



Reproductive Healthcare Services and Health Outcomes: A Comparative Study of Aspirational and Non-Aspirational Districts in West Bengal

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Abstract

Good health is a result of good infrastructure and good access to health care services. The women in the reproductive age group required better access to health care for maternal health, the health of newborn babies, or healthy aging. Reproductive health is an important resource for the future population of any country. This study goes through a comparative analysis of Aspirational and Non-Aspirational districts of West Bengal of reproductive health using DLHS-4 data. After the standardization of the variables of accessibility, availability, and health outcome, the districts are ranked by the composite score. As a result, the variation of accessibility is slightly more in the Aspirational districts (CV=54.68 percent) than the Non-Aspirational districts (CV=53.76percent) and the variation of availability is more in the Non-Aspirational districts (CV=79.64 percent) than the Aspirational districts (CV=70.94 percent) of West Bengal. The accessibility, availability positively related to health outcomes. The effect of the availability of health care services is more on health outcomes rather than the accessibility of reproductive health care services.

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Introduction

Reproductive health is a crucial resource for the future population of any country or state. It determined the future population growth. India is the second-largest country in the world. For these issues, the demand for health care services increases day by day. India has about 69 percent of the rural area; that's why the primary health care services come to very important in the field of reproductive health care services (Salam & Siddiqui, 2006). The definition of health, according to the World Health Organization (1948), was the physical, social, and mental well-being and absence of any morbidity. Reproductive health is defined as the health issues related to the reproductive age group (15-49). The access of reproductive health care services denoted as accessibility, availability, affordability, acceptability, and accommodation, which is known as '5A' concept of access to health care (Penchansky & Thomas, 1981). Availability defined as the number of services that are available for the users, and users make their choice (Shrestha, 2010). Accessibility is always related to the spatial dimension, i.e., time and distance (Singh Bisht, Mishra, &

Fuloria, 2019). Accessibility refers to the ability to reach the people to get the services or opportunities (Gaans & Dent, 2018), and it is spatial in nature (Nobles, Serban, & Swann, 2014). Access to health care services has divided into two types-objective and subjective, where accessibility and availability are both in nature (Shrestha, 2010). The health outcome is the changes in health-related issues that resulted from health care intervention or investment (Hati & Majumder, 2013). This study is a concern with the aspirational and non-aspirational districts of West Bengal. National Institute for Transforming India (NITI AYOOG) identified 115 aspirational districts throughout the country. In West Bengal, Only five districts are aspirational, and 14 districts are non-aspirational. The aspirational districts are those districts which are engaged to moral development to ranked or catch up the best district in the state or country within 2022 (NITI Aayog, 2018).

Objectives

This study is a concern to know the spatial pattern of reproductive health care services of Aspirational and Non-



Aspirational districts of West Bengal. The emphasis of this study is to know the relationship of accessibility, availability, and health outcome of reproductive health care services of 'Aspirational' and 'Non-aspirational' districts of West Bengal.

The Study Area

West Bengal has 19 districts, according to the census of India (2011), where six districts known as North Bengal, situated in the north of the Ganga and 13 districts called South Bengal (Bandyopadhyaya, 1977). NITI AYOOG divided India into Aspirational and Non-Aspirational districts. In West Bengal, five districts are Aspirational, such as Malda, Murshidabad, Dakshin Dinajpur, Birbhum, and Nadia. Among the aspirational districts, only Maldha and DakshinDinajpur are located in the North Bengal. Left of the three aspirational districts (Murshidabad, Birbhum and Nadia) are located in the South Bengal (Fig.-1).

Methodology

Data Source: The study using the data from District Level Household Survey-4, which was conducted in 2012-2013 and published in 2014 by the International Institute for Population Sciences. The facility survey for reproductive and child health conducted by DLHS-4. The survey was conducted at District Hospital (DH), Community Health Care Centre (CHC), Primary Health Care Centre (PHC), and sub-center (SHC) level. This study is concern about the reproductive health facility at the PHC level of aspirational districts. So, this study used PHC level data.

Techniques: The Composite Index is defined as the weighted average of all the indicators, taken as positives indicators, and ranked by the lowest score to the highest. The lower the score the more the development in terms of accessibility and availability and health outcome of reproductive health care and vice-versa.

Standardization of Indicators: The indicators have been standardized to make these comparable, as follows:

$$\text{Standardized or Scaled value} = \frac{x_{\max} - x_i}{x_{\max} - x_{\min}}$$

Where,

x_{\max} = maximum value, x_{\min} = minimum value and x_i = any value

Composite Score: The standardized values of indicators were multiplied with their respective weights to calculate a weighted average score, using the formula given below:

$$\text{Composite Score, } C_i = \frac{\sum(W_i S_i)}{\sum W_i}$$

In the present study, variables are analyzed with the help of arithmetic mean, standard deviation (SD), coefficient of variation (CV), and correlation.

Results and Discussion

Accessibility of Reproductive Health Care Services

Access to health care is a key component of the health of human beings. Accessibility is an important factor for access to health care. Sometimes health facility is available, affordable,

acceptable but not accessible. Basically, in rural areas in developing countries like India, it is a major problem. For spatially reproductive health care, accessibility is much more needed because of the delivery system or other emergency purposes. Distance to PHC from CHC, PHC connected with pucca road, ambulance functionality, facility accessible throughout the year by transport are selected as the indicators for computing the accessibility index.

Based on the availability of those indicators at the PHC level, the composite index is developed. The composite score for the Accessibility varies from 39% to 79% (where higher the value is higher level of accessibility). Out of the top nineteen districts of West Bengal, seven districts have a high level of accessibility, where two districts are aspirational (Table-1). Three aspirational districts have moderate accessibility out of seven districts. Only one district (Maldha) has a low level of accessibility.

Based on the coefficient of variation, the variation is much more of the indicator 'connected with the pucca road,' distance to PHC (less than 5km), 'accessible PHC throughout the year by transport (yes)' in non-aspirational district compared to the aspirational districts. 'Ambulance functional at least once' have better conditions in non-aspirational districts compared to the aspirational districts. The mean value of connected with pucca road says, more than 94% PHC are accessible in aspirational districts. (Table: 2). Fig.1 shows the disparities of reproductive health care access among the aspirational districts and non-aspirational districts. About 36% of districts have good accessibility in non-aspirational districts where 40% of districts have good accessibility in aspirational districts. In the low level of accessibility, five districts are non-aspirational and one district is aspirational.

Availability of Reproductive Health Care Services

For better health care facility not only accessibility, availability of health care services are also play an important role. Access to health care is a combined effect of accessibility, availability, acceptability, and affordability. There have a three-tier of health care facilities (SHC, PHC, and CHC). Sub center (SHC) for 5000 population, primary health care (PHC) consists of 30000 population and community health care (CHC) for 100000 population in India. Primary Health Care is much more important than the others because it is worked at the village level. The indicators of availability; PHC functioning 24x7, At least six beds per PHC, PHC provided Anti-natal Care, At least two ANM per PHC and At least two Medical Officer per PHC, Operation Theatre available at PHC, Normal delivery services availability, Power Availability in PHC, Running Water Availability, etc. are selected for computing the Availability Index for reproductive health care facility at the PHC level.

The composite score for the Availability varies from 13% to 83% (where higher the value indicating the high level of availability). Out of the top nineteen districts, one district has the high-level availability of reproductive health care facilities. Out of seven districts with a low level of accessibility, four districts are aspirational (Table-3). One aspirational district have moderate accessibility out of nine districts. Coefficient of variation (Table- 4), it can be said that the variation is much more of the indicator 'operation theatre availability' and 'at least two ANM per PHC' compare to the other indicators. 'PHC provided



ANC care' and 'providing normal delivery' have a better condition than the other. The average coefficient of variation for all indicators of Availability shows the moderate condition of variation (49% variation). Higher the mean value indicates the higher the variation. The average mean value for accessibility is 62, means 62% PHC are had the availability of reproductive health care facility. Among all indicators of availability, only 5 indicators have a variation of less than 50percent. After analysis Table- 4, it is said that only 2 indicators are available among the PHC with more than 90percentavailability.Fig.2 is showing the reproductive health care availability among the districts of West Bengal. Out of low-level districts, 90% of districts are aspirational.

Health Outcome Reproductive Health Care Services

Health outcome is a key component of social development. It also depends on the human health condition. Reproductive health is important for aging health and even the future generation. The child's health condition also depends on reproductive health. Institutional delivery, Population covered PHC (at least 30000), percent of women who had no post-delivery complication, and Percentage of Women (Mothers) who received any Antenatal Check-up (%) are the indicators which are selected for developing composite health outcomes index. According to the coefficient of variation, the indicators, such as Institutional delivery percent of women who had no post-delivery complication, and Percentage of Women (Mothers) who received any antenatal check-up (%) are more across the districts of aspirational than the non-aspirational districts (Table-5). Fig. 3 showing the disparity of health outcomes of reproductive health in aspirational districts and non-aspirational districts of West Bengal.

Relationship between Accessibility and Availability and Health Outcome of Reproductive Health

There is a positive relation or linkage between access to health care and the health outcome. Increasing access to health care, health outcomes also growing (good). The Correlation matrix showing by table number 6. The relationship between Availability and Health Outcome is low positive ($r=0.12$). The relation between Accessibility and Health Outcome is low positive ($r=0.02$). So, increasing the accessibility and availability of reproductive health care services, health outcomes increases. According to health care accessibility and availability, all the districts of West Bengal are categories into nine-category (Table- 7). Where two aspirational districts (Dakshin Dinajpur, Murshidabad) are fall in the category of high accessibility and low availability of health care services. Nadia has moderate accessibility and moderate availability and Birbhum have a moderate level of accessibility and low availability. Having low accessibility and high availability, Maldha has a moderate health outcome among the aspirational districts of West Bengal.

Conclusion

After discussion, it is clear that the variation of accessibility (CV= 55.6%) of reproductive health care is less than the availability (CV=82.9%) of health care. The variation of accessibility is slightly more in the aspirational districts (CV=54.6%) than the non-aspirational districts (CV=53.7%) of West Bengal. The variation of availability is more in the non-aspirational districts (CV=79.6%) than the aspirational districts (CV=70.9%) of West Bengal. The districts which ranked inaccessibility, not ranked in the availability of health care facility. Exceptionally, Puruliya is only districts that have high accessibility and availability of reproductive health care services. The ranking of non-aspirational districts is better than the aspirational districts. So, there is no enough availability and accessibility of reproductive health care facilities among the aspirational districts as well as the non-aspirational districts of West Bengal for a good health outcome. There is a relationship between the accessibility, availability with health outcomes but not strongly. With the increase of reproductive health care services, health could be improved (Gaans & Dent, 2018). The effect of the availability of health care is more on health outcomes rather than the accessibility of reproductive health care services.

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Table-1: Accessibility of Reproductive Healthcare in West Bengal.

Reproductive Healthcare Facilities (Accessibility Index)	Districts
High	Puruliya, Kolkata, Hugli, Darjiling, Dakshin Dinajpur, Murshidabad, Koch Bihar
Moderate	North Twenty Four Parganas, Nadia, Birbhum, Barddhaman, Pachim Medinipur, Uttar Dinajpur
Low	Haora, Jalpaiguri, South Twenty Four Parganas, Maldah, Bankura, Purba Medinipur

Source: Classified by Author



Table-2: Descriptive Statistics of the Indicators of Healthcare Accessibility.

Indicators of Accessibility of Health Care Services	Mean		Standard Deviation		Co-efficient of Variation	
	Aspirational Districts	Non-Aspirational Districts	Aspirational Districts	Non-Aspirational Districts	Aspirational Districts	Non-Aspirational Districts
Connected with pucca road	90.94	81.47	8.58	19.08	9.44	23.42
Distance to PHC (less than 5km)	39.14	32.76	14.57	15.41	37.22	47.03
Accessible PHC throughout the year by transport (yes)	83.78	88.34	24.12	14.63	28.79	16.56
Ambulance functional at least 1	4.04	11.15	5.78	14.27	143.26	128.01

Source: DLHS-4, 2012-2013

Table-3: Availability of Reproductive Healthcare in West Bengal.

Reproductive Healthcare Facilities (Availability Index)	Districts
High	Puruliya
Moderate	Koch Bihar, Darjiling, Jalpaiguri, North Twenty Four Parganas, PachimMedinipur, Haora, Nadia, Hugli, Bankura
Low	South Twenty Four Parganas, Murshidabad, Birbhum, Maldah, PurabMedinipur, Kolkata, Dakshin Dinajpur, Uttar Dinajpur

Source: Classified by Author

Table-4: Descriptive Statistics of the Indicators of Healthcare Availability.

Indicators of Availability of Health Care Services in percentage	Mean		Standard Deviation		Co-efficient of Variation	
	Aspirational Districts	Non-Aspirational Districts	Aspirational Districts	Non-Aspirational Districts	Aspirational Districts	Non-Aspirational Districts
PHC Functioning 24*7(YES)	29.99	29.28	30.94	17.25	103.16	58.91
Delivery conducted in PHC 24*7 (Yes)	12.78	23.08	6.28	18.57	49.16	80.46
Resuscitation for new born baby (Yes)	7.57	16.87	7.75	15.27	102.47	90.51
PHC provided Anc care (Yes)	16.18	23.78	9.32	14.34	57.59	60.28
Laboratory room availability (Yes)	22.37	33.35	18.63	19.65	83.26	58.93
At least 1 ambulance (Yes)	0.00	2.95	0.00	7.08	0.00	239.78
PHC has free diagnostic services for pregnant women (Yes)	53.80	46.23	16.41	18.03	30.49	39.00
24*4 h water supply (Yes)	71.27	75.53	15.00	17.34	21.05	22.95
Regular power supply PHC (Yes)	70.08	75.59	27.24	25.58	38.88	33.84
Telephone facility in PHC (Yes)	12.42	19.98	19.46	14.43	156.74	72.25
Labour room availability (Yes)	25.64	42.81	16.81	25.14	65.56	58.72
OT availability in PHC (Yes)	12.12	9.92	14.85	8.22	122.45	82.81
At least 6ed	21.49	45.78	12.72	22.61	59.19	49.40
At least 2 Medical Officer	13.15	11.58	3.40	13.01	25.88	112.30
At least 2 ANM	5.35	7.68	7.92	10.32	148.16	134.48

Source: DLHS-4, 2012-2013

Table-5: Descriptive Statistics of the Indicators of Health Outcome

Indicators of Health Outcome	Mean		Standard Deviation		Co-efficient of Variation	
	Aspirational Districts	Non-Aspirational Districts	Aspirational Districts	Non-Aspirational Districts	Aspirational Districts	Non-Aspirational Districts
Pop covered PHC (at least 30000)	63.37	72.55	23.12	19.51	36.48	26.90
Institutional Delivery	74.22	81.13	10.89	10.93	14.67	13.47
% of women Who had no post- delivery complication	48.30	46.88	11.56	11.73	23.94	25.01
Full ANC Check-up	32.58	39.73	6.78	8.27	20.80	20.81

Source: DLHS-4, 2012-2013



Table-6: Correlation Matrix of Healthcare Indices

Correlation Matrix	Availability Index	Accessibility Index	Health Outcome Index
Availability Index	1		
Accessibility Index	0.3651	1	
Health Outcome Index	0.1254	0.0194	1

Source: Calculated by Author

Table-7: Classification of Districts of West Bengal based on the level of Accessibility and Availability

Level of Accessibility and Availability	Districts
High Accessibility and High Availability	Puruliya
High Accessibility and Moderate Availability	Hugli, Darjiling, Koch Bihar
High Accessibility and Low Availability	DakshinDinajpur, Murshidabad, Kolkata
Moderate Accessibility and High Availability	Barddhaman
Moderate Accessibility and Moderate Availability	North Twenty Four Parganas, Nadia, Pachim Medinipur, Haora
Moderate Accessibility and Low Availability	Birbhum, Uttar Dinajpur
Low Accessibility and High Availability	Maldah
Low Accessibility and Moderate Availability	Jalpaiguri, South Twenty Four Parganas, Bankura
Low Accessibility and Low Availability	Purba Medinipur

Source: Classified by Author

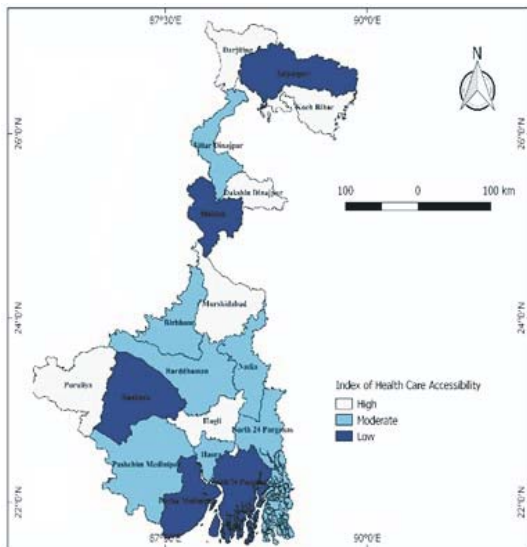


Fig.1: Level of Accessibility of Reproductive Health Care in West Bengal.

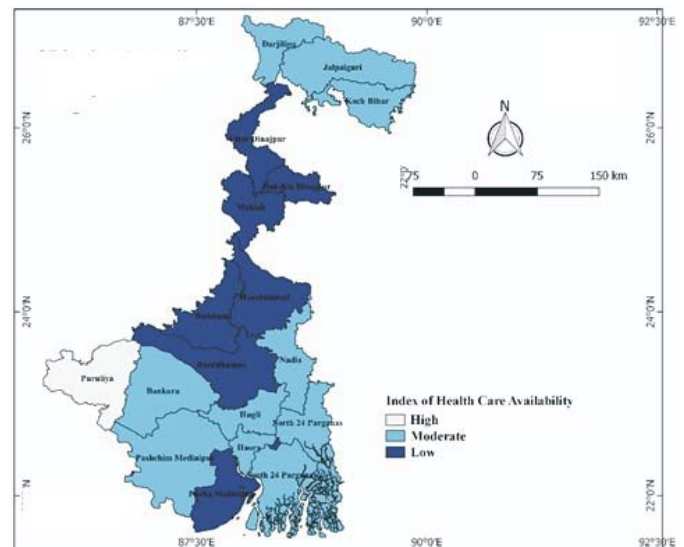


Fig.2: Classification of Districts based on the Level of Accessibility of Reproductive Health Care in Aspirational Districts.

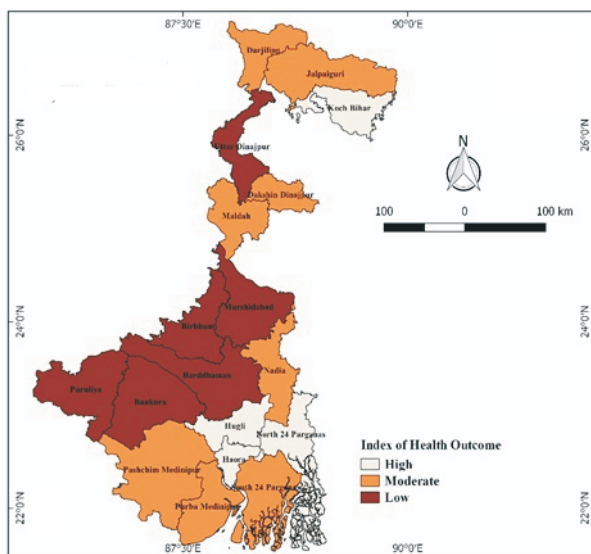


Fig.3: Classifications of Aspirational Districts by the Health Outcome of Reproductive Health Care.



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