

Breast feeding: preventive therapy for type 2 diabetes

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Body

Abstract

Exclusive breastfeeding for six months, continued along with top feed up to the age of 2 years and beyond, is strongly recommended by the World Health Organization. Apart from the various benefits that it provides, breast feeding may also serve to prevent the development of type 2 diabetes and metabolic syndrome in mothers, and type 1 diabetes and overweight/ obesity in their offspring. This review discusses the evidence related to breastfeeding and type 2 diabetes. It highlights pertinent aspects of breast feeding management, which can help facilitate optimal use of this natural preventive intervention.

Keywords: Type 1 diabetes, Type 2 diabetes, Metabolic syndrome, Prevention, Lactation.

Introduction

Breast feeding is an essential component of post-partum management. This becomes even more important when pregnancy has been complicated by diabetes mellitus. Breast feeding has been found to confer multiple health benefits to both infant and mother. In women with gestational diabetes mellitus (GDM), breast feeding has been reported to reduce the development of metabolic syndrome,¹ while in their offspring, it decreases the risk of becoming overweight or obese.² Exclusive breast feeding is also associated with a reduced incidence of type 1 and type 2 diabetes mellitus.³ All members of the GDM care team should be aware of these benefits. However, there exist various, bio-psychosocial barriers and challenges to breast feeding initiation. These need to be identified and resolved, through a comprehensive approach, involving not only the patient, but her family members as well.

Evidence and Mechanism of Action

The evidence related to breast feeding and GDM has collated and discussed by Much et al and Gunderson et al in detail.^{4,5} While earlier studies showed no association between breast feeding and the development of type 2 diabetes in women with GDM, recent studies have demonstrated the protective effect of lactation on metabolic parameters.⁴ Breast feeding improves metabolic function by various mechanisms (Table-1).^{4,5} In postpartum women with GDM, breast feeding has been shown to improve glucose tolerance. In women who breast fed their offspring for 15 minutes during an OGTT, post-challenge glucose levels fell significantly as compared to those mothers who did not feed their babies during the course of OGTT.⁶

Table-1: Postulated mechanisms by which breast feeding improves metabolic health.

A. Lactogenesis

Requires glucose uptake

Uses non-insulin mediated pathway

Attenuates hyperinsulinaemia

Promotes lipid/ triglyceride utilization

B. Prolactin

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- Increases beta cell proliferation
- Increases beta cell mass
- May increase expression of menin

C. Lactation

- Promotes energy expenditure
- Promotes emotional well being
- May reduce stress

Status of Breast Feeding in GDM

Women with history of GDM, especially if obese and/or required insulin for treatment during pregnancy, report lower rates of breast feeding initiation, and earlier weaning.^{7,8} This may be due to reduced prolactin response to suckling, anatomical difficulties with large breasts, a higher operative delivery rate, and a higher nursery admission rate, which keeps the neonate away from the mother.⁴ Other reasons for non-initiation of breastfeed that we have encountered, includes maternal fear of transmission of diabetes to the child.

Adequacy of Lactation

Mothers often feel that their milk production is inadequate, and start early top feeds in a misguided attempt to ensure optimal nutrition for their offspring.⁹

This is usually not the case. Women can be reassured by providing a simple checklist (Table-2) which describes clinical markers of adequacy of lactation.

Table-2: Markers of adequacy of lactation.

Maternal history

- Adequate maternal- infant interaction during feeding
- Drip milk from contralateral breast during feeding

Infant history

- Baby satisfaction/adequate sleep
- Urine void greater than 6/day

Examination/ investigation

- Weight gain 30g/day in first month
- Breast milk Na concentration less than 16 mmol/l

Management

Counselling about the benefits of breast feeding, anticipated barriers and challenges, and ways to overcome them, should begin in the antenatal period. The end of the third trimester is an appropriate time to begin such discussion. Doubts and myths must be explored, discussed, and dispelled.

Examination of the breast is important to ensure and maintain optimal nipple and breast hygiene. Conditions such as retracted or cracked nipples, and skin infections can be addressed prior to delivery.

Support is important immediately after delivery. Baby- friendly policies should be practiced in the maternity wards, and breast feeding should be initiated as soon as the baby is ready to feed, and the mother is well enough to suckle. This should ideally be within 60 minutes of a vaginal delivery.¹⁰ Rooming- in should be encouraged, and prelacteal feeds avoided. Adequate attention should be paid to maternal nutrition as well as maternal emotions. Various nutritional galactogogues are used , based upon local traditions: if this practice promotes family bonding, and allows active involvement of the mother-in-law, there is no harm. It must be emphasized, however, that there is no robust evidence to support the use of any galactagogue.¹¹ Metoclopramide, in a dose of 10 mg tds, is often prescribed as a galactagogue.¹¹

The medication record of the postpartum mother should also be reviewed: only those drugs which are safe in lactation should be prescribed. In women with diabetes, insulin remains the safest option during lactation. Glibenclamide and metformin are other options which can be tried if absolutely necessary.^{12,13} A pragmatic approach to the use of metformin in pregnancy has already been published.¹⁴ Women with diabetes who are

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breastfeeding should continue to avoid any medicines for the treatment of diabetes complications that were discontinued for safety reasons in the preconception period.¹³

Lactation for Neonates in Nursery

For neonates who are admitted in nursery, mothers may provide expressed breast milk (EBM), using a breast pump. Early institution of expression is important, to avoid later complaints of inadequacy of lactation and engorgement of breast.

Room temperature milk storage is safe for at least 3 to 4 hours and may be safe for up to 8 hours when it has been expressed in a clean manner and stored in cooler room temperatures. Milk may be stored for at least 72 hours refrigerated at 4°C or less. New, warm milk should not be added to cooled, stored milk as this could increase bacterial contamination. The antibacterial activity in milk declines, with increasing duration of storage.¹⁵

Expressed breast milk must be collected in a glass or plastic bowl, and must not be boiled.¹⁶ Stainless steel containers should be avoided as immunoglobulins are reported to stick to steel surfaces.¹⁶

Summary

Breast feeding provides a natural, and effective means of preventing metabolic syndrome in both women and their offspring. While the benefits of breast feeding are of relevance to all postpartum women, women with history of GDM (and their infants) are at relatively higher risk of developing dysmetabolism in later life. Breast feeding should therefore be promoted strongly in women with GDM, as a means of improving, long term health outcomes. Necessary encouragement, support and management must be provided to ensure institution, and maintenance, of breast feeding in them.

All members of the GDM care team, including endocrinologists, diabetes nurses, educators, and dieticians, should be aware of potential misconceptions related to breastfeeding. They should work closely with the mother, explaining the proven benefits of this process, encouraging her to breastfeed, and providing appropriate support where necessary.

We suggest a simple mnemonic (Table-3) similar to one related to the post partum management of GDM, to highlight and simplify breastfeeding management. The points embedded in the ABCDE mnemonic promote comprehensive breast feeding management, from antenatal to postpartum period, involving all care providers, while keeping the women with GDM at the centre of decision-making.

Table-3: ABCDE of Breast feeding.

A Assess breast/nipple hygiene
B Benefits, to communicate
C Challenges, to identify and overcome
D Drug therapy, to ensure safety for baby
E Encouragement, to offer

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