

# Chapter 12

## Deprivation of Women in Northeast India: An Exploratory Study

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**Abstract** Deprivation of women is an obstacle in effective human capital formation as well as in determination of future demographic dividend of an economy. Deprivation of women is a multidimensional and context specific issue. This study has attempted to investigate the extent and inequality of some indicators of deprivation of women across the states of northeast India. Female illiteracy rate, Incidence of child marriage, proportional gap of female headed households, workforce non-participation rate for female, rate of crime committed against women are the indicators considered in this study. This study is based on secondary data published by directorates of population census, 2011, and National Crime Records Bureau, 2012. In order to determine the positions of the states in northeast India and to compare them with West Bengal in respect of deprivation of women a weighted deprivation index for women (WDIW) of each state has been developed. We basically follow the Anand and Sen (Concept of human development and poverty: A multidimensional perspectives, UNDP: Background Paper for Human Development Report 1997) methodology for computing indices. Only the relevant principal components of the indicators have been replaced in place of the indicators and weights are generated from Principal Component Analysis (PCA). Atkinson measures of inequality have been applied to gauge the inequality of deprivation of women. This study explores that among the states in northeast India deprivation of women in Meghalaya is least, followed by Nagaland, Mizoram. Assam is the worst in position among the states of northeast India. In contrast to the state of West Bengal all the states of northeast India are better in position in terms of deprivation of Women. However, the states of northeast India are less diverse in terms of multifaceted deprivation of women.

**Keywords** Child marriage • Crime against women • Female illiteracy  
Northeast india • Deprivation of women

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## 12.1 Introduction

Women in India are no doubt a deprived section of total population. Deprivation of women has multiple dimensions in our society. The major dimensions are economic, social and familial. Deprivation of women is an obstacle in effective human capital formation as well as in determination of future demographic dividend of an economy. In recent times, the agendum of reducing deprivation of women has received a deep attention of public policy makers. Thus, the study of intensity and inequality of the deprivation of women is pertinent. The North Eastern part of India covers seven sister states, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura, along with the state of Sikkim. There are different communities and each have their own distinct culture and historical context. Majority of the people come under tribal community but no two tribes have the same culture and history. In northeast India, patriarchal system is strong in some states while matrilineal system is also operating in some communities. The feminists claim that socio-economic deprivation of women is a product of patriarchal culture. In this study we want to examine this claim. In the socio-economic spheres, a large section of tribal women work in agriculture. Very few women are employed in non agricultural activities. Here few female have participated in direct politics. Besides, Christianity has contribution to improve education and empowerment of women in northeast India. This chapter examines the nature of deprivation of women across the states in northeast India where socio-cultural environment are heterogeneous.

Remaining part of this study has four sections. Section 2 presents a brief review of relevant literature and the objectives of this study. In Sect. 3 we have defined the indicators of multifaceted deprivation of women. The research methodology of this study has been specified in Sect. 4. We have discussed the empirical findings in Sect. 5. Section 6 concludes this chapter indicating some policy prescription for further development of the women in northeast India.

## 12.2 Motivation and Objectives

The literature on empowerment or deprivation of women is very old. Feminist advocates of this literature viewed empowerment or deprivation of women as an instinct of development (Rowlands 1995; Prabhu et al. 1996; Kabeer 2001; Tripathi 2011). The economists, who advocate capability approach for development, consider empowerment of women as an instrument of development (Sen 1999; Malhotra et al. 2002; Alsop and Heinsohn 2005). In order to accelerate inclusive development, the economists and governmental authorities in India have recommended the reduction of deprivation, particularly, deprivations of women. In literature we find several gender sensitive indices to gauge impact of gender

inequality on human development. For example, Gender-related Development Index (GDI) adjusts the Human Development Index (HDI) for gender inequalities in the three dimensions namely life expectancy, education and income. The Gender Empowerment Measure (GEM) seeks to measure relative women representation in economic and political power. It considers gender gaps in political representation, in professional and management positions in the economy, as well as gender gaps in incomes. These measures show the deprivation of women compared to men. But there is no standard measure that reports the nature of deprivations/achievements of women exclusively. No doubt deprivation of women has multidimensional spheres. Many studies theoretically and empirically developed empowerment index of women. The extent of deprivation of women and its quantification at the state level has been less discussed in literature. Very few studies have tried to examine the deprivation of women in their family, and how far they are given the opportunity to access health facilities and education compared to their male counterparts. With this research gap, we have been motivated to study the intensity and inequality of deprivation of women of the states in northeast India.

The specific objectives of this study are as follows.

First, this study explores the extent of multifaceted deprivation of women of the states in northeast India. In this step a comprehensive index of deprivation of women for each state including West Bengal has been computed.

Second, we have compared the extent of multifaceted deprivation of the states of northeast India with that of the state of West Bengal.

Third, we have examined the nature of inequality across the states in terms of the selected indicators and index of multifaceted deprivation of women.

### 12.3 Indicators of Multifaceted Deprivation of Women and Data Sources

Deprivation is a multidimensional issue. Deprivation of women may have several dimensions and indicators. The selection of the indicators and weight of the indicators are to some extent context specific. With this end in view, to investigate the intensity and inequality of multifaceted deprivation of women across the states in northeast India we consider the following indicators of multifaceted deprivation of women.

**Female illiteracy rate:** Illiteracy not only deprives a person from reading and writing, it also has some cumulative and dynamic consequences upon the society. Illiteracy of women reduces employability, social consciousness and empowerment of the women. In long run it may induce child marriage and child labour and even reduce child education. Illiteracy is thus definitely an important indicator of deprivation of women. Illiteracy rate is measured by the percentage of female aged above 6 years, who are unable to read and write.

**Incidence of child marriage:** Female children are often viewed as burden to the guardian particularly to the poor and unconscious guardians. In most of the cases child marriages take place by the will of the guardian. The unconscious guardians actually deprive their girl children from social and economic points of view. The child marriage is thus a social curse in our society. It has a long term adverse effect on education, health and longevity of the women. Not only that, child marriage stunts growth of personality and self dignity of the women. The incidence of child marriage is measured by the percentage of women aged below 18 years of age who are ever married.

**Gap of female headed households:** In an ideal society proportion of male and female headed households should be equal. But in our society a low proportion of households are headed by female persons. In patriarchal society men act as the head of the households. Consequently females do not get chance to participate in most of the familial decision making issues. However, in hard times when men are absent or are dead, women take up the role as the households head and they have to take several familial and economic decisions. Moreover, among some communities like Khasi in northeast India matrilineal system is sustaining where female headed households are common till now. We examine whether the status of the women under the matrilineal customs are higher than that of the women living in patriarchal society. So the difference of actual percentage of households headed by females from the fifty is the gap of female headed households. It is an important indicator of deprivation of women in family.

**Workforce non-participation rate for female:** Nobody would deny that females in our society work hard for their family. It is unfortunate that in Economics this hard work is not treated as economic activity. In accordance with the customs of the society a large number of women take part in household work, sacrificing their own dreams. As a result, active workforce participation of women is low compared to that of men. Therefore, the percentage of women failing to participate in workforce is a real indicator of the multifaceted deprivation of women.

**Crime committed against women:** Crime committed against women is a crude dimension of deprivation of women. The frequency of domestic violence and outdoor violence against women are hindrances to female emancipation and healthy living. The deaths of women due to violence are not rare in our country. This indicator is used to capture deprivation of freedom of women to live a healthy life. It is shocking to note the report of National Crime Records Bureau 2012, that in the state of Assam 9% of women faced crime while in India as a whole 4.1% of women faced crime in 2012. In this study, number of cognizable crimes committed per thousand female populations has been considered as a measure of crime committed against women.

The indicators individually focus on the deprivation of women from the angle of the particular dimension. One state may be better in position in terms of one indicator and at the same time the state is worse in terms of other indicators. Thus assessment of the deprivation of women taking a single indicator may be

misleading. To this end, this study has been designed to compute a comprehensive index for multifaceted deprivation of women. This study is based on secondary data published by directorates of population census, 2011, and National Crime Records Bureau, 2012.

## 12.4 Methodology

There are different methodologies to compute the index of deprivation at aggregate level. The formula of Human poverty index, developed by Anand and Sen (1997), is suitable to compute the index of multidimensional deprivation for women. The formula for deprivation index for five deprivation indicators under consideration is as follows.

$$\text{SDIW}(\alpha) = \left[ \frac{1}{5} \sum_{i=1}^5 D_i^\alpha \right]^{1/\alpha} \quad (12.1)$$

It follows some good properties of an index. This index assumes that all the indicators are equally important. Thereby the weights of the indicators have been considered as equal. However, it is not a realistic assumption. The selection of indicators and their corresponding weight is a vital problem in the construction of an index. In this study we have applied principal component analysis which reduces the number of indicators and guide us to attach the weight to each Principal component (PC) in accordance with their contribution in total variability in the data set. This study has used the eigenvalues as the weight of the PCs. Then the formula for weighted index can be written as follows.

$$\text{WDIW}(\alpha) = \left[ \frac{1}{\sum w_i} \sum_{i=1} w_i (\text{PC})_i^\alpha \right]^{1/\alpha} \quad (12.2)$$

In formula (12.2)  $w_i$  is eigenvalue of  $i$ th PC and  $i$  is running from 1 to that number of PC for which eigenvalues are greater than one. In this chapter we have applied PCA after taking standardisation of the original indicators and extracted PCs based on Kaiser Normalisation criteria. Thus we estimate two indices for deprivation of women of northeastern states of India. One index has been estimated following formula (12.1), called simple deprivation index of women (SDIW) and other index has been estimated using formula (12.2) which is referred to as weighted deprivation index of women (WDIW). In our analysis we have reported the results after normalisation of the index and assuming  $\alpha = 5$ .

In order to categorize the states in accordance with its SDIW/WDIW value this study has set three sub-ranges. The high intensity of deprivation of women has been denoted by the range,  $\bar{I} + 0.5S < \text{WDIW} \leq 1$ . The range  $\bar{I} - 0.5S < \text{WDIW} \leq \bar{I} + 0.5S$  indicates moderate intensity of deprivation. The relatively low intensity of deprivation has been specified by the range  $0 \leq \text{WDIW} \leq \bar{I} - 0.5S$ . Here  $\bar{I}$  and  $S$  denote mean and standard deviation of deprivation index, respectively.

An attempt has also been taken to gauge the inequality for indicators of deprivation as well as for the indices of deprivation of women. The Gini measure of inequality is not suitable for non-monetary values of the deprivation, because in the case of non-monetary deprivation the value of deprivation indicators are greater for poor and lower for rich. So, we apply Atkinson measures of inequality (Atkinson 1970). The family of Atkinson measure is originated from welfare point of view. It considers normative judgement about social welfare. Considering the additivity and homotheticity assumption in welfare function Atkinson family of inequality measure can be written as follows (Sen 1973).

$$A_{\varepsilon}(x) = 1 - \left[ \frac{1}{n} \sum_{i=1}^n \left( \frac{x_i}{\mu} \right)^{\varepsilon} \right]^{1/\varepsilon} \quad \text{for } \varepsilon \leq 1 \text{ and } \varepsilon \neq 0$$

$$= 1 - \prod_{i=1}^n \left( \frac{x_i}{\mu} \right)^{1/n} \quad \text{for } \varepsilon = 0$$

where  $\varepsilon$  denotes the inequality aversion parameter,  $n$  stands for number of states (9),  $x_i$  stands for the  $i$ th indicator/index of deprivation. The value of  $\varepsilon$  ranges from 1 indicating no preference for equality to minus infinite indicating extreme preference for equality. In this study the values of  $\varepsilon = 0.5, 0$  and  $-1$  have been considered for measuring inequality of the indicators and indices under consideration.

## 12.5 Empirical Results and Discussion

Sex ratio is the primary indicator of women status in a specific zone. The Fig. 12.1 shows the sex ratio across the states in northeast India. In terms of overall sex ratio, women are most deprived in the state of Sikkim and least deprived in Meghalaya.

The sex ratio of the old age people is higher than 1000 in India as well as in the state of West Bengal, Meghalaya, Tripura and Manipur. It indicates that the longevity of women is greater than that of men or 60 years back there were very little problem of ‘missing girls’ among the people in these states. In respect of child sex ratios, northeastern states are in better position compared to India as a whole. The states of northeast India, except Manipur and Nagaland, are better than West Bengal. In the index of deprivation we did not include sex ratio as it is not an indicator of direct deprivation of existing women. Besides, regarding sex ratio there is a little variation across the states under consideration.

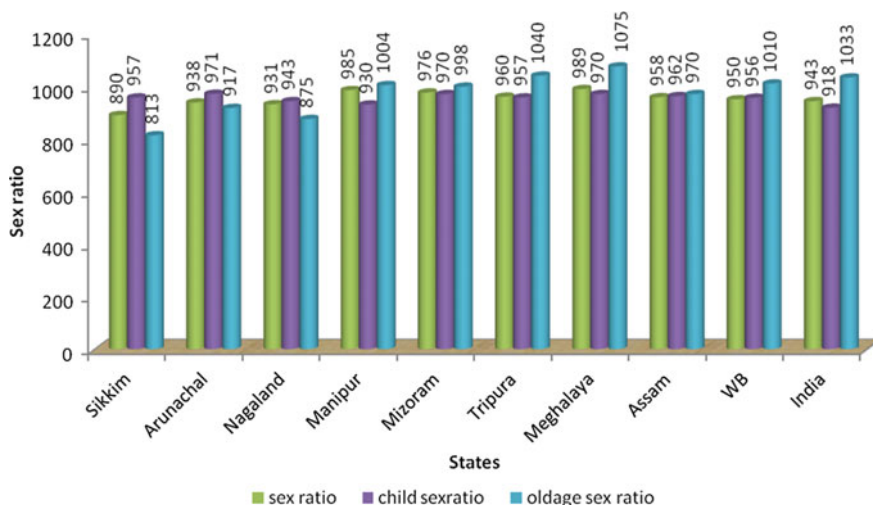


Fig. 12.1 Sex ratio of the states in northeast India. (Source Drawn based on census data 2011)

Fig. 12.2 Incidence of child marriage across the states in northeast India. (Source Drawn based on census data 2011)

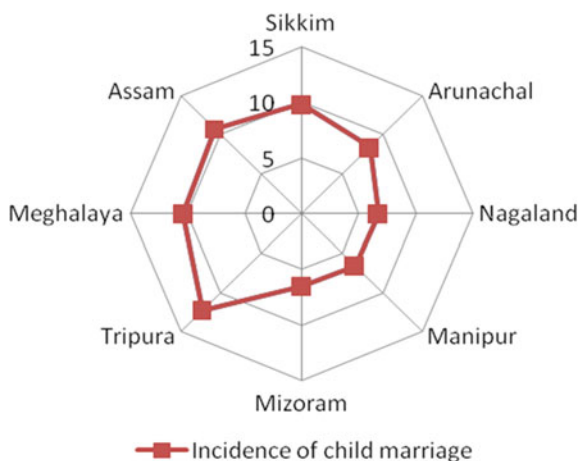


Figure 12.2 presents the incidence of child marriage across the states in northeast India. The incidence of child marriage is highest in the state of Tripura followed by Assam, Meghalaya and Sikkim which are in second last radar. The curse of child marriage is relatively low in the state of Mizoram. In spite of the existence of the matrilineal system, child marriage in Meghalaya is not below 10%. However, in contrast to West Bengal, where incidence child marriage is 13%, all the states in northeast states are better off in this respect.

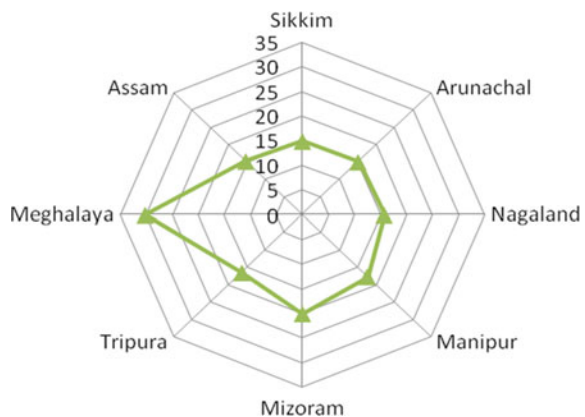
Unlike many Indian states, Meghalaya, particularly Khasi-Jaintia and Garo societies, have historically followed a matrilineal system. In this customs the

ancestry and inheritance are traced through women. The youngest daughter inherits all wealth and she also takes care of her parents. Therefore, households are controlled under the headship of women. This is transmitted in the census data. In Fig. 12.3 it is shown that Meghalaya is distinct among the northeastern states in India. In this state more than 30% households are headed by women. Other states of northeast India are far behind the state of Meghalaya with respect to female headed households. Again compared to West Bengal all the states come forward in terms of giving opportunity of household headship to women.

Figure 12.4 shows the female illiteracy rate across the states in northeast India. Female illiteracy rate is highest in Arunachal Pradesh among the states followed by Assam, Manipur. Female illiteracy rate is lowest in Mizoram, where 90% women are literate, preceded by Tripura. However, there is wide variation across the states regarding female literacy rate. It is pertinent to note that female literacy rate of all the states in northeast India is higher than that of West Bengal.

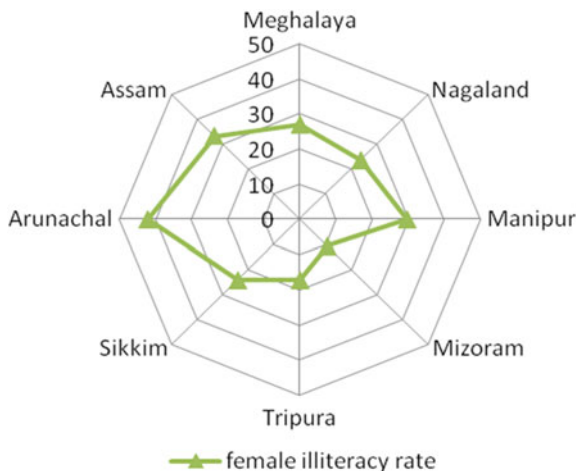
Figure 12.5 shows the non-participation rate of women in workforce. In Assam the non-participation is highest followed by Tripura. Among the states in northeast India and India as a whole workforce participation rate for women (52.3%) is highest in the state of Nagaland. The gap between women and men workforce participation rates is lowest in Nagaland among the states in India (Census 2011). Thus women of Nagaland are least deprived of getting enter into workforce. It is again found that the workforce participation for women in West Bengal is lower than any state in northeast India. Moreover, women participation in workforce of the states except Assam and Tripura in North East India are higher than that of Indian average. As per Census 2011, women workforce participation rate in India is 25.51% against 53.26% for males. Women participation in work force is lower than male participation because most of the women are engaged either in unpaid work or in informal sector. They also face significant wage differentials in comparison with their male counterparts.

**Fig. 12.3** Female headed households across the states in northeast India. (Source Drawn based on census data 2011)

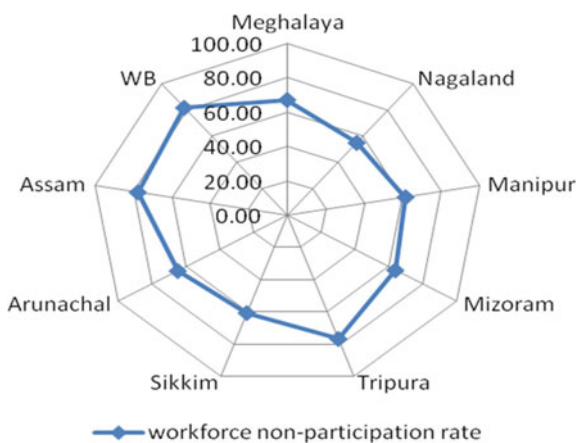




**Fig. 12.4** Female illiteracy rate across the states in northeast India. (Source Drawn based on census data 2011)



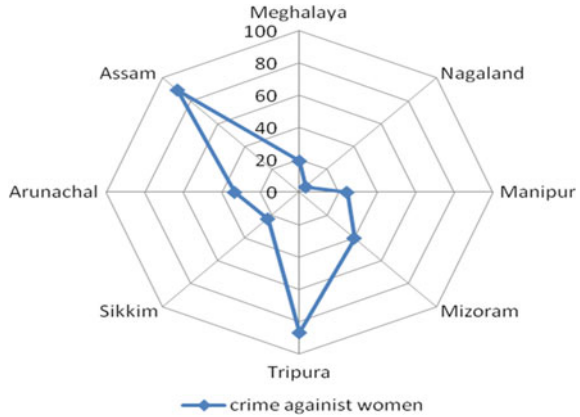
**Fig. 12.5** Workforce non-participation of women across the States in northeast India. (Source Drawn based on census data 2011)



In Fig. 12.6 it is observed that regarding the phenomenon of crime against women there is wide variation across the states in North-East India. The total of cognizable crimes during 2012 varies from 89 women per thousand in Assam to 5 per thousand women in Nagaland. The incidence of total cognizable crimes includes reported indoor and outdoor violence against women. However, the figures include only the reported cases. Thus actual incidence of crime would be higher than the figures reported. The statistics of crime against women focus that a large number of women in the states of Assam and Tripura are not physically and mentally safe.

Uni-dimensional discussion of deprivation of women demonstrates that in respect of longevity reflected in sex ratio and in respect of the access to ancestor’s physical asset and control over the household decision captured by female headed households women in the state of Meghalaya are least deprived among the states

**Fig. 12.6** Incidences of crimes against women across the states in northeast India. (Source Drawn based on census data 2011)



under study. The women in the state of Mizoram compared to other states are come forward in respect of the access to education and getting marriage at a higher age. The deprivations of women in workforce participation and in terms of violence are lowest in Nagaland among the all states and UTs in India. Therefore, from the uni-dimensional analysis we cannot determine the position of the states in accordance with the deprivation of women.

With this end in view we have computed a comprehensive index of deprivation for women considering the above mentioned indicators. In this index weights are determined by Principal Component Analysis (PCA). Table 12.1 shows the appropriateness of the PCA for the data set. The KMO measure of sample adequacy and Sphericity test support the application of PCA in our data set.

Table 12.2 presents the result of PCA of the data set. It shows that two components are much important to present the variation of the data ser of the indicators of deprivation of women. The first component explains 59% of total variation while the second component explains 21% of total variation in the data set.

Before going to compute weighted deprivation index for women of the states in northeast India we have presented the descriptive statistics of the indicators and Indices in Table 12.3.

Table 12.4 demonstrates the position of the states in northeast India along with the state of West Bengal. In accordance with the value of simple deprivation index

**Table 12.1** Appropriateness test of principal component analysis

KMO and Bartlett’s Test		
Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy. (sample will be adequate if the value is greater than 0.5)		0.543
Bartlett’s test of sphericity	Approx. Chi-square	24.495
	df	10
	Sig.	0.006

Source Author’s computation

**Table 12.2** Results of PCA of the indicators of deprivation of women

Total variance explained						
Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative (%)	Total	% of variance	Cumulative (%)
1	2.930	58.607	58.607	2.930	58.607	58.607
2	1.031	20.613	79.220	1.031	20.613	79.220
3	0.880	17.603	96.823			
4	0.123	2.467	99.290			
5	0.035	0.710	100.000			

*Extraction method* Principal component analysis.

*Source* Author's computation

**Table 12.3** Descriptions of the indicators of deprivation of women in northeast India

Indicator (%)	Mean	Median	SD	CV	Max	Min
Incidence of child marriage	9.43	9.86	2.52	26.72	13.32	6.50
Lack of female headed families	32.19	34.29	4.95	15.37	35.25	19.77
Female Illiteracy rate	27.98	27.11	10.60	37.88	42.62	10.73
Non-worker force participation	67.64	64.56	8.99	13.29	81.92	55.26
Incidence of crime against women	4.36	3.36	3.09	71.01	8.95	0.47
SDIW	53.23	48.57	11.34	21.30	70.41	40.87
WDIW	0.573	0.595	0.284	49.65	0.950	0.110

*Source* Author's computation

measured following Anand and Sen (1997) we see that deprivation of women is highest in Assam among the states in northeast India including West Bengal followed by Tirupur West Bengal and Meghalaya. The composite deprivation is least in the state of Nagaland. However, in this methodology we have attached equal weight with the indicators. However, all indicators are not equally important in overall deprivation of women. For example, deprivation of ancestor's wealth is definitely more important compared to education and child marriage. Again, access to inherited property may reduce the incidence of domestic violence, deprivation to participation in household's decision and illiteracy. So the indicators are highly correlated. It makes difficulty to determine the relative importance of the indicators. Here we determined the relative importance with the help of PCA as specified in methodology section.

Now we discuss the position of the states under study in accordance with the weighted deprivation indices. This study explores that among the states in northeast India women's deprivation in Meghalaya is least, preceded by Nagaland, Mizoram. In respect of women's deprivation, Assam is the worst in position among the states

**Table 12.4** Weighted deprivation index for the women in northeast India

State	SDIW	Rank	WDIW	Rank
West Bengal	64.55	3	0.950	1
Assam	70.41	1	0.770	2
Sikkim	44.52	8	0.732	4
Arunachal Pradesh	48.57	5	0.714	3
Tripura	68.65	2	0.595	5
Manipur	45.2	7	0.583	6
Mizoram	47.35	6	0.583	7
Nagaland	40.87	9	0.119	8
Meghalaya	48.94	4	0.110	9

Source Author's computation

in northeast India. However, in contrast to the state of West Bengal all the states in northeast India are better in position in terms of women's deprivation. Only two states namely Meghalaya and Nagaland have low level intensity of deprivation of women. However, these two states are most deprived in accordance with the multidimensional poverty (Bagli 2015). The women of Tripura, Manipur and Mizoram have almost same level of deprivation and they are belonging to moderate range of deprivation. The average deprivation of the women is at high level in the states of Assam, Sikkim and Arunachal Pradesh (Table 12.5).

We see that as the preference for equality becomes stronger the value inequality measure (Atkinson measure) becomes stronger. In accordance with the all measures under consideration the inequality across the states for the WDIW is higher than that for the SDIW of the states. Among the indicators of deprivation, the inequality in crime against women across the districts is the highest for all measures. The inequality for non-participation in workforce is least across the states for each measure of inequality. Moreover, extents of inequalities are low but different across the indicators under consideration. Almost all the values of inequality measure are less than 0.3. Thus the states of northeast India are less diverse in terms of multifaceted deprivation of women.

**Table 12.5** Inequality of the deprivation indices and its indicators across the states in northeast India

Indicators/Indices	A (0.5)	A (0)	A (-1)
Incidence of child marriage	0.016	0.032	0.064
Lack of female headed families	0.006	0.013	0.030
Female illiteracy rate	0.035	0.073	0.156
Non-worker force participation	0.004	0.008	0.015
Incidence of crime against women	0.123	0.259	0.530
SDIW	0.010	0.019	0.036
WDIW	0.077	0.184	0.430

Source Author's computation

## 12.6 Concluding Remarks

This study, therefore, reveals that women of the state of Meghalaya and Nagaland are more empowered compared to the women of other states. On the other hand, women of the states of Assam, Sikkim and Arunachal Pradesh are most deprived relative to the other states. So far the inequality across the states is not very strong in respect of deprivation of women. However, the women of all the states of northeast India are less deprived compared to the women in West Bengal. It may be true that matrilineal system within Khasi-Jaintia and Garo societies is helpful for preventing women from deprivation. As in this system women enjoy inheritance of family assets and wealth, they are empowered persons in the family and in the community. However, in other states like Assam where in most of the cases sons of the family inherit family assets and wealth; consequently, women are suffering from more deprivation. Therefore, equal right of male and female in family wealth should be implemented more strongly. This not only empowers the women within household, it also improves their status outside the family. It is a good instrument to reduce the violence against women, because, a large number of domestic violence occurs due to dowry or wealth. Besides, we have to emphasise on the accessibility of education for women across the states in an equitable basis. It is reported that NABARD and local governments have already taken several initiatives for skill development of women. The government should extend more and more skill development programmes for women across the states in northeast India. It will increase the employability of the women and prevent the women from the curse of child marriage.

So far, the deprivation of women may vary according to ones religion, caste and financial condition or may be different from district to district. This study did not encompass the range of all these matters in the study of inequality and intensity of deprivation of the women in northeast India. Therefore, for formulating appropriate decentralised planning for alleviating deprivation of women, area specific micro level study is needed.

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