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A geographical analysis of gender inequality in literacy among Muslims of West Bengal, India (2001–2011)

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Abstract Muslim community is a socio-economically backward section in Indian states wherein gender inequality in literacy is a highlighting problem. This manuscript is a modest attempt to analyse geographical organization of Muslims' gender inequality in literacy rate covering the districts of West Bengal. The objectives of this study are to measure the degree of gender inequality in literacy rate of Muslims in opposition of total population following by analysis of regional pattern during 2001–2011; to present a comparative study between Muslim and non-Muslim female literacy in West Bengal; and to identify the determinant factors responsible for low Muslim female literacy rate in West Bengal. The data for this study has been collected from Census of India concerning religion and sex wise database (2001 and 2011) and Indiastat. Coefficient of equality is adopted to draw the degree of gender inequality while GIS tool ArcMap is used for portraying regional organization. The findings reveal that gender inequality in Muslim literacy rate has reduced significantly in most of the districts of this state and the rate of reduction in Muslim majority districts is higher than other districts; and Muslim female literacy rate in majority of the districts dominates on non-Muslim female literacy rate in 2011. Although there is a trend of reduction in gender inequality in West Bengal, equality in literacy should be the prime focus to policy makers for sustainable development of future generations.

Keywords Gender inequality · Literacy · Muslims · Coefficient of equality · West Bengal · Sustainable development

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Introduction

The target of gender equality was taken with significant priority among all the 17 goals of Sustainable Development Goals (SDGs) because, only gender equality can heal up the gap between male and female, which in turn leads to the driving force for overall development of communities. Bhat et al. (2011) rightly stated that gender inequality hammers the overall wellbeing of society and such inequality in education can not be eliminated without ensuring universal primary education. To address primary education, literacy rate of a particular group of population can be considered as the sole parameter. Except literacy rate, in fact, there is no educational indicator on which data are available to represent status of any religious groups like Muslim community (Hussain 2009a). Muslims are the most socio-

economically backward section in India according to Sachar Committee Report (2006). Being the largest minority of India, Muslims lag behind other communities on all indicators and in the state of West Bengal, both rural and urban Muslims faced problems of illiteracy, poverty and unemployment (Biswas 2015). From the account of SNAP[1] Survey Report (2016), it has been found that gender gap between Muslim male and female literacy rate of West Bengal stands at 4.8% wherein it varies up to more than 10% at district level. With taking into account such observation from milieu of existing literature, this paper tries to assess regional difference of gender inequality in terms of literacy of Muslims in comparison to total population of West Bengal and by measuring the extent of inequality between Muslim female literacy and non-Muslim female literacy. This paper finally targets to ascertain the importance of female literacy rate for overall development and the ways for eradicating gender inequality in literacy rate in response to bring equality not only in Muslim community but also in all human society. Hence, this study is directly impactful at global arena wherever such issue is found.

Despite tremendous progress of SDGs, women and girls are still facing multiple barriers related to gender and its associated factors like poverty, ethnicity, disability and unequal enjoyment of quality education. According to UNESCO Institute for Statistics (UIS) and Global Education Monitoring (GEM) Report (2016), 53% girl children have been found out of school during primary level. Not only girl children, young women are also more likely to be excluded from upper secondary education in Caucasus and Central Asia, Southern Asia, Northern Africa, Sub-Saharan Africa and Western Asia (UNESCO Institute for Statistics 2016). Inequality pertains to those over which moral concerns of wrong or right can occur, such as differences in wealth or educational qualifications of individuals (Ghosh and Mistri 2016; Johnston et al. 2000). Gender inequality in educational attainment also prevails in the religious spectrum. In developing and underdeveloped countries, Muslims are educationally backward as compared to other religious groups. According to the report of Pew Research Center (2016), despite such backwardness, educational attainment among adult Muslims with at least some formal schooling has increased by 25% in the last few decades resulting in rapid reduction in gender gap among Muslims in terms of educational attainment worldwide. In fact, inter-generational gender gap has been reduced more for Muslim women than Muslim men. It is the progressive side of Muslim education in Muslim majority countries but Muslim education worldwide has different scenario wherein 43% Muslim women have no formal education at all in comparison to 30% of Muslim men.

Gender disparity in education is also one of the major issues in India. Amartya Sen outlined the significance of women's role in the nation's growth. He considered growth or development as dependent on women's earning power, their economic role outside the family, literacy, education and property rights (Jafri 2007). In 2011 census, the gender gap in literacy rate was recorded as 16.68% wherein Male literacy was 82.14% and female literacy was only 65.46%. Among Muslims, the gap is of 10.51% comprising 62.41% males and 51.9% females. Though, the gender gap of Muslims is lesser than the national average, both Muslim male and female literacy rates are far behind the national male and female literacy rates respectively. About 48.11% Indian Muslim women are considered illiterate which is the highest among all the religious groups. The school drop-out rate among Muslims is 17.6% which is also higher than the national average of 13.2%. Therefore, it can be stated that Muslim's educational condition in India is deplorable in comparison to men, and women of other communities (Bano 2017). Illiteracy may generally be believed as the real cause of underdevelopment. The condition of literacy is highly connected with the role of the state in delivering education to all. No country in the world has been able to educate all its children without the support and involvement of the native state (Hussain 2009b; Sen 2007). It has already been mentioned in the beginning that Muslims are the largest minority in India as well as in West Bengal. The share of Muslim population is 27% to population of West Bengal and gender inequality among Muslims vary at greater extent all over the districts of West Bengal. Thus, the present study measures the district wise level of gender inequality as well as their regional pattern. As per the census of India, The decadal growth in literacy rate of all the religious groups has calculated in West Bengal. So, the study also demands

[1] It stands for 'Association Social Network for Assistance to People' which published a report "Living Reality of Muslims in West Bengal" in association with Pratichi Institute, Kolkata.

an analysis on the growth in gender inequality during the last decade (2001–2011). Thus the religious data of Indian Census is used for the present study.

Objectives

This manuscript is an analytical study to draw the importance of gender equality in literacy for sustainable development. The broad objectives of the present study are:

1. To measure the degree of gender inequality in literacy rate among Muslim population and total population for presenting a comparative study, and to analyse the regional difference of gender inequality over the districts of West Bengal during 2001–2011.
2. To trace out the extent of inequality between Muslim female literacy rate and non-Muslim female literacy rate of West Bengal.
3. To identify the determinant factors responsible for low Muslim female literacy rate in West Bengal.
4. To discourse the importance of Muslim female literacy in particular and female literacy in general for sustainable development and the probable ways to eliminate gender inequality in literacy rate in the study area.

Development in education of Indian Muslims: a gendered perspective

Gender inequality in literacy rate and socio-economic conditions are reciprocal factors which affect each other. For finding out the viscosity of such relationship, researchers like Banerjee and Roy (2004) assured from their study that West Bengal had taken little effort to enhance gender equality in the true sense or to eliminate the obstacles for women in response to obtaining government provided public facilities. They also added that such allocation on education had not impacted very much to the special needs of girls. In terms of educational spread and the quality of performance, the Muslims are the most backward section in the society of West Bengal (Rahaman and Barman 2015). Justice Rajinder Sachar outlined that the Muslims of West Bengal have not only lagged behind Muslims of all other states of India, but even they are the most backward community amongst the population of West Bengal (Biswas 2015). Unfortunately, the changes in social status of the Muslim community and particularly of Muslim women are not paid much scholarly attention from the sociologists or other social researchers. Muslim females in India are still insecure and it is an inevitable fact that their liberation could be an important step towards empowering their community. The present position of Muslim females reflects the prominence of traditional and conservative attitudes in their community. But, their outlook, thinking and perception have been changing with increasing literacy among the Muslim women which in turn led to changes among all Indian Muslims (Kar and Ghosh 2017). Moreover, improvement in female education develops their earning potential and living standard of their children as women are likely to contribute more share of their income towards the family as compared to men (Saha and Halder 2017). However, a remarkable growth of 11% in literacy rate was found among Muslim women of West Bengal but they are below the state average of 77.16%. Muslim women are considered as the most illiterate section of the society as they have 36.3% illiteracy which is comparable only with SC/ST, i.e., 38.2% (Siddiqui and Rahaman 2016). It is believed by Muslim parents that education is not necessary for their daughters and that kind of belief may generate wrong thinking. Despite the enrolment of girls in education, they are terminated at an early age due to marriage. This results in a greater drop-out rate among Muslim girls (Hossain 2013). Ghosh (2011) in his study claimed that practicing child marriage becomes the curse which affects their education, safety, health and freedom of choice. Although Muslim girls' enrolment raises year by year on one hand, the drop-out at upper primary level have become the cause of backwardness on the other hand (Laskar 2018).

It is to note that there is a dearth of research works on gender disparity in education of Muslims. The aforesaid researchers, so far, have talked about status of Muslims in Indian society, importance and repercussions of Muslim female education and growth in their literacy rate. Among other researches regarding Muslims, the work of Nazmul Hussain has been found prominent. Hussain (2009a) tried to examine the relationship between concentrations of Muslim population and level of literacy and later concluded that the relative educational backwardness of Muslims is a

determining factor to economic backwardness among Indian Muslims. He further perpetuated his research at state level from national level along with Siddiqui and Hannan (2011) in which they proved the hypothesis that there is an inverse relationship between literacy rate and non-primary occupation. In the same year, Hussain along with Bhat and Khurshid (2011) conducted a case study in Jammu and Kashmir on the issue of gender disparity in terms of education, where they found out that low female literacy rate exhibit low enrolment ratio and high drop-out ratio. Later, Hussain et al. (2012) have based their research upon another Indian state of West Bengal where they studied the relationship between population growth and education. Some other important contributions on Muslims in general and Muslim women in particular of West Bengal have come from Hossain (2012a, b), Das and Marjit (2016), and Biswas (2017), who discussed gender disparity in education of Muslims as one of the components of socio-economic attributes in the light of minority status. It directly ascertains that all previous researchers focused only on socio-economic condition and minority status of Muslims, but the gender inequality in education as a whole has not been covered so far. Although Bhat et al. (2011) tried to examine the decadal growth of female literacy rate in Jammu and Kashmir which was very different from the objectives of this paper. Therefore, there is a need of district wise analysis on gender inequality in literacy rate of Muslims in West Bengal.

Locale of the study

West Bengal is located in the north-eastern part of India stretching in the shape of elongated land from Himalaya in the north to the Bay of Bengal (Fig. 1). This state is spread over an area of 88,752 sq. Km, covering 2.7% of the total land of the country. The state is surrounded by the international boundaries of Bangladesh in the east, Nepal and Bhutan in the north and is sharing the national boundaries of Sikkim and Assam in the north, Bihar, Jharkhand, and Orissa in the west. West Bengal is highly populated state with 9.13 crore persons (Census 2011) whereas majority belongs to Hindu accounting 70.54% and the largest minority group is Muslim consisting of 27.01%. Other minority groups are Christians, Buddhists, Sikhs and Jains. According to 2011 census, the district of North Twenty Four Parganas has the highest population of 8.9 million and the highest density of population is in Kolkata with 24,252 persons/sq. km. The overall population density of this state is 1028 persons/sq. km which is the second highest among all the states/UTs of India. Kolkata is the capital of this state and it was also the capital of India up to 1911. The decadal growth rate during 2001–2011 is 13.84% which was 17.77% in 1991–2001 and 24.73% in 1981–1991. Thus, a continuous decline in growth rate of population was seen in West Bengal. On the other hand, the level of education has increased rapidly as literacy rate was recorded 76.26% which is higher than the national average of 74.04%. Meanwhile, the sex ratio was increased by 16 females from 934 (2001) to 950 (2011) which is also greater than the national average of 943 (Census, 2011). Economically, West Bengal has achieved the 6th position in India with approximately US$ 150 million for 2018–2019, while the previous year's GDP growth rate was recorded as 11.5% and this state registered 10.9% unemployment rate during 2015–2016 (Wikipedia 2018). Moreover, 70% of total population of the state belong to rural who are directly dependent on agriculture like cultivation, animal husbandry, forestry, horticulture and fisheries (GoWB 2010). West Bengal has ranked first in jute production, second in tea production and third in rice production in India. Kolkata and Durgapur are the major centres of industries. The key industries of this state are tea, jute, fisheries, iron and steel, textiles, leather, petroleum and petrochemical, mineral resources, information technology, biotechnology and automobile and auto components (IBEF 2019; Wikipedia 2018).

Materials and methods

Data

The present study is entirely based on secondary sources of data, such as Census of India, 2001 and 2011. The study is based on two types of data such as literacy rate of total population and Muslim population so as to identify the place of Muslim literacy to total literacy of West Bengal. Thus, the religion-wise and sex-wise data (Religious PCA or Primary Census Abstract) of West Bengal were used for the present study. Some religious data was also obtained from

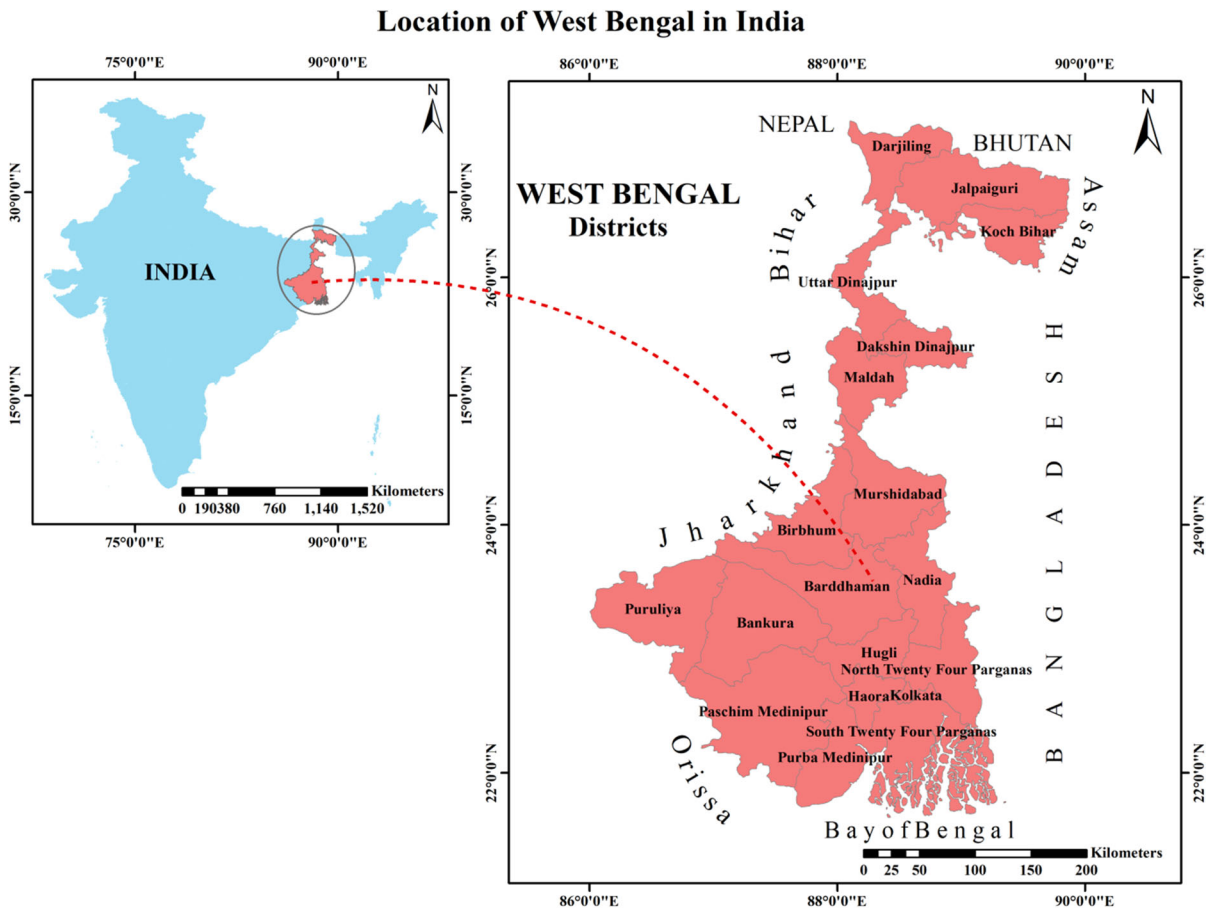

Fig. 1 Location map of study area

Indiastat. Moreover, other crucial data related to Muslim households was taken from the report entitled "Living Reality of Muslims in West Bengal: A Report", Association SNAP and Guidance Guild & Pratichi Institute, Kolkata, 2016.

Statistical and cartographic techniques

The literacy rate of two population groups, i.e., total population of West Bengal as a whole and Muslim population in West Bengal has been calculated on the basis of two ways, i.e., (i) literacy rate as total population (LRTP); and (ii) literacy rate as number of literates (LRNL), in order to quantify actual growth of Muslim female literates. Additionally, non-Muslim female literacy rate has also been calculated as it is required to measure the extent of inequality between non-Muslim female literacy rate and Muslim female literacy rate on the basis of LRTP and LRNL. In order to get number of non-Muslim females and non-Muslim female literates, Muslim females from total female population and Muslim female literates from total female literates have been subtracted respectively.

Calculating literacy rate

Literacy rate as total population (LRTP)

$$LR^{t}_{a,p} = \frac{L^{t}_{a,p}}{P^{t}_{a}} * 100 \quad (1)$$

$$LR^{t}_{a,m} = \frac{L^{t}_{a,m}}{P^{t}_{a}} * 100 \quad (2)$$

$$LR^t_{a,f} = \frac{L^t_{a,f}}{P^t_a} * 100 \quad (3)$$

where $LR^t_{a,p}$ = Total population literacy rate of age group a in year t, $LR^t_{a,m}$ = Male literacy rate of age group a in year t, $LR^t_{a,f}$ = Female literacy rate of age group a in year t, $L^t_{a,p}$ = Literate population of age group a of total population in year t, $L^t_{a,m}$ = Literate population of age group a of male population in year t, $L^t_{a,f}$ = Literate population of age group a of female population in year t, P^t_a = Population of age group a in year t.

Literacy rate as number of literates (LRNL)

$$\%M^t_a = \frac{LP^t_{a,m}}{TLP^t_a} * 100 \quad (4)$$

$$\%F^t_{a,f} = \frac{LP^t_{a,f}}{TLP^t_a} * 100 \quad (5)$$

where $\%M^t_a$ = Male literacy rate of age group a in year t, $\%F^t_{a,f}$ = Female literacy rate of age group a in year t, $LP^t_{a,m}$ = Male literate population of age group a in year t, $LP^t_{a,f}$ = Female literate population of age group a in year t, TLP^t_a = Total literate population of age group a in year t

In these Eqs. (1 to 5), a comprises of population with more than 6 years age group while t represents two different census years, i.e., 2001 and 2011. Through first three equations *(LRTP)*, three types of literacy rates comprising of total literacy rate, male literacy rate and female literacy rate have been calculated respectively with respect to total population. Similarly, the remaining two equations *(LRNL)* are used to calculate male literacy rate and female literacy rate among number of total literates. Total literacy rate as number of literates is not applicable because the numerator and denominator are same. All five equations are drawn from a report given by Institute for Statistics of UNESCO with the title "Guidelines and methodology for the collection, processing and dissemination of international literacy data" (Pessoa 2008).

Coefficient of equality

In order to achieve the central objective of this paper, i.e., gender inequality in literacy rate, a statistical technique called coefficient of equality given by S.M.I.A. Zaidi has been used. This technique is explicitly fit to evaluate the degree of gender inequality in literacy rate.

$$\text{Coefficient of Equality (CE)} = \text{X1/X2} \quad (6)$$

where X2 > or = X1 and X1 and X2 are the observed values of two groups of population.

The value of CE will always range between 0 and 1 (there is a modification in which CE may be more than 1 to represent the dominance of one group on another). In case of no disparity (i.e., perfect equality), CE will be 1. It may be interpreted as smaller the value of CE, higher the extent of disparity and higher the value of CE, lesser the disparity (Zaidi n.d.).

This formula has been used in this paper in two different perspectives, i.e., (i) to measure the gender inequality of total and Muslim population (Figs. 3, 4, 5, 6) where X1 = female literacy rate and X2 = male literacy rate, and (ii) to identify the dominance of Muslim female literacy rate over the districts (Figs. 7, 8) where X1 = Muslim female literacy rate and X2 = Non-Muslim female literacy rate. In case of inequality between Muslim female and Non-Muslim female literacy rate, CE value exceeds the equality limit (CE = 1) because Muslim female literacy rate is higher than Non-Muslim female literacy rate in some districts of West Bengal. After calculating CE values for each district, a spatial analysis has been done by using choropleth technique through GIS tool ArcMap 10 (all the maps) and Microsoft excel 2010 (all the diagrams).

Coefficient of correlation

Pearson′s Coefficient of Correlation $\boldsymbol{r}$

$$= \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{\left[n\sum x^2 - (\sum x)^2\right]\left[n\sum y^2 - (\sum y)^2\right]}}$$

where r = Correlation, n = number of observations and x, y = different variables.

Pearson's coefficient of correlation has been applied to find out the factors affecting Muslim female literacy rate in West Bengal. This method was used by using SPSS statistical tool. One dependent variable and 10 independent variables were taken for calculating coefficient of correlation, which was followed by two tailed test to draw the significance level of these correlations (Table 3).

The present study has been broadly conducted through five steps such as data collection, calculations, results, discussions and conclusions which are diagrammatically shown through flow chart in Fig. 2.

Results

Gender inequality in literacy rate

The result section begins with the study to measure the degree of gender inequality in literacy rate in West Bengal. The CE value regarding literacy rate has been calculated for each district of this state (Table 4 in "Appendix"). This section deals with comparative discussion of gender inequality in literacy rate between Muslim population and total population so as to understand the place of Muslim gender inequality among total population of West Bengal. It covers gender inequality in two types of literacy rate such as LRTP and LRNL and each of these inequalities have been calculated with the help of two consecutive census years, i.e., 2001 and 2011 for tracing out the decadal change.

Gender inequality in literacy rate as LRTP

As the study demands an investigation to find out the decadal change in gender inequality in literacy rate, the calculated CE between male and female literacy rate of Muslim and total population has been categorized into three groups such as high (≤ 0.75), medium (0.76–0.85) and low (0.86) on the basis of range of CE values of all the districts of West Bengal. These categories have further been compared by identifying number of districts under each category and by placing these districts according to both census years side by side (Table 1).

Muslim population During 2001, the CE value of Muslim literacy rate in all the districts ranges from 0.48 of Puruliya to 0.89 of Kolkata with state average of 0.77 (Table 4 in "Appendix"). According to the categories of CE, high inequality category was found in 10 districts which constitute 6 districts from south Bengal and 4 districts from north Bengal. Out of these 10 districts, Maldah and Uttar Dinajpur are considered as the Muslim majority district, whereas Muslim male and female literacy rate in Uttar Dinajpur were recorded as 45.98% and 25.5% respectively. As a result, it is appeared as the Muslim majority district with highest gender inequality and having second rank (Table 4 in "Appendix"). Thus the gap of 20% was huge on one hand and Muslim female literacy rate was far away from the state average of 49.75% on the other hand. Medium level of Inequality was found in 7 districts. Excluding Dakshin Dinajpur, other 6 districts are adjacently located forming the separate belt in south Bengal. Apart from Hugli, each district has more than 20% Muslim population in total population of district. Therefore, it can be pointed out that medium level of gender inequality was found in significantly Muslim populated districts. It was also found that gender inequality in literacy rate decreases in the southern part of the state. Only Kolkata was fallen under high category as it is the capital and highest urban populated district of West Bengal. The districts like Barddhaman, Nadia and North Twenty Four Parganas were having equal CE value of 0.81 making a separate triangle-shaped belt where the share of Muslim population ranges between 20 and 30%. The districts with low share of Muslim population like Darjiling, Puruliya, Bankura, Medinipur, Jalpaiguri and Hugli had represented high gender inequality, while high and medium Muslim populated districts were responsible for medium and low gender inequality respectively. Therefore, it can be stated that gender inequality in literacy rate has negative correlation with the share of Muslim population in the districts of West Bengal.

The lowest inequality (0.89) occupied by Kolkata in 2001 has increased to 0.94 in 2011, showing a reduction of 0.05 points in inequality. The most impressive thing has been observed during the last decade that the number of district under low category (≥ 0.86) was only 1 in 2001, which has increased to 12 districts in 2011, while it was 10 districts for total population (Table 1). It is a sudden change that has occurred during the last decade. Except Uttar Dinajpur, all the districts have entered into low inequality category in 2011. Out of 12 districts of this category, 11 districts have created a huge area extending from Dakshin Dinajpur in north Bengal to South Twenty Four Parganas which connects north Bengal to Bay of Bengal (Fig. 3b). Puruliya (0.63) was reported only district under high inequality category because Muslim female literacy rate was 46.78% which is substantially poor in comparison to male literacy rate

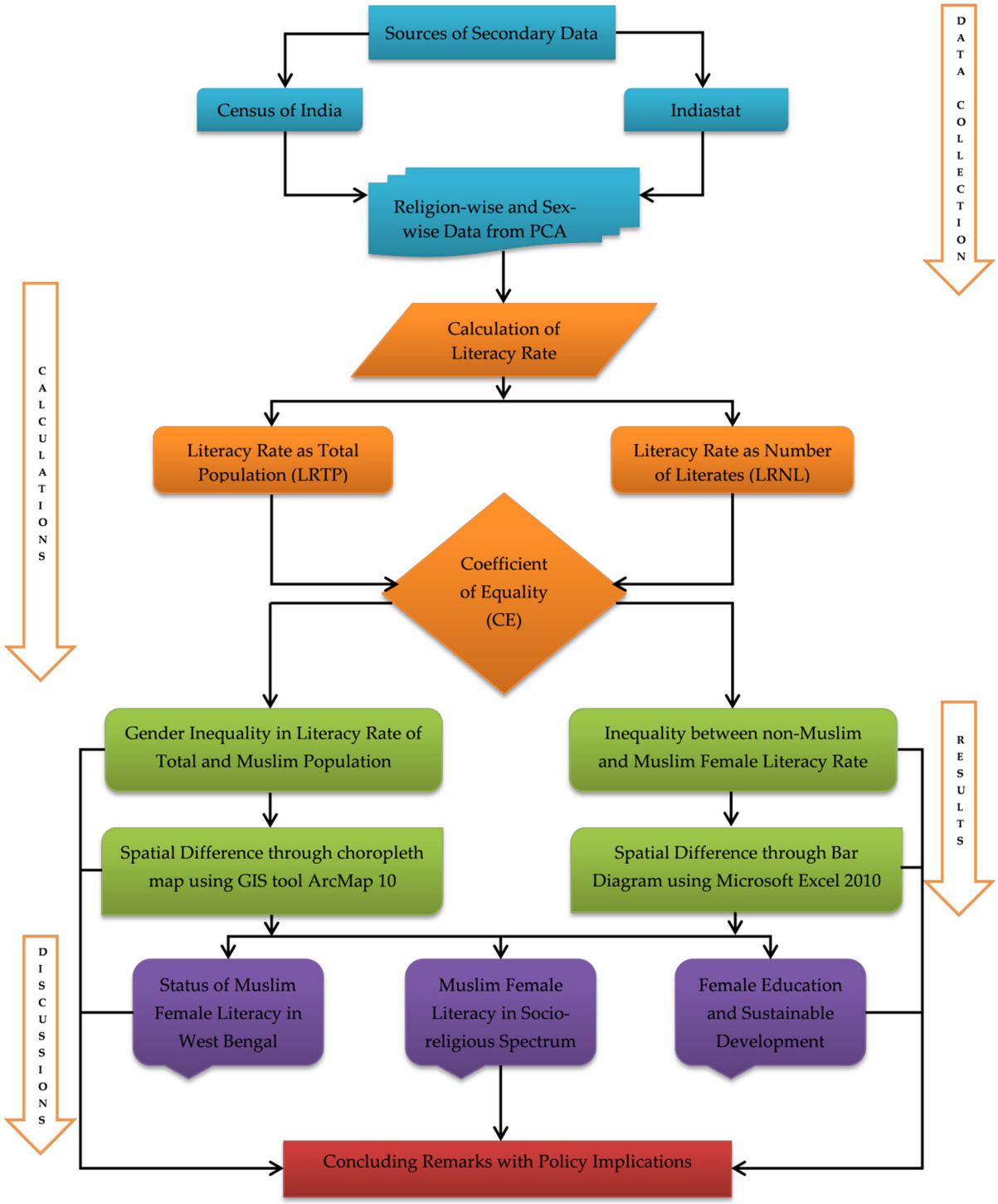

Fig. 2 Flow chart of the present study

Table 1 Category wise distribution of districts on the basis of gender inequality in literacy rate in West Bengal (LRTP). Source: Table has been prepared on the basis of Table 4 in "Appendix"

Categories of Gender Inequality or CE	Districts	
	2001	2011
Muslim Population		
≤ 0.75 (High)	Puruliya, Uttar Dinajpur, Darjiling, Bankura, Jalpaiguri, Medinipur, Koch Bihar, South Twenty Four Parganas, Maldah, Birbhum (10)	Puruliya (1)
0.76–0.85 (Medium)	Murshidabad, Barddhaman, Nadia, North Twenty Four Parganas, Haora, Dakshin Dinajpur, Hugli (7)	Bankura, Darjiling, Uttar Dinajpur, Jalpaiguri, Medinipur (5)
≥ 0.86 (Low)	Kolkata (1)	Koch Bihar, Birbhum, South Twenty Four Parganas, Barddhaman, Hugli, Maldah, Murshidabad, North Twenty Four Parganas, Haora, Dakshin Dinajpur, Nadia, Kolkata (12)
Total Population		
≤ 0.75 (High)	Puruliya, Uttar Dinajpur, Bankura, Maldah, Jalpaiguri, Birbhum, Koch Bihar, Dakshin Dinajpur, South Twenty Four Parganas (9)	Puruliya, Bankura (2)
0.76–0.85 (Medium)	Medinipur, Murshidabad, Barddhaman, Darjiling, Hugli, Nadia, Haora, North Twenty Four Parganas (8)	Medinipur, Uttar Dinajpur, Jalpaiguri, Birbhum, Barddhaman, Koch Bihar (6)
≥ 0.86 (Low)	Kolkata (1)	Darjiling, Dakshin Dinajpur, Maldah, South Twenty Four Parganas, Hugli, Murshidabad, Nadia, North Twenty Four Parganas, Haora, Kolkata (10)

Value in parenthesis denotes number of districts in each category

of 74.53%. Uttar Dinajpur is another district which has very low female literacy rate of 45.4%, but male literacy rate is also low, i.e., 56.77%, which is quite less than the male literacy rate of Puruliya. The remaining 5 districts have observed medium category ranging the value of CE from 0.79 in Bankura to 0.85 in Medinipur (Purba and Paschim). While in Puruliya and Bankura, CE has increased substantially from 0.48 and 0.65 in 2001 to 0.63 and 0.79 in 2011 respectively, but in 2011 census, Muslim female literacy rate of these districts were recorded as 46.78% and 58.93%, which was lower than the state average of 64.77% (Table 4 in "Appendix"). In terms of decadal change in CE, the highest change was noticed in Uttar Dinajpur with 0.25 points while the lowest change (0.5 points) was found in Hugli and Kolkata. Other noticeable districts were Darjiling, Puruliya and South Twenty Four Parganas.

Total population In 2001, 3 western districts and 1 southern district of south Bengal and 5 districts from north Bengal were found with CE of ≤ 0.75 (Fig. 4a). Total 9 districts were recorded under high category which contained 10 districts in case of Muslim Population (Table 1). Among these districts, Puruliya recorded the lowest CE of 0.5 which is slightly higher than Muslim population (0.48). The medium category was found in 8 districts, out of the remaining 9 districts which are mostly concentrated in south Bengal appearing as a patch of region starting from Murshidabad to North Twenty four Parganas and Medinipur (Purba and Paschim). Likewise Muslim population, Kolkata was again only the district under

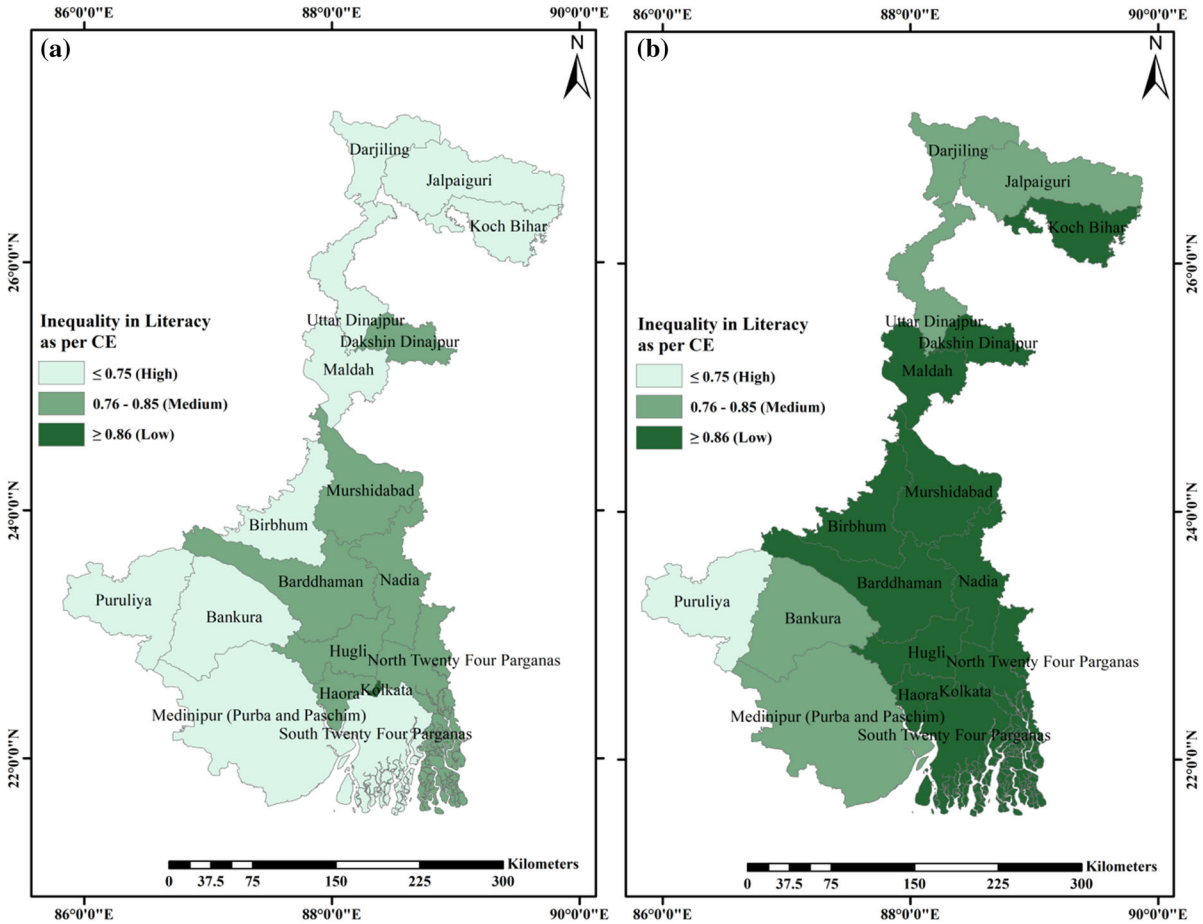

Fig. 3 Gender inequality in literacy rate (LRTP) of total population during **a** 2001 and **b** 2011

low category with highest CE of 0.92. Out of 18 districts, 9 districts were registered under medium and low gender inequality. Kolkata, Haora and Hugli are relatively smaller districts with high urban population and they are located in medium and low inequality belt. It means that these districts have CE value of ≤ 0.75 which suggests quite low inequality. It is the fact that high share of urban population in the total population of region delivers a low gender inequality in literacy.

In 2011, a significant improvement has been found in terms of gender inequality in literacy rate in most of the districts of West Bengal. The numbers of districts are distributed in all the three categories, like 2 districts in high category, 6 districts in medium category and 10 districts in low category (Fig. 4b). In comparison to 2001, the pattern of districts is totally reversed in 2011 (Table 1 and Fig. 4). Most of the districts under high and medium category in 2001 have shifted to low category in 2011, suggesting a huge improvement in decreasing gender inequality in literacy rate. The highest increase in CE values has been found in Uttar Dinajpur by 0.18 points from 0.62 in 2001 to 0.80 in 2011. In terms of increase in CE, Uttar Dinajpur was followed by Maldah, Puruliya, Murshidabad, Jalpaiguri etc. These districts have experienced an increase of more than 0.10 points. In contrary to this, the lowest increase was recorded in Kolkata by 0.03 points which ranges from 0.92 in 2001 to 0.95 in 2011 (Table 4 in "Appendix"). But, Kolkata had already low inequality rate in 2001 which has come more close to equality in 2011. It is discussed earlier that Kolkata is totally urban populated district where there is very negligible scope of discrimination between male and female in literacy. In spite of remarkable increase by Puruliya and Bankura could

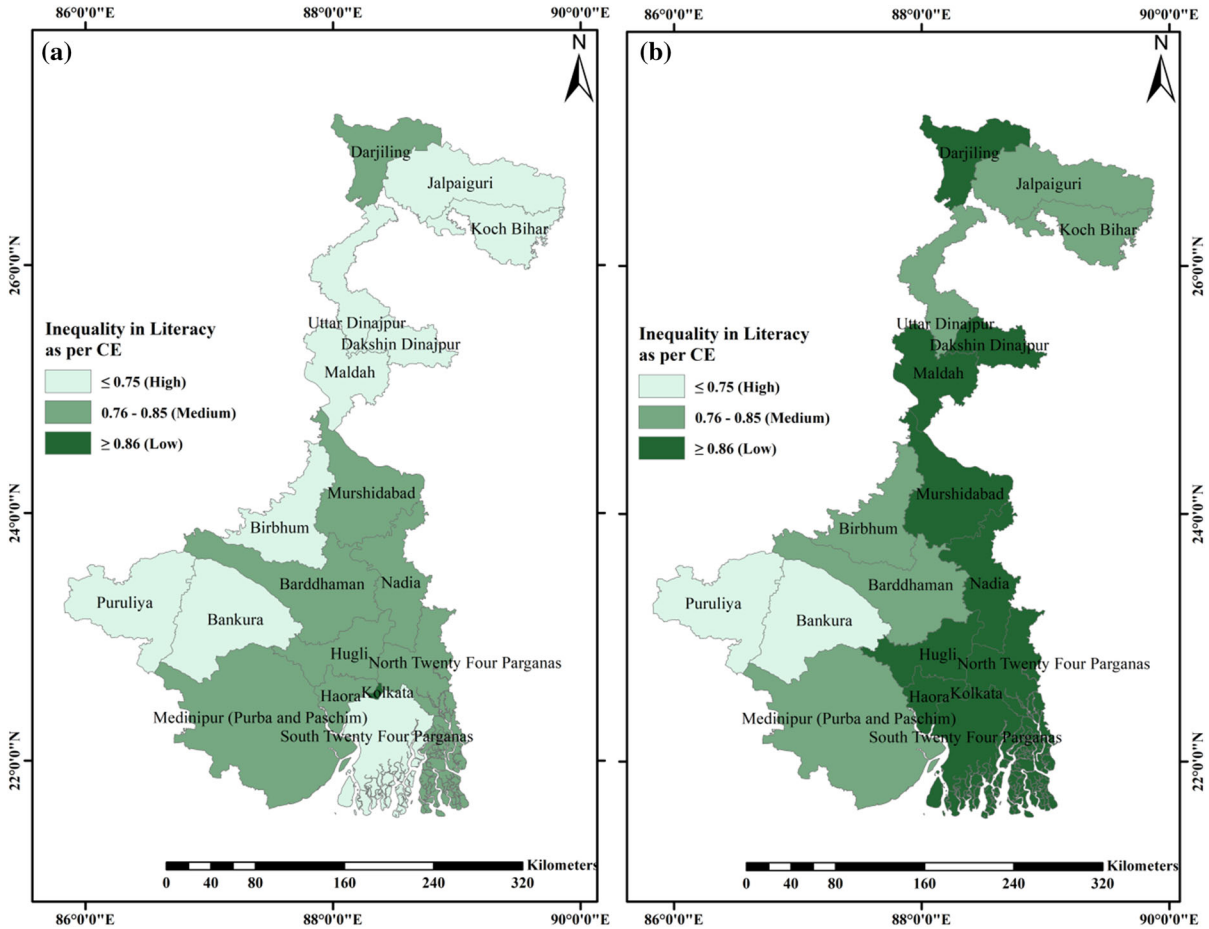

Fig. 4 Gender inequality in literacy rate (LRNL) of total population during **a** 2001 and **b** 2011

not cross the boundary of CE = 0.75. It is because, the persistence of low female literacy rate as compared to male literacy rate.

Gender inequality in literacy rate as LRNL

LRNL has been calculated to measure the actual change in number of literates in order to identify the growth in number of male and female literates in gender composition. While discussing gender inequality in literacy rate as LRNL, the range of categories is changed and/or reduced as compared to LRTP (Table 1). It is because the gap between highest and lowest CE is lesser than LRTP. The calculated CE values in this section have been categorized into three categories like high (≤ 0.65), medium (0.66–0.75) and low (≥ 0.76) which have been applied on Muslim and total population (Table 2).

Muslim population In terms of inequality in LRNL among Muslim, a different kind of pattern was seen during 2001 (Fig. 5a). The high inequality category was found in 6 districts among which two Himalayan districts of Darjiling and Jalpaiguri, and two western plateau districts of Puruliya and Bankura were included. Poverty of Muslims in Puruliya, Bankura and Uttar Dinajpur might have become one of the hindrances for females to get the basic need like literacy. It was very shocking to note that Kolkata being the capital of West Bengal, was found with CE of only 0.64. It means that Muslim females were underprivileged not only in rural districts but also in urban centres like Kolkata. Another important noteworthy result was found that 10 districts were recorded under medium inequality category ranging from 0.69 in Medinipur (Purba and Paschim) to 0.75 in Murshidabad, Nadia and North Twenty Four

Table 2 Category wise distribution of districts on the basis of gender inequality in literacy rate in West Bengal (LRNL). Source: Table has been prepared on the basis of Table 5 in **"Appendix"**

Categories of Gender Inequality or CE	Districts	
	2001	2011
Muslim Population		
≤ 0.65 (High)	Puruliya, Darjiling, Uttar Dinajpur, Bankura, Kolkata, Jalpaiguri (6)	Puruliya (1)
0.66–0.75 (Medium)	Koch Bihar, Medinipur, South Twenty Four Parganas, Maldah, Birbhum, Barddhaman, Haora, Murshidabad, Nadia, North Twenty Four Parganas (10)	Darjiling, Bankura (2)
≥ 0.76 (Low)	Dakshin Dinajpur, Hugli (2)	Uttar Dinajpur, Kolkata, Jalpaiguri, Medinipur, Koch Bihar, Birbhum, Barddhaman, South Twenty Four Parganas, Haora, North Twenty Four Parganas, Hugli, Maldah, Nadia, Dakshin Dinajpur, Murshidabad (15)
Total Population		
≤ 0.65 (High)	Puruliya, Uttar Dinajpur, Bankura (3)	Puruliya (1)
0.66–0.75 (Medium)	Maldah, Jalpaiguri, Birbhum, South Twenty Four Parganas, Koch Bihar, Dakshin Dinajpur, Barddhaman, Darjiling, Medinipur, Murshidabad (10)	Medinipur, Bankura, Uttar Dinajpur (3)
≥ 0.76 (Low)	Haora, Kolkata, Hugli, Nadia, North Twenty Four Parganas (5)	Jalpaiguri, Koch Bihar, Birbhum, Barddhaman, Maldah, Dakshin Dinajpur, South Twenty Four Parganas, Darjiling, Hugli, Nadia, Murshidabad, Haora, Kolkata, North Twenty Four Parganas (14)

Value in parenthesis denotes number of districts in each category

Parganas. The considerable share of Muslim population was found in these districts. In contrary to this, the remaining two districts namely Dakshin Dinajpur and Hugli of low inequality category were found with impressive CE values like 0.80 and 0.81 respectively irrespective of very low Muslim concentration. It is because; both Muslim male and female literacy rate were found almost similar in these districts. Such kind of literacy rate in these districts made them closer to each other resulting in their inclusion in low category.

In 2011 (Fig. 5b), all the districts have shown a great improvement in reducing gender inequality in literacy rate of Muslims. The lowest inequality has now reached to 0.89 in favour of Murshidabad which was held by Hugli in 2001 (Fig. 5a). But, the position of highest inequality is still occupied by Puruliya with 0.59 and it was the only district of high inequality category. With an improvement up to 0.24 points (Uttar Dinajpur), remaining 5 districts apart from Puruliya (2001) have entered into next categories (Table 5 in "Appendix" and Table 2). Medium category was found in Bankura and Darjiling, where Muslim concentration was 5.69% and 8.08% standing at the bottom of list of districts. The number of female literates as compared to male literates is found to be very low, i.e., 42.78% and 42.43% respectively, which are even lower than the state's average of 45.87% (Table 5 in "Appendix"). About 13 districts have joined Hugli and Dakshin Dinajpur which were already part of low category in 2001. The highest positive change has been found in Uttar Dinajpur with 0.24 points from 0.52 in 2001 to 0.76 points. Apart from Uttar Dinajpur, other notable districts in terms of

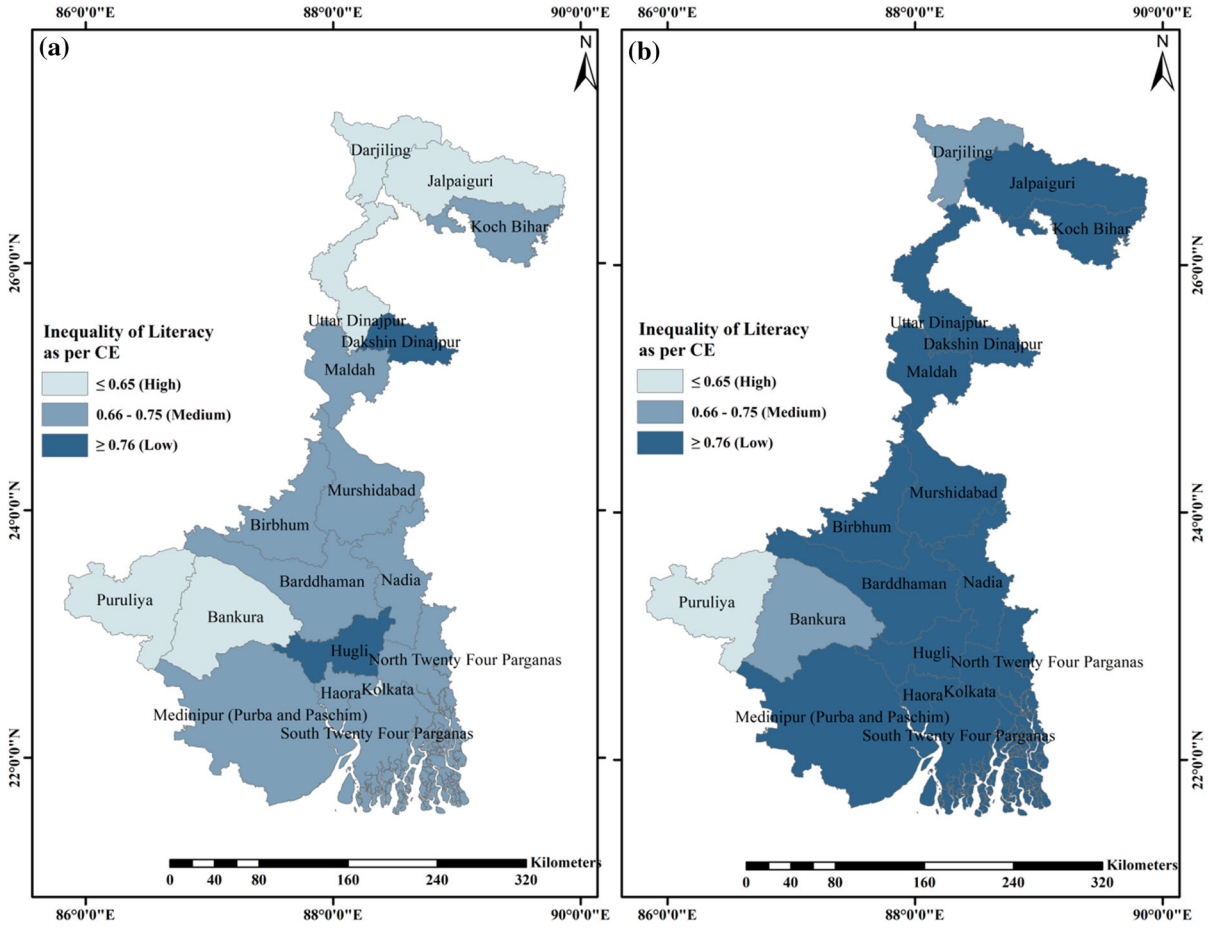

Fig. 5 Gender inequality in literacy rate (LRTP) of Muslims during **a** 2001 and **b** 2011

CE change were Darjiling, Maldah, Jalpaiguri, Kolkata, South Twenty Four Parganas etc. The lowest increment has occurred in Hugli as 0.6 points from 0.81 in 2001 to 0.87 points.

Total population In 2001, the highest gender inequality was observed as 0.47 as expected in Puruliya because in terms of LRTP (Table 1), Puruliya was predominantly appeared as the outlier. The lowest gender inequality was observed as 0.79 in North Twenty Four Parganas which is higher than Kolkata (0.76). These two districts were found surpassing the state average (0.72) along with Darjiling, Medinipur, Murshidabad, Haora, Hugli and Nadia (Table 5 in "Appendix"). It means that these districts were in a better condition of gender inequality in literacy rate. While more than 50% of the districts were comparatively seen with higher gender inequality (Table 2). Medium category was recorded in 10 districts, which are more than 50% of total districts covering all parts of West Bengal from north to south (Fig. 6a). Most of these districts are dominated by rural population which can be one of the reasons of such level of inequality. While, the category with low inequality was found in five districts which are characterized by high urban population as compared to rest of the districts.

Likewise Muslim population, an improvement has been found in gender inequality in 2011 which is because the lowest gender inequality of 2001 (0.79) has been passed by 13 districts in 2011 (Table 2 and Fig. 6). Now, the lowest inequality has reached to 0.88 in the same district i.e., North Twenty Four Parganas. The state average of gender inequality in literacy has also increased from 0.72 in 2001 to 0.82 in 2011. With the addition of Jalpaiguri, the low category in 2011

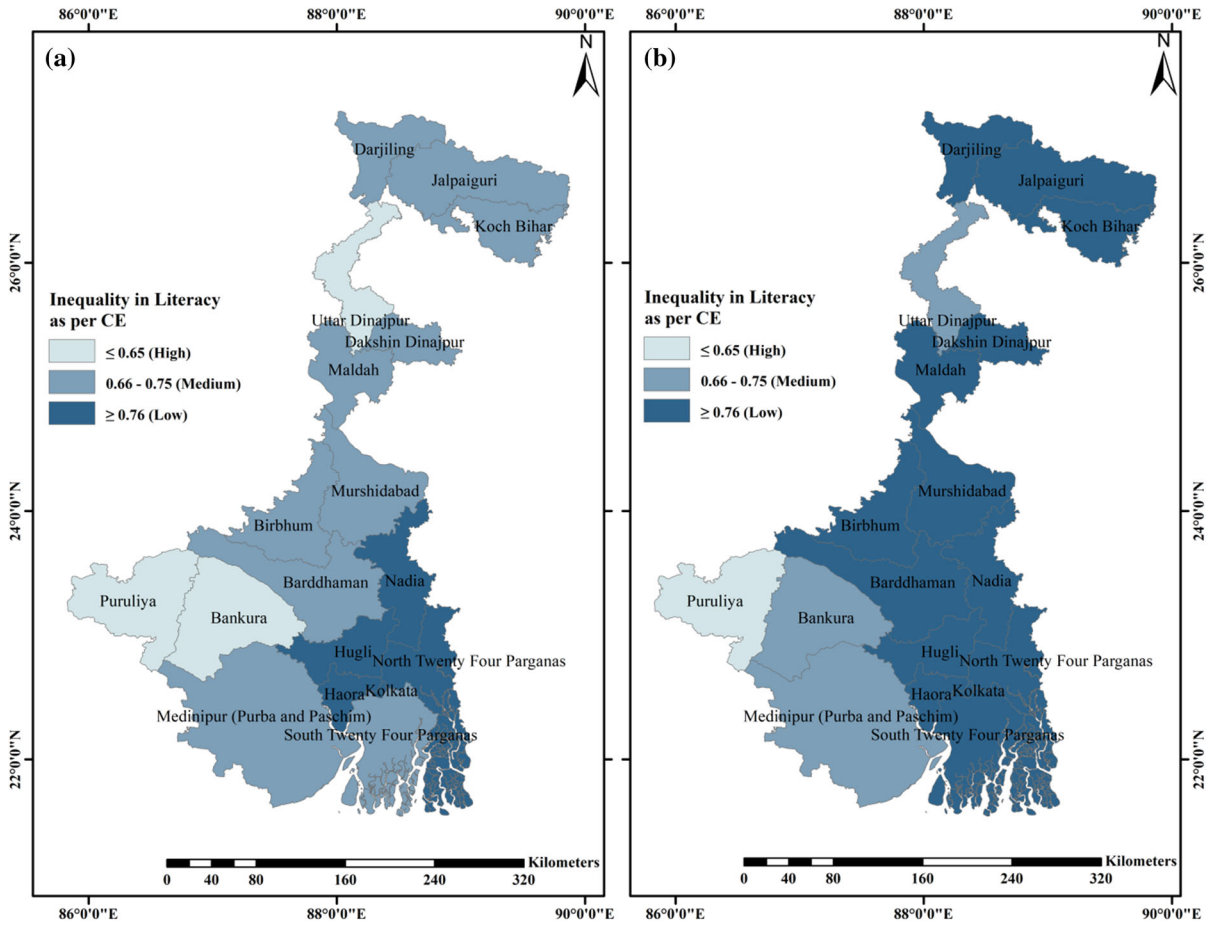

Fig. 6 Gender inequality in literacy rate (LRNL) of Muslims during **a** 2001 and **b** 2011

covers a vast region of 14 districts and most of them are adjacent to Bangladesh border such as Darjiling, Jalpaiguri, Koch Bihar, Dakshin Dinajpur, Maldah, Murshidabad, Nadia, North Twenty Four Parganas and South Twenty Four Parganas. Out of the remaining four districts, only Puruliya was credited by high category with the highest CE of 0.62. Under medium category, Uttar Dinajpur from north Bengal and Medinipur and Bankura from south Bengal have been recorded. Irrespective of socio-economically high backwardness, Uttar Dinajpur is appeared with low inequality than Bankura. Moreover, both these districts were registered under high inequality category in 2001 which have come under medium inequality category in 2011. The highest decadal change in CE was detected as 0.17 points in Uttar Dinajpur similarly Muslim population (0.24), which was followed by Maldah, Puruliya, South Twenty four Parganas etc. (Table 5 in "Appendix"). Medinipur (Purba and Paschim) has become the only district with negative CE change of − 0.06 which is because female literacy rate has dropped from 42.03% in 2001 to 40.09% accounting reduction of 1.94%, but male literacy rate has increased by almost 2%.

Inequality in literacy rate between non-Muslim and Muslim females in West Bengal

Gender inequality in literacy rate of Muslims has revealed a trend of improvement during the last decade in the districts of West Bengal. But the status of Muslim female literacy rate as compared to Non-Muslim female literacy rate is yet to be identified. In order to examine the level of inequality between Non-Muslim and Muslim female literacy rate, CE value has been calculated for each district with the help of 2001

and 2011 census years and both the census years are subsequently compared. The CE values below 1 and above 1 suggest the dominance of Non-Muslim female literacy rate and Muslim female literacy rate respectively while 1 depicts equality. The main purpose of this section is to present decadal change in CE of non-Muslim and Muslims female literacy rate in West Bengal which has been discussed as LRTP (Table 6 in "Appendix") and LNNL (Table 7 in "Appendix").

Inequality in literacy rate between non-Muslim and Muslim females in West Bengal (LRTP)

It has been found out in previous discussion that Muslim female literacy rate was comparatively lower than the literacy rate of total females in most of the districts of West Bengal in 2001. Moreover, it has improved a lot up to the next census year. Now, the question has arisen that whether Muslim females are close enough to non-Muslim females in terms of literacy rate or not? Irrespective of provision for equal educational attainment for both male and female in every religious group, Muslims of West Bengal are less likely to educate females due to persistence of poverty, while non-Muslims of this state are somehow capable enough to provide basic education to their female children. Such kind of inequality varies over the districts of the state where different CE value has been found in different districts.

In 2001, the CE value had the range from 0.68 (Darjiling) to 1.39 (Dakshin Dinajpur) while the state average was recorded as 0.91, which is far below the equality (Table 6 in "Appendix"). Both these districts are located in north Bengal. In Darjiling, Muslim female literacy rate was 37.92% which was far below the non-Muslim female literacy rate of 56.17%, i.e., decreased by 18.25%. In contrast, the difference between the literacy rates of these two groups was 17.30% in Dakshin Dinajpur where the literacy rate of Muslim female was high, i.e., 61.33% over non-Muslim female literacy rate of 44.03%. Jalpaiguri was the only district which had attained equality in literacy and ranked 8th in the list of districts on the basis of CE. It means that there were 7 districts, where Muslim female literacy rate was more than non-Muslim female literacy rate (Fig. 7). Except Maldah and Dakshin Dinajpur, all the districts were from the southern half of the state. Maldah is the second highest Muslim populated district, where Muslim female had surpassed by only 2.51% which was very low as compared to Dakshin Dinajpur. Out of those districts with the dominance of non-Muslim female literacy rate, Medinipur and Darjiling were the closest and distant districts from equality line (Fig. 7). Despite being the highest Muslim majority districts in West Bengal, Murshidabad was found with the CE value of 0.90 and the difference of 4.75%. Another Muslim majority district of Uttar Dinajpur from north Bengal had represented a very poor performance by registering the second highest inequality of 0.68. Therefore, it can be said that, Muslim female literacy rate had more dominance in south Bengal.

In 2011, the number of districts with the dominance of Muslim female literacy rate has increased from 7 in 2001 to 12. The CE values of these 12 districts ranges between 1.01 (Koch Bihar) and 1.27 (Dakshin Dinajpur) while South Twenty Four Parganas was the only district to be counted with equality. The dominance of Muslim female literacy rate has been recorded in ten districts. Likewise 2001 census, all the Muslim districts except Uttar Dinajpur have represented the dominance of Muslim female literacy rate over non-Muslim literacy rate in 2011. Muslim female literacy rate as the state's average of 64.77% is not too far from 65.04% of non-Muslim females resulting equality (CE = 1). The dominance of non-Muslim female literacy rate has been found in the districts such as North Twenty Four Parganas, Kolkata, Nadia, Uttar Dinajpur and Darjiling. The high poverty of Muslims as compared to non-Muslims in Kolkata is one of the crucial drawbacks for the unequal attainment of basic education. Most of the Muslims of Kolkata live in urban slums and middle class society. The slum Muslims are unable to afford costs of urban schooling for their ward, especially female child and as a result they would remain illiterate in urban areas. As far as CE change is concerned, the highest change has been observed in Dakshin Dinajpur with 0.22 points while the negative change has been noticed in Dakshin Dinajpur, Puruliya, Barddhaman and Hugli, that means relatively higher rate of increase in non-Muslim female literacy rate as compared to Muslim female literacy rate.

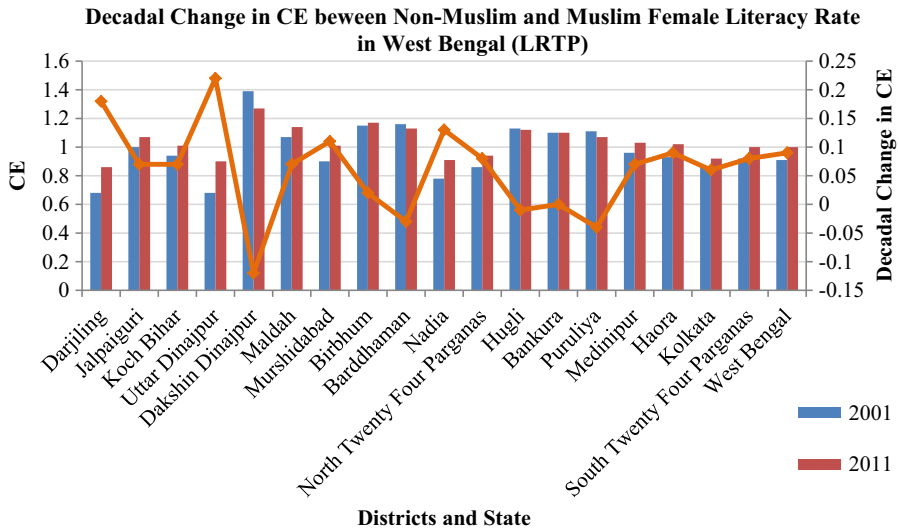

Fig. 7 Inequality in literacy rate (LRTP) between Non-Muslim and Muslim females in West Bengal

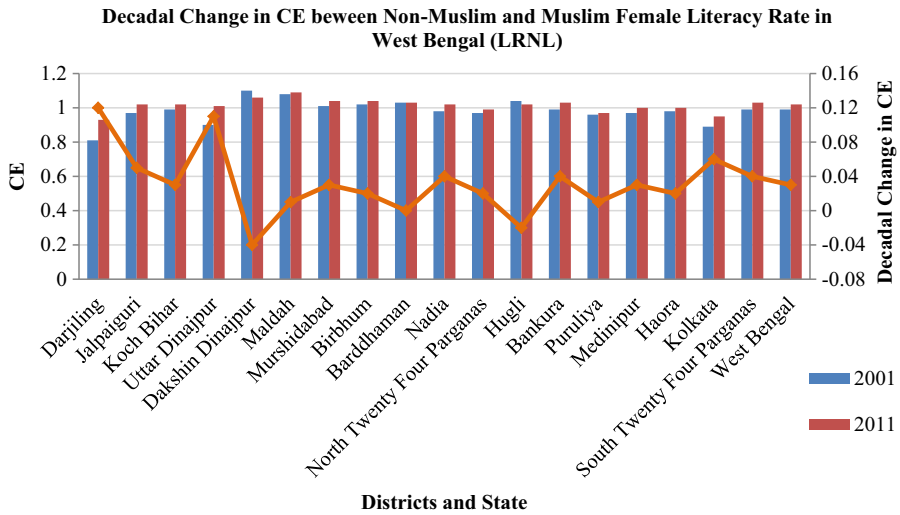

Fig. 8 Inequality in literacy rate (LRNL) between Non-Muslim and Muslim females in West Bengal

Inequality in literacy rate between non-Muslim and Muslim females in West Bengal (LRNL)

One can easily see the difference between LRTP (Fig. 7) and LRNL (Fig. 8), where it is clearly found that the gap between Non-Muslim female literacy rate and Muslim female literacy rate is less in LRNL as compared to LRTP. But, the variation of such gap in terms of LRNL differs over the districts of West Bengal. Therefore, this section also deals with geographical distribution and decadal change in gender inequality in literacy rate as LRNL.

In 2001, there has been observed a totally different kind of CE variation over the districts while discussing the inequality in LRNL. The CE values as LRNL (Fig. 8) have been found more evenly distributed than LRTP (Fig. 7). Most of the districts are situated very close to equality line meaning equal distribution of Muslim female literacy rate in comparison to non-Muslim female literacy rate. In Fig. 8, Darjiling, Uttar Dinajpur, Dakshin Dinajpur, and Kolkata are seen to maintain a considerable distance from equality line. The CE values range between 0.81 (Darjiling) and 1.10 (Dakshin Dinajpur). There were found 12 districts with the dominance of Non-Muslim female literacy rate over Muslim female literacy rate. But 9 districts out of these 12 districts from Koch Bihar to Puruliya were not far away from the equality line

ranging from 0.99 to 0.96. In contrary to this, there were only 6 districts with the dominance of Muslim female literacy rate. Almost all the districts with considerable Muslim population had represented better Muslim female literacy rate as compared to non-Muslim female literacy rate. Murshidabad was found with below equality line in terms LRTP (Fig. 7) but in terms of LRNL, Muslim female was found with dominating over non-Muslim females. But the condition of Muslim females in Uttar Dinajpur whether in terms of LRTP or LRNL have been found very disappointed. Muslim Female literacy rate in this district was recorded only 34.35% which was lesser than non-Muslim female literacy rate that of 38.01% and the state's average in Muslim female literacy rate of 41.61% (Table 6 in "Appendix"). It is noteworthy that the state average inequality (0.99) was very close to equality line. It means, number of Muslim female literates were not very less as compared to non-Muslim female literates in West Bengal.

In 2011, the number of districts with the dominance of Muslim female literacy rate has also increased by double from 6 in 2001 to 12 in 2011. But these 12 districts have reported with CE range of only 0.09 points from 1.01 (Uttar Dinajpur) to 1.09 (Maldah). It means that in all these 12 districts, there was very low gap between Muslim and non-Muslim female literacy rate. Including Uttar Dinajpur and Maldah, these districts have been registered as Koch Bihar, Jalpaiguri and Hugli with 1.02; Bankura, South Twenty Four Parganas and Barddhaman with 1.03; Birbhum and Murshidabad with 1.04; and Dakshin Dinajpur with 1.06 (Table 7 in "Appendix"). It is noteworthy that Uttar Dinajpur was found below the equality line so far, but in 2011, it has come just above the line. Such kind of improvement suggests that the number of Muslim female literates has increased substantially as compared to non-Muslim female literates during the last decade. Another noticeable result is that two districts namely Haora and Medinipur have achieved the equality in female literacy rate in 2011, while these districts were very close to equality line with the CE value like 0.98 and 0.97 in 2001. There were noticed four districts namely North Twenty Four Parganas, Puruliya, Kolkata and Darjiling with the dominance of non-Muslim female literacy rate in both census years showing the persistence of staying below the equality line throughout the decade, but the CE value of these districts has increased which led them towards the equality line. A noticeable increase in CE value has been observed in Uttar Dinajpur, Medinipur, Jalpaiguri, Nadia, Haora, Bankura, South Twenty Four Parganas and Koch Bihar between 2001 and 2011 (Table 7 in "Appendix"). Meanwhile, Uttar Dinajpur and Hugli have found slight decline in CE suggesting high rate of increase in non-Muslim female literacy rate as compared to Muslim female literacy rate. The state average in CE has also improved and has crossed the equality line to enter the area of dominance of Muslim female literacy rate (from 0.99 in 2001 to 1.02 in 2011). Therefore, it can be said that Muslim female dominates presently over non-Muslim females in terms of LRNL.

Discussions

Status of Muslim female literacy in West Bengal

As far as the findings of the present study are concerned, that female literacy rate in West Bengal is showing a trend of improvement since 2001, but there is still a gap in educational gender inequality. In general, gender inequality in literacy (CE) has reduced significantly throughout the districts of West Bengal during the last decade (2001–2011) because of the abrupt increase in female literacy rate as compared to male literacy rate (Tables 4, 5 in "Appendix"). Especially, female education was empowered highly by several central and state government policies like Sarva Shiksha Abhiyan, Kanya Saaksharta Protsahan Yojna and Kasturba Gandhi Balika Vidyalaya Yojna (Jain 2013). Muslim gender inequality has also reduced in West Bengal as Muslim parents are now more open to educate their daughters due to such schemes. As per the study, the number of districts under low gender inequality category has increased substantially in both cases such as LRTP (Table 1) and LRNL (Table 2). Moreover, the difference between Muslim and non-Muslim female literates has reduced significantly in 11 districts (LRTP) and 10 districts (LRNL) out of the 18 districts (Figs. 7, 8 respectively). Some of the notable districts were Darjiling, Uttar Dinajpur, Dakshin Dinajpur, North Twenty Four Parganas, Puruliya, Haora and Kolkata, where the difference has reduced in both the LRTP and LRNL. The noteworthy fact is that out of the three Muslim majority districts, Murshidabad and Maldah are not in

the list of these districts. Although the difference in Murshidabad has reduced in LRTP but has increased in LRNL, while the difference in Maldah district has increased in both the LRTP and LRNL. It means that the growth of non-Muslim female literates was greater than Muslim female literates in these two districts. Figures 7 and 8 clearly highlight the districts with high reductions in which Darjiling was found with the highest reduction during 2001–2011 from 18.25 to 9.52% in LRTP and 8.23 to 3.16% in LRNL. While focusing on Muslim female literacy rate only, it was found that decadal growth was greater in LRNL as compared to LRTP (Fig. 9). It is thus because 100% in LRTP and 50% in LRNL are the highest limits of being equal with male literacy rate.

Gender inequality of Puruliya has consistently ranked last in both census years despite a significant increment in CE. It is because females are extremely backward in literacy as compared to males. Female literacy rate is increased from 23.24% in 1991 to 50.52% in 2011 while male literacy rate is increased from 62.17% in 2001 to 77.86% (GoWB n.d.-a). As per census 2011, there is a huge gap of 27.34% between male literacy rate and female literacy rate (GoWB n.d.-b). Around 91% population live in rural areas, therefore, the economic condition is totally dependent on agriculture and labouring. Hence, females likewise males, are not equally encouraged for education due to poverty.

According to 2011 census, Muslim female dominates upon non-Muslim females in terms of literacy rate in the districts around river Ganga including Dakshin Dinajpur, Maldah, Murshidabad, Birbhum, Barddhaman, Hugli and Bankura. In contrast, Kolkata does not appear as the favourable district for Muslim women as they are found below the equality line in

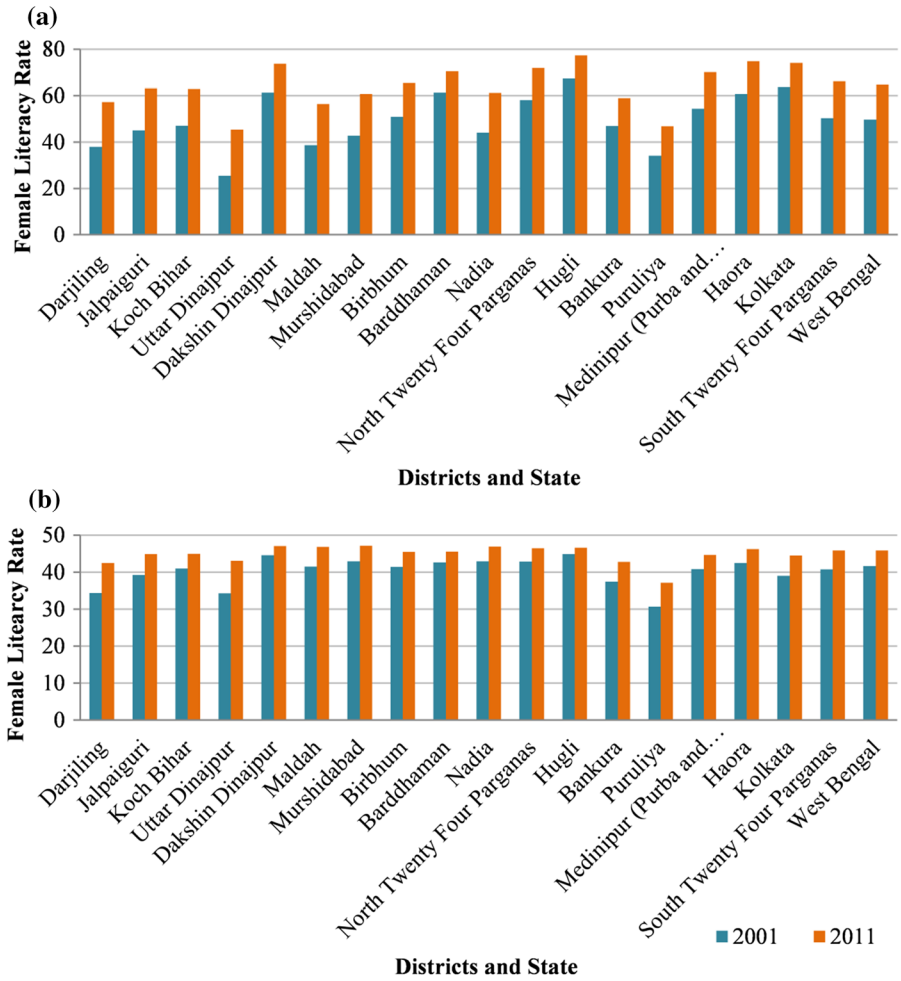

Fig. 9 Decadal growth of Muslim female literacy rate as **a** LRTP and **b** LRNL. Data Source: Census of India, 2001 and 2011

both LRTP and LRNL. Apart from Kolkata, Darjiling and Uttar Dinajpur are also the victims of high inequality between Muslim and non-Muslim female literacy rate. Eventually, most of the districts have come close to equality line in 2011.

Critically, it can be pointed out that the minority status of Muslims in West Bengal is the root cause of backwardness in education as well as socio-economic condition. Some previous studies were able to find out the relationship between unequal size of minority and majority groups and socio-economic inequalities. The findings of those studies reveal that larger size of minority group refers to greater extent of socio-economic inequalities (Alam 2009; Blalock 1956; Brown and Fuguitt 1972; Frisbie and Neidert 1977; Tienda and Lii 1987). In India, there is a negative relationship between the size of Muslim and Scheduled Caste population and the distribution of public goods and services in rural areas (Alam 2009; Betancourt and Gleason 2000). The similar kind of results has been found in this study where gender inequality among Muslims in literacy rate is relatively higher than literacy rate of total population of West Bengal.

Muslim Female literacy in socio-religious spectrum

It is stated earlier that West Bengal is one of the backward state in terms of Muslim's education. Siddiqui (1998) outlined that the backwardness of Muslims and their continuous downwards shifting in the field of education, particularly in a great metropolitan city like Kolkata which is also an essential centre of learning that would probably appear peculiar. Hasan and Menon (2005) targeted various aspects accountable for Muslim's educational backwardness in West Bengal. Generally, extreme poverty and high concentration of Muslims in rural areas are the main responsible factors behind low educational status of Muslims.

Among all the religious groups of West Bengal, Muslims have the lowest literacy rate of 68.75% which is about 7.51% points lesser than that of the state average i.e., 76.26% (Census, 2011).Similarly, Muslim female has occupied the position by registering 64.77% which is also lesser than the state average in female literacy (70.54%). Irrespective of tremendous growth in literacy rate of Muslims during the last decade (2001–2011), they still appear at the lowest position on religious spectrum (Fig. 10). But, they are in better position in comparison to SC (Scheduled Cast) and ST (Scheduled Tribe). Muslim female literacy rate has jumped from 49.75% in 2001 to 64.77% in 2011 with the gap of 15.02% which is the highest growth among all the religious groups. Due to such kind of improvement during (2001–2011), this study is also shown that non-Muslim female literacy rate was suppressed by Muslim female literacy rate in 50% of the districts (Figs. 7, 8). Such kind of growth really sounds prolific in one hand but Muslim females are the most backward among the women of major religious groups on the other hand (Fig. 10).

Determinant factors of low Muslim female literacy rate in West Bengal

Muslim female literacy rate in particular and female literacy rate in general is affected by several determinant factors which are directly or indirectly responsible. There were taken 10 such factors or independent variable like gender inequality in literacy rate (X1), percentage of Below Poverty Line (BPL) households (X2), percentage of Muslims in total population of district (X3), number of schools/10,000 population (X4), percentage of girls' enrolment (X5), Pupils Teacher Ratio (X6), percentage of schools without toilet (X7), Percentage Illiterate families (X8), percentage of families with primary education (X9), percentage families with secondary education (X10)for testing depending variable or Muslim female literacy rate (Y1) in West Bengal (Tables 3, 8 in "Appendix"). Out of all these variables, three important variables like Y1, X1 and X2 were considered for the discussion in this section as these variables are very influential to understand the degree of affecting Muslim female literacy rate.

In column Y1, X1 is positively correlated with female literacy rate thereby means higher the female literacy rate lower the gender inequality. It is because CE value is inversely related with gender inequality (*see coefficient of equality in 'Materials and methods'*). Other variables from X2 to X8 are characterized by negative relationship with Muslim female literacy rate whereas X3 denoting percentage of Muslims also represents negative correlation instead of positive correlation. It is because only 3 districts out of 19 districts are the Muslim majority districts in the state,

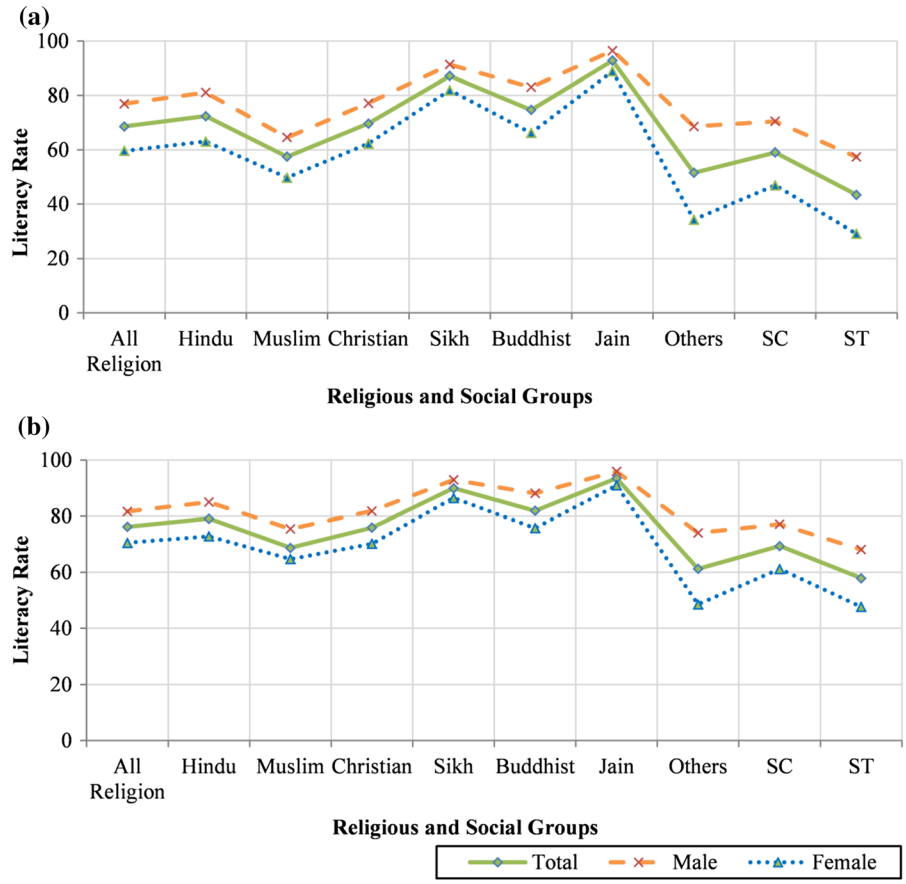

Fig. 10 Sex-wise literacy rate of different religious and social groups **a** 2001 and **b** 2011 in West Bengal. Data Source: Census of India, 2001 and 2011

that is why the correlation is very weak (r = − .213). The highest correlation is noticed in favour of X8 (r = − 860) which denotes that illiterate families are less likely to educate their female children. On the other hand, families with primary education (X9) and secondary education (X10) are more likely to educate their female child as these families are positively correlated.

In column X1, positive correlation is noticed in X3, X5, X6, and X9, because these factors can really reduce gender inequality in literacy rate by increasing CE value. Since dependent variable is gender inequality or CE in this column, positive correlation suggests inverse relationship with independent variables and opposite relation has been found with X2, X4, X7 and X8 having negative correlation. For example, the highest correlation situated in X4 (r = − .650) suggests that gender inequality in literacy rate decreases (CE values increases) with increasing number of schools/10,000 population. Reduction in other important factors like percentage of BPL households (r = − .377) and percentage of illiterate families (r = − .432) increase CE value and decrease gender inequality. Poverty and illiteracy are closely associated with each other as one can lead to another.

In column X2, percentage of BPL households is the dependent variable. It is positively correlated with X4, X5, X6, X7, X8 and X9, whereas it is statistically significant with X7 and X8. It means that share of BPL in total population or poverty enhance percentage of schools without toilet and percentage of illiterate families which are evil factors to restrict particularly female children to go to school because absence of toilet in school for girls really bothers parents to send them to school. Remaining two variables like X3 and X10 are dominating factors to increase poverty among Muslims especially X10 or percentage of families with secondary education. It actually denotes that higher percentage of educated families face lower rate of poverty in the society. Similarly, more percentage of Muslim population observes low poverty. A typical condition is seen in West Bengal where Muslims being

Table 3 Outcome of coefficient of correlation for determining Muslim female literacy rate in West Bengal. Source: (1) Census of India, 2011. (2) "Living Reality of Muslims in West Bengal: A Report", Association SNAP and Guidance Guild & Pratichi Institute, Kolkata, 2016

	Y1	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
Y1	1										
X1	.683**	1									
X2	− .468*	− .377	1								
X3	− .213	.411	− .012	1							
X4	− .417	− .650**	.411	− .423	1						
X5	− .308	.050	.010	.467*	− .133	1					
X6	− .338	.027	.184	.687**	− .400	.225	1				
X7	− .501*	− .273	.603**	− .021	.067	.191	.135	1			
X8	− .860**	− .432	.471*	.311	.339	.124	.404	.465*	1		
X9	.348	.143	.335	− .057	.214	− .298	.048	− .139	− .223	1	
X10	.772**	.562*	− .569*	− .175	− .360	.116	− .482*	− .339	− .842**	− .052	1

**Significant at 0.01 (p value), *significant at 0.05 (p value)

Muslim Female literacy rate (Y1), Gender inequality in literacy rate (X1), Percentage of Below Poverty Line (BPL) households (X2), Percentage of Muslims in total population of district (X3), Number of schools/10,000 population (X4), Percentage of girls' enrolment (X5), Pupils Teacher Ratio (X6), Percentage of schools without toilet (X7), Percentage of Illiterate families (X8), Percentage of families with primary education (X9), Percentage families with secondary education (X10)

minority faces poverty which leads low female literacy rate (column Y1, r = − .468). Kamrup district of Assam is dominated by Muslim immigrants who are affected by poverty due to flood and erosion because these agrarian Muslims are dependent on land; majority of them are illiterate and education of female is normally ignored; and they face major problem of primary education ("Literacy Level and Economic Status of the Minority Community in South Kamrup" n.d.). Existing poverty and significant neglect of government are the reasons behind poor condition in education of Muslims (Hasan and Menon 2005; Khan 2016).

Female education and sustainable development

Generally, the importance of education as an objective of significant development has been widely acknowledged. It has been noticed that education has essential importance for development. By enhancing technical and intellectual skills, it increases the efficiency of the workforce and provides the diffusion of technology and new ideas. Education also reduces the occurrence of HIV/AIDS. In particular, female education improves health effects for infants and children, the nutritional condition of the family, and (in following generations) educational condition. Some scientific studies have also revealed that education; and lower levels of poverty and inequality are highly correlated, education is not accomplishes sustained growth and development, but it is important as an independent goal with the effort to improve human capabilities (Birdsall and Londono 1998; Bruns et al. 2003; Godoy and Contreras 2001; Hadden and London 1994; Husain and Chatterjee 2009; Sen 1985, 1999; World Bank 2002). But in the perspective of women's education in India, researchers in the past few years have been able to gather a large number of empirical evidence, indicating how education can enhance greater abilities, such as the freedom to participate in financial and political processes; use new technologies; becoming protective against exploitation (legal, financial, sexual); exercise personal mobility; attain greater social status; and increase maternal and child well-being. Indeed, education of women can deliver a much more powerful effect than income in enhancing the social indicators. For instance, Uttar Pradesh experience child mortality rate six times greater than those in Kerala, despite the fact that overall population under poverty are similar in these two states of India (King and Hill 1993; McDougall 2000; Murthi et al. 1995). Acquisition of education has been made

compulsory for both the Muslim men and women. That is why Prophet Muhammad (PBUH) stated *"The acquisition of education is compulsory for every Muslim men as well as women"*(Ilyas 2014).

The idea has been maintained by *The World Economic Forum's Global Gender Gap Report 2007*, that gender-based inequality is a trend that influences the majority of the world's cultures, religions, countries and income groups. The Forum deals with four areas: differences between men and women's salaries, access to education, political representation and health including life expectancy. The report inculcates that the Middle East and North African countries take up the last place by accounting roughly 58% of its gender gap. Females are seriously affected by lack of education in the Muslim world. Islam has given immense importance to the acquisition of knowledge. Imam Ali bin Abi Talib had written in the 6th century, *'If God were to humiliate human being, He would deny him'* (Jafri 2007). Muslim females have been misguided by the Islamic scholars. The misuse of some Quranic words or its misinterpretation is one of the threats to Muslim female Education. For example, the term *"Qiwama"* is completely misused to stop some female Muslims from obtaining education. The idea that men are the caretaker of Muslim females does not mean restriction of Muslim women to be kept at home and hinder them from seeking knowledge. It is noted that the role of women is that of spouse and mother, that doesn't mean neglecting them from getting education and seeking knowledge (Ilyas 2014).

Limitations

There are some of limitations in the present study. Firstly, district wise data of 2011 for Muslims on the basis of level of education (e.g. primary, upper primary, secondary, higher secondary etc.) and age (7–14, 15–19, 20–24, 25–29 etc.) is not available as it has not been released by Census of India yet. These data are important so to depict the changing trend in gender inequality by level of education and population generations, because the enumerated older illiterate people of 2011 were counted illiterate in 2001 as well and for other age groups excluding 0–6 years. The Sample data provided by NSSO would not match with census data. Therefore, census data was taken as the main source of data. Secondly, the researchers conducted on Muslim literacy in India so far were less and that creates a shortage of the available review of literature upon which the future researches could be based. Thirdly, Medinipur district of West Bengal was divided into two parts such as Purba (East) Medinipur and Paschim (West) Medinipur in 2002; the data of these two districts of 2011 have been combined for making comparison with 2001 data (future researchers regarding West Bengal can face further problem because there are three districts which have been further divided after 2011 census like Jalpaiguri into Jalpaiguri and Alipurduar; Barddhaman into Paschim Barddhaman and Purba Barddhaman; and Paschim Medinipur into Paschim Medinipur and Jhargram). Inspite of all these shortcomings, the findings of this study are somewhat relevant so as to make an insightful impact on policy making by updating the extent of gender inequality in literacy rate not only among Muslims but also among total population of West Bengal. Additionally, this study is very useful for the researchers working on identical issues in all over the world for the sake of empowering women in education.

Concluding remarks with policy implications

All the proposed objectives of this manuscript have been accomplished with multi-dimensional approach, wherein, the spatial difference of gender inequality in literacy (Muslim and total population) has been represented with the time period of two census periods (Tables 1, 2; Tables 4, 5 in "Appendix"; Figs. 3, 4, 5 and 6); an illustrative account is portrayed regarding the relative dominance of Muslim females over non-Muslim females in terms of literacy rate in the districts of West Bengal (Tables 6, 7 in "Appendix"; Figs. 7, 8); determinant factors for low Muslim female literacy rate in West Bengal (Table 3 and Table 8 in "Appendix"); and finally, the importance of female literacy rate for sustainable development has been demonstrated for the purpose of policy making (see section "Female Education and Sustainable Development"). The probable ways to eliminate gender inequality in literacy rate have been discussed below.

The findings reveal that Muslim female literacy appears under-represented when comparing with Muslim male literacy, but Muslim female literacy is

highly representative in most of the districts when comparing with non-Muslim female literacy. Thus it clearly means that Muslim females are underprivileged section within the Muslim community. Since, it is also noticed in previous literature that there is an opposite move in size of population and the socio-economic inequality between majority and minority groups (Alam 2009; Betancourt and Gleason 2000). A similar condition of Muslims has been observed in this study, as they live with the status of largest minority, but the status of Muslim female literacy has already started changing which can improve the overall socio-economic conditions of Muslims in West Bengal.

West Bengal is among those states of India, where Madrasa education exists for educating Muslims. Despite being the matter of concern and attention, Madrasas are continuously making efforts to alleviate the poor status of Muslims in West Bengal (Aleaz 2005). The present government is now somewhat aware about the elevating Madrasa education and is allocating a significant amount of financial assistance to Madrasas. They have introduced *Kanyashree Prakalpa* (Kanyashree Scheme) in 2013 for providing financial assistance to the poor family to educate their female child and marry them after 18 years of age. The central government also has introduced and launched some scheme wherein *Beti Bachao, Beti Padhao* (Save Daughter, Educate Daughter) *and Sukanya Samriddhi Yojna* (Girl Child Prosperity Scheme) in 2015, so as to reduce the gap of gender inequality in education, sex ratio and poverty.

From the present analysis, it is clear that gender inequality is a problem not only for Muslims but also for total population of West Bengal. All aforesaid schemes and policies are presently very crucial for eradicating gender inequality in literacy rate and uplifting the socio-economic status of females of the majority as well as minority communities like Muslims. Actually, 100% education of underprivileged groups living in rural areas of India and other parts of the world is the only solution because mostly the population of urban areas are literate, which is not the case with the population of rural areas. For that, government budget for education should be enhanced and it should be allocated to grass root level, i.e., village level as it provide the connecting bridge between inequality and equality as far as the illiterate males and females of rural areas are concerned who needs to be educated with priority. It is because sustainable development cannot be achieved without attaining 100% education as it is the backbone of overall development. The poor parents especially belonging to Muslim females should get some financial assistance so as to overcome their financial constraints and to meet their educational expenses especially in districts like Puruliya, Bankura and Uttar Dinajpur, where gender inequality as well as level of poverty is higher than other districts. The government needs to appoint some monitoring officials like educational officers in each district, who can supervise the enrolment of children eligible for primary education and they can create awareness among the parents about the importance of education especially for girl child. This proposal is proposed so as to avoid the misuse of government provided financial support. Although the detailed account regarding the gender inequality of Muslim literacy of West Bengal till 2011 census has been depicted in this paper, it demands an in-depth research after 2021 census to measure the further reduction in gender inequality after the introduction and implementation of various new schemes.

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Compliance with ethical standards

Conflict of interest We, the authors of this manuscript, declare that there is no competition of interest with any individual, institutes and agencies.

Appendix

See Tables 4, 5, 6, 7 and 8.

Table 4 Gender inequality in literacy in West Bengal (as LRTP). Source: Calculated by authors from religious data of Census of India

	2001				2011				CE Change	2001				2011				CE Change
	Female (X1)	Male (X2)	CE(X1/X2)	Rank as CE	Female (X1)	Male (X2)	CE(X1/X2)	Rank as CE		Female (X1)	Male (X2)	CE(X1/X2)	Rank as CE	Female (X1)	Male (X2)	CE(X1/X2)	Rank as CE	
Darjiling									0.18									0.07
Jalpaiguri	45.01	64.98	0.69	14	63.11	74.15	0.85	13	0.16	52.21	72.83	0.72	14	66.23	79.95	0.83	13	0.11
Koch Bihar	47.11	64.59	0.73	11	62.87	73	0.86	12	0.13	56.12	75.93	0.74	12	68.49	80.71	0.85	11	0.11
Uttar Dinajpur	25.5	45.98	0.55	17	45.4	56.77	0.8	16	0.25	36.51	58.48	0.62	17	52.17	65.52	0.8	15	0.18
Dakshin Dinajpur	61.33	72.81	0.84	3	73.71	79.16	0.93	2	0.09	54.28	72.43	0.75	10	67.01	78.37	0.86	8	0.11
Maldah	38.68	51.56	0.75	9	56.42	61	0.92	4	0.17	41.25	58.8	0.7	15	56.95	66.24	0.86	9	0.16
Murshidabad	42.76	54.21	0.79	8	60.7	65.65	0.92	5	0.13	47.63	60.71	0.78	7	63.09	69.95	0.9	4	0.12
Birbhum	50.97	68.28	0.75	10	65.47	74.93	0.87	11	0.12	51.55	70.89	0.73	13	64.14	76.92	0.83	14	0.1
Barddhaman	61.39	75.54	0.81	5	70.51	79.62	0.89	9	0.08	60.95	78.63	0.78	8	69.63	82.42	0.84	12	0.06
Nadia	44.03	54.42	0.81	6	61.29	66.13	0.93	3	0.12	59.58	72.31	0.82	4	70.98	78.75	0.9	5	0.08
North Twenty Four Parganas	58.13	71.41	0.81	7	71.91	78.55	0.92	6	0.11	71.72	83.92	0.85	2	80.34	87.61	0.91	2	0.06
Hugli	67.31	79.43	0.85	2	77.26	85.47	0.9	8	0.05	67.21	82.59	0.81	5	76.36	87.03	0.88	6	0.07
Bankura	46.96	71.81	0.65	15	58.93	74.31	0.79	17	0.14	49.43	76.76	0.64	16	60.05	80.05	0.75	17	0.11
Puruliya	34.14	71.32	0.48	18	46.78	74.53	0.63	18	0.15	36.5	73.72	0.5	18	50.52	77.86	0.65	18	0.15
Medinipur (Purba and Paschim)	54.36	75.05	0.72	13	70.15	82.43	0.85	14	0.13	64.42	84.91	0.76	9	75.49	96.58	0.78	16	0.02
Haora	60.78	74.13	0.82	4	74.85	81.37	0.92	7	0.1	70.11	83.22	0.84	3	79.43	86.95	0.91	3	0.07
Kolkata	63.61	71.25	0.89	1	74.12	78.76	0.94	1	0.05	77.3	83.79	0.92	1	84.06	88.34	0.95	1	0.03
South Twenty Four Parganas	50.27	68.84	0.73	12	66.13	75.42	0.88	10	0.15	59.01	79.19	0.75	11	71.4	83.35	0.86	10	0.11
West Bengal	**49.75**	**64.61**	**0.77**		**64.77**	**72.52**	**0.89**		0.12	**59.61**	**77.02**	**0.77**		**70.54**	**81.69**	**0.86**		0.09

Table 5 Gender inequality in literacy in West Bengal (as LRNL). Source: Calculated by authors from religious data of Census of India

Districts and State	Muslim									Total								
	2001				2011				CE Change	2001				2011				CE Change
	Female (X1)	Male (X2)	CE(X1/X2)	Rank as CE	Female (X1)	Male (X2)	CE(X1/X2)	Rank as CE		Female (X1)	Male (X2)	CE(X1/X2)	Rank as CE	Female (X1)	Male (X2)	CE(X1/X2)	Rank as CE	
Darjiling									0.22									0.1
Jalpaiguri	39.26	60.74	0.65	13	44.84	55.16	0.81	12	0.16	40.19	59.81	0.67	14	44.11	55.89	0.79	14	0.12
Koch Bihar	40.94	59.06	0.69	10	44.97	55.03	0.82	11	0.13	41.15	58.85	0.7	11	44.41	55.59	0.8	11	0.1
Uttar Dinajpur	34.35	65.65	0.52	17	43.05	56.95	0.76	15	0.24	36.77	63.23	0.58	17	42.71	57.29	0.75	15	0.17
Dakshin Dinajpur	44.53	55.47	0.8	2	47.03	52.97	0.89	1	0.09	41.55	58.45	0.71	9	44.96	55.04	0.82	8	0.11
Maldah	41.5	58.5	0.71	8	46.78	53.22	0.88	3	0.17	39.84	60.16	0.66	15	44.79	55.21	0.81	10	0.15
Murshidabad	42.92	57.08	0.75	3	47.09	52.91	0.89	2	0.14	42.66	57.34	0.74	6	46.32	53.68	0.86	2	0.12
Birbhum	41.43	58.57	0.71	9	45.49	54.51	0.83	10	0.12	40.78	59.22	0.69	12	44.34	55.66	0.8	12	0.11
Barddhaman	42.59	57.41	0.74	6	45.53	54.47	0.84	9	0.1	41.54	58.46	0.71	10	44.39	55.61	0.8	13	0.09
Nadia	42.93	57.07	0.75	4	46.9	53.1	0.88	4	0.13	43.69	56.31	0.78	2	46.02	53.98	0.85	5	0.07
North Twenty Four Parganas	42.84	57.16	0.75	5	46.41	53.59	0.87	5	0.12	44.07	55.93	0.79	1	46.69	53.31	0.88	1	0.09
Hugli	44.82	55.18	0.81	1	46.59	53.41	0.87	6	0.06	43.57	56.43	0.77	3	45.77	54.23	0.84	6	0.07
Bankura	37.51	62.49	0.6	15	42.78	57.22	0.75	16	0.15	37.99	62.01	0.61	16	41.81	58.19	0.72	16	0.11
Puruliya	30.73	69.27	0.44	18	37.17	62.83	0.59	18	0.15	32.04	67.96	0.47	18	38.33	61.67	0.62	18	0.15
Medinipur (Purba and Paschim)	40.76	59.24	0.69	11	44.66	55.34	0.81	13	0.12	42.03	57.97	0.73	8	40.09	59.91	0.67	17	− 0.06
Haora	42.48	57.52	0.74	7	46.23	53.77	0.86	7	0.12	43.11	56.89	0.76	4	46.11	53.89	0.86	3	0.1
Kolkata	39.05	60.95	0.64	14	44.49	55.51	0.8	14	0.16	43.08	56.92	0.76	5	46.3	53.7	0.86	4	0.1
South Twenty Four Parganas	40.75	59.25	0.69	12	45.81	54.19	0.85	8	0.16	41	59	0.69	13	44.98	55.02	0.82	9	0.13
West Bengal	**41.61**	**58.39**	**0.71**		**45.87**	**54.13**	**0.85**		0.14	**41.83**	**58.17**	**0.72**		**45.04**	**54.96**	**0.82**		0.1

Table 6 Inequality in literacy between Non-Muslim and Muslim females in West Bengal (as LRTP). Source: Calculated by authors from religious data of Census of India

Districts and State	2001					2011					CE Change
	Non-Muslim (X2)	Muslim (X1)	Difference (X1 − X2)	CE (X1/X2)	Rank as CE	Non-Muslim (X2)	Muslim (X1)	Difference (X1 − X2)	CE (X1/X2)	Rank as CE	
Darjiling	56.17	37.92	18.25	0.68	18	66.76	57.24	9.52	0.86	18	0.18
Jalpaiguri	45.07	45.01	0.06	1.00	8	58.88	63.11	4.23	1.07	7	0.07
Koch Bihar	50.29	47.11	3.18	0.94	10	62.32	62.87	0.55	1.01	12	0.07
Uttar Dinajpur	37.49	25.5	11.99	0.68	17	50.64	45.4	5.24	0.90	17	0.22
Dakshin Dinajpur	44.03	61.33	17.30	1.39	1	57.99	73.71	15.72	1.27	1	− 0.12
Maldah	36.17	38.68	2.51	1.07	7	49.70	56.42	6.72	1.14	3	0.07
Murshidabad	47.51	42.76	4.75	0.90	13	59.96	60.7	0.74	1.01	11	0.11
Birbhum	44.20	50.97	6.77	1.15	3	55.99	65.47	9.48	1.17	2	0.02
Barddhaman	53.12	61.39	8.27	1.16	2	62.22	70.51	8.29	1.13	4	− 0.03
Nadia	56.78	44.03	12.75	0.78	16	67.58	61.29	6.29	0.91	16	0.13
North Twenty Four Parganas	67.85	58.13	9.72	0.86	15	76.15	71.91	4.24	0.94	14	0.08
Hugli	59.54	67.31	7.77	1.13	4	69.22	77.26	8.04	1.12	5	− 0.01
Bankura	42.69	46.96	4.27	1.10	6	53.38	58.93	5.55	1.10	6	0
Puruliya	30.87	34.14	3.27	1.11	5	43.91	46.78	2.87	1.07	8	− 0.04
Medinipur	56.65	54.36	2.29	0.96	9	67.79	70.15	2.36	1.03	9	0.07
Haora	65.12	60.78	4.34	0.93	11	73.24	74.85	1.61	1.02	10	0.09
Kolkata	73.83	63.61	10.22	0.86	14	80.62	74.12	6.50	0.92	15	0.06
South Twenty Four Parganas	54.85	50.27	4.58	0.92	12	66.35	66.13	0.22	1.00	13	0.08
West Bengal	**54.63**	**49.75**	**4.88**	**0.91**		**65.04**	**64.77**	**0.27**	**1.00**		0.09

Table 7 Inequality in literacy between Non-Muslim and Muslim females in West Bengal (as LRNL). Source: Calculated by authors from Religious PCA (Census of India)

Districts and State	2001					2011					CE Change
	Non-Muslim (X2)	Muslim (X1)	Difference (X1 − X2)	CE (X1/X2)	Rank as CE	Non-Muslim (X2)	Muslim (X1)	Difference (X1 − X2)	CE (X1/X2)	Rank as CE	
Darjiling	42.62	34.39	8.23	0.81	18	45.59	42.43	3.16	0.93	18	0.12
Jalpaiguri	40.28	39.26	1.02	0.97	12	44.02	44.84	0.82	1.02	10	0.05
Koch Bihar	41.21	40.94	0.27	0.99	7	44.24	44.97	0.73	1.02	11	0.03
Uttar Dinajpur	38.01	34.35	3.66	0.90	16	42.46	43.05	0.59	1.01	12	0.11
Dakshin Dinajpur	40.58	44.53	3.95	1.10	1	44.26	47.03	2.77	1.06	2	− 0.04
Maldah	38.56	41.5	2.94	1.08	2	42.95	46.78	3.83	1.09	1	0.01
Murshidabad	42.32	42.92	0.60	1.01	6	45.08	47.09	2.01	1.04	3	0.03
Birbhum	40.46	41.43	0.97	1.02	5	43.68	45.49	1.81	1.04	4	0.02
Barddhaman	41.29	42.59	1.30	1.03	4	44.10	45.53	1.43	1.03	5	0
Nadia	43.86	42.93	0.93	0.98	11	45.77	46.9	1.13	1.02	8	0.04
North Twenty Four Parganas	44.36	42.84	1.52	0.97	14	46.77	46.41	0.36	0.99	15	0.02
Hugli	43.29	44.82	1.53	1.04	3	45.62	46.59	0.97	1.02	9	− 0.02
Bankura	38.02	37.51	0.51	0.99	9	41.74	42.78	1.04	1.03	7	0.04
Puruliya	32.13	30.73	1.40	0.96	15	38.42	37.17	1.25	0.97	16	0.01
Medinipur	42.16	40.76	1.40	0.97	13	44.83	44.66	0.17	1.00	14	0.03
Haora	43.27	42.48	0.79	0.98	10	46.07	46.23	0.16	1.00	13	0.02
Kolkata	43.88	39.05	4.83	0.89	17	46.69	44.49	2.20	0.95	17	0.06
South Twenty Four Parganas	41.09	40.75	0.34	0.99	8	44.62	45.81	1.19	1.03	6	0.04
West Bengal	**41.89**	**41.61**	**0.28**	**0.99**		**44.79**	**45.87**	**1.08**	**1.02**		0.03

Table 8 Determinant Factors of Low Muslim Female Literacy Rate in West Bengal. Source: Census of India, 2011 and "Living Reality of Muslims in West Bengal: A Report", Association SNAP and Guidance Guild & Pratichi Institute, Kolkata, 2016

Districts	Muslim Female Literacy Rate	Gender Inequality in Literacy	Percentage BPL households	Percentage of Muslims in total population of district	Number of schools/ 10,000 population	Percentage of girls' enrolment	Pupils Teacher Ratio (PTR)	Percentage of Schools without toilet	Percentage of Illiterate families	Percentage of Families with Primary Education	Percentage of Families with Secondary Education
Darjeeling	57.24	0.80	71.65	5.69	13.30	50.33	18.02	20.00	21.00	19.20	15.30
Jalpaiguri	63.11	0.85	86.40	11.51	10.10	50.48	29.41	28.60	17.20	23.80	15.90
Koch Bihar	62.87	0.86	75.00	25.54	10.90	49.13	30.70	2.90	27.80	23.70	9.70
Uttar Dinajpur	45.40	0.80	83.35	50.95	8.60	51.05	39.17	33.30	32.90	17.40	9.00
Dakshin Dinajpur	73.71	0.93	69.25	24.63	11.90	49.76	26.91	5.00	16.20	24.20	17.80
Maldah	56.42	0.92	75.95	53.27	7.80	51.00	34.57	16.40	24.00	18.30	15.80
Murshidabad	60.70	0.92	69.80	70.20	8.00	50.79	34.01	9.30	20.10	22.40	14.50
Birbhum	65.47	0.87	76.90	37.06	10.10	49.35	28.57	1.90	17.10	20.90	14.60
Barddhaman	70.51	0.89	48.20	20.73	7.40	49.20	29.92	5.10	12.80	18.40	17.10
Nadia	61.29	0.93	80.40	26.76	7.30	48.53	27.93	26.30	29.00	18.80	12.00
North Twenty Four Parganas	71.91	0.92	73.60	25.82	5.80	49.17	35.88	11.50	13.00	23.90	13.90
Hugli	77.26	0.90	68.65	15.77	6.70	50.05	23.60	17.10	7.90	21.80	19.80
Bankura	58.93	0.79	77.50	8.08	11.80	48.95	25.37	20.00	15.90	22.00	13.20
Puruliya	46.78	0.63	79.30	7.76	12.80	49.46	31.70	14.30	28.40	16.70	10.40
Paschim Medinipur	66.17	0.83	75.00	10.49	13.40	49.31	23.55	0.00	13.00	25.70	14.90
Purba Medinipur	73.51	0.86	86.35	14.59	10.10	49.26	27.14	18.80	8.40	26.40	15.90
Haora	74.85	0.92	66.50	26.76	6.30	48.55	30.56	7.10	9.10	24.30	17.60
Kolkata	74.12	0.94	55.90	20.60	4.80	50.68	24.57	0.00	4.10	11.60	20.70
South Twenty Four Parganas	66.13	0.88	72.65	35.57	7.10	50.48	34.43	3.80	14.40	27.20	13.80

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