Historical precedents for socioeconomic disparities in growth among South African schoolchildren

To the Editor: As part of the 1930s Carnegie Commission investigation into 'the poor white problem', Murray [1] collected data on three anthropometric indices (weight, sitting height and chest circumference) from 1 743 schoolchildren aged 9 - 15 years attending schools at various locations throughout the Cape province and the Transvaal. His final report tabulated average values for each of these measurements, disaggregated by age, sex, socio-economic status and locality. To establish whether poverty was independently associated with significant differences in average weight, sitting height and chest circumference, the tabulated averages were converted from imperial to metric units and entered into three separate multivariate analyses of covariance (Table I). Poverty was not associated with significant differences in average weight, but girls were found to be 20% heavier than boys at the average age of 12 years. The average sitting height and chest circumference of poor schoolchildren (i.e. those from 'poor and very poor homes') were significantly lower than measurements of children from families whose financial circumstances were described as 'good' or 'fair'. While sexual dimorphism in average sitting height was twice that associated with disparities in socioeconomic status, the reverse was true for average chest circumference.

The patterns of growth observed by Murray in 1932[1] are remarkably similar to those recently described by Louw and Naidoo (Figs 2, 3 and 11 in that article).[2] In their report, girls were heavier than boys between the ages of 11 and 14, and while socioeconomic disparities in average trunk length (a component of sitting height) were minimal, there were substantial socioeconomic differences in average chest circumference. Nevertheless, there were clear differences in the absolute values of the two comparable anthropometric variables (weight and chest circumference). As expected, contemporary measurements of high socioeconomic status schoolchildren[2] exceeded historical averages of schoolchildren with 'good' and 'fair' family circumstances.[1] However, contemporary measurements from low socioeconomic status schoolchildren appear somewhat worse than the historical averages of schoolchildren from 'poor and very poor' families. Notwithstanding the possibility of systematic methodological differences between these two studies (not least in the sampling and classification of children from contrasting socioeconomic backgrounds), there are three alternative explanations why the anthropometric measurements collected by Louw and Naidoo[2] encompass the range of values presented by Murray:[1] first, the schoolchildren examined by Louw and Naidoo[2] might have a low genetic potential for growth; second, contemporary living conditions of low socio-economic status schoolchildren might be no better (if not worse) than those experienced by the poor and very poor children examined by Murray;[1] and third, increases in body size might lag behind improvements in living conditions. The first explanation seems unlikely, particularly if Louw and Naidoo's description of these schoolchildren as being of 'mixed origin'[2] accurately describes their genetic composition, since heterosis is thought to increase the potential for growth.[3] The second explanation is more plausible, since high levels of income inequality and inadequate public services mean that the poorest individuals benefit little from South Africa's prosperous middle-income economy.[4] The third explanation is supported by the absence of positive secular trends in growth among a variety of South African populations, both 'favored and oppressed'.[5] Indeed, elsewhere Louw[6] reported that comparable samples of high socioeconomic status

Table I. Multivariate analyses of covariance to assess whether poverty was associated with significant differences in: (*i*) average weight; (*ii*) average sitting height; and (*iii*) average chest circumference of schoolchildren examined by Murray (1932)

	Age (yr) B (SEM)	Sex Adjusted means (95% CI)	Province Adjusted means (95% CI)	Socio-economic status Adjusted means (95% CI)
Weight (kg)	+ 2.52 (0.59)*	Girls: 39.9 (36.7, 43.2)†	Cape: 36.2 (32.3, 40.1)§	Poor: 35.9 (32.6, 39.3)§
		Boys: 33.3 (30.1, 36.5)	Tvl: 37.0 (34.3, 39.7)	Good / fair: 37.3 (34.2, 40.4)
Sitting height (cm)	+2.09 (0.09)*	Girls: 75.1 (74.6, 75.6)*	Cape: 73.4 (72.8, 74.0)*	Poor: 74.0 (73.4, 74.5)‡
		Boys: 73.6 (73.1, 74.1)	Tvl: 75.3 (74.9, 75.7)	Good / fair: 74.7 (74.3, 75.2)
Chest circumference (cm)	+2.10 (0.13)*	Girls: 67.9 (67.3, 68.6)§	Cape: 67.8 (67.0, 68.6)§	Poor: 67.6 (66.9, 68.4)†
		Boys: 68.6 (67.9, 69.3)	Tvl: 68.8 (68.2, 69.3)	Good / fair: 68.9 (68.3, 69.6)

* $p < 0.001$.
† $p < 0.01$.
‡ $p < 0.05$.
§ $p > 0.05$. (not significant).
B = parameter estimate; SEM = standard error of mean; CI = confidence interval; Tvl = Transvaal.

schoolchildren had not displayed a significant increase in height- or weight-for-age *z*-scores between 1989 and 1999, despite a decline in mean menarcheal age, and significant increases in skinfold thicknesses and body mass index (BMI). While the latter reflect recent improvements in nutritional status, increases in overall body size (particularly stature) are likely to require sustained improvements in living conditions.

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At what age are South African women first having sex?

To the Editor: A national cervical abnormality survey published in 2002 collected data from 20 603 women aged 20 years and older. Data were collected from 10 sites covering all provinces in South Africa and included women from rural, urban and peri-urban areas.[1] The age distribution of the total sample was similar to the national age distribution; however, there was an underrepresentation of women in the 20 - 25-year and over 60-year categories. Nonetheless data collected on reproductive history provide us with information on a large sample that is likely to be generalisable to the South African population.

The contraceptive use rate for the 19 861 women in the study for whom contraceptive use data are available is illustrated in Table I. As on average the total population is relatively old (mean age 37.7 years, range 20 - 95 years, standard deviation (SD) 11.8 years), it is not surprising that 54% of the study population was not using any method of contraception and that 8% of the study population had been sterilised. Of those who reported currently using a method of contraception (9 171 women), 55% were using injectable contraceptives. Of interest is the very low rate of use of barrier methods, namely 0.5% of the total sample and 1% of the women who reported using contraception. Data were collected in the late 1990s, after initiation of condom promotion programmes.

Table I. Contraceptive prevalence

Method	Number	Percentage
None	10 690	53.8
Injectable	5 028	25.3
Pill	1 835	9.2
Sterilisation	1 594	8.0
IUCD	176	0.9
Barrier	104	0.5
Other	434	2.2
Total	19 861	100

IUCD = intra-uterine contraceptive device.
Data on contraceptive use missing for 742 women.

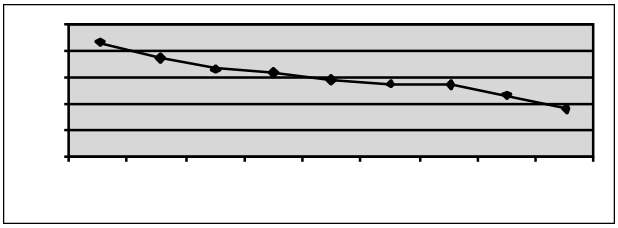

Fig. 1. Age at first intercourse by age cohort.

Data on the age of first intercourse were also collected and in Fig. 1 the average age of first intercourse by 5-year age cohorts is presented. Women in the age cohort 20 - 25 years reported having sexual intercourse for the first time at an average age of 16.8 years compared with women in the age cohort 60 plus who were on average 19.3 years of age at the time of first sexual intercourse. These data indicate that there has been a steady decrease in the average age at first intercourse, with a decrease of $2^1/_2$ years over the past 40 years.

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