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Child Malnutrition and Child Health: A Study on India and Odisha

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ABSTRACT
BACKGROUND
Malnutrition is very high among the children from 0-5 years. Nutritional deficiency in children worsened in last five years in Odisha. As per the NFHS-5 statistics, highest spike has been recorded among children where 64.2%are anemic as compared to 44.6%in NFHS-4.31% children are stunted,18.1% wasted and 29.7% are underweight in Odisha according to NFHS-5. Prevalence of underweight was 35.8%, Wasting was 21% and stunting was 38.4% in India and in Odisha it is 34.4%, 20.4% and 34.1% respectively as per NFHS-4 data. Nutritional status among children of Balasore district among the coastal districts and Boudh district among the noncoastal districts of Odisha is worst according to NHFS-4 data.
OBJECTIVE
To study the status of child malnutrition in India and Odisha and to compare nutritional status of children between Balasore and Boudh district of Odisha.
METHODS
The data collected from the secondary sources and were analysed by using descriptive statistics. In the present work secondary data were collected from NFHS-III (2005-06) and NFHS-IV (2015- 16) and also from the Department of Health and Family Welfare, Govt. of Odisha. The State and central Govt. report on women and child development. The collected data are to be presented in tables and charts. Simple statistics such as mean, percentage, mean deviation, standard deviation etc. are also to be calculated.
RESULTS
NFHS-3 and it decreased to 38% in NFHS-4.Percentage of children wasted under 5 years of age was 20% in NFHS-3 but it increased to 21% in NFHS-4.Percentage of underweight children below 5 years of age were 43% in NFHS-3 which declined to 36% in NFHS-4. percentage of children whose birth was registered in India is less in comparison to Odisha. IMR and U5MR is also less that is 40% and 48% in Odisha in comparison to India where IMR is 41%and U5MR is 50%.If we will see the NFHS-3 data then IMR of Odisha was higher at 65% and U5MR was higher at 91% in comparison to IMR and U5MR rate of India.
CONCLUSION
From NFHS-4(2015-16) it is clear that among coastal districts of Odisha, Balasore is highly suffering from child malnutrition and among non-coastal districts Boudh suffers from severe child malnutrition. ,NFHS-4 data shows an improvement in the maternal care indicators for Odisha in comparison to India.Comparison between NFHS-3 and NFHS-4 data for Odisha as well as India shows an increasing trend for maternal care indicators in last 10 years.
KEYWORDS: *Malnutrition,Stunting,Wasting,Underweight*

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I. Introduction

Malnutrition is a universal public health problem in both children and grown-ups encyclopedically. It isn't only a public health concern but it's a manacle to global poverty eradication, productivity and profitable growth. By barring malnutrition, it's estimated that 32 of the global complaint burden would be removed. As a wide serious problem affecting children in developing countries, progress towards diving the different forms of malnutrition remains fairly slow. Malnutrition occurs due to an imbalance in the body, whereby the nutrients needed by the body and the quantum used by the body don't balance. There are several forms of malnutrition and these include two broad orders videlicet undernutrition and over nutrition. Undernutrition manifests as wasting or low weight for height (acute malnutrition), stunting or low height for age (habitual malnutrition), light or low weight for age, and mineral and vitamin scarcities or intemperateness. Over nutrition includes fat, rotundity and diet- related non-communicable conditions (NCDs) similar as diabetes mellitus, heart complaint, some forms of cancer along with stroke. Malnutrition is an important global issue presently, as it affects all

people despite the terrain, socio-profitable status, coitus and gender, lapping homes, communities and countries. Anyone can witness malnutrition but the most vulnerable groups affected are children, adolescents, women, as well as people who are vulnerable-compromised, or facing the challenges of poverty.

According to the World Health Organization (WHO), 462 million grown-ups are light, while1.9 billion grown-ups are fat and/ or fat. In children under 5 age, 155 million are stunted, 52 million are wasted, 17 million are oppressively wasted and 41 million are fat and/ or fat.

It's vital that malnutrition is addressed in children as malnutrition instantiations and symptoms begin to appear in the first 2 times of life. Coinciding with the internal development and growth ages in children, protein energy malnutrition (PEM) is said to be a problem at periods 6 months to 2 years. Therefore, this age period is considered a window period during which it's essential to help and/ or manage acute and habitual malnutrition instantiations. Child as well as motherly malnutrition together have contributed to 3.5 million periodic deaths. Likewise, children lower than 5 years of age have a complaint burden of 35.

In 2008,8.8 million global deaths in children lower than 5 years old were due to light, of which 93 passed in Africa and Asia. Roughly one in every seven children faces mortality before their fifth birthday in sub Saharan Africa (SSA) due to malnutrition.

The frequencies of malnutrition and its mischievous goods on children in India is intimidating. In a report published by UNICEF, it was noted that malnutrition was the cause of 69 of deaths of children under the age of five in India, also noting that within the under-five age type, every alternate child suffers from some form of malnutrition (ET 2019). Stunting, a major point of concern for India, can affect in irrecoverable physical damage in children and piecemeal from the physical suffering caused by undernutrition. It's known to discourage brain development which in turn results in multitudinous downsides- lowered internal capability and increased pitfalls of nutrition- related habitual conditions being just two exemplifications (UNICEF).

India acquires a larger stake of stunted children in the world (40.6 million), a third of the global quantum of stunted children under the age of five (UNICEF). Bihar, Madhya Pradesh, Maharashtra and Uttar Pradesh alone are where further than 50 of stunted children live, despite India being a country with 29 different other countries (UNICEF). The possibilities of catching and spreading waterborne or diarrheal conditions are boosted due to attainability of clean and safe water in homes and lack of regular handwashing. This has led to nearly diarrheal deaths amongst children under the age of five in India (UNICEF).

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Odisha is the eleventh largest state in India with roughly 42 million people, utmost of them live in pastoral areas with only 17 per cent living in civic regions. It has the third largest ethnical population in the Country. As per Census 2011, 40 per cent of the population in Odisha are Slated Lines and Slated Gentries. The state is home to 13 particularly vulnerable ethnical groups. In 2016-17 the growth rate as per the Odisha Economic Survey was pegged at10.4 per cent. Despite the positive profitable growth,32.6 per cent of the population still lives below the poverty line.

The State is disaster prone to cyclones, cataracts and failure. As numerous as 14 out of 30 sections are vulnerable to cataracts, cyclones in the littoral region and 11 sections in the western part of the state are prone to failure. The west, north and south is largely ethnical, hilly and forested, while the east has rich littoral plains with six major gutters.

Odisha has the loftiest new born mortality rate in the country at 32 per 1000 live births (Sample Registration System 2016) with steep civic-pastoral difference. Gender inequity, especially in smaller admissions of womanish new-borns to the special new born care units, is also a concern. As per the National Family Health Survey (NFHS) 4, Odisha has the loftiest birth rate of 13 per 1000 live births in India. The motherly mortality rate is 180 motherly deaths per live births. Around children remain incompletely immunized oral-immunized, maturity of these in 14 ethnical dominated sections.

Food instability remains a sensitive threat, especially among the most underprivileged ethnical groups, with ethnical children bearing advanced burden of suppressing and severe wasting. The poor nutritive status of women and adolescent girls remains a significant contributor to child stunted.

Children's vulnerability among utmost marginalized groups deepens with high situations of poverty, rigid social morals and artistic practices, relegation of families, frequent natural disasters and the presence of Left- sect unreasonableness. Children in child care institutions, children in need of care and protection and those in conflict with law bear special attention. Child labour is predominant as well as violence against children is a major prevalence.

Odisha has reached high gross/ net registration rates in grades 1-5 and reduced the number of out-of-academy children among the 6-14 age group. Its challenge remains the quality of literacy and the sharp drop-off in registration at the middle and secondary academy situations. Strengthening the tutoring process and the quality of sale between preceptors and scholars is an important demand, while the state continues to emphasize

regular attendance and getting all out-of- academy children back to academy. 20 per cent of children progressed 3-6 times don't pierce any type of pre-school. (UNICEF).

The overall sanitation content has increased yet people still defecate in the open in pastoral areas. Bringing about gesture change towards promoting restroom operation and conservation remains a challenge for the State. While utmost homes have access to a bettered drinking water source, only 19 per cent of homes have access to drinking water installations within the ménage demesne.

Odisha is one of those Empowered Action Group States, or eight socioeconomically backward States of India, has done remarkably well in health and nutrition issues over the once two decades. Its child mortality rate has significantly declined. Its under-five mortality rate nearly halved in the National Family Health Survey (NFHS)-4 from NFHS-3. It has seen a steep decline in suppressing in children under five. Anemia in children and pregnant women has also dropped since NFHS-3. Prenatal care and institutional deliveries have shown good enhancement. All these changes have been possible with backing, policy support, robust leadership, and inventions in delivery of services.

Still, despite progress in child and motherly pointers, Odisha continues to be agonized by a high position of malnutrition. There's stark variability across sections in suppressing ranging from as high as 47.5% in Subarnapur, to a low of 15.3% in Cuttack. Wasting is high in 25 out of 30 sections. Nearly two quarter of the under-five children from ethnical communities in Odisha are light, and 46 are stunted. The child mortality rate among ethnical is the fourth loftiest in Odisha, after Madhya Pradesh, Rajasthan and Chhattisgarh.

The frequency of stunting and wasting among the children lower than 5 years of age are 34.1 and20.4, independently. Nearly, 8 %children are oppressively affected glutted (SAM) and 30% children fall under Grade I-IV malnutrition. The child mortality rate (IMR) is 40 and the Motherly Mortality Rate (MMR) is 237%. The recommended salutary input (RDI) gap for utmost nutrients is further than 50%. Only54.9% children between 6-8 months admit solid and semi-solid food and bone milk and8.9 %children age 6-23 months admit an acceptable diet. 51% of women age 15-49 times and44.6% children 6-59 months are anemic in the state. Standard sanitation, good hygiene and safe drinking water accounts on good health and nutrition. Strangely, 77.7% homes in Odisha are rehearsing open defecation. As per Odisha Economic Survey, growth rates of GSDP-13- 14 are only 5.6%. The state doesn't have a birth on micronutrient insufficiency and rotundity situation. Public data reveals 16.5% women and around 17.2 % men aged 20 are fat, the state is likely to have an analogous trend.

The uninstructed (with low cognitive capability) and unhealthy labour force significantly slows down productivity, frugality and growth. The culture of silence, passivity and circle of query strangulate bournes of present generation in immaturity. Its 23 Scheduled Tribe (ST) and 17 Slated Estate (SC) population are worst victim to perpetual poverty and marginalization. As a result, the state rolls under a poverty and backward label and numbers high in malnutrition, poor health and hunger chart prominently.

II. Review Of Literature

Barker & Osmond (1986), plant that Childhood undernutrition can also have an impact on long- term physiological functioning. One of the first studies conducted on child nutrition and its long- term goods.

Krasove. C along with Anderson (1991), plant that increased perinatal and neonatal mortality a advanced threat of low birth weight of babies, still births and confinement are some of the consequences of malnutrition in women.

Delletier etal (1994), 57% of under 5 years in Ethiopia the mortality is related to severe and mild to moderate malnutrition.

Sommerfelt et al (1994), plant advanced position of suppressing among pastoral than civic children.

Zerioun et al (1997), Ferroluzzi et al (1990), plant advanced rates of pastoral malnutrition by the original studies in Ethopia.

VinodK. Mishra et al (1999), has studied the multivariate analysis considering the goods on named demographic and socioeconomic parameters on child malnutrition indicates that the strongest predictors of child nutrition in India were child's age, birth order of child, mama's education, and standard of living.

Rotimi (1999), examined that women having a body mass indicator (BMI) under18.5 reflects a progressive rise in mortality rate with a high threat of illness.

Susmita Bharati et al (2001), are to assess the spatial distribution of nutritive status of Indian children; the study shows that there are gender differences and spatial variations in the nutritive status of children in India. The weight-for- age and height for- age scores showed a dismal picture of the health condition of children in nearly all countries in India.

Elangovan and Shanmugan (2002), analyses the immunization and nutritive status among children progressed under five in a major quarter in India, it reveals that Children in pastoral areas in India die due to contagious and transmissible conditions.

Rajaram et al (2003), analyses the nonage malnutrition in Kerala and Goa revealed that the confounding factors that impact the nutritive status of children in these countries. The results showed that the relative

frequence of light and wasting was high in Kerala, but the frequence of suppressing was medium. The study recommends further area-specific programs for the development of nutritive intervention programmes.

Elangovan R, Shanmugun M (2004), in The Immunization and nutritive status among children under 5 in a major quarter in India plant that 16 of the children were under malnutrition (according to weight for age and growth map) .

Daniels & Adair (2004), the study indicated that children below the age of two times who had suppressed growth, had delayed academy entry, advanced grade reiteration and powerhouse rates, and lower academy performance.

Desai & Johnson (2005), conducted across-cultural study to examine the impact of women's capability to make independent opinions on child's health issues (measured as vaccination status, nutritive status and child mortality) in 12 developing countries.

Cooper etal. (2006), in their exploration on the causes of osteoporosis in after stages of life, plant that poor nutrition during nonage could have a mischievous impact on the bone viscosity.

Grantham-McGroegor et al.'s (2007), in an composition stressed that further than 200 million children under the age of 5 times in low and middle- income countries weren't reaching their fullest eventuality in the context of health and capability.

Walker et al (2007), involved a comprehensive cross-cultural disquisition of child development in further than 79 countries using information from the WHO Global Database on Child Growth and Malnutrition of children (2006).

Harsha Aturupane et al (2008), examine the determinants of child weight and height in Sri Lanka A quintile retrogression approach, it reveals that reducing child malnutrition is a crucial thing of utmost developing countries. To battle child malnutrition right set of understanding and interventions by policymakers is needed to have a better understanding of its profitable, social and policy determinants.

Black et al (2008), Numerous studies have stressed the wide spread gender difference and performing disadvantages that women in utmost corridor of India face .

Victoria etal. (2008), analysed motherly and child health issues in five low and middle- income countries using the Demographic and Health Survey data. The authors suggested that the common issues of child undernutrition, particularly in resource constrained communities, are child mortality, habitual physical and internal disabilities similar as blindness, anaemia, indecorous functioning of branches, amongst others.

Jethy Debasis (2009), conducted a check to estimate frequence of under-nutrition and its threat factors inpre-school children in a ethnical area of Kendujhar quarter, Orissa and plant that the nutritive status of the ethnical children was wrong.

Fehling, Nelson & Venkatapuram (2013) Global reports on child protection suggest that the reduction in undernutrition and child mortality rates have been limited and inversely distributed across countries.

Coleman-Jensen, etal. (2014) plant roughly3.8 million homes were unfit to give acceptable and nutritional food to their children, therefore impacting their overall health and nutritive status.

UNDP, (2015), the average GII score of the sub-Saharan Africa region was0.575 indicating lower position of gender inequality as compared to India (UNDP, 2015).

Cunningham et al (2015), stressed that the ill goods of undernutrition endured during nonage have a prolonged impact through the colorful stages of life, and beget intergenerational cycle of poor health issues.

Thapa and Retherford, (1982 68-69; Gubhaju, 1985a 20). Still, the cause of advanced threat of child death among first born babies was noted as being the result of the advanced proportion of youngish women having a first birth rather than the first birth.

Dreze & Sen, (2013), India suffers from a malnutrition incongruity, as despite the steady profitable growth within the country, there are persistently high rates of child undernutrition.

Thomas Deborah, Sarangi Biraj Laxmi, Garg Anu Ahuja Arti Meherda PramodR.Karthikeyan Sujata Joddar Pinaki Kar Rajendra Pattnaik Jeetendra Druvasula Ramesh Dembo Rath Alison (2015), in their study Ending the health and nutrition gap in Odisha, India A case study of how transubstantiating the health system is achieving lesser equity how political will and married policy makers can powers the health system to promote equity in health and nutrition through equity- acquainted policy, targeted investments, health system reforms that prioritize underserved geographical areas and target groups, and innovative service delivery acclimatized to the requirements of underprivileged populations.

Das Sanjukta (2016), made a relative analysis of child malnutrition in Odisha with other countries and plant that high chance of light children in Odisha. It also indicates a fact that from the nethermost position Odisha is likely to attain the top one in the near future which should be a matter of serious concern.

OBECTIVES

1. To study the status of child malnutrition in India and Odisha.
2. To compare nutritional status of children between Balasore and Boudh district of Odisha.

III. Methods

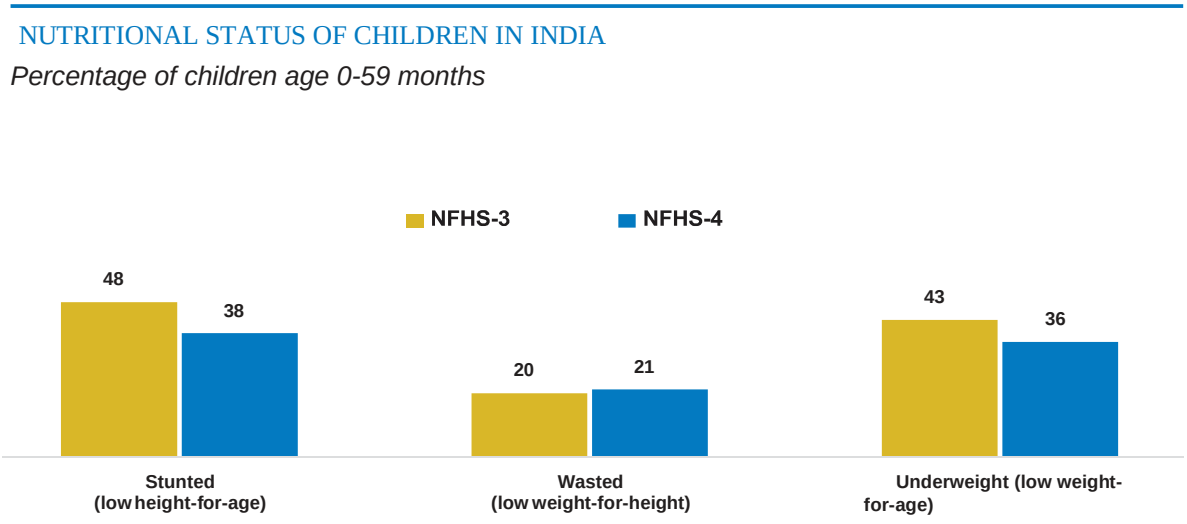
The present work is based on secondary data. The secondary data is to be collected from NFHS-III (2005-06) and NFHS-IV(2015- 16) rounds and also from the Department of Health and Family Welfare, Govt. of Odisha.

The 1st objective is to be studied on the basis of the information gathered by the review of literature and information collected from the various sources of secondary data. (NFHS –III (2005-06) and NFHS-IV(2015-16),State and central Govt. report on women and child development

The collected data are to be presented in tables and charts. Simple statistics such as mean, percentage, mean deviation, standard deviation etc. are also to be calculated.

IV. Results

FIGURE - 1



As shown in the above diagram, In India percentage of children (0-5) stunted were 48% in NFHS-3 and it decreased to 38% in NFHS-4.Percentage of children wasted under 5 years of age was 20% in NFHS-3 but it increased to 21% in NFHS-4.Percentage of underweight children below 5 years of age were 43% in NFHS-3 which declined to 36% in NFHS-4.

TABLE-1: HOUSEHOLD PROFILE CHILD MORTALITY RATES (PER 1,000 LIVE BIRTHS)

SL. NO.	INDICATORS	URBAN	RURAL	TOTAL NFHS-4 (2015-16)		TOTAL NFHS-3 (2005-06)		DECADAL CHANGE
				ODISHA	INDIA	ODISHA	INDIA	
1	Children under age 5 years whose birth was registered (%)	90	80.7	82.1	79.7	57	41.2	25.1
2	Women married before age 18 years (%)	19.4	21.7	21.3	26.8	37.2	47.4	15.9
3	Total fertility rate (children per woman)	1.7	2.1	2.1	2.2	2.4	2.7	0.3
4	Infant mortality rate (IMR)	20	43	40	41	65	57	25
5	Under-five mortality rate (U5MR)	24	52	48	50	91	74	43

Source: NFHS-3&4

A comparative study between NFHS-3 and NFHS-4 shows that children under 5 years of age whose birth were registered in NFHS-3 were 57% which increased to 82.1% in NFHS-4.As found in NFHS-3 37.2% of women married before 18 years and the percentage declined to 21.3%in NFHS-4 study. Similarly total fertility rate declined from 2.4% to 2. As the above table reveals that IMR was 65 per 1000 live births in NFHS-3 which declined to 40 in NFHS-4.Similarly U5MR also declined from 91 to 48 per 1000 live births in NFHS-4.

From table -1 it is evident that percentage of children whose birth was registered in India is less in comparison to Odisha. IMR and U5MR is also less that is 40% and 48% in Odisha in comparison to India where IMR is 41%and U5MR is 50%.If we will see the NFHS-3 data then IMR of Odisha was higher at 65% and U5MR was higher at 91% in comparison to IMR and U5MR rate of India.

It shows improvement in IMR and U5MR status of Odisha in comparison to India in past 10 years.

TABLE-2: MATERNAL AND CHILD HEALTH

SL. NO.	INDICATORS	URBAN	RURAL	TOTAL NFHS-4 (2015-16)		TOTAL NFHS-3 (2005-06)		IMPROVEMENT IN MATERNAL AND CHILD HEALTH INDICATORS IN LAST 10 YEARS(O)
				ODISHA	INDIA	ODISHA	INDIA	
1	Mothers who had antenatal check-up in the first trimester (%)	69.6	63	64	58.6	48.3	43.9	15.7
2	Mothers who had at least 4 antenatal care visits (%)	69.7	60.5	61.9	51.2	36.9	37.0	25
3	Mothers whose last birth was protected against neonatal tetanus (%)	96.5	93.9	94.3	89.0	83.3	76.3	11
4	Mothers who consumed iron folic acid for 100 days or more when they were pregnant (%)	40.8	35.7	36.5	30.3	22.5	15.2	14
5	Mothers who had full antenatal care (%)	27.1	22.3	23	21.0	12.3	11.6	10.7
6	Registered pregnancies for which the mother received Mother and Child Protection (MCP) card (%)	97.2	97.2	97.2	89.3	NA	NA	NA
7	Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within 2 days of delivery (%)	73.6	73.1	73.2	62.4	31.7	34.6	41.5

Source:NFHS-3&4

As shown in the above chart indicators representing maternity care (for last birth in the 5 years before the survey) shows an increasing trend in NHFS – 4 as compared to NHFS – 3 data. Mothers who had antenatal checkups in the first trimester increased by 15.7% in NFHS-4 as compared to NFHS-3.Mothers having at least 4 antenatal care visits increased by 25% in NFHS-4 as compared to NFHS-3.Similarly percentage of mother who consumed iron folic acid for 100 days and more increased by 14% according to NFHS-4 data. Mothers

Who got full antenatal care increased by 10.7%.Mothers who received postnatal care increased by 41.5%which shows a great improvement in maternal health facility

A comparative study of Odisha and India shows that maternal care indicators like mothers who got antenatal check-ups was 64% whereas for India it is 58.6%.Mothers who consumed iron and folic acid for 100 days or more is 36.5% in Odisha but in India the rate is only 30.3%.23% of mothers got full antenatal care in Odisha but in India it is only 21.0%.Registered pregnancies with MCP card in Odisha is 97.2% which is very high than the figure of India which is only 89.3%.Similarly mothers received postnatal care for Odisha is 73.2% in Odisha where as in India it is only 62.4%.

So,NFHS-4 data shows an improvement in the maternal care indicators for Odisha in comparison to India.

Comparison between NFHS-3 and NFHS-4 data for Odisha as well as India shows an increasing trend for maternal care indicators in last 10 years.

TABLE-3: DELIVERY CARE

SL. NO.	INDICATORS	URBAN	RURAL	TOTAL NFHS-4 (2015-16)		TOTAL NFHS-3 (2005-06)		CHANGE IN DELIVERY CARE INDICATORS IN LAST 10 YEARS
				ODISHA	INDIA	ODISHA	INDIA	
1	Institutional births (%)	89.7	84.5	85.3	78.9	35.6	38.7	49.7
2	Institutional births in public facility (%)	66.9	77.3	75.8	52.1	28.8	18.0	47
3	Home delivery conducted by skilled health personnel (out of total deliveries) (%)	1.3	3.6	3.3	4.3	8.3	8.2	5
4	Births assisted by a doctor/nurse/LHV/ANM/other health personnel (%)	89.7	85.9	86.5	81.4	44	46.6	42.5
5	Births delivered by caesarean section (%)	24.1	12.1	13.8	17.2	5.1	8.5	8.7
6	Births in a private health facility delivered by caesarean section (%)	49.5	56	53.7	40.9	32.4	27.7	21.3
7	Births in a public health facility delivered by caesarean section (%)	19.1	10.4	11.5	11.9	10	15.2	1.5

Source:NFHS-3&4

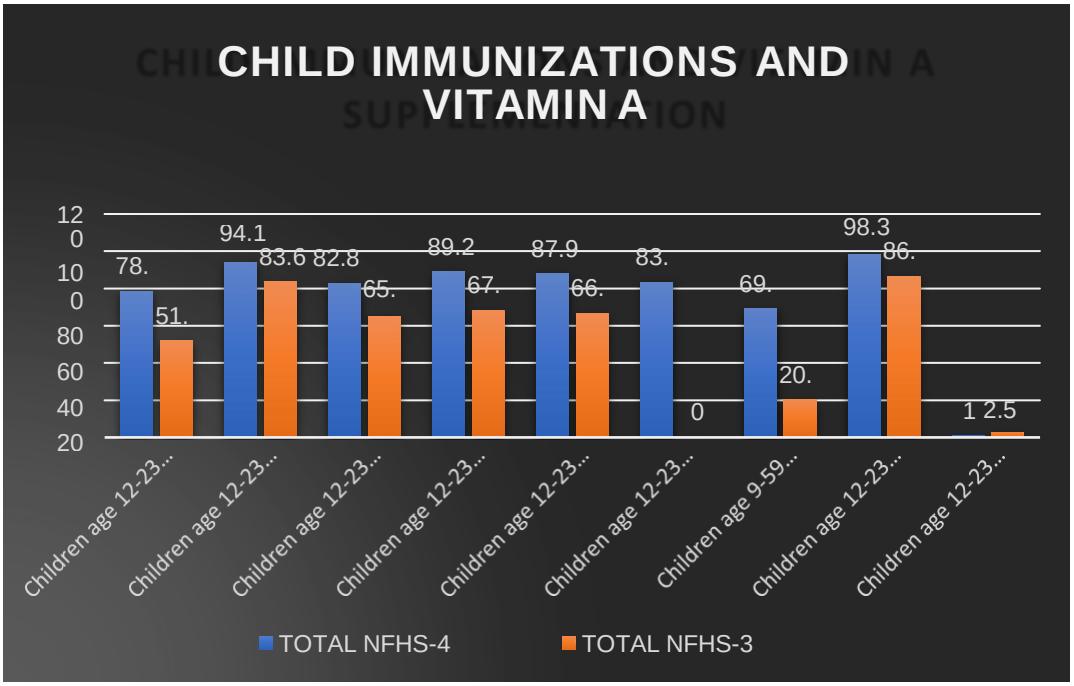
As shown in the above table the delivery care (for births in the 5 years before the survey) shows an increasing trend in NHFS – 4 as compared to NHFS – 3 in different indicators such as Institutional birth, Public facilities, home deliveries, assisted birth through health personnel, caesarian deliveries, birth in private health facility and public health facility etc.

If we will compare the improvement in delivery care facility between NFHS-3 and NFHS-4 then we can find that percentage of institutional birth increased by 49.7%.47% increase in institutional births in public. Home delivery conducted by skilled health personnel increased by 5%.Births assisted by health personnel's increased by 42.5%.Birth deliveries by c-section increased by 8.7%. Birth in private health hospital by C-section increased by 21.3% and birth in a public health facility by C section only increased by 1.5% in last 10 years.

A comparison of delivery care indicators for Odisha and India in NFHS-3 and 4 shows that in NFHS-4,percentage of institutional birth for Odisha is 85.3% and for India it is 78.9%.Institutional births in public facility status in Odisha is very high at 75.8% in comparison to India at 52.1%.Home delivery by skilled health personnel in Odisha is 3.3% which is slightly lesser than India which is 4.3%.Similarly birth assisted by health personnel in Odisha is 86.5% ,which is higher than India that is 81.4%.In Odisha delivery by C-section is 13.8% which is less than India that is 17.2%.Birth in a private health facility by C-section in Odisha is 53.7%,more than India which is only 40.9%.

Similarly birth in public health facility by C-section in Odisha and India are almost same at 11.5% and 11.9% respectively. Comparison between NFHS-3 and 4 shows that there is huge improvement in the delivery care indicators in Odisha as well as in India.

FIGURE – 2: COMPARISION OF CHILD IMMUNIZATION AND VITAMIN –A SUPPLIMENTS IN NFHS-3 & NFHS-4



As shown in the above statistical data regarding child immunizations and vitamin a supplementation there is an increasing trend in NHFS – 4 data as compared to NHFS – 3 data with an exception in the indicator for Children age 12-23 months who received most of the vaccinations in private health facility (%) which shows a decline in %age.

TABLE-4: TREATMENT OF CHILDHOOD DISEASES (CHILDREN UNDER AGE 5 YEARS)

SL. NO.	INDICATORS	URBAN	RURAL	TOTAL NFHS-4 (2015-16)		TOTAL NFHS-3 (2005-06)		IMPROVEMENT IN TREATMENT OF CHILDHOOD DISEASES IN LAST 10 YEARS
				ODISHA	INDIA	ODISHA	INDIA	
1	Prevalence of diarrhoea (reported) in the last 2 weeks preceding the survey (%)	7.3	10.2	9.8	9.2	11.8	9.0	-2
2	Children with diarrhoea in the last 2 weeks who received oral rehydration salts (ORS) (%)	68.6	68.6	68.6	50.6	39.8	26.0	28.8
3	Children with diarrhoea in the last 2 weeks who received zinc (%)	13.5	17.5	17	20.3	NA	NA	NA
4	Children with diarrhoea in the last 2 weeks taken to a health facility (%)	65.8	68.9	68.6	67.9	56.2	61.3	12.4
5	Prevalence of symptoms of acute respiratory infection (ARI) in the last 2 weeks preceding the survey (%)	1.9	2.5	2.4	2.7	2.8	5.8	-0.4
6	Children with fever or symptoms of ARI in the last 2 weeks preceding the survey taken to a health facility (%)	74.3	72.7	72.9	73.2	59.6	69.6	13.3

Source: NFHS-3&4

If we will compare status of treatment of childhood disease of 0-5 year children between NFHS-3 and NFHS-4 then we can found that prevalence of diarrhea decreased by 2% over 10 years .Children with diarrhea in last 2 weeks who received oral rehydration salts(ORS) increased by 28.8%.Children with diarrhea taken to heal facility increased by 12.4% and Prevalence of ARI in the last 2 weeks preceding the survey decreased by

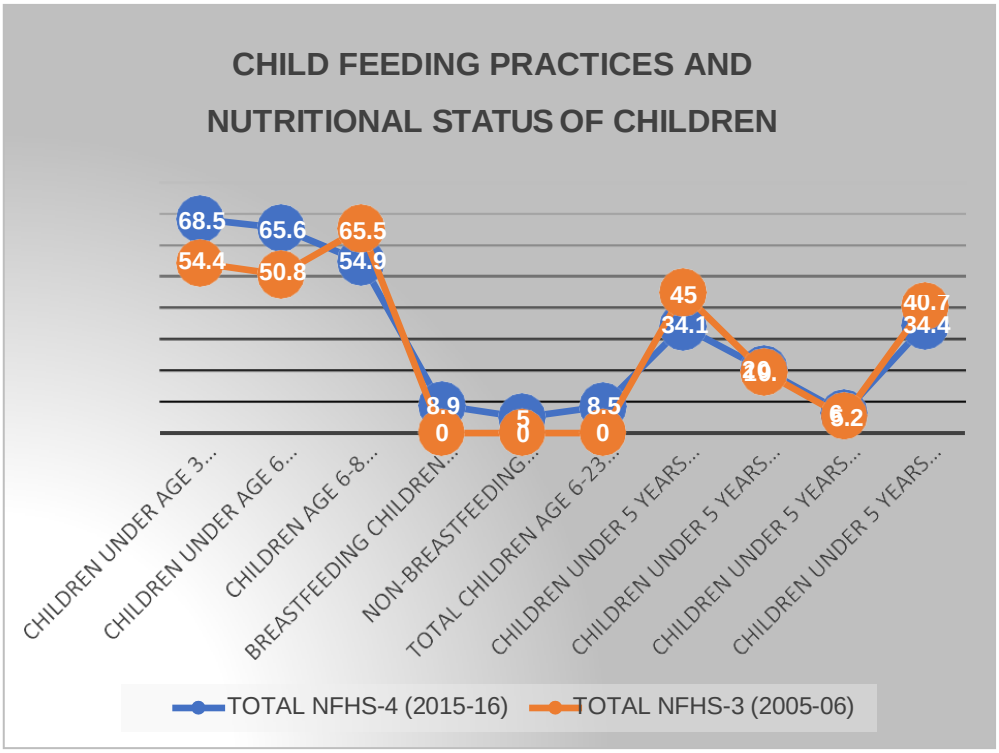
0.4% over 10 years which is not satisfactory. Children with fever or symptoms of ARI in the last 2 weeks preceding the survey taken to a health facility increased by 13.3% over the decade. The above study of indicators depicts that there is an increase in the Prevalence of diarrhoea (reported) in the last 2 weeks preceding the survey (%) and Prevalence of symptoms of acute respiratory infection (ARI) in the last 2 weeks preceding the survey (%) has declined as per the data of NHFS – 4 as compared to NHFS – 3.

Comparative study of different indicators showing treatment of childhood disease status in India and Odisha shows that, prevalence of diarrhea in Odisha was 9.8% but in India it is 9.2% during NFHS-4.Children with diarrhea who received ORS is 68.6% in Odisha and 50.6% in India. Prevalence of symptoms of ARI is 2.4% in Odisha and 2.7% in India.

So, it is evident from the table that in Odisha the result for treatment of childhood diseases is not satisfactory in comparison to India.

But comparison between NFHS-3 and 4 shows that there is an improvement in the treatment of childhood diseases in Odisha and India over 10 years. Received oral rehydration salts (ORS) (%),Children with diarrhoea in the last 2 weeks who received zinc (%),Children with diarrhoea in the last 2 weeks taken to a health facility (%), Children with fever or symptoms of ARI in the last 2 weeks preceding the survey taken to a health facility (%) shows an increase in trend.

FIGURE – 3: CHILD FFEDING PRACTICES AND NUTRITIONAL STATUS OF CHILDREN



From the comparison of NHFS – 4 and NHFS – 3 data for child feeding practices and nutritional status of children it can be visualized that there is mixed pattern in the indicators where some of the indicators reflects decline and some of the indicators shows a rise in the %age.

TABLE – 5: STUNTING, WASTING AND UNDERWEIGHT STATUS IN COSTAL AND NON COSTAL DISTRICTS OF ODISHA

DISTRICTS OF ODISHA	CHILDREN UNDER 5 YEARS WHO ARE STUNTED (HEIGHT- FOR-AGE) (%)	CHILDREN UNDER 5 YEARS WHO ARE WASTED (WEIGHT-FOR- HEIGHT) (%)	CHILDREN UNDER 5 YEARS WHO ARE UNDERWEIG HT (WEIGHT- FOR-AGE) (%)	TOTAL
STATUS OF COASTAL DISTRICTS				
Puri	16.1	15.1	17.2	48.8
Khordha	24.7	18.2	20.3	63.2

Jagatsinghapur	19.5	17	16.5	53
Kendrapara	26.9	16.7	24.1	67.7
Balasore	33.2	24.8	33.7	91.7
Bhadrak	34.9	19.1	28.2	82.2
Ganjam	28.9	22.7	21.3	72.9
STATUS OF NON COASTAL DISTRICTS				
Jharsuguda	34.9	31.5	36.5	102.9
Balangir	44.4	35.6	44.7	124.7
Koraput	40.3	36.8	44.4	121.5
Rayagada	43.5	29.1	42.4	115
Kalahandi,	36.6	33.8	39.7	110.1
Nuapada	37.6	35.6	40.0	113.2
Subarnapur	47.5	27.7	43.0	118.2
Kandhamal	38.4	31.5	43.1	113
Gajapati	32.5	23.2	32.1	87.8
Nayagarh	28.0	21.6	25.4	75
Anugul	31.8	29.3	35.3	96.4
Dhenkanal	26.1	22.4	29.2	77.7
Cuttack	15.3	11.9	17.1	44.3
Mayurbhanj	43.5	22.2	43.8	109.5
Kendujhar	44.6	24.3	44.3	113.2
Sundargarh	37.2	40.7	44.2	122.1
Debagarh	33.4	25.1	37.5	96
Baudh	42.2	29.6	43.5	155.3
Jajapur	30.3	22.6	30.0	82.9
Bargarh	39.1	33	39.0	111.1
Sambalpur	40.2	35	45.3	120.5
Nabarangapur	45.8	47.6	51.0	144.4
Malkangiri	45.7	40.9	51.8	138.4

SOURCE: NFHS-4(2015-16)

From the above data of NFHS-4(2015-16) it is clear that among coastal districts of Odisha, Balasore is highly suffering from child malnutrition and among non-coastal districts Boudh suffers from severe child malnutrition.

TABLE – 6: COMPARISION OF CHILD NUTRITIONAL STATUS OF BALASORE AND BOUDH (NFHS - 4) (MATERNAL AND CHILD HEALTH)

NFHS – 4 (2015-16)		**BALASORE**		**BOUDH**		
SL. NO.	**INDICATORS**	**RURAL**	**TOTAL**	**RURAL**	**TOTAL**	**COMPARISION BETWEEN CHILD HEALTH STATUS OF BALASORE AND BOUDH**
1	Children under age 5 years whose birth was registered (%)	91.3	90.3	71.1	70.9	19.4
2	Women age 20-24 years married before age 18 years (%)	23.2	25.9	23.5	23.4	2.5
1	Mothers who had antenatal check-up in the first trimester (%)	51.6	52	73.9	73.8	21.8

2	Mothers who had at least 4 antenatal care visits (%)	57.7	57.3	73.2	73.4	16.1
3	Mothers whose last birth was protected against neonatal tetanus (%)	91.1	91.6	97.9	98	6.4
4	Mothers who consumed iron folic acid for 100 days or more when they were pregnant (%)	15.9	17.3	42.7	42	24.7
5	Mothers who had full antenatal care (%)	8.7	9.5	30.3	30	20.5
6	Registered pregnancies for which the mother received Mother and Child Protection (MCP) card (%)	95.5	95.7	99.3	99.3	3.6
7	Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within 2 days of delivery (%)	71.9	72.2	74.2	73.8	1.6
8	Mothers who received financial assistance under Janani Suraksha Yojana (JSY) for births delivered in an institution (%)	65.9	65.8	85.5	86	20.2
9	Children born at home who were taken to a health facility for check-up within 24 hours of birth	3,425	3,401	3,595	3,611	210
10	Children who received a health check after birth from a doctor/nurse/LHV/ANM/ midwife/other health personnel within 2 days of birth (%)	*	*	18.2	18.2	NA
11	Average out of pocket expenditure per delivery in public health facility (Rs.)	29.6	28.5	33.1	33.3	4.8

Source:NFHS-3&4

The above comparison between the coastal (Balasore) and non – costal (Boudh) belt of Odisha indicates that the registration of child birth under age of 5 is higher in the costal as compared to noncoastal where as there is a marginal difference in the women getting married below 18 years and is marginally higher in the coastal as per the NHFS – 4 data.

A comparative study of indicators of child nutritional status between Balasore and Boudh district of Odisha shows that in 90.3% child birth is registered in Balasore district and in Boudh it is very less that is 70.9%.

Women married before age of 18 in Balasore district is 25.9% which is higher than Boudh that is 23.4%.

Mothers who had antenatal checkups in 1st trimester is 52% in Balasore but it is higher in Boudh which is 73.8%Similarly mothers who consumed iron folic acid for 100 days or more is 17.3%for Balasore but for India it is 42%.Mothers who got postnatal care from a health professional in Balasore is 72.7% and in Boudh it is 73.8%.65.8% of mothers in Balasore received financial assistance under Janani Surakshya Yojana but in Boudh 86% of mothers received the financial assistance under JSY.

So, the major indicators of maternal and child health shows that in Boudh district maternal and child health instances are better in comparison to Balasore.

FIGURE – 4: MATERNAL AND CHILD HEALTH

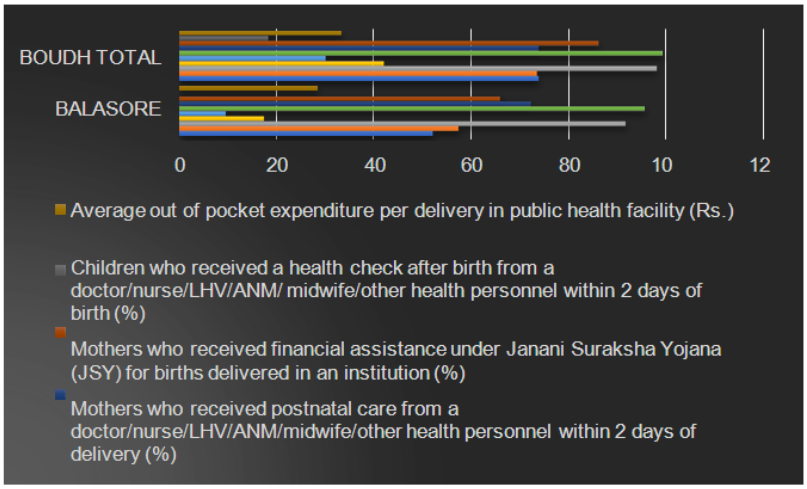


TABLE – 7: DELIVERY CARE

NFHS – 4 (2015-16)		BALASORE		BOUDH		COMPARISION OF DELIVERY CARE BETWEEN BALASORE AND BOUDH
SL. NO.	INDICATORS	RURAL	TOTAL	RURAL	TOTAL	
1	Institutional births (%)	92.5	91.9	81.9	82.3	9.6
2	Institutional births in public facility (%)	82.7	81.9	80.7	81.2	0.7
3	Home delivery conducted by skilled health personnel (out of total deliveries) (%)	3	3	5.5	5.4	2.4
4	Births assisted by a doctor/nurse/LHV/ANM/other health personnel (%)	87	87	87.3	87.7	0.7
5	Births delivered by caesarean section (%)	15.5	16.1	6.7	7	9.1
6	Births in a private health facility delivered by caesarean section (%)	-57.6	-58.3	*	*	NA
7	Births in a public health facility delivered by caesarean section (%)	11.9	12.5	7.2	7.6	4.9

Source:NFHS-3&4

Comparative study of delivery care indicators between Balasore and Boudh district shows that institutional births in Balasore is 91.9% and in Boudh it is 82.3%.Institutional births in public facility is same at 81% in both of the districts. Home delivery conducted by skilled health personnel in Balasore is only 3% and in Boudh it is 5.4%.Birth assisted by a health personnel in Balasore is 87% and in Boudh 87.75.Deliveries by C-section in Balasore is 16.1% and in Boudh it is only 7%.Birth in public health facility in Balasore is 12.5% and in Boudh it is very less at 7.6%.

The table shows that C-section delivery is high in Balasore and birth in public health facility is also high in Balasore.

TABLE – 8: CHILD IMMUNIZATIONS AND VITAMIN A SUPPLEMENTATION

NFHS – 4 (2015-16)		BALASORE		BOUDH		DIFFERNCE OF CHILD IMMUNIZATION BETWEEN BALASORE AND BOUDH
SL. NO.	INDICATORS	RURAL	TOTAL	RURAL	TOTAL	
1	Children age 12-23 months fully immunized (BCG, measles, and 3 doses each of polio and DPT) (%)	79.5	79	94.2	94.2	15.2
2	Children age 12-23 months who have received BCG (%)	92.6	92.9	98.3	98.3	-5.4
3	Children age 12-23 months who have received 3 doses of polio vaccine (%)	89	89.4	94.2	94.2	-4.8
4	Children age 12-23 months who have received 3 doses of DPT vaccine (%)	88.8	87.8	98.3	98.3	-10.5
5	Children age 12-23 months who have received measles vaccine (%)	87	87.6	98.3	98.3	-10.7
6	Children age 12-23 months who have received 3 doses of Hepatitis B vaccine (%)	87.4	86.6	95.5	95.5	-8.9
7	Children age 9-59 months who received a vitamin A dose in last 6 months (%)	66.3	67.1	63.7	62.4	4.7
8	Children age 12-23 months who received most of the vaccinations in public health facility (%)	-90.2	90.7	100	100	-9.3
9	Children age 12-23 months who received most of the vaccinations in private health facility (%)	0	0	0	0	0

Source:NFHS-3&4

Comparative study of indicators of child immunization and vitamin –A supplementation between Balasore and Boudh district shows that 79% of children in Balasore are fully immunized but in Boudh district the immunization percentage is very high that is 94.2%.Children who received most of the vaccination in public health facility is 90.7%in Balasore and 100%in Boudh district.

FIGURE – 5: CHILD IMMUNIZATION

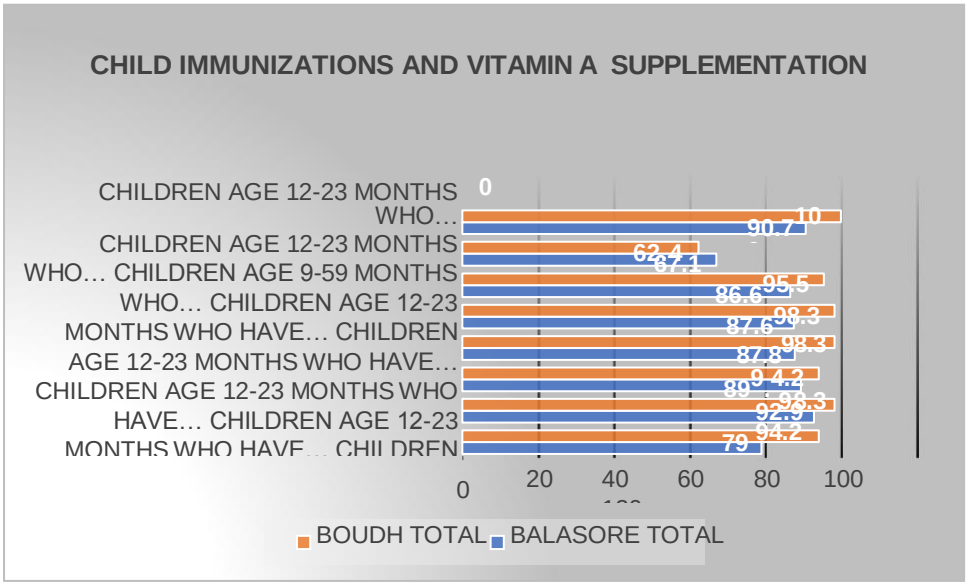


TABLE-9: TREATMENT OF CHILDHOOD DISEASES (CHILDREN UNDER AGE 5 YEARS)

NFHS – 4 (2015-16)		BALASORE		BOUDH		DIFFERENCE BETWEEN TREATMENT OF CHILD HOOD DISEASE
SL. NO.	INDICATORS	RURAL	TOTAL	RURAL	TOTAL	
1	Prevalence of diarrhoea (reported) in the last 2 weeks preceding the survey (%)	19.9	20.6	10.5	10.2	10.4
2	Children with diarrhoea in the last 2 weeks who received oral rehydration salts (ORS) (%)	71	68.1	-69.4	-69.4	
3	Children with diarrhoea in the last 2 weeks who received zinc (%)	1.6	4.1	-26.9	-26.9	
4	Children with diarrhoea in the last 2 weeks taken to a health facility (%)	69	69.4	-70.1	-70.1	
5	Prevalence of symptoms of acute respiratory infection (ARI) in the last 2 weeks preceding the survey (%)	4.4	4.7	0.6	0.6	
6	Children with fever or symptoms of ARI in the last 2 weeks preceding the survey taken to a health facility (%)	67.6	67.5	-72.8	-72.8	

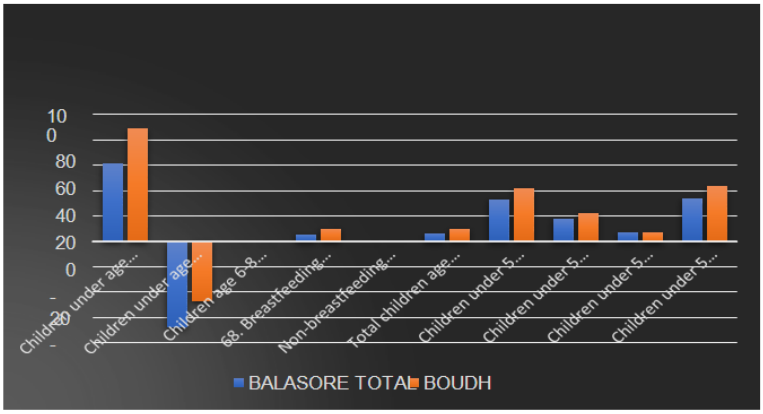
Source:NFHS-3&4

Comparison of indicators of treatment of childhood disease shows that prevalence of diarrhea in Balasore is 20.6% and in Boudh it is only 10.2%

68.1% of children with diarrhea received ORS in Balasore .

In Balasore prevalence of symptoms of ARI is 4.7% and in Boudh it is only 0.6%.So,study shows that prevalence of diseases is less in Boudh district in comparison to Balasore.

FIGURE – 6: CHILD FEEDING PRACTICES AND NUTITIONAL STATUS OF CHILDREN



V. **Discussion:**

As shown in the above diagram, In India percentage of children (0-5) stunted were 48% in NFHS-3 and it decreased to 38% in NFHS-4.Percentage of children wasted under 5 years of age was 20% in NFHS-3 but it increased to 21% in NFHS-4.Percentage of underweight children below 5 years of age were 43% in NFHS-3 which declined to 36% in NFHS-4.

A comparative study between NFHS-3 and NFHS-4 shows that children under 5 years of age whose birth were registered in NFHS-3 were 57% which increased to 82.1% in NFHS-4.As found in NFHS-3 37.2% of women married before 18 years and the percentage declined to 21.3%in NFHS-4 study. Similarly total fertility rate declined from 2.4% to 2. As the above table reveals that IMR was 65 per 1000 live births in NFHS-3 which declined to 40 in NFHS-4.Similarly U5MR also declined from 91 to 48 per 1000 live births in NFHS-4.

From table -1 it is evident that percentage of children whose birth was registered in India is less in comparison to Odisha. IMR and U5MR is also less that is 40% and 48% in Odisha in comparison to India where IMR is 41%and U5MR is 50%.If we will see the NFHS-3 data then IMR of Odisha was higher at 65% and U5MR was higher at 91% in comparison to IMR and U5MR rate of India. It shows improvement in IMR and U5MR status of Odisha in comparison to India in past 10 years.

As shown in the above chart indicators representing maternity care (for last birth in the 5 years before the survey) shows an increasing trend in NHFS – 4 as compared to NHFS – 3 data. Mothers who had antenatal checkups in the first trimester increased by 15.7% in NFHS-4 as compared to NFHS-3.Mothers having at least 4 antenatal care visits increased by 25% in NFHS-4 as compared to NFHS-3.Similarly percentage of mother who consumed iron folic acid for 100 days and more increased by 14% according to NFHS-4 data.

Mothers who got full antenatal care increased by 10.7%.Mothers who received postnatal care increased by 41.5%which shows a great improvement in maternal health facility.

A comparative study of Odisha and India shows that maternal care indicators like mothers who got antenatal check-ups was 64% whereas for India it is 58.6%.Mothers who consumed iron and folic acid for 100 days or more is 36.5% in Odisha but in India the rate is only 30.3%.23% of mothers got full antenatal care in Odisha but in India it is only 21.0%.Registered pregnancies with MCP card in Odisha is 97.2% which is very high than the figure of India which is only 89.3%.Similarly mothers received postnatal care for Odisha is 73.2% in Odisha where as in India it is only 62.4%. So, NFHS-4 data shows an improvement in the maternal care indicators for Odisha in comparison to India.

Comparison between NFHS-3 and NFHS-4 data for Odisha as well as India shows an increasing trend for maternal care indicators in last 10 years. As shown in the above table the delivery care (for births in the 5 years before the survey) shows an increasing trend in NHFS – 4 as compared to NHFS – 3 in different indicators such as Institutional birth, Public facilities, home deliveries, assisted birth through health personnel, caesarian deliveries, birth in private health facility and public health facility etc.

If we will compare the improvement in delivery care facility between NFHS-3 and NFHS-4 then we can find that percentage of institutional birth increased by 49.7%.47% increase in institutional births in public. Home delivery conducted by skilled health personnel increased by 5%.Births assisted by health personnel's increased by 42.5%.Birth deliveries by c-section increased by 8.7%. Birth in private health hospital by C-section increased by 21.3% and birth in a public health facility by C section only increased by 1.5% in last 10 years.

A comparison of delivery care indicators for Odisha and India in NFHS-3 and 4 shows that in NFHS-4,percentage of institutional birth for Odisha is 85.3% and for India it is 78.9%.Institutional births in public facility status in Odisha is very high at 75.8% in comparison to India at 52.1%.Home delivery by skilled health personnel in Odisha is 3.3% which is slightly lesser than India which is 4.3%.Similarly birth assisted by health personnel in Odisha is 86.5% ,which is higher than India that is 81.4%.In Odisha delivery by C-section is 13.8% which is less than India that is 17.2%.Birth in a private health facility by C-section in Odisha is 53.7%,more than India which is only 40.9%.

Similarly birth in public health facility by C-section in Odisha and India are almost same at 11.5% and 11.9% respectively. Comparison between NFHS-3 and 4 shows that there is huge improvement in the delivery care indicators in Odisha as well as in India.

As shown in the above statistical data regarding child immunizations and vitamin a supplementation there is an increasing trend in NHFS – 4 data as compared to NHFS – 3 data with an exception in the indicator for Children age 12-23 months who received most of the vaccinations in private health facility (%) which shows a decline in %age.

From the above data of NFHS-4(2015-16) it is clear that among coastal districts of Odisha, Balasore is highly suffering from child malnutrition and among non-coastal districts Boudh suffers from severe child malnutrition.

The above comparison between the coastal (Balasore) and non – costal (Boudh) belt of Odisha indicates that the registration of child birth under age of 5 is higher in the costal as compared to noncoastal

where as there is a marginal difference in the women getting married below 18 years and is marginally higher in the coastal as per the NHFS – 4 data.

A comparative study of indicators of child nutritional status between Balasore and Boudh district of Odisha shows that in 90.3% child birth is registered in Balasore district and in Boudh it is very less that is 70.9%.

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Comparative study of indicators of child immunization and vitamin –A supplementation between Balasore and Boudh district shows that 79% of children in Balasore are fully immunized but in Boudh district the immunization percentage is very high that is 94.2%.Children who received most of the vaccination in public health facility is 90.7%in Balasore and 100%in Boudh district.

Comparison of indicators of treatment of childhood disease shows that prevalence of diarrhea in Balasore is 20.6% and in Boudh it is only 10.2%. Further, 68.1% of children with diarrhea received ORS in Balasore. While in Balasore prevalence of symptoms of ARI is 4.7% and in Boudh it is only 0.6%.So, study shows that prevalence of diseases is less in Boudh district in comparison to Balasore.

VI. Conclusion

There is an improvement in the maternal care indicators for Odisha in comparison to India. Odisha as well as India shows an increasing trend for maternal care indicators in last 10 years. It is found that among coastal districts of Odisha, Balasore is highly suffering from child malnutrition and among non-coastal districts Boudh suffers from severe child malnutrition.

VII. Recommendation:

More emphasis should be given on study of factors affecting child malnutrition in coastal and non coastal districts of Odisha . More focus should be given on implementation of policies to tackle child malnutrition in coastal as well as non coastal districts of Odisha. More emphasis should be given on vaccination to tackle with the problem of child malnutrition.

Acknowledgement

The current study is dedicated to all the enumerator who have dedicated their time and labour in obtaining the data for preparing the National data.

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