

AGE AT MENARCHE IN INDONESIA

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ABSTRACT

Since 1937 data on age at menarche are gathered in Indonesia. An overview of the whole literature and unpublished thesis until 1996 is presented in this paper. The data originate from Java, some other also from Sulawesi, Sumatra and, recently, from Flores. The general mean values in a diachronic sequence demonstrate a trend of decrease in menarcheal age of 0.145 year per decade. This means that in general the wealth and health conditions in Indonesia improved in the last six decades. Statistically significant differences in menarcheal age between girls from different socio-economic class' and the father's occupation, like traders (14.13), teachers (14.48) and farmers (14.63); rich (13.90), medium situated (14.60) and poor (14.88); between girls from different environmental conditions like urban (12.27), fisherman village (12.85), farmer village (13.19). The role of animal protein intake as the most influential factor where the differences in menarcheal age between girls who eat meat e.g. 13 times (11.64) and those eating only 1-4 times a week (13.46). The mother's education constitutes an indirect influencing factor because better-educated mothers have knowledge required to give their children more suitable food. The menarcheal age is: 12.19 from mothers with university, 12.88 with highschool and 12.93 with low education. These data confirm the assertion that age at menarche constitutes a sensitive indicator of the wealth and health of a population (Bielicki & Welon 1982; Brasel 1978).

Keywords: age at menarche, Indonesia, environment

Growth and age at menarche are considered as indicators of wealth and good health of a population [Bielicki & Welon 1982; Brasel 1978]. As a physiological process age at menarche is even more sensitive on environmental changes than growth despite its high ($H_R = 0.89$) genetical determination [Bergman & Orczykowska-Swiatkowska 1988]

MATERIAL

Here under a literature review of the research results on age at menarche in Indonesia. The first known research had been done in 1937 by a Dutch scholar and is continued till the present by Indonesians.

Most date come from Java (Semarang, Jakarta, Klaten, Yogyakarta, Surabaya, Malang, Tengger) but there are also some data from Madura (Pamekasan), Sumatra (Palembang, Kayu Agung), Sulawesi (Ujung Pandang) and West-Flores (Tab. 1). Table 2 presents the influence of socio-economic conditions on the age at menarche in different places. Environmental conditions given in Table

3 reflect in substance also socio-economic differences, which are caused by the local economic and occupational situation of the people. A very important factor, i.e. the weekly animal protein intake, is given in Table 4. How far mother's education influences age at menarche reflects Table 5.

ANALYSIS AND DISCUSSION

Looking on Table 1, ordered diachronically, one can observe a zigzaggy line which slowly diminish. If we draw a regression line to get the common trend then the *b*-coefficient achieves a value of 0.0145 per year for all records and 0.01626 per year only for Java. It means that in the last six decades the expected values of the age at menarche dropped from 14.08 in 1937 to 13.22 in 1996 for all records and from 13.79 to 12.83 in the two respective years only for Java. According to other publications it could be said that generally health and nutritional conditions improvement in Indonesia is caused by better health service in rural areas and by continued informative actions on healthy food among mothers. – But there is a big worsening leap between 1938 (12.67) and 1948 (14.63), i.e. at the end of the Dutch colonial occupation and after the war and the independence. Two factors could be responsible for this deterioration: (1) wartime and Japanese occupation was a time of famine in most areas of Indonesia, and the general the increase in age at menarche reflects this situation; (2) because the data were collected in schools and, during this Dutch colonial time, only children from well-to-do parents could

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go to school, whereas after the independence every children get the opportunity to go to school, children from

rich as well as from poor families. These data reflect both factors.

Table 1. Age at Menarche by Years

Place	Age	Author/year
Semarang	13.07	Bree-Maeuleman, 1937 ¹
Jakarta	12.67	Bree-Maeuleman, 1938 ¹
Klaten	14.63	Radioputro, 1948
Yogyakarta	14.48	Doerjadibroto, 1952-58 (1970)
Surabaya	13.96	The Tik Lien, 1959 ²
Palembang	13.90	Noer, 1975
Kayu Agung	15.52	Noer, 1975
Surabaya	13.20	Ferdinandus, 1976
Ujung Pandang	14.29	Luhulima, 1979
Malang	13.27	Sjamsuar 1983
Yogyakarta	13.09	Aswin, 1985
Surabaya	12.81	Yoeliana, 1990
Pamekasan	12.62	Hendrawati, 1993
Surabaya	12.00	Kurniasari, 1994
Surabaya	12.03	Kurniasari, 1994
West-Flores	13.22	Sukadana, 1995
Tengger	13.27	Putri, 1996

Note: ¹ cited after Doerjadibroto, 1970; ² cited after Sjamsuar 1983

Table 2. Age at Menarche by Socio-Economic Condition

Place	Occupation/profession	Age	Author, year
Yogyakarta	traders	14.13	Doerjadibroto, 1970
	teachers	14.48	
	farmers	14.63	
Palembang	rich	13.90	Noer, 1973
	medium	14.60	
	poor	14.88	
Surabaya	upper class	12.39	Ferdinandus, 1980
	middle class	13.78	
	lower class	13.98	
Malang	upper class	12.98	Sjamsuar, 1983
	lower class	13.38	
Pamekasan	upper class	12.12	Hendrawati, 1993
	middle class	12.70	
	lower class	13.03	

Table 2 reflects well how the economic status influences process of sexual maturation. Generally traders are the rich or upper class whereas farmers build the poor or

lower class. In most of the cases the differences are statistically significant.

Table 3. Age at Menarche by Environment

Place	Environment	Age	Author, year
Palembang	urban	13.90	Noer, 1975
	suburban	15.52	
Madura	urban	12.27	Hendrawati, 1993
	rural (fishermen)	12.85	
	rural (farmers)	13.19	

The same factor is on work when environmental factor is considered (Tab. 3) where urban means an economically better-situated population whereas rural means uncertain economic conditions. It is not only the problem of food intake but also the burden of work which children have to do in villages [Jasicki et al. 1962]. An exception are

fisherman villages. Economically they are generally seen as the poorest population but they consume systematically more animal protein than the farmers who, referring to a joke, eat meat only when either the farmer or the chicken is sick.

Table 4. Age at Menarche by Animal Protein Intake

Animal protein intake per week	Age	Author, year
13 times or more/week	11.64	Hendrawati, 1993
9-12 times/week	12.22	
5-8 times/week	13.03	
1-4 times/week	13.46	

The importance of the animal protein intake is nicely documented in Table 4. In the growth and maturation process wealth means not much without a rational food intake by children. It is clear that generally better-educated mothers give their children better nutrition according to age than less educated mothers do. This

seems to be proofed in Table 5. The correlation between mother's education and the menarcheal age of their daughters is highly significant whereas no correlation was found between the father's education and age at menarche of their daughters.

Table 5. Age at Menarche by Mother's Formal Education

Place	Mother's education	Age	Author, year
Madura	Higher	12.19	Hendrawati, 1993
	Medium	12.88	
	Lower	12.93	

As conclusion it could be said that age at menarche constitutes a sensitive indicator of wealth and health of a population (Bielicki & Welon 1982; Brasel 1978).

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