

Body Sizes of Orang Asli School Children: A Case Study of *Bateq* School Children in Pos Lebir, Kelantan

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Abstract: The *Bateq*, one of Orang Asli (aboriginal) groups of Peninsula Malaysia, have been recognized to have different root and different physical frame from the Malay. The *Bateq* in Pos Lebir used to subsist on hunting and gathering, and recently sedentarise and change their life style. This paper reports body sizes of *Bateq* children with comparing mean values of other Malaysian ethnic groups and the US National Center for Health Statics (NCHS) percentile values.

Introduction

Body size and shape differ owing to a complex combination of genetic, environmental, and social factors [Takaishi 2004; Ruff 2002]. As we can see populations in different parts of the world vary in their body features, Bergman's rule and Allen's rule are examples of theories based on the results of climatic adaptation: people living equatorial regions typically have narrow bodies and linear stature, whereas populations in tropical region have longer, thinner limbs to maximize heat loss [Lewin 1998; Ohtsuka et al. 2003]. But the bodies of those inhabiting moist tropical rain forests cannot radiate much heat by sweating, and for them, the best strategy is to limit the amount of heat generated during physical exertion, which is achieved by reducing body size [Lewin 1998].

Nutrition and illness affect not only personal growth, but the body sizes of a particular generation. "Secular trends" in growth resulting from improvements of nutritional conditions and health care systems, have been seen in many countries [Ohtsuka et al. 2003]. In a study on Malaysian infants, Chen [1990] reported that when comparing two cohorts of infants aged 0 to 6 years, born from 1968 to 1973 and from 1980 to 1985, the group born between 1980 and 1985 were larger. On the other hand, with the change of lifestyle, the ratio of obesity has been rapidly increasing in urban areas of Malaysia [Mohd 2002]. Zailah [2000] reported this phenomenon was common even among children of low-income families in Kuala Lumpur who had been recognized to have a small build.

Malaysia has diverse ethnic groups, and physical differences in three major groups: Malay, Chinese, and Indian, have been noted [Karmegam et al. 2011]. Chinese and Indian are mostly descendants of migrants in the colonial period, having roots outside of Malaysia, whereas Malay is said to be indigenous to the country. In addition to Malay, many indigenous populations live in the country, and groups of the Peninsula are addressed as "Orang Asli" meaning "natural people" in Malay. They have their own cul-

tures, and some groups use languages linguistically different from Malay. Although some Orang Asli groups have physical features dissimilar to Malay, little attention has been given to the point.

This study examines body sizes of the *Bateq*, one of Orang Asli groups. Orang Asli are generally seen as an impoverished people within the Malaysian nation, and many health problems have been noted: they are also expected to have a comparatively small body size [Baer 1999]. However, as the country has developed so fast, their mode of lives have changed. In case of the *Jahai*, the mean population age had increased from 19.5 to 21.1 years over the course of a decade [Gomes 2007]. To take another example, the total fertility rate of the *Semaq Beri* community in Terengganu, increased dramatically after they became sedentary [Kuchikura 2011]. The subject of this study had been nomadic in the jungle and settled down at Pos Lebir reservation. We evaluate that their current life in the reservation affect their body.

The *Bateq* in Malaysian society

The total population of the Orang Asli is around 147,000 including 18 linguistic groups, which are categorized into 3 clusters: Semang (or Negrito), Senoi, and Peroto-Melayu (Table. 1) [JHEOA 2006]. The Aboriginal Peoples Act 1954 (Article 134) defines an Orang Asli as a person who has at least one parent who is/was an aboriginal, speaks an aboriginal language, and follows an aboriginal way of life, aboriginal customs, and beliefs. This definition was established during the Malayan Emergency (1948–1960) to control those people and prevent the spread of communism.

Orang Asli category is rarely referred in national politics, and they are treated as “*bumiputra*”. *Bumiputra*, meaning “son of the land” in Malay, refers to all earlier inhabitants of Malaysia, but also has an internal hierarchy. The Malaysian government had not

Table 1. Orang Asli population by group and state (Source: JHEOA 2006).

State	Negrito	Senoi	Peroto-Melayu	Total
Pahang	657	22,609	31,027	54,293
Perak	2,131	45,093	363	47,587
Kedah	232	—	—	232
Selangor	—	3,758	10,403	14,161
Kelantan	953	9,701	—	10,654
Terengganu	28	640	—	668
Negri Sembilan	—	—	7,624	7,625
Melaka	—	23	1,228	1,251
Johore	—	2	10,940	10,942
Total	4,001	81,826	61,585	147,412

used this title till the New Economic Policy aimed at ensuring the indigenous people's (especially Malay's) economic status was started [Maznah 2009]. Through the implementation of this policy, Orang Asli groups have been shrewdly assimilated into the main community.

Even though Orang Asli category has been socially established and used for political purposes, and now some Orang Asli are not so different from Malays, physical, linguistic, and social differences do exist in rural communities. These differences in their ethnogenesis go back a long way. It has been argued that Semang and Senoi are descendents of Hoabinhians who occupied the Peninsula for several thousand years until about four thousand B.C., whereas Melayu-Asli have ancestral ties with the Austronesians [Benjamin 1976; Kuchikura 1997].

Figure 1 shows distributions of Semang, Senoi, and Melayu-Asli. Semang distribute at the foot of the mountains and interior lowland, traditionally engaging in hunting, gathering, and trading of forest products, and led a nomadic life. They have dark brown colored skin, frizzy hair, and a small body. Senoi inhabit the mountain range to the north of the central belt, and subsisting by swidden cultivation, with some hunting and gathering. They have wavy hair, slightly paler skin, and taller stature than Semang. The title of Melayu-Asli refers to various groups living in the interior and the coastal area to the South of the Peninsula. Populations in the interior have engaged in swidden cultivation and trading of forest products, whereas coastal groups have mainly relied on fishing. Their appearance is more similar to that of the Malay, with straight hair; and the palest skin color of the three [Kuchikura 1997].

All Orang Asli groups had their own language or dialect, but most of them can now use Malay on some level. Melayu-Asli now speak standard Malay, but previously spoke



Figure 1. Distribution of Orang Asli groups (Source: Benjamin 1976).

Malay dialects that belong to Austronesian languages. This is true not only of Melayu-Asli; many Malays in rural states still speak dialects that differ so greatly from standard Malay, that people from the capital cannot understand. This is because Malay is the language of the first rulers of Malacca, and spread to other areas as a trade language [Dentan et al. 1997].

Semang and Senoi language are in Mon-Khmer group, which is comprised of Austro-Asiatic languages, with a different origin from Austronesian languages. These Mon-Khmer languages are grouped into North Aslian, East Aslian, and South Aslian. Semang generally speak North Aslian, whereas Senoi speak East Aslian and South Aslian, but these linguistic categories and ethnic groupings are not completely uniform [Benjamin 1976; Kuchikura 1997].

When physical features, linguistic roots, archeological evidence, and ecological analysis are all considered, we can support the theory that the Semang and the Senoi are the descendants of Hoabinhians [Kuchikura 1997]. The people who succeed Hoabinhian life based on hunting and gathering became samang, on the other hand, people who adapted neolith culture and cultivation introduced from the outside became Senoi [Kuchikura 1997]. The *Bateq*, the subject of this study, is one of Semang groups whose members have traditionally been nomadic and subsisted on hunting and gathering.

We conducted our research in Pos Lebir reservation in August of 2011 and 2012 (total research period was 2 months). Most of Orang Asli live in reservations settled by Jabatan Hal Ehwal Orang Asli (Department of Orang Asli Affairs, JHEOA). The government intervention to the Orang Asli has started during the Malayan Emergency period. To prevent contacts and possible cooperation between the Orang Asli and the communist guerrilla, the Emergency government established JHEOA to have authority over Orang Asli concerns, and conducted a resettlement policy [Endicott and Dentan 2004; Dentan et al. 1997]. This was a project aiming national security, and continued after the Emergency government had left office, as the risk of guerrilla resistance was still present. However, the government has altered its resettlement policy with a “re-groupment” scheme, and now these controls continue under the title of “development for the Orang Asli” [Nicholas 2000].

Pos Lebir was established in 1969 and *Bateq* people living in the northern Pahang of Kelantan were gathered [Khadizan and Abdul Razak 1974]. They followed a nomadic life at that time, but their lifestyle has changed: most women now stay at the reservation and only men go hunting and gathering forest products to sell. Other Orang Asli communities have showed significant demographic changes after becoming sedentary: it was expected that the average size of the *Bateq* would also increase as a result of their life changes [Gomes 2007; Kuchikura 2011].

Pos Lebir and the people

Pos Lebir is located on the banks of the Lebir River in Kelantan (fig. 2). The Lebir's source is around the borders of Pahang state and Trengganu state; it joins with the Galas River at Kuala Kerai, becomes the Kelantan River through Pasir Mas and Kota Bharu, and flows into the South China sea. When the reservation was settled, the main means of transportation was river boats. JHEOA officers from Kuala Kerai office contacted the *Bateq* in the jungle and encouraged them to move to Pos Lebir. However, since many public roads and logging roads have been opened, many people now use motorbikes or cars.

The reservation was established to encourage the *Bateq* living in the rain forest to take up cultivation and settle there [Khadizan and Abdul Razak 1974]. Three groups moved to Pos Lebir at the time, one from Lading (north of Gua Musang), one from the Aring river valley, and one from around the reservation area. However, after a few years, two of these groups left the reservation and moved to the Aring valley (one of these groups later moved from Aring to Kuala Koh), and only the group originally lived there was remained.

Pos Lebir people are mainly descendant of this group, but intermarriages have occurred, and the *Mendriq*: another Semang group moved from another area, also now live there [Khadizan and Abdul Razak 1974; Endicott 1979]. Pos Levbir is made up of two communities, Macang and Pasir Lingi. The former was *Bateq*, and the latter was originally *Mendriq* community [Odani 2011]. Now the *Bateq* and the *Mendriq* have intermarried, distinctive ethnicity of the two groups is no longer as clear as it once was.

The population of Pos Lebir was 258 (male 123, female 135). Table 2 shows a partial

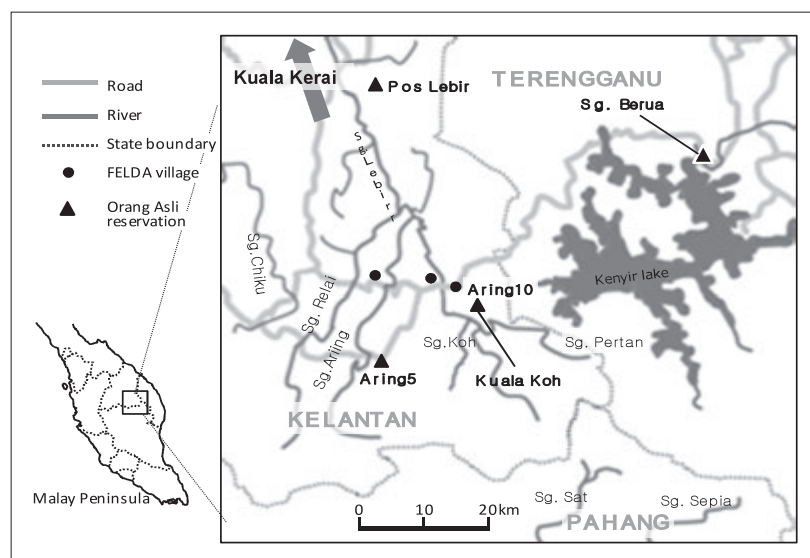


Figure 2. Research area.

demographic structure [Odani 2011]. Although the *Bateq* and the *Mendriq* had both previously nomadic, since settled in Pos Lebir, they have gradually transformed their lives, converted to Islam (to some degree), and changed their dietary habits.

They now purchase food from small stores and peddlers, or sometimes at markets. It is very rare for them to eat meals entirely made from food that they obtained from the jungle. The cash economy has deeply impacted their lives: they receive money from work (table 3) and government distributions. Examples of their ongoing gathering and hunting include the collection of agarwood (*gaharu*), rattans, and turtle.

Most of the *Bateq* marry in their teens, and breastfeed their babies unless the mother has a health problem. When a baby is a few months old, normally before he or she starts teething, the mother start to give tea (sugared or milk tea) alongside breast milk. Giving tea in a nursing bottle is started when the mother cannot breastfeed. A baby gradually begins to eat food that other people eat; curry and tomato sardine, chicken, or fish. The children do not eat monkeys as previous generations used to, and their parents say their children would get a stomachache if they did. Blowpipe hunting used to be their main method of hunting animals, and monkeys were one of their main protein sources, but this practice is now seen as antiquated in Pos Lebir.

• **Subjects and Methods**

Cross-sectional studies and longitudinal studies are the main methods of evaluating growth. The former is a way of discussing growth based on the data of one population by age. It is relevant to compare different groups of a certain age at some point, but this data does not provide a growth history of identical individuals or populations, and

Table 2. Demographic structure of Kampung Sungai Lebir (Pos Lebir) [Odani 2011].

Age	Male	Female
70-74	1	
60-69	2	1
50-59	4	3
40-49	13	10
30-39	10	15
20-29	24	10
10-19	10	15
0-9	10	23
0-4	7	5
Total	81	82

Table 3. Occupation with cash income of Kampung Sungai Lebir [Odani 2011].

Occupation	
Gathering, Hunting	43
Rubber plantation	13
School janitor	12
Other plantation work	3
Other	4
Total	75

On the other hand, longitudinal studies are a way of analyzing the data collected by following up with specific individuals or populations, meaning that the researcher can examine the growth in detail, but he needs to wait for the objects to grow up [Takaishi et al. 2004].

The data we collected is cross-sectional. Values of *Bateq* children are shown plots with 5th, 25th, 50th percentile curves representing the US National Center for Health Statics (NCHS) values and mean values of Malay, Chinese, and Indian children. The NCHS curves are often used to evaluate children's growth state, it illustrate the distribution of selected body measurements in the U.S., the 50th percentile means the curve ranks medium size of the population. The mean values of other ethnic children are based on Chen's study [1976] conducted at five primary schools in Kuala Lumpur in 1972. He collected data of 3312 children aged 6 to 11: 1120 Malays, 1413 Chinese, and 779 Indians. We can examine position of *Bateq* children in other ethnic groups with his data, but must remind the data is about 40 years before.

We collected data at a primary school (Sekolah Kebangsaan Pasir Linggi) in Pos Leb-ir in 2010 and 2011. The subjects include children from Pasir Linggi, Machan, Pos Aring (Aring 5), and Kuala Koh, but the attendance from Pos Aring and Kuala Koh was very few. The school supplies Malay meals for them each day, which include foods such as rice and curry, fried chicken or fried fish, and all students sleep at the dormitory near the school.

We obtained data from more than 70 subjects from 6 to 17 years old but could only attain age from 56 students (30 boys and 26 girls), who were mostly children from Pos Leb-ir. We analyzed these of 56 data.

Results

Stature

Figure 3 and figure 4 show the stature of boys and girls from Pos Lebir school. All of the values were below the NCHS 50th percentile values. Pos Lebir school children have a relatively short stature compared with figures for other ethnicities from the 1970s.

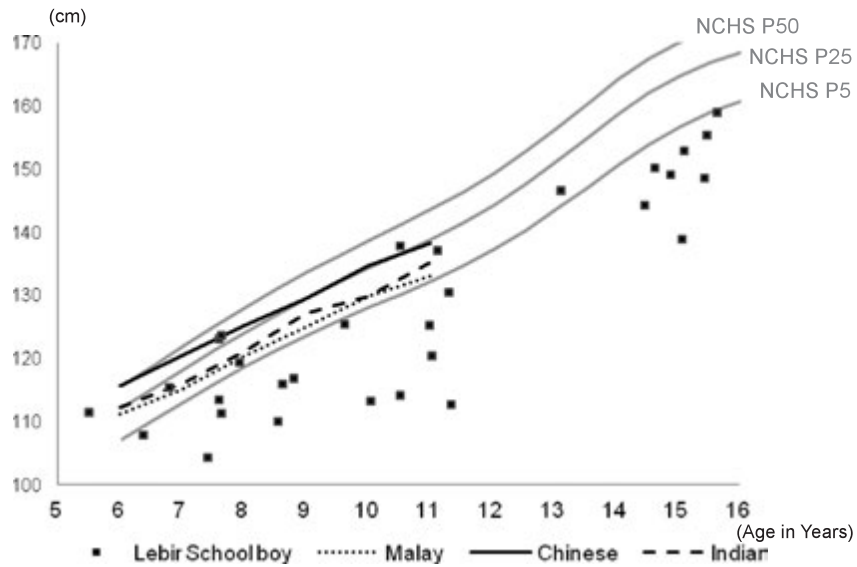


Figure 3. Stature of Pos Lebir school boys with NCHS percentile values and mean values of Malay, Chinese, and Indian. (n=30)

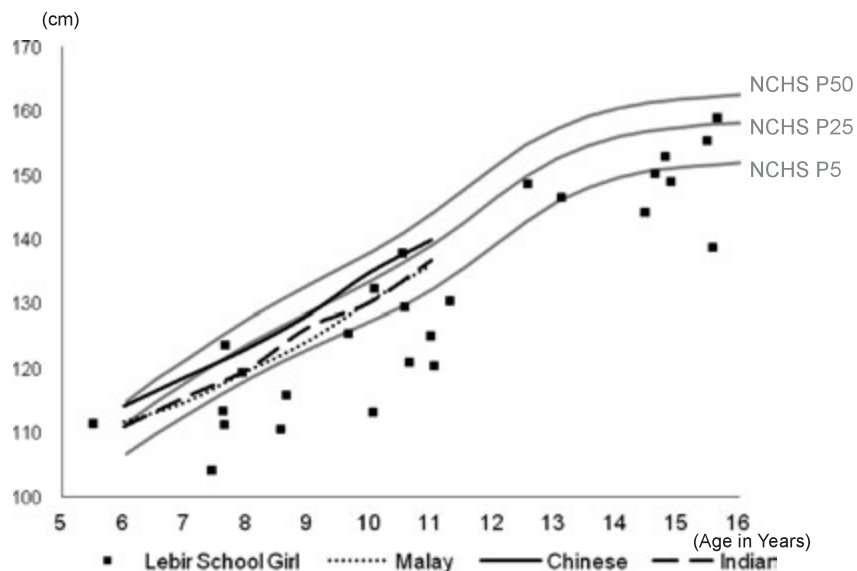


Figure 4. Stature of Pos Lebir school girls with NCHS percentile values and mean values of Malay, Chinese, and Indian. (n=26)

Weight

The weight of Pos Lebir school boys and girls is shown in figure 5 and figure 6. On the whole, the children's average weight is below the NCHS 50th percentile, but some results are above it.

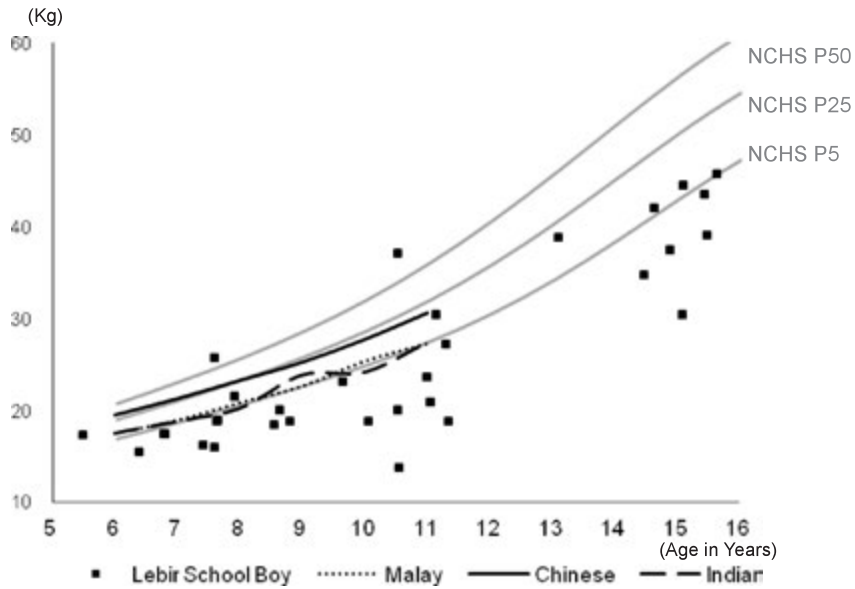


Figure 5. Weight of Pos Lebir school boys with NCHS percentile values and mean values of Malay, Chinese, and Indian. (n=30)

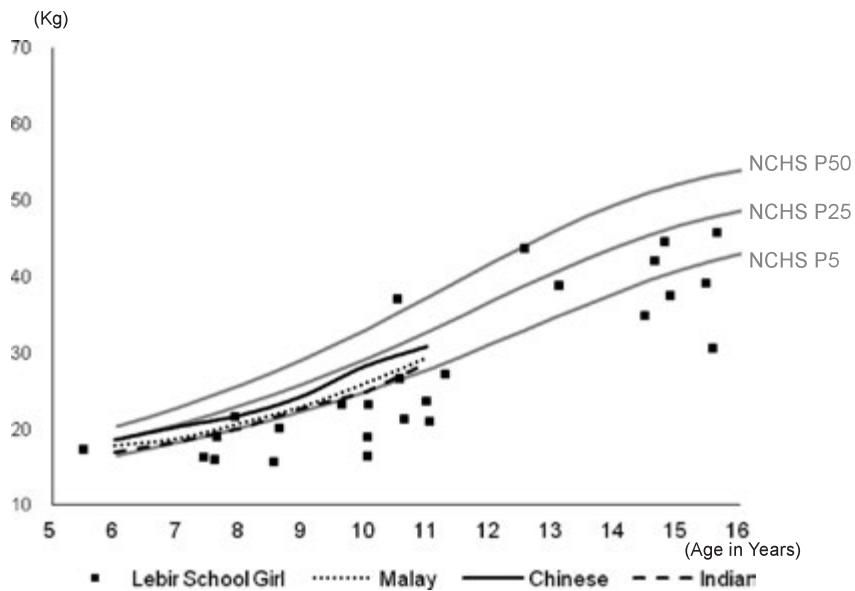


Figure 6. Weight of Pos Lebir school girls with NCHS percentile values and mean values of Malay, Chinese, and Indian. (n=26)

Body mass index

Figure 7 and figure 8 show the BMI of the children. The plots here are more scattered than the figures of stature and weight.

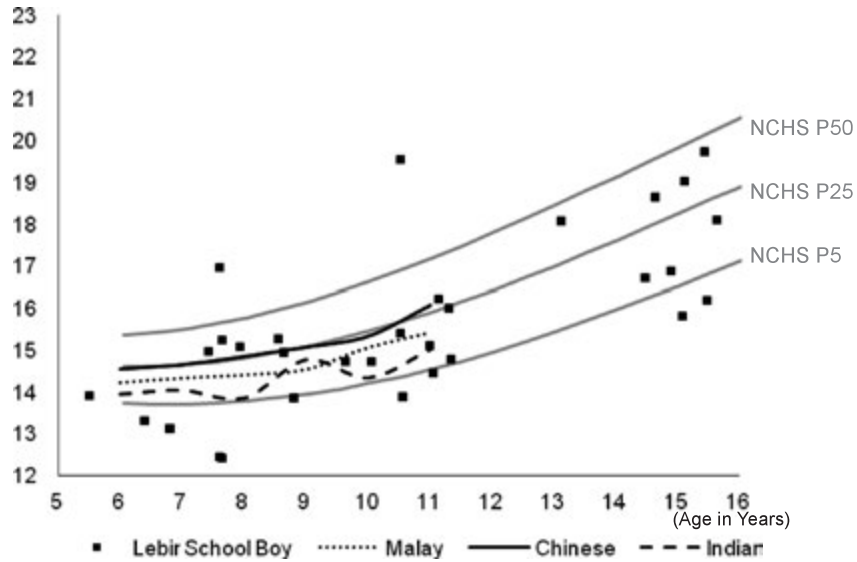


Figure 7. BMI of Pos Lebir school boys with NCHS percentile values and mean values of Malay, Chinese, and Indian. (n=30)

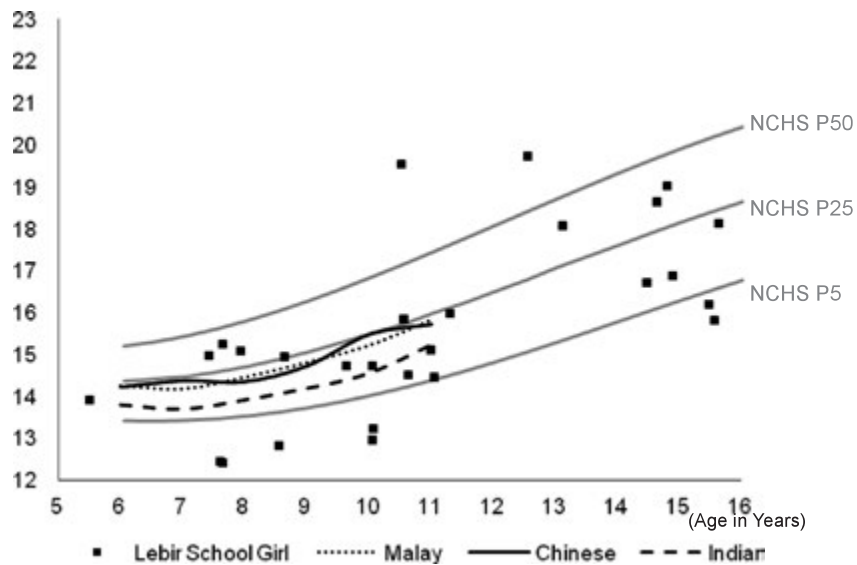


Figure 8. BMI of Pos Lebir school girls with NCHS percentile values and mean values of Malay, Chinese, and Indian. (n=26)

Table 4 Numbers of people within each range of NCHS percentile values.

	Boy			Girl		
	Stature	Weight	BMI	Stature	Weight	BMI
Y > P50	—	2	2	—	1	2
P50 ≥ Y > P25	4	—	9	4	1	6
P25 ≥ Y > P5	4	6	11	5	7	11
P5 ≥ Y	22	22	8	17	17	7
Total	30	30	30	26	26	26

Table 4 shows the number of people within each range of NCHS percentile values. Though none of the children is was above the 50th percentile in height, two boys are above it in weight and BMI, one girl is above it in weight, and two in BMI.

Discussion and Conclusions

This study examined body sizes of *Bateq* children. The *Bateq* of Pos Lebir had subsisted on hunting and gathering, and been nomadic in the rain forest. But since settling down, they have changed their way of life and dietary habits. We could assume that these factors affect their body.

The results shows that body sizes of *Bateq* children are comparatively small, mostly under the NCHS 50th percentile. When this is compared to other ethnic children, a distinction can be seen in height. : *Bateq* children were shorter. However, three children were above the 50th percentile in weight and four children were over it in BMI value. It is not sure whether this is because they were well nourished or cared for as infants, or because after they reached school age, they stayed at school and ate high-calorie meals more than the other children did. It is also unclear whether they were the children of parents who had intermarried with other ethnic groups. We need to investigate these points in next research.

Although this study contains limitations: the number of sample and the oldness of data used to show body sizes of other ethnic groups, the findings may offer some insight into states of Orang Asli body size in Malaysian ethnic groups. We need further comprehensive investigation and to pursue how their life change affect their body size.

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