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# Gender gap in rural literacy: a spatio-temporal analysis of Bankura district in West Bengal, India

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**Abstract** Gender inequality in literacy is higher in rural areas compared to urban areas and also in Scheduled Castes (SCs) and Scheduled Tribes (STs) compared to other communities in India. Comprehensive studies across regions and social groups are required to reduce gender inequality in literacy in this country. In this context, the study attempts to analyse the nature of gender gap in rural literacy of Bankura district in West Bengal, India from 1961 to 2011. Gender gap in rural literacy in this district has been assessed using logged gender odds ratios. Time series analysis has also been used to estimate the time period to achieve 100% rural female literacy in this district. During the study period, decline in gender gap in rural literacy has been observed in Bankura district, however, this gap has remained comparatively high in the western part of the district. Expansion of education infrastructure and adequate support towards the girls of agricultural distressed families are essential for reduction in gender gap in rural literacy. Special attention is also required towards the female education in SCs and STs of Bankura district in this context.

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## Introduction

Education is the backbone of a country's prosperity, and its influence on economic growth is universally recognized. Educational deprivation of females has been considered as a social injustice worldwide. To promote gender equality in society, "a rights-based approach" has been propagated by UNESCO in accessing education all through and thereby empowered through education (UNESCO, 2016, p. 28). Therefore, gender equality in education is a primary need for achieving gender neutral society.

Uneven distribution in educational infrastructure exists between rural and urban areas in India. Beside location, gender, religion and poverty are the crucial factors influencing literacy rate at household level in this country (Govinda & Biswal, 2005). Gender difference in education has remained a major issue which hinders the achievement of universal elementary education in this country. According to Azam and Kingdon (2013), alike many other countries, girls in India have been facing substandard educational facilities for ages. In rural areas of this country, historical bias is pervasive against women's education. This has resulted from the "traditional gender roles" debarring

the females to participate in the job market and therefore low demand from the parents for their daughters' education (Kingdon, 2007, p. 172). Vivakaran and Maraimalai (2016) stressed on "socially constructed images" of women that lead to their absence in education system and hence existence of multi-layered gender inequalities in the system (p. 1). Likewise, in patriarchal Indian society, girls suffer from various constraints to access educational opportunities. Hence, gender equality in education accessibility has occupied the centre in development agendas in India. As per Millennium Development Goals (MDGs)—Final Country Report of India (2017), the goals to "achieve universal primary education" and "promote gender equality and empower women" in education have been significantly considered amongst the eight MDGs (p. 16). Regardless of considerable progress, in rural India, a significant drop out rate has been observed in elementary level of education (Siddhu, 2011). Gender inequality in educational accessibility reflects unrelenting differences in the individual's capability to grab market opportunities in this country. Nevertheless, the gender gap in education is attributed to the existence of gender discrimination, market restriction, marginalization of women and caste based socio-economic exclusion in India.

In 2014, the Ministry of Human Resource Development, Government of India has strongly focused on Education for All (EFA) and level of education of all genders for the development of this country. Since decades, various schemes of Government of India viz. Operation Blackboard (1987), National Literacy Mission (1988), Total Literacy Campaign (1989), District Primary Education Program (1994), National Programme of Nutritional Support to Primary Education (1995), Sarva Shiksha Abhiyan (SSA) (2000–2001), Mid Day Meal Scheme (2007) and The Right of Children to Free and Compulsory Education (RTE) Act (2009) have positively influenced the achievement of Universalization of Elementary Education. Despite these attempts, more than one-third of population inhibiting in rural India are still illiterate (Census of India, 2011). On the other hand, although the overall literacy rate in India has increased, gender inequality in literacy is still prominent across regions and social groups in the country.

According to Jogani (2021), increase in the female literacy in rural India and simultaneous reduction in gender disparity in rural literacy have been observed in India as a result of the initiation of Sarva Shiksha Abhiyan (SSA). After the introduction of District Primary Education Programme (DPEP) in mid-1990s, the disparities in educational attainments have reduced in general, however, considerable disparities still persist across gender and social groups, particularly in rural areas (Goel & Husain, 2018). Therefore, in order to understand the real dimension of gender inequality in literacy in such a diverse country as India, in-depth study needs to be done relatively on small areas across social groups. In this context, a spatio-temporal analysis of gender gap in literacy in Bankura district has been attempted in this study.

## Literature review

Gender inequality hinders the progress of the society and pulls the society backwards in various ways. The nature of gender inequality in literacy and education varies country to country that depends on the existing socio-cultural environment and politico-economic system. Discrimination against women in education and labour force participation not only harms women but it affects the whole society and even in this twenty-first century, the women in South Asia, still face gender-based discrimination in education and economic participation (Klasen & Lamanna, 2009). Based on the study of six South Asian countries (Bangladesh, India, Maldives, Nepal, Pakistan and Sri Lanka), Munir and Kanwal (2020) confirmed that the relationship between per capita income and educational inequality is negative and gender inequality at primary level education is positively related to income inequality. Based on micro level data in Bangladesh, Hossain and Tisdell (2005) showed that female labour force participation is positively correlated with female education, poverty, gender discriminatory and orthodox religious practices. Based on the study in Bangladesh and Malawi, Chisamya et al. (2012) opined that learning process at schools, perceived social role and ability to receive education of girls reflect a gender bias. Moreover, the socio-economic and political system does not encourage educating girls. Due to "religious extremism", in some tribal areas of Pakistan, attainment of modern education is judged as "un-Islamic", while females are restricted from attending school, hence in these areas literacy rate has been reported as only nine % in 2012 (Rehman

et al., 2015, p. 140). In China, no significant gender inequality has been observed in compulsory education (that covers nine years of primary school and junior high school education) resulting from the successful implementation of government schemes since 1980s (Zeng et al., 2014). Baliamoune-Lutz and McGillivray (2015) assessed the impact of gender inequality on income in North African and Middle Eastern countries. They observed that "gender inequalities in primary and secondary education exert a negative effect on income" (Baliamoune-Lutz & McGillivray, 2015, p. 8).

In rural areas of India and Pakistan, the resource constrained households with having burden of making restrictive choices, generally invest in schooling of boys than that of girls, where choice and attendance in school are strongly influenced by "poverty and gender interactions" (Alcott & Rose, 2015, p. 353). McDougall (2000) stated that "gender inequity in primary education" is a reflection of historical inequality in social relations in India (p. 1657). Preference of son as old age security, in this country, compel parents to invest more in their sons than that of daughters, who leave the parental home after marriage. According to Kambhampati and Pal (2001), in rural areas of India, the gender gap in primary schooling is the result of a combined effect of limitations in household resources, opportunity costs of child and priorities of parents, which are needed to be carefully examined for policy formulation. Irrespective of resource availability, gender gap in literacy is a part of patriarchal system in this country. According to Drèze and Sen (2002), persistent gender inequality in Indian society results in overall disparities in well-being, power relations and decision making. Increase in gender gap in rural literacy is also associated with the nature and extent of female participation in agriculture. In rural India, large numbers of female children are engaged in domestic chores, crop and livestock production. Agrawal (2014) stated that in major states in India, children of agricultural households get engaged in agriculture and related activities that hamper their attaining schools at primary stage. Saha (2013) analysed the nature of gender discrimination in household expenditure on education across the states in India. Followingly, he found that more discrimination on education for girl child is associated with large household size and vice versa and this discrimination is prominent in rural areas compared to urban areas. Rammohan and Vu (2018) noticed that gender inequality in education is more prominent in North India. They also observed that low gender inequality in education exists with the districts having higher per capita GDP in India. Landry et al. (2019) observed that "mindset and attitudes" as prevails in schools and communities impose barrier on a girl's life particularly in north India where they face high gender discrimination (p. 8). Kaul (2015) reported that patriarchal attitudes about girl's education persist among the parents of high-income families with fertile lands in Mandya district, Karnataka, as they want to keep their female child engaged in domestic chores and preparing to get married. Based on the study of literacy in India, Chandra (2019) has disclosed that social constraints on women's mobility hinder an educated woman's engagement in labour market and offering support to her household. However, gender gap in literacy is not only the reflection of low economic returns to girls' schooling, but it is a sign of deep-rooted biases which discourage the right and ability of women. According to UNESCO (2005), "the world's largest numbers of out-of-school and primary school eligible children" (p. 20) have been recorded in India and "23% of primary school-age children in India are out of school, of which 86% have a mother with no education" (p. 47), while it is an established fact that mother's education is more important than father to send their children to primary school. Considering the issue of out of school children, UNESCO (2005) mentioned that mother's education is more important than father to send their children to primary school. Based on the study of selected villages in West Bengal, India, Pal (2004) stated that parents education affects their children's education differentially, schooling of boys and girls is influenced by father's and mother's education respectively. In West Bengal, India, the women generally suffer from oppression, poverty and patriarchal domination, resulting in restriction in their mobility and deprivation from access to education as well as information (Maity, 2016). According to Bagchi (2017), high gender gap in literacy has been recorded in the districts with low literacy rate in West Bengal. Based on the study of villages in West Bengal, India, Bose and Bose (2020) have investigated the parental roles and family characteristics in order to explain gender discrimination in children's education.

Gender inequality in literacy is also interconnected with other forms of social discrimination, especially

based on caste and ethnicity in India. Thorat (2010) pointed out the tradition of exclusion of STs and SCs from access to knowledge has prevented them from getting skilled jobs. SC and ST females are underprivileged and suffer from further marginalization and deprivation in education due to their livelihood hardship, patriarchal value system and hierarchical caste system in this country. According to Mitra and Singh (2008), high poverty is the root cause for low literacy and education among the tribal women in India. They also stated that the variations in women literacy rates among tribes across the states in India are largely determined by the "social and cultural norms, proximity to the mainstream Hindu culture, and the role of women" (p. 99). According to Sedwal and Kamat (2008), gender gap in literacy is a serious concern in SCs and STs, as compared to boys', the drop-out rate at elementary level is higher in girls, who are "doubly disadvantaged" in India. Ghosh (2007) while assessing the gender gap in literacy among the major tribes in Jharkhand and West Bengal, found that high proportion of "never-enrolled" children and high gender disparity in literacy persist among the Ho and Mahali tribes in Jharkhand and Lodha tribe in West Bengal compared to the other tribal groups in India. Based on C.D. Block level analysis of West Bengal, Rana (2010) observed that specific social groups are conspicuously absent in elementary education. He also stressed that this exclusion pertains not only on the basis of class but also on the basis of identity, gender, language, culture and other factors" (p. 24). Non-enrolment to elementary education and high dropout rates amongst SC and ST girls is attributed to distant location of primary school, household pressure, stereotypes of gender and caste, and social-economic ostracism in this country.

In MDGs and EFA schemes, special attention has been given on gender equality in education. Till now, minimum infrastructure for attending female child has not been developed in India. Based on the survey of "14,724 government schools with primary sections" in rural India, it has been found there was no usable toilet for girls at 46.7% schools in 2013 and no separate girl toilet at 19.3% schools (ASER, 2013, p. 67). Moreover, discrimination against SCs and STs and casteism in schools still persist. Hence, to reduce gender gap in literacy in this country, comprehensive studies across regions and social groups are required. Therefore, the study attempts to analyse the nature of gender gap in rural literacy of Bankura district in West Bengal, India from 1961 to 2011.

## Study area

Bankura district considered as the study area, lies in the Rarh tract of West Bengal in India. According to O'Malley (1908), Bankura district represents "a connecting link between the plains of Bengal on the east and the Chota Nagpur Plateau on the west" (p. 2). The district covers an area of 6882 sq.km. consisting of 22 Community Development Blocks (C.D. Blocks) (GoI, 2011) (Fig. 1). As per Census of India (1961–1981), there were 19 C.D. Blocks in Bankura district. In 1991, Bankura was divided into Bankura-I and Bankura-II C.D. Blocks, Khatra into Khatra-I and Khatra-II C.D. Blocks, and Raipur into Raipur-I and Raipur-II C.D. Blocks (Census of India, 1991). Later, in 2001 the name of C.D. Blocks Raipur-II and Khatra-II has been changed to Sarenga and Hirbandh respectively (Census of India, 2001 and 2011).

According to Census of India (2011), total population has been recorded as 3,596,674 persons in Bankura district, out of which 91.67% are rural population. In 2011, the share of rural SCs and STs has been recorded as 33.54% and 11.08% in this district (Census of India, 2011). In this district, 70.06% of the total rural workforce directly engaged in agriculture (Census of India, 2011). Bankura is one of the poorest districts in West Bengal, 41.52% families have been reported as below poverty line in the district (GoWB, 2007). Out of the 16 districts with rural population in West Bengal, Bankura ranked 2nd highest in terms of rural poverty ratio (GoWB, 2004). The western and southern parts of Bankura district are severely drought-prone and marked by "specific geographical concentration of backwardness and poverty" (GoWB, 2007, p. 48). The main rural livelihood is agriculture characterized by low productivity, and paddy dominated nearly subsistence nature of farming. Erratic and seasonal rainfall (more than 75% rainfall occurs during June to September), low water retention capacity of soils, prolonged dry season and inadequate irrigation facilities are the major hindrances for agricultural development in the study area. Agriculture in the eastern alluvial tract is quiet better compared to the undulating and hilly tract in the west of the district. The average land holding size has

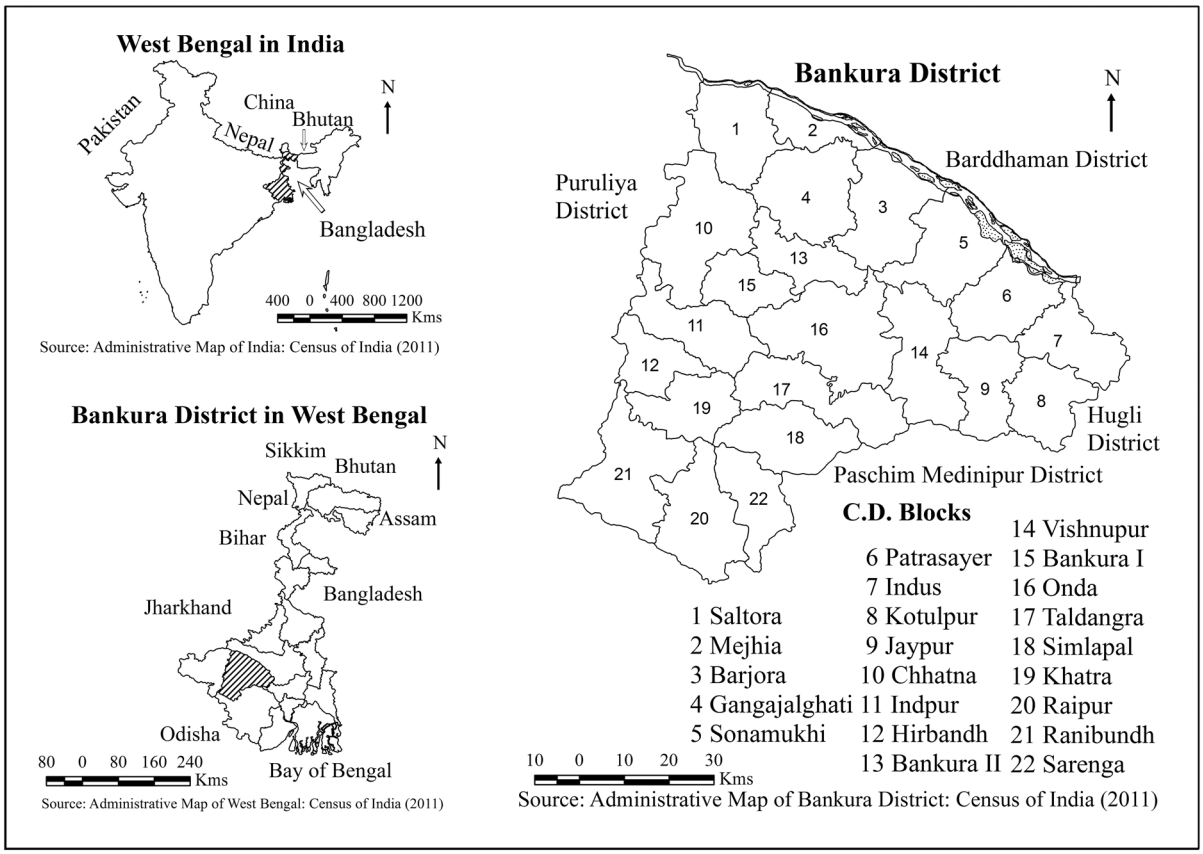



**Fig. 1** Location map of Bankura district

been reported only as 0.96 hectares (GoI, 2010–2011). Out of the total land holders, marginal farmers (holding size less than 1 hectare) have been recorded as 68% and small farmers (holding size less than 1–1.99 hectares) as 21% (GoI, 2010–2011). In spite these impediments, "agriculture accounts almost 70 per cent of the district's total income" (GoI, 2011, p. 18). This district is endowed with various mineral resources such as coal, copper, mica, tungsten and kyanite. However, the benefits of these mineral resources have insignificant impact on the livelihoods of the local inhabitants. Weavers of this district are world famous in producing traditional 'baluchari' and 'swarnachari' saree (traditional silk saree). Even the weavers are facing many challenges viz. poor access to formal credit, lack of product diversification and exploitation by the middlemen (GoWB, 2007). Total forest coverage in Bankura district has been recorded as 1482 sq. km. i.e. 21.53% of the total geographical area of the district (GoWB 2015–2016). Mostly the

**Table 1** Basic demographic characteristics of rural Bankura district and its comparison with rural India (2011). Source: Census of India (2011)

| Demographic Characteristics 2011 (Rural) | Bankura | India |
|---|---|---|
| Rural population to total population (%) | 91.67 | 68.86 |
| Sex ratio | 956 | 949 |
| Child sex ratio | 947 | 923 |
| SCs population (%) | 33.54 | 18.45 |
| STs population (%) | 11.08 | 11.28 |
| Literacy rate (%) | 68.93 | 67.77 |
| Male literacy rate (%) | 79.10 | 77.15 |
| Female literacy rate (%) | 58.31 | 57.93 |
| Work participation rate (%) | 41.16 | 41.83 |
| Male work participation rate (%) | 57.27 | 53.03 |
| Female work participation rate (%) | 24.29 | 30.03 |
| Main workers (%) | 60.80 | 70.50 |
| Marginal workers (%) | 39.20 | 29.50 |
| Agricultural work force (%) | 70.06 | 72.28 |

poor section of STs depends on forest resources for their survival. Bankura is one of the economically backward districts in West Bengal. Nearly 45% of the rural population belongs to SCs/STs who are considered as most backward communities in this district. Rural livelihoods mainly depend on agriculture in spite of being a drought prone district. Basic demographic characteristics of rural Bankura district and its comparison with rural India are given in Table 1.

The district is characterized by undulating topography in western side, plain land in eastern side, frequent droughts, substantial concentration of marginalised communities (SC and ST communities) and prevalence of extreme poverty. Due to the physical set up and socio-economic backwardness, Bankura has emerged as a unique region in India. However, the experience of Bankura district in terms of gender gap in rural literacy portrays a similar story of many regions where concentration of marginalised communities is higher. The analysis of this gender gap is therefore highly relevant to such regions commonly found in India and in other similar regions in the world.

## Research materials and methods

This study is mainly based on secondary data collected from Census of India (1961–2011), Agricultural Census, India (2010–2011), District Human Development Report: Bankura (2007) and District Statistical Handbook: Bankura (2010–2011).

As per Census of India (2010–2011), "a person aged 7 years and above who can both read and write with understanding in any language is taken as literate" (GoI, 2011, p. 30). Children below five years of age group have necessarily been considered as illiterates by the Census of India prior to 1991. Later, in Census of India (1991), it has been stated that all children of 0–6 years age group should be treated as illiterate and population aged seven years and above should be classified either as literate or illiterate. The same criterion as of Census 1991 has been retained in Census of India, 2001 and 2011. In this study, Crude Literacy Rate (CLR) during the period from 1961 to 2011 and Effective Literacy Rate (ELR) from 1991 to 2011 have been calculated following the norms of Census of India.

$$\text{Crude Literacy Rate (CLR)} = \frac{Total\ number\ of\ literates}{Total\ population} \times 100$$

$$\text{Effective Literacy Rate (ELR)} = \frac{Total\ number\ of\ literates}{Total\ population(excluding\ 0-6\ population)} \times 100$$

Based on CLR and ELR, gender gap in rural literacy rate of Bankura district has been assessed using logged gender odds ratios (Sundaram & Vanneman, 2008)

$$L_j = L_n\left[\frac{(F_{literate}/F_{illiterate})_j}{(M_{literate}/M_{illiterate})_j}\right]$$

where, $L_j$ = The sex difference in literacy,

$F_{illiterate}$ = Number of female literates, $F_{illiterate}$ = Number of female illiterates.

$M_{literate}$ = Number of male literates, $M_{illiterate}$ = Number of male illiterates.

To calculate logged gender odd ratio, for example, in 1961 the highest gender gap or logged gender odd ratio in rural CLR has been observed in Ranibundh C.D. Block (- 2.51). Where, as per Census of India (1961), numbers of male literates and female literates have been recorded as 10,362 and 1122 respectively, while, numbers of male illiterates and female illiterates have been recorded as 23,674 and 31,446 respectively in Ranibundh C.D. Block in the study area. Therefore $(X)$ or $(F_{literate}/F_{illiterate})$ i.e. 1122/31446 = 0.0357, and $(Y)$ or $(M_{literate}/M_{illiterate})$ i.e. 10,362/23674 = 0.4377. Thus the gender odd ratio between male and female literacy has be obtained from $\left[\left(X\right)_j/(Y)_J\right)\right]$ i.e. 0.0357/0.4377 = 0.0815. Hence, $(L_j)$ or the logged gender odd ratio of CLR in Raipur C.D. Block has been calculated as $L_n\left[\left(X\right)_j/(Y)_J\right)\right]$ i.e. $L_n(0.0815)$ = - 2.51 in 1961 (Table 6).

Sundaram and Vanneman (2008) stressed that "the difference in logged odds has some advantages over the difference in percentages since it is not mathematically constrained to be small when literacy rates are very low or high" (p. 134). In order to clarify logged odds ratios, it may be stated that in a situation where male literacy is 95% and female literacy is 90%, the percentage difference between male and female literacy is only 5%, however, the illiteracy of female is

double than male illiterate (Sundaram & Vanneman, 2008). In case of logged odds ratios, "90–95% difference is equivalent in log odds to a 50–68% difference at lower literacy levels" (Sundaram & Vanneman 2008, p. 134).

Based on logged gender odds ratios in CLR (1961–2011) and ELR (1991–2011) at C.D. Block level in Bankura district, five zones of gender gap such as extremely high (Logged gender odds ratios: - 2.61 to - 2.16), very high (Logged gender odds ratios: - 2.16 to - 1.72), high (Logged gender odds ratios: - 1.72 to - 1.27), moderate (Logged gender odds ratios: - 1.27 to - 0.82) and low (Logged gender odds ratios: - 0.82 to - 0.37) for CLR and ELR have been delineated.

The following time series analysis (Katiyar, 2016) has been adopted in order to estimate the time period for achieving 100% rural female literacy rate in the study area.

$$P_n = P_0(1 + R/100)^n$$

[where, $P_n$ = 100 (literacy to be achieved), $P_0$ = present literacy, $R$ = rate (difference in literacy rates between periods)].

## Results and discussion

### Rural CLR in Bankura district (1961–2011)

An increasing trend in rural total CLR has been recorded in Bankura district as well as in rural SCs and STs during 1961–2011. The rural total CLR has increased by 39.19% during this period. While the rural male and female CLR have increased by 35.06% and 43.08% respectively from 1961 to 2011. In rural SCs, the total CLR has increased by 39.10% during 1961–2011. While the rural male and female CLR of SCs, have increased by 43.73% and 34.34% respectively during this period. On the other hand, in rural STs, the total CLR has increased by 44.60% during 1961–2011. But the rural male and female CLR of STs, have increased by 49.92% and 39.34% respectively during this period (Table 2) (Figs. 2, 3 and 4).

### Rural ELR in Bankura district (1991–2011)

Likewise, CLR, an increasing trend in rural total ELR has been observed in Bankura district and also for SCs and STs during 1991–2011. The rural total ELR has increased by 18.92% during this period. But the rural male and female ELR have increased by 13.93% and 24.25% respectively during this period. In SCs, the rural ELR has increased by 27.14% during 1991–2011. While the rural male and female ELR of SCs, have increased by 25.73% and 28.89% respectively during this period. Moreover, in STs, the rural ELR has increased by 26.91% during 1991–2011. While the rural male and female ELR of STs, have increased by 22.54% and 32.05% respectively during this period (Table 3).

### Gender gap in rural CLR in Bankura district (1961–2011)

During 1961–2011, a persistent gender gap in rural CLR exists in Bankura district. In rural CLR (1961–2011), the maximum rate of change in gender gap has been observed where the gender gap is highest and minimum rate of change in gender gap has been found where the gender gap is lowest. Hence, it is found that the average annual rate of change (AARC) in gender gap (i.e. logged gender odds ratios) is highest in STs rural CLR and lowest gender gap in

**Table 2** Rural CLR (%) in Bankura district (1961–2011). Source: Based on data collected from Census of India (1961–2011)

| Years | Total | | | SC | | | ST | | |
|---|---|---|---|---|---|---|---|---|---|
| | M | F | T | M | F | T | M | F | T |
| 1961 | 34.61 | 8.33 | 21.55 | 12.48 | 1.39 | 6.99 | 13.84 | 1.00 | 7.39 |
| 1971 | 36.16 | 12.88 | 24.75 | 14.15 | 5.08 | 9.71 | 18.11 | 2.25 | 10.24 |
| 1981 | 50.56 | 22.43 | 36.73 | 22.98 | 5.47 | 14.37 | 29.00 | 5.50 | 17.31 |
| 1991 | 54.20 | 28.26 | 41.54 | 31.82 | 10.00 | 21.14 | 41.52 | 11.33 | 26.63 |
| 2001 | 64.69 | 40.58 | 52.94 | 48.11 | 21.98 | 35.27 | 57.48 | 26.37 | 42.05 |
| 2011 | 69.66 | 51.41 | 60.74 | 56.21 | 35.73 | 46.09 | 63.76 | 40.34 | 51.99 |
| Change (1961–2011) | 35.05 | 43.08 | 39.19 | 43.73 | 34.34 | 39.10 | 49.92 | 39.34 | 44.60 |

total rural CLR during 1961–2011. During this period, the AARC in gender gap of rural CLR has been recorded as -1.12%. The AARC in gender gap of rural CLR in SCs and STs have been observed as -1.28% and -1.31% respectively during this period. However, from 1961 to 2011, a decreasing trend in gender gap has been found in total rural CLR and rural CLR of STs. Whereas in rural CLR of SCs, the gender gap has decreased during 1961–1971, then increased from 1971 to 1981 and gradually shows a decreasing trend during 1981–2011 (Table 4) (Fig. 5).

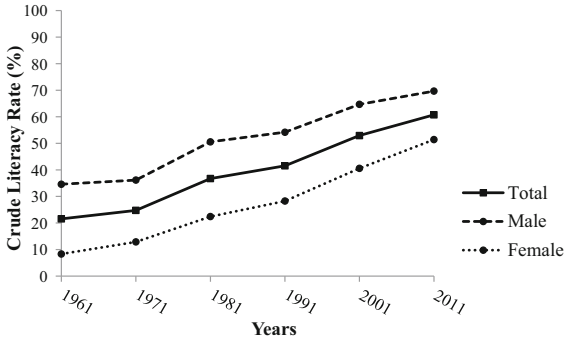



**Fig. 2** Rural CLR in Bankura district (1961–2011)

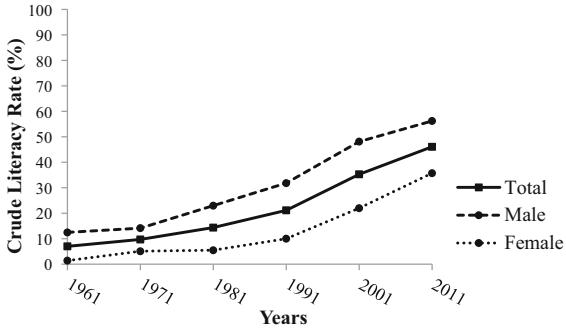



**Fig. 3** Rural CLR of SC population in Bankura district (1961–2011)

Gender gap in rural ELR of Bankura district (1991–2011)

In Bankura district, similar to CLR, the highest and lowest AARC in gender gap in rural ELR are observed among STs ELR and in total ELR respectively during 1991–2011. The AARC in gender gap of rural ELR has been recorded as - 1.13% during this period. The AARC in gender gap of rural ELR in SCs and STs have been observed as - 1.80% and - 1.88% respectively during this period. A decreasing trend in gender gap has been found in total rural ELR as well as rural ELR of SCs and STs from 1991 to 2011 (Table 5).

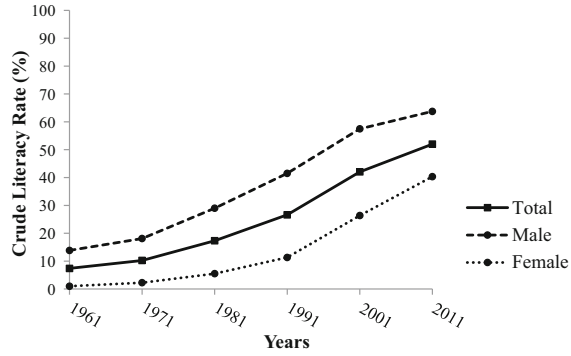



**Fig. 4** Rural CLR of ST population in Bankura district (1961–2011)

Gender gap in rural CLR: Intra regional variations in Bankura district (1961–2011)

During 1961–2011, a decreasing trend of gender gap in rural CLR has been observed in all C.D. Blocks in Bankura district, however the rate of change is different. In most of the cases, the maximum rate of decrease in gender gap of rural CLR (1961–2011) has

**Table 3** Rural ELR in Bankura district (1991–2011). Source: Based on data collected from Census of India (1991–2011)

| Years | Total | | | SC | | | ST | | |
|---|---|---|---|---|---|---|---|---|---|
| | M | F | T | M | F | T | M | F | T |
| 1991 | 65.17 | 34.06 | 50.01 | 39.36 | 12.38 | 26.16 | 50.24 | 13.75 | 32.27 |
| 2001 | 75.81 | 47.56 | 62.04 | 57.59 | 26.32 | 42.22 | 67.75 | 30.97 | 49.47 |
| 2011 | 79.10 | 58.31 | 68.93 | 65.09 | 41.27 | 53.30 | 72.78 | 45.80 | 59.18 |
| Change (1991–2011) | 13.93 | 24.25 | 18.92 | 25.73 | 28.89 | 27.14 | 22.54 | 32.05 | 26.91 |

**Table 4** Gender gap (i.e. logged gender odds ratios) in rural CLR of Bankura district (1961–2011). Source: Based on data collected from Census of India (1961–2011)

| Years | Total | SC | ST |
|---|---|---|---|
| 1961 | - 1.76 | - 2.32 | - 2.77 |
| 1971 | - 1.34 | - 1.12 | - 2.26 |
| 1981 | - 1.26 | - 1.64 | - 1.95 |
| 1991 | - 1.10 | - 1.44 | - 1.71 |
| 2001 | - 0.99 | - 1.19 | - 1.33 |
| 2011 | - 0.77 | - 0.84 | - 0.96 |
| Average Annual Rate of Change (%) | - 1.12 | - 1.28 | - 1.31 |

been found in the C.D. Blocks with high gender gap and minimum in the C.D. Blocks with low gender gap. From 1961 to 2011, the highest AARC in gender gap of rural CLR has been recorded in Ranibundh C.D. Block (- 1.25%) and the lowest in Indus C.D. Block (- 0.97%). The highest gender gap in rural CLR has been observed in Ranibundh C.D. Block (- 2.51) followed by Indpur (- 2.46) and Khatra (- 2.34) in 1961. Whereas, in 2011, the highest gender gap in rural CLR has been observed in Hirbandh C.D. Block (- 1.03) followed by Ranibundh (- 0.94) and Indpur (- 0.94). The lowest gender gap in rural CLR has been recorded as - 1.11 in 1961 and - 0.57 in 2011 in Indus C.D. Block. During 1961–2011, it has been observed that high gender gap in rural CLR exists in the C.D. Blocks situated in western part of this district, compared to the C.D. Blocks in eastern part.

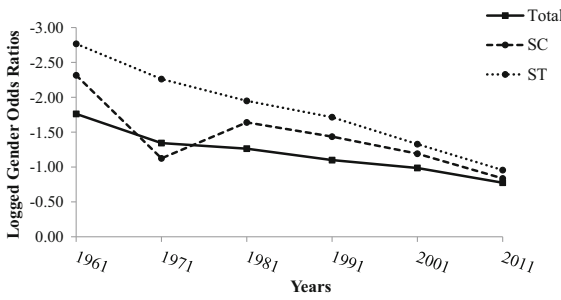



**Fig. 5** Gender gap in rural CLR in Bankura district (1961–2011)

**Table 5** Gender gap (i.e. logged gender odds ratios) in rural ELR of Bankura district (1991–2011). Source: Based on data collected from Census of India (1991–2011)

| Years | Total | SC | ST |
|---|---|---|---|
| 1991 | - 1.29 | - 1.53 | - 1.85 |
| 2001 | - 1.24 | - 1.34 | - 1.54 |
| 2011 | - 1.00 | - 0.98 | - 1.15 |
| Average Annual Rate of Change (%) | - 1.13 | - 1.80 | - 1.88 |

In 1961, four C.D. Blocks in Bankura district viz. Chhatna, Indpur, Khatra and Ranibundh comprised extremely high gender gap zone of rural CLR consisting of 21.99% rural population of this district. In this zone, Raipur C.D. Block having 8.41% rural population of this district has been found in 1981. However, in 1971 and 1991 to 2011, none of the C.D. Blocks have been observed in the zone of extremely high gender gap of rural CLR. Very high gender gap zone of rural CLR comprised of seven C.D. Blocks viz. Saltora, Mejhia, Gangajalghati, Bankura, Taldangra, Simlapal and Raipur consisting of 36.60% rural population of this district in 1961. Three C.D. Blocks viz. Indpur, Khatra and Ranibundh consisting of 14.71% rural population of the district, have been fallen within very high gender gap zone of rural CLR in 1971. Ranibundh C.D. Block has been found in the very high gender gap zone of rural CLR in 1981 and no C.D. Block has been observed in this zone during 1991–2011. In low gender gap zone of rural CLR, no C.D. Block has been observed in 1961 and 1971, whereas two C.D. Blocks viz. Indus and Vishnupur consisting of 9.42% rural population of Bankura district have been fallen in this zone in 1981. Two C.D. Blocks viz. Indus and Kotulpur consisting of 10.76% rural population of this district in 1991, and three C.D. Blocks viz. Patrasayer, Indus and Kotulpur, representing 16.38% rural population of this district in 2001 have been found within low gender gap zone of rural CLR. In 2011, low gender gap zone of rural CLR, comprised of 12 C.D. Blocks representing 59.70% rural population of this district (Table 6) (Figs. 6, 7, 8, 9, 10 and 11).

**Table 6** Gender gap (i.e. logged gender odds ratios) in rural CLR across C.D. Blocks in Bankura district (1961–2011). Source: Based on data collected from Census of India (1961–2011)

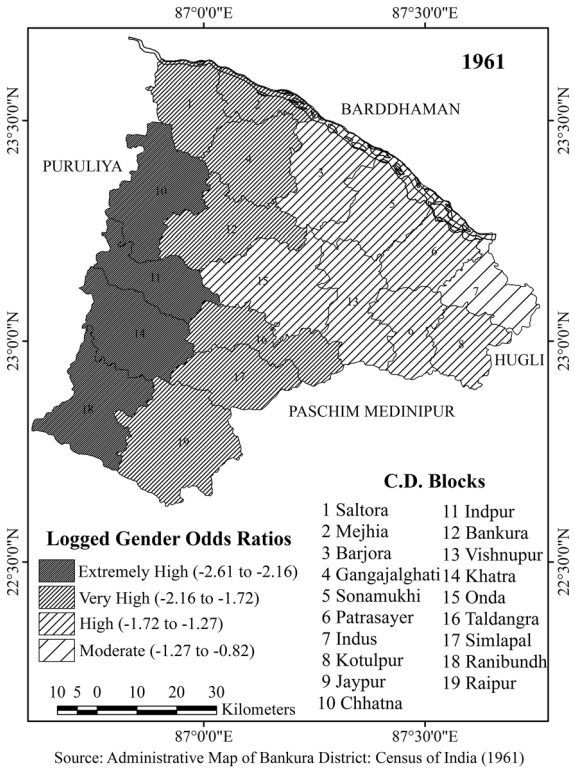
| C.D. Blocks | 1961 | 1971 | 1981 | 1991 | 2001 | 2011 |
|---|---|---|---|---|---|---|
| Saltora | - 1.95 | - 1.67 | - 1.50 | - 1.27 | - 1.16 | - 0.90 |
| Mejhia | - 1.78 | - 1.16 | - 1.32 | - 1.15 | - 1.06 | - 0.83 |
| Gangajalghati | - 2.05 | - 1.56 | - 1.42 | - 1.22 | - 1.09 | - 0.89 |
| Chhatna | - 2.25 | - 1.45 | - 1.48 | - 1.32 | - 1.14 | - 0.89 |
| Indpur | - 2.46 | - 1.77 | - 1.50 | - 1.31 | - 1.18 | - 0.94 |
| Bankura I | - 1.92 | - 1.50 | - 1.31 | - 1.19 | - 1.03 | - 0.80 |
| Bankura II | – | – | – | - 1.12 | - 0.99 | - 0.77 |
| Barjora | - 1.50 | - 1.24 | - 1.13 | - 1.04 | - 0.95 | - 0.77 |
| Sonamukhi | - 1.46 | - 1.15 | - 0.96 | - 0.90 | - 0.86 | - 0.68 |
| Patrasayer | - 1.33 | - 1.04 | - 0.98 | - 0.85 | - 0.80 | - 0.63 |
| Indus | - 1.11 | - 0.83 | - 0.80 | - 0.71 | - 0.72 | - 0.57 |
| Kotulpur | - 1.47 | - 1.10 | - 0.92 | - 0.82 | - 0.76 | - 0.62 |
| Jaypur | - 1.36 | - 1.01 | - 0.89 | - 0.93 | - 0.84 | - 0.69 |
| Vishnupur | - 1.38 | - 1.18 | - 0.37 | - 1.01 | - 0.91 | - 0.69 |
| Onda | - 1.58 | - 1.23 | - 1.11 | - 1.03 | - 0.95 | - 0.70 |
| Taldangra | - 1.74 | - 1.38 | - 1.01 | - 1.04 | - 0.94 | - 0.73 |
| Simlapal | - 2.02 | - 1.48 | - 1.30 | - 1.10 | - 1.02 | - 0.77 |
| Khatra | - 2.34 | - 1.78 | - 1.62 | - 1.43 | - 1.12 | - 0.93 |
| Hirbandh | – | – | – | - 1.56 | - 1.35 | - 1.03 |
| Ranibundh | - 2.51 | - 2.00 | - 1.79 | - 1.50 | - 1.26 | - 0.94 |
| Raipur | - 1.99 | - 1.56 | - 2.61 | - 1.27 | - 1.10 | - 0.88 |
| Sarenga | – | – | – | - 1.25 | - 1.07 | - 0.82 |

In SCs, a decreasing trend of gender gap in rural CLR has been observed in all C.D. Blocks in Bankura district except Ranibundh during 1961–2011. Gender gap in rural CLR has increased in SCs of Ranibundh C.D. Block from - 0.69 in 1961 to - 0.83 in 2011. The highest gender gap in rural CLR of SCs has been recorded in Chhatna (- 3.57) C.D. Block followed by Vishnupur (- 3.52) and Simlapal (- 3.36) in 1961 and in Hirbandh (- 1.06) C.D. Block followed by Indpur (- 1.02) and Khatra (- 0.96) in 2011. The lowest gender gap in rural CLR of SCs has been recorded in C.D. Block Ranibundh (- 0.69) in 1961 and Kotulpur (- 0.73) in 2011. During 1961–2011, the highest AARC in gender gap in CLR of SCs has been reported in Vishnupur C.D. Block (- 1.53%) and lowest in Indus C.D. Block (- 0.43%) (Table 7).

In STs, a decreasing trend of gender gap in rural CLR has been found in all C.D. Blocks in Bankura district. The highest AARC in gender gap in CLR has been observed in Saltora C.D. Block (- 1.68%) and lowest in Vishnupur C.D. Block (- 0.77%) during 1961–2011. In 1961, the highest gender gap in rural CLR of STs has been recorded in C.D. Block Saltora (- 5.38) followed by Simlapal (- 5.08) and Indpur (- 4.84). In 2011, the highest gender gap in rural CLR of STs has been recorded in C.D. Block Hirbandh (- 1.09) followed by Ranibundh (- 1.03) and Sarenga (- 1.02). The lowest gender gap in rural CLR of STs has been recorded in C.D. Block Vishnupur (- 1.49) in 1961 and Mejhia (- 0.70) in 2011 (Table 7).

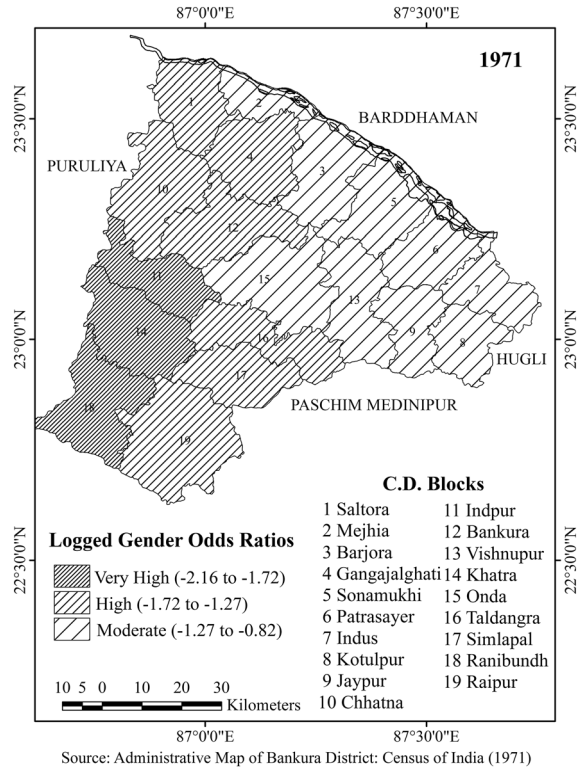
### Gender gap in rural ELR: Intra regional variations in Bankura district (1991–2011)

Similar to CLR, a decreasing trend of gender gap in rural ELR has been observed in all C.D. Blocks of Bankura district during 1991–2011 with different rates. Alike CLR, in most of the cases, the rate of decrease in gender gap of rural ELR (1991–2011) is maximum in the C.D. Blocks with high gender gap and minimum in the C.D. Blocks with low gender gap. From 1991 to 2011, the highest AARC in gender gap in ELR has been observed in Hirbandh C.D. Block followed by Ranibundh and the lowest in Indus C.D. Block. Likewise, CLR, gender gap in rural ELR has remained comparatively high in the C.D. Blocks



Source: Administrative Map of Bankura District: Census of India (1961)

**Fig. 6** Gender gap in rural CLR across C.D. Blocks in Bankura district (1961)



Source: Administrative Map of Bankura District: Census of India (1971)

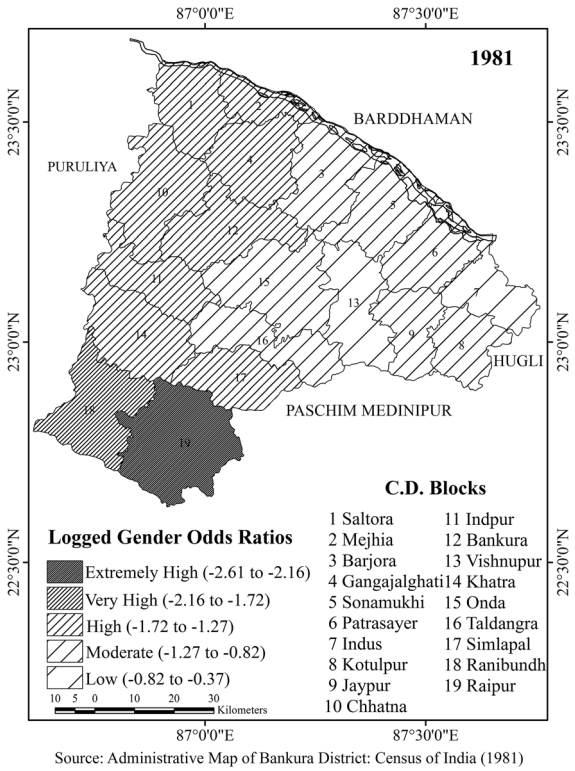
**Fig. 7** Gender gap in rural CLR across C.D. Blocks in Bankura district (1971)

situated in the western part of Bankura district, during 1991–2011.

Hirbandh C.D. Block has been fallen into the zone of very high gender gap zone in rural ELR in 1991 whereas no C.D. Block has been found in this zone in 2001 and 2011. High gender gap zone in rural ELR is comprised of 12 C.D. Blocks representing 50.29% rural population in 1991 and 13 C.D. Blocks representing 52.05% rural population of the district in 2001. However, no C.D. Block has been observed in the high gender gap zone in rural ELR in 2011. Moderate gender gap zone in rural ELR comprised of nine C.D. Blocks with 47.29% rural population in 1991, nine C.D. Blocks with 47.95% rural population in 2001 and 20 C.D. Blocks with 89.27% rural population of Bankura district in 2011. In 2011, low gender gap zone in rural ELR comprised of two C.D. Blocks with 10.73% rural population of the district (Table 8) (Figs. 12, Fig. 13 and Fig. 14).

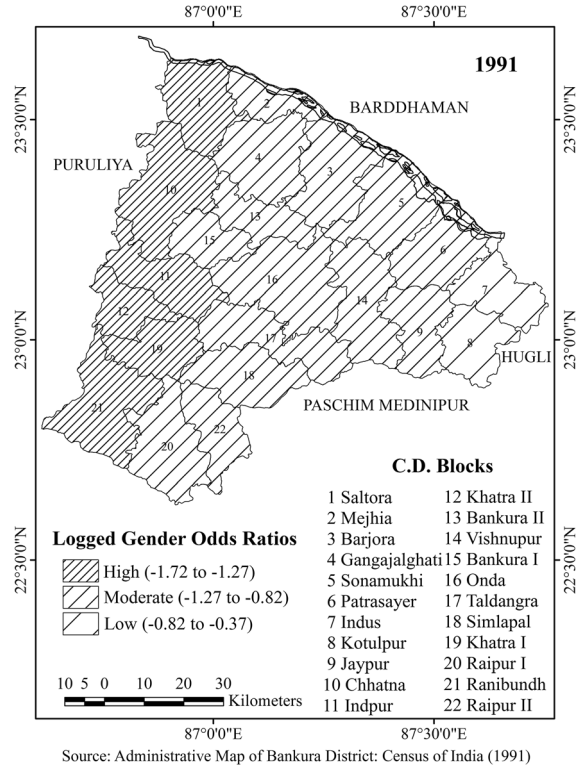
In SCs, a decreasing trend of gender gap in rural ELR has been observed in all C.D. Blocks in Bankura district. The highest AARC in gender gap in ELR has been recorded in Onda C.D. Block (- 2.35%) and lowest in Gangajalghati C.D. Block (- 1.01%) during 1991–2011. The highest gender gap in rural ELR of SCs has been observed as - 1.87, - 1.71 and - 1.22 in 1991, 2001 and 2011 respectively in Hirbandh C.D. Block. The lowest gender gap in rural ELR of SCs has been recorded in C.D. Blocks Sonamukhi (- 1.34), Kotulpur (- 1.19) and Patrasayer (- 0.85) in 1991, 2001 and 2011 respectively. Gender gap in rural ELR of SCs has remained comparatively high in the C.D. Blocks situated in the southern part of Bankura district, during 1991–2011 (Table 8).

In STs, a decreasing trend of gender gap in rural ELR has been observed in all C.D. Blocks in Bankura district. The highest AARC in gender gap in ELR has been recorded in Indus C.D. Block (- 2.68%) and the lowest in Sarenga C.D. Block (- 1.03%) during 1991–2011. The highest gender gap in rural ELR of STs has been found in C.D. Blocks Gangajalghati (- 2.15) and Patrasayer (- 2.15) in 1991, Hirbandh (- 1.78) in 2001, and Sarenga (- 1.31) in 2011. The lowest gender gap in rural ELR of STs has been



Source: Administrative Map of Bankura District: Census of India (1981)

**Fig. 8** Gender gap in rural CLR across C.D. Blocks in Bankura district (1981)



Source: Administrative Map of Bankura District: Census of India (1991)

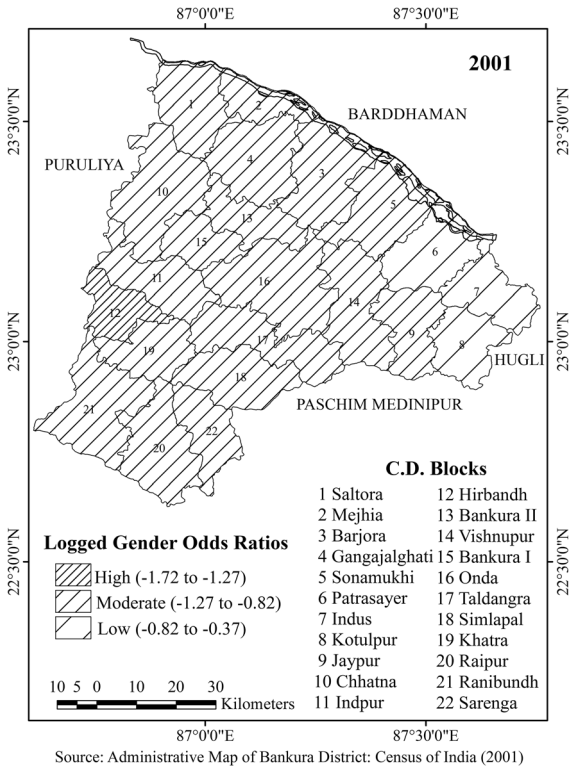
**Fig. 9** Gender gap in rural CLR across C.D. Blocks in Bankura district (1991)

recorded in C.D. Blocks Mejhia (- 1.40), Indus (- 1.17) and Mejhia (- 0.85) in 1991, 2001 and 2011 respectively. During 1991–2011, gender gap in rural ELR of STs has remained comparatively low in the C.D. Blocks in northern part of Bankura district (Table 8).

## Factors affecting gender gap in rural literacy in Bankura district

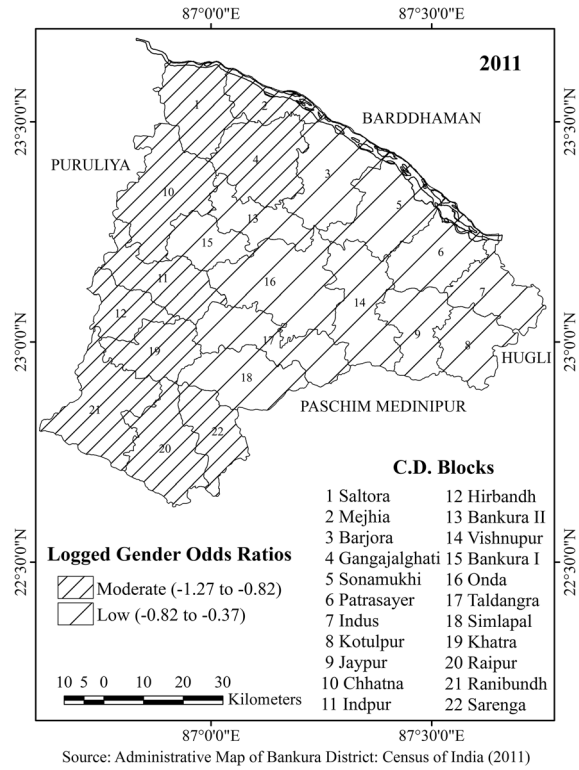
During the study period (1961–2011), an increase in primary schools and consequent rise in enrollments to elementary education have increased the literacy rate all over India. According to Pathania (2020), educational accessibility, efficient government policies, empowerment of women, competition and awareness are the main reasons behind reducing gender inequality during 1951 to 2011 in India. The ELR has been recorded as 74.04% in India and as 76.26% in West Bengal (Census of India, 2011). In Bankura district the ELR has been observed as 70.26% and the district ranked 14 in among the 19 districts in West Bengal (Census of India, 2011). Moreover, rural ELR (68.93%) is lagging behind than that of its urban counterpart (84.42%) in this district (Census of India, 2011). This may be attributed to the non-availability of schools at village level. In Bankura district, total 449 Shishu Shiksha Kendras (SSKs) has been operating in 2005–2006 (GoI, 2010) along with 3645 primary schools, 117 middle schools and 338 secondary/higher secondary schools in 2004–2005 (GoI, 2010). Considering the village level situation, out of the total number of 3585 inhibited villages in Bankura district, 61.76% villages are with at least one primary school and no middle school, 23.15% villages are with at least one primary school and one middle school and 11.99% villages are with at least one middle school and one secondary school (GoI, 2011).

In Bankura district, gender gap in rural literacy is also attributed to poverty, distressed agriculture and concentration of SCs and STs. Islam and Siddiqui (2019) have emphasized on the reciprocal relationship between gender inequality in literacy and socio-economic characteristics of the communities. As per



Source: Administrative Map of Bankura District: Census of India (2001)

**Fig. 10** Gender gap in rural CLR across C.D. Blocks in Bankura district (2001)



Source: Administrative Map of Bankura District: Census of India (2011)

**Fig. 11** Gender gap in rural CLR across C.D. Blocks in Bankura district (2011)

GoWB (2007), Bankura district is comprised of 42.48% rural BPL families. Scarcity of food, poor health conditions, household instability, insecure environment and limited access to school and learning materials impede the rural BPL children from education in this district. High gender gap in rural CLR (1961–2011) and ELR (1991–2011) have been observed in Ranibundh, Raipur, Hirbandh, Indpur and Khatra, compared to other C.D. Blocks in Bankura district. Below poverty line (BPL) population is also high in Ranibundh (49.75%), Raipur (49.98%), Hirbandh (49.95%), Indpur (48.19%) and Khatra (46.87%) C.D. Blocks (GoWB, 2007). This portrays that the coexistence of poverty and acute livelihood crisis are the root causes of high gender gap in literacy in these C.D. Blocks. Gender discrimination in poorer section of people is more prominent than that of the richer section in Bankura district (GoWB, 2007). Hence, in education, pro-male bias manifests in lesser intra-household educational expenditure on girls than that of boys. Moreover, due to the practice of dowry, particularly in low-income rural household, the girls are assumed as economic liability to the households in this district. Therefore, expenditure on their education is compromised in order to pay the dowry at the time of their marriage. Thus, the challenges of economic hardship, household constraints and conservatism, societal and parental negligence towards girl child are the basic reasons for gender gap in rural literacy in this district. Agriculture and related activities represent major occupation of rural female workforce in this district and therefore large numbers of rural girls are engaged in domestic chores to support their mother at home (GoWB, 2007). Although RTE Act (2009) "entitles every child of the age of six to fourteen years to the right to free and compulsory education in a neighbourhood school till the completion of elementary education" (GoI, 2019, p. 27). In reality, girls' schooling is considered as extra burden and futile proposition to the parents, leading to girl's non-enrollment and dropout in majority of the households that depend on agriculture in this district (GoWB, 2007).

**Table 7** Gender gap (i.e. logged gender odds ratios) in rural CLR of SC and ST population in Bankura district (1961–2011). Source: Based on data collected from Census of India (1961–2011)

| C.D. Blocks | 1961 | | 1971 | | 1981 | | 1991 | | 2001 | | 2011 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SC | ST | SC | ST | SC | ST | SC | ST | SC | ST | SC | ST |
| Saltora | - 3.01 | - 5.38 | - 1.17 | - 4.55 | - 1.79 | - 2.26 | - 1.33 | - 1.89 | - 1.17 | - 1.42 | - 0.89 | - 0.85 |
| Mejhia | - 2.20 | - 3.07 | - 1.17 | - 2.74 | - 1.66 | - 2.96 | - 1.35 | - 1.29 | - 1.17 | - 1.24 | - 0.86 | - 0.70 |
| Gangajalghati | - 2.44 | - 3.86 | - 1.26 | - 3.65 | - 1.49 | - 2.97 | - 1.25 | - 2.08 | - 1.24 | - 1.35 | - 0.94 | - 0.93 |
| Chhatna | - 3.57 | - 4.37 | - 1.84 | - 1.63 | - 1.86 | - 2.29 | - 1.53 | - 1.89 | - 1.28 | - 1.37 | - 0.89 | - 0.98 |
| Indpur | - 2.87 | - 4.84 | - 1.63 | - 2.16 | - 1.71 | - 1.90 | - 1.49 | - 1.88 | - 1.35 | - 1.41 | - 1.02 | - 1.01 |
| Bankura I | - 2.52 | - 3.43 | - 0.82 | - 2.45 | - 1.78 | - 1.83 | - 1.45 | - 1.74 | - 1.25 | - 1.33 | - 0.90 | - 1.01 |
| Bankura II | – | – | – | – | – | – | - 1.61 | - 1.41 | - 1.31 | - 1.25 | - 0.79 | - 0.80 |
| Barjora | - 2.05 | - 3.05 | - 0.79 | - 2.88 | - 1.41 | - 1.67 | - 1.28 | - 1.92 | - 1.13 | - 1.34 | - 0.85 | - 0.94 |
| Sonamukhi | - 2.84 | - 2.70 | - 1.55 | - 1.22 | - 1.53 | - 3.02 | - 1.29 | - 1.97 | - 1.15 | - 1.25 | - 0.80 | - 0.87 |
| Patrasayer | - 3.10 | - 4.32 | - 1.54 | - 2.84 | - 1.67 | - 2.02 | - 1.52 | - 2.02 | - 1.20 | - 1.41 | - 0.75 | - 0.86 |
| Indus | - 0.96 | - 1.92 | - 0.27 | - 1.96 | - 1.74 | - 3.25 | - 1.44 | - 1.89 | - 1.13 | - 1.01 | - 0.76 | - 0.78 |
| Kotulpur | - 1.47 | - 2.10 | - 0.23 | - 2.49 | - 1.81 | - 2.37 | - 1.35 | - 1.66 | - 1.02 | - 1.27 | - 0.73 | - 0.76 |
| Jaypur | - 2.08 | - 2.25 | - 0.91 | - 3.24 | - 1.59 | - 1.65 | - 1.54 | - 1.93 | - 1.15 | - 1.47 | - 0.86 | - 0.91 |
| Vishnupur | - 3.52 | - 1.49 | - 1.74 | - 2.71 | - 1.55 | - 1.96 | - 1.55 | - 1.89 | - 1.22 | - 1.49 | - 0.83 | - 0.92 |
| Onda | - 2.17 | - 3.24 | - 0.97 | - 3.04 | - 1.72 | - 1.85 | - 1.62 | - 1.97 | - 1.26 | - 1.30 | - 0.77 | - 0.83 |
| Taldangra | - 2.93 | - 2.69 | - 1.62 | - 2.86 | - 1.68 | - 2.06 | - 1.51 | - 1.68 | - 1.20 | - 1.27 | - 0.87 | - 0.94 |
| Simlapal | - 3.36 | - 5.08 | - 1.99 | - 2.88 | - 1.80 | - 2.14 | - 1.71 | - 1.75 | - 1.25 | - 1.34 | - 0.83 | - 0.94 |
| Khatra | - 2.34 | - 3.40 | - 1.12 | - 3.03 | - 2.16 | - 2.30 | - 1.61 | - 1.77 | - 1.26 | - 1.34 | - 0.96 | - 0.99 |
| Hirbandh | – | – | – | – | – | – | - 1.75 | - 1.96 | - 1.50 | - 1.55 | - 1.06 | - 1.09 |
| Ranibundh | - 0.69 | - 1.99 | - 0.09 | - 2.37 | - 1.37 | - 2.28 | - 1.30 | - 1.72 | - 1.20 | - 1.37 | - 0.83 | - 1.03 |
| Raipur | - 2.18 | - 2.23 | - 0.94 | - 2.17 | - 1.50 | - 1.41 | - 1.48 | - 1.62 | - 1.21 | - 1.28 | - 0.87 | - 1.01 |
| Sarenga | – | – | – | – | – | – | - 1.54 | - 1.47 | - 1.24 | - 1.32 | - 0.83 | - 1.02 |

Throughout 1961–2011, lowest rural CLR and ELR have been observed among SCs in Bankura district. Also, highest AARC in rural ELR has been found in SCs in the district during this period. In India, SCs, also considered as "dalits or former untouchables" comprises 16% population of this country, and are "generally poorer", "less literate" and "disadvantaged minority" (Bhavnani & Jensenius, 2019, p. 4). However, during 1971–2001, a highest increase in literacy rate among SCs (31%) has been found compared to that of other population (25%) in this country (Bhavnani & Jensenius, 2019, p. 4). On the other hand, in Bankura district, highest AARC in rural CLR has been observed in STs during 1961–2011. Also, a considerable difference in rural CLR and ELR has been found between SCs/STs compared to that of non-scheduled communities in this district during this period. In India, SCs and STs occupy the lowest rung of the social ladder. In this country, government has adopted various schemes and constitutional safeguards to uplift the students of these backward communities, which have also resulted in positive outcome leading to the development and betterment of these deprived groups (Raghavendra, 2020). As a result of governmental schemes and policies on literacy of backward communities, although a rapid progress in rural CLR and ELR has been found in SCs and STs of Bankura district, but compared to non-scheduled communities they are lagging far behind in literacy. Moreover, people of these backward groups are still unaware of government schemes and policies on literacy. Highest gender gap in rural CLR and ELR has been found in the C.D. Blocks with high percentage of STs in the study area. In 1961, the highest gender gap in rural CLR has been observed in Ranibundh C.D. Block with 41.40% STs, while the

**Table 8** Gender gap (i.e. logged gender odds ratios) in rural ELR across C.D. Blocks in Bankura district (1991–2011). Source: Based on data collected from Census of India (1991–2011)

| C.D. Blocks | 1991 | | | 2001 | | | 2011 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | SC | ST | Total | SC | ST | Total | SC | ST |
| Saltora | - 1.46 | - 1.45 | - 1.98 | - 1.40 | - 1.34 | - 1.59 | - 1.10 | - 1.04 | - 0.97 |
| Mejhia | - 1.34 | - 1.46 | - 1.40 | - 1.27 | - 1.28 | - 1.37 | - 1.06 | - 1.00 | - 0.85 |
| Gangajalghati | - 1.44 | - 1.35 | - 2.15 | - 1.34 | - 1.37 | - 1.50 | - 1.14 | - 1.08 | - 1.10 |
| Chhatna | - 1.53 | - 1.61 | - 2.01 | - 1.41 | - 1.42 | - 1.56 | - 1.12 | - 1.02 | - 1.17 |
| Indpur | - 1.51 | - 1.58 | - 2.01 | - 1.49 | - 1.55 | - 1.65 | - 1.21 | - 1.19 | - 1.28 |
| Bankura I | - 1.41 | - 1.58 | - 1.84 | - 1.32 | - 1.43 | - 1.55 | - 1.01 | - 1.06 | - 1.15 |
| Bankura II | - 1.34 | - 1.68 | - 1.48 | - 1.27 | - 1.44 | - 1.42 | - 1.05 | - 0.94 | - 1.01 |
| Barjora | - 1.23 | - 1.35 | - 1.98 | - 1.19 | - 1.26 | - 1.55 | - 0.99 | - 0.99 | - 1.07 |
| Sonamukhi | - 1.02 | - 1.34 | - 2.03 | - 1.05 | - 1.26 | - 1.39 | - 0.85 | - 0.90 | - 1.02 |
| Patrasayer | - 0.98 | - 1.58 | - 2.15 | - 0.96 | - 1.29 | - 1.54 | - 0.78 | - 0.85 | - 1.02 |
| Indus | - 0.84 | - 1.50 | - 1.94 | - 0.91 | - 1.25 | - 1.17 | - 0.74 | - 0.87 | - 0.90 |
| Kotulpur | - 1.01 | - 1.47 | - 1.77 | - 1.01 | - 1.19 | - 1.37 | - 0.86 | - 0.90 | - 0.93 |
| Jaypur | - 1.13 | - 1.63 | - 2.05 | - 1.10 | - 1.31 | - 1.60 | - 0.94 | - 1.03 | - 1.08 |
| Vishnupur | - 1.16 | - 1.62 | - 1.96 | - 1.13 | - 1.35 | - 1.65 | - 0.86 | - 0.94 | - 1.06 |
| Onda | - 1.21 | - 1.69 | - 2.07 | - 1.18 | - 1.38 | - 1.49 | - 0.89 | - 0.90 | - 0.98 |
| Taldangra | - 1.24 | - 1.62 | - 1.79 | - 1.23 | - 1.39 | - 1.47 | - 0.96 | - 1.03 | - 1.10 |
| Simlapal | - 1.30 | - 1.81 | - 1.89 | - 1.29 | - 1.41 | - 1.56 | - 0.97 | - 0.96 | - 1.11 |
| Khatra | - 1.65 | - 1.73 | - 1.92 | - 1.45 | - 1.49 | - 1.57 | - 1.21 | - 1.16 | - 1.24 |
| Hirbandh | - 1.76 | - 1.87 | - 2.10 | - 1.65 | - 1.71 | - 1.78 | - 1.26 | - 1.22 | - 1.29 |
| Ranibundh | - 1.70 | - 1.49 | - 1.88 | - 1.58 | - 1.49 | - 1.62 | - 1.22 | - 1.07 | - 1.26 |
| Raipur | - 1.48 | - 1.63 | - 1.79 | - 1.41 | - 1.41 | - 1.58 | - 1.17 | - 1.07 | - 1.29 |
| Sarenga | - 1.50 | - 1.70 | - 1.64 | - 1.45 | - 1.51 | - 1.67 | - 1.15 | - 1.06 | - 1.31 |

lowest in Indus C.D. Block with only 1.60% STs (Census of India, 1961). Whereas, in 2011, highest gender gap in rural CLR and ELR has been recorded in Hirbandh C.D. Block consisting of 28.39% STs, while, the lowest gender gap in rural CLR and ELR observed in Indus C.D. Block consisting of only 1.85% STs in 2011 (Census of India, 2011). STs are one of the most deprived and marginal communities in India. The Constitution of India has facilitated the STs with special defend and concessions, they still are "poor and socially excluded due to differences in customs, practices and geographic isolation" (Halim et al., 2016, p. 123).

Drought is one of the most widespread calamities affecting rural livelihoods in Bankura district. Besides its spatial extent, the increasing frequency and severity of drought amplify the vulnerability towards poverty in the study area. Ranibundh, Raipur, Hirbandh, Indpur and Khatra with high gender gap in literacy during 1961–2011, are situated within severely drought prone areas in Bankura district. The incidents of drought along with increasing poverty further marginalize the females in rural society undermining their power, resources. This leads to deprivation of females from educational attainment resulting high gender gap in CLR and ELR in these C.D. Blocks. Eastern part of Bankura district is covered by "a wide plain of recent alluvium, while metamorphic or gneissose rocks are found to the extreme west" (O'Malley, 1908, p. 8). Western part of Bankura district is characterized by undulating topography consisting rocky hillocks. Hence not only the physical environment, but also the socio-economic and livelihood patterns in the western part of Bankura district vary from the eastern part. Undulating topography, poor road conditions and lack of accessibility to school

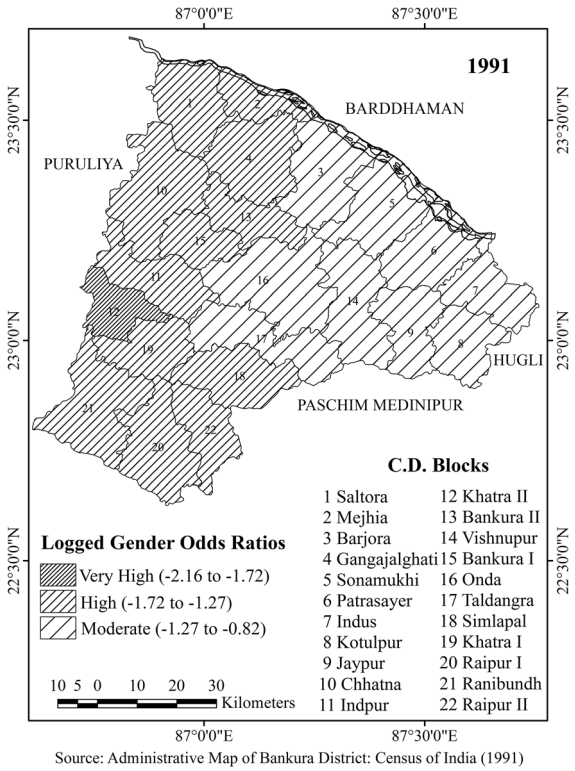



**Fig. 12** Gender gap in rural ELR across C.D. Blocks in Bankura district (1991)

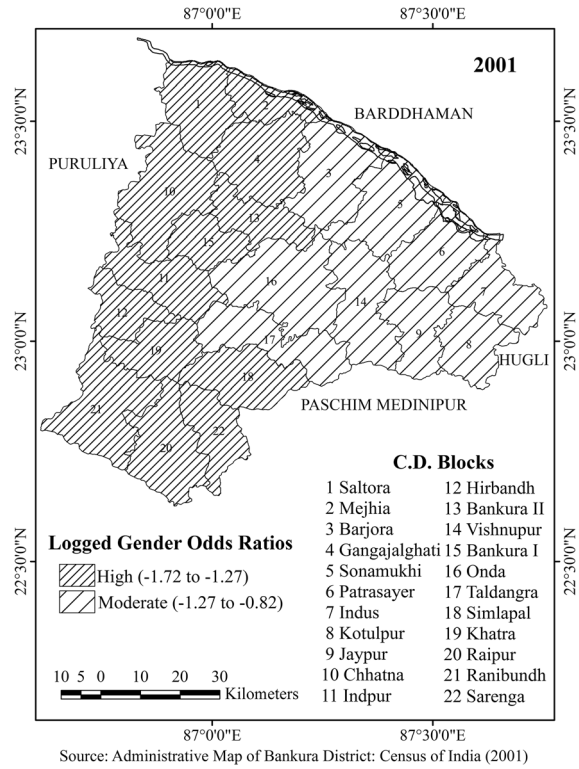
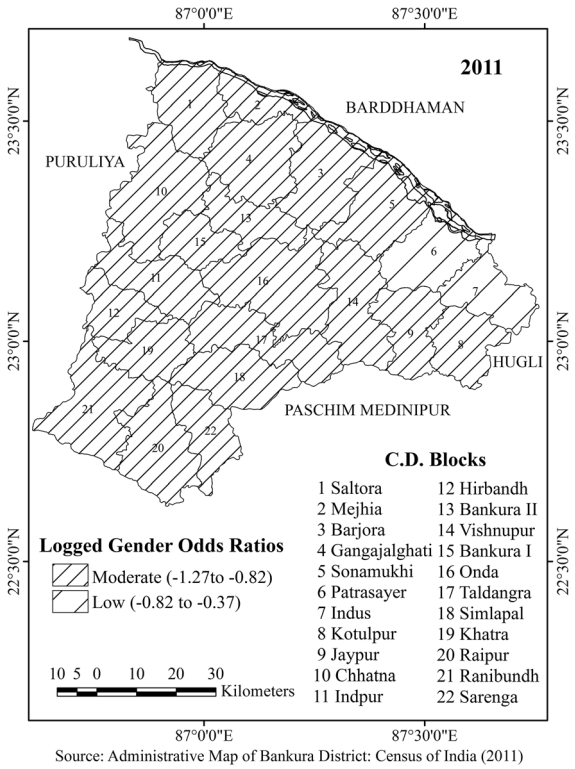



**Fig. 13** Gender gap in rural ELR across C.D. Blocks in Bankura district (2001)

are also important reasons for higher gender gap in rural literacy in western part of Bankura district.

In Bankura district, female dropout is the critical issue as middle schools and secondary schools are not available in large number of villages. For girls, it becomes physically difficult and insecure to travel more than 3–4 km distance in order to access schooling in this district (GoWB, 2007). Percentage of inhabited villages with at least one primary school and no middle school is high in the C.D. Blocks Ranibundh (65.09%), Raipur (60.91%), Hirbandh (62.07%), Indpur (66.16%) and Khatra (60.96%). Also, percentage of inhabited villages with at least one primary school and one middle school has been recorded low in these C.D. Blocks Ranibundh (23.08%), Raipur (26.40%), Hirbandh (17.24%), Indpur (18.18%) and Khatra (18.49%). On the other hand, percentage of inhabited villages with at least one middle school and one secondary school is also low in the C.D. Blocks Ranibundh (11.83%), Raipur (14.72%), Hirbandh (12.07%), Indpur (12.12%) and Khatra (8.22%) (GoI, 2011).Whereas, in Indus C.D. Block, out of 129 inhabited villages, 64.34% villages are with at least one primary school and no middle school, 31.78% villages are with at least one primary school and one middle school and 15.50% villages are with at least one middle school and one secondary school (GoI, 2011). As per Census of India (2011), in Bankura district, 541 inhibited villages are without any primary school. Out of these 541 villages "513 villages have this facility within 5 kms, 20 villages have this facility within 5–10 kms and 8 villages have this facility beyond 10 kms" (GoI, 2011, p. 87). Also, as per Census of India (2011), percentage of villages with no primary school to total number of inhabited villages is high in the C.D. Blocks Ranibundh (11.83%), Raipur (12.69%), Hirbandh (20.69%), Indpur (15.66%) and Khatra (20.55%) (GoI, 2011). While, the lowest percentage of villages with no primary school has been observed in Indus (3.88%), where low gender gap in literacy exists, compared to other C.D. Blocks, throughout the study period (GoI, 2011). In rural areas of Bankura district, SSKs also supplement the formal education system. However,



Source: Administrative Map of Bankura District: Census of India (2011)

**Fig. 14** Gender gap in rural ELR across C.D. Blocks in Bankura district (2011)

total number of SSKs in C.D. Blocks Ranibundh (9 SSKs), Hirbandh (11 SSKs), Khatra (14 SSKs), Indpur (19 SSKs), Raipur (21 SSKs) and Chhatna (16 SSKs) are much less than that of other C.D. Blocks in the study area (GoWB, 2007). Moreover, there is no Mass Literacy Centre (MLC) in C.D. Blocks Ranibundh, Hirbandh and Khatra (GoWB, 2012).

Compared to that of boys, the problem of lack of toilet facility hinders girls more to attend school. Percentage of primary school without toilet facilities is high in the C.D. Blocks Ranibundh (42.58%), Hirbandh (66.67%), Khatra (37.07%), Indpur (89.76%) and Raipur (81.87%) (GoWB, 2007). However, in Indus C.D. Block, only 0.71% of primary schools are without toilet facility (GoWB, 2007). Bhagavatheeswaran et al. (2016) have studied on rural areas of northern Karnataka, India and identified that lack of toilet facility in school "poses a problem for girls, especially during menses, and may mean they are more inclined to stay home to avoid this problem" (p. 267).

To ensure education to all, a number of provisions have been added in the Constitution of India (1949) such as Educational Right of Minorities (Article 30), Free and Compulsory Education for all (Article: 41, 45 and 46) and Education of Weaker Sections (Article 15, 17 and 46). The Constitution of India (Eighty-sixth Amendment) Act, 2002 added Article 21(A), which modified as RTE Act (2009) later, to provide free and compulsory education to all children from 6 to 14 years age group as a fundamental right. Although all these efforts are resulting in increased literacy rate over decades, rural areas are lagging behind with high gender gap in literacy rate compared to that of urban counterpart of the study area.

### Future projections

In 2011, rural female ELR has been recorded as 58.31% and rural female ELR in SCs and STs as 41.27% and 45.80% respectively in Bankura district (Census of India, 2011). The time series analysis of Katiyar (2016) has been used to estimate the time period for achieving 100% rural female literacy rate in this district (as mentioned in Research materials and methods section). Considering, $P_n$ = 100 (literacy to be achieved), $P_0$ = (present ELR viz. 58.31 for rural females, 41.27 for rural SC females and 45.80 for rural ST females in Bankura district), the value of *R* (difference in ELR between 2011 and 2001) has been calculated for rural females as 10.75/10 = 1.075, for rural SC females as 14.95/10 = 1.495 and for rural ST females as 14.83/10 = 1.483. Putting the values of *R* in the time series equation given by Katiyar (2016), *n* values are obtained as 50.46 for rural females, as 59.64 for rural SC females and 53.05 for rural ST females in this district.

Hence, the result of time series analysis (Katiyar, 2016) shows that, it will take 50 years from 2011 to achieve 100% rural female literacy in Bankura district. However, to achieve 100% rural SC and ST female literacy, it will take 60 years and 53 years respectively from 2011, if all the conditions remain unchanged in the study area (Table 9).

## Conclusion

Gender gap in rural literacy in Bankura district is attributed to the over-dependence on agriculture,

**Table 9** Future projection to attain 100 per cent rural female literacy in Bankura district. Source: Based on data collected from Census of India (2001 and 2011)

| Categories | No. of years to attain 100 per cent rural female literacy |
|---|---|
| Total | 50 |
| SC | 60 |
| ST | 53 |

frequent droughts, economic hardship, customary gender discrimination and caste based socio-economic exclusion. A decreasing trend of gender gap in CLR (1961–2011) and ELR (1991–2011) in all C.D. Blocks reveals although not compatible to that of male, yet a remarkable achievement in female literacy in Bankura district. Moreover, in rural SCs and STs, decreasing trend of gender gap in CLR and ELR has also been observed in almost all C.D. Blocks. Throughout the study period, highest gender gap and highest AARC in gender gap in CLR (1961–2011) and ELR (1991–2011) have been found in rural STs of this district. Comparatively high gender gap in rural literacy has been recorded in Ranibundh, Raipur, Hirbandh, Indpur and Khatra C.D. Blocks lying in the western part of Bankura district, whereas, low gender gap in literacy in Indus, Kotulpur and Patrasayer C.D. Blocks in the eastern part of the district. Ranibundh, Raipur, Hirbandh, Indpur and Khatra C.D. Blocks are situated within severely drought prone areas, where agricultural distress and poverty ridden livelihoods have further marginalized the rural females. To reduce gender gap in rural literacy in the district, special attention needs to be given towards the backwards C.D. Blocks lying in the western part of the district. Provision of at least one primary school at village level in these C.D. Blocks, where concentration of socio-economically deprived SC and ST communities are higher. Additional supports for the girls' education have to be provided considering the economic hardship and cultural constraints of the agriculturally distressed households in the study area. Finally, to reduce gender gap in rural literacy in the study area, initiatives towards social protection schemes in poverty reduction, women's socio-economic progress, diversification in rural economic activities, eradication of caste based discrimination and promotion of gender neutral education system are needed.

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**Declarations**

**Conflict of interest** Authors of this research paper declare that there are no any potential conflicts of interest.

**Human and animals rights** This article does not contain any issues related to human and animals' rights.

**Informed consent** No consent is required for this research paper.

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