

ORIGINAL PAPER

Practice of Antenatal Breast Expression in National Health Service in England

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ABSTRACT

Purpose: Antenatal breast expression (ABE) is widely used in National Health Services (NHS) in England without any evidence of its safety and efficacy. The purpose of this study was to investigate the extent of its use by professionals in NHS settings in England. **Methods:** An online questionnaire was sent to healthcare professionals involved in providing care to pregnant women in maternity units in England. **Results:** 56 maternity units in England with delivery rates varying from 1600 to 11,000 per annum responded to the survey including 75% response from the large hospitals. Most hospitals are offering ABE at 36-37 weeks with an aim to reduce hypoglycaemia and neonatal admissions to special care in diabetic antenatal women. **Conclusion:** Despite of no proven evidence of safety and efficacy, ABE is practiced in many trusts, which have huge cost and time implications, hence a clear need of evidence and guidance.

Keywords: Antenatal Breast Expression, Diabetes, Pregnancy, Hypoglycaemia, Special Care Admission

Key Notes: This paper reviews the extent of the practice of antenatal breast feeding particularly in diabetic women in the national health system in England, whilst its safety and efficacy is yet to be proven.

INTRODUCTION

Antenatal Breast Expression (ABE) expresses colostrum in antenatal period either by hands or sometimes using breast pumps. This was first documented during the mid 20th century where it was described as a rationale to increase the milk flow and lactation postnatally.^{1,2} ABE has also been described as potential benefits in reducing breast feeding problems postnatally,³ its effect on ripening the cervix and labour augmentation.⁴ More recently, ABE was tested for its feasibility of expression, storage and provision of stored colostrum in diabetic pregnant women for the infants if they became hypoglycemic at birth.⁵

Currently the practice of ABE is widespread and worldwide and subjectively seems that many hospitals in England advocate for this practice and is most commonly advised in high-risk pregnancies such as diabetes. Poorly controlled pre-existing diabetes (type 1 or 2) can complicate pregnancy by 3-6 times with increased incidences of major fetal congenital abnormalities and spontaneous miscarriages.⁶ A Confidential Enquiry into Maternal and Child Health reported of a 5 times likely risk of still born babies and are 3 times likely to die in their first month of life in diabetic mothers.⁷ Many units in England run a dedicated combined Medical-Obstetrics antenatal clinic for diabetic women including multidisciplinary team of obstetricians, and diabetic specialist team. The aim is to optimise the diabetic control and achieve a safer pregnancy and neonatal outcome. Given the complexity of this metabolic and vascular condition, there are increased risks of intervention to the pregnancy in diabetic women, which may result in an increased risk of induction of labour, instrumental delivery and emergency caesarean sections. Neonates of diabetic women are at an increased risk of hypoglycaemia secondary to hyperinsulinaemia and may require early and frequent feeding to avoid hypoglycaemia. With increased interventional deliveries, there may be delayed opportunities of early skin-to-skin contact and breast-feeding initiation. It is a perceived notion that often these infants are given glucose or formula milk and admitted to special care baby unit (SCBU) to maintain normoglycemia. To reduce the incidence of neonatal hypoglycaemia and admission to intensive/special care, an increasing number of maternity units in England practice antenatal breast expression in diabetic women. The expectation is that antenatal expression and the stored

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colostrums may then be used for these infants whereby the mother is unable to provide early feeding, therefore preventing the potential hypoglycaemia and the admission to SCBU.

Breast feeding rates in England are much lower compared to other European countries. UNICEF demonstrated in and infant feeding survey by baby friendly initiative in 2012 that only 17% mothers across England breastfed exclusively at 3 months and only 1% at 6 months. The Confidential Enquiry into Maternal and Child Health highlighted the importance of baby friendly initiative practice especially in diabetic mothers and recommended skin-to-skin contact and breastfeeding within one hour of birth.⁷ The benefits of metabolic control of breast feeding were particularly emphasised in diabetic mothers.⁷ Furthermore lactogenesis is delayed in diabetic mothers by at least 24 hours as compared to the non-diabetic women.⁸ ABE may be considered as a factor to increase the chances of breast feeding in such women, as women perceive already "primed" for breast feeding. Moreover, there is a subjective feeling that those women who choose to do ABE, will be more motivated and are more likely to continue to breastfeed longer postnatally. National Institute for Health and Care Excellence (NICE) guidelines suggest that there is a need for randomised controlled trials (RCT) to determine the clinical and cost effectiveness of ABE in diabetic women.⁹

Recent Cochrane review article¹⁰ stated, "There are no published or unpublished randomised controlled trials comparing antenatal expressing with not expressing. There is no high level evidence about the potential benefits and harms of the expression and storage of breast milk during pregnancy by women with diabetes".

Although it seems that the practice of ABE is performed at many units in England, however the exact number of these units is not known. The key purpose of this survey was to identify the preponderance of this practice across units in England.

METHODS

This was a prospective online survey sent to all healthcare professionals providing care to pregnant women including diabetes specialist midwives, breast feeding midwives or other professionals involved with breast feeding and diabetes. A descriptive analysis of the data received was performed.

RESULTS

In total 56 units responded. Majority of the respondents were midwives (85%). Remainders were infant feeding specialists (11%), diabetic nurses (2%) and obstetricians (2%) (**Figure 1**).

The number of deliveries from the respondent trusts varied from 1600 to 11,000 deliveries per annum (**Figure 2**).

Of the 56 responses, 41 (73%) were from district general hospitals (DGH) and the remaining 15(27%) were from tertiary hospitals. Amongst these DGH, 14(25%) were from smaller DGH and 27(48%) were from a much larger DGH (**Figure 3**). A unit with the deliveries of >3000 per year was considered a smaller trust whilst a larger DGH delivered >3000 deliveries per year.

The response was received from various regions across England (**Figure 4**).

73% of the responding units offered ABE only to diabetic women

whilst 25% offered to all high risk women. 19% units offered ABE to all pregnant women. Majority of units (98%) would advise ABE at 36-37 weeks, and very few units (2%) will advise it at 35, 38 or 39 weeks.

Most units advocate ABE to their pregnant population to reduce the chances of fetal hypoglycemia (92%) and to reduce the incidence of neonatal admission (67%), while some viewed this to stimulate labour (8%). 33% units offered ABE to improve breast feeding rate. These units believed that ABE will provide the mother with the confidence and empowerment in relation to post natal breast feeding, and this will simultaneously help reduce the post natal supplement formula milk. Some units are doing ABE for more than one of the above reasons.

Interestingly most units have either not audited their practice of ABE, or not sure of an audit (89%). Only 11% units believe that they have audited their practice of ABE.

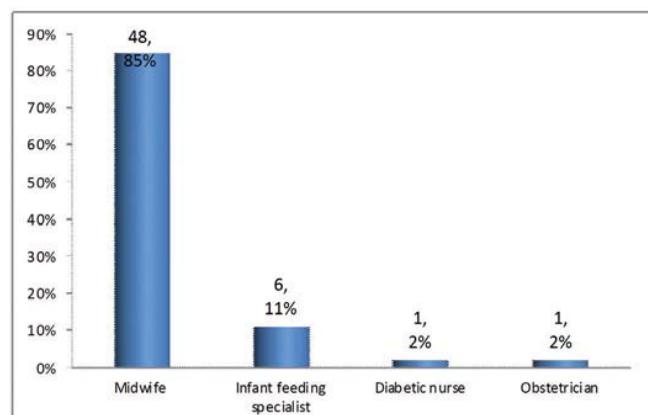


Figure 1 Respondents as per speciality role

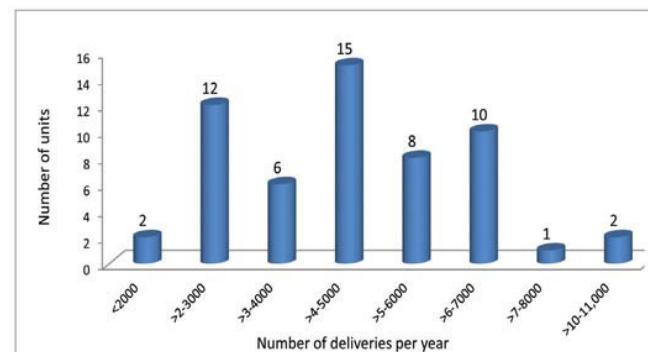


Figure 2 Number of units responded according to the delivery rate

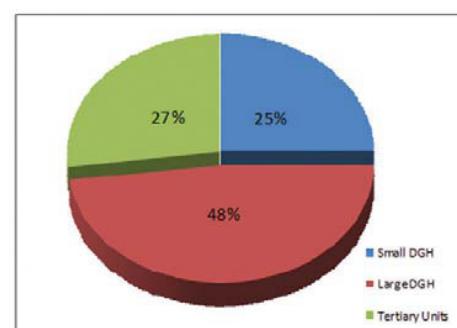


Figure 3 Response according to the size of unit

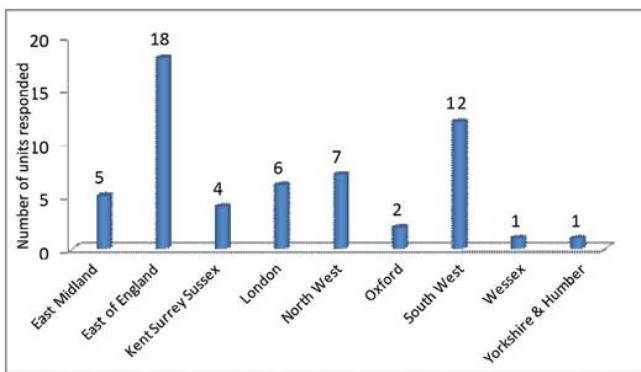


Figure 4 Response as per region in NHS

DISCUSSION

There has been no randomised controlled trial (RCT) worldwide till date reviewing the safety and efficacy of ABE and yet this is a widely used practice in the NHS costing hugely without any evidence. Diabetic women in general are considered to be a high risk population for higher perinatal morbidity and mortality rate and there is also an increased risk of neonatal admission specially with fetal hypoglycaemia if these babies are not fed within 1 hour of delivery. It is a perceived notion that by using stored colostrums, the incidence of neonatal admission due to the fetal hypoglycaemia can be reduced. However, a small retrospective cohort study¹¹ (Soltani and Scott, 2012) showed the trend of a higher rate of special care baby unit admission for babies from the breast milk expression group as compared to those who did not express antenatally. Although this was a small retrospective study and the number of admission to SCBU were not statistically significant, however, obtaining the result contrary to belief is concerning about this practice. Local data from author's hospital (unpublished) also revealed that there was no statistically significant reduction in overall admission rate to SCBU as well as the neonatal hypoglycaemia was not reduced in the women where neonates used expressed colostrum.

An appropriately powered RCT is needed to determine the safety of this practice and its acceptability to women and health professionals before it can be recommended for implementation in practice. The research on ABE needs to ascertain the proportion of women with diabetes undertaking ABE, the percentage of those that succeed in expressing and storing milk, and finally the proportion of neonates that are fed antenatally expressed milk. If ABE is proven to be safe and effective for the mother and the baby, this practice can then be instigated in a wider practice in NHS with evidence, however if this practice is proven unsafe and/or not effective, women can be counselled appropriately and expenses and resources can thus be avoided in several NHS maternity providers. This survey indicated that 75% of the units, which were either large DGH or tertiary centres, currently employ this practice, which has huge cost implications. Each unit in the NHS encounters approximately 10-12% of the antenatal women with diabetes suggesting a significant number of antenatal women being counselled and advised for ABE, which equates to a significant involvement of the NHS resources.

LIMITATION OF THE STUDY

This study is not providing a representative cross section of the professionals and therefore has its limitations, as majority of responders were midwives.

STRENGTH OF THE STUDY

Although only 56 units responded, this result can be extrapolated as a fair representation of the maternity units across the England as the responses were received from 9 regions across England. 75% of the responses received were from large DGH and tertiary units. The units with delivery rates up to 11,000 per annum also responded to this survey.

CONCLUSION

This survey provides an overview of the use of ABE practice in the NHS setting in England. There is no evidence of safety and efficacy of ABE so far and yet it is practiced in many units across England without any appropriate audit of this practice. This may however have a huge time and cost implications in an already constraint financial situation in the NHS.

Acknowledgements: All professionals and units responded to the survey.

Conflict of Interest: None

Ethics Approval: Local R&D approval was sought. As this survey did not involve any patients, no further approval was required.

Author declaration: "I declare that this work was done by the author named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the author". The author SP conceived and designed the study, collected and analyzed the data.

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ORIGINAL PAPER

A Study on Pineal Gland and Melatonin in relation to 'Severe Depressive Episode'

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ABSTRACT

The pineal gland or epiphysis cerebri is a small grey organ occupying a depression between the superior colliculi. The importance of the pineal gland lies in its function. The gland is a neuroendocrine gland and consists of parenchymal cells, called pinealocytes and neuroglial cells. The pinealocytes secrete a hormone called melatonin. Melatonin, 5methoxy-N-acetyltryptamin, is a neurohormone of the brain produced by pineal gland. The precursor to melatonin is serotonin, a neurotransmitter that itself is derived from the amino acid tryptophan. On the other hand 'severe depressive episode' is one of the commonest problems encountered by the doctors in the tropical countries like India, Pakistan and Bangladesh. Two particularly notable features of depression is diminished nighttime release of melatonin and abnormal sensitivity to melatonin suppression. Variation of the blood melatonin level, in the patients suffering from "severe depressive episode" with the normal individuals was seen in two groups: group "A" & group "B". In group "A" (control) subjects were selected from the medical and non medical volunteers working at Gauhati Medical College & Hospital. In the other group "B" (case) patients attending the Psychiatry 'Out Patient Department' of Gauhati Medical College & Hospital with "severe depressive episode" were taken. The data recorded was analysed statistically using Student's T-test. P value ≤ 0.05 is considered as statistically significant. Such a study may be useful in establishing a database which may be useful in treating the patients suffering from 'severe depressive episode'.

Keywords: Pineal gland, Melatonin, Depression

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INTRODUCTION

The pineal gland is innervated by a nerve called nervus conarii which consists of postganglionic sympathetic fibers arising from superior cervical ganglion.¹ Melatonin, 5methoxy-N-acetyltryptamin, is a neurohormone of the brain produced by pineal gland. Within the pineal gland, serotonin is acetylated to yield melatonin.² The main environmental control of the pineal melatonin synthesis is light intensity. Light perceived by the retina reaches the supra chiasmatic nucleus (SCN) through the retinohypothalamic tract. The SCN innervates the pineal gland via the dorsomedial hypothalamic nucleus, the upper thoracic intermediolateral cell columns of the spinal cord and the superior cervical ganglia, resulting in the rhythmic secretion of melatonin.³ In humans, as in animals, the plasma melatonin level rises in darkness and falls during the day.⁴ This has led researchers and clinicians to try melatonin as an experimental treatment for depression, with gratifying results.⁵ Disruption of circadian rhythms produces amnesia by interfering with the circadian organization of memory processes.⁶ Melatonin, by correcting circadian rhythms should, theoretically, improve mental performance.⁷ Melatonin has also been shown to improve immunity and extend lifespan in some mammals.^{8,9} In 'severe depressive episode', the sufferer usually shows considerable distress or agitation, unless retardation is a marked feature. Loss of self-esteem or feelings of uselessness or guilt are likely to be prominent, and suicide is a distinct danger in particularly severe cases.¹⁰ Low nocturnal Melatonin has been proposed as a trait marker for major depressive disorders.¹¹ Melatonin has been suggested for the improvement of sleep patterns in patients with depression, although research is limited in this area.^{12,13,14,15}

OBJECTIVES

To ascertain the variation of the blood melatonin level, in patients suffering from 'severe depressive episode' with normal individuals.

MATERIALS AND METHODS

The study has been done at Gauhati Medical College & Hospital