

Puberty in Zambian Children

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SUMMARY

A cross sectional study of 2,638 Zambian school children 1,220 boys and 1,418 girls has been done in Lusaka to study the puberty process. Pubic and axillary hair, breast development and menarche were studied. Pubic hair appeared for the first time in the group of 9 year-old girls and 10 year-old boys. Axillary hair appeared at about the same time. Stage two of the breast bud appeared for the first time in the group of 9 year-old girls.

The earliest case of occurrence of menarche was in a girl of 9.4 years. The mean age at menarche in Zambian school girls was 13.7.

INTRODUCTION

It is believed that in countries with a hot climate, children develop and mature earlier than children living in countries of a moderate or cold climate (Mills, 1937, 1949; Whitacre and Crimes, 1959). As there are no available data about puberty in Zambian children this study was undertaken.

MATERIAL AND METHOD

A cross sectional study of 2,638 children, 1,220 boys and 1,418 girls, was done in various schools in Lusaka regarding appearance and stages of axillary and pubic hair and breast development. The stages were determined following Tanner (1962).

All children were examined nude in a separate small room. Girls were examined by two nurses who were specially trained. The children were asked in advance to fill in special proformas where date of birth and date of first menarche (for girls) were recorded. Age was recorded in the decimal notation. For example March 20th, 1966 = 66.214 and October 3rd, 1978 = 78.753, therefore time elapsed between the two dates is 12.539 years. The midpoint of ages 9.5 - 10.4 = 10 years (see Tables). The birth date of Zambian school children was ascertained from the school records which were based on the birth certificates.

RESULTS

Pubic Hair

Pubic hair first appeared in 9 year-old girls (Table II) and in 10 year-old boys (Table I). According to Tanner the average is between 8-14 for boys.

Axillary Hair

Axillary hair appeared also in the group of 9 year-old girls, but a year later in boys, at 10 (Table I and II). In both sexes in the Zambian children the axillary hair appeared one year earlier than the average given by Tanner for other children.

TABLE I

Axillary and Pubic Hair Stages

BOYS

AGE	NUMBER	AXILLARY HAIR		PUBIC HAIR STAGES				
		YES	NO	I	II	III	IV	V
17.5-18.4	67	67	0	0	0	7	27	33
16.5-17.4	75	72	3	0	0	8	37	30
15.5-16.4	96	83	13	1	5	23	50	17
14.5-15.4	103	72	31	4	12	28	49	10
13.5-14.4	106	53	53	20	22	29	34	1
12.5-13.4	102	15	87	55	31	11	5	0
11.5-12.4	106	9	97	80	18	7	1	0
10.5-11.4	103	2	101	101	2	0	0	0
9.5-10.4	106	0	106	105	1	0	0	0
8.5-9.4	145	0	145	145	0	0	0	0
7.5-8.4	120	0	120	120	0	0	0	0
6.5-7.4	68	0	68	68	0	0	0	0
5.5-6.4	23	0	23	23	0	0	0	0

Breast Development

The appearance of stage two of the breast bud was recorded for the first time in the group of 9 years girls (Table II). According to Tanner it appears between 8-13 years, and is believed as a rule to be the first sign of puberty in the female, though the appearance of pubic hair may sometimes precede it.

TABLE II
Axillary and Pubic Hair and Breast Development Stages
GIRLS

AGE	NUMBER	AXILLARY HAIR		PUBIC HAIR STAGES					BREAST DEVELOPMENT STAGES				
		YES	NO	I	II	III	IV	V	I	II	III	IV	V
17.5-18.4	83	83	0	0	0	1	6	76	0	0	2	16	65
16.5-17.4	103	103	0	0	0	2	19	82	0	0	4	22	77
15.5-16.4	121	120	1	0	1	12	37	71	0	0	17	41	63
14.5-15.4	110	110	0	0	2	8	53	47	0	2	15	44	49
13.5-14.4	102	96	6	0	8	21	45	28	0	6	25	42	29
12.5-13.4	105	89	16	6	21	38	25	15	3	25	44	28	5
11.5-12.4	95	57	38	26	23	25	15	6	16	30	34	15	0
10.5-11.4	111	27	84	85	13	12	1	0	57	38	15	1	0
9.5-10.4	142	11	131	120	13	7	1	1	113	12	15	2	0
8.5- 9.4	147	3	144	145	2	0	0	0	140	5	2	0	0
7.5- 8.4	166	0	166	166	0	0	0	0	166	0	0	0	0
6.5- 7.4	115	0	115	115	0	0	0	0	115	0	0	0	0
5.5- 6.4	18	0	18	18	0	0	0	0	18	0	0	0	0

TABLE III
Age at First Menarche

AGE GROUP	NUMBER	No. MENARCHE	AGE AT FIRST MENARCHE									
			8.5-9.4	9.5-10.4	10.5-11.4	11.5-12.4	12.5-13.4	13.5-14.4	14.5-15.4	15.5-16.4	16.5-17.4	17.5-18.4
17.5-18.4	83	0	0	0	0	2	25	30	23	3	0	0
16.5-17.4	103	0	0	3	6	24	37	26	5	5	1	0
15.5-16.4	121	2	0	0	2	9	32	60	13	3	0	0
14.5-15.4	110	15	0	1	0	10	35	38	11	0	0	0
13.5-14.4	102	27	0	0	3	12	42	18	0	0	0	0
12.5-13.4	105	79	0	0	2	12	12	0	0	0	0	0
11.5-12.4	95	85	0	0	2	7	0	0	0	0	0	0
10.5-11.4	111	109	0	0	2	0	0	0	0	0	0	0
9.5-10.4	142	142	0	0	0	0	0	0	0	0	0	0
8.5- 9.4	147	147	0	0	0	0	0	0	0	0	0	0

Menarche

The earliest case of occurrence of menarche was a girl of 9.4 years. By the time she was examined she was 15.4 years old, with pubic hair and breasts at stage 5.

In 14 girls, the age at first menarche was 11 years. In the group of 18 year-old girls all 83 had their

first menarche at the time of examination. The mean age at menarche in Zambian school girls was 13.7. According to Tanner menarche occurs between 10-16.5 years, being 14.3 for Nigerian school girls, Ellis (1950), 14.4 for Alaskan Eskimo girls, Levine (1953), 12.8 for school girls in Colombo, Sri Lanka, Wilson and Sutherland (1950, 1953), 13.6 for Indian girls in Durban, South Africa, Kark (1956) 13.3 for

school girls in Kampala, Uganda, Burges and Morton, unpublished.

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