

An Empirical Study on the Impact of Socio-economic and Demographic Variables on Rural Poverty among the Mishing Tribe in Assam of North East India

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Abstract: The prime objective of the study is to examine the economic, social and demographic determinants and their impacts on household rural poverty among the Mishing tribe in Dhemaji and Sivasagar districts of Assam in North East India, and recommend remedial measures to the policy makers to reduce poverty. It is based on primary data collected through household level questionnaire from select twelve villages of the two districts. It was found that the prime determinants of poverty among the Mishing tribe are size of the household, dependency ratio, sex ratio, education, health, occupation as agriculture and allied, distance from town to the village, flood and erosion. Thus, it needs the improvement in health quality of rural life, awareness on family planning, more expenditure on education for formation of human capital to enhance capabilities, sustainable employment opportunities and creation of new jobs in quantity and quality, diversification of agriculture, new mechanism to monitor and evaluate anti-poverty programme, expansion of rural non-farm sector (that lead to occupational diversification and rural transformation), infrastructure (transport and communication) and permanent solution of the flood problem among the Mishing tribe. Responsive institutions and effective policy interventions are must to meet the formidable challenges that harm health, impede education and endanger livelihoods of the Mishing tribe.

Keywords -determinants of poverty, Mishing tribe, rural poverty, Assam, North East India.

I. Introduction

The definition of poverty varies not only from society to society, but also varies within the same society at different points of time. Different terms are used to describe poverty. These are income or consumption poverty, human (under)development, social exclusion, ill-being, (lack of) capability and functioning, vulnerability, livelihood un-sustainability, lack of basic needs, relative deprivation etc.[1], lack of hunger and malnutrition, illiteracy, homelessness and inadequate housing, unsafe environment, social discrimination [2] etc.

Poverty has been defined by different researchers based on different criteria. Some have viewed the poor as that portion of the population that is unable to meet basic nutritional needs [3][4]. Others defined poverty as a function of education and/or health [5]. Consumption expenditures are other criteria that are used to define poverty [6]. "Basic needs" [7] and "entitlements" [8] also, in broad terms, used to identify poverty [9]. Now-a-days, human poverty is defined as deprivation in multiple dimensions, such as, education, health and standard of living instead of one dimension 'income' or 'consumption expenditure'[10][11].

They view three basic perspectives poverty as mentioned below:

- i) Income perspective: A person is poor if his/her income level is below the poverty line.
- ii) Basic needs perspective: A person is poor if, and only if he/she is deprived in minimally acceptable fulfilment of human needs for health, education and essential services. It also recognizes the need for employment and participation.
- iii) Capability perspective: Poverty is viewed as the lack of basic capabilities to function. The capability approach incorporates both absolute and relative poverty. Because, relative deprivation in incomes or commodities can lead to an absolute deprivation in minimum capabilities [12]

Poverty is a multi-dimensional and multivariate phenomenon. Instead of bearing an uniform face, it varies across space and time. According to the World Bank[13] "poverty is pronounced deprivation in wellbeing." Wellbeing is 'quality of life' that is measured by income, health, education, housing, assets, rights to speech etc. of an individual.

Assam is the hub of diverse ethnic tribes with different cultures and languages. The Mishings, also called *Mising*s or *Miris*, are the second largest scheduled tribe of Assam state, first being the *Bodos*. Anthropologically the Mishings belong to the Tibeto-Burman family of the Mongoloid group. The Mishings are primarily concentrated in the riverine areas of eight districts of Assam, namely, Dhemaji, Lakhimpur, Jorhat, Sonitpur, Golaghat, Sivasagar, Tinsukia and Dibrugarh. The Mishings dwelt basically on the bank of rivers in natural environment. Because of which they have to face the natural calamities, such as, flood and erosion leading to displacement. Their houses, made of thatches and bamboos, are constructed on raised platforms about 5 feet above the earth to get rid of furies of floods. This colourful ethnic tribe, an indispensable part of the formation of the greater Assamese community, has been able to maintain their traditional socio-cultural-religious traits unimpaired in spite of the radical changes throughout Assamese life. The main occupation the tribe is agriculture. Due to globalization and other factors, changes are noticed in the socio-economic life this tribe. The Mishing tribe has been given regional autonomy under the name of Mishing Autonomous Council (MAC). The council was constituted after signing the MAC act 1995 between Mishing organisation and Govt of Assam. The MAC includes 40 constituencies of eight upper Assam districts comprising of core areas and satellite areas.

Dhemaji and Sivasagar districts have been chosen on the ground that, Dhemaji is the highest flood-affected, rural and remote district with the highest Mishing population; whereas, Sivasagar is less flood-affected district with semi-urban character and the medium level of Mishing population. Main occupation in Dhemaji is agriculture and that in Sivasagar is diversified, that is, service, business, labourer in tea garden and break-factory etc. other than agriculture and allied activities. Sivasagar is an industrial area of oil, tea and sericulture with urban character, whereas, Dhemaji is purely rural in character and newly developed cum urbanized district. Dhemaji is situated in northern bank of mighty Brahmaputra river and Sivasagar is in southern bank. There is infrastructural development and variability in socio-economic conditions in Sivasagar as compared to Dhemaji district.

There are numbers of empirical works on poverty and inequality internationally in different countries of the world. There are numbers of empirical works on the determinants of poverty in context of Kenya (Achia, Wangombe, & Khadioli, 2010)[14], Pakistan (Anka, Lawal Mohammad, 2009; Ahmed & Sial, 2012)[15][16], Cameroon (Epo, n.d.)[17], Sri Lanka (Ranathunga, 2010)[18], Cambodia (Runsinarith, 2011)[19], Asia (Son, 2007)[20], West Virginia (Sousa, 2000)[21], China (Wang, Yao, Liu, Xin, Liu, & Ren, 2006)[22].

The prime objective of the study is to examine the economic, social and demographic determinants and their impacts on household rural poverty among the Mishing tribe in Dhemaji and Sivasagar districts of Assam in North East India and recommend remedial measures to the policy makers to reduce poverty.

II. Data And Methodology

In the study, we make use of primary data collected through household level questionnaire. We selected two sample districts of Assam: Dhemaji and Sivasagar districts. We selected three blocks from each district and two villages from each blocks. The blocks and villages have been selected purposively, but households are selected randomly. While selecting the villages, we lay emphasis on variability or diversity of data that influence poverty and inequality among Mishing tribe. Total 373 households i.e. 25% of the village level Mishing population of the selected villages under selected blocks have been selected.

In the econometric analysis, we use the OLS regression method and the binary Logit regression method on the potential determinants of rural poverty in terms of economic, social and demographic characteristics of the households. The dependant variable in the OLS regression method is log of per capita consumption expenditure and that in the binary Logit regression method is poverty, that is, whether a household is poor or non-poor (1=poor; 0=Non-Poor). In the logit model, we constructed the health index based on ten indicators: i) Whether vaccination schedule or immunization of children (below 5 years) followed completely, ii) Place of child birth, iii) Presence of at least one children below normal BMI, iv) At least one children dying before age 5 years in the last 5 years, v) In case of child below 10 years present at home, the age of mother during the birth of this child, vi) Access to improved sanitation (according to the MDG guidelines), vii) Access to improved drinking water (WHO prescribed), viii) Age at death of adult person who last died in the household, ix) House with acceptable roof, floor and boundary, and x) Visit to Doctor /health centre/hospital, whenever required.

III. Results And Discussions

A log linear multivariate model is estimated to verify the effects of socio-economic and demographic variables on rural poverty of the Mishing tribe. Thus, multiple regression was conducted to determine the best linear combination of Type of family, Size of Household, Dependency Ratio, Sex Ratio, Age of HoH (years), No. of Income Earner, Mean Years Schooling, Health Index (BMI), Physical assets (per household in Rs), Landholding (per household in Bigha), Livestock (per household in Rs), Distance from nearest Urban, and Flood dummy (whether the household is affected by flood and erosion) for predicting poverty. **Table 1** provides

a summary profile of correlation coefficients for the variables used in the regression in Dhemaji district. These results confirms that per-capita consumption expenditure (PCE) is negatively and significantly correlated with dependency ratio (DR), and distance from nearest urban (Dis); but positively and significantly correlated with numbers of income earner (NoE), Mean Years of Schooling (MYS), BMI, physical assets per household (PA), landholding per household (Land) and livestock per household (Live). The **table 2**, in which twelve variables are depicted, illustrates correlation for the variables used in the regression in Sivasagar district. The estimates in table show that per-capita consumption expenditure (PCE) is positively and significantly correlated with numbers of income earner (NoE), mean years of schooling (MYS), Body Mass Index (BMI), physical assets per household (PA) and landholding per household (Land). The correlation coefficients of dependency ratio (DR), and distance from nearest urban (Dis) are significant with negative signs. It signifies that these variables are negatively correlated with PCE.

Income gives actual economic power of a household, but expenditures or consumption give actual standard of living of that household. **Table 3** reports the results of the determinants of poverty in Dhemaji district using log of log of per-capita consumption expenditure as dependent variable. The explanatory power of the regression equations which is measured by R² is significantly high (R² is 82.00 in two equations). It implies that 82 per cent of the variation in the dependent variable (natural log of per capita consumption expenditure) is due to the explanatory variables and the remaining 18 per cent is due to other unmentioned variables. In other words, high R² indicates the statistical fitness of the model used to analyse the determinants of the poverty. The adjusted R squared value was 0.81. This indicates that 81% of the variance in the dependable variable was explained by the variations in the independent variables. The test of significance (F-test) is accepted at the 1% level of significance in two Models.

The type of family is found to be statistically significant and have positive sign. The coefficient suggests that additional increase one nuclear family would increase per capita consumption by 31 per cent. The numbers of income earners in the household has a significant role in poverty reduction. The table shows that per capita consumption is positively associated with the numbers of income earners in the household. One additional income earner in the household would increase per capita consumption by 3 per cent. Similarly Mean Years of schooling of the members of the household plays a significant part in reducing poverty. The table shows that one more year of education increases the per capita consumption by 3 per cent.

Health Index (BMI) has a significant and positive effect on per capita consumption. The coefficient implies that 1 per cent increase in body mass of the household increase the per capita consumption by 1 per cent. Physical assets per household (Rs) is positive and statistically significant on per capita consumption, i.e. physical assets has a positive relationship with per capita consumption. When other factors remain constant, a 1 per cent rise in physical assets increases per capita consumption at a positive amount. The distance of the household from nearest urban has a positive relationship with incidence of poverty. As other factors remain constant, a 1% rise in distance from nearest urban increases the incidence of poverty by 1 per cent. Food dummy has negative sign. It implies that if a household is affected by flood and erosion, it has negative impact on per capita consumption. From the empirical results, it is proved that socioeconomic as well as demographic variables have a significant impact on the consumption expenditure of households and on reduction of poverty incidence in Dhemaji and Sivasagar districts.

Table 1: Correlation coefficients for the variables used in the regression in Dhemaji District (N=181)

	PCE	SoH	DR	FMR	AHoH	NoE	MYS	BMI	PA	Land	Live	Dis
Dependent Variables												
PCI												
Independent Variables												
SoH	-.074	1										
DR	-.171*	-.070	1									
FMR	-.078	-.005	.162*	1								
AHoH	.109	.467**	-.146	-.017	1							
NoE	.909**	-.064	-.142	-.044	.136	1						
MYS	.391**	.004	-.049	.002	.080	.384**	1					
BMI	.881**	.005	-.205**	-.013	.128	.814**	.415**	1				
PA	.681**	-.144	-.071	-.021	-.020	.622**	.228**	.523**	1			
Land	.503**	-.254**	-.197**	.095	-.011	.492**	.217**	.446**	.407**	1		
Live	.502**	-.307**	-.208**	-.029	-.016	.472**	.171*	.498**	.321**	.650**	1	
Dis	-.861**	-.037	.165*	-.028	-.200**	-.821**	-.488**	-.913**	-.509**	-.422**	-.440**	1

PCE= Per-capita Consumption Expenditure; SoH= Size of Household; DR= Dependency Ratio; FMR= Female Male Ratio (Members); AHoH= Age of the HoH; NoE= No. of Income Earner; MYS= Mean Years of Schooling; BMI= Body Mass Index; PA (Rs) = Physical assets per household (Rs); Land = Landholding per household (Bigha); Live = Livestock per household (Rs); Dis= Distance from nearest Urban.

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Source: Computed on the basis of primary data collected during field survey

Table 2:Correlation coefficients for the variables used in the regression in Sivasagar District (N=192)

	PCE	SoH	DR	FMR	AHoH	NoE	MYS	BMI	PA	Land	Live	Dis
Dependent Variables												
PCI												
Independent Variables												
SoH	-.128	1										
DR	-.247**	.018	1									
FMR	-.051	.059	-.062	1								
AHoH	.010	.472**	-.014	.011	1							
NoE	.331**	.313**	-.180*	.035	.122	1						
MYS	.448**	.020	-.421**	-.066	.142*	.253**	1					
BMI	.612**	-.112	-.273**	-.075	.058	.285**	.435**	1				
PA	.563**	.079	-.211**	-.041	.125	.230**	.292**	.349**	1			
Land	.251**	-.152*	-.176*	-.100	-.083	.178*	.278**	.295**	.234**	1		
Live	-.051	.048	-.126	.039	.125	-.024	.003	.005	.076	.047	1	
Dis	-.431**	.174*	.205**	.026	.058	-.264**	-.300**	-.485**	-.223**	-.195**	.014	1

PCE= Per-capita Consumption Expenditure; SoH= Size of Household; DR= Dependency Ratio; FMR= Female Male Ratio (Members); AHoH= Age of the HoH; NoE= No. of Income Earner; MYS= Mean Years of Schooling; BMI= Body Mass Index; PA (Rs) = Physical assets per household (Rs); Land = Landholding per household (Bigha); Live = Livestock per household (Rs); Dis= Distance from nearest Urban.
 **. Correlation is significant at the 0.01 level (2-tailed).*. Correlation is significant at the 0.05 level (2-tailed).

Source: Computed on the basis of primary data collected during field survey

Table 3: Log-Linear regression Results on the Determinants of Rural per-capita Consumption Expenditure or Poverty in Dhemaji and Sivasagar Districts (N=373)

Variables	Model-I				Model-II			
	B	SEB	t-ratio	p-value	B	SEB	t-ratio	p-value
Type of family	0.30	0.04	6.83	0.00	0.31	0.04	7.14	0.00
Size of Household	-0.01	0.01	-1.45	0.15	-			
Dependency Ratio	0.00	0.00	-1.19	0.24	-			
Sex Ratio	0.00	0.00	1.68	0.09	0.00	0.00	1.62	0.11
Age of HoH (years)	0.00	0.00	-0.53	0.60	-			
No. of Income Earner	0.15	0.03	4.57	0.00	0.14	0.03	4.30	0.00
Mean Years Schooling	0.02	0.01	2.99	0.00	0.03	0.01	3.05	0.00
Health Index (BMI)	0.17	0.01	13.44	0.00	0.17	0.01	13.62	0.00
Physical assets (per household in Rs)	0.00	0.00	5.85	0.00	0.00	0.00	5.73	0.00
Landholding (per household in Bigha)	0.04	0.02	2.08	0.04	0.05	0.02	2.53	0.01
Livestock (per household in Rs)	0.00	0.00	-1.25	0.21	-			
Distance from nearest Urban	-0.01	0.00	-3.34	0.00	-0.01	0.00	-3.35	0.00
Flood dummy	-0.17	0.05	-3.82	0.00	-0.18	0.04	-4.11	0.00
Constant	3.62	0.32	11.17	0.00	3.42	0.31	10.98	0.00
	R-square		Akaike criterion		R-square		Akaike criterion	
		0.82		0.81		0.82		0.81
	Adjusted R ²		Hannan-Quinn		Adjusted R ²		Hannan-Quinn	
		0.81		0.96		0.81		0.92
	Log-likelihood		Schwarz criterion		Log-likelihood		Schwarz criterion	
	-137.95		0.87		-141.18		0.85	
F(12, 360)			Durbin-Watson statistic		F(9, 363)		Durbin-Watson statistic	
		126.04		1.79		180.23		1.81
P-value (F)		0.00			P-value (F)		0.00	

Notes: Dependable variable: Log of Per-capita Consumption Expenditure
 A dash (-) refers to the situation where corresponding insignificant and multi-collinear variables are dropped

Source: Computed on the basis of primary data collected during field survey

A logistic regression, an alternative econometric technique, is thus used to analyze the main determinants of poverty in terms of some qualitative and quantitative variables. In particular, the aim of the model is to determine the factors that explain the probability of being poor.

Logistic regression was conducted to assess whether the ten variables, (i.e., Size of household, Dependency ratio, Sex ratio, Mean Years of Schooling, Occupation as Agriculture and allied, Health Index, Distance from town, and Flood dummy) significantly predicted whether a person is poor or not.

In case of Dhemaji district, the **table 4** depicts that the signs of the coefficients of Size of household, Dependency ratio, Occupation as Agriculture and allied, Distance from town, and Flood dummy) are positive significant. It signifies that these variables positively affecting the probability of being poor. The dependency ratio and size of household are positive significant showing that probability of being poor is high in case of the large families with high dependents. On the other hand, the signs of the coefficients of occupations as agricultural labor show that this variable is positively affecting the probability of being poor. The values of the coefficients of health of the households are negative and significant implying that sound health can reduce the poverty.

On the other hand, in Sivasagar district, it is evident that the probability of being poverty is high in case of high size of household, high dependency ratio, high female-male ratio, occupation as agriculture and allied, remoteness or long distance from town to the village, and Flood dummy or if the household is affected by flood (See **table 5**).

Table 4: Estimated results of Binomial Logit Model of Poverty in Dhemaji District (N=181)

	Model -I				Model -II				
	B	S.E.	Exp(B)	Sig	B	S.E.	Exp(B)	Sig	
Size of household	1.874	.462	6.514	.000	1.588	.383	4.893	.000	
Dependency ratio	.022	.008	1.022	.004	.016	.006	1.016	.004	
Sex ratio	-.022	.013	.978	.080	-	-	-	-	
Mean Years of Schooling	-.668	.292	.513	.022	-.560	.229	.571	.014	
Occupation as Agriculture and allied	5.542	1.421	255.151	.000	5.111	1.273	165.900	.000	
Health Index	-5.478	1.841	.004	.003	-4.570	1.455	.010	.002	
Distance from town	.175	.069	1.191	.011	.111	.048	1.117	.021	
Flood dummy	1.331	.996	3.785	.181	-	-	-	-	
Constant	-10.253	3.079	.000	.001	-9.393	2.470	0.00	.000	
$\chi^2=199.739, df=8, N=181, p<.001$				$\chi^2=193.809, df=6, N=181, p<.001$					
-2 Log likelihood		38.835		-2 Log likelihood		44.765			
Cox & Snell R Square		.668		Cox & Snell R Square		.657			
Nagelkerke R Square		.913		Nagelkerke R Square		.897			
Notes: Dependable variables: Poverty									
A dash (-) refers to the situation where insignificant and multi-collinear variables are dropped									

Source: Computed on the basis of primary data collected during field survey

Table 5: Estimated results of Binomial Logit Model of Poverty in Sivasagar District (N=192)

	Model -I				Model -II				
	B	S.E.	Exp(B)	Sig	B	S.E.	Exp(B)	Sig	
Size of household	.075	.873	1.078	.932	.813	.273	2.255	.003	
Dependency ratio	.031	.044	1.031	.484	.022	.007	1.023	.003	
Sex ratio	.014	.017	1.014	.400	.022	.006	1.022	.001	
Mean Years of Schooling	-.084	1.074	.920	.938	-	-	-	-	
Occupation as Agriculture and allied	3.787	5.117	44.110	.459	2.496	.983	12.136	.011	
Health Index	-204.047	7540.002	.000	.978	-	-	-	-	
Distance from town	.675	.537	1.963	.209	.353	.086	1.423	.000	
Flood affected dummy	22.287	904.791	4.775E9	.980	2.906	.882	18.276	.001	
Constant	68.574	3317.479	6.046E29	.984	-19.948	3.956	.000	.000	
$\chi^2=224.170, df=8, N=192, p<.001$				$\chi^2=183.562, df=6, N=192, p<.001$					
-2 Log likelihood		9.376		-2 Log likelihood		49.984			
Cox & Snell R Square		.689		Cox & Snell R Square		.616			
Nagelkerke R Square		.979		Nagelkerke R Square		.875			
Notes: Dependable variables: Poverty									
A dash (-) refers to the situation where insignificant and multi-collinear variables are dropped									

IV. Summary And Conclusion

The Mishing tribe basically lives in riverine natural area with unique cultural heritage, particular condition of ethnic society, economy, and natural resources. In spite of adoption of welfare schemes by the government, this community is still lagging behind in terms of socio-economic conditions. The prime determinants of poverty among the Mishing tribe in Dhemaji and Sivasagar districts in Assam are size of the household, dependency ratio, sex ratio, education, health, occupation as agriculture and allied, distance from town to the village, flood and erosion. Some variables that cause poverty are inside the households and others are outside the households. Thus, it needs the improvement in health quality of rural life, awareness on family planning, more expenditure on education for formation of human capital to enhance capabilities, sustainable employment opportunities and creation of new jobs in quantity and quality, diversification of agriculture, new mechanism to monitor and evaluate anti-poverty programme, expansion of rural non-farm sector (that lead to occupational diversification and rural transformation), infrastructure (transport and communication) and permanent solution of the flood problem among the Mishing tribe. Responsive institutions and effective policy interventions are must to meet the formidable challenges that harm health, impede education and endanger livelihoods of the Mishing tribe. For which, we need a pro-poor, proactive and responsible government and governance that can provide a permanent solution of flood and erosion, corruption-free mechanism, socioeconomic safety nets, human capital and standard of living among the Mishing tribe with a consistent, balanced and equity-based approach. The policy makers and policy implementers must have clear and concrete perceptions regarding the what, why and how of poverty among the rural Mishing tribe.

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