

SEASONAL VARIATION IN SOMATIC GROWTH AT BIRTH

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Birth-weight is influenced by many interacting factors such as maternal nutritional status, age, health, racial and genetic background, which act via the intrauterine environment of the fetus. Mean birth-weight is also related to income and the amount of antenatal care received (Das et al. 1981). This article studies the relationship between season and birth-weight, length and occipito-frontal circumference (OFC) of normal healthy full term neonates in Thailand.

The observations were made between 1979 and 1980 at the Chiang Mai University hospital. Only single healthy babies of uncomplicated term pregnancy, normal delivery, and known gestational age (38-42 weeks) were included in the study. Also only infants with birth-weights > 2000 g and an Apgar score > 7 were included. The data were analysed by season for both sexes using Student's t-test. The total number of healthy term neonates was 8954 with a male to female sex ratio of 1.08. Seventy per cent of the hospital deliveries were from rural areas. The average birth-weight, length and OFC were 3007 ± 45 g; 51.5 ± 0.7 cm; 33.5 ± 0.7 cm for males (n=4651) and 2923 ± 65 g; 50.6 ± 0.9 cm; 32.7 ± 0.8 cm for females (n=4303) respectively. All male measurements were significantly higher than those for females in each season (p < 0.001). The average birth-weight, length and OFC were significantly different and lower in summer than in winter (p < 0.001).

Mean and standard deviation for birth-weight, length and OFC according to season and sex.

	Sex	Winter(Nov-Feb)	Summer(Mar-Jun)	Rainy(Jul-Oct)
Number of babies	male	1434	1495	1375
	female	1550	1614	1486
Birth-weight (g)	male	3025 ± 39.6	2982 ± 48.4	3014 ± 38.4
	female	2942 ± 93.6	2906 ± 57.2	2920 ± 48.2
Length (cm)	male	51.7 ± 0.70	51.3 ± 0.68	51.5 ± 0.63
	female	51.2 ± 1.49	50.2 ± 0.85	50.3 ± 0.69
OFC (cm)	male	33.7 ± 0.53	33.1 ± 0.40	33.5 ± 0.38
	female	33.2 ± 1.12	32.3 ± 0.83	32.7 ± 0.48

One reason for this finding may be the fact that the pregnancies which result in summer birth start in the rainy season which is paddy planting time and the energy expenditure of Thai farmers is high and continues to be increased throughout the pregnancy period. Pre-harvest food shortages are also likely to affect these pregnancies to a greater extent during the last trimester. In this study there was approximately a 40 g difference in birth-weight between winter and summer. This is of the same order as the estimated effect of an energy deficit of around 10,000 kcal during pregnancy (Winick 1969). The findings suggest that season is an important consideration in the planning of nutrition programmes for pregnant women.

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