

**GESTATIONAL ASSESSMENT ASSESSED:
A SYSTEMATIC REVIEW OF VALIDITY AND FEASIBILITY AT
VARIOUS LEVELS OF CARE IN DEVELOPING COUNTRIES**

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Abstract

Objective: To systematically review the literature regarding methods of clinical assessment of gestational age and to examine the validity the accuracy as well as feasibility for various levels of care in resource poor settings.

Background: An estimated 4 million neonates die per year with 99% occurring in low to middle income countries. Preterm birth is the main direct cause of neonatal deaths, as they are more susceptible to infection and hypothermia. Data on preterm births is not always available in developing countries. As a result there is a need to identify a simplified method of measuring gestational age (GA) that would be accurate and feasible in the context of a developing country. Then these infants can be identified and clinical management of the newborn can be improved. Also, data will help to make decisions and bring attention to the newborn on a population level.

Search Strategy: A comprehensive search was performed using the following databases: Medline, Popline, LILACS, BioMed Central, African Index Medicus, Cochrane and EMRO databases. Search was performed in all languages using multiple keywords (e.g. gestational age, birth weight, fundal height, etc).

Data abstraction: Studies were assessed for accuracy and feasibility. Validity was bases on comparison with a "gold standard" which is reported in the study (ultrasound, last menstrual period (LMP) or Dubowitz). Feasibility was assessed by looking at where the study took place, cadre of worker performing the exam, training required and time needed to perform the exam. On this basis the studies were categorized into 3 groups:

1. Complex gestational assessments scores including neurodevelopment assessment.
2. Intermediate complexity gestational assessment scores
3. Simple gestational assessment scores

For each score the following data was summarized: number of characteristics measured, year of publication, statistical measure, range in days from standard, inter-observer error, amount of training needed to perform exam and so on.

Results: There were 21 methods of gestational age measurement identified in the literature, and 17 met our inclusion criteria. There were 5 complex, 9 intermediate and 3 simple scores. All the scores were accurate to within +/- 3 weeks, with some variation in accuracy but the number of characteristics assessed varied from 1 to 21. Consequently the time taken to perform the assessment and the skills of workers and training input varied.

Discussion: There are limitations to our review, particularly in the "ideal gold standard" of ultrasound was used by only two studies to assess accuracy, and a number of studies were done by those that devised that exam which may show some bias in the assessment. As far as we know this is the first systematic review of gestational assessment scores to evaluate these from the point of view of accuracy and feasibility in a developing country.

Recommendations: Based on our findings from the existing literature we recommend that the most accurate score for use in a tertiary care hospital level is New Ballard or Eregie (accuracy of +/- 14 days). At a district level we recommend the use of the Eregie, Parkin or Ballard external (accuracy of +/- 17 days). At the community level, based on limited data we cannot make a definite recommendation. We can recommend the following as possible scores that could be used Narayanan (breast and sole creases) and Primak's method.