



Reproductive Profile of Two Lesser-Known Tribes of Arunachal Pradesh – Miji and Sartang

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ABSTRACT

Identifying and understanding the factors affecting fertility and mortality is important to maintain a balanced, healthy, and prosperous population. The present study is an attempt to understand the reproductive profile of two lesser-known tribes of Arunachal Pradesh, India – the Miji and the Sartang, and to comprehend the relationship between fertility and mortality. The study able to establish a range of factors affecting fertility and mortality. The average age at marriage is below the legal age of marriage for both the populations and affecting fertility. The educational status of the mother and age at first conception is also found to affect the fertility. However, occupation, religion, and uses of birth control measures show no impact on fertility in this study. The maximum prenatal mortality is found in the form of miscarriage. However, the study could not establish any factor influencing prenatal mortality except antenatal checkups. The study also found the impact of mortality on fertility in the form of reproductive compensation.

Introduction

The size and composition of a population is determined by three components – fertility, mortality, and migration. While migration is more a social issue, fertility and mortality are more a biological issue. Mortality, though influenced by scientific development up to some extent, is far beyond human control. Fertility, on the other hand, can be manipulated using advanced scientific knowledge. Fertility is the means for biological replacement of human species, and human beings continue to prevail on earth through fertility. Since mortality is an inevitable phenomenon, fertility is the counteractive force to overcome the loss and hence to continue its existence. However, taking full advantage of the human potential for fertility leads to the exponential growth of its population. Hence, it is not a sensible phenomenon considering the limited natural resource available for its survival. Therefore, measures are being taken up to control the fertility rate. Besides, fertility is not free from various other factors which may be either biological or social. Factors like age at marriage, education, occupation, income, age at menarche, age at menopause, religion, etc. have been found to impact the overall outcome of fertility and are studied across the populations including few in Northeast India (Mukhopadhyay 2001; Singh 2006, Asghar *et al.* 2014, 2016, Kameih and Kshatriya 2016).

Similarly, mortality is also affected by various biological and social factors. Factors like age at first

conception, number of total conceptions, education and occupation status level of the parents, per capita annual income, religion, consanguineous marriage, place of delivery, etc. are studied in many populations worldwide. Of the various types of mortalities, mortality before the reproductive age is important as it eliminates the individual before being able to participate in the reproductive scheme of the population. It is also one of the main factors affecting the health of mothers. Further, mortality also affects the overall fertility of the population. Studies reported that parents tend to produce more offspring to replace the lost ones (Asghar and Devi 2016). This phenomenon is popularly known as reproductive compensation (Gowaty *et al.* 2007, Gowaty 2008).

Since every community has its own gene pool and are exposed to a different environment with a different set of cultures, the factors influencing fertility and mortality vary from community to community. Identifying and understanding the factors affecting fertility and mortality is important to maintain a balanced, healthy, and prosperous population. For this reason, the study of the reproductive profile always takes the central position in the population studies. The present study is an attempt to understand the reproductive profile of two lesser-known tribes of Arunachal Pradesh – the Miji and the Sartang, and also tries to comprehend the relationship between fertility and mortality.

Populations and Methods

The Miji, also known as Sajolang or Damai is one of the lesser-known tribes of Arunachal Pradesh. With a population of less than 40,000, they inhabit the districts of West Kameng, East Kameng, and Kurung Kumey. The name Miji is believed to be derived from the words *mai* (fire) and *ji* (giver) which means fire giver. It is believed that in the olden day the Mijis used to help Aka by giving fire. They are mainly animist but recently some of them have started following Christianity. The Sartang is another lesser-known tribe of Arunachal Pradesh. Their population is less than that of the Miji with not more than 5000 people in total. They inhabit Nafra and Dirang Circle of West Kameng District. Due to the influence of the Monpas, a neighboring tribe, the majority of the Sartang population follows Buddhism. However, still, a few of them continue to follow their traditional religion.

To get a detailed account of the reproductive profile of the studied population a pretested schedule was used. The schedule consists of two sections. The first section is on the general profile of the woman and her husband which include age at marriage, age at menarche, occupation, educational status, religion, etc. The second section focuses on the reproductive history of the woman which includes age at conception, number of conceptions, number of live births, pre and postnatal mortality, uses of birth control measures, etc. In total, 207 ever married women were interviewed (100 Miji and 107 Sartang) using this schedule. For the Miji, samples were collected from in and around Nafra circle and for the Sartang, from Rahung and Selery village. The collected data were entered in the MS Excel and analyzed.

Findings and Discussions

Fertility and Associated factors

Fertility is influenced by various social and biological factors, directly or indirectly. Age at menarche is one of the biological factors that directly affected fertility. It is the indication that a woman is biologically ready for reproduction, and in many societies, there are rituals to mark this passage of life. So, age at menarche is an important factor that influences fertility. Age at menarche is further influenced by many other factors like environment, topography, socioeconomic conditions, and genetic (Abelson 1976, Bangham and Sacherer 1980). In the present study, Miji women have

an earlier age at menarche as compared to the Sartang ones. The average age at menarche among the Miji is 12.98 years. It is observed from Table 1 that the highest number of Miji women (52 %) get their menarche at the age of 13 years. The average age at menarche for the Sartang is 13.61 years. Comparing with other neighboring populations, Sartang women have a higher age at menarche than that of the Adi (12.12 year) and the Hills Miri (13.92 Years), but lower than that of the Galo (13.92 years). But Miji women have lower age at menarche than that of these populations except that of the Adi (12.3 years) (Asghar *et al.* 2016)

Table 1 shows the relationship between age at menarche and fertility. Here, mean live birth, calculated as the number of children per woman is considered as fertility. From the table, it is observed that the lowest fertility is among the women with 13 years as the age at menarche in both the studied populations. Among the Miji the highest is found when the age at menarche is less than or equal to 12 years and among the Sartang the highest fertility is among women with 14 years as the age at menarche. From this distribution pattern, it can be inferred that though it is one of the important indications for the onset of fertility, among the Miji and Sartang fertility is not determined by the age at menarche.

Table 1: Relationship of age at menarche, age at marriage and age at first conception with fertility

	Miji			Sartang		
	Woman %	Mean Conception	Mean Live Birth	Woman %	Mean Conception	Mean Live Birth
<i>Age at Menarche (year)</i>						
≤12	30	5.03	4.07	26.17	3.53	3.07
13	51	3.45	2.78	27.1	3.14	2.55
14	12	3.91	3.25	24.3	3.81	3.46
≥15	7	4.71	3.43	22.43	3.46	2.87
<i>Age at Marriage (year)</i>						
≤14	35	4.68	3.77	28.97	3.81	3.39
15-19	52	3.9	3.12	58.89	3.54	3.02
20-24	13	3.16	2.46	8.41	2.44	1.89
≥25	0	0	0	3.73	2.25	1.75
<i>Age at first conception (year)</i>						
≤14	22	5.09	4.09	11.21	3.25	3.08
15-19	54	4.26	3.37	61.68	3.56	3.02
20-24	22	2.95	2.4	22.43	3.79	3
≥25	2	2.5	3	4.68	2.6	2.2
<i>Pooled</i>	100	4.07	3.26	100	3.57	2.98

Childbirth before marriage is considered as taboo in most societies. Therefore, age at marriage is an important factor for fertility. In India, the legal age at marriage is 18 years for women and 21 years for men. In both the study populations, it is found that most women get married before the legal age. Among the Miji 67% and among the Sartang 62.62% of women are getting married before 18 years of age. The average age at marriage among Miji women (16 years) is almost similar to that of the Sartang (16.48 years). In a study from the same state, Asghar *et al.*, (2016) also reported that among the Hills Miri the average age at marriage for women (17.33 years) is below the legal age. However, among the Galo and the Adi the average age at marriage for women is above the legal age (Asghar *et al.* 2016).

In the present study, age at marriage has a positive impact on fertility in both the populations (Table 1). The mean conception and mean live birth are found to be the highest among the women

who marry at or before 14 years. With the increase in age at marriage, the mean live birth decreases. So, age at marriage is inversely proportionate with fertility. Thus, it indicates that the women who get married at an early age are more capable of bearing children than that of women who get married at a later age. A similar relationship is also reported among the Adi, Galo, and Hills Miri of Arunachal Pradesh (Asghar *et al.* 2016).

Age at first conception is also one of the important factors for fertility. In the present study, the average age at first conception is 17.3 years among the Miji and 18.27 years among the Sartang. Similar to the case of age at marriage, the age at first conception is also inversely proportionate with fertility. The highest mean live birth is found among women with the earliest age at first conception and it goes on decreasing with the increase in age at first conception. A similar pattern is also found among the Adi, Galo, and Hills Miri (Asghar *et al.*, 2016). In overall, the Miji have a higher fertility compared to the Sartang with a mean live 3.26 among the Miji and 2.98 among the Sartang (table 1).

The study found that Miji women are more literate compared to the Sartang. Among the Miji, most (60%) are literate, while among the Sartang most (70.09%) are illiterate. The educational status of the mother plays a very important role in fertility. Besides getting married late due to their higher education and careers; educated women are usually more conscious about the size of the family. The impact of education is clearly visible in the present study. In both populations, the mean number of conception and mean live births is higher among the literate woman compared to illiterate women. The difference in both populations is statistically significant at 0.05. Among the Miji, the mean live birth is 4.43 for the illiterate, compared to 2.48 for literate women. In the same way, among the Sartang, the mean live birth is 3.28 for the illiterate, compared to 2.28 for literate women. A similar pattern of relationships between education and fertility is also reported among the Hills Miri, Galo and Adi of Arunachal Pradesh (Asghar *et al.*, 2016) and also some populations in Manipur (Choudhury and Devi 1997, Singh 2006, Asghar *et al.* 2014).

Table 2: Relationship of education, occupation, religion and birth control measures with fertility'

	Miji			Sartang		
	Woman %	Mean Conception	Mean Live Birth	Woman %	Mean Conception	Mean Live Birth
<i>Education</i>						
Illiterate	40	5.63	4.43	70.09	3.85	3.28
Literate	60	3.03	2.48	29.91	2.59	2.28
<i>p-value for t test</i>			<0.00001*			0.00899*
<i>Occupation</i>						
Housewife	49	3.86	3.27	16.82	2.94	2.22
Working	51	4.27	3.25	83.18	3.58	2.13
<i>p-value for t test</i>			0.97714			0.052875
<i>Religion</i>						
Animism	49	3.95	3.22	8.41	5.33	4.78
Buddhism	10	4.1	3.4	87.85	3.35	2.84
Christian	41	4.19	3.26	3.74	2.25	2.25
<i>Birth Control Measures</i>						
Users	53	3.88	3.07	75.7	3.11	2.8
Non-users	47	4.27	3.46	24.3	4.62	3.54
<i>p-value for t test</i>			0.278898			0.073816

Occupation of the woman is also another important factor that affects total fertility. Women engaged in some job usually have lower fertility compared to housewives. In the present study, the number of working women outnumbered the housewives in both populations. The mean number of conception is higher among working women compared to housewives. Among the Miji, the mean conception is 3.86 for the housewives and 4.27 for the working women. Among the Sartang, it is 2.94 for the housewives and 3.58 for the working women. However, the mean live birth is found higher among the housewives compared to the working women, though it is not statistically significant at 0.05 in both populations. The mean live birth is 3.27 for the housewives, and 3.25 for the working women among the Miji. Among the Sartang, the mean live birth is 2.22 for the housewives and 2.13 for the working women.

Table 2 also shows the distribution of women on the basis of religion and its relation with the fertility. It is noted among the Miji, 49% of mothers are animists, 41% are Christian and only 10% of women are Buddhist. Among Sartang, 87.85% of women are Buddhist, 8.41% are animist, and only 3.74% are Christian. The relation between religion and mean live birth is found contrasting between the Miji and the Sartang. Among the Miji, the highest mean live birth is found among women following Buddhism, and the lowest among the animists. Among the Sartang it is vice versa. The highest mean live birth is found among animists and the lowest among the Christians.

The use of the Birth Control Measure is one of the important social factors that plays an important role in determining total fertility. In both the study populations, the numbers of BMCs' users are higher than those of the non-users. Comparing the two populations, the users of BCMs are larger among the Sartang (75.7%) than among the Miji (53%). Analyzing the impact of BCMs on fertility, it is observed that both mean conception and mean live birth are higher among the non-users compared to the users. However, the difference is not statistically significant at 0.05.

Mortality and associated factors

Mortality is also one of the important components of demography that shape the structure of a population. Unlike fertility, mortality cannot be controlled directly by the humans. Mortality can be prenatal or postnatal. Again, prenatal mortality can be of three types – miscarriage, abortion, and stillbirth. The most prenatal mortality in the present study is in the form of miscarriage. Comparing the two populations, cases of miscarriage are higher among the Sartang (78.3%) than among the Miji (70%). In an opposite pattern, abortion is higher among the Miji (13.3%) compared to the Sartang (4.3%). The frequency of stillbirth is almost equal in both populations.

Like fertility, mortality is also influenced by many factors. In the present study, among the Miji mean miscarriage and mean abortion is the highest among women who get married at the age of 14 years and below, and stillbirth is also found only in this group of women. On the other hand, among the Sartang, the highest mean miscarriage is found among women who get married in the age group 20 – 24 years, and abortion is also found only in this group of women. The mean stillbirth is the highest among women with age at marriage 25 years and above.

Comparing literate and illiterate women, the mean miscarriage and abortion are the highest among the illiterate women, and stillbirth is also found only among illiterate women in both populations. While among the Sartang, the mean miscarriage is the highest among literate women, and abortion is also found only among literate women among the Sartang. Comparing working women and housewives,

the mean miscarriage and mean stillbirth show no difference among the Miji, and abortion is found only among working women among Miji. Similarly, among Sartang, the mean miscarriage shows no difference between housewives and working women. Unlike the Miji, among the Sartang abortion is found only among housewives and stillbirth among working women.

Table 3: Relationship of age at marriage, education, occupation, birth control measures and antenatal check up with prenatal mortality

	Miji			Sartang		
	Mean Miscarriage	Mean Abortion	Mean Still Birth	Mean Miscarriage	Mean Abortion	Mean Still Birth
<i>Age at Marriage (year)</i>						
≤14	0.28	0.80	0.14	0.13	0	0.06
15-19	0.15	0	0	0.16	0	0.02
20-24	0.23	0.07	0	0.33	0.11	0
≥25	0	0	0	0.25	0	0.25
<i>Education</i>						
Illiterate	0.28	0.08	0.13	0.16	0	0.05
Literate	0.17	0.02	0	0.19	0.03	0
<i>Occupation</i>						
Housewife	0.22	0	0.08	0.17	0.05	0
Working	0.20	0.08	0.08	0.17	0	0.04
<i>Birth control measures</i>						
Users	0.21	0.06	0.09	0.14	0.01	0.04
Non-users	0.21	0.02	0	0.27	0	0.04
<i>Antenatal check up</i>						
Regular	0.02	0.02	0	0.12	0.01	0.01
Irregular	0.08	0	0	0.17	0	0
Never	0.26	0.07	0.13	0.26	0	0.09
<i>Pooled</i>	0.21	0.04	0.05	0.17	0.009	0.04

Similar to mortality and occupation of women, the relationship between mortality and birth control measures show some mixed pattern. Among the Miji, the mean miscarriage and abortion show no difference between BCM users and non-users. Stillbirth is observed only among BCM users among the Miji, while it is found in both BCM users and non-users without any difference among the Sartang. Abortion is found only among BCM users among the Sartang and the mean miscarriage is the highest among the non-users. As far as antenatal check-up is concerned, among the Miji almost half (49%) of the married women get it done regularly, but 39% of them never get any antenatal check-up. Among the Sartang also, 31.78% of them never get any antenatal check-up, but most (62.62%) get regular antenatal check-ups during their pregnancies. The impact of not taking regular antenatal check-ups is visible in the relationship with mortality. In the study populations, mean miscarriage and stillbirth is the highest among the women who never get any antenatal checkup (Table 3).

Relation between fertility and mortality

Table 4: Relation between mortality and fertility

No. of Mortality ^a	Miji			Sartang		
	Woman %	Mean live birth	<i>p</i> -value for <i>t</i> test	Woman %	Mean live birth	<i>p</i> -value for <i>t</i> test
Nil	58	2.86	0.0087*	69.16	2.97	0.944
At least one	42	3.81		30.84	3.00	
1	27	3.52		20.56	2.73	
2	5	4.20		6.54	3.28	
2+	10	4.40		3.74	4.00	

^athis includes prenatal mortality and mortality of child up to 10 years of age

The impact of mortality on fertility is shown in table 4. The mean live birth is compared between women with no case of offspring mortality and women with at least one case of offspring mortality. Among the Miji, 42% of women lost at least one offspring, while it is 30.84% among the Sartang. In both populations, the mean live birth is higher among the women with at least a case of offspring mortality, compared with women with no such cases. The difference is statistically significant at 0.05 in the case of the Miji but not significant in the case of the Sartang. However, among the Sartang, the mean live birth increases with the increase in the number of offspring mortality. A similar trend is also observed for the Miji (table 4). This finding supports the reproductive overcompensation hypothesis. The reproductive overcompensation hypothesis says that parents have a tendency of producing more offspring to compensate for the lost one. So, in this process the overall fertility increases (Nobles *et al.* 2015, Asghar and Devi 2016).

Summary and Conclusion

The present study was conducted among two lesser-known tribes of Arunachal – the Miji from Nafra Circle and the Sartang from Rahung and Selery village of West Kameng District. The study establishes a range of factors affecting fertility and mortality. The average age at menarche occurs earlier among the Miji (12.98 years) as compared to the Sartang (13.61 years), however, it doesn't affect the fertility in both populations. The average age at marriage is below the legal age of marriage for both populations (16 years for the Miji and 16.48 years for the Sartang) and it affects fertility. Fertility is higher among women who get married early. A similar trend is also observed for age at first conception in both population. The Miji are more literate (60%) compared to the Sartang (30%) and this aspect affects fertility. Fertility is significantly higher among the illiterate compared to the literate in both populations. However, occupation, religion, and uses of birth control measures show no impact on fertility in this study.

The highest prenatal mortality is found in the form of miscarriage and is higher among the Sartang compared to the Miji, but abortion is higher among the Miji compared to the Sartang. However, the study could not establish any factor influencing prenatal mortality except antenatal checkups. Women who never got any antenatal checkups have the highest frequency of miscarriage and stillbirth in both populations. The study also found the impact of mortality on fertility in the form of reproductive compensation. Hence, the present study highlights the reproductive profile of these populations and their associated factors. This is the first of its kind in these populations. So, this finding will be the baseline information for any further related studies.

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