

Audit on outcome of midwife-led gestational diabetes care

Abstract

The aim was to compare the pregnancy outcomes of gestational diabetic women who received midwife-led care to those who received specific treatment from multidisciplinary teams and to determine the progress of gestational diabetes mellitus (GDM) to type 2 diabetes mellitus (T2DM).

A retrospective audit was used on a cohort of 291 gestational diabetic women at an east London maternity unit. Outcome measures were ethnicity; attendance at the clinics; mode of deliveries; premature birth requiring admission to neonatal unit; macrosomia and diagnosis of T2DM 6 weeks post delivery.

The highest proportion of GDM were Bangladeshi (81.7%) and African (7.9%) compared to (4.1%) Caucasian. This is representative of the ethnic group of T2DM in the 2005 Confidential Enquiries into Maternal and Child Health (CEMACH) report. Clinic attendances during the first 6 months were reduced by 50% with significantly shorter waiting times. Sixty-two percent of the women delivered vaginally; 31% by caesarian section and 6% of women had assisted deliveries. Adverse pregnancy outcomes—macrosomic babies (1%, 3/298) and premature babies (4.1%, 13/298) born at 29–35 weeks—were lower in women receiving treatment. Four percent (12/219) women progressed to T2DM at 6 weeks post delivery.

The National Institute for Health and Clinical Excellence (NICE) (2003) do not recommend routine screening. If nothing else, these 4% of women are the same women at risk of unrecognized, undiagnosed and untreated T2DM. CEMACH (2005) data suggested these women have particularly poor outcomes. The evidence of this audit led to the following changes in the diagnostic value for impaired glucose tolerance: the biochemistry value for 2 hours post 75g glucose is now equal to or more than 7.8mmol/L (World Health Organization, 1999; NICE, 2008). The gap identified in the criteria for selective screening is to screen all women from minority ethnic group including South Asian, Middle Eastern, African and Black Caribbean.

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The antenatal diabetes clinic at an east London maternity unit experienced a volume of referrals that had become difficult to manage. The clinic's demography covers a large Bangladeshi community among whom risk of diabetes during pregnancy is higher than the national average. The number of clinic attendees on one day alone had exceeded 100 and some women were waiting 3 hours or more to be seen. This scenario presented significant risk for women whose blood glucose was not stable.

It was known that the women who attended the clinic would be either high or low risk for diabetic complications during pregnancy. High risk attendees are those women who have pre-existing

type 1 or type 2 diabetes. There was opportunity therefore to use the specialist diabetic resources more effectively. This improvement project aimed to achieve this by targeting specialist services at those women most at risk and re-designing the overall flow of antenatal women through the midwife-led diabetic services.

Solution methods

A diabetes specialist midwife led a team of key stakeholders from the NHS Trust and local Primary Care Trust (PCT) to achieve the changes in practice. This team included diabetologists, obstetricians, diabetic specialist nurses, antenatal clinic staff, community midwives, health advocates and clinic administrative assistants. A number of approaches were used to support the change process:

- New guidelines for managing diabetes in pregnancy were produced for local implementation by the trust. These guidelines specified the intention of redirecting pregnant women care flows according to their level of risk for diabetic complications. A launch event for the guidelines was attended by 97 stakeholders including primary and secondary health care professionals, dietitians, pharmacists and biochemists
- Community midwives were provided training sessions and workshops to manage the low risk gestational diabetic women in the community. In addition to the six workshops a number of meetings took place to specify the care pathways and referral process
- A weekly educational group was conducted by dietitian and diabetic nurses assisted by health advocates for all women referred to the diabetic clinics
- Acute service midwives were provided with a similar training agenda to ensure their appropriate management of women in the high risk group
- Six months after the launch of the new guidelines and training sessions, the midwife-led model of care was implemented.

Methodology

A retrospective audit was done on a cohort of 291 women with gestational diabetes mellitus (GDMs)

who attended the postnatal diabetic educational clinic 6 weeks following childbirth. Comparison of outcomes were made between women receiving midwife-led care and women who received specified treatment from a diabetologist.

Data on ethnicity, attendances at clinics, mode of deliveries, macrosomia, prematurity neonatal admissions, progression to type 2 diabetes mellitus (T2DM) were extracted from case notes, electronic patient records and biochemistry reports.

Results

Among the cohort of 291 women, 74% ($n=216$) and 24% ($n=69$) were newly diagnosed gestational diabetes and previous gestational diabetes respectively and 2% ($n=6$) women were not screened.

Ethnic group

Women were populated between the group receiving midwife-led care and the group receiving treatment as illustrated in Figure 1. Bangladeshi (81.7 %) being the highest followed by African (7.9%) and Caucasian (4.1%) groups is representative of the ethnic group of T2DM as reported in the Confidential Enquiries into Maternal and Child Health (CEMACH) (2005).

Clinic attendance

During the first 6 months of implementing the midwife-led service, the multidisciplinary diabetic clinic attendances were reduced by more than 50% as illustrated in Figure 2.

Figure 3 illustrates attendance at the clinic managed by midwife, nurses and dietitian. The weekly number of attendees were increasing as more women were classified as low risk who were cared for by midwife and GP throughout their pregnancy.

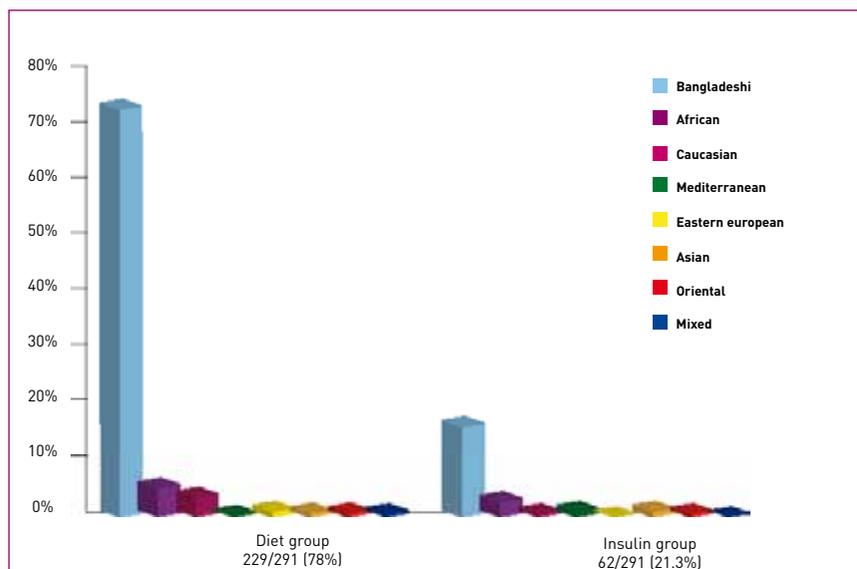


Figure 1. Ethnicity

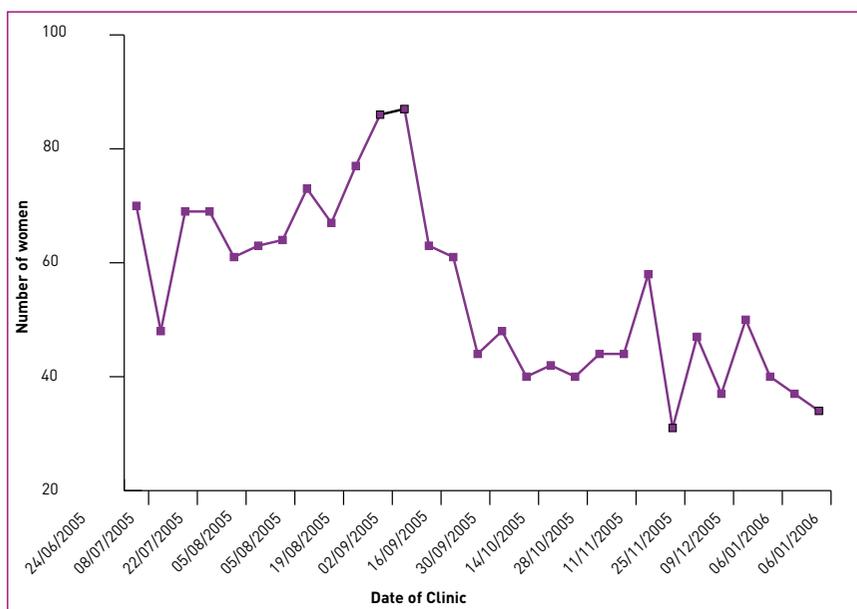


Figure 2. Combined antenatal clinic attendance

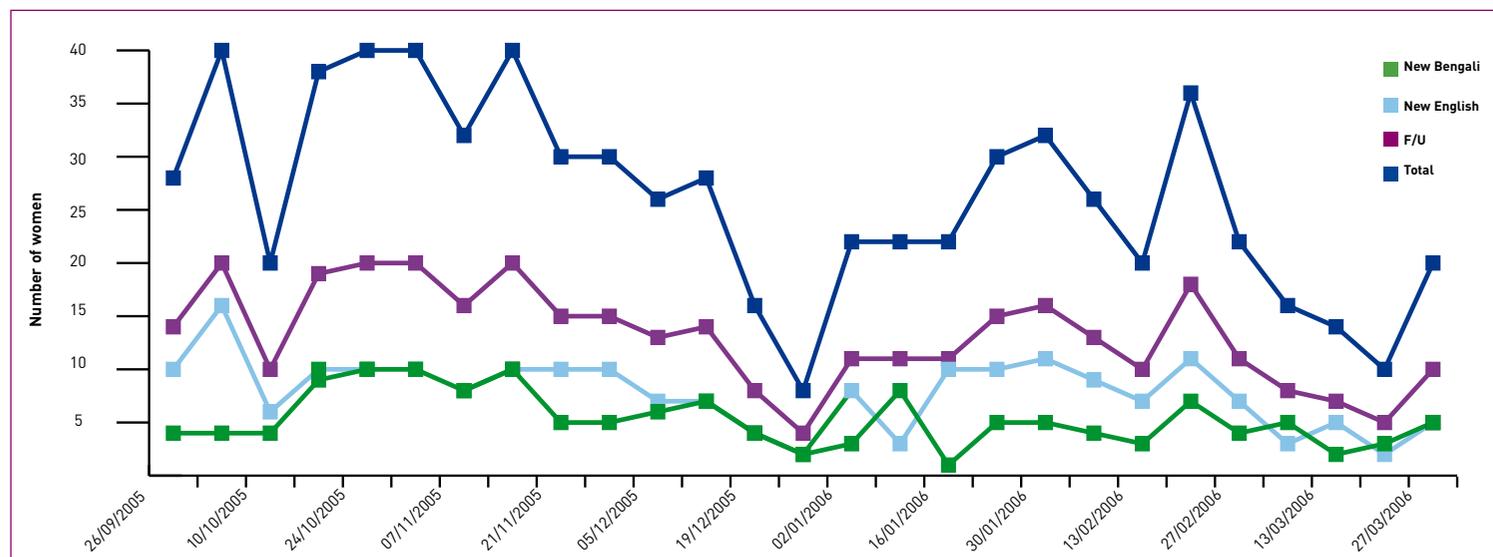


Figure 3. Midwife-led clinic attendees

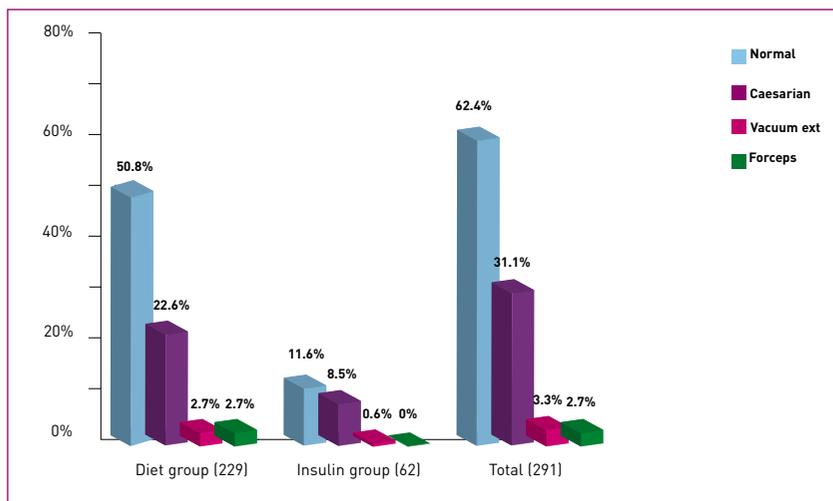


Figure 4. Mode of deliveries

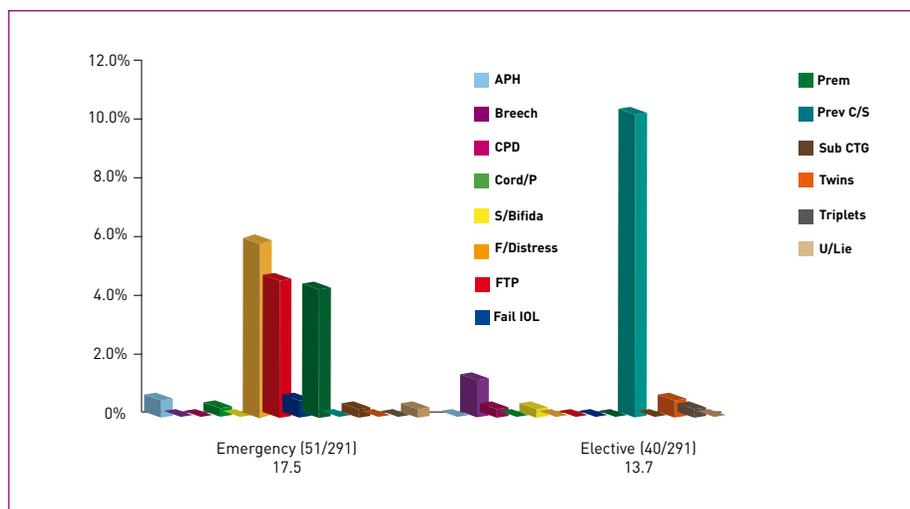


Figure 5. Caesarean sections

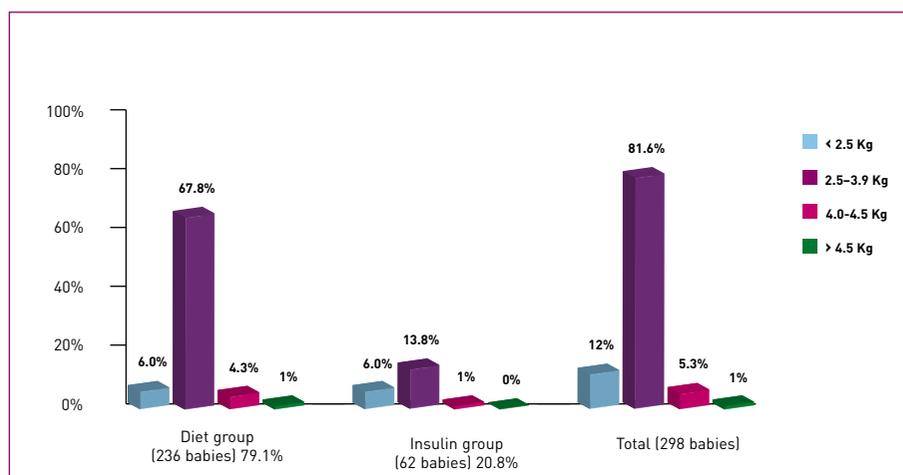


Figure 6. Birth weights

Mode of deliveries

Fifty percent (50%) and 11% of women on dietary treatment and insulin treatment respectively delivered their babies vaginally. However, more babies (22.6%) were born by caesarean section to mothers on dietary treatment compared to 8.5% of women

receiving insulin (Figure 4).

The main indicators for elective caesarean (13.7%) were women who had previous caesarean birth. For emergency caesarean (17.5%) indicators were prematurity complicated by pre-eclampsia, fetal distress, antepartum haemorrhage, twins and more as illustrated in Figure 5.

Admission to neonatal unit

Twenty five neonates (8.3%) were admitted to neonatal care owing to severe prematurity, hypoglycemia, jaundice, respiratory distress and one spinal bifida. Thirteen babies (4.1%) were delivered between 29–35 weeks gestation. Among these neonates, 3 were delivered vaginally and 3 were born to mothers who received insulin treatment for gestational diabetes.

Birth weight

Over 81% of babies were born within the normal weight range of 2.5–3.9 kg as illustrated in Figure 6. Only 3 babies (1%) weighing in excess of 4.5 kg were born to mothers in the non-insulin treated group and there were no reports of difficulty in delivering the shoulders. None of the women in the insulin treatment group delivered any infant in excess of 4.5 kg.

Progression to T2DM

Six weeks following deliveries, this cohort of women with gestational diabetes were screened for diabetes. They attended a midwife-led postnatal group session for health prevention and preconception education. They were given an explanation of their screening report and the progress of their diagnostic gestational status based on the WHO (1999) criteria. Four percent (12/291) of women of which 2.7% and 1.3% from the group who received insulin treatment and dietary treatment respectively remained diabetic is illustrated in Figure 7. However, 11% (33/291) of women diagnosed as impaired glucose tolerance are still at risk of developing T2DM in later life.

Discussion

The introduction of the midwife-led model of care demonstrated that women who would previously have been managed by the acute trust multidisciplinary team are now attending primary care clinics conducted by community midwives and alternating with GPs. In turn, high risk women are receiving timely, focused individual consultations with the specialist team. The outcomes associated with this change in practice are that GPs and community midwives have developed knowledge and skills on the management of low risk gestational diabetes.

Lowering the burden on specialist services means that women who need those services now see the same named midwife with non-adverse pregnancy outcomes. As such, the rate of 4.1% premature deliveries compared favourably with the local rate of 12% for pre-existing diabetic women. Although the overall caesarean rate of 31.2% was high, the emergency rate of 17.5% is lower than the local non-diabetes rate of 18.2%. The rate of 1% severe macrosomia is favorable to the non-diabetic general population of 2%.

NICE (2003) does not recommend routine screening. These 4% of women who progressed to T2DM are the same women at risk of unrecognized, undiagnosed and untreated T2DM. CEMACH (2005) data suggested these women have particularly poor outcomes.

Releasing capacity has also allowed other service components to develop. A postnatal diabetic educational group has been established to promote healthy lifestyle and prevention of developing T2DM in particular for the group diagnosed with impaired glucose tolerance.

Conclusion

This project demonstrated the possibility of redesigning services to benefit both women and staff but the process needed careful consideration of pathways and teamwork. Understanding whole systems it is possible to devise and deliver a range of interventions for different audiences to buy in or adopt new working methods. Awareness of national guidelines among the workforce to drive, guide and support improvements is important. The workforce development is the acquisition of new knowledge and skills by staff to take on new roles. Ongoing education and training to sustain developments is vital.

Recommendations

Following this study the authors make the following recommendations:

- Ongoing education and training of workforce to sustain developments
- Guidelines to be updated in line with recommendations from the (NICE, 2008)
- Criteria for screening to include women from country of origin in South-East Asia, Middle East, African and Black Caribbean (NICE, 2008). **BJM**

Acknowledgement: This project would have NOT been possible without the team effort from many key players to whom I owe a debt of gratitude. Particular credit is due to: The lead Obstetrician, Mrs A. Sanghi for her wisdom in pioneering the project. The lead Diabetologist, Dr. D. Peterson for his expert knowledge and experience in guiding

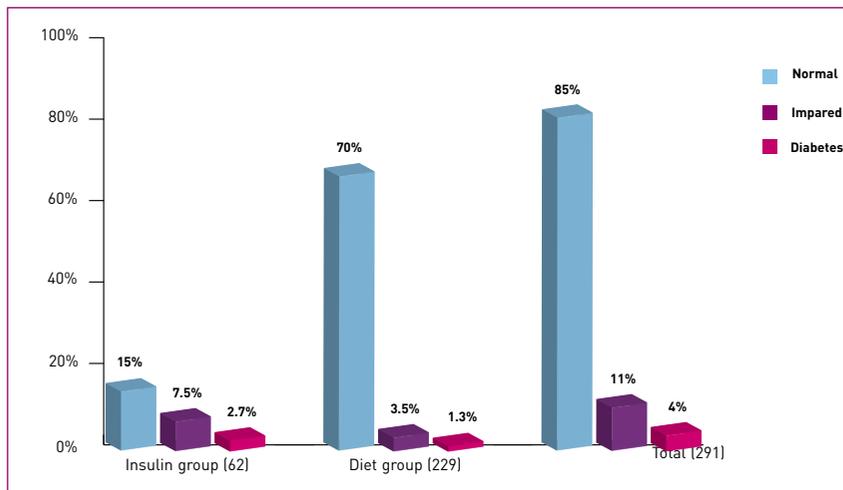


Figure 7. Progression to type 2 diabetes mellitus (T2DM)

us through the process. All the maternity staff in particular the Community Midwives for their co-operation and ability to implement the midwife-led model of care and not forgetting the Bilingual Health Advocates and Dietitian.

Confidential Enquiry into Maternal and Child Health (2005) *Pregnancy in woman with type 1 and type 2 diabetes*. CEMACH, London

National Institute for Health and Clinical Excellence (2003) *Antenatal routine care for healthy pregnant women*. NICE, London

National Collaborating Centre for Women's and Children's Health (2008) *NICE clinical guideline 63. Diabetes in pregnancy: management of diabetes and its complications from pre-conception to the postnatal period*. NICE, London

World Health Organization (1999) *Definition, diagnosis and classification of diabetes mellitus and its complications*. Report of a WHO consultation. WHO, Geneva

Key points

- The introduction of the midwife-led model of care demonstrated that women who would previously have been managed by the acute trust multidisciplinary team are now attending primary care clinics conducted by community midwives and alternating with GPs.
- The National Institute for Health and Clinical Excellence does not recommend routine screening. These 4% of women who progressed to type 2 diabetes are the same women at risk of unrecognized, undiagnosed and untreated type 2 diabetes.
- Releasing capacity has allowed other service components to develop. A postnatal diabetic educational group has been established to promote healthy lifestyle and prevention of developing type 2 diabetes in particular for the group diagnosed with impaired glucose tolerance.
- This project demonstrated the possibility of redesigning services to benefit both women and staff but the process needed careful consideration of pathways and teamwork.
- Ongoing education and training to sustain developments is vital.