

A PREDICTIVE MODEL OF FEEDING PERFORMANCE IN PRETERM INFANTS

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Purpose: The purpose of this study was to test a model of the relationship between bottle feeding readiness and experience and bottle feeding performance in preterm infants. Bottle feeding readiness was defined as: 1) neurological maturation; 2) severity of illness; and 3) pre-feeding autonomic, motor, and behavioral state organization. Bottle feeding experience was defined as opportunities for bottle feeding. Bottle feeding performance was defined as: 1) proficiency (% of prescribed volume consumed in the first 5 minutes of the feeding), 2) efficiency (volume consumed/minute), and 3) consumed (% of prescribed volume taken during the feeding).

Method: A non-experimental design was used. Data were collected from 75 preterm infants at 800 bottle feedings (39 males, 36 females; 55 African American, 15 White, 4 other; 3 Hispanics). Infants' mean birth gestation was 29.2 weeks and their mean birth weight was 1273 grams. Infants were fed on study for 10-14 days beginning when they were 32 weeks post-conceptual age (PCA). Data were collected using a computer data acquisition system; data recorders were assessed for reliability every 6 months.

Findings: The unit of analysis was the observation but since almost all measures were repeated on the same infant, all analyses were done using GEE estimators or generalized linear models, depending on whether the outcome was multinomial or continuous, respectively. Feeding performance variables were modeled using Proc Genmod in SAS v8 using a logistic regression model in the case of proportions (proficiency and consumed) and the log link-function in the case of the continuous variable (efficiency). An exchangeable correlation structure with subjects nested within severity of illness was used. The analysis revealed that morbidity, neurological maturation, and feeding experience predict measures of feeding performance. Pre-feeding autonomic, motor and behavioral state organization was not predictive of feeding performance. All three feeding performance measures improved as the infants mature, have more feeding opportunities, or are less ill.

Discussion: The findings of this study provide information for establishing empirically supported bottle feeding readiness criteria for clinical practice. These criteria are expected to be useful in determining when to offer a bottle feeding to a preterm infant. Research is proposed to test the efficacy of these criteria under a variety of conditions and to develop interventions to reduce the adverse affects associated with bottle feeding in preterm infants.

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