnancy. The 2005 Confidential Enquiry into Maternal and Child Health report identified suboptimal pre-pregnancy counselling in diabetes. Therefore, the authors decided to undertake a survey to assess the knowledge of women attending specialist diabetes services who may be considering conception. This article discusses the development and results of the survey.

Women with diabetes are at higher risk of developing complications during pregnancy than women without the condition (Confidential Enquiry into Maternal and Child Health [CEMACH], 2005). There is evidence that pre-conceptual counselling plays a crucial role in minimising the risk of fetal congenital anomalies by offering advice on optimising glycaemic control before and during pregnancy (NICE, 2008), and commencing high-dose folic acid before conception (CEMACH, 2007).

The National Service Framework for diabetes (Department of Health, 2001) emphasises the importance of an effective multidisciplinary approach in optimising glycaemic control

before conception and improving the quality of antenatal care during pregnancy. However, a 2005 CEMACH report identified that pre-pregnancy counselling in diabetes is sub-optimal, which may be the reason for the limited knowledge of risk and ideal treatment around pregnancy care in women with diabetes (CEMACH, 2005).

This led the authors to undertake a prospective survey to assess the current knowledge of pre-gestational women attending specialist care diabetes services who may be considering conception, so that relevant information can be offered to expand their knowledge and to assist planning of pregnancies for women with diabetes in the future.

## Article points

1. The Confidential Enquiry into Maternal and Child Health report identified suboptimal pre-pregnancy counselling in diabetes.
2. The present study has reported that a significant proportion of pre-gestational women with diabetes have limited knowledge of pregnancy care that may hinder successful outcomes.
3. The key to a successful pregnancy is planning and, therefore, pre-pregnancy counselling is key to optimising successful maternal and fetal outcomes.

## Key words

- Counselling
- Pregnancy
- Preventing complications

Full author details can be found at the end of the article.

### Page points

1. Only 74% of respondents recognised the importance of good glycaemic control before and during pregnancy, and a similar number were aware of the need for an increased insulin requirement with progressive hyperglycaemia during pregnancy.
2. In the Confidential Enquiry into Maternal and Child Health survey of maternity services in 2002, less than one fifth (17%) of maternity units in England, Wales and Northern Ireland provided structured multidisciplinary pre-conception care for women with type 1 or type 2 diabetes.

### Box 1. Demographic data for respondents (n=159).

**Mean age:**

31.6±5.7 years

**Diabetes:**

Type 1 diabetes: n=110

Type 2 diabetes: n=49

**Parity:**

Nulliparous: n=65

Multiparous: n=94

**Ethnicity:**

Caucasian: n=149

Asian: n=6

Afro-Caribbean: n=1

Other: n=3

### Methods

Questionnaires were sent to all women with diabetes aged 16–40 years (n=750) in the Portsmouth region identified through an electronic clinical information system. The questionnaire included demographic characteristics, type of diabetes, parity and a number of additional questions to assess the individuals' knowledge relating to care from pre-pregnancy to delivery. The questions required a yes or no answer, and assessed each woman's awareness of a number of key themes:

- Whether women with diabetes have a higher health risk during pregnancy.
- The existence and the importance of pre-pregnancy care services.
- The recommended dose of folic acid supplementation (405 mg daily up to 12 weeks' gestation) and its importance.
- The importance of retinal and renal function screening.
- The importance of good glycaemic control before and during pregnancy.
- Recognition of the need for increasing insulin requirements during pregnancy.
- Diabetes-related complications affecting maternal and fetal outcome.

### Results

There were 159 responses to the survey, giving a response rate of 21.2%. Demographic data are shown in *Box 1*, and the main findings are summarised in *Table 1*.

Only 74% of respondents recognised the importance of good glycaemic control before and during pregnancy (*Figure 1*), and a similar number were aware of the need for an increased insulin requirement with progressive hyperglycaemia during pregnancy.

Around four-fifths of respondents were aware of the risk of fetal macrosomia with poor glycaemic control; however, only 66% were aware of the enhanced risk of birth defects, a greater potential for more complex delivery and fetal hypoglycaemia (*Figure 2*).

Following the survey, 41% of the women who replied wished to have more information or appointments regarding pre-conceptual counselling services.

### Discussion

The majority of women with diabetes (approximately 90%) were aware that they have higher health risks during pregnancy. However, just under half of them were aware of the existence and importance of pre-pregnancy diabetes care services.

In the CEMACH (2004) survey of maternity services in 2002, less than one-fifth (17%) of maternity units in England, Wales and Northern Ireland provided structured multidisciplinary or pre-conception care for women with type 1 and type 2 diabetes.

A CEMACH survey reported in 2005 showed that women with diabetes were poorly prepared for pregnancy. The survey indicated that:

- Less than half of all women with diabetes were recorded to take folic acid supplements prior to becoming pregnant.
- Less than half were recorded to have had pre-conceptual counselling regarding glycaemic control, diet, contraception, diabetes complications and alcohol intake.
- Only one-third were recorded to have had a test of glycaemic control in the 6 months before pregnancy.
- Two-thirds had evidence of sub-optimal glycaemic control before conception and in the first trimester of pregnancy.

Based on the CEMACH (2005) survey results, the authors were not surprised that the data from the present survey suggested that a significant proportion of pre-gestational women with diabetes had limited knowledge of pregnancy care, even though they were currently under follow-up in specialist services.

The CEMACH report (2005) reported that one of the main underlying issues was failure of healthcare professionals to provide appropriate care to women with diabetes, such as pre-conception advice. It is believed that women who did not receive information about the potential impact of diabetes on pregnancy and possible management strategies may have, therefore, been less aware of the importance of planned pregnancy and good glycaemic control before and through their pregnancy.

Changes in the knowledge and attitudes and behaviours related to reproductive health among

both men and women need to be made to improve pre-conception health. Pre-conception health promotion, therefore, should focus on a general awareness among men and women regarding reproductive health and risks to child-bearing (Moos, 2004). The Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry Preconception

Care Work Group and the Select Panel on Preconception Care in the US developed recommendations so as to help to achieve the Healthy People 2010 objectives to improve maternal and child health outcomes (Johnson et al, 2006). The recommendations are shown in *Box 2* as similar guidelines have not yet been developed in the UK.

**Table 1. Summary of results from the questionnaire indicating the percentage of individuals who recognised key themes relating to pregnancy complicated by diabetes.**

	Yes	No
Awareness that people with diabetes have a higher health risk during pregnancy	89.3% Nulliparous: 87.7% Multiparous: 90.4%	10.7% Nulliparous: 12.3% Multiparous: 9.6%
Awareness of existence of pre-pregnancy services	53.5% Nulliparous: 44.6% Multiparous: 59.6%	46.5% Nulliparous: 55.4% Multiparous: 40.4%
Awareness of the importance of pre-pregnancy counselling	39.6% Nulliparous: 33.8% Multiparous: 46.8%	60.4% Nulliparous: 66.3% Multiparous: 53.2%
Awareness of the importance of taking folic acid prior and up to 12 weeks' gestation	78.6% Nulliparous: 58.5% Multiparous: 92.6%	21.4% Nulliparous: 41.5% Multiparous: 7.4%
Awareness of the recommended dose of folic acid for women with diabetes	33.3% Nulliparous: 38.5% Multiparous: 43.6%	66.7% Nulliparous: 61.5% Multiparous: 56.4%
Awareness of the importance of retinal screening	39.0% Nulliparous: 27.7% Multiparous: 46.8%	61.0% Nulliparous: 72.3% Multiparous: 53.2%
Awareness of the importance of renal function screening	25.0% Nulliparous: 20.0% Multiparous: 28.7%	75.0% Nulliparous: 80.0% Multiparous: 71.3%
Awareness of the of need for increasing insulin requirements during pregnancy	75.5% Nulliparous: 64.6% Multiparous: 81.9%	24.5% Nulliparous: 35.4% Multiparous: 18.1%
Awareness of the risk of fetal macrosomia with poor glycaemic control	80.5% Nulliparous: 90.4% Multiparous: 66.2%	19.5% Nulliparous: 9.6% Multiparous: 33.8%
Awareness of the risk of complex delivery	67.3% Nulliparous: 53.8% Multiparous: 76.6%	32.7% Nulliparous: 46.2% Multiparous: 23.4%
Awareness of the risk of fetal hypoglycaemia	63.5% Nulliparous: 36.9% Multiparous: 79.8%	36.5% Nulliparous: 46.2% Multiparous: 23.4%

Improving pre-conception health and pregnancy outcomes will require more than effective clinical care for women. A limited number of studies have assessed the best methods for integrating interventions to achieve maximum impact and optimise the use of limited resources (Woolf and Atkins, 2001). The purpose of pre-conception care is to deliver risk screening, health promotion, and effective interventions as a part of routine healthcare. Pre-conception care should be tailored to meet the needs of the individual as certain recommendations will be more relevant to women at different life stages, and with varying levels of risk. Health promotion, risk-screening and interventions are different for a young woman who has never experienced pregnancy than for a woman aged 35 years who has had three children. Women with concurrent chronic diseases, previous pregnancy complications, or behavioural risk factors, might need more intensive interventions. Such variations also place constraints on how interventions can and should be integrated.

Pre-conception care is key in ensuring both mothers and babies have a healthy and safe pregnancy and birth. Adult diabetes services and primary care professionals have a responsibility to provide relevant information in the pre-conception period as they are often in contact with women prior to pregnancy. The National Framework Service for diabetes (DH, 2001) recommends that all diabetes services should be effectively planned, so that the services can be provided jointly in primary as well as secondary care to achieve integrated models of pre-conception and pregnancy care.

It is important to understand that pregnancy in women with diabetes will always carry a high risk. The key to a successful pregnancy is planning, and it is the responsibility of healthcare professionals to explore new ways of working with women so as to reduce the adverse outcomes.

**Conclusion**

Sub-optimal maternity and diabetes care during pregnancy is associated with poor pregnancy outcomes (CEMACH, 2005). The present study has demonstrated that a significant proportion of women with diabetes have a sub-optimal knowledge of pre-pregnancy counselling.

Therefore, it is crucial that all women with diabetes should be provided with specialist pre-conception services, with access to all members of the specialist multidisciplinary team to improve the health of women with diabetes, and increase the quality of health for families and the community. ■

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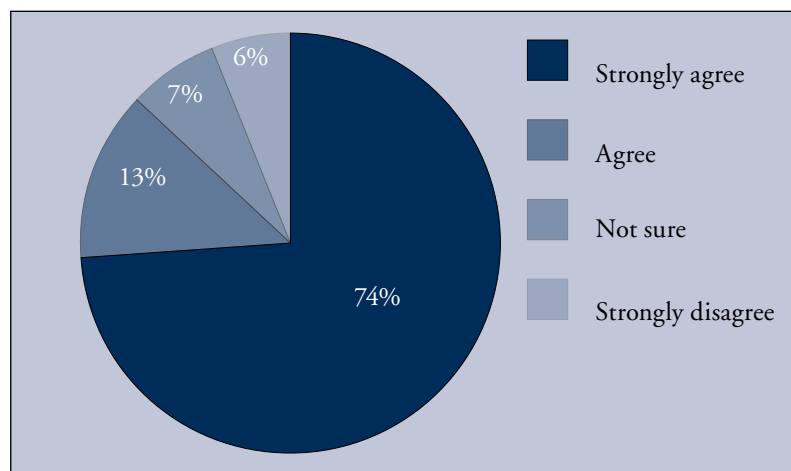


Figure 1. Recognition of the importance of good glycaemic control before and during pregnancy.

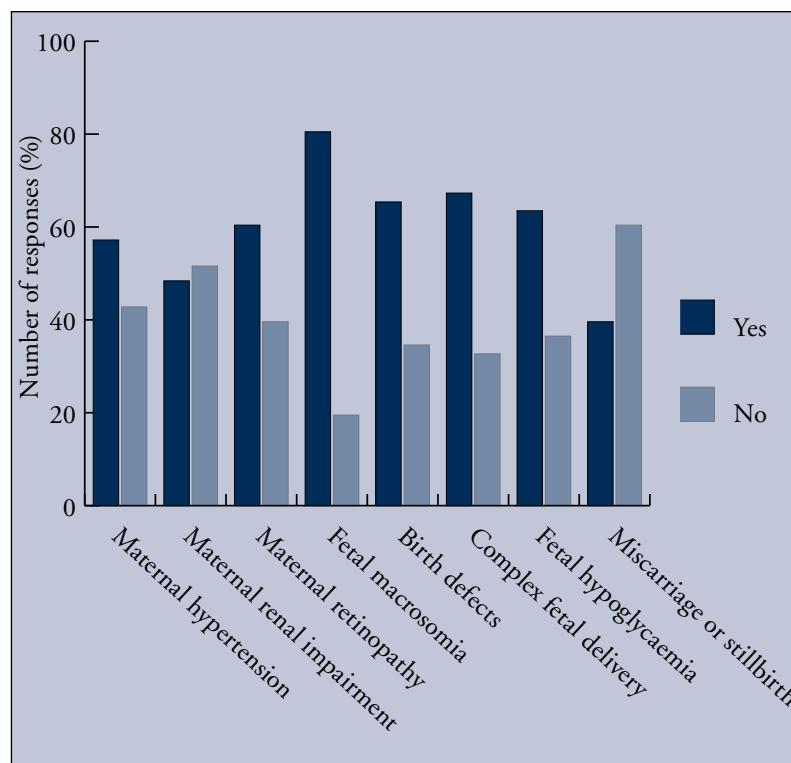


Figure 2. Awareness of complications related to poor maternal glycaemic control.

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**Box 2. Recommendations for improving maternal and fetal health.**  
Adapted from: Johnson et al (2008).

- **Individual responsibility across the life-span**  
Develop, evaluate and disseminate life-planning tools for women and men of reproductive age so as to reduce unintended pregnancies (Misra et al, 2003).
- **Consumer awareness**  
Increase public awareness of the importance of pre-conception health behaviours and pre-conception care services by using information and tools appropriate to various ages, literacy levels, cultures and languages (Card, 1999).
- **Preventive visits**  
Provide risk assessment and educational and health promotion counselling to all women of child-bearing age through integration of pre-conception components into primary care and professional guidelines for clinicians (American College of Obstetricians and Gynecologists Preconception Work Group, 2005).
- **Interventions for identified risks**  
Develop and implement modules on pre-conception care for specific conditions for use in clinical education at graduate, post-graduate and continuing education levels (Grol, 2001).
- **Inter-conception care**  
Use the inter-conception period to provide additional intensive interventions to women who have had a previous pregnancy that ended in an adverse outcome (i.e. infant death, fetal loss, birth defects, low birth weight, or preterm birth; Mercer et al, 1999).
- **Pre-pregnancy checkup**  
Offer, as a component of maternity care, one pre-pregnancy visit for couples and persons planning pregnancy (Committee on Perinatal Health, 1993).
- **Public health programmes and strategies**  
Integrate components of pre-conception health into existing local public health and related programmes, including emphasis on inter-conception interventions for women with previous adverse outcomes (Frost et al, 2004).
- **Research**  
Increase the evidence base and promote the use of the evidence to improve pre-conception health (Grosse et al, 2006).
- **Monitoring improvements**  
Maximise public health surveillance and related research mechanisms to monitor preconception health (US Department of Health and Human Services, 1994).

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