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A Comparative Study of Differential Fertility among the Pnars and the Sakacheps in Meghalaya

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Abstract

The present is the outcome of the cross-sectional study carried out among the Pnars and Sakacheps of Saitsama village in Jaintia Hills district of Meghalaya.The main objective of the study is to find out whether or not differential fertility exists between the Pnar and Sakachep communities living in the same ecological niche, and to identify how socioeconomic factors are associated with differential fertility in these two communities. Demographic data using structured schedules were collected, which included reproductive performances of 112 Pnar women and 85 Sakachep women.It was found that the mean ages at marriage (± SE) among the Pnars and Sakachep women were19.25 ± 0.25 and 19.29 ± 0.33 years, respectively. The completed family size (± SE) was 7.55±0.47 live-births per mother among the Pnars and 7.71±0.59 live-births per mother among the Sakacheps. The total fertility rate was 6.75 among the Pnars and 6.25 among the Sakacheps; whereas the mean number of live-births (± SE) to all married women was found to be 4.79±0.30 and 4.99±0.31, respectively. The result indicated that both the communities experienced high fertility rate. The adoption of family planning was also low. It is found that the effects of household income and mother's education were more pronounced in case of the Pnars as compared to that of the Sakacheps. So it is expected that fertility rates among the Pnars would be reduced considerably with the improvement in their socioeconomic conditions. Such an assumption may not, however, be the same for the Sakacheps as other socio-cultural factors may play an important role in regulating fertility rates among them.

Key words: Fertility, Pnars, Sakacheps, family planning, socio-economic

INTRODUCTION

Demographic parameters are of great importance to understand the cultural variation and the operation of various evolutionary forces in human populations. Differential fertility, for example, has been recognised as one of the raw materials for estimating the Darwinian fitness in human populations (Crow, 1958). The view on the evolutionary significance of differential reproduction can be traced back to the writing of Thomas Malthus (1803) on the principles of population, which had in turn a great influence on the writing of Charles Darwin's evolutionary theory (Darwin, 1859). According to Malthus, "population invariably increases where the means of subsistence increases unless prevented by various checks, and that these checks can be resolved into those of moral restraint, vice and misery." Malthus saw the constant tendency for the population to increase as one great impediment to the welfare and progress of mankind. It is on the basis of this backdrop that Darwin formulated his theory of natural selection through differential reproduction in terms of differential fertility and mortality.

The difference between individuals or groups in fertility rate has been the subject of debate and discussion for more than two centuries from both cultural and biological perspectives. In addition to its linkage with evolutionary mechanisms, differential fertility is also associated with various economic, social and cultural factors (Brokerhoff and Hewett, 2000; Dey and Goswami, 2009; Adhikari, 2010; Barthold *et al*., 2012; Jalovaara and Miettinen 2013; Dribe *et al*., 2014). For example, researchers have reported a significant association of educational and occupationalstatus with fertility (Kreyenfeld, 2004; Weeden *et al*., 2006; Bauer and Jacob, 2009; Bartholde*t al*., 2012). It is reported that educational status has also a great influence on child health and survival by enhancing the knowledge and skills of age at marriage, contraceptive use, nutrition, prevention and disease treatment (Balakrishnan *et al*., 1993; McCrary and Royer, 2011; Güneş, 2013). Several studies have revealed that economic factors, such as household income and occupation are negatively associated with a fertility rate in developing countries (Kost and Amin, 1992; Bicego and Boerma, 1993; Adhikari, 2010). However, the effects of these socioeconomic factors on fertility appear to vary from one population to another depending upon

various ecological, social and cultural factors. Understanding of the mechanisms in bringing about such variation is till important from the anthropological and demographic perspectives.

In the present study, an attempt has been made to find out whether or not differential fertility exists between the Pnar and Sakachep communities living in the same ecological niche, and to explore how socioeconomic factors are associated with differential fertility in these two communities.

MATERIAL AND METHODS

The present study was carried out among Pnar and Sakachep tribal communities of Saitsama village in Jaintia Hills district of Meghalaya, Northeast India. The Sakacheps are one of the Kuki tribes who had lived in Vairengte (Mizoram) and migrated to Tripura around 300 years ago. It is narrated that the Sakacheps migrated from Tripura to Meghalaya in the early 19th century. The Saitsama village in Jaintia Hills is a village where both the Pnars and Sakacheps live together. The Pnar dialect is the main language spoken by the people in the village. However, the Sakachep have their own dialect without any script, which is akin to Hmar and other Lushai group of languages. Agriculture is the main occupation of both the communities.

The demographic data were collected using a structured interview schedules. A total of 202 households were surveyed for the necessary data collection. Demographic and socioeconomic information on age, sex, marital status, ethnicity, religion, occupation, place of birth, place of residence was collected. Data on number of conceptions, number of live births, birth order, age, sex and marital status of each offspring, through in-depth interview from the married women. Verbal consents were obtained before starting the interview after making them understand the purpose of the study. Data on household income were cross-checked taking into consideration some aspects of socioeconomic conditions like housing condition, types of occupation, landholding, etc. Three income groups were arbitrarily classified based on the percentile distribution of percapita monthly income of households, which are as follows:

Above 75th percentile (Above Rs. 500.00) = High income group (HIG)

Between 50th to 75th percentile (Rs. 250.00 to Rs.500.00) = Middle income group (MIG)

Below 50 percentile (Below Rs. 250.00) = Low Income group (LIG)

The data were analyzed using the Statistical Package of Social Science (SPSS, version 16) at 5% level of significance. The continuous variables include age at marriage, age at first childbirth, family size, number of live births and surviving children. Independent sample t-test was used to test differences between two means. One way analysis of variance (ANOVA) was also used for testing the differences of more than two means.

RESULTS AND DISCUSSION

Age at marriage and childbirth: Table 1 shows the mean age at first marriage for both the Pnars and Sakacheps. As generally observed in other populations (Khongsdier, 2005), the mean age at marriage was higher in males than in females in both the populations.In other words, the results indicate that the females get married earlier than their male counterparts in both populations. As for the population differences, it is observed that there are no significant differences between Pnars and Sakacheps for both males and females. Therefore, it is likely that the effect of age at marriage on fertility would be similar in both the communities, provided other things being equal. Table 2 shows the mean age at first child births in both the communities. Similar to the age at marriage, the mean age at first child birth was also significantly higher in males than in females in both the communities. Our study also failed to find out any statistical differences between the two communities in respect of mean age at first child birth (i.e., for both males and females).

Table 1: Mean age at marriage

Sex	Pnar			Sakachep			t-value(2-tailed)
	Number	Mean	SE	Number	Mean	SE	
Male	112	24.27	0.44	85	24.69	0.66	0.55, p>0.05
Female	112	19.25	0.25	85	19.29	0.33	0.10, p>0.05
Sex difference	t = 9.86, p<0.0001			t= 7.29, p<0.0001			

Table 2: Mean age at first childbirth

Sex	Pnar			Sakachep			t-value(2-tailed)
	Number	Mean	SE	Number	Mean	SE	
Male	112	25.63	0.48	85	26.02	0.66	0.55, p>0.05
Female	112	20.68	0.31	85	20.69	0.35	0.10, p>0.05
Sex-difference	t = 8.72, p <0.01			t = 23.73, p< 0.01			

Completed Family Size: Table 3 below shows the completed family size for both the communities. The completed family size is obtained as a number of live-births and/or surviving children per mother, who was married once and lived continuously in wedlock till the age of 45 years and above (Khongsdier, 1992). It is considered an important measure of total fertility to women who completed the reproductive age. The Table 3 shows that the completed family size was slightly higher among the Sakacheps, especially in respect of live-births. However, the t-test indicates that the difference between the two communities were not statistically significant (t = 2.17, p<0.05).In other words, we may conclude that both the communities are by and large similar in completed family size.

Table 3: Completed family size

Parameters	Pnar	Sakachep	t-test
Number of mothers (45 years and above)	31	17	-
Number of live-births	231	131	-
Number of surviving children	173	113	-
Mean (± SE) of live-births per mother	7.55±0.47	7.71±0.59	0.21
Mean (± SE) of surviving children per mother	5.58±0.45	6.65±0.54	1.52

Live-births by Age Groups of Mothers: The mean number of live births for both Pnars and Sakacheps is shown in Table 4. It is observed that both the communities are also similar in

mean number of live-births per married woman, although it was slightly higher among the Sakacheps (4.99±0.31) than in the Pnars (4.79±0.30). It can also be observed from Table 4 that the mean live-births per married woman increased with the increasing age group of the mothers in both the communities. The t-test for the differences between the two communities was not statistically significant across age groups ($p>0.05$), except in the age group ≤24 years ($t = 2.02$, $p < 0.05$).

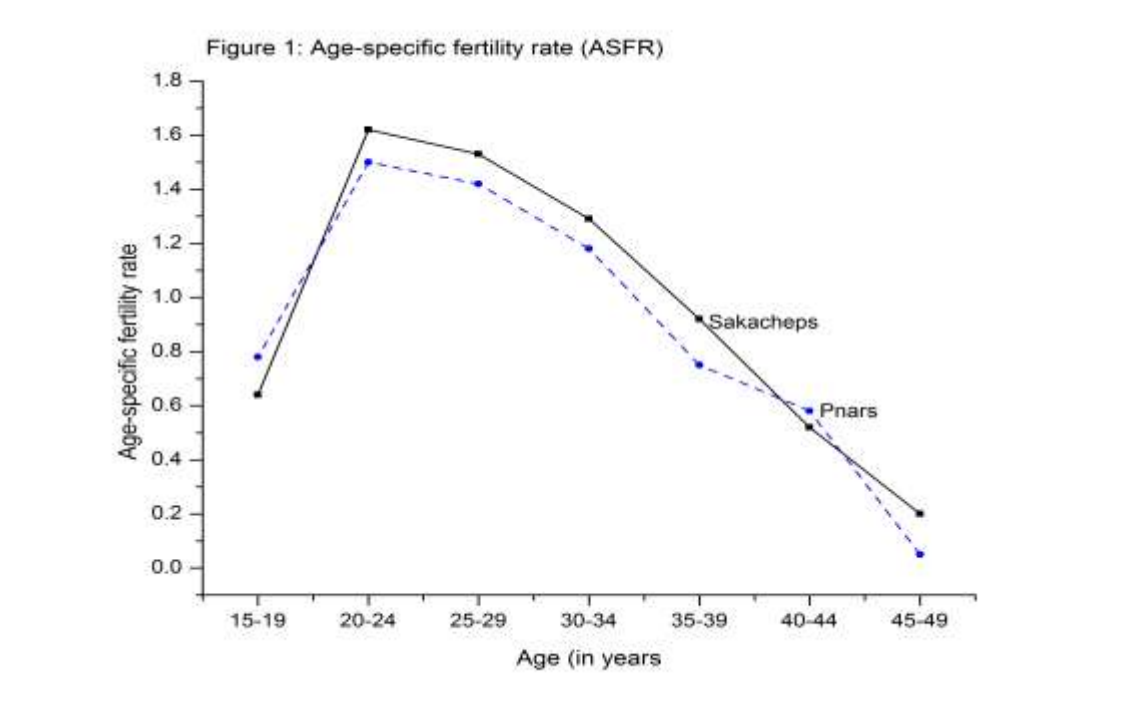
Table 4: Mean live-births by age group of all married women

Age Group in Years	Pnar			Sakachep			t-value (2-tailed)	
	Mothers	Mean	SE	Mothers	Mean	SE	t-value	Significant
≤ 24	31	1.87	0.25	14	2.86	0.47	2.02	p <0.05
25-29	18	3.22	0.43	18	3.11	0.34	0.20	p >0.05
30-34	17	5.35	0.38	11	4.82	0.58	0.80	p >0.05
35-39	7	4.86	0.59	13	4.62	0.65	0.24	P >0.05
40-44	15	7.60	0.80	10	7.20	0.99	0.31	p >0.05
≥45	24	7.58	0.58	19	7.53	0.54	0.07	p >0.05
Total	112	4.79	0.30	85	4.99	0.31	0.45	p >0.05

Age-Specific Fertility Rates: The age-specific-fertility rate (ASFR) and total fertility rate (TFR) of the women is shown in Table 5**.** It was observed that the ASFR started declining when the women are aged more than 30 years of age. Thereafter, it tends to decline with the increasing age of women. As in the case of other measures of fertility, the two communities are also by and large similar in TFR, although it was slightly higher among the Pnars (6.75). In both the communities, the ASFR reaches its peak when the mothers are aged 20-24 years (**Figure 1)**.

Table 5: Age-specific-fertility rate (ASFR)

Age group of Mothers (years)	Pnar			Sakachep		
	Mothers	Live-births	ASFR	Mothers	Live-births	ASFR
15-19	112	72	0.64	85	66	0.78
20-24	104	168	1.62	84	126	1.50
25-29	81	124	1.53	73	104	1.42
30-34	64	82	1.29	54	64	1.18
35-39	47	43	0.92	47	31	0.75
40-44	39	20	0.52	29	17	0.58
≥45	84	17	0.20	55	3	0.05
TFR			6.75			6.25



Live-births by Economic Condition: Table 6 shows the mean number of live-births according to income groups of mothers. The results showed that the mean number of live-births per mother decreased with the increase of household income levels in both the communities. The mean live-births among the Pnars were found to be 5.94±0.54, 4.94±0.38 and 93.21±0.51 in Low, Middle and High Income groups, respectively. Using the one-way analysis of variance

(ANOVA), these mean differences in live-births among the three income groups were statistically significant among the Pnars (F-Statistics = 7.47,$p<0.01$). It indicates that economic condition in terms of household income is an important factor for regulating fertility rates among the Pnars. Among the Sakacheps, the situation is different. Although the mean live-births decreased with increasing income levels, the ANOVA test indicates that the differences were not statistically significant.

Table 6: Live-births by economic condition

Income Groups	Pnar				Sakachep			
	Mothers	Live-births	Mean	SE	Mothers	Live-births	Mean	SE
Low	32	190	5.94	0.54	49	271	5.69	0.42
Middle	47	232	4.94	0.38	24	99	4.13	0.49
High	29	93	3.21	0.51	10	39	3.90	0.81
F-Statistics = 7.47, $p<0.001$					F-Statistics=3.54, $p>0.05$			

Live-births by Educational Status: Several studies have reported the adverse relationship between fertility and educational status of mothers (Balakrishnan *et al*., 1993; Dey and Goswami, 2009; Adhikari, 2010).In the present study, we have also observed that the mean number of live births decreased with the increase in educational level of mothers (**Table 7**). Among the Pnars, the mean live-births were 5.76±0.43, 3.94±0.68, and 3.36±0.37 for the mothers with illiterate, primary, and secondary levels of education, respectively. These mean differences in live-births were found to be statistically significant between the educational groups of mothers (F-statistics =7.67, $p<0.01$). Similarly, the mean live-births among the Sakacheps decreased with the increasing educational levels of mothers. However, the ANOVA test indicates that the differences between educational groups of mothers were not statistically significant among the Sakacheps (F-statistics = 3.54, $p>0.05$). So the present findings suggest that socioeconomic factors like household income and education of mothers is more important in regulating fertility rates among the Pnars as compared to the Sakacheps.

Table 7: Live-births by education level

Educational Level	Pnar				Sakachep			
	Mothers	Live-births	Mean	SE	Mothers	Live-births	Mean	SE
Illiterate	65	363	5.76	0.43	46	257	5.59	0.44
Primary	16	63	3.94	0.68	21	97	4.62	0.51
Secondary	33	111	3.36	0.37	18	70	3.89	0.59
F-Statistics =7.67, $p<0.001$					F-Statistics=2.68, $p>0.05$			

Conclusion

The present findings also indicate that the fertility rate is fairly high in both the communities. It may be noted that only about 25 percent of the mothers included in this study were aware of family planning and the acceptance rate of modern family planning methods is relatively low, i.e. about 14 percent. The low acceptance rate of modern family planning methods in Meghalaya is not fully understood (Khongsdier, 2002). According to several micro studies (Deka, 1989; Khongsdier and Ghosh, 1998; Khongsdier *et al*., 2001), the fertility rate among the Khasis seems to be higher than many populations in Northeast India. Similarly, data of the National Family Health Survey-3 (IIPS and Macro, 2007) at the state level indicated that Meghalaya is one of the three states with the highest fertility rate in the country. It is likely that various socio-cultural factors are associated with high fertility rate in Meghalaya. The present study is limited to small sample size.

The findings in this study are preliminary and subject to many limitations including small sample size. It is however, evident that both the study populations are by and large similar in fertility rates.As noted earlier, both the communities are also living in the same ecological niche, although they are different from both cultural and ethnic perspectives. It is also evident from the present study that the effects of the two universal socioeconomic factors, namely, household income and mother's education, are not the same in both the communities. The present findings suggest that the relation between these socioeconomic factors and fertility is more pronounced in

the Pnars as compared to that among the Sakacheps. In other words, it is expected that fertility rates among the Pnars would be reduced considerably with the improvement in socioeconomic conditions of the society. Such an assumption may not, however, be the same for the Sakacheps; instead it is likely that other socio-cultural factors may also play an important role in regulating fertility rates among them.

The present study also suggests that household income and education are important factors that may be linked not only with the overall economic development but with differential fertility as well. Our preliminary findings suggest that the interrelationship of these socioeconomic and demographic variables may not be straight forward rather it is very complex issue. Further studies are required to look into such nature of relationship, especially in understanding how household income or economic condition is associated with fertility in relation to mother's education. It may be mentioned that de la Croix and Doepke (2003) have suggested that poor families tend to have more children and invest less in education.They have also suggested that differential fertility accounts for the cross-sectional relationship between inequality and economic growth.It is the differential fertility within the population, but not the overall total of children in the population, which is more important. Whether it is so in the present communities is a subject matter of further investigation. We hope that further studies will shed much more light on such type of possible interaction.

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