

Postpartum glucose tolerance test application rates and non-application causes in gestational diabetes mellitus cases

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Abstract

Objective: Gestational diabetes mellitus is a health problem with long-term consequences that concern the general population seen at increasing rates. This population should be followed up more closely and the reasons of those who do not apply should be investigated and these people should be included in follow-up protocols. In this study, we investigated the rates of application for postpartum glucose tolerance tests of women who had gestational diabetes mellitus diagnosis in a low socioeconomic population. We also examined the reasons for not applying to have a glucose tolerance test.

Methods: A total of 738 gestational diabetes patients with low socioeconomic status who were followed-up and treated at a tertiary care center were included in the study. These patients were reached after the 8th postpartum period to investigate the cases of having glucose tolerance testing and the reasons for not having it.

Results: 227 (30.7%) of the 738 patients who participated in the study, had applied for glucose tolerance testing in the postpartum period. Of the remaining 511 patients, 337 (65.9%) indicated that they did not apply because they were not informed about it, 98 (19.1%) of them indicated the financial impossibilities as the reason of not applying, 40 (7.8%) of them did not apply because their husbands did not take them the health center, 36 (7.2%) indicated that they did not attend because they did not consider it necessary.

Conclusion: In the postpartum period, glucose test admission rates are quite low in the low socioeconomic population. It is clear that there is a need for new health policies and follow-up systems following this population in terms of long-term outcomes.

Keywords: Gestational diabetes, glucose tolerance testing, postpartum, type 2 diabetes.

Özet: Gestasyonel diabetes mellitus olgularında postpartum glukoz tolerans testi uygulamasının oranları ve uygulanmamasının nedenleri

Amaç: Gestasyonel diabetes mellitus, artan oranlarda görülen ve genel popülasyonu ilgilendiren uzun vadeli sonuçlara sahip bir sağlık sorunudur. Bu popülasyon daha yakından takip edilmeli, uygulanmama nedenleri araştırılmalı ve bu kişiler takip protokollerine dahil edilmelidir. Bu çalışmada, düşük sosyo-ekonomik popülasyonda bulunan ve gestasyonel diabetes mellitus tanısı almış kadınlarda postpartum glukoz tolerans testlerinin uygulanma oranlarını araştırdık. Ayrıca, glukoz tolerans testi için başvurumama nedenlerini de inceledik.

Yöntem: Çalışmaya, düşük sosyo-ekonomik düzeyde olan, üçüncü basamak bakım merkezinde takip ve tedavi edilen toplam 738 gestasyonel diyabet hastası dahil edildi. Glukoz tolerans testi yapılan olguları ve bu testi yaptırmama nedenlerini araştırmak amacıyla bu hastalara 8. postpartum dönemden sonra ulaşıldı.

Bulgular: Çalışmaya katılan 738 hastanın 227'si (%30.7) postpartum dönemde glukoz tolerans testine başvurmuştu. Kalan 511 hastanın 337'si (%65.9) bilgilendirilmedikleri için başvurmadığını, 98'i (%19.1) başvurumama nedeni olarak mali güçlükler yaşadığını, 40'ı (%7.8) eşlerinin kendilerini sağlık merkezine getirmedikleri için başvurmadığını, 36'sı (%7.2) ise testin gerekli olmadığını düşündükleri için gelmediklerini belirtti.

Sonuç: Postpartum dönemde glukoz tolerans testi başvuru oranları, düşük sosyo-ekonomik popülasyonda oldukça düşüktür. Uzun vadeli sonuçlar bakımından yeni sağlık politikalarına ve bu popülasyonu takip etmek için takip sistemlerine gereksinim olduğu açıktır.

Anahtar sözcükler: Gestasyonel diyabet, glukoz tolerans testi, postpartum, tip 2 diyabet.

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Introduction

Gestational diabetes mellitus (GDM) first recognized during pregnancy from those whose disease is a transient manifestation of pregnancy-related insulin resistance.^[1] GDM is a health problem seen at increasing rates.^[2] Although GDM usually recovers after pregnancy, it carries the risk for dyslipidemia, obesity, hypertension, cardiovascular diseases and other metabolic disorders, especially type 2 diabetes in long term.^[3,4] Because of long-term risks, postpartum glucose screening is recommended by all health systems. NICE state that up to 50% of women diagnosed with gestational diabetes develop type 2 diabetes within 5 years of the birth.^[5]

Women who are diagnosed as GDM are more motivated for treatment during pregnancy but do not show enough interest in the glucose test after pregnancy.^[6,7] Patients referred to the glucose tolerance testing (GTT) have a higher admission rate, especially in the high socioeconomic category, but remain lower in low socioeconomic group.^[8] Therefore, the objective of this study was to conduct an in-depth exploration of the experiences of, and perspectives on postpartum GTT screening with low socioeconomic status women diagnosed with GDM.

Methods

This is a cross-sectional study conducted between January 2015 and June 2016 at the Bursa Yüksek İhtisas Training and Research Hospital, which is a tertiary care center. In this period, 738 of 926 patients with low socioeconomic status and no previous diagnosis of diabetes or with no history of GDM in previous pregnancies that were reached by the hospital records and telephone numbers diagnosed with GDM were included in the study. Low socioeconomic status defined according to Turkish Statistical Institute January 2015 data. The study was approved by the local ethics committee (Ethics Committee of Bursa Yüksek İhtisas Training and research Hospital, 613-2014).

A one-step approach was used in the diagnosis of patients. In 2010, International Association of Diabetes and Pregnancy Study Group (IADPSG) bring new criteria for the diagnosis of GDM. New IADPSG criteria were mainly prepared by focusing on the perinatal risk of parameters which are >90 percentile. For the diagnosis, the criteria endorsed by the American Diabetes

Association (ADA) were used (one-step 75-g OGTT).^[9] According to ADA patient diagnosed GDM if one of three values (Fasting ≥ 92 mg/dL, first hour ≥ 180 mg/dL, second hour ≥ 153 mg/dL) are elevated. Patients receiving GDM diagnosis were followed up in the same diabetes clinic and informed by the diabetes nurse. Patients were informed about GDM when they were discharged from the hospital after the follow-up period of birth and they were called for the diabetes screening at postpartum 6th week.

All of the patients were called by telephone after the postpartum 12th week and a verbal questionnaire was applied after their verbal permission was obtained. Survey responses were recorded in the computer afterwards. At the end of the survey, the responses were confirmed by reading the participants again. All patients were asked the same questionnaire by the same researcher. During the telephone survey of all the participants were asked the total monthly income of the family and the participants whose income was below the poverty line were included in the study. Postpartum diabetes screening was defined as women who received an oral GTT at 6 to 12 weeks postpartum.

Basic demographic data and survey results were recorded in the SPSS v21 software (SPSS Inc., Chicago, IL, USA).

Results

The mean age of women with GDM was 30.8 ± 5.1 . The demographic characteristics of the patients are given in **Table 1**. 427 (57.8%) of the participants were high school graduates, 249 (33.7%) were primary school graduates and 62 (8.5%) were illiterate while none of them were university graduates.

Of the 738 patients who participated in the study, 227 (30.7%) reapplied for GTT in the postpartum peri-

Table 1. Demographic characteristic of study population (n=738).

	Mean
Age	30.8 \pm 5.1
Gravida	1.8 \pm 1.1
Gestational week at birth	38.9 \pm 1.7
Pre-eclampsia	71 (9.6%)
Cesarean	84 (11.3%)

od, while the remaining 511 (69.3%) did not reapply for GTT. As a result of the survey, the reasons for not having GTT were collected under 4 main headings. Of 511 patients stated that they did not go to the hospital because they were not informed enough and did not know about long-term risks, 98 (19.1%) said they did not go because of financial difficulties and health insurance problems, 40 (7.8%) of the participants stated that they could not apply because their husbands did not take them to hospital, and 36 (7.2%) of them claimed that they did not consider it necessary (Fig. 1).

Discussion

In our study, it is seen that the majority of patients with low socioeconomic status (69.3%) did not return to the health facility for GTT in the postpartum period. This creates a public health problem in terms of long-term complications. Women with GDM history are seven times more likely to develop type 2 diabetes during their lifetime compared with women without GDM history.^[10] At the same time, it poses a risk for early diabetes in subsequent pregnancies. In the study by Ekelund et al. it was shown that 51% patients with GDM had impaired glucose tolerance and 30% developed diabetes mellitus over 5 years.^[11] Gestational requirement for insulin and early gestational age at the time of diagnosis (ie, less than 24 weeks of gestation) are the major risk factors for the development of type 2 diabetes mellitus. In women who used insulin during pregnancy, relative measures of association range between 2.8 and 4.7.^[12]

Studies have shown that the risk for type 2 diabetes is significantly reduced if high-risk individuals are identified early and lifestyle changes are made. Tuomilehto et al. showed that, lifestyle changes may reduce to type 2 diabetes rate up to 58%.^[13] These patients need to be recognized early and referred to lifestyle changes and treatment if necessary.^[14] It is not easy to make lifestyle changes in the populations with low socioeconomic status. When evaluated in terms of dietary changes, as the socioeconomic level decreases, the predominant eating habits of carbohydrates increase and the protein weighted diet decreases.

Postpartum GTT admission rates are high in developed countries. This ratio was found to be 85% in the study of Paez et al. Halle et al. found this rate as

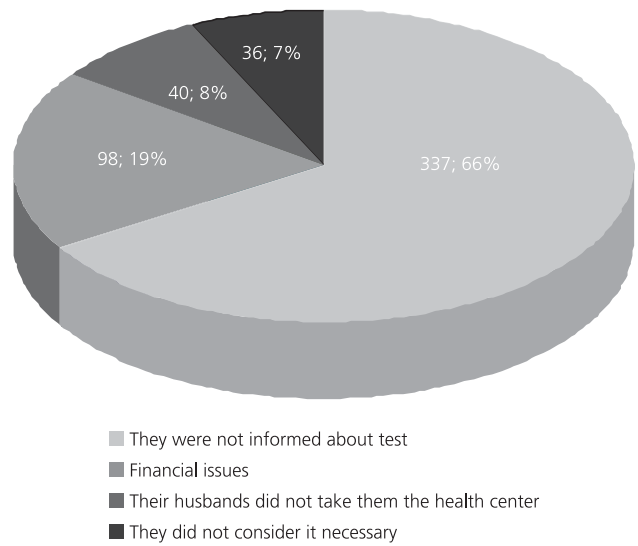


Fig. 1. Reasons for not attending to postpartum GTT (n=511).

97%. In our low socioeconomic status population, it was found to be 30.7%.^[15,16]

The majority of patients (n=337, 65.9%) who did not apply for postpartum GTT said they were not adequately informed and they were not aware of the long-term complications. Women in this group indicated that they would make a postpartum GTT if they were aware of long-term risks. Disagreements among some health professionals regarding postpartum GTT make it difficult for patients to be referred to health care facilities.^[17] Having different views of major health organizations, especially ADA, The American College of Obstetricians Gynecologists (ACOG) and World Health Organization (WHO), leads to confusion in this way. In addition, there are no precise criteria about who will (obstetrics, endocrinologists, family physicians) perform postpartum GTT screening in most countries. Turkish Ministry of Health recommend GTT screening between 24th and 28th gestational weeks in low risk population at pregnancy management guideline.^[18] Turkish Perinatology Society recommends single-step 75-g diagnostic test for Turkish population. They stated that this approach seems more appropriate in terms of costs and patient compliance.^[19]

98 (19.1%) of the patients who did not participate in the postpartum GTT screening indicated that they did not have sufficient financial means to reach and

obtain this test. Some of the people at low socioeconomic status are not covered by health insurance, so they have difficulties at paying for these tests. At the same time this group also has difficulty about accessing the health facility. Normalization of blood glucose values in the early postpartum period leads the people not to have postpartum GTT. Especially women who do not see familial support excuse the absence of time and do not apply for postpartum GTT screening.^[8] The likelihood of long-term dieting and life-limiting measures also reduces the rate of patients applying to the postpartum GTT.^[20] In our population, 36 (7.2%) women did not apply because they did not consider postpartum GTT necessary.

Clark et al. showed that the rate of having postpartum GTT was higher in the population that was monitored and stimulated by the health system.^[21] Problems related to health insurance in the low socioeconomic populations as in our study also affect the rate of postpartum GTT admission. 98 (19.1%) of the patients in our population, showed health insurance problems as the cause for not applying. It is known that education level also affects the rates of postpartum GTT applications.^[22] In our population, 62 (8.5%) participants were illiterate while none of the participants were university graduates.

Forty (7.8%) of our patient population stated that they could not make the postpartum GTT because their partners did not take them to the health institution for screening tests. It seems that family members should also be educated about GDM. Bandyopadhyay et al. showed that the rate of postpartum GTT admission increased if family members participated in diabetes education.^[8]

One of the main limitations of this study is the lack of long-term follow-up results. It is not known if diabetes developed or not in the long-term follow-up of the population at risk. Also the results of subsequent pregnancies are not known for our study group.

All populations have different excuses not to apply for postpartum GTT. The most common cause in a study conducted in Canada was the lack of adequate time, while the most common cause in a study in the USA was long-term treatment needs.^[19,23] In our population, the most common cause is not to be informed sufficiently.

For the clinical practice, this study suggests that patients and their relatives should be adequately informed in the postpartum period before being discharged from the hospital. At the same time, this population should not be lost during the postpartum period due to health insurance problems. It is thought that sending mails or making reminder talks by telephone to the participants may increase the admission rate for postpartum GTT.

Conclusion

In our study it was found that patients with low socioeconomic status had a very low rate of admission to the GTT in the postpartum period. The follow-up of this group of patients and postpartum GTT applications should be considered as a public health problem and family physicians and obstetricians work in harmony to protect these patients from long-term complications.

Conflicts of Interest: No conflicts declared.

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