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Time Required to Document Temperature by Electronic Skin Thermometer in a Healthy Neonate

We studied the actual time taken to document temperature in a stable neonate by an electronic digital skin thermometer with automatic time beeper. We studied 100 neonates after initial stabilization. The mean time required for documenting the temperature by a electronic thermometer in axilla was 56.34 ± 1.54 secs for term neonates (>2500 g) and 54.87 ± 1.23 secs for low birth weight (<2500 g). The skin temperature measured simultaneously by the ordinary mercury thermometer kept for traditional 3 minutes supported the electronic measurement ($P < 0.01$).

Keywords: *Electronic thermometer, Neonatal temperature, Skin thermometer.*

Rectal or axillary temperature has been considered the gold standard for measuring core temperature, although there are obvious limitations to this procedure. The usual recommendation is to keep the low reading mercury thermometer ($25^{\circ}\text{C}/77^{\circ}\text{F}$) for 3-5 minutes in axilla or groin(1,2). The time required to obtain a stabilized reading as documented in western literature using a digital thermometer is about 30-45 seconds at either side(3). But there is no study published in our setup regarding this.

In this hospital based, prospective, cohort study, all neonates of any gestation or mode of delivery after initial stabilization (preferably within 1 hour of birth) without congenital anomalies or any sickness or distress were examined in Brazelton stage between I to III. Electronic Thermometer used was Dr.Morgan Digital model MT-219. Vega Technologies Inc. Taipei, Taiwan. An ordinary

mercury skin thermometer (Hick's) was also used.

Duration of study was from October 2007 to August 2008. Total 100 neonates were examined and data analysed. Both the thermometers were simultaneously used-one in either axilla of the neonate. The stop watch was started immediately after placing them. The Hick's thermometer was kept for 3 minutes and temperature was documented. The electronic thermometer was removed and stop watch locked as soon as the steady beep was heard and temperature and time needed were both documented. The environmental temperature was also documented.

The mean time required for documenting a temperature by a electronic thermometer in axilla was 56.34 ± 1.54 for term neonates (>2500 g) and 54.87 ± 1.23 secs for low birth weight (<2500 g). The time required for documenting temperature did not change significantly ($P < 0.01$) with environmental temperature. The skin temperature measured by the ordinary mercury thermometer did not differ significantly from that noted by keeping the electronic one ($P < 0.01$).

The present study is limited due to small study population. And that may be the cause of higher mean time in our study (56.34 ± 1.54 s) than reported in western literature (30-45 s). But using an electronic thermometer (Rs 200/-) instead of an ordinary one (Rs 60/-) will save valuable time (about >2 min) for a peripheral health worker who has to manage all resuscitation procedures single-handedly.

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Modification of Kuppuswamy's Socioeconomic Status Scale in context to Nepal

Assessment of socioeconomic status (SES) is an important aspect in community based studies. Evaluation of SES of a family would mean the categorization of the family in respect of defined variables such as, education, occupation, economic status, physical assets, social position etc. Some of these variables can be evaluated simultaneously. Several methods or scales have been proposed for classifying different populations by socioeconomic status: Rahudkar scale 1960, Udai Parikh scale 1964, Jalota Scale 1970, Kulshrestha scale 1972, Kuppuswamy scale 1976, Shrivastava scale 1978, Bharadwaj scale 2001(1-7). However, social transformation and fast growing economy have rendered these scales ineffective in measuring the SES over the years. Further, steady inflation and consequent fall in the value of currency make the economic criteria in the scale less relevant. The most widely accepted scale for urban populations has been proposed by Kuppuswamy in India in 1976 (*Table I*). A method has recently been suggested for updating the Kuppuswamy scale(8). Presently, there is no standardized questionnaire to assess the SES of Nepalese people. We herein propose a modification to the Kuppuswamy's scale for use in Nepal, which takes into account the current national price indices of Nepal.

In the modified scale, the educational and

TABLE I SOCIOECONOMIC STATUS SCALE OF KUPUSWAMY (URBAN, 1976)

Score Card		Score
<i>Education</i>		
Professional or Honours		7
Graduate or Post-Graduate		6
Intermediate or Post-High-School Diploma		5
High School Certificate		4
Middle School Certificate		3
Primary School or Literate		2
Illiterate		1
<i>Occupation</i>		
		Score
Profession		10
Semi-Profession		6
Clerical, Shop-owner, Farmer		5
Skilled worker		4
Semi-skilled worker		3
Unskilled worker		2
Unemployed		1
<i>Family Income Per Month (in Rs)*</i>		
		Score
≥2000		12
1000 – 1999		10
750 – 999		6
500 – 749		4
300 – 499		3
101 – 299		2
≤100		1
Total Score	Socioeconomic Class	
26 – 29	Upper (I)	
16 – 25	Middle	Upper Middle (II)
11 – 15		Lower Middle (III)
5 – 10	Lower	Upper Lower (IV)
< 5		Lower (V)

Reproduced from reference 5; *Indian rupees.