BACKGROUND

Monitoring maternal-fetal heart rate (MFHR) tracings for critical signals is the predominant method to assess fetal health during labor (Freeman, 2002). The fetal heart rate (FHR) and maternal contractions are typically displayed either on a paper strip or a computer screen (Menihan & Zottoli, 2001) and are assessed for patterns indicating possible fetal distress. For example, a late deceleration is a decrease in the fetal heart rate from a baseline level after the peak of the contraction. Late decelerations represent a particularly ominous pattern often indicating fetal hypoxemia (Menihan & Zottoli, 2001). By contrast, early decelerations are very similar in appearance but have a decrease in the FHR that is coincident with the onset and offset of the contraction and a nadir that occurs at the same time as the contraction peak. Early decelerations are considered a benign pattern; thus, it is necessary for clinicians to differentiate between late and early decelerations.

RESEARCH

Anderson and her colleagues have used a MFHR simulator to examine how individuals interpret MFHR patterns. In one set of studies, Anderson et al. (2010, 2011a) examined how well individuals could discriminate between early and late decelerations. The early decelerations occurred coincident with the contractions (0-sec) while the late decelerations occurred at 4, 8, 12, or 16-sec after the contractions. The results indicated that both undergraduate students and trained labor and delivery clinicians struggled to differentiate late decelerations from early decelerations, particularly at the moderate offset intervals (i.e., 8 and 12 sec).

Another perceptual challenge is the ability to detect patterns under different levels of FHR variability. According to the National Institute of Child Health and Human Development, the beat-to-beat variability of the FHR falls into four different classifications: absent, minimal, moderate, and marked (Macones et al., 2008). Anderson, Scerbo, Belfore, and Abuhamad (2008) examined how well individuals could detect deviations in the FHR from baseline (decelerations) under different amounts of FHR variability. According to the MFHR simulator allows investigators to have complete control over the characteristics of the simulated tracings. Thus, it is possible to examine systematically the specific perceptual and cognitive issues that affect the ability to monitor MFHR signals.

REFERENCES:


