Acceptance and tolerability of 75 g Pregnancy Oral Glucose Tolerance Test in Pregnancy

Santosh Kumar Chaubey (✉ drchaubeysk@gmail.com)

Gosford Hospital <https://orcid.org/0000-0002-5009-6261>

Henrik Falhammar

Royal Darwin Hospital, Darwin, NT

Research article

Keywords:

Posted Date: September 17th, 2019

DOI: <https://doi.org/10.21203/rs.2.14227/v1>

License: This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Acceptance and tolerability of 75 g Pregnancy Oral Glucose Tolerance Test in Pregnancy

Santosh Chaubey^{1,2}, Henrik Falhammar^{3,4,5,6}

¹Department of Endocrinology, Diabetes and Metabolism, Gosford Hospital, Gosford, NSW, Australia.

²Department of Endocrinology, Sahara Hospital, Lucknow, UP, India.

³Department of Endocrinology, Royal Darwin Hospital, Darwin, NT, Australia.

⁴Department of Endocrinology, Metabolism and Diabetes, Karolinska University Hospital, Stockholm, Sweden.

⁵Department of Molecular Medicine and Surgery, Karolinska Institutet, Stockholm, Sweden ⁶Menzies School of Health Research, Darwin, NT, Australia.

Corresponding author: Santosh K Chaubey, Department of Endocrinology, Sahara Hospital, Viraj Khand, Gomti Nagar, Lucknow, UP, India, 226010. E-mail:drchaubeysk@gmail.com

Acceptance and tolerability of 75 g Pregnancy Oral Glucose Tolerance Test in Pregnancy

Background

The prevalence of gestational diabetes mellitus (GDM) is increasing globally as well as in Australia.

^{1,2} There have been a paradigm shift in diagnosis and management of GDM after HAPO study.³

The Australasian Diabetes in Pregnancy Society (ADIPS) has recommended against the use of 50 g oral glucose challenge test (GCT) at 24-28 week of pregnancy and has advised to use 75 g oral pregnancy oral glucose tolerance test (POGTT) instead as a screening tool for GDM.⁴

Universal screening is now a norm in Australia but there have been disagreement between various health services and health experts about ideal way for screening and diagnostic thresholds.⁵ One of the obstacles in general acceptance for the International Association of Diabetes in Pregnancy Society Group (IADPSG) 75 g POGTT criteria is the concern by some obstetricians, endocrinologists and other health professionals of putting additional burden on health care system and their patients for minimal advantage. It is true that diagnosis of GDM does incur significant cost to health care service but it has been found that the incremental cost per extra life-year gained over the whole life span is highly favourable.⁶ Similarly, there is also debate about implications of increased numbers of GDM diagnosis after the change in the diagnostic criteria and lower treatment targets with concern that lowering treatment targets may cause a number of harms including increased risk of hypoglycaemia in pregnant women, greater medico-legal risk for health practitioners, and heavier economic costs for the health system.⁵

Furthermore, we do not have a clear picture about attitudes of the patients towards this change.

There have been concerns raised among various streams of health care professionals and health care providers about acceptance and tolerability among pregnant women of POGTT, which takes longer

to complete, has larger glucose load and mandates fasting. There have been very few studies focusing on attitude of patients towards glucose tolerance test.⁷ Since there have been no studies about patient experiences about 75 g POGTT we decided to explore these issues.

Methods

A questionnaire based non-interventional study was prospectively undertaken of English speaking pregnant females diagnosed with GDM in any trimester presenting between August 2014 and January 2015 to the combined endocrinology and obstetrics antenatal clinic, Gosford Hospital, Gosford, NSW, a level III teaching hospital with a high-risk pregnancy service and neonatal intensive care unit.

A questionnaire was developed (Figure 1) to survey women on their experiences of being screened for GDM and comparisons with experiences related to 50 g GCT in current or previous pregnancy in a subgroup of patients were done. The survey questionnaire aimed at various concerns commonly raised by endocrinologists, obstetricians, pathologists, midwives and other health care professionals. The subjective issues such as nausea, vomiting and taste of GlucoGel as well as objective issues such as duration of test and volume of glucose solution were investigated. Patient attending the antenatal clinic were prospectively provided the questionnaire. A diagnosis of GDM or glucose intolerance of pregnancy was made according to criteria recommended by ADIPS.³

The study was approved by the university of Newcastle , Human Research and Ethics Committee and written consent was obtained of all participants.

Statistical analysis

In frequency table calculations Fisher's exact test was used. A P-value <0.05 was considered significant. SigmaStat 3.0 for Windows (Systat Software Inc., San Jose, California) was used for all calculations.

Figure 1:

Results

During the six months inclusion period, 98 pregnant females, predominantly Caucasians, who attended the combined antenatal endocrine and obstetrics clinic completed the questionnaire. The most inconvenient factor during the POGTT were as the taste of Glucogel (54%, 53/98) and duration of the test (45%, 44/98, followed by nausea (42%, 41/98) and requirement for fasting (18%, 18/98) (Table 1). However, very few factors were intolerable. Fainting or near fainting like episodes were experienced in 7% (7/98) and 10% (10/98) experienced vomiting with the test. It was observed that 5% (5/98) of the females needed help from laboratory staff during the test. However, in spite of all these individual issues the majority said that they had no issues with POGTT (69%, 68/98) and would accept it in future pregnancies (69%, 68/98).

We did not have data on discontinuation of the test. It was noted that 47% (46/98) declared they had no issues at all with the 75 g POGTT. Of all females 46% (45/98) had had a 50 g GCT previously. Of those who had had a previous 50 g GCT, more had no issues with 50 g GCT compared to 75 g OGTT (76% vs. 47%, $P=0.006$) and there was a tendency of less issues of the duration of the test (20% vs. 40%, $P=0.065$).

Table 1.

Discussion

In view of short and long term maternal-foetal benefit, 75 g POGTT is a valuable screening tool which not only help in early diagnosis of diabetes in pregnancy but also has potential to improve health of the mother and the baby. Moreover, it should have positive benefit on future pregnancies by allowing the mother to get early screening in subsequent pregnancies.⁸ It is likely to motivate the mother to adopt healthy lifestyle changes to decrease the risk of type 2 diabetes in later life. It would be interesting to get responses from this group who may have different opinion and may have different response about accepting this in subsequent pregnancies. In our view even a negative test has valuable clinical importance as it rules out diabetes in pregnancy.

This study provides an insight into issues related to 2-hour 75 g POGTT which is increasingly being used. We feel that a scale to assess acceptance and tolerability of POGTT is needed and this questionnaire developed by us may prove a framework for this. It could provide valuable information to the laboratories what to expect of intolerance or complications arising from POGTT and improve their management. The inference from this hospital based study is likely to be relevant to clinical and paramedical service across a broad spectrum of health care.

Our study provides reassurance about wider use of 75 g POGTT since very few participants had any intolerable issues with the test. Acceptance of POGTT in subsequent population is particularly interesting. It would be useful to do a larger study of patients who had both 50 g GCT and 75 g POGTT to confirm our results that GCT was more acceptable but the vast majority having the POGTT still acceptable to have it in future pregnancies. Hence, it should be encouraged to both patients and practitioners to endorse POGTT for universal screening for GDM as a normal and routine part of antenatal management.

This study has a number of limitations. We did not include females who had a negative POGTT although a previous study from regional NSW showed similar acceptance about GDM.⁷ The number of included patients was limited. We did not have an ethnically diverse population which may restrict the generalisation of the study result.

Conclusion

This study demonstrates a fairly positive attitude of women toward screening for GDM using POGTT in spite of some minor adverse event. It provides reassurance about acceptability and tolerability of 75 g POGTT even though it is more labour intensive, resource demanding and more complicated for patients. This strengthens the IADPSG and ADIPS recommendation of utilising 75 g POGTT at wider scale.⁴ POGTT should be endorsed by all health services if it can be feasibly provided as a normal and routine part of antenatal management.

Abbreviations

GDM = gestational diabetes mellitus, GCT = glucose challenge test, POGTT = pregnancy oral glucose tolerance test, ADIPS = Australasian Diabetes in Pregnancy Society, IADPSG = International Association of Diabetes in Pregnancy Society Group.

Ethics approval and consent to participate

The study was approved by the university of Newcastle, Human Research and Ethics Committee and written consent was obtained of all participants.

Competing interests

The authors declare that they have no competing interests.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Authors' contributions

SC collected the data from Gosford hospital , NSW and HF helped in data analysis and manuscript preparation .

ACKNOWLEDGEMENTS

We thank all of the women who participated in the study and the medical, nursing and midwifery staff of antenatal clinic of Obstetrics and Gynecology Unit, Gosford Hospital , Gosford, NSW.

References:

1. Hunt K. J., Schuller K. L. The increasing prevalence of diabetes in pregnancy. *Obstetrics and Gynecology Clinics of North America*. 2007; **34(2)**:173–199.
2. Falhammar H, Davis B, Bond D, Sinha AK. Maternal and neonatal outcomes in the Torres Strait Islands with a sixfold increase in type 2 diabetes in pregnancy over six years. *Aust N Z J Obstet Gynaecol*. 2010;**50(2)**:120-6.
3. Metzger, BE ., Lowe, LP., Dyer, AR., Trimble, ER., et al. the HAPO Study Cooperative Research Group Hyperglycemia and adverse pregnancy outcomes. *N Engl J Med*. 2008; **358**:1991-2002.
4. Nankervis, A. , Moses,RG. , Callaway, L. , McIntyre, D. , et al. Testing for gestational diabetes mellitus in Australia. *Diabetes Care* 2013;**36**: e64.
5. Kevat DA, Ashim KS, McLean AG. Lower treatment targets for gestational diabetes:is lower really better? *Medical Journal of Australia* 2014; **201(4)**:204-7.
6. Crowther , CA. , Hiller, JE., Moss, JR. , McPhee, AJ. , et al. Costs and consequences of treatment for mild gestational diabetes mellitus - evaluation from the ACHOIS randomised trial. Australian Carbohydrate Intolerance Study in Pregnant Women (ACHOIS) Trial Group. *N Engl J Med*. 2005; **352(24)**:2477-86.

7. Griffiths RD, Rodgers DV, Moses RG. Patients' attitudes toward screening for gestational diabetes mellitus in the Illawarra area, Australia. *Diabetes Care*. 1993;**16(2)**:506-8.
8. Davis B, McLean A, Sinha AK, Falhammar H. A threefold increase in gestational diabetes over two years: review of screening practices and pregnancy outcomes in Indigenous women of Cape York, Australia. *Aust N Z J Obstet Gynaecol*. 2013;**53(4)**:363-8.

Figures

	No issue	Inconvenient but tolerable	Very inconvenient
1. Convenience with fasting requirement			
2. Convenience with duration of the test			
3. Taste of the GlucoGel			
4. Nausea soon after taking the GlucoGel			
5. Overall experience with the test			
6. Acceptability of repeat 75 g POGTT in future pregnancies			

Figure 1

Questionnaire given to the females attending the combined Endocrine-Obstetric Antenatal Clinic. Panel A: Tolerability of 75 g oral pregnancy oral glucose tolerance test (POGTT). Q 1: Did you feel unwell and needed help from lab staff during the test? 1= No, 2= Yes Q 2: Vomiting soon after taking GlucoGel? 1= No, 2=Yes Q 3: Fainting before, during or 1 hour after test? 1= No, 2=Yes Q 4: Did you have 1 hour 50 g glucose challenge test in current or previous pregnancy? If yes, how is your experience with 75 g POGTT in comparison to 50 g glucose challenge test? 1= No issues 2= Issues with longer duration of test 3= Issues with larger amount GlucoGel. Panel B: Acceptance of 75 g POGTT. Q 5: How was your experience with various aspects of 75 g POGTT - please tick the appropriate boxes, below.