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Secular Trends in Nutritional Status of Children from a Low Socio-economic Background

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Summary

Osinusi K and Oyejide CO. Secular Trends in Physical Growth among Nigerian Children from a Low Socio-economic Background. *Nigerian Journal of Paediatrics* **1987; 14:7.** In a survey of anthropometric measurements in 208 pre-school children living at Idikan, a low socio-economic urban area of Ibadan, it was found that the weights for age of the children were better than those of pre-school children in Oje, a similar low socio-economic urban area surveyed about two decades earlier. There was however, no significant difference in the heights-for-age of the two groups of children. Although the growth pattern as indicated by weights, had improved over the period of time, the overall secular improvement in physical growth was less than expected. The factors which appeared to be responsible for this included high illiteracy rate among the mothers, poor environmental sanitation, with its attendant recurrent diarrhoeal diseases, large family size and increased cost of food items which adversely affected the nutritional habits of the children.

Introduction

PHYSICAL growth of both rural and urban children from low socio-economic background in developing countries often falls below that of children from high socio-economic class in the same country[1,2]. A number of factors have been identified as predisposing to this, important among which are ignorance, poverty, unfavourable living conditions and recurrent infections[3-5]. Janes[2] in 1968, reported that the physical growth of children from Oje, a low socio-economic area of Ibadan, was significantly poorer than that of a group of elite children from medium to high socio-economic class of the same city. Secular trend of growth has been assessed in some communities and changes in the pattern of growth of the children over a period of time have been found to constitute one of the best indicators of their health and well-being[6]. Positive secular trends have been attributed to better social conditions[6,7], so, it serves as a measure of improvement in nutritional status, environmental sanitation, living conditions and control of communicable diseases in a community.

The purpose of the present study was to assess the secular trend of growth among a group of pre-school children from Idikan, an urban low socio-economic area of Ibadan. This was done by comparing the anthropometric measurements of

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the children with those of elite Ibadan children and children from Oje, a low socio-economic community in Ibadan, both of which were studied by Janes[2] about two decades ago.

Materials and Methods

Idikan and Oje areas of Ibadan have almost identical characteristics. They are both situated in the inner core of the city of Ibadan which has an unplanned development and a population density of about 350–430 persons per hectare[8]. The inhabitants belong to the low socio-economic stratum of the society and are mostly petty traders and unskilled workers. They live in units called households, each household comprising three to ten families. Each family consists of a husband, two or more wives and several children. Environmental sanitation is poor in the two communities with numerous open drains flowing on to the narrow streets. Supply of pipe-borne water is haphazard, thus, most of the inhabitants resort to wells and surface water. The main difference between the two communities is that the Department of Preventive and Social Medicine, University of Ibadan, has had a primary health care centre in Idikan for twenty-one years. This service comprises an outpatient clinic run by the physicians and nurses from the department. Services offered consist of treatment of minor ailments, health education, immunization and referral of severe cases to the hospital.

The study population consisted of children aged one month to four years, randomly selected from among the under-five children. The study was carried out in the month of September 1984. A questionnaire was completed for each of the selected children detailing information about exact birth dates, parent's education and occupation, accommodation, immunization history, feeding habits and available toilet facilities. Weights and heights were measured using the technique described by Falkner and modified by Janes[2].

Data collected were collated and tabulated. Mean weights of the Idikan children for six-monthly age intervals were calculated; the mean heights were similarly calculated. A frequency polygon was constructed plotting the mean weights of the Idikan children against mean age in years. Data from previous studies (Oje and elite Ibadan children[2] and Ilora children, respectively[9]) were also displayed on this graph for comparison with the Idikan data.

A frequency polygon was similarly constructed plotting the mean heights of the Idikan children against age in years; these data were compared with those obtained from previous studies[2,9].

Results

Three hundred children were studied. However, data on 92 children whose birth dates could not be verified were excluded from the analysis. Of the remaining 208 children, 93 (44.7%) were males and 115 (55.3%) females.

Demographic characteristics of the families

Table I shows the educational status of the parents; 66% of the mothers and 27% of the

TABLE I

Educational Status of Parents

Status	*No of Fathers*	*% of Total*	*No of Mothers*	*% of Total*
No formal education	17	27.4	85	66
Islamic school	1	1.6	*	
Primary school	26	42.0	28	21.9
Post-primary (Modern school, Secondary school)	18	29.0	15	11.7
Post-secondary	0	0	0	0
Total	62	100.0	128	100.0

fathers had no formal education. Table II shows that one hundred and nine (85%) of the 128 mothers were petty traders, while 35 (56%) of the 62 fathers were artisans. Only 2 (3%) of the fathers were farmers. Five (8%) of the fathers and 5 (4%) of the mothers were not in any employment.

The 208 children belonged to 62 families, 58 (93.6%) of which were polygamous; the remaining 4 were monogamous young families with one child each. Table III shows a summary of the number of children per family; 41 (66.1%) of the 62 families had 5–9 children each. An analysis of the living conditions showed that an average of 4 families lived in each house with an average of 5 persons sleeping in one room. In all the houses, refuse was disposed into open drains and backyard which also served as toilets in 13 (21%) of the 62 families; the remaining 49 families used pit latrines. Water supply was mainly from wells and streams. One hundred and thirty-five (64.9%) of the 208 children had received the full course of triple vaccine, 108 (52%) had recieved BGG and 93 (45%) had had measles immunization. The analysis of the feeding pattern revealed that most of the children under 12 months of age were still being breastfed, with supplementary feeds consisting of overdiluted infant formula or pap. The diets of the older children which were mainly carbohydrate-based included pap, cassava and yam-based foodstuff (*gari*, *amala*); these items had very little protein content.

TABLE II

Occupation of Parents

Occupation	*No of Fatners*	*% of Total*	*No of Mothers*	*% of Total*
Medium professionals	1	1.6	3	2.3
Skilled labour	35	56.5	1	0.8
Petty trading	9	14.5	109	85.1
Unskilled labour	10	16.1	10	7.8
Farmers	2	3.2	0	0
Not in employment	5	8.1	5	4.0
Total	62	100.0	128	100.0

TABLE III

Number of Children per Family*

No of Children	*No of Families*	*% of Total*
1	4	6.5
2-4	9	14.5
5-9	41	66.1
10 and above	8	12.9
Total	62	100.0

*Includes chiidren aged 5 years and above.

Anthropometric values

Fig 1 compares the mean weights-for-age of Idikan children with those of Oje and elite children[2] and children from Ilora[9] (a rural community). The mean weights-for-age in the interval 0–6 months, did not differ significantly in the four groups of children ($p>0.05$). From the age of 6 months, the difference in the mean weights-for-age in different age groups between the Idikan group and Oje group for the two decades ranged from 0.8 to 2kg, giving a secular increase of 0.4 to 1kg per decade. After six months, the curves diverged with the Idikan curve running parallel to but higher than those of Oje and Ilora children; it was however, lower than that of the elite curve of 1968.

Fig 2 shows the distribution of mean heights according to the age of the subjects in the study group and the three other groups. The curves for the study group and the Oje group ran close to each other with cross-over at three points. Both of these curves ran higher than that for Ilora. The curve for the elite children ran parallel to but was much higher than the three other curves.

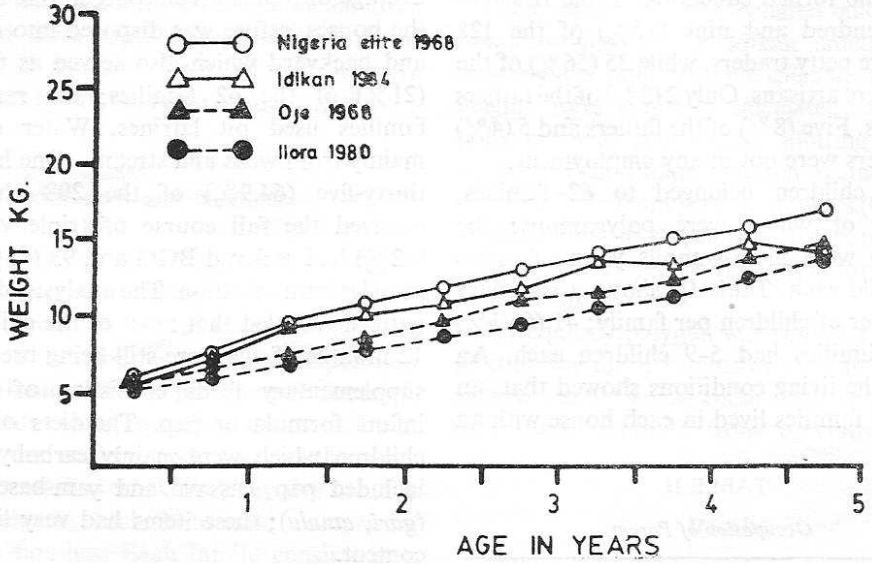

Fig 1. Comparative distributions of mean weights-for-age in Idikan, Oje, Ilora and Ibadan elite children

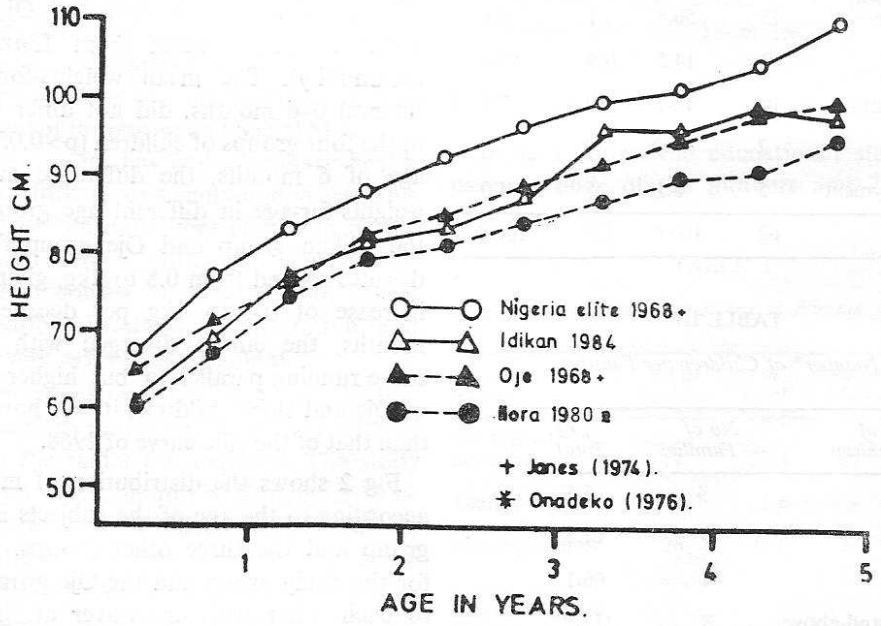

Fig 2. Comparative distributions of mean heights-for-age in Idikan, Oje, Ilora and Ibadan elite children

Discussion

Although the physical growth of Idikan children in 1984 as evidenced by their weights was better than that of Oje children in 1968, it was still below the optimal level. The secular increase of between 0.4kg and 1kg per decade in this study is similar to the secular increase in weight of about 0.5 kg per decade reported from Europe and America[7], but the physical growth of these children was still far below that of elite Nigerian children of almost two decades earlier.

There was no improvement in the heights of the Idikan children when compared with their Oje counterparts of almost two decades earlier. This might be due to many factors, because physical growth of children is a complex expression of their ethnic traits, genetic potentials, consumption of nutrients and morbidity from specific diseases. Any one or combinations of these factors could be responsible for the lack of significant improvement in the heights of these children. Janes[2] has reported that elite Nigerian children were taller and heavier than many other indigenous African groups. Since the elite and poor Nigerian children have the same ethnic traits and genetic potentials, it may therefore, be inferred that the suboptimal physical growth of the poor children in the present study was due primarily, to environmental factors.

In this study, there was a high illiteracy rate particularly among the mothers. This might be an important factor in the poor physical growth of the subjects because educating women has an enormous potential for raising the levels of maternal and child health. Illiterate women often find it difficult to absorb lessons about sanitation, infection, nutrition, fertility regulation, child raising and other factors that contribute to good health[10].

The effect on physical growth of socio-economic status when determined by the father's income, has been highlighted [3,4]. Most of the fathers in the study were artisans and most mothers were petty traders. Although the parents earned more money than their counterparts did in the past, their purchasing power had decreased appreciably because of the rising cost of living. Coupled with this was the large family size. Although the mothers had better knowledge about the nutritive values of local foodstuffs, the feeding habits of these children were not appreciably different from those of their Oje counterparts, because of poverty.

The health facilities in the community studied, appeared to have been well utilized; the rates of DPT and measles vaccination of 64.9% and 45% respectively, were higher than the 34% and 14.4% reported in a similar study[9]. In spite of the available health care however, there is still a high prevalence of diarrhoeal diseases and respiratory infections due to the poor environmental sanitation (unpublished observation). This suggests that improved health care without associated improvement in sanitation and nutrition will not lead to adequate improvement in health or physical growth.

Based on the findings in this study, it is concluded that any attempt to improve the health and physical growth of children, should include programmes that encourage the education of girls, improvement of environmental sanitation and health education, with emphasis on smaller family size. All these should be supported by projects aimed at increasing food production and reducing the cost of living.

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