DETERMINANTS OF FERTILITY ASPECTS OF PRIMITIVE TRIBAL WOMEN IN ANDHRA PRADESH

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Abstract

Key Words: Primitive Tribal Groups (PTGs), Crude Birth Rate (CBR), General Fertility Rate (GFR), Total Fertility Rate (TFR), Sex Ratio, Child-Women Ratio.

Health status of a woman is a function not only of medical care but of the overall integrated development of socio-cultural, economic, education, nutritional status etc. Each of these aspects has a deep impact on the health status which in turn influences the health performance of the women. Hence efforts have been made to make a holistic view of all the dimensions of health status of the Selected Primitive tribe women community which would generate new impetus for some appropriate interventions with regard to tribal health. Tribes being the poorest of the poor, now accounts 4 per cent of the global population and found in all regions of the world. India is the largest concentration of tribal people anywhere in the world. On almost all the indices of health, the status of tribals was poor. The constitution of India, in its article 46, promises special care for the educational and economic interest of the Scheduled tribes and protection from social injustice and economic exploitation. But despite the Constitutional promise, the tribals are the most adversely affected ethnic group by the big developmental projects in post-independence India.

A comprehensive study on the health status of tribal women is needed because only few health related studies were available and most of the available ones are fragmentary without adequate sample size and standardised methodology. The health status of the tribal people of India, especially in the state of Andhra Pradesh is relatively a neglected area of research. The Primitive Tribal Groups (PTGs) are mostly residing in the North Coastal Districts of Andhra

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Pradesh. In this background, the presented study is carried out to understand the total health status of selected PTG women. In this study an attempt has been made to enquire into the health status and fertility aspects of the primitive tribe women. This micro level study will be highly useful to understand the health status and food habits of the primitive tribe women. Also, towards filling up the gaps in knowledge in relation to the urgent needs to health studies, an attempt is made to study the health status of primitive tribal women in the North Coastal districts of Andhra Pradesh.

Introduction:

Health status of a woman is a function not only of medical care but of the overall integrated development of socio-cultural, economic, education, nutritional status etc. Each of these aspects has a deep impact on the health status which in turn influences the health performance of the women. Hence efforts have been made to make a holistic view of all the dimensions of health status of the Selected Primitive tribe women community which would generate new impetus for some appropriate interventions with regard to tribal health. Tribes being the poorest of the poor, now accounts 4 per cent of the global population and found in all regions of the world. India is the largest concentration of tribal people anywhere in the world. Owing to their extreme remoteness, health infrastructure is very poor, people have to travel 2 to 10 km to reach a health centres. On almost all the indices of health, the status of tribals was poor. The constitution of India, in its article 46, promises special care for the educational and economic interest of the Scheduled tribes and protection from social injustice and economic exploitation. But despite the Constitutional promise, the tribals are the most adversely affected ethnic group by the big developmental projects in post-independence India. On the positive side are their access to more or less good, satisfactory nutrition from forest based resources, access to medicinal herbs and plants for practicing their own medicine. In India tribal groups have developed string magico-religious health care systems and they wish to survive and live in their own style. It is necessary for health functionaries not only to have knowledge about the culture and society of tribal people and the socio-cultural dimensions of their health and family welfare systems, but also to examine constraints for the acceptance of modern health care facilities.

A comprehensive study on the health status of tribal women is needed because only few health related studies were available and most of the available ones are fragmentary without adequate sample size and standardised methodology. The health status of the tribal people of India, especially in the state of Andhra Pradesh is relatively a neglected area of research. The Primitive Tribal Groups (PTGs) are mostly residing in the North Coastal Districts of Andhra Pradesh. As per the literature work on health status of PTGs women, regulation has not been reported so far on the selected K. Savara, Gadaba and Porja tribes. In this background, the presented study is carried out to understand the total health status of selected PTG women.

In this study an attempt has been made to enquire into the health status and fertility aspects of the primitive tribe women. This micro level study will be highly useful to understand the health status and food habits of the primitive tribe women. Also, towards filling up the gaps in knowledge in relation to the urgent needs to health studies, an attempt is made to study the health status of primitive tribal women in the North Coastal districts of Andhra Pradesh. Since a handful of studies on reproductive health have been carried out on the tribes of Andhra Pradesh, especially the Primitive Tribal Groups (PTGs) in North Coastal districts like Konda Savara, Gadaba and Porja tribe on which no such work has been reported so far, the present work has been taken up to evaluate the current health status of the selected PTGs Konda Savara, Gadaba and Porja women. The fertility status of the PTG women and the acceptance of the health care facilities were taken into consideration.

Multi stage stratified random sampling method is used in the present study. The selection process is carried out in four stages; i.e., relating to districts, mandals, villages and households. All the three districts of North Coastal districts: Srikakulam, Vizianagaram and Visakhapatnam are selected for the study due to the fact that these districts have larger extent of Tribe Sub-Plan area and higher proportion of PTG population. Regarding the selection of mandals, from each district one mandal is selected. The mandal selected from each district is supposed to be located at far end of the district and with much interior hill tracts where the hill and Primitive Tribal Groups (PTGs) reside. As a whole from the three selected districts 3 mandals are selected. From the Srikakulam district the Konda Savara PTG concentrated Mandasa mandal is selected. The Gadaba PTG concentrated Pachipenta mandal is selected from the Vizianagaram district. Similarly Porja PTG concentrated Chintapalli mandal is selected from

the Visakhapatnam district for the study because they are the tribal mandals that are having a high proportion of specific PTG population. As a whole 3 mandals are selected from the three districts.

With a stratification procedure based on the selected PTG population concentration the panchayats in the selected mandals are classified into different categories. From each mandal a number of two villages are selected to identify the households. In the Srikakulam district from the interior Mandasa mandal from the Konda Savara hill tribe concentrated panchayats Kondalogam panchayat Puttulogam village and from Cheepi panchayat Bondikaro villages are selected. In the Vizianagaram district from the interior Pachipenta mandal from the Gadaba PTG concentrated panchayats Manchadavalasa and Panukuvalasa villages are selected. In the Visakhapatnam district from the interior Chintapalli mandal from the Porja PTG concentrated panchyats Meduru and Chintaluru villages are selected. As a whole a total of 6 villages are selected from the 3 selected mandals of the three selected districts. To examine the health status of the selected PTGs a sample of 50 households are selected from each specific tribe concentrated village based on the random sampling procedure. For the each selected PTG a number of 100 households are selected from their concentrated 2 interior villages. As a whole a number of 300 households are selected from the 6 villages of the 3 selected mandals which are selected from the three North Coastal Districts of the state of Andhra Pradesh.

Information relating to the health status of the selected PTG households is collected while canvassing a pre designed and structured household schedule in the selected villages during the year 2009-10 in different visits. The secondary data has been obtained from various Official sources. In analyzing the data apart from tabular analysis with averages and percentages, different statistical techniques are used at appropriate places. Tabular analysis with averages and percentages are used to explain the general profile and their health conditions. . Multiple regression analysis is used in appropriate places particularly to identify the socio-demographic and economic determinants of fertility levels of the selected sample primitive tribal women households.

Fertility Performance of the Selected Primitive Tribe Women

The term fertility is generally used to refer the actual reproductive performance of a woman or the number of children a woman has or the average number of children for a group of women. In the recent years, increasingly, more attention has been paid to demographic and fertility problems of the communities, since it is found that co linearity of one or more particular cultural variables with biological variable(s) have some amount of additive or interactive impact on fertility and fertility shows differential mode of behaviour. The socio-demographic background plays a vital role in fertility performance. The phase of actual reproductive performance is contented in terms of the physiological potential of a woman to conceive and bear children. This phase is termed as the fecund period. In demographic studies, the reproductive span i.e., the child bearing period of the women is usually taken to as between 15-49 years of age. Thus, a fecund woman may or may not be fertile but a fertile woman must be fecund. The main events or phenomenon associated with fertility are age at menarche, age at marriage, age at first child birth, etc.

Human fertility is responsible for the biological replacement and maintenance of the human species. Fertility, a major component of population growth is an important aspect of population study. In fact, the fertility is a major counteracting force to population attrition, and therefore has a significant impact as an expansionary force in population dynamics. Fertility may be defined as the actual reproductive performance of a woman or a group of women. Fertility indicates the number of children which were produced by the women. Literally, through fertility is a biological phenomenon. Among tribals, every aspect and notions which have been practiced in their day-to-day life. Therefore various studies on tribals have taken culture as an independent variable determining the fertility behaviour. Demographers usually measure the fertility differentials by taking into account women's income, occupation, education, age at menarche, age at marriage, etc.

Age at menarche, one of important biological determinants of fertility shows a range varying between 10-18 years among the girls of 24 countries of the world. There is a wide variation in monarchical age. The first menstruation start is taken into account as the age of puberty or maturity and from this stage, females are biologically capable to conceive. It may be attributed that low level of socio-economic condition, malnutrition, environment, etc are the reasons for the marginally high menarcheal age of the Tribal women. Various studies indicate

that menarcheal age is influenced by food habit, nutrition, occupation, education, family size, living condition, birth rank, environmental, genetical, socio-economic factors, etc.

Table: 1

Distribution of the ever married women by age at menarche

Age at menarche (in years)	Number of women	Percentage
11	14	4.67
12	31	10.33
13	86	28.67
14	109	36.33
15	46	15.33
16	7	2.33
17	5	1.67
18	2	0.67
Total	**300**	**100.00**

Source: Data collected through Field Survey

In general, it starts about the 13th to 14th year of age, but it may vary according to different environmental, economic conditions and nutrition. With earlier onset of menarche, a woman gets a longer reproductive life. According to table 7.1, it has been observed that the age at menarche of the tribal women (respondents) varies from 11 years to 18 years. The maximum percentage of the Tribal women menstruated at the age of 14 years (36.33 percent) and 13years (28.67 percent) whereas some women achieved menstruation cycle at the age of 15 years (15.33 percent) and respectively. 12 years (10.33 percent) few women menstruated late. Among all the women, the Mean±SD age at menarche has been found to be 13.65±1.17 years.

Fertility history of the ever married women:

It may be attributed that low level of socio-economic condition, malnutrition, environment, etc are the reasons for the marginally high menarcheal age of the tribal women. Various studies indicate that menarcheal age is influenced by food habit, nutrition, occupation, education, family size, living condition, birth rank, environmental, genetical, socio-economic factors.

Fertility-the actual reproductive performance, the actual occurrence of birth, especially live births are a time dependant genetic concept. Table 2 presents the fertility performance of the ever married women. The total number of conceptions, uterine wastage, live births and children survived are some of the major findings of this study.

Table: 2.

Fertility history of the ever married women

Present age group	No.of ever married women	Total no.of conception		No.of abortion per conception		No.of still birth per conception		No.of live birth per conception		No. of child dead per conception		No.of survivors per conception		Post natal loss (11)/(9)
		No	Av	No	Av	No	Av	No	Av	No	Av	No	Av	No
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
15-19	17	15(0.88)		2(0.13)		0	-	13(0.87)		0	-	13(0.87)		0
20-24	54	98(1.81)		8(0.08)		4(0.04)		86(0.88)		5(0.05)		81(0.82)		0.06
25-29	58	153(2.64)		13(0.08)		7(0.05)		133(0.87)		9(0.06)		124(0.81)		0.07
30-34	51	196(3.84)		11(0.06)		5(0.03)		180(0.92)		12(0.06)		168(0.86)		0.07
35-39	47	211(4.49)		15(0.07)		4(0.02)		192(0.91)		17(0.08)		175(0.83)		0.09
40-44	36	194(5.39)		19(0.10)		15(0.08)		160(0.82)		21(0.11)		139(0.72)		0.13
45-49	37	187(5.05)		21(0.11)		14(0.07)		152(0.81)		23(0.12)		129(0.69)		0.15
Total	**300**	**1054(3.51)**		**89(0.08)**		**49(0.05)**		**916(0.87)**		**87(0.08)**		**829(0.79)**		**0.09**

Source: Data collected through Field Survey

The total number of conceptions of the Tribal women is 1054 and the average rate of conception per woman is 3.51. The average number of conception is gradually increasing from lower to lower to higher age-group of the women. The total number of live births of the women in various age-groups is 916 and the average number of live births per woman is 3.05. The average live birth per conception is 0.87 (Number of live births/Total Number of conceptions). The average live births per conception decreases from lower to higher age-groups with a little exception in the age-group 30-34 and 35-39 years. This is due to less number of uterine wastage in their age-group which is possible may be due to higher acceptance of the health care facilities. The interesting finding of the present study is that this population registers very low pre-partum reproductive loss or uterine loss (0.13). However due to the acceptance of the existing medical facilities and close proximity of the district Headquarters, Baleswar, the pre-partum reproductive

loss has decreased to a value of 0.13 (Present Study). Hence the uterine loss is only 0.09 % of the total number of conceptions of the Tribal respondents.

It is further noticed that the average number of abortions per conception is relatively high (0.13) in the women in the age-group 15-19 years than the subsequent age-groups which is in acceptance to the findings that risk of pregnancy is higher at young child bearing ages as younger mothers i.e. below 20 years, are not physiologically completely prepared for the process of reproduction. Similarly the risk of pregnancy is observed in higher age-groups where the age of marriage is comparatively lower. However majority of pregnancies resulted in live births (0.87 percent) in comparison to reproductive loss. The ever-married tribal women in the childbearing years have borne an average of 3.05 children (Col-9/Col-2) and have 2.76 children currently living or surviving (Col-13/Col-2). Thus for all the women age 15-49 years the average number of children who died is 0.29 per women. This shows 90.50 percent of the children are surviving and 9.50 percent children die after live born due to various causes. Post natal loss per woman has been estimated by weighing the number of child dead or the non-surviving offspring against the live born (Col-11/Col-9). Hence the postnatal loss calculated is 0.09. This postnatal loss is due to unhygienic process of childrearing, nutrition, lack of prevention and control of disease, delayed treatment offered, etc. The index of survivality has been estimated as surviving offspring against conception (Col-13/Col-3) and expressed in terms of 100. The index of survivality will help in overall assessment of reproductive success. The study reveals that both the uterine and the postnatal loss are very low among the tribal respondents. Due to this the index of survivality becomes high (78.65).

Measures of Fertility:

Although there is a wide gap between the potential level of fertility (Fecundity) and actual performance of the potentiality (fertility), in reality it has to rely upon the latter method for measuring the actual fertility performance. The measures of fertility ratios and rates help in understanding the relation between the general conditions of the people and level of fertility. Various fertility measures have been calculated for the population under study in order to evaluate the trends in fertility level.

In determining the fertility performance of the women, the average rate of conceptions, uterine wastage, live births, children survived were being calculated.

$$\text{Average number of live births per women} = \frac{\text{No.of live births}}{\text{No.of ever married women}}$$

$$\text{Uterine wastage} = \frac{(\text{No.of Abortions} + \text{No.of Still births}}{\text{No.of live births}}$$

$$\text{Post natal loss} = \frac{\text{No.of child dead}}{\text{No.of live births}}$$

$$\text{Index of survival} = \frac{\text{No.of surviving off spring}}{\text{No.of conception}} \times 1000$$

$$\text{Crude Birth Rate (CBR)} = \frac{\text{Total number of live births in a year}}{\text{Total Population}} \times 1000$$

$$\text{General Fertility Rate (GFR)} = \frac{\text{Total number of live births in a year}}{\text{Total No.of Women between the agesof 15–44 years}} \times 1000$$

$$\text{Age Specific Fertility Rate (ASFR)} = \frac{\text{Total number of live births to mothers of a specified age in a year}}{\text{Total No.of Women in the same age group}} \times 1000$$

$$\text{Total Fertility Rate (TFR)} = \frac{(\sum \text{ASFR}) \times 5}{1000}$$

The sum of ASFR is multiplied by 5 because each age group (e.g. 15-19) consists of women of five different ages.

$$\text{General Fertility Rate (GFR)} = \frac{\text{Number of live births in a year}}{(1 \times W1) + (7 \times W2) + (7 \times W3) + (6 \times W4) + (4 \times W5) + (1 \times W6)}$$

Table 3

Measure of fertility among the Tribal population

Sl.No.	Fertility Indicator	Value
1a.	Child-Woman Ratio(C_{0-4}/W_{15-44})	595.32
1b.	Child-Woman Ratio(C_{5-9}/W_{20-49})	637.63
1c.	Child-Woman Ratio(C_{0-9}/W_{15-49})	1074.40
2.	Crude Birth Rate(CBR)	26.29
3.	General Fertility Rate(GFR)	119.06
4.	Total Fertility Rate(TFR)	3.29
5a.	Age Specific Fertility Rate(15-19)	61.20
5b.	Age Specific Fertility Rate(20-24)	241.38
5c.	Age Specific Fertility Rate(25-29)	275.86
5d.	Age Specific Fertility Rate(30-34)	58.82
5e.	Age Specific Fertility Rate(35-39)	21.28
6.	Sex-Age Adjusted Birth Rate	27.42

Source: Data collected through Field Survey

The evaluation of fertility levels in the Tribal women on the basis of measures like Child-Women Ratio (CWR), Crude Birth Rate (CBR), General Fertility Rate (GFR), Age-Specific Fertility Rate (ASFR) and Total Fertility Rate (TFR), calculated for "Past one year", are presented here. The Child-Women Ratio is a commonly used measure of fertility calculated from the age-sex distribution. Very simply, it is defined as the ratio between number of children and number of women in reproductive age group. This ratio is used as an indicator of fertility when more detailed measures are unavailable. It can also be treated as the measure of effective fertility, as it does not consider the births of children dying early in life. In other words, it reflects only the number of surviving children of less than 5 years (or 9years) of age. But this ratio is affected by distribution of women by age in the reproductive period, dramatic changes in mortality (infant and early childhood mortality) and migration, which in turn are influenced by several independent determinants of the population components. In the present study, child-

woman ratio for C0-4/W15-44, C5-9/W20-49 and C0-9/W15-49 among the Tribal women have been found to be 595.32, 637.63 and 1074.40 respectively (table 7.3) Preference of male child, more number of children ever born per woman in the last decade illiteracy, relatively high child death among the older Tribal women etc are attributed as the reasons of their high CWR.

Crude Birth Rate plays an important role in fertility rate. The Crude Birth Rate is an important measure of the fertility as it directly points to the contribution of fertility to the growth rate of the population. It has been defined that CBR is a ratio of total registered live birth to the total population, in some specific year, multiplied by 1000. In the present study, CBR among the Tribals has been found to be 26.29. CBR is influenced by standard of education, medical facilities, communication system, environmental condition, financial status, family size. CBR is dependent on marriage, conception, induced abortion, postpartum etc. Even high fertility is entertained for preferring particular sex in developing countries.

Though the standard of education is low among the tribals (Present Study), the low CBR indicates the acceptance of the Government health care facilities among the women and the adoption of different methods of family planning. This is possible due to the approach of the various health workers to the villagers personally and communicates the necessary information. Other reasons of low CBR include the poor nutritional status and the effect of postpartum /amenorrhea. The simplest overall age limited measure is the General Fertility Rate (GFR), defined as the number of births per 1000 women of the child bearing age in a specific year. GFR also does not indicate a definite pattern. When the CBR is moderate, GFR is high which indicates that the number of women in this age-group (15-44 years) is less compared to the total population. In the present study, the GFR among the Tribals has been found to be 119.06. The adoption of different family planning methods by different age groups is one of the reasons of relatively low GFR. Among other reasons, the poor nutritional status and postpartum Amenorrhea have affected the fertility of the Tribal women.

Age Specific Fertility Rate (ASFR) reveals the distribution of frequencies of births among women according to age. It is more accurate than the estimates of CBR. This is due to the fact that only the women in the child bearing age are considered here and not the whole population, the emphasis being made to a specific period of time in relation to live births and women. In a population, a detailed picture of fertility at a specified time can be obtained by

examining the schedules of ASFR, since the age of mother is an important factor affecting the fertility level and the rate of child bearing is not uniform throughout all ages. In fact fertility is usually heavily concentrated between ages 20 to 29 years. In the present study among Tribals, ASFR has been found to be highest (241.38) in those women who are in 20-24 years age-group, followed by 275.86 (25-29years), 61.20 (15-19 years), 58.82 (30-34 years) and 21.28 (35-39years). It is interesting to note that the ASFR of the women reaches its peak in the age-group 20-24 years and becomes Zero after the age group (35-39) years.

Table.4

Age Specific Fertility Rates and Total Fertility Rate

(Current fertility)

Present Age Group	No. of women	No. of live births during last year			ASFR (5)/(2) x 1000
		Boys	Girls	Total	
(1)	(2)	(3)	(4)	(5)	(6)
15-19	49	2	1	3	61.22
20-24	58	6	8	14	241.38
25-29	58	9	7	16	275.86
30-34	51	1	2	3	58.82
35-39	47	1	-	1	21.28
40-44	36	-	-	-	-
Total	**299**	**19**	**18**	**37**	**658.56**

∑ASFR=658.56 TFR= (658.56 x 5)/1000 = 3.29

The highest ASFR of India has been reported as 314.5 in those reproductive mothers who are in the age-group of 20-34 years. Since the relatively high fertility reproductive periods have been observed in the age-group of 20-29 years, women of these age groups though adopting family planning methods should be made more aware of the different temporary methods of family planning. The total fertility rate presents a single index of total fertility and is the sum of Age Specific Fertility Rates, at each age i.e. from 15 to 44 years (Multiplied by the size of the class interval) and divided by 1000. The effect of the age-sex structure of the population on the crude birth rate can be reduced to the minimum by computing the Sex Age Adjusted Birth Rate (SAABR). The United Nation has defined the SAABR as the number of births per 1000 of a weighted aggregate of numbers of women in various five-year age groups from 15-44.The

United Nations has recommended a standard set of weights in computing this aggregate. These are 1,7,7,6,4,1 which correspond to the average pattern of the age specific fertility rates for the five year age-groups, 15-19, 20-24, 25-29, 30-34, 35-39, and 40-44 respectively.

Determinants of fertility among the selected Primitive Tribe Women:

The fertility level is the phenomenon which is the major determinant of population growth. The levels and trends in fertility are influenced by various physiological, cultural, social, economic, behavioral, demographic and ecological factors. Using the primary cross-sectional data attempt is made to estimate the major determinants of the total fertility rates in selected tribal community. The following is the general multiple linear model to be estimated for the three selected tribes as aggregate and disaggregate.

$$\mathbf{Y= \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + u_i}$$

Where Y= Number of children

X_1 = Age of the women

X_2 = Educational levels of the household

X_3 = Family size

X_4 = male to female ratio

X_5 = Household economic status (wealth)

X_6 = Available medical infrastructure

β_1 to β_6 = coefficients of the independent variables

u_i = error term

Theoretically, the women's fertility will increase with age at their early stage but gets decline as they get closer to the age of menopause. So fertility gets increase with age at first but ultimately gets decrease after a while. So, there is no a priori expected sign for age. But women's fertility is expected to decrease with education and hence we expect positive relationship between education level and fertility. Furthermore, family size and especially male to female

ratio in the family will have a negative impact on fertility because households basically prefer male child and they demand children only up to same level.

Children are considered as wealth in tribal population and the rich affords more children. So we expect positive relationship between household income and fertility. The availability of health care institutions near to the tribal society will negatively affect fertility because the women will get some awareness about the burden having more children.

Determinants of fertility among all the selected PTG women households:

Using the multiple linear regression model specified above, an attempt is made to estimate the major determinants of fertility. The following table shows the estimation result of women fertility determinant for all three tribes as aggregate.

Table –5

Results of the linear regression - fertility model for all tribes

Variable	Coefficient	t-value
Age of the women	0.214*	3.035
Educational levels	-0.161**	-1.650
Family size	-0.244*	-4.303
Male to female ratio	-0.198*	-3.367
Household economic status	0.96**	1.548
available medica infrastructure	-0.20***	-0.378
N	300	
Intercept	0.206	
R^2	0.701	
F	13.780	

As can be seen from the above table all variables have their theoretically expected values. The age of the women has shown a positive relationship with fertility and is significant at 1 percent. Family size and male to female ratio are also strongly significant (at one percent) and shows negative relationship with fertility. Household economic status has its expected positive sign but significant at 5 percent. The last variable, availability of medical infrastructure, although

carries its expected sign, is weekly significant (only at 10%).

We can also see from the above table that a unit increase in women's age increases fertility by 0.214 units and a unit increase in household wealth also increases fertility by 0.96 units. On the other hand a unit increase in education, family size, male to female ratio and health care institutions decrease fertility by 0.16., 0.244, 0.198, and 0.20 units, respectively. The explanatory power of the model is found to be more than satisfactory and significant as can be seen from the F-value. The general implication that can be derived from the above regression result is that educational status, family size and male to female ratio in the household are the most important determinant of fertility. Hence, there should be a serious work on tribal education especially in family planning. This ultimately necessitates an extensive provision of health care services to these tribal communities.

Determinants of fertility among the selected Porja PTG women households:

Using the multiple linear regression model specified above, an attempt is made to estimate the major determinants of fertility. The following table shows the estimation result of women fertility determinant for Porja tribe.

Table .6

Results of the linear regression - fertility model for Porja

Variable	Coefficient	t-value
Age of the women	-0.392*	-4.021
Educational levels	-0.200**	-2.078
Family size	-0.343**	-1.101
Male to female ratio	-0.181**	-1.139
Household economic status	0.135***	0.023
available medica infrastructure	-0.076***	0.088
N	100	
Intercept	0.206	
R^2	0.573	
F	5.843	

As can be seen from the above table all variables have their theoretically expected values. The age of the women has shown a negative relationship with fertility and is significant at 1 percent. Family size and male to female ratio are also fairly significant (at five percent) and shows negative relationship with fertility. Household economic status has its expected positive sign but significant at 10 percent. The last variable, availability of medical infrastructure, is weekly significant (only at 10%).

We can also see from the above table that a unit increase in women's age decrease fertility by 0.392 units and a unit increase in household wealth also increase fertility by 0.135 units. On the other hand a unit increase in education, family size, male to female ratio and health care institutions decrease fertility by 0.200, 0.343, 0.181, and 0.076 units, respectively. The explanatory power of the model is found to be more than satisfactory (57%) and significant as can be seen from the F-value. The general implication that can be derived from the above regression result is that educational status, family size and male to female ratio in the household are the most important determinant of fertility. Hence, there should be a serious work on tribal education especially in family planning. This ultimately necessitates an extensive provision of health care services to these tribal communities.

Determinants of fertility among the selected Gadaba PTG women households:

Using the multiple linear regression model specified above, an attempt is made to estimate the major determinants of fertility. The following table shows the estimation result of women fertility determinant for Gadaba tribe.

Table 7

Results of the linear regression - fertility model for Gadaba

Variable	Coefficient	t-value
Age of the women	-0.121**	-2.053
Educational levels	-0.611*	-2.421
Family size	-0.276*	-2.326
Male to female ratio	-0.198*	-3.781
Household economic status	0.022**	0.548
available medica infrastructure	-0.012**	-1.736
N	100	

Intercept	0.213
R^2	0.652
F	10.226

As can be seen from the above table all variables have their theoretically expected values. The age of the women has shown a negative relationship with fertility and is significant at 10 percent. Education level, Family size and male to female ratio are also strongly significant (at one percent) and shows negative relationship with fertility. Household economic status and availability of medical infrastructure have their expected sign but significant only at 5 percent.

We can also see from the above table that a unit increase in household wealth also increases fertility by 0.022 units. On the other hand a unit increase in women's age, education, family size, male to female ratio and health care institutions decrease fertility by 0.121, 0.611, 0.276, 0.198, and 0.012 units, respectively. The explanatory power of the model is found to be more than satisfactory (65.2 percent) and significant as can be seen from the F-value. The general implication that can be derived from the above regression result is that educational status, family size and male to female ratio in the household are the most important determinant of fertility. Hence, there should be a serious work on tribal education especially in family planning. This ultimately necessitates an extensive provision of health care services to these tribal communities.

Determinants of fertility among the selected konda Savara PTG women households:

Using the multiple linear regression model specified above, an attempt is made to estimate the major determinants of fertility. The following table shows the estimation result of women fertility determinant for Konda Savara tribe.

Table 8

Results of the linear regression - fertility model for Konda Savara

Variable	Coefficient	t-value
Age of the women	-0.050***	-0.594
Educational levels	-0.105*	-2.344

Family size	-0.101*	-2.211
Male to female ratio	-0.139**	-1.415
Household economic status	0.023***	0.251
available medica infrastructure	-0.088*	-3.230
N	100	
Intercept	0.241	
R^2	0.679	
F	11.884	

As can be seen from the above table all variables have their theoretically expected values. The age of the women has shown a negative relationship with fertility but is weekly significant. Education level, Family size and availability of medical infrastructure in the area are strongly significant (at one percent) and shows negative relationship with fertility. Family male to female ratio and Household economic status have their expected sign but significant only at 5 percent and 10 percent respectively.

We can also see from the above table that a unit increase in household wealth also increases fertility by 0.023 units. On the other hand a unit increase in women's age, education, family size, male to female ratio and health care institutions decrease fertility by 0.05, 0.105, 0.101, 0.139, and 0.088 units, respectively. The explanatory power of the model is found to be more than satisfactory (67.9 percent) and significant as can be seen from the F-value. The general implication that can be derived from the above regression result is that educational status, family size and male to female ratio in the household are the most important determinant of fertility. Hence, there should be a serious work on tribal education especially in family planning. This ultimately necessitates an extensive provision of health care services to these tribal communities.

Conclusion:

Health status of women, though biological, is influenced by several socio-cultural norms and practices and also physical environmental condition. The sex ratio of this Selected Primitive tribe women population is 1017 females per 1000 males which indicate a high sex ratio. The total dependency ratio is 0.7 as the child dependency is 0.6 and the aged dependency is 0.1. This shows that the child dependency is very high among the Selected Primitive tribe women

community which speaks of their relatively high birth rate during the past decade which is also confirmed b the high child-women ratio. The actual health performance is the physiological potential of a woman to conceive and bear children which is between 15-49 years of age. The age at menarche is a biological phenomenon which determines the maturity of the women or that the women are capable to conceive. The cultural norms that particularly effect women's health performance is age at marriage, age at first child birth etc.

The duration between two successive live-births of the Selected Primitive tribe women is 2-3 years. This not only speaks of the use of family planning methods but also the effect of postpartum amenorrhea, poor nutritional status and health wastages. In the present study, the average rate of conception per women is 3.51 and the average number of live births per woman is 3.50. Thus, the average live-birth per conception of the Selected Primitive tribe women is 0.87 which indicates a very low pre-partum health loss i.e. 0.13. Another interesting finding is that the average number of children currently living or surviving is 2.76 which indicate that average number of children who died is 0.29 per woman. The post natal loss of the Selected Primitive tribe women is also low compared to the other tribes. The study reveals both the uterine and the post-natal loss are very low among the Selected Primitive tribe women respondents. Due to this, the index of Survivality (78.65) becomes high among the Selected primitive tribe women.

Results of the study also indicates that the older women have higher fertility than younger women which is due to multiple reasons like early age at marriage, post-natal loss is more, preference of male child, lack of awareness of family planning methods etc.

The various fertility measures have been calculated for the population under study to evaluate the trends in fertility level. It is observed that the child-woman ratio for C0-4/W15-44 and C5-9/W20-49 is 595.32 and 637.63 respectively among the Selected primitive tribe women. This is comparatively high which speaks of the more number of children ever born per woman in the last decade but the Crude Birth Rate (26.29), General Fertility Rate (119.06) and the Total Fertility Rate (3.29) is comparatively lower than many other tribes. However, these findings of CBR, GFR&TFR are consistent with the values in Indian context. Using the primary cross-sectional data an attempt is made to estimate the major determinants of the total fertility rates in selected tribal community. Multiple linear regression models are used with six dependent variables: demographic variables (age of women and family size), social variables and economic

variables . It is found that at aggregate level, demographic and social variables are more significant than economic variables. The explanatory power of the model is also found to be significant.

At disaggregate level (across the three tribes), the demographic variables are the most important determinant of tribal women fertility at Porja, whereas both social and demographic variable are equally important in Gadaba and K. Savara tribes. The economic variables do not show any remarkable significance at all three tribes. The general implication that can be derived from the regression result is that demographic and social variables (like educational status, family size and male to female ratio in the household) are the most important determinant of fertility. Hence, there should be a serious work on social and demographic conditions of tribal especially in family planning. This ultimately necessitates an extensive provision of health care services to these tribal communities. But since the determinants of fertility across tribes slightly vary, all-fit-one approach will not work and each tribe's specific determinant must be considered whenever social, economic and demographic intervention is sought. The general implication that has derived from the fertility model is that demographic and social variables are the most important determinant of fertility. Hence, there should be a serious work on social and demographic conditions of tribal especially in family planning. This ultimately necessitates an extensive provision of health care services to these tribal communities. But since the determinants of fertility across tribes slightly vary, all-fit-one approach will not work and each tribe's specific determinant must be considered whenever social, economic and demographic intervention is sought.

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