



The Acceptability of Continuous Glucose Monitoring in Early Pregnancy

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Introduction

Gestational Diabetes Mellitus (GDM) is a common metabolic pregnancy disorder which can lead to adverse foetal and maternal outcomes. However, the level of hyperglycaemia that constitutes a diagnosis of GDM is controversial, and there remains a lack of consensus over what diagnostic tests should be used to define hyperglycaemia in pregnancy. Amid this controversy, continuous glucose monitoring (CGM) is emerging as a useful tool to assess glycaemic changes in diabetic patients. It has revolutionised diabetes care and management¹. It is recommended as the gold standard of care for individuals with diabetes treated with insulin therapy outside of pregnancy. However, the role of CGM in non-diabetic pregnant women has not been well established. There is no information on CGM acceptability in healthy, non-diabetic, pregnant women.



Aim of the study

To study the acceptability of and attitudes towards, CGM sensors by healthy pregnant women without pre-pregnancy diabetes mellitus in early pregnancy.

Materials & Methodology

A prospective observational study was conducted at The Coombe Hospital. The cohort included healthy, non-diabetic pregnant women aged 18 or older with one or more risk factors for GDM and able to provide informed consent in English. A CGM device² was worn for 14 days during early pregnancy, as shown in the image above³. The study evaluated the acceptability and feasibility of the sensors through a questionnaire that included free-text, multiple-choice, and Likert scale questions. The survey questioned the following key factors: patients’ physical comfort and discomfort, ease of use, impact on daily life, attitude towards the sensor, experience in comparison to finger-prick tests, and motivation to participate.

Results

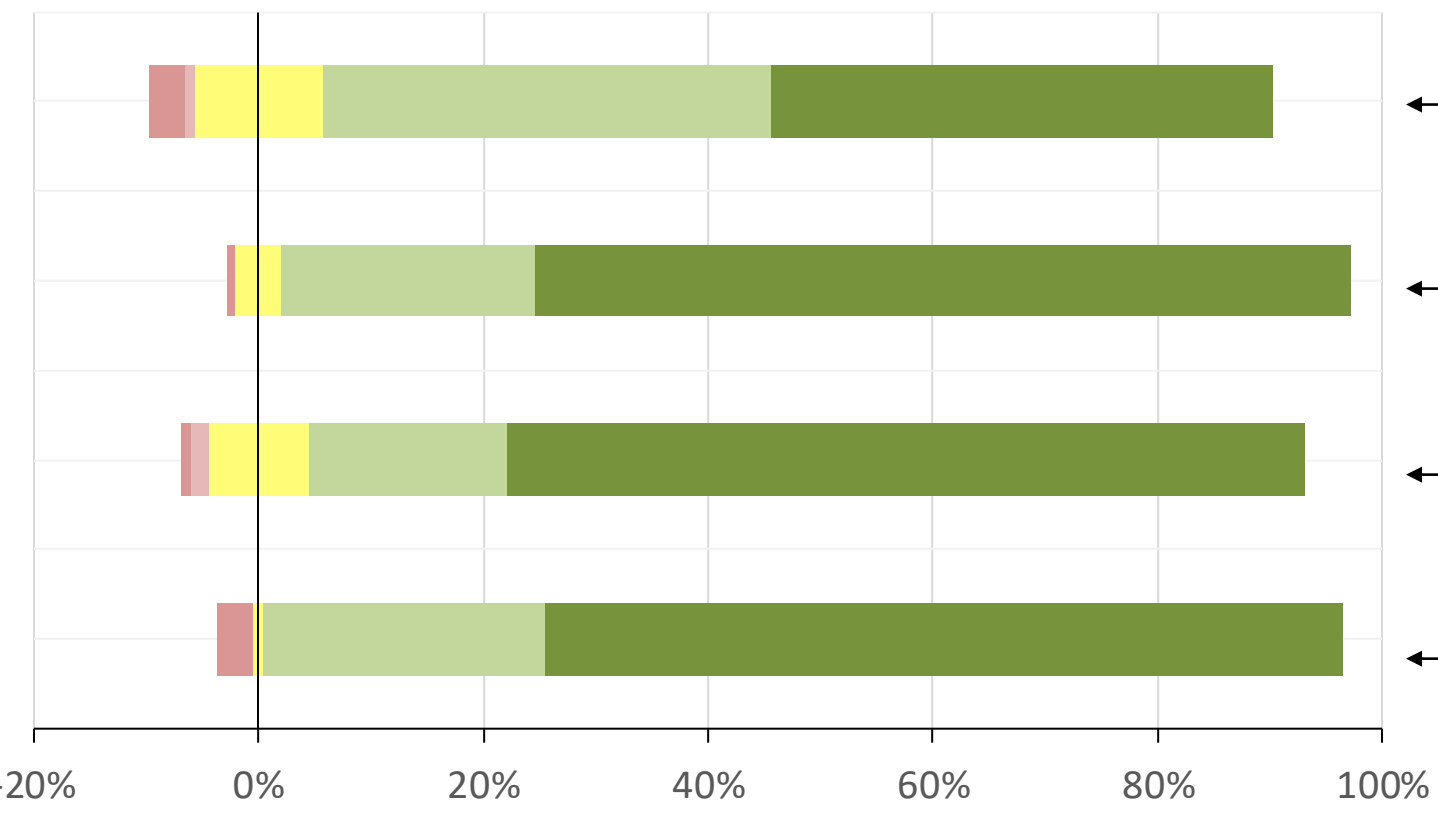
The questionnaire was completed by a total of 124 participants. The patients reported a generally positive experience and a high level of acceptability for the sensor.

Percentage of patients who had heard about CGM prior to participating



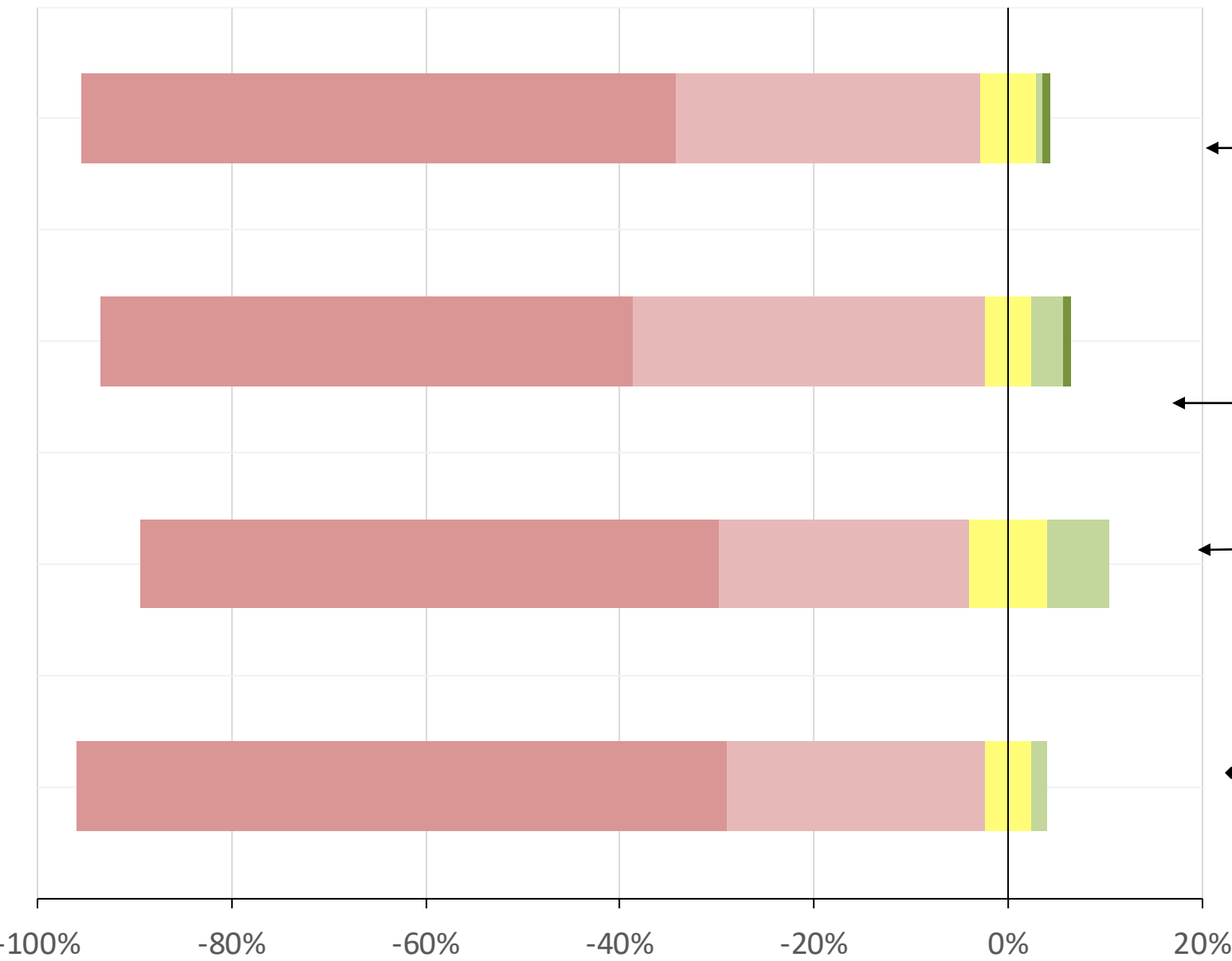
■ No ■ Yes ■ No answer

Physical Experience - Acceptability



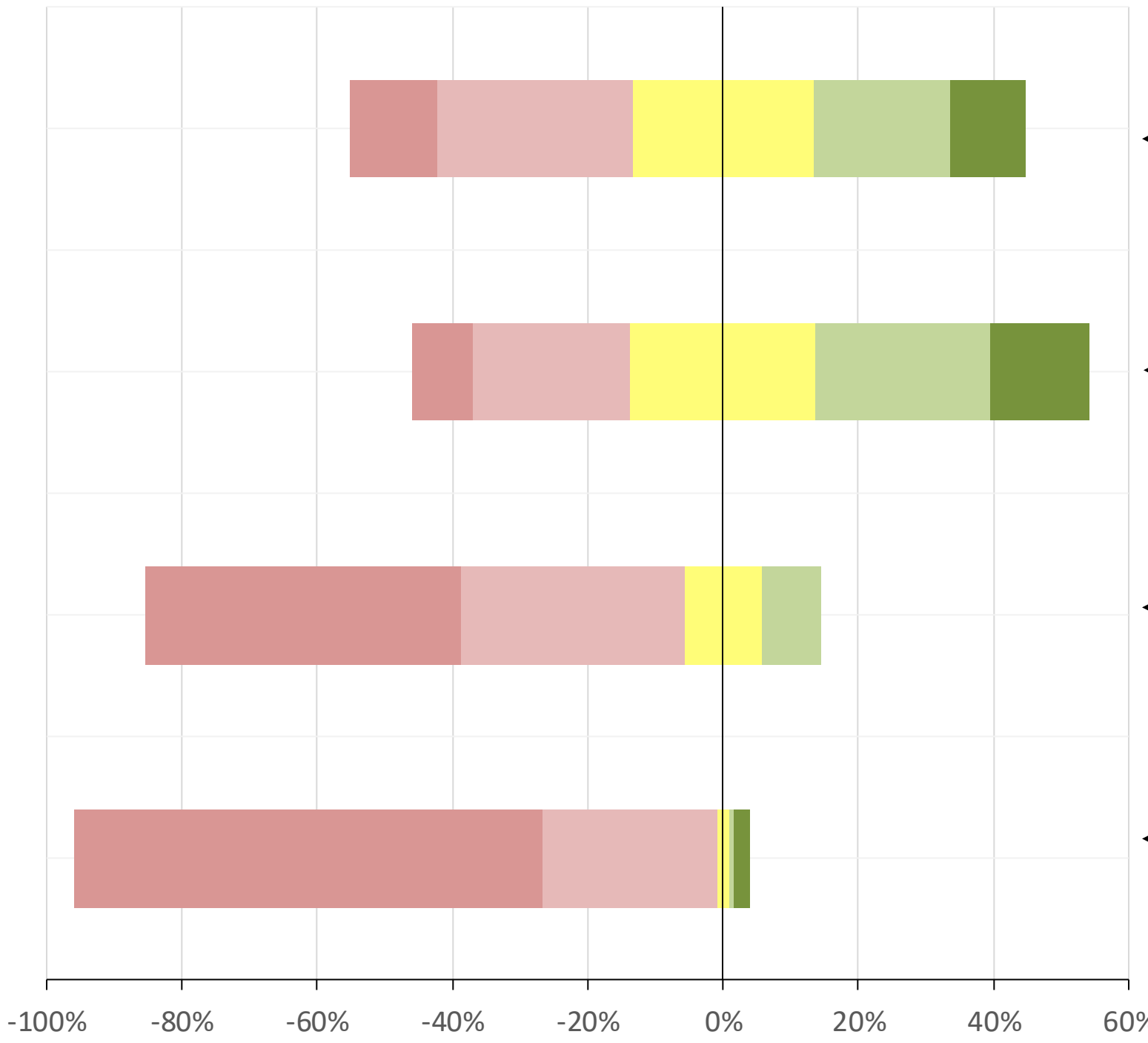
← **84.5%** (104/123) *strongly agreed/agreed* that the CGM sensor was **comfortable to wear**
← **95.2%** (118/124) *strongly agreed/agreed* that it is **acceptable** to use CGM *during pregnancy*
← **88.7%** (110/124) *strongly agreed/agreed* that the CGM sensor is **more convenient than a finger prick test**
← **96.0%** (119/124) *strongly agreed/agreed* that the CGM sensor **did not get in the way of their daily activities**

Physical Experience - Discomfort



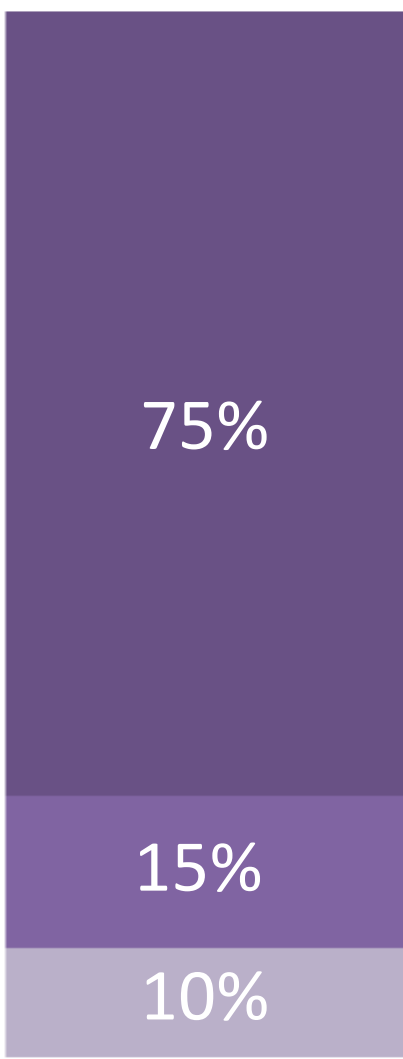
← **92.7%** (115/124) *strongly disagreed/disagreed* that they **experienced discomfort** while wearing the sensor
← **91.1%** (113/124) *strongly disagreed/disagreed* that **the feeling of an external object** on the arm **bothered them**
← **85.5%** (106/124) *strongly disagreed/disagreed* that the CGM sensor **caused skin irritation and/or bruising**
← **93.5%** (116/124) *strongly disagreed/disagreed* that the **initial application** of the CGM sensor was **painful**

Patient Opinion



← There were mixed responses (n = 124) on *change in awareness* of **exercise routine** whilst wearing the CGM sensor
← There were mixed responses (n = 124) on *change in awareness* of **diet** whilst wearing the CGM sensor
← **79.8%** (99/124) *strongly disagreed/disagreed* that they were **concerned** the CGM sensor *would be visible*
← **95.2%** (118/124) *strongly disagreed/disagreed* that they were **concerned** the CGM sensor *might harm the pregnancy*

Open Feedback



– Positive: “Genuinely **forgot that I was wearing it** 90% of the time, **totally painless** and didn’t get in the way.”
– Neutral: “I’d love to be able to see the data rather than it being a blind test.”
– Negative: “I was **worried that the sticker would come off**, it was **itchy**.”

Conclusions and Future Direction

CGM was well tolerated and accepted by the cohort of healthy women in early pregnancy. This is the first study examining the acceptability of a CGM sensor in non-diabetic pregnant women in Ireland. As CGM technology becomes more widely available and cheaper to access, it is likely that it will have an important role in the diagnosis and management of GDM. We believe that in this study, finding high levels of acceptability and engagement with CGM in pregnancy in non-diabetic patients is important. We also believe that this study opens a door for increasing understanding of the potential value of CGM in GDM care.

References

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