

Team management of gestational diabetes: a training experience

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Gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance developing or first recognized during pregnancy that is not clearly overt diabetes [1]. It affects from 5–6 up to 15–20% of pregnancies worldwide, depending on population demographics, screening methods, diagnostic criteria in use, and maternal lifestyle [2]. GDM is characterized by a defective insulin secretion and insulin resistance even in early pregnancy [3, 4]. Left untreated, GDM can complicate pregnancy, affecting neonatal growth and maternal health, and causing macrosomia, fetal congenital anomalies, intrauterine fetal death, neonatal hypoglycemia, neonatal hyperbilirubinemia, birth trauma, preeclampsia, premature delivery [1]. GDM is also associated with long-term consequences for the women. They have an increased risk of type 2 future diabetes, in particular in the presence of obesity, insulin treatment during pregnancy, and a family history of diabetes [5]. They also have a greater than threefold risk of metabolic syndrome compared to women with normal glucose tolerance in pregnancy [6].

A multidisciplinary team operating in a secondary or tertiary care setting is a commonly adopted model for the provision of pregnancy care to women with diabetes. In fact, in the literature, there are evidences that demonstrated that a systematic multidisciplinary management of

pregnant women in the diagnosis and treatment of GDM is essential to contain these maternal and fetal complications [7].

The universal implementation of this best practice could transform the outcomes for women with GDM. But, on the basis of clinical experience, the organization of outpatient clinic and the composition of the multidisciplinary team vary according to local circumstances. These circumstances can lead to some problems in management of GDM patient decreasing the quality of patients' management. The Italian DAWN Study Group on Pregnancy performed a survey to evaluate the wishes and the needs of Italian and immigrant women affected by GDM. The results showed that all women received structured care from a multidisciplinary team comprising diabetologists, experienced nurses, and dietitians. On the other hand, gynecologists and diabetes specialists cooperated in only 25–26% of cases, and 73% of pregnant women felt that a better cooperation between practitioners is the best way to improve the care available to pregnant women with GDM [8].

To overcome the weaknesses of multidisciplinary teams operating at different diabetic outpatient clinics in different Italian regions, enabling them to facilitate task sharing and standardize their GDM patient management, we conducted a training experience.

Our clinic adopt a multidisciplinary team approach meeting the standards recommended in national and international guidelines, so our team experienced in GDM management, including a diabetologist, a nurse, a dietitian, and a gynecologist, was the trainer team of the experience. A total of 13 multidisciplinary teams comprising a diabetologist, a nurse, a dietitian, and a gynecologist operating at different diabetic outpatient clinics of 5 Italian regions (Veneto, Lombardia, Emilia Romagna, Trentino Alto

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Adige, and Friuli Venezia Giulia) took part in the training experience as trainee teams.

Due to the lack of appropriate tools in the literature, the experience was assessed using an *ad hoc* questionnaire that was administered twice, before, and 6 months after the training experience. The questionnaire examined how GDM patients were managed at different outpatient clinics, identifying potential critical issues. The post-training questionnaire was the same for the pre-training one except for the addition of participants' satisfaction with the training question.

Before the training experience, all the members of multidisciplinary trainee teams filled out the pre-training questionnaire concerning their critical issues in the management of patients with GDM.

The results of the pre-training questionnaire demonstrated the main critical concerns of the multidisciplinary teams that were: How to improve the postpartum follow-up of these patients; how to improve the management of migrant patients; how to improve dietary GDM management, especially in overweight and obese patients; and how to improve the collaboration between diabetologist and gynecologist.

Then, all the trainee teams took part in the practical training experience. In particular, each trainee team spent 7 h being coached by the trainer team during the various outpatient clinic activities involved in the management of GDM patients. They have been coached during the trainer diabetologist's visit activities (diagnosis of GDM, prescription, or modification of insulin therapy), during the trainer dietitian's visit (prescription of medical nutrition therapy), during the trainer nurse's activities (education on blood glucose self-monitoring), and during the trainer gynecologist's visit (gynecological examination).

The GDM diagnostic criteria, metabolic and obstetric surveillance modalities, and treatment targets for diabetic pregnancies used by the trainer team were based on national and international guidelines [9, 10]. In particular, GDM was diagnosed according to the IADPSG criteria (OGTT 75 gr, generally between the 24th and 28th gestational week (g.w.), or between the 14th and 16th g.w. in cases at high risk of GDM [9]. The trainer dietician prescribed all GDM patients with individualized medical nutrition therapy, taking their gestational age, pre-pregnancy BMI, and physical activity levels into consideration. If medical nutrition therapy was unable to achieve the established glycemic goals (fasting glucose <95 mg/dl, 1-h postprandial glucose <140 mg/dl) on more than two occasions after a fortnight of its institution, then insulin therapy was started by the trainer diabetologist [10].

Then, all the trainee teams worked independently of the trainer team at their outpatient clinics for 6 months.

Six months after the training experience, our trainer team organized a meeting with all the multidisciplinary trainee team to fill out the post-training questionnaire and to discuss about their management of GDM patients.

The results of the post-training questionnaire demonstrated that all 13 trainee teams had been able to acquire tools to help them overcome their weaknesses by dealing with the trainer team. In particular emerged a significant improvement in the management of all critical issues by all the teams learning of new strategies to address them, specially they improved the management of migrant patients and the collaboration between diabetologist and gynecologist. There was also an improvement in the standardization of GDM patient management at the various outpatient clinics. In addition, overall satisfaction with the experience, assessed on a scale of 1–10 (1 = “not satisfied”; 10 = “very satisfied”), was rated at a mean 9.2.

Our experience of the development and assessment of a training program designed to improve the quality and the standardization of the multidisciplinary management of GDM patients goes to show that this type of collaboration between the various parties involved can play an essential part in health care for pregnant women with GDM. Overall satisfaction with the program was highly positive: a good result that also indicates the interest in such initiatives and encourages the team to develop other, similar projects.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Human and animal rights This article does not contain any studies with human participants performed by any of the authors.

Informed consent Informed consent was obtained from all individual participants included in the study.

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