ANTHROPOLOGIE • XL/2 • pp. 141–144 • 2002

DIPAK KR. ADAK, AJAY KR. GHARAMI

SEXUAL MATURITY AND ITS BIOSOCIAL PROXIMATES: A STUDY AMONG THE LADIYA OF MADHYA PRADESH, INDIA

ABSTRACT: The Ladiya of Madhya Pradesh have been studied in terms of puberty status. In the present paper four biosocial proximates like family income, father's occupation, birth order and sibship size have been taken into consideration to examine the age at menarche. On the basis of the present findings it appears that better socio-economic condition does show its effect over the onset of menarche among the Ladiya.

KEY WORDS: Onset of menarche – Biosocial factors – The Ladiya

INTRODUCTION

Menarche is the most obvious sign of puberty of a woman. The period between the onset of menarche and menopause is considered to be the reproductive span in a woman's life. Thus, the age at menarche can be used as a quantitative and objective measure of reproductive physiology of a woman. Menarche is influenced by intrinsic and extrinsic factors. Intrinsic factors are the genes which lay down the entire constitution of individuals and are responsible for hereditary differences. Extrinsic factors are many – the environmental, psychological, pathological ones and socio-economic status. The latter is reflected in better education, occupation, nutrition, and in better hygienic conditions of the people (Rajangam, Thomas 1987). The onset of menarche is considered as an important indicator in any study of growth.

India has had a strong tradition of menarcheal study. The majority of these studies focused on the average age at menarche in various populations. However, there are some studies which dealt with the association of several biosocial factors with menarche. For instance, Rami Reddy (1977, c.f. Rajangam, Thomas 1987) has shown the influence of consanguinity in the early onset of menarche among the Balija, Sharma and Chowdhury (1995) found a positive relationship between the age at menarche and fertility among the Gond. Better socio-economic condition in a family has been found responsible to decrease the age at menarche among the Assamese Muslims (Begum, Choudhury 1999). Relationship between age at menarche and socio-economic status has been investigated by Bai and Vijayalakshmi (1973) in different populations of Andhra Pradesh. Side by side, Rajanagam and Thomas (1987) have investigated the relationship between age at menarche and socio-biological factors among the Tamil Brahmin. The present study is an endeavour to deal with puberty status and its biosocial proximates among the Ladiya of Madhya Pradesh.

MATERIALS AND METHODS

For the purpose of the present study, a total of 188 unrelated Ladiya women were interviewed. Of these 188 women 66 belong to the postmenopausal group while the rest are yet to attain their menopause. The method of recall age of menarche was applied to collect the data on menarcheal age. In order to examine the relationship of

menarche with the biosocial proximates altogether four proximates like household income, father's occupation, birth order and sib-ship size were taken into consideration. Data on economic status were categorised on the basis of per capita annual income. In this connection three categories were made, viz. HES (high economic status: per capita annual income more than Rs. 5000), MES (middle economic status: per capita annual income between Rs. 5000 and 1001) and LES (low economic status: per capita annual income Rs. 1000 and less). For detailed information on study area and people we refer to Adak (2001).

RESULTS

The mean menarcheal age of the Ladiya women is found to be 13.5±0.12. Majority of the women (39.89%) have experienced their first menstruation at the age of 13 years. A decreasing trend is perceptible above and below this age. This is found to be true in both the pre and post-menopausal group. However, the occurrence of menarche at the age of 13 years is comparatively higher among the post-menopausal women (51.52%) than among the pre-menopausal women (33.61%). Side by side the mean menarcheal age among the pre-menopausal women (13.70±0.15) is found to be slightly higher than the post-menopausal women (13.09±0.19). Difference between these two means is significant statistically (t = 2.52). This indicates an upward trend in the pre-menopausal group (*Table 1*).

Menarcheal age and household income : It can be seen from *Table 2* that mean menarcheal age increases as household income decreases, i.e. from HES households (13.11±0.23) to LES households (14.09±0.25) through MES households (13.54±0.17). However, when the t-test is applied it is found that the difference between the HES and LES is statistically significant (t=2.88) but the differences between the HES and MES (t=1.50), and MES and LES households (t=1.82) are not significant.

Menarcheal age and father's occupation: Mean age at menarche increases from the daughters of job holder fathers (12.87±0.29) to daily labourer fathers (14.07±0.22) through the bidi binder fathers (13.06±0.15) and the fathers engaged in miscellaneous occupations (13.57±0.24). Differences in mean menarcheal age between the daughters of bidi binder and daily labourer (t=3.79) as well as daily labourer and job holder (t=3.30) are statistically significant. But no significant difference has been noticed in other categories (*Table 3*).

Menarcheal age and birth order: Effect of birth order on menarcheal age is apparent from *Table 4*. There is a gradual increase in menarcheal age from the first born (12.92±0.10) to the third born (13.70±0.43) through the second born (13.26±0.18). But in case of the fourth and above born the mean menarcheal age (13.61±0.34) is found to be lower than the third born. The differences between different birth orders are, however, found to be non-significant.

Menarcheal age and sibship size: It follows from *Table 5* that mean menarcheal age increases with the increase in family size i.e. from 1 to 3 children (12.98±0.34) to 10 or more children (14.22±0.39) through 4 to 6 children (13.07±0.13) and 7 to 9 children (13.54±0.21). When the t-tests are applied in mean menarcheal age of the women from different family sizes, it is found that there are significant differences between 1 to 3 children families and 10 or more children families (t=2.40), as well as 4 to 6 children families and 10 or more children families (t=2.80). In other categories, no significant difference is found.

DISCUSSION

Montagu (1948, c.f. Sharma, Chowdhury 1995) opined that the menarche before 12 years of age is abnormal. The frequency of abnormality has been found to be quite low (i.e. 6.38%) among the Ladiya in this context. It could be expected that better economic condition in a family does show its effect over dietary intake as well as nutritional status among the members. Early menarche has been observed in the Ladiya in higher income group, while in lower income group the reverse is evident. Thus, the menarcheal age in the studied population indicates an inverse relation with household income.

Bielicki *et al.* (1986; c.f. Begum, Choudhury 1999) have found that menarcheal age of an occupational group is strongly dependent upon its socio-economic status. It is apparent from the present study that the daughters of job holders and bidi binders have attained their menarche at lower age than that of the daily labourer and fathers engaged in miscellaneous occupations. Job holders and bidi binders being the higher earners, they maintain better standard of living than the other two groups. Consequently, their daughters have attained menarche at an earlier age.

Along with the above two proximates, the effects of birth order on menarche have also been observed. The Ladiya women who were born later, on the whole, attained menarche at a later age than the earlier born. Begum and Choudhury (1999) are of the opinion that parental care decreases from the first born onwards, which has a profound effect on the psychological condition of the children. Psychological stress may be a cause of delayed menarche. Ruble and Crooks (1982, c.f. Begum, Choudhury 1999) also found similar results. Thus, the delayed menarche among the later-born Ladiya women is in congruence with the view of Begum and Choudhury (1999) and Ruble and Crooks (1982).

Apart from these proximates, the effects of family size on menarche have been determined too. Tanner (1962; c.f. Rajangam, Thomas 1987) has stated the influence of family size as a simple environmental one "the more there are mouths to feed and care, the lower the standards of feeding and care". Large family size increases the possibility of lower nutrition, as more mouths are to be fed consumption of nutritious diet might be reduced. Rajangam and Thomas

TABLE 1. Age specific occurrence of menarche (after Adak *et al.* 2001).

Age at menarche	Pre-menopausal women (n = 122)		Post-menopausal women (n = 66)		Total (n = 188)	
(in years)	No.	%	No.	%	No.	%
11	6	4.92	6	9.09	12	6.38
12	19	15.57	14	21.21	33	17.55
13	41	33.61	34	51.52	75	39.89
14	21	17.21	4	6.06	25	13.30
15	16	13.11	2	3.03	18	9.57
16	9	7.38	3	4.55	12	6.38
17	4	3.28	1	1.51	5	2.66
18	4	3.28	1	1.51	5	2.66
19	2	1.64	1	1.51	3	1.60

TABLE 2. Menarcheal age in relation to economic status.

Household categories	Number of women	Menarcheal age	
		Mean±S.E.	S.D.±S.E.
High economic status (HES)	35	13.11±0.23	1.39±0.17
Medium economic status (MES)	102	13.54±0.17	1.77±0.12
Low economic status (LES)	51	14.09±0.25	1.80±0.18

t values: HES vs MES = 1.50 (d.f. = 135); HES Vs LES = 2.88* (d.f. = 84); MES Vs LES = 1.82 (d.f. =151); * Significant at 5 per cent level

TABLE 3. Menarcheal age according to father's occupation.

Occupation	Number of women	Menarcheal age	
		Mean±S.E.	S.D. ±S.E.
Bidi binder (BB)	53	13.06±0.15	1.09±0.11
Daily labourer (DL)	78	14.07±0.22	1.98±0.16
Job holder (JH)	16	12.87±0.29	1.16±0.20
Miscellaneous activities (MA)	41	13.57±0.24	1.57±0.17

t values: BB Vs DL = 3.79* (d.f. =129); BB vs JH = 0.58 (d.f. =67); BB Vs MA = 1.80 (d.f. =92); DL Vs JH = 3.30* (d.f. = 92); DL Vs MA = 0.15 (d.f. = 117); JH Vs MA = 0.18 (d.f. = 55); * Significant at 5 per cent level

TABLE 4. Menarcheal age according to birth order.

Birth order	Number of women	Menarcheal age	
		Mean±S.E.	S.D.±S.E.
I	69	12.92±0.10	0.83±0.07
II	79	13.26±0.18	1.58±0.12
III	13	13.70±0.43	1.54±0.30
IV and above	27	13.61±0.34	1.77±0.24

t values: I Vs II = 1.65 (d.f. = 146); I vs III = 1.77 (d.f. =80); I vs IV and above = 1.95 (d.f. =94); II vs III = 0.94 (d.f.= 90); II vs IV and above = 0.91 (d.f. = 104); III vs IV and above = 0.16 (d.f. = 38)

TABLE 5. Menarcheal age as per sibship size.

Sibship size	Number of women	Menarcheal age	
		Mean±S.E.	S.D.±S.E.
1–3	48	12.98±0.34	2.35±0.24
4–6	76	13.07±0.13	1.18±0.09
7–9	46	13.54±0.21	1.44±0.15
10 and above	18	14.22±0.39	1.65±0.27

t values: 1–3 vs 4–6 = 0.25 (d.f. = 122); 1–3 vs 7–9 = 1.40 (d.f. =92); 1–3 vs 10 and above = 2.40* (d.f. = 64); 4–6 vs 7–9 = 1.90 (d.f. = 120); 4–6 vs 10 and above = 2.80* (d.f. = 92); 7–9 vs 10 and above = 1.53 (d.f. = 62); * Significant at 5 per cent level

(1987) have found later menarche among the families with more children. An increasing trend in the menarcheal age is perceptible among the Ladiya as the family size increases. Thus, this finding corroborates the findings of others on the same line.

Taking into consideration all these proximates it could be surmised that better socio-economic condition does show its effect over the onset of menarche among the Ladiya. With the improvement of socio-economic condition the menarcheal age is found to be decreasing.

REFERENCES

ADAK D. K., 2001: A study of the phenomenon of demographic transition among the Ladiya of Madhaya Pradesh, India. *Anthropologie* XXXIX, 2–3: 241–242.

ADAK D. K., GHARAMI A. K., SINGHAI T., JAIN M. K., 2001: A study on menarche and fertility among the Ladiya of Sagar District, Madhya Pradesh. *J. of Hum. Ecol*. 12: 279–281.

BAI K. I., VIJAYALAKSHMI B., 1973: Sexual maturation of Indian girls in Andhra Pradesh (South India). *Hum. Biol*. 45: 695–707.

BEGUM G., CHOUDHURY B., 1999: Sexual maturation among the Assamese Muslim girls. *J. of the Indian Anthrop*. *Soc.* 34: 293–297.

BIELICKI T., WALISZKO A., HULANICKA B., KOTLARZ K., 1986: Social class gradients in menarcheal age in Poland. *Ann. Hum. Biol*. 13: 1–11.

MONTAGU A., 1948: *The Reproductive Development of the Female*. New York.

RAJANGAM S., THOMAS I. M., 1987: Menarche and menopause in Tamil Brahmins. *Man in India* 67: 264–275.

RAMI REDDY V., 1977: *Age at Menarche among the Balija's of Tirupathi, South India*. IVth Annual Genetic Conference.

RUBLE D. N., CROOKS G. J., 1982: The experience of menarche. *Child Dev*. 53: 1557–1566.

SHARMA M. B., CHOUDHURY D., 1995: Menarche and fertility: A correlation study among the Gond tribe of Maharashtra. *J. of Hum. Ecol*. 6: 209–212.

TANNER J. .M., 1962: *Growth at Adolescence.* Blackwell Scientific Publications, Oxford.

Dipak Kr. Adak
Anthropological Survey of India
Field Station, Sagar 470 003, M. P., India
E-mail: adak_dk@rediff.com

Ajay Kr. Gharami
Department of Anthgropology
Dr. H. S. Gour University
Sagar 470 003, M. P., India
E-mail: agharami@yahoo.com