



ACCESS TO MATERNAL HEALTH CARE SERVICES IN ODISHA: AN INTER-DISTRICT ANALYSIS

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ABSTRACT

The Government of India has adopted concerted effort to reduce MMR through the flagship programme of National Rural Health Mission (NRHM). However, the situation is very distressing in Odisha. An attempt has been made in this article to trace out regional disparity that exists in the field of 'Access to Maternal Health Care' among the people of Odisha and mapping out the districts of the state with respect to 'Access to Maternal Health Care Services'. We have used data from secondary sources towards this end. For analytical purpose a Composite Index of 'Maternal Health Achievement Index' (MHAI) for each district by integrating different components of maternal health care in a suitable manner has been computed. From empirical study it is observed that coastal districts of Odisha are doing well whereas the tribal-dominated southern districts depict dismal picture. It is also found that the district of Jagatsinghapur is at the top and Nabarangapur is at the bottom of MHAI ladder. Despite the fact that Odisha is improving its position, a lot has to be done.

KEYWORDS: *Maternal health, maternal mortality, family planning, health infrastructure*

I. INTRODUCTION

Maternal health is the health of women during pregnancy, childbirth and during the post-partum period. It encompasses the health care dimensions of family planning, preconception, and prenatal care in order to ensure a positive impact to reduce maternal morbidity and mortality. Key health-care interventions can largely prevent women from dying of pregnancy-related causes. Attendance of antenatal care, delivery in a medical setting and having a skilled health worker at delivery improve maternal health (Adam, 2005; Gertler, 1992; McCaw-Binns, 2007). Even after three decades of the launch of 'Safe Motherhood Campaign' in India in 1987, maternal mortality is still high in India (Starss, 2006). Maternal healthcare remains a major challenge to the global public health system, especially in developing countries (Patton et al, 2010). Despite substantial improvement in maternal health indicators in India, the proportion of adolescent deaths (9 percent) due to pregnancy or during child birth to total maternal mortality is unacceptably high (SRS,2007). Studies have highlighted the relationship between early child bearing and adverse health outcomes potentially causing death among women in the 15-19 age group (Reynolds et al, 2006). Acknowledging the

importance of the issue, the United Nations focused on improving maternal health in the Millennium Development Goals to reduce Maternal Mortality Ratio (MMR) by 75 percent during 1990 to 2015 (UN MDG, 2009).

OBJECTIVE

Against this backdrop an attempt has been made in this article to:

1. Trace out regional disparity that exists in the field of 'Access to Maternal Health Care' among the people of Odisha.
2. Mapping out the districts of the state with respect to 'Access to Maternal Health Care Services'.

II. DATA AND METHODOLOGY

To examine the above stated objectives, data collected from secondary sources, viz., District level Health Survey 2002-04, 2007-08; Annual Health Survey, 2010-11, 2011-12 and 2012-13, District Fact Sheets; Health and Family Welfare Statistics in India 2017, Statistical Abstract of Odisha and Odisha Economic Survey will be used. The period of reference has been taken from 2002-04 to 2012-13. For analytical purpose we compute a Composite Index of 'Maternal Health Achievement Index' for each district by integrating different

components of maternal health care in a suitable manner. This index will reflect the position of the concerned district with respect to the 'access to and utilization of different maternal health care services' provided by the government. The Composite Index is computed by following the method developed by UNDP for computation of Human Development Index. The method is as follows:

Let X_{ij} represent the value of the i^{th} maternal health care indicator in j^{th} district, ($i = 1, 2, \dots, 5; j = 1, 2, 3, \dots, 30$).

Let

$$Y_{ij} = \frac{X_{ij} - \text{Min}_j X_{ij}}{\text{Max}_j X_{ij} - \text{Min}_j X_{ij}} \dots\dots\dots (1)$$

Where, $\text{Min}_j X_{ij}$ and $\text{Max}_j X_{ij}$ are the minimum and maximum of X_{ij}

III. PAST STUDIES

A number of works have been carried out by different researchers in this area. Let us cite a few of these. **Bhatia (1993)** examined various causes of maternal mortality scenario in Southern India. In his work he observed that the factors like socio-economic, cultural, and behavioural factors, demographic, religion, caste, family type, family size, education, occupation of the women and their husbands and marriage age of women affect the maternal health.

By examining the Vital Registration data from 1993 to 1995 in rural areas of Western Maharashtra **Ganatra et al. (1998)** observed that nearly 46.5 percent women died outside the health facility. This is due to poor health as well as rural infrastructure and lack of education.

Barnett et al. (2008) have attempted to find out the reasons of maternal mortality among the indigenous people residing in Jharkhand and Orissa. It is found that deaths in the reproductive age are classified as maternal, prenatal and late maternal. From the study it has been estimated that around 24 percent maternal death occurred during the ante-partum stage, half during the intra-partum stage and rest during the post-partum stage. Further, it is recorded that 25 percent of maternal deaths are due to hemorrhage which is primary cause of women at prenatal stage.

Goldie et al. (2010) in their work have investigated the way that the women can get maximum benefits by minimizing the risk with feasible cost and by evading operational complication through alternative intervention. The interventions like effective family planning and safe abortion reduce the prenatal health risks using United Nations Population Fund's (UNFPA) Reproductive Health Costing Tools Model (RHCTM), reduces the maternal health difficulty with minimum cost which would be advantageous for both rural and urban area. Empirical information from the study on unmet need for birth limiting, birth facilities, skilled birth attendant the study formulated different models for urban and rural area. To get better Emergency Obstetrical Care and Skill Birth Attendants (SBAs) and safe abortion people preferred institutional birth.

The relationship between the proportion of institutional birth and maternal mortality rate to promote institutional birth is analysed by **Randive et al. (2013)**. The authors examined the role and importance of "Janani Surakshya Yojana (JSY)" to promote institutional birth and consequent effect on maternal death. A cash incentive has been adopted in states like Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Madhya

Pradesh, Chhattisgarh, Assam, Rajasthan and Odisha to increase institutional birth. Through Conditional cash transfer (CCT) the women are capable to overcome their financial barrier to get access for institutional care; consequently the risk of maternal mortality would be low.

Montgomery et al. (2014) have reported on about the scenario of maternal mortality and crucial factors responsible for the health care services of women in India. The main cause of the maternal mortality is unskilled attendant and poor health infrastructure in the rural area. It is estimated through national maternal mortality rate rural areas of poorer states had the highest maternal mortality rate. This is due to lack of education, awareness, infrastructure and communication facilities.

IV. MATERNAL MORTALITY RATIO: A BIRD'S-EYE VIEW

Maternal mortality is a strong negative indicator of women's status. The likelihood of dying during pregnancy or childbirth is intricately related to the status of women, socioeconomic set up and quality of overall health system of a country. Each year, an estimated 529000 maternal deaths occur in the world. The global ratio of maternal deaths to live births or maternal mortality ratio, the most commonly used indicator of maternal mortality, is 400 per 1000000 live births. This measure captures the probability of dying once a woman is pregnant and so is also referred to as the obstetric risk.

Maternal Death: Global Scenario

Maternal deaths, too often solitary and hidden events, go uncounted. This is not because of a lack of clarity in defining a maternal death, but because of an inherent weakness in the health information and recording systems. A majority of maternal deaths occur in Asia (253,000) and Africa (251,000). Thirteen countries account for 67 percent of all maternal deaths. India has the dubious distinction of having the highest estimated number of maternal deaths in any country (136,000). Developed countries have a maternal mortality ratio of 20 per 100000 live births. Maternal deaths are not uniformly distributed throughout the world. In 2000, the maternal mortality ratio for sub-Saharan Africa was estimated to be nearly 1000 per 1000000 live births: almost twice that of south Asia, four times as high as in Latin America and the Caribbean and nearly 50 times higher than in industrialized countries. Most maternal deaths occur in sub-Saharan Africa, with a staggering lifetime risk of one in 16, and in south Asia with a lifetime risk of one in 43. The lowest estimate of lifetime risk is nearly one in 30000 for Sweden, and the highest is one in six for Afghanistan and Sierra Leone. This comparison between the burden of maternal mortality in developed and developing countries has long been cited as the "largest discrepancy of all public-health statistics" and is substantially greater than that for child or neonatal mortality.

India and its neighbour (Sri Lanka)

Safe motherhood practice is critically important in our country that is experiencing high maternal mortality ratio. India, in spite of rapid economic progress is still far away from the goal of lowering maternal mortality to less than 100 per 100,000 live births. The target of Millennium Development Goal was to reduce the maternal mortality ratio by three quarters between 1990 and 2015 and now the 2030 agenda of Sustainable Development Goal (SDG) to bring the MMR to a level of 70. According to the latest SRS estimates, the MMR of India was 437 per 100,000 live births in 1990-91, which came down to 167 in 2009 and 130 in 2014-16.

When Sri Lanka gained independence in 1948, its maternal mortality ratio was at 630. The MMR in Sri Lanka has shown a marked decline and as per estimates for the year is pegged at 57. Other indicators of maternal health are equally impressive, 96 percent of deliveries are attended by trained personnel and 92 percent of all live births take place in Government hospitals. These gains have been achieved through improving both geographic and economic access to institutional health services, availability of emergency obstetric care and non-health strategies like female education and women empowerment.

The Government of India has adopted concentrated effort to reduce MMR through the flagship program National Rural Health Mission (NRHM) in 2005 later on converted to National Health Mission (NHM) in 2013. NRHM/NHM initiatives include: Second Round of Reproductive and Child Health program, the Janani Surakshya Yojana (JSY) and the appointment of Accredited Social Health Activist (ASHA) in every rural habitation.

Odisha Scenario

The situation is very distressing in Odisha, at present MMR is 222 per 100000 live births, the sixth highest among Indian states. Till now Odisha has not come to main stream as compared to states like Kerala (61), Tamil Nadu (61) and Maharashtra (68) those who have made remarkable progress in 2011-13. The MMR is the highest in Assam (300) closely followed by Uttar Pradesh (285) and Rajasthan (244). Maternal health care is vulnerable with overburdened

hospitals, weak peripheral facilities and referral systems, and less number of health workers. These factors limit access to health services, contributing to neglect, mistreatment, and poor quality of care, consequently high MMR in Odisha.

V. EMPIRICAL OBSERVATION

To examine the spatial disparity in maternal health care services at the district level in Odisha, we have considered different indicators such as mothers who received at least one Tetanus Toxoid (TT) injection, mothers who consumed Iron and Folic Acid (IFA) for 100 days or more, mothers who had full antenatal checkup, institutional delivery, delivery at home conducted by skilled health personnel etc.

As shown in Table-I the percentage of mother who have taken Tetanus Toxoid (TT) injection during the antenatal period is quite encouraging. The percentage change of mother who have taken Tetanus Toxoid (TT) injection across the districts during the period 2002-04 to 2012-13 is remarkable. This is due to improve in health infrastructure and good initiative through different schemes by the state government to protect the pregnant mothers. The overall percentage in TT injection to the pregnant mother is above 90 percent. However, data shows that there is a wide variation exists among the districts of Odisha. It is observed from Table-I that there is good coverage of TT injection to the pregnant mothers to make them immune from disease.

Table I: Mothers who received at least one Tetanus Toxoid (TT) injection (%)

District	2002-04	2007-08	2010-11	2011-12	2012-13
Angul	78.6	71.4	89.7	93.1	96.9
Balangir	91.4	100	97.7	98.6	99.2
Balasore	85.6	97.7	97.2	98.0	99.1
Bargarh	90.2	89.4	97.6	98.8	99.2
Baudh	91.7	84.9	95.1	95.8	96.3
Bhadrak	91.6	77.8	96.5	97.5	98.3
Cuttack	93.8	85.1	97.0	97.5	98.1
Debagarh	86.3	57.7	97.1	97.3	98.0
Dhenkanal	91	72.2	96.1	96.8	98.0
Gajapati	83.5	59.5	91.6	92.1	95.7
Ganjam	75	80.2	92.7	93.6	95.5
Jagatsinghpur	82.4	92.2	97.0	97.7	98.4
Jajpur	85.5	91	96.9	97.8	98.1
Jharsuguda	93.3	87.3	98.6	99.0	99.5
Kalahandi	86.4	74.6	96.5	94.2	93.3
Kandhamal	84.6	68.2	93.1	95.6	98.6
Kendrapara	92	89.9	97.3	98.4	99.2
Keonjhar	77	80	95.8	96.9	97.7
Khordha	90.7	84.5	95.1	95.6	96.8
Koraput	76.5	79.9	93.3	95.4	96.8
Malkangiri	68.8	81.4	89.7	90.6	93.7
Mayurbhanj	89.1	95.2	96.2	97.9	99.1
Nabaragapur	78	89.4	82.8	92.9	93.5
Nuapada	80.7	86.5	93.9	95.2	97.2
Nayagarh	84.1	71.9	91.5	93.2	96.5
Puri	89.3	87.7	95.3	96.6	98.0
Rayagarh	85.7	80.8	95.3	96.1	97.8
Sambalpur	91.9	82.9	97.0	97.5	98.3
Sonapur	87.4	85	96.6	96.8	97.7
Sundergarh	85.6	82	96.0	97.2	98.2
Odisha	84.8	82	95.1	96.6	97.6

Source: Annual Health Survey 2010-11, 2011-12 & 2012-13 and District Level Household Survey 2002-04 & 2007-08, Government of Odisha.

Table-II shows the percentage of pregnant women who have consumed Iron and Folic Acid (IFA) tablets for 100 or more days. As per the survey conducted in different period it is clear that the percentage change of IFA for the women in the antenatal period is decreased in Cuttack district which is considered one of the developed districts of Odisha. It is reported 19.5 percent in 2012-13 which is much less than the achievement of 43.3 percent in the year 2002-04. This may be due to the negligence of the persons associated with health

sector or due to the lack of interest of the illiterate working women residing in the district. On the contrary in the Jajpur district of Odisha the percentage of pregnant women consumed IFA has been increased from a low of 6.9 percent in 2002-04 to a high of 57.5 percent in 2012-13. This is because poor people of the district may not afford the cost of private treatment and depend on government sponsored health schemes. It is observed from the Table-II that the overall scenario of IFA in Odisha is still poor.

Table II: Mothers who consumed Iron and Folic Acid (IFA) for 100 days or more (%)

District	2002-04	2007-08	2010-11	2011-12	2012-13
Angul	18.4	44.4	21.6	26.0	31.2
Balangir	30.9	41.3	14.1	19.3	22.2
Balasore	25.5	45.9	12.7	17.4	23.8
Bargarh	13.2	41.3	19.1	20.2	20.2
Baudh	39	49.5	13.6	20.6	26.2
Bhadrak	21.4	58.4	22.4	28.8	35.1
Cuttack	43.3	44.1	12.4	15.9	19.5
Debagarh	22.9	71.6	30.1	33.6	40.8
Dhenkanal	28.9	43.3	11.7	19.2	19.7
Gajapati	26.5	70.2	10.3	19.7	23.7
Ganjam	15.6	41	15.1	26.1	35.3
Jagatsinghpur	22.8	50.5	30.7	31.7	32.7
Jajpur	6.9	45.4	39.0	46.3	57.5
Jharsuguda	27.2	50.7	6.0	14.7	26.9
Kalahandi	25.3	58.2	28.6	37.3	42.6
Kandhamal	30.7	58.7	25.4	27.0	26.8
Kendrapara	23.7	44.8	36.7	37.7	42.3
Keonjhar	22.5	45.4	20.3	23.7	27.3
Khordha	21.5	41.7	25.3	27.1	28.8
Koraput	24.4	47.6	27.9	32.5	38.7
Malkangiri	16	55.4	25.7	24.8	22.1
Mayurbhanj	30.6	54	12.2	17.5	29.2
Nabaragapur	27.4	26.4	30.4	35.7	41.5
Nuapada	17.7	53.7	20.8	30.6	41.6
Nayagarh	29.1	47.8	34.0	44.6	56.7
Puri	24.7	34.7	21.8	25.7	31.0
Rayagarh	30.4	38	17.0	21.5	30.2
Sambalpur	27	55.8	25.9	34.0	39.9
Sonapur	20.3	55.7	18.6	22.5	25.2
Sundargarh	25.8	47.2	16.9	26.6	36.6
Odisha	24.3	48.1	22.4	28.1	33.6

Source: Annual Health Survey 2010-11, 2011-12 & 2012-13 and District Level Household Survey 2002-04 & 2007-08, Government of Odisha.

So far as pregnant mothers who had undergone full antenatal checkup is considered, out of 30 districts of Odisha 16 districts have the attainment is below the state average. These districts are Angul, Bargarh, Bhadrak, Ganjam, Jajpur, Kalahandi, Kandhamal, Kendrapara, Keonjhar, Khordha, Koraput, Malkangiri, Nabaragapur, Nayagarh, Sonpur, and

Sundargarh. It is clearly revealed from the table that though the districts like Jajpur and Kalahandi are under developed districts, yet the percentage change in full antenatal health care is praiseworthy. It is recorded as 54.6 percent and 41.4 percent for the Jajpur and Kalahandi districts respectively (Table-III).

Table III: Mothers who had full Antenatal Checkup (%)

District	2002-04	2007-08	2010-11	2011-12	2012-13
Angul	14.2	16	18.6	22.7	27.8
Balangir	21.4	29.5	11.8	17.7	21.1
Balasore	16.4	33.7	9.7	14.8	21.1
Bargarh	9.4	24.9	17.5	18.4	18.8
Baudh	20	26.6	11.8	17.6	23.7
Bhadrak	12	29.2	17.2	22.9	27.5
Cuttack	33	24.5	10.6	14.1	17.9
Debagarh	17.5	22.5	26.7	29.8	36.5
Dhenkanal	24.1	15.8	10.3	16.9	18.2
Gajapati	19.6	22.7	7.9	16.6	21.1
Ganjam	11.2	18.7	13.0	23.2	31.9
Jagatsinghpur	19.6	39.4	27.2	28.5	29.5
Jajpur	3.7	28.3	36.0	43.5	54.6
Jharsuguda	17	32.2	5.4	13.4	24.9
Kalahandi	15.1	26.4	27.9	36.1	41.4
Kandhamal	12.8	14.6	20.1	21.8	20.2
Kendrapara	15.5	24.8	32.1	32.5	37.8
Keonjhar	13.7	15.8	16.7	21.1	25.9
Khordha	13.4	23.2	18.2	20.8	23.8
Koraput	13	16.1	24.9	28.8	35.0
Malkangiri	7.5	13.2	19.8	18.8	16.8
Mayurbhanj	17.8	34.1	10.3	14.8	25.6
Nabaragapur	14.3	11.7	29.3	33.4	38.4
Nuapada	10.7	29.6	16.1	20.9	31.4
Nayagarh	16.3	14.7	29.6	37.1	47.0
Puri	19.1	19.8	16.8	20.0	25.0
Rayagarh	19.7	13.7	14.3	18.4	27.3
Sambalpur	22.8	33.6	22.7	29.2	33.6
Sonpur	13.8	31.4	17.1	20.7	24.1
Sundargarh	14.5	26.4	15.6	24.3	33.5
Odisha	15.7	23.2	19.5	25.7	31.6

Source: Annual Health Survey 2010-11, 2011-12 & 2012-13 and District Level Household Survey 2002-04 & 2007-08, Government of Odisha.

One of the important goals of the Reproductive and Child Health Programme (RCHP) is to encourage deliveries with safe conditions under the supervision of trained health professionals. The provision of institutional delivery services through RCHP in the government health institutions are playing crucial role to improve the maternal health and reduce the maternal and infant mortality rate. It is being considered that in institution delivery the risk for both mothers and new born babies is less than the delivery at home. The main reason for not going for institutional delivery is the lack of

communication and infrastructure facilities in the rural area. It is observed from Table-IV that the profile of institutional delivery across the districts in Odisha is quite satisfactory. The situation has been improved over the period. All most all the districts depict a positive movement in this field, though the change is not uniform. The institutional delivery in Gajapati, Koraput, Malkangiri and Nabaragapur is below the state average. This may be either due to lack of communication facility or on account of lack of awareness among the indigenous people residing in this area.

Table IV: Institutional Delivery (%)

District	2002-03	2007-08	2010-11	2011-12	2012-13
Angul	37.1	43.7	72.8	79.6	84.6
Balangir	37.9	51.7	69.7	75.8	80.1
Balasore	28	52.6	76.5	83.2	86.3
Bargarh	32.1	43.7	79.0	84.1	86.5
Baudh	34.4	28.8	55.8	62.9	67.7
Bhadrak	35.2	42.7	68.9	75.5	81.8
Cuttack	52.2	68.3	86.5	88.5	91.3
Debagarh	32.4	44.5	69.2	74.3	78.3
Dhenkanal	47.6	46.9	73.4	80.9	84.1
Gajapati	21.3	19.7	59.3	62.6	66.1
Ganjam	32.7	55.4	83.0	85.7	87.6
Jagatsinghpur	61.5	79.7	90.4	93.0	95.9
Jajpur	36.2	61.6	82.2	85.4	88.6
Jharsuguda	37.2	64.9	78.4	82.3	85.8
Kalahandi	30.6	27.5	62.7	64.5	67.0
Kandhamal	32.4	25.3	67.5	72.8	80.4
Kendrapara	42.3	46.9	65.8	74.0	81.8
Keonjhar	19.9	34.3	59.4	67.3	71.3
Khordha	52.9	17.8	88.3	90.8	92.9
Koraput	19.3	18.9	44.1	50.5	53.4
Malkangiri	10.7	14.8	42.8	45.5	52.6
Mayurbhanj	32.4	43	68.6	77.0	79.7
Nabaragapur	25.1	15.9	31.8	45.1	53.6
Nuapada	38.3	28.8	59.8	65.8	70.4
Nayagarh	24.9	44.1	80.8	85.2	89.1
Puri	60.6	63.6	91.6	94.0	95.5
Rayagarh	20.2	18.3	55.9	59.3	62.3
Sambalpur	44.3	56.6	78.0	80.2	83.2
Sonapur	29.8	40.9	74.8	79.7	83.4
Sundergarh	32.2	45.3	69.6	75.4	80.9
Odisha	34.4	44.1	71.3	77.7	80.8

Source: Annual Health Survey 2010-11, 2011-12 & 2012-13 and District Level Household Survey 2002-04 & 2007-08, Government of Odisha.

Table-V shows the type of assistance during home delivery. Generally, assistance during delivery can be provided by medical staff (doctors, ANM/nurse/LHV, TBA, un-trained *dhai*), and relatives/friends. But in the remote rural areas these types of services are not available. Pregnant mothers depend only on *Dhai* (untrained health worker) during the delivery in

the rural areas. The practice adopted by the *Dhai* is very unsafe for both mothers and new born babies. It is recorded that the percentage of delivery at home in the presence of trained / skilled health personnel has increased over the period in Odisha. However, in Boudh, Ganjam, Nayagarh, Puri and Raygada districts the situation has been reversed.

Table-V: Delivery at Home Conducted by Skilled Health Personnel (%)

District	2002-03	2007-08	2010-11	2011-12	2012-13
Angul	8.1	22.1	10	11.6	14.9
Balangir	27.4	10.5	37.8	33.6	36.8
Balasore	13.3	34	16.9	23	24.7
Bargarh	27.4	22.1	45.7	38.3	40.7
Baudh	16.3	9	15.2	13.6	15
Bhadrak	15.6	3.6	20.3	23.6	25.9
Cuttack	10.8	3	26.9	27.9	34.1
Debagarh	11	10.2	15.4	14.9	13.8
Dhenkanal	10.6	5.9	11.3	13.8	17.9
Gajapati	14.5	6.7	10.7	13.9	27.6
Ganjam	20.1	3.3	21.1	18.1	19.4
Jagatsinghpur	21.7	3.3	36.3	38.3	30.4
Jajpur	12.1	2.9	15.3	13.2	14.2
Jharsuguda	37.3	14.4	46.2	43.1	45
Kalahandi	12.5	14.2	25.9	24.7	21.8
Kandhamal	14.3	1.5	17.1	14.7	18
Kendrapara	18.6	10.3	35.2	40.2	41.1
Keonjhar	6.9	4.6	15.3	19.2	22.2
Khordha	11.5	5.8	21.5	21.4	26.2
Koraput	4.3	1.8	20	22.6	33.1
Malkanagiri	6.9	0.6	15.2	14.5	18.1
Mayurbhanj	7.4	2.6	12.8	17.3	24.3
Nabaragapur	10.2	2.7	11.2	19.6	13.8
Nuapada	9.7	16.6	26.6	27.9	24.7
Nayagarh	14	4.3	7.8	6.7	9.5
Puri	17.9	5.8	19.8	19.4	14.3
Rayagarh	17.2	3.1	15	13	12.5
Sambalpur	24.7	11.3	32	24.6	25.8
Sonapur	15	13.7	27.4	27.5	24
Sundargarh	22.4	6.7	22.1	24.9	29.7
Odisha	14.2	6.7	20.5	22.2	24.5

Source: Annual Health Survey 2010-11, 2011-12 & 2012-13 and District Level Household Survey 2002-04 & 2007-08, Government of Odisha.

Table VI reflects district-wise maternal health achievement index across the districts of Odisha along with its rank over the entire period of analysis. Among the 30 districts of Odisha, Cuttack remains top in 2002-03 with index value of 0.803. However at the gap of 5 years its position reduced to a level of 12th rank. In the next quinquennium it is

able to recover its position and became 3rd. Another coastal district Jagatsinghpur began its journey with a rank of 8th and reached at the top. Koraput and Malkanagiri, two tribal dominated southern district of Odisha, remain at the bottom of the ladder throughout the period of analysis. Two district Baudh and Dhenkanal not able to keep up their earlier position in later point of time.

Table VI: District-wise Maternal Health Achievement Index and its Rank

District	CMHAI (2002-03)	Rank	CMHAI (2007-08)	Rank	CMHAI (2010-11)	Rank	CMHAI (2011-12)	Rank	CMHAI (2012-13)	Rank
Angul	0.340	25	0.393	19	0.327	27	0.285	27	0.331	25
Balangir	0.681	4	0.567	5	0.540	16	0.490	14	0.517	12
Balasore	0.446	19	0.751	1	0.538	17	0.490	15	0.443	15
Bargarh	0.469	15	0.529	8	0.630	8	0.594	8	0.594	6
Baudh	0.637	6	0.432	16	0.451	21	0.387	21	0.336	24
Bhadrak	0.484	14	0.467	13	0.435	23	0.394	20	0.394	20
Cuttack	0.803	1	0.480	12	0.747	3	0.687	3	0.689	3
Debagarh	0.448	17	0.427	17	0.412	24	0.376	23	0.303	26
Dhenkanal	0.621	7	0.304	23	0.368	26	0.386	22	0.389	21
Gajapati	0.437	21	0.333	21	0.323	28	0.284	28	0.405	18
Ganjam	0.331	26	0.363	20	0.658	7	0.508	12	0.425	17
Jagatsinghpur	0.610	8	0.686	2	0.924	1	0.939	1	0.882	1
Jajpur	0.281	27	0.519	10	0.386	25	0.372	24	0.429	16
Jharsuguda	0.703	2	0.633	3	0.840	2	0.846	2	0.805	2
Kalahandi	0.448	18	0.447	14	0.585	12	0.398	19	0.192	29
Kandhamal	0.465	16	0.251	26	0.659	6	0.549	10	0.578	9
Kendrapara	0.570	9	0.485	11	0.600	11	0.596	7	0.592	7
Keonjhar	0.272	28	0.303	24	0.497	19	0.437	18	0.386	22

Khordha	0.531	10	0.318	22	0.676	4	0.602	6	0.590	8
Koraput	0.255	29	0.250	28	0.451	20	0.324	26	0.263	27
Malkangiri	0.092	30	0.251	27	0.232	29	0.072	30	0.159	30
Mayurbhanj	0.493	12	0.560	6	0.623	9	0.628	5	0.626	5
Nabaragapur	0.351	23	0.166	30	0.177	30	0.276	29	0.229	28
Nuapada	0.344	24	0.525	9	0.660	5	0.657	4	0.649	4
Nayagarh	0.445	20	0.296	25	0.444	22	0.339	25	0.376	23
Puri	0.646	5	0.419	18	0.546	15	0.489	16	0.489	13
Rayagarh	0.489	13	0.201	29	0.510	18	0.451	17	0.403	19
Sambalpur	0.682	3	0.600	4	0.613	10	0.504	13	0.463	14
Sonapur	0.431	22	0.560	7	0.553	14	0.551	9	0.544	11
Sundargarh	0.506	11	0.444	15	0.560	13	0.548	11	0.555	10

Source: Annual Health Survey 2010-11, 2011-12 & 2012-13 and District Level Household Survey 2002-04 & 2007-08, Government of Odisha.

Table VII describes the performance of districts of Odisha on the basis of the MHAI score. 15 districts are placed on the frontier of Improvement, but 12 districts placed themselves in the the margins of deterioration. However, there is no change is observed in case of Angul, Jharsuguda and Malkangiri.

Table VII: Performance of District on Maternal Health Achievement Index ladder

Improvement	Deterioration	No Change
Balasore, Bargarh, Gajapati, Ganjam, Jagatsingpur, Jajpur, Kandhamal, Kendrapara, Keonjhar, Khordha, Koraput, Mayurbhanj, Nuapada, Sonapur, Sundargarh	Balangir, Baudh, Bhadrak, Cuttack, Debagarh, Dhenkanal, Kalahandi, Nabarangapur, Nayagarh, Puri, Rayagarh, Sambalpur,	Angul, Jharsuguda, Malkangiri

Source: Computed from Table VI

With respect to maternal health achievement index (MHAI) Table VIII shows that the top 5 positions are occupied either by the coastal districts of Odisha or by industrially rich district Jharsuguda. This is due to the better health infrastructure and communication facilities. It is worth mentioning that though Nuapada is a backward district but it

carved out a position in top 5 districts during 2010-11 to 2012-13. This is possible only because of the reason that the performance of the district in the field of TT injection and institutional delivery is quite impressive. On the contrary districts like Malkangiri, Nabarangapur and Koraput always remain at bottom.

Table VIII: Mapping of Districts with respect to Maternal Health Achievement Index

Year	Top 5 Districts	Bottom 5 Districts
2002-04	Cuttack, Jharsuguda, Sambalpur, Balangir, Puri	Malkangiri, Koraput, Keonjhar, Jajpur, Ganjam
2007-08	Balasore, Jagatsinghpur, Jharsuguda, Sambalpur, Balangir	Nabarangpur, Rayagarha, Koraput, Malkangiri, Kandhamal,
2010-11	Jagatsinghpur, Jharsuguda, Cuttack, Khordha, Nuapada	NabarangourMalkangiri, Gajapati, Anugul, Dhenkanal
2011-12	Jagatsinghpur, Jharsuguda, Cuttack, Nuapada, Mayurbhanj	Malkangiri, Nabarangpur, Gajapati, Anugul, Koraput
2012-13	Jagatsinghpur, Jharsuguda, Cuttack, Nuapada, Mayurbhanj	Malkangiri, Kalahandi, Nabarangpur, Koraput, Deogarh

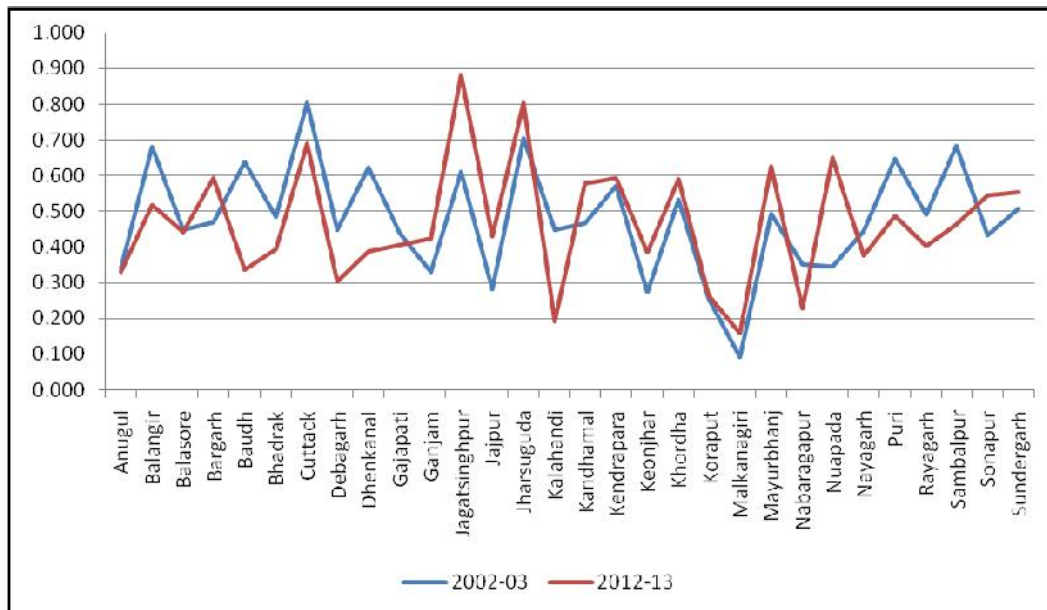
Source: Computed from Table VI

The trend of maternal Health Achievement Index from the period of 2002-03 to 2012-13 is depicted in Figure-1. It is clearly visible from the figure that there is wide fluctuation in the maternal health care service over the period. To make it smooth and improve we have to concentrate on the creation

of health infrastructure, availability of human resource in the field of health services, and information dissemination through awareness generation among the public in tribal-dominated backward districts namely Kalahandi, Koraput, Malkangiri, Nabarangapur, Gajapati, Kandhamal and Jajpur.

Fig. I

Trend of Composite Maternal Health Achievement Index (MHAI) 2020-03 vs. 2012-13



Source: Computed from Table VI

CONCLUSION

It can be concluded from the analysis that the overall scenario of maternal health care system in Odisha is fluctuating over the years. In backward districts such as Jajpur, Kalahandi, Koraput and Nabarangapur, maternal health care system is still a challenge to policy makers. In these districts, on account of poor infrastructure and communication facilities, people are still in the dark. The main reasons for lagging behind of these tribal-dominated areas are education and awareness; consequently the maternal health care schemes do not reach them. It is also observed that the coastal districts such as Cuttack and Jagatsinghpur have performed positively as compared to other districts of Odisha. But in the hilly areas like Koraput, Nabarangapur and Kalahandi geographical barriers play hindrance to achieve the desired result.

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