FIRST EDITION

DIABETES & PREGNANCY

A JOURNEY INTO THE PAST, PRESENT & FUTURE OF CARE

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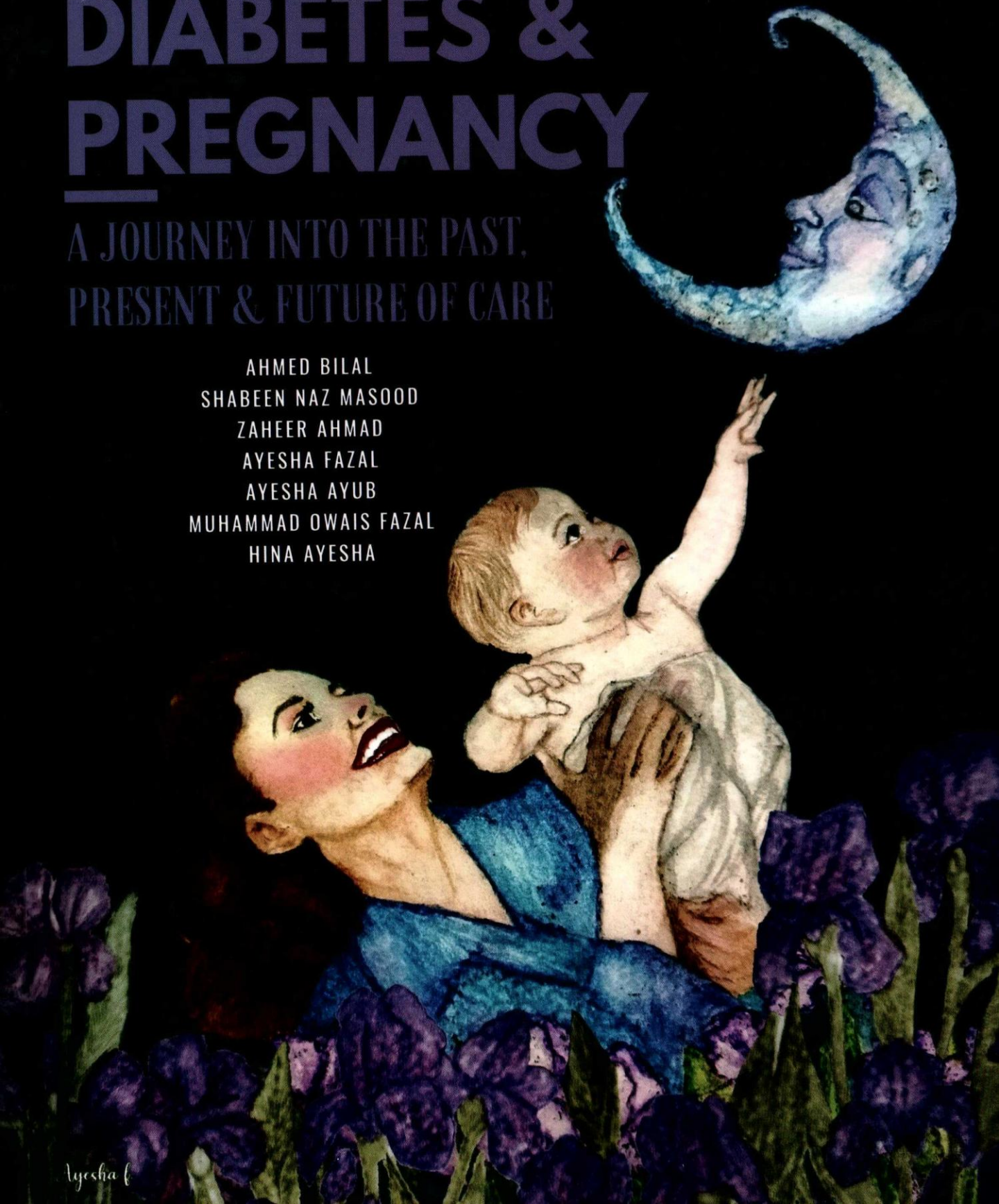

'EXPERIENCE WITH DEVELOPMENT AND IMPLEMENTATION OF A MODEL OF CARE FOR GESTATIONAL DIABETES MELLITUS' INDIAN EXPERIENCE

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INTRODUCTION

Gestational diabetes mellitus (GDM) has become a very common pregnancy complication affecting 5 to 7% of pregnancies in high-income countries[1–4]. The prevalence of GDM in India varies from 7% to 20%, depending on the diagnostic criteria used [5,6]. The adverse effects of GDM are seen in both the short term and long term. GDM is associated with a high risk of adverse pregnancy complications such as preeclampsia[7], cesarean section[8], stillbirth[9], hypoglycemia[10], and macrosomia[7]. Women with GDM are also at a substantially high risk of developing type 2 diabetes[11] and cardiovascular disease[12] later in life.

However, there have been several constraints to providing the optimum care for GDM, which include the following: lack of standardized protocols, poor knowledge about GDM among health care professionals, and lack of coordination between different HCP's involved in GDM care. These are some of the major reasons for less-than-optimal care and follow-up of women with GDM [13,14].

Women in India with GDM Strategy (WINGS) study was conducted in 2013 in Chennai, Tamil Nadu in India, to address these challenges and gaps in care for GDM. The study's objective was to develop a model of care suitable for providing care for women with GDM in low resource settings, specifically in low- and middle-income countries[15].

This chapter aims to highlight some of the key issues surrounding GDM care in India and summarize some of the key learnings from the WINGS study that enabled us to address some of the critical gaps in the management and follow-up of women with GDM.

SCREENING AND DIAGNOSIS OF GESTATIONAL DIABETES MELLITUS

There have been several controversies surrounding the screening and diagnosis of GDM. In 1964, O'Sullivan and Mahan proposed the use of a 50g 1 h oral glucose challenge test (GCT) to screen for GDM followed by a confirmatory 100g 3 h oral glucose tolerance test (OGTT)[16]. Over the years, a modified version of the O'Sullivan and Mahan criteria, validated by Sacks et al., became the famous Carpenter and Coustan criteria for GDM, which soon became widely accepted[17]. The American Diabetes Association endorses the Carpenter and Coustan criteria and recommends that women with a high risk of GDM undergo glucose testing as early as possible during pregnancy[18]. In 1999, the WHO Expert Group recommended a 75g OGTT with a 2 h glucose cut point of 140mg/dl [19]. Later in 2013, WHO dropped the 1999 criteria and endorsed the International Association of Diabetes in Pregnancy Study Group (IADPSG) criteria [20] which is based on the results of the Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) study; the IADPSG criteria involves a single step 75g OGTT done at 24-28 weeks of gestation[21]. O'Sullivan and Mahan's criteria were derived and validated for future risk of diabetes in women with GDM. The WHO 1999 criteria also predicted the future risk of diabetes. The IADPSG criteria are the newer, evidence-based criteria based on predicting adverse pregnancy outcomes in both mother and baby. In India, the Diabetes in Pregnancy Study group of India (DIPSI) criteria was proposed as a single-step test for diagnosing GDM[22].

SPECIAL CHALLENGES FOR GDM DIAGNOSIS AND MANAGEMENT IN INDIA:

There are several constraints to the screening and management of GDM in India. Primary health centres are usually the first point of access to care for pregnant women in rural areas. The next level of care is the district general hospitals and medical college hospitals, usually tertiary referral centres. Access to private hospitals is limited to women in urban cities. Thus, with different health care systems, there are several barriers to providing care for women.

HEALTH CARE SYSTEM BARRIERS:

Despite adopting a policy for screening for GDM by the Government of India, issues remain relating to its implementation at the point of health delivery. From the health care system's point of view, one of the main barriers is a shortage of health care providers, especially in rural areas. Lack of uniformity in screening and diagnostic criteria leads to discrepancies in care offered by different health care providers. In addition, inadequate training of health care professionals, lack of knowledge about GDM, and lack of clear directions present a formidable barrier in ensuring timely patient management.

There is often a lack of follow-up of pregnant women referred to higher centres in rural areas, mainly due to a lack of coordination among health care providers. This is especially true when pregnant women diagnosed with very high blood glucose levels at PHCs are referred to district government hospitals. These women are most often lost to follow up as they move between the referring and reference facility. This eventually leads to less-than-optimal care being provided to them.

In some remote rural areas, lack of access to a standardized laboratory and lack of resources for performing the blood tests are huge challenges. Equipment such as glucometers, computers, and software for fetal monitoring are other major tools often not easily available in rural areas. Often, a lack of trained phlebotomists to collect venous blood samples, as required by most guidelines, pose a serious challenge in ensuring universal screening.

PATIENT-RELATED BARRIERS:

In many rural locations, pregnant women have to travel long distances to meet the doctor, and women do not routinely attend antenatal checkups in the fasting state unless they are informed earlier about this. Hence bringing women to undergo the OGTT in the fasting state at the first visit could be a challenge. Care for GDM women is further complicated because not all primary health care centres in rural areas are equipped to offer insulin treatment. Women are therefore referred to higher centres which would require more travel. Cost of treatment and unaffordability of insulin are other important barriers limiting the access to care for women diagnosed with GDM.

About postpartum follow-up, pregnant women tend to move to their maternal homes for delivery. When women move to their maternal home for the delivery, the new health care provider may not have access to the woman's previous records. This adds one more barrier to proper care and follow-up during pregnancy and, most importantly, postpartum follow-up. Challenges are seen more often in resource-constrained settings in developing nations. Women with GDM are at a higher risk of developing GDM in subsequent pregnancies, and it is essential to ensure postpartum follow-up. Table 1 summarizes the health care system barriers and the patient-related barriers to screening for GDM in resource-constrained settings.

Table 51.1: Challenges in screening for GDM in resource-constrained settings:

Health care system barriers	Patient barriers
Lack of trained health care professionals	Undergoing the OGTT in fasting state
Lack of trained phlebotomists	Late contact with the health care system
Lack of diagnostic facilities and standardized laboratories	Lack of awareness about GDM and its complications
Storage and transport of blood samples	Distance to the primary health centre/ higher centres

Issues related to availability, affordability, and access to GDM care in resource-constrained settings are much more in developing countries than in the western world. The absence of a standard approach to GDM care is a key barrier to understanding the true magnitude and burden due to GDM. Acknowledging the challenges for GDM care in India, the International Diabetes Federation launched the Women in India with GDM Strategy (WINGS) in collaboration with the Madras Diabetes Research Foundation (MDRF). The project was carried out in Chennai, in south India.

WOMEN IN INDIA WITH GDM STRATEGY (WINGS) PROJECT

WINGS project was a 3-and-a-half-year long flagship project of the International Diabetes Federation (IDF). The project aimed to improve the health outcomes of women with GDM and their babies and strengthen the health facilities' capacity. The project helped develop and implement a model of care (MOC) for GDM.[15]

THE FRAMEWORK OF WINGS MODEL OF CARE (MOC):

The WINGS Model of Care (MOC) was developed keeping in mind the pregnant mother, their families, the health care system, the community, and the global scientific audience. At the individual level, it was aimed to educate pregnant women about GDM and help improve their pregnancy outcomes; at the health system level, health care professionals were trained to diagnose, treat and manage GDM; at the community level, community health workers who work in remote or rural regions were trained. Lastly, through the scientific publications, the results from MOC have helped disseminate evidence-based information to the global community.

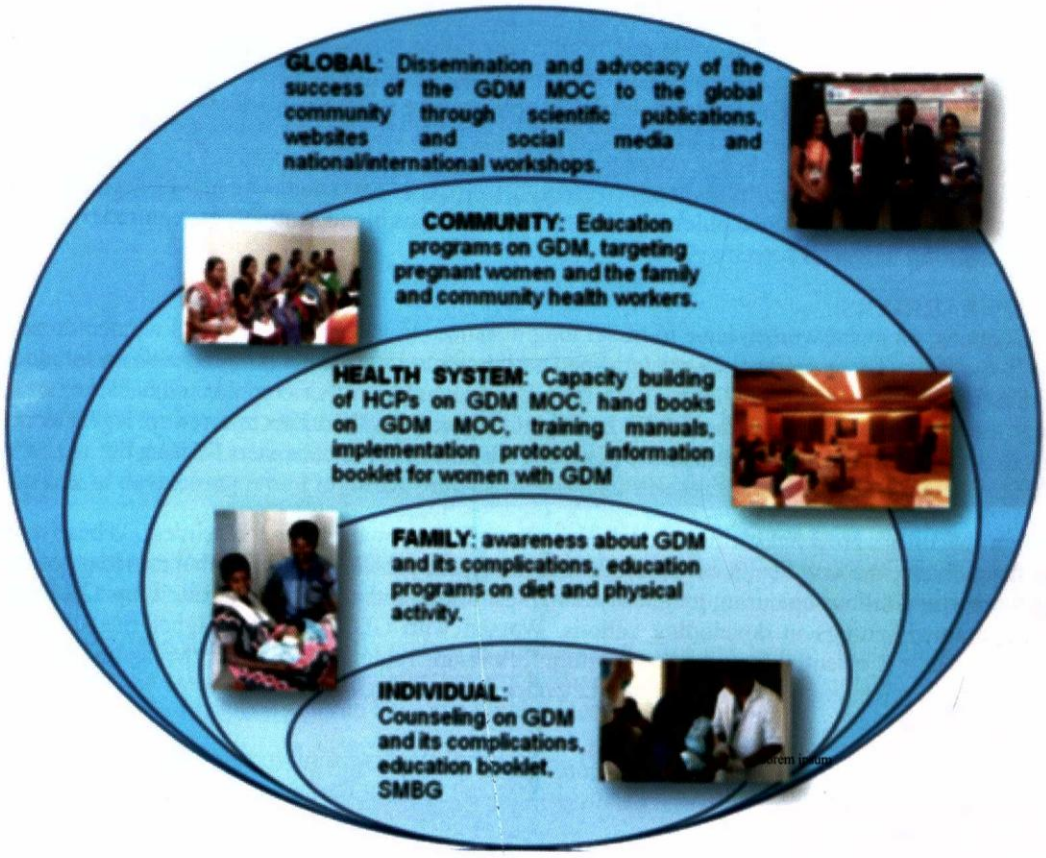

Figure 51.1: Framework for development of WINGS Model of Care

WINGS PROJECT WAS CARRIED OUT IN 2 PHASES:

Phase 1 involved establishing a comprehensive overview of current practices in GDM screening and management, understanding the burden of the GDM in India. A nationwide survey was conducted to understand the practice patterns of the health care professionals and a pilot study to determine the best screening criteria.

Phase 2 involved the development of a model of care based on evidence from Phase 1. Under the model of care, women with GDM were followed up by health care professionals throughout their pregnancy and followed up after delivery and 1 year postpartum. Implementation of the model of care involved:

1. Development of the WINGS MOC tool kits and materials
2. Identifying study sites and creating a network of collaborating centres
3. Training program for health care professionals from the study sites
4. Implementation of the MOC in the different study sites.

The development of training materials and booklets has been explained in detail in the previous publication. In short, standard operating guidelines were developed for health care professionals with a screening and management algorithm. Educational booklets were provided to women with GDM to teach them about GDM, its risk, how they are diagnosed, how to self-monitor, etc. The booklet contained general guidelines for healthy eating and keeping fit.

Before the implementation of the model, health care professionals underwent rigorous training. As part of the model of care, women with GDM were educated about GDM, its impact on their health and their babies; they were provided face to face counselling with nutritionists and health care professionals to drive home the message of proper management and follow up of GDM during pregnancy and postpartum. The model was found to be effective in that the adverse pregnancy outcomes were very similar between women with GDM and women with normoglycemia.

RESULTS FROM THE WINGS MODEL OF CARE:

Women with GDM who were followed up under the WINGS Model of Care (MOC) had pregnancy outcomes similar to women without GDM. This was achieved through a structured program under the MOC focusing on women's counseling and follow-up. Many women were followed up only on medical nutrition therapy and increasing physical activity[23]. The WINGS MOC also helped bring about a positive behavioural change in women, with more women meeting the physical activity recommendations and reduced time spent in sedentary activities[24]. One of the most important results from the project was the postpartum follow-up of women with GDM. Despite clear evidence about the substantial risk that GDM imposes on women after delivery, rates of postpartum follow-up have been low in most parts of the world[25]. Under the WINGS MOC, women were followed up throughout pregnancy and after delivery through telephone calls and were reminded about returning to test for diabetes postpartum. Several women were unable to visit the hospital due to a newborn's demands. In such scenarios, postpartum testing was arranged at their respective homes.

In most cases, pregnant women in India move to their mother's home for delivery. Foreseeing this, the contact information of the pregnant women's parents was collected, and details of delivery and neonatal birth outcomes were collected through telephone. Women who had left the country were contacted through WhatsApp and email, and their postpartum OGTT test results were collected. Ultimately, the project reached a 96% postpartum follow-up rate[26]. THEREFORE, the WINGS MOC proved to be a low-cost model of care to help screen and manage women with GDM in India.

HOW CAN WE IMPROVE POSTPARTUM GLUCOSE TESTING?

Recently several studies have tried to address the low postpartum follow-up testing, and many researchers have come up with possible ideas/ solutions to tackle the issue. Proactive systems have shown to be useful in increasing the rate of adherence to postpartum follow-up[13]. The health care provider took the extra time and effort to send reminders through telephone, email, or SMS had increased the odds of postpartum visits by 3 times more than when reminders were not sent.[27]

CONCLUSIONS

Because of the rapid conversion to type 2 diabetes after GDM, it is important to emphasize the value of proper screening for GDM and timely postpartum follow-up with cultural adaptations to achieve the same. Barriers to GDM care at both individual and health care provider levels must be addressed to improve compliance rates and ensure women with a history of GDM do not undergo subsequent pregnancies with undetected diabetes. Staying updated on current recommendations, providing dedicated teams of health care professionals to provide counselling and support to women, implementing home-based care where possible, introducing reminder systems are some ways in which we can address low postpartum follow-up rates.

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About the Book

The textbook on, "Diabetes and Pregnancy: Past Present and Future of care" provides a comprehensive overview of diabetes care in pregnancy. It compiles evidence, information and guidance on the area making it an essential tool for practice with a special interest in gestational diabetes. This book also offers a comprehensive review of the science, clinical management, and medical implications of gestational diabetes mellitus. This is also as a useful resource for those working in community and acute settings. This book is a timely important contribution especially from the developing world. I congratulate the authors for undertaking such an important task.
-Akhtar Hussain

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