

Assessing the preference of women for different methods of monitoring the fetal heart in labour



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Objective. To assess which of three different methods of monitoring the fetal heart in labour was preferred by labouring women.

Method. Ninety-nine women in the first stage of labour were enrolled into a prospective clinical study to compare their preference for fetal monitoring with a Pinard fetal stethoscope, an innovative wind-up Doppler ultrasound fetal heart rate monitor, and cardiotocography.

Result. Significantly more women preferred the fetal heart rate monitor to the other two methods ($p=0.001$).

Conclusion. Intermittent auscultation of the fetal heart during labour with a fetal monitor is more acceptable to labouring women than monitoring with a Pinard fetal stethoscope or a cardiotocograph.

Monitoring the fetal heart rate in labour is an important way of assessing fetal well-being and detecting fetal distress. Assessment of the fetal heart is mainly by intermittent auscultation with a Pinard fetal stethoscope or by continuous electronic cardiotocography. An alternative method is to use a fetal heart rate monitor with a Doppler ultrasound probe to detect the fetal heart.

All three methods of recording the fetal heart rate have their advantages and disadvantages. The fetal stethoscope is simple and cheap, but locating the fetal heart and counting the rate can be difficult, especially in obese women. In contrast, cardiotocography is accurate with a permanent record, but it is expensive and requires a reliable electricity supply and skilled interpretation. The Doppler ultrasound monitor avoids most of these problems. It has many advantages in intermittently monitoring the fetal heart in under-resourced primary care clinics, such as ease and accuracy in counting the heart rate, but it is relatively expensive and depends on replaceable batteries.

The aim of this study was to question women in labour as to their preferences regarding the method used to monitor their fetus's heart rate. An innovative wind-up Doppler ultrasound fetal heart rate monitor, which does not require replacement batteries, was used.

Method

This was a quantitative, cross-sectional, prospective clinical study. Convenience sampling was used with the researcher enrolling women who happened to be in labour on the day. The study population was 100 women in the active phase of the first stage of labour at Cecilia Makiwane Hospital in the Eastern Cape province, South Africa. Women approaching the second stage of labour, with twins, in preterm labour or with evidence of fetal distress were excluded. Women were recruited after being told the purpose, the significance and the objective of the study. Information about the entire procedure was explained and then verbal informed consent was obtained.

A researcher spent approximately 30 minutes with each woman. Ten minutes was spent informing the prospective participant about the study, allowing her to ask questions and obtaining her consent. A further 10 minutes was spent monitoring the fetus with the wind-up fetal heart rate monitor and a fetal stethoscope while palpating the woman's abdomen for contractions. The last 10 minutes was spent obtaining a cardiotocograph tracing. If the tracing appeared unsatisfactory a doctor was notified. The fetal stethoscope was used first in every second participant. The researcher had to wind up the fetal heart rate monitor before the examination.

Participants were asked to choose which of the three methods they were most comfortable with. They were also asked for their second preference.

Data recordings were entered from the data collecting sheets into Epi-Info 2002 computer software.

Results

Thirteen of the 97 participants preferred the fetal stethoscope, 72 preferred the wind-up fetal heart rate monitor and 12 preferred the cardiotocograph (Table I). When asked for their second preference, 58 preferred the fetal stethoscope, 17 the wind-up fetal heart rate monitor and 22 the cardiotocograph. Two women were unable to decide which method they preferred, and data on one woman were lost. Significantly more women preferred the fetal heart rate monitor to either the fetal stethoscope or the cardiotocograph. The fetal stethoscope was disliked because of the discomfort experienced during the examination, while the securing belt of the cardiotocograph restricted a woman's movements and often confined her to bed.

| Table I. Preferences of labouring women for fetal heart rate monitoring with a fetal stethoscope, fetal heart rate monitor (FHRM) and cardiotocograph (CTG) (N=97) | | | |
|---|--------------------------|-------------|------------|
| | Fetal stethoscope | FHRM | CTG |
| First maternal preference* | 13 | 72 | 12 |
| Second maternal preference | 58 | 17 | 22 |

*Fetal stethoscope v. FHRM $p=0.001$; FHRM v. CTG $p=0.001$; fetal stethoscope v. CTG $p=0.8$.

Discussion

According to Wood,¹ there has been no significant difference in outcomes of infants whose low-risk mothers were monitored during labour by either the cardiotocograph or intermittent auscultation of the fetal heart rate. In spite of these findings, electronic fetal monitoring for low-risk labouring women remains the method of choice in many institutions.² Albers³ and Banta and Thacker⁴ regard intermittent auscultation as a safe and effective method of fetal monitoring in low-risk pregnancies, while Mahomed *et al.*⁵ found that decelerations of the fetal heart rate in labour were detected more reliably with a Doppler ultrasound monitor than with a fetal stethoscope.

This study shows that intermittent auscultation of the fetal heart during labour with a fetal monitor is more acceptable to labouring women than monitoring with a Pinard fetal stethoscope. The second preference was a fetal stethoscope over a cardiotocograph.

The Doppler ultrasound fetal heart rate monitor used in this study is robust, easy to use and independent of replaceable batteries as power is generated by manual winding. It provides a digital display of the heart rate, which avoids the difficulty and potential error of counting.

1. Wood SH. Should women be given a choice about fetal assessment in labour. *American Journal of Maternal and Child Nursing* 2003; 28: 292-298.
2. Feinstein NF. Fetal heart rate auscultation: current and future practice. *J Obstet Gynaecol Neonatal Nurs* 2000; 29: 306-315.
3. Albers LL. Monitoring the fetus in labour: evidence to support the methods. *J Midwifery Womens Health* 2001; 46: 366-373.
4. Banta DH, Thacker SB. Historical controversy in health technology assessment: the case of electronic fetal monitoring. *Obstet Gynecol Surv* 2001; 56: 707-719.
5. Mahomed K, Nyoni R, Mulambo J, Kasule E, Jacobus E. Randomised controlled trial of intrapartum fetal heart rate monitoring. *BMJ* 1994; 308: 497-500.