**JHSPH-IIHMR UNIVERSITY**

# A study on the Continuum of Maternal Care for selected High Priority Districts of Uttar Pradesh

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**by**

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# Abstract

The state of Uttar Pradesh is the most populous state in the country. Since the Government of India granted it statehood in 1950, it has borne witness to shifts in government from monarchy to republican. With this shift in administrative power, and despite it being a politically active state, it has seen a very slow social and economic development, and invariable corruption and organized crime have kept it in the shackles of being one of the most backward states in the country. The current study has been undertaken in a bid to determine the changes that have occurred in selected maternal health indicators since the Ministry of Health and Family Welfare (MoHFW) ranked the districts of Uttar Pradesh in order of their performance against health indicators and identified the districts forming the bottom-most 25$^{th}$ percentile and termed them as **"***High Priority***".** After the prioritization of these districts, numerous organizations, both governmental and otherwise have been working consistently to improve the health status of the communities (known as Health Partners). This study aims to identify the organizations working in some of the most backward districts of the state and attributing the changes identified in the maternal health indicators to their work. Data was obtained from the AHS 3 (2012-2013) and NFHS 4 (2015-2016) Factsheets and maternal health indicators for the High Priority Districts were compared for both surveys. A composite index was constructed to rank the districts so that the lowest performing districts could be identified. *Balrampur, Bahraich, Shrawasti, Gonda and Hardoi* were identified as the lowest performers, constituting the bottom-most 25$^{th}$ percentile. The maternal health indicators for these districts for NFHS 4 were then compared with the indicators seen in AHS 3 and a paired sample t test was used to determine whether the change is significant. The changes were only significant for certain indicators like *percentage of women who received ANC in the 1$^{st}$ trimester, women who delivered in institutions, and the women who received postnatal care within 48hrs of delivery***.** Further, these districts were then compared with 5 other, non-priority districts to determine their status for maternal health indicators using only NFHS 4 data. The districts selected for this purpose were *Gorakhpur, Rai Bareli, Maharjgunj, Basti and Unnao***.** The various organizations working in the state of Uttar Pradesh, specifically those working in the High Priority Districts were identified and attempts were made to study the District Action Work Plans for these districts. The percentage of change for some indicators was found to be greater for the districts that were not high priority, than for those that were in higher focus. Since sufficient data was not available, it could not be ascertained whether the improvement in these districts were due to the developmental activities performed by the Health Partners.

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# Background

Uttar Pradesh, abbreviated as UP, is the most populous state in the Republic of India, with a population of 199,821,341[1](Census of India in 2011). The densely populated state (820/sq km)[1]which is located in the northern region of the Indian sub-continent and which covers an area of 243,290 sq km, was created on April 1, 1937[2] under the British rule as United Provinces. It was granted statehood in 1950[2] following independence, and was thus named Uttar Pradesh.

UP has been divided into 18 divisions under which fall 75 districts[1]. These divisions are namely- *Saharanpur, Bareilly, Lucknow, Devipatan, Basti, Gorakhpur, Meerut, Aligarh, Agra, Kanpur, Faizabad, Azamgarh, Jhansi, Chitrakoot, Allahabad, Varanasi, and Mirzapur***.** Each division falls under the control of a Divisional Commissioner who is an IAS Officer to whom the District Magistrates report[2]. Each district is divided into subdivisions, which are governed by Sub-Divisional Commissioners, and again into Blocks[2]. These Blocks are further subdivided into urban units called census towns (town municipalities) and rural units called Gram Panchayats (village councils)[2]. According to the decadal census, the absolute urban population of the state is 44.4 million[1], which constitutes 11.8% of the total urban population of the country[1].

The socio-demographic and healthcare indicators are dynamic and ever evolving for the state. If UP was to be considered as a separate nation, it would come fifth to the most populous countries of the world after China, India, USA, and Indonesia[2]. UP has an extensive network of public and private healthcare facilities, and yet the health indicators are not as promising as they should be[3]. According to data provided by Ministry of Health and Family Welfare (MoHFW), the number of public health facilities in the state have decreased by 8%[3], whereas the population has steadily seen an upward growth of 25% since the last decadal census in 2001[2] (Census 2011). The *Infant Mortality Rates (IMRs) and Under 5 Mortality Rates (U5MR), though have seen an improvement in numbers (64 per 1000 live births and 78 per 1000 live births in 2016 respectively)[4], the chances of survival of a new born in the state is still 4 years less than in Bihar[3], 5 years less than in Haryana[4] and 7 years less than in Himachal Pradesh[4]. Additionally, the Maternal Mortality Rate (MMR) is still 285 maternal deaths for every 100,000 live births as of 2013*[5]. UP contributes to 48% of all deaths by typhoid, 17% of all cancer deaths and 18% of deaths by tuberculosis in the country[6]. According to Indian Public Health Standards, one third of the rural population in the state is deprived of primary health care, with sub-health centres growing only at the rate of 2% in the last 25 years[2].

Since the formulation of the Indian Constitution, the GOI prepares Five Year Plans to outline the framework for different sectors[7]. The 12[th]Five year Plan (2012-2017) that was constituted included the following goals to be achieved by 2017:

i) [7]Reducing the IMR to 25 per 1,000 live births.

ii) [7]Reducing the MMR to 100 per 100,000 live births.

iii) [7]Reducing the national fertility rate to 2.1.

*iv)* [7]Increasing the child sex ratio in the 0-6 year age group to 950.

In compliance with the "Global Child Survival Call to Action: A Promise to Keep in 2012" followed by India's own "Summit on the Call to Action for Child Survival", a "Strategic Approach to Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCH+A) was launched in India that became the GOI's flagship public health program under the aegis of National Health Mission[8]. Aided by the USAID's Maternal and Child health Integrated Program (MCHIP) multiple development partners were involved including UNICEF, Bill and Melinda Gates Foundation, and UNFPA to name a few, and various medical colleges and academic and research institutes were requested to provide technical assistance in this nationwide movement[8]. The following steps were developed to implement the action plan[8]:

1. Identification of High Priority Districts
2. Development of RMNCH+A Guidelines and Policies
3. Development of Management Tools and Job Aids like the RMNCH+A 5x5 matrix.
4. Ensuring Partner Harmonization
5. Gap Analysis and Block Monitoring
6. Development of Scorecards and Dashboard Indicators

On account of their unacceptably high fertility and mortality indicators, the eight Empowered Action Group (EAG) states *(Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Uttarakhand, Uttar Pradesh and Assam),* which account for about 48% of India's population, are designated as "High Focus States" by the Government of India[9]. *Annual Health Survey (AHS)* was conducted for each district for 8 high focus states of the country to quantify changes in the health indicators of these states[10]**.** AHS was conducted for 3 years, from 2009-2012, the last of which was conducted in 2012-2013 on the basis of which the high priority districts in each state were decided[10]. The sampling design for the AHS was based on the 2011 Census wherein single-stage stratified simple random samples were chosen in rural areas with populations under 2000 (Stratum I) or more than 2000 (Stratum II), and Census Enumeration Blocks (CBEs) in urban areas[10]. Any village having population less than 200 was excluded from the sampling. NFHS 4 used similar kind of sampling for their data collection activities, thus making the 2 surveys comparable[10].

In the year 2015, the MoHFW published a list of High Priority Districts (HPD) in each state based on the AHS of the previous years[11]. A total of 184 districts, which were the bottom 25 percentile districts in each state, were identified after calculating a composite health index. All Left Wing Effected districts and Districts with a majority tribal population were also

categorized as HPDs[11]. The aim of this classification was *"to ensure equitable healthcare and to bring about sharper improvements in health outcomes"*[11]

The 19 High Focus Districts according to the MoHFW for the state of Uttar Pradesh were identified as the following: *Faizabad, Sant Kabir Nagar, Hardoi, Barabanki, Pilibhit, Kheri, Sitapur, Bareli, Gonda, Kausambhi, Etah, Kushinagar, Shahjahanpur, Siddharth Nagar, Bahraich, Budaun, Balrampur, Shrawasti and Sonbhadra* **[11].**

For the HPDs**,** a group of 6 indicators were identified to be used in the Guidelines for HPDs for the RMNCH+A Strategy by the NHM[12] (one covering impact and the other covering outcome in areas of maternal and child health and family planning). These were:

i. Maternal Mortality Ratio (MMR)

ii. % of Safe Deliveries

iii. Infant Mortality Rate (IMR)

iv. % of Children 12-23 months fully immunized

v. Total Fertility Rate (TFR)

vi. Contraceptive Prevalence Rate (CPR) – Modern method

The 16 dashboard indicators[13] given by MoHFW for the RMNCH+A strategy focuses on 4 stages of a woman's lifecycle in a bid to reduce child and maternal mortality by strengthening the healthcare delivery system. This includes:

1. **Pregnancy care**-
    a) Registration during 1st Trimester
    b) Pregnant Woman (PW) receiving 3rd ANC
    c) PW receiving 100 IFA tablets
    d) Complicated cases attended for delivery
    e) PWs receiving 2 doses of Tetanus Toxoid
2. **Child Birth**-
    a) Delivery conducted by Skilled Birth Attendant (SBA)
    b) Institutional delivery against registration
    c) Percentage of Caesarean Sections out of the total deliveries conducted
3. **Postnatal maternal and newborn care**-
    a) Percentage of women that stayed in the institution after 48 hrs
    b) Percentage of new born weighing less than 2.5kg
    c) Percentage of new born breast fed in the 1st hour of delivery
    d) Percentage of new born visited in 24 hrs by a skilled caregiver following a home delivery
    e) Percentage of new born fully immunized with BCG
4. **Care during pre-pregnancy/reproductive age**-
    a) Percentage of male sterilization
    b) Percentage of post-partum sterilization

c) Percentage of Intra-Uterine Contraceptive Devices (IUCD) inserted

The **National Health and Family Survey (NFHS)** is conducted to provide information on population, health and nutrition status of each and every state of the country[14]. In the year 2015-2016, NFHS 4 was conducted to provide district-wise estimates of important indicators that may be used to project a socio-economic, demographic and healthcare scenario for every state/Union Territory of India. NFHS 4 is now being considered as the benchmark for all future surveys.

Annual Health Survey 2012-13 also provide district wise information on similar indicators. Reviewing two time data set on similar indicators there was a temptation to understand how the performance on these indicators moved in the high priority districts. Even if the two set of data are methodological comparable, still an attempt could be made to see the trend over a period of time especially after the label of "high priority district" was assigned to these districts.

Most of the districts were allotted to different development partners and they assisted the district health system to achieve the RMNCH+A related performance. The review of activities facilitated by these partners could be different in form and kind but they all remained targeted to the overall performance.

In view of the above the present capstone work seeks to obtain answer to the following questions:

*How did the high priority districts in Uttar Pradesh perform on selected maternal health indicators in NFHS 4? What is the change in these indicators over a period of time (after included as High Priority District)? Is the change significant? What is the proportion of change among HPDs as compared to adjacent no focus district and can this be attributed to the inputs provided by development partners?*

## Objectives

This study attempts to analyse the Fact Sheets provided in the public domain by NFHS 4 (2015-2016) and AHS 3 (2012-2013) for the State of Uttar Pradesh. In this study the author has the following 5 objectives:

1. To determine the status of the continuum of maternal health care in19 HPDs in relation to each other.
2. To determine the 5 lowest performing districts within the 19 HPDSin Uttar Pradesh using a composite index (CI).
3. To compare the level of change that has occurred in the maternal health indicators in the Bottom 5 Districts since AHS 3 to NFHS 4.
4. To compare the lowest performing districts with adjacent/comparable non high priority districts (non-HPDs) for the same indicators using NFHS 4 data.

5. To identify different organizations working in the 5 lowest performing districts and to review health programs aimed at improving the maternal and child health indicators so asto attribute the apparent change to these programs.

## Methodology

Only indicators that were common to NFHS 4 and AHS 3 were considered for the purpose of this study. Thus, the 16 dashboard indicators were modified to include only those indicators which reflected the status of maternal health, in accordance with the data available in the aforementioned surveys. The final sets of indicators used for the purpose of this study are:

1. **Pregnancy care:**
    a) Mothers who had antenatal check-up in the 1st trimester (%)
    b) Mothers who received at least one Tetanus Toxoid injection (%)
    c) Mothers who consumed IFA for 100 days or more (%)
    d) Mothers who had full antenatal check-up (%)
2. **Child Birth:**
    a) Institutional deliveries (%)
    b) Deliveries in government institutions (%)
    c) Home deliveries conducted by SBA (%)
    d) Caesarean sections in public facilities (%)
3. **Postnatal maternal and new born care:**
    a) Mothers who received PNC within 48 hrs of delivery (%)
    b) New born checked-up within 24 hrs of birth (%)
4. **Pre-Pregnancy Care/Use of Family Planning:**
    a) Any modern method of FP (%)
    b) Female Sterilization (%)
    c) Use of Copper-T/IUD (%)

I. To determine the status of the continuum of maternal care in the 19 HPDs in relation to each other, the NFHS 4 District Level Fact Sheet for each of the 19 HPDs were reviewed and the indicators reflecting the continuum of maternal health for each were entered in Microsoft Excel. Simple graphical representation for each indicator for each high priority district was obtained to view how these districts fared with respect to each other.

II. To determine the 5 lowest performing districts within the 19 HPDs, a composite index (C.I.) was generated for all indicators used for the status of maternal health in this study using NFHS 4 data, using Microsoft Excel.

A composite index is used to determine spatial differentiation in a city/state/district to determine the level of development[14]. For the purpose of this study, a CI was constructed to rank the HPDs and to determine the lowest performing districts from among them. The CI was computed using the following formula:

**If Xi is the value for that district, then Index Value (Xi)=** $\frac{(Xi-Xmin)}{(Xmax-Xmin)}$

Note: All indicators used for this analysis were positive indicators.

Total Number of Indicators=13

For the purpose of this study all maternal health indicators were assumed to have equal importance, and equal weightage was given to each indicator. Hence the composite index was calculated as the arithmetic mean of all the indices computed for that district.

Therefore, Composite Index=(X1+X2+X3.....X13)/13.

After the calculations, the values were arranged in ascending order. Higher the value better was the rank of that district. Percentile values were calculated for these districts which were then tabulated to show which districts comprised the 25$^{th}$, 50$^{th}$ and 75$^{th}$ percentiles.

**III.** For comparing the level of change that has occurred in the maternal health indicators between the two national level surveys, i.e., AHS 3 and NFHS 4, district-level data sheets for AHS 3 which were available in the public domain, were collected and entered in Microsoft Excel**.** Similar composite index was constructed for the AHS 3 data and the districts were ranked accordingly. The data from NFHS 4 was then compared for the same indicators, for each lowest performing district, and was represented graphically to show an improvement (or reduction). To determine whether the change in data between the 2 surveys was significant data for all 5 lowest performing districts was entered into SPSS 16 and a paired sample t test was run. The results were tabulated and reported in APA format.

IV. To contrast the highest priority districts (cases) with non-high priority ones (controls), 5 comparable districts, in the same administrative and geographical division were identified. The performances of these non-HPDs were evaluated for NFHS 4 against the same indicators, and the results were displayed graphically obtained by **Microsoft Excel** to provide a visual representation of the difference between them.

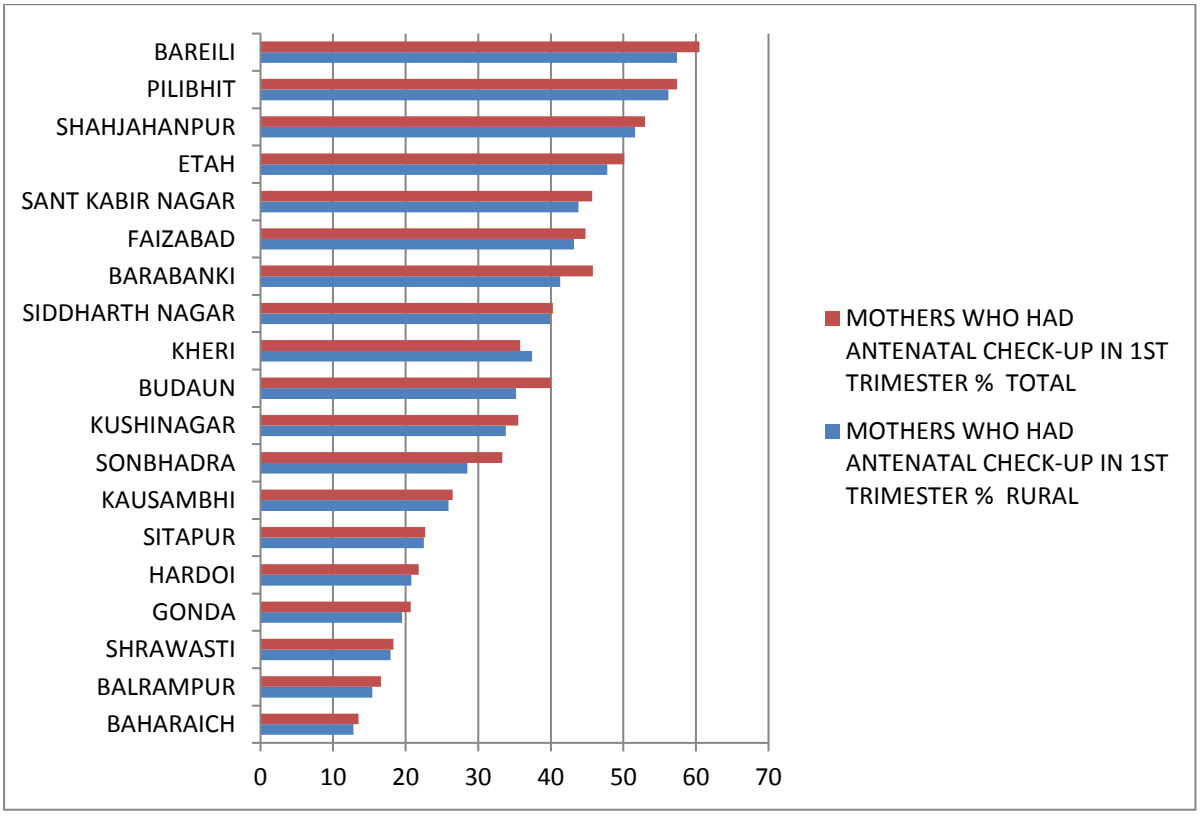
V. Various organizations working in UP, especially in the HPDs were identified as Health partners to the Govt of Uttar Pradesh and tabulated with reference to the area and field of work. The official websites of MoHFW and National Health Mission Govt of Uttar Pradesh were searched for District Action Plans. The Health Partner Forum of Uttar Pradesh was studied to identify the Health Partners. Multiple search engines like ProQuest, Sage Journals, J Gate and Research Gate were searched for scholarly articles on the impact of RCH Programs in the state of Uttar Pradesh in the interim period between 2012 and 2016.

# Results

## I. The status of continuum of maternal care in High Priority Districts according to NFHS 4, with respect to each other:

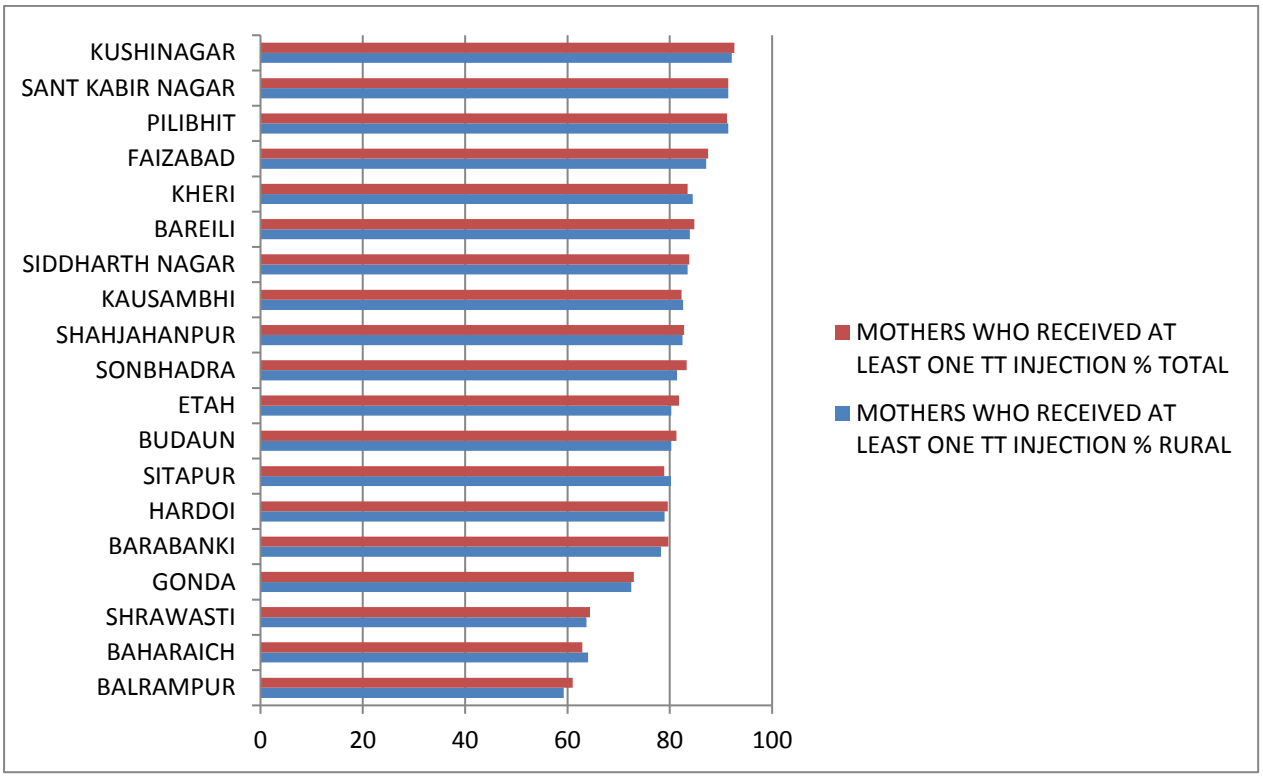
**Pregnancy Care:**

*Fig 1. Mothers who had ANC in the first trimester:*



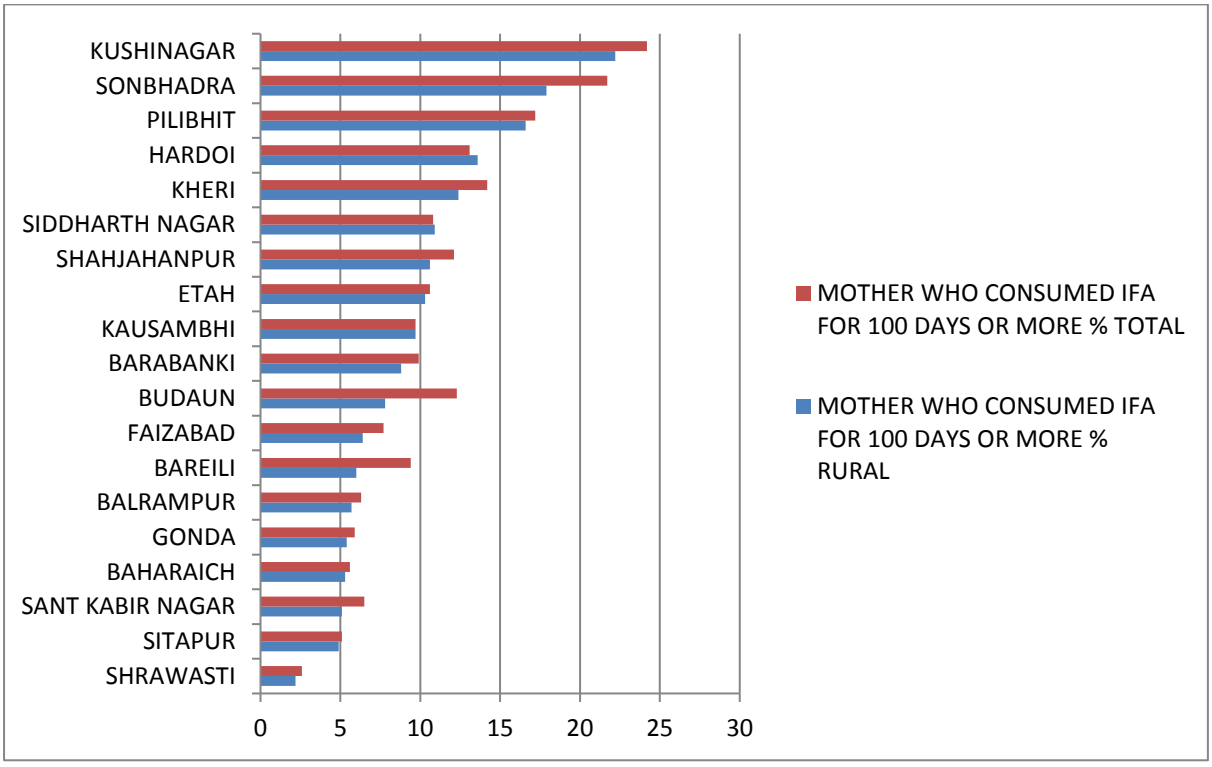

The lowest performer for mothers who had ANC in their first trimester was Bahraich, whereas Bareli had the highest percentage of mothers who received ANC check-up in the first trimester.

*Fig. 2 Mothers who received at least one TT injection:*



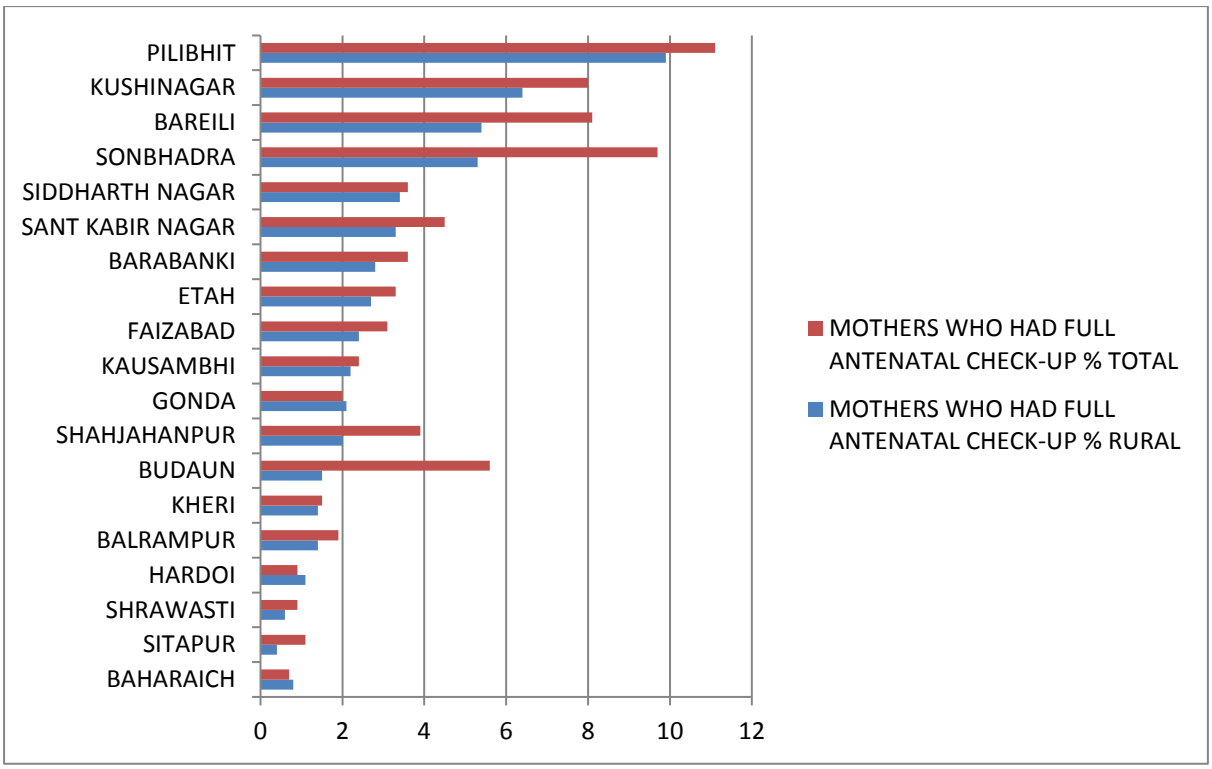

Balrampur was the lowest performing district in terms of mothers who received at least one dose TT injection. Kushinagar again had the highest percentage within the HPDs.

*Fig 3. Mothers who consumed IFA for 100 days or more:*



**Shrawasti** district had the lowest percentage of mothers who consumed IFA for 100 days or more, as compared to **Kushinagar** which was the highest performer for this indicator.

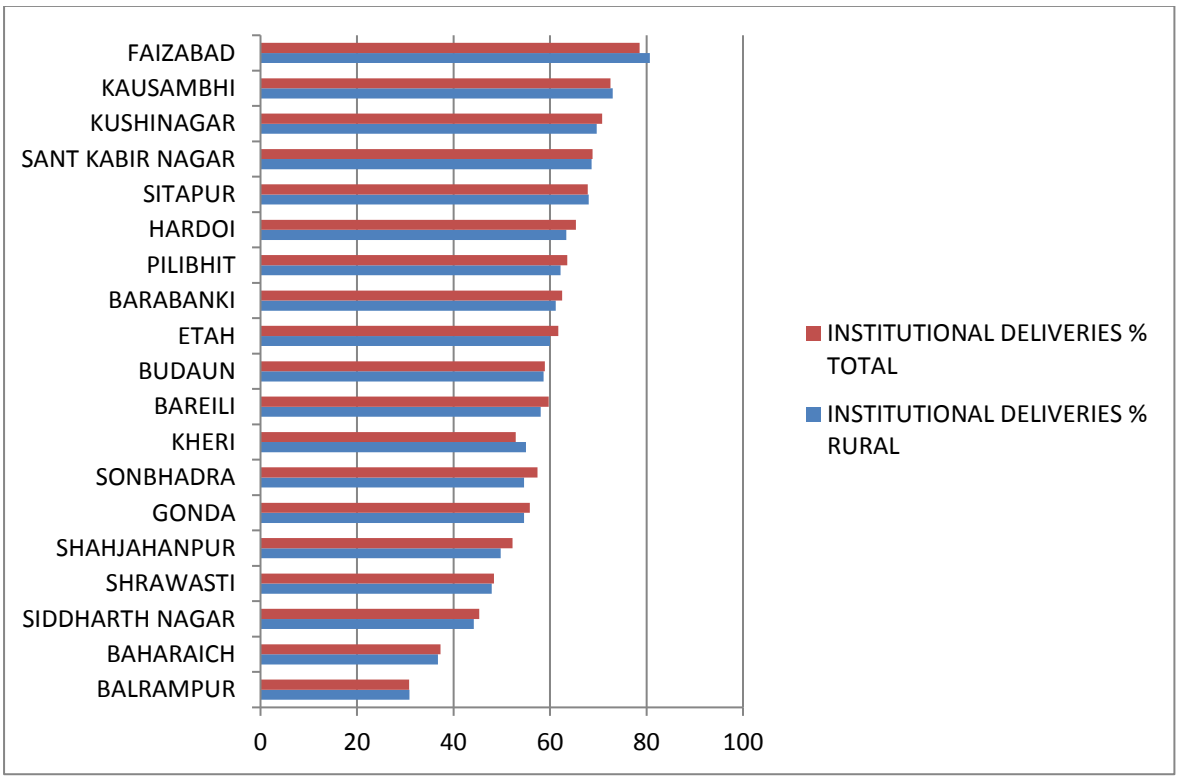
*Fig 4. Mothers who had full ANC:*




**Bahraich (0.9%)** was the districts with the lowest percentage of mothers who received a full ANC check-up.

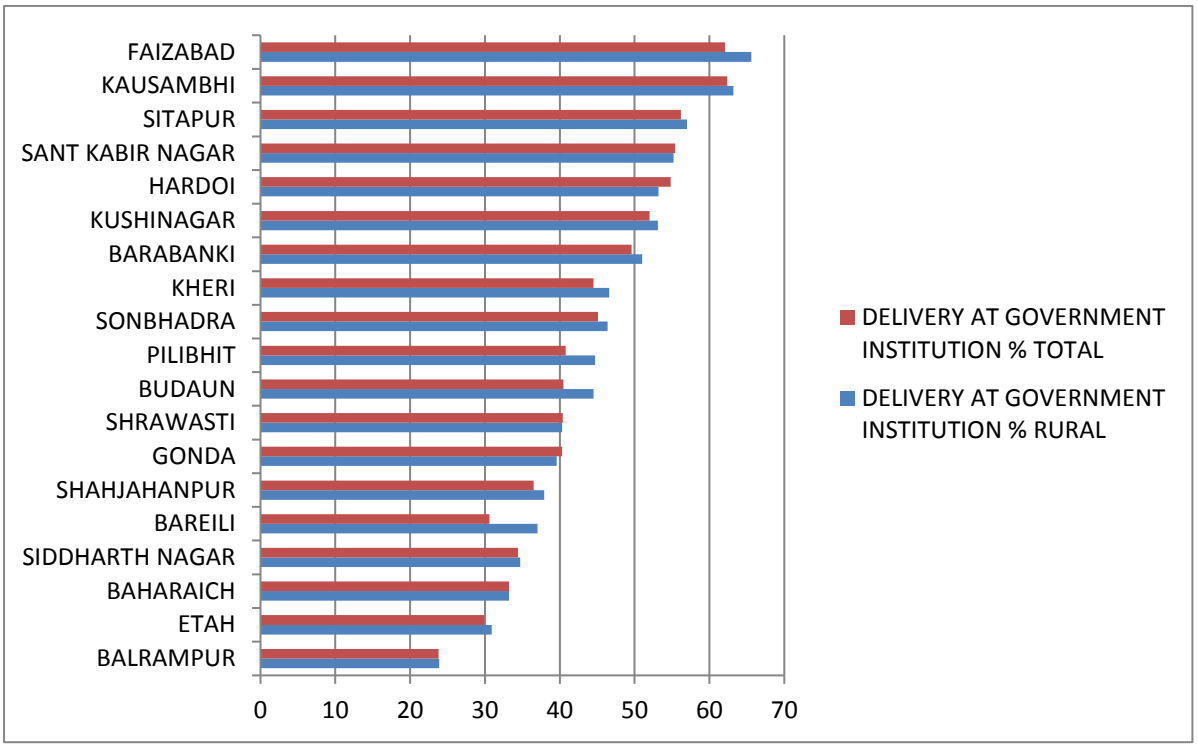
**Child Birth:**

*Fig 5. Institutional deliveries (%)*



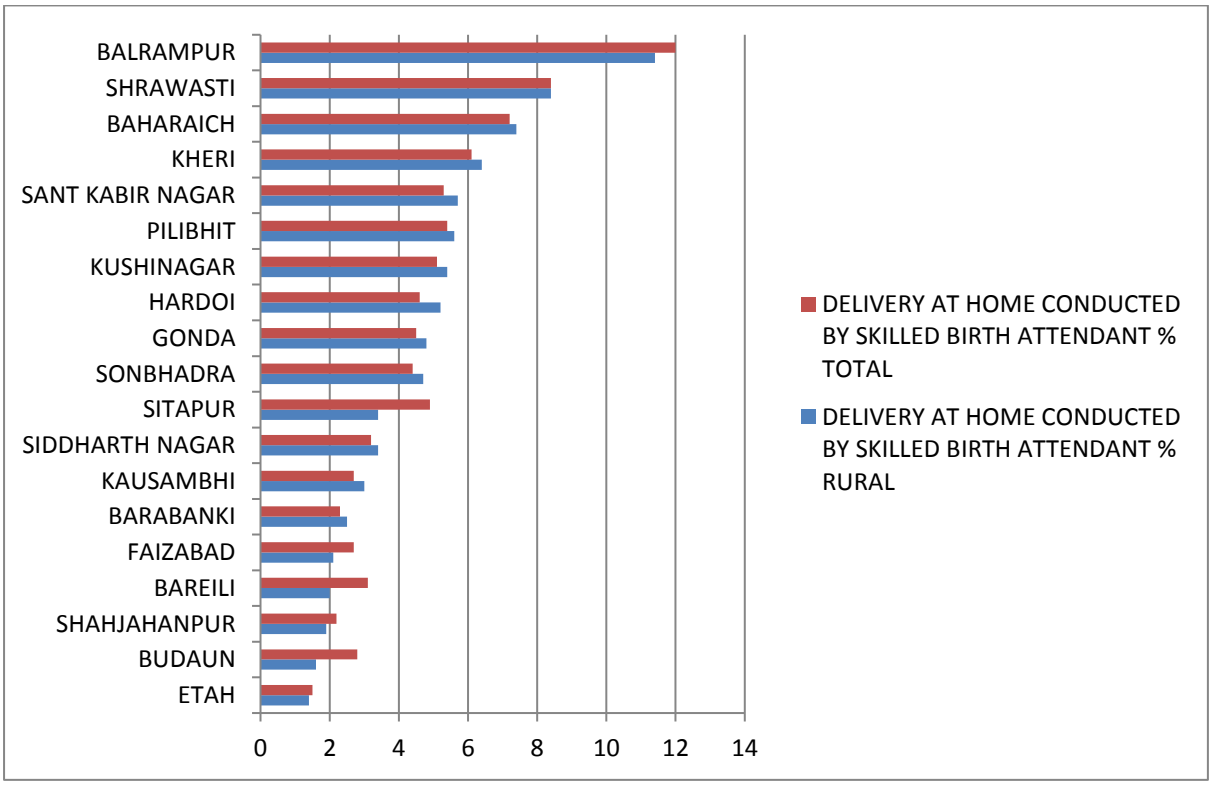

**Balrampur** had the lowest percentage of institutional deliveries in the state at 30.9%, as compared to Faizabad with 80.7%.

*Fig 6. Deliveries in government institutions:*



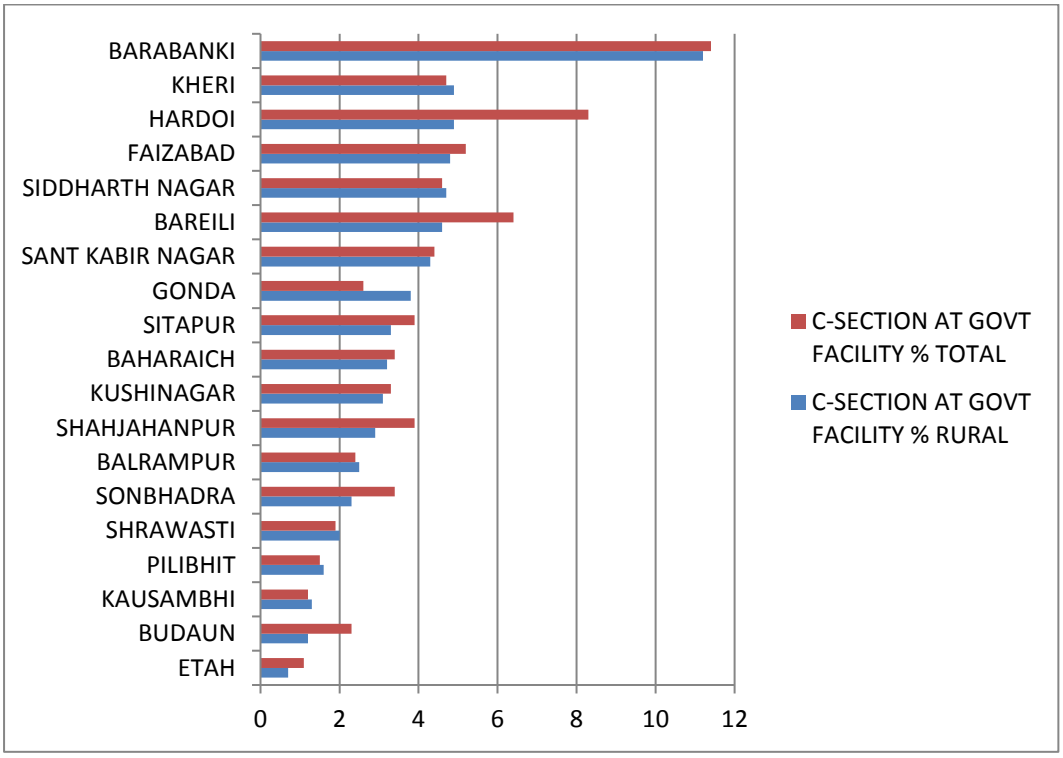

**Balrampur** with 23.9% deliveries in govt institutions held the bottom most rank for this indicator as compared to Faizabad with 65.5% govt institutional deliveries.

*Fig 7. Home deliveries conducted by SBA:*



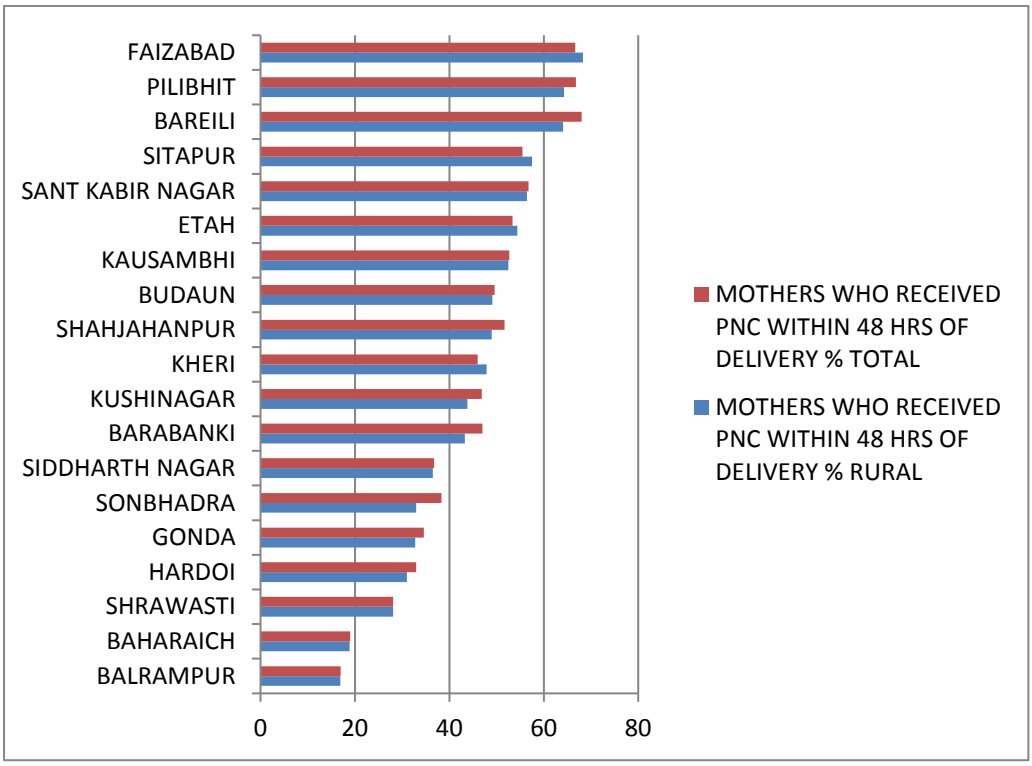
**Etah** was the lowest ranking district in which home deliveries were conducted by a skilled birth attendant at 1.4% as compared to Balrampur with 11.4% deliveries at home conducted by SBA (the highest amongst the HPDs).

*Fig 8. Caesarean sections in public facilities*



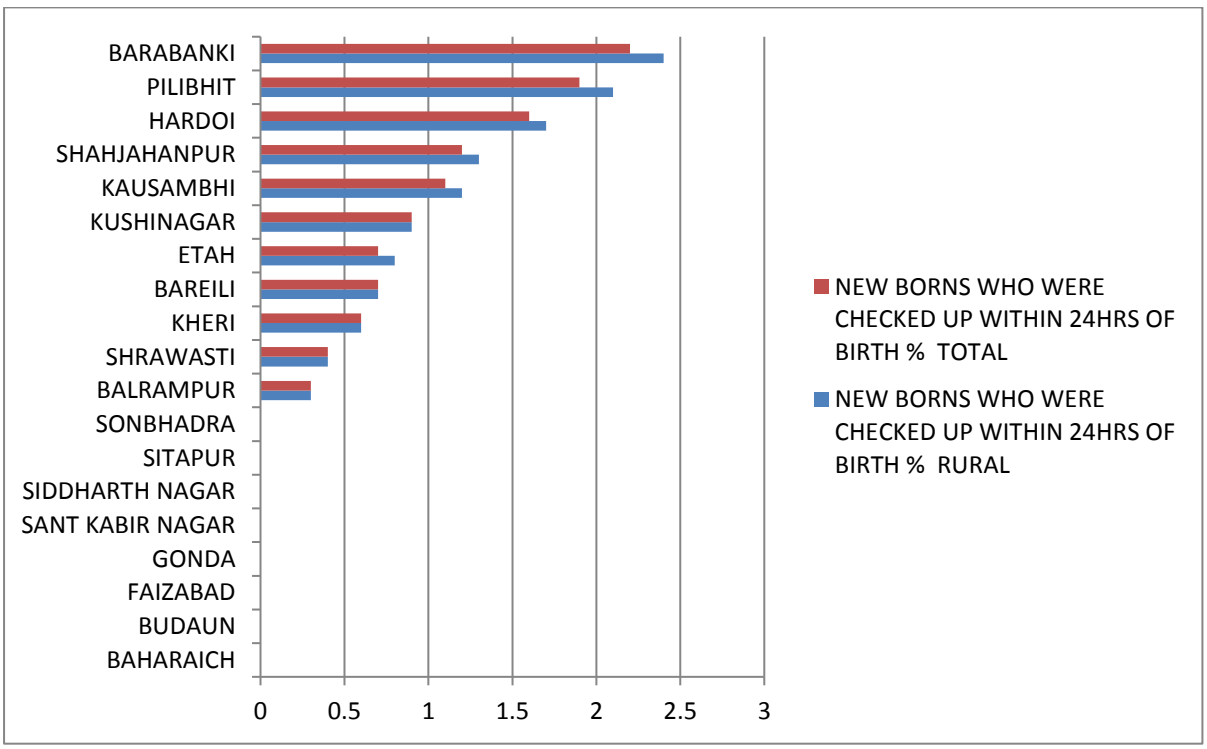

**Etah** again ranked lowest for this indicator with only 0.7% C-sections in Govt Facilities, with Barabanki ranking the highest for HPDs at 11.2%.

*Fig 9. Postnatal maternal and new born care:*




**Bahraich** witnessed only 18.9% mothers receiving post-natal care within 48 hrs of delivery in the state, as compared with Pilibhit and Bareli at 64.3% and 64.1% respectively.

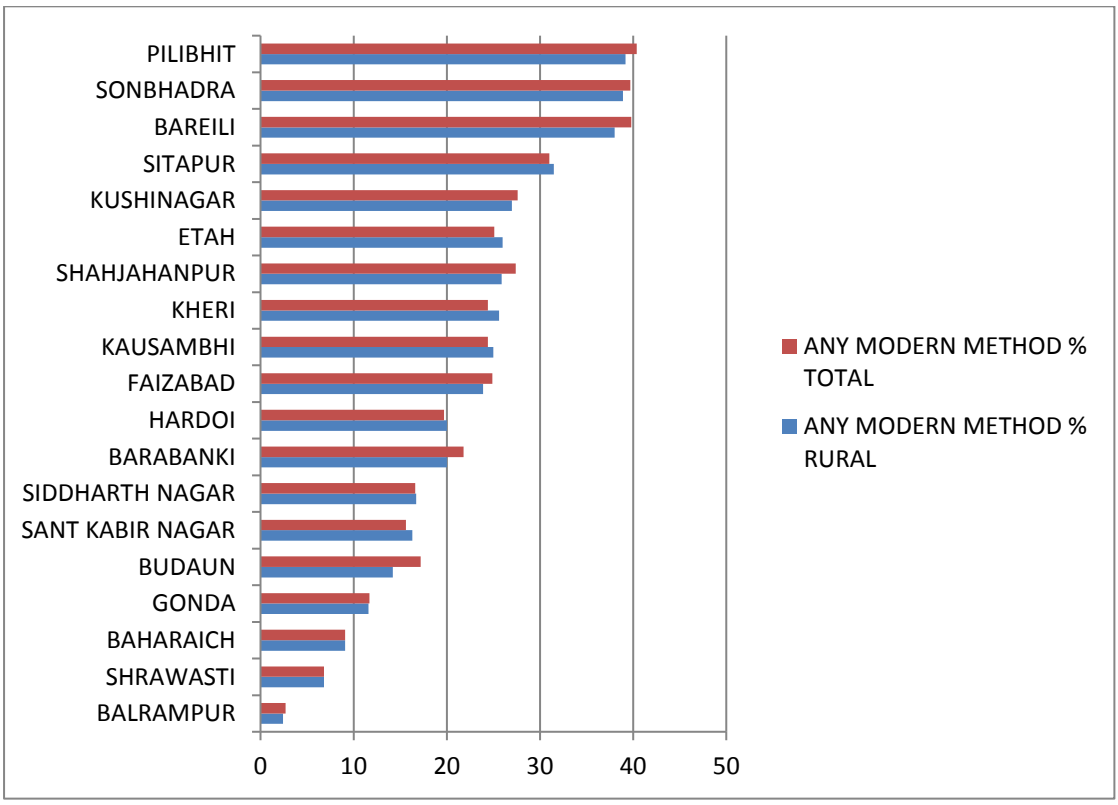
*Fig 10. New born checked-up within 24 hrs of birth:*



**Bahraich**, Badaun, Faizabad, Gonda, Sant Kabir Nagar, Siddharth Nagar, Sitapur and Sonbhadra were among the districts that recorded 0% neonates being checked-up within 24 hrs of birth. **Since NFHS 4 is being considered as the gold standard against which future surveys will be based, this data, although not questionable, is certainly alarming. The highest figure reported for this region was for the district of Barabanki, which recorded a figure of 2.4%, which in itself is an appallingly low number.**

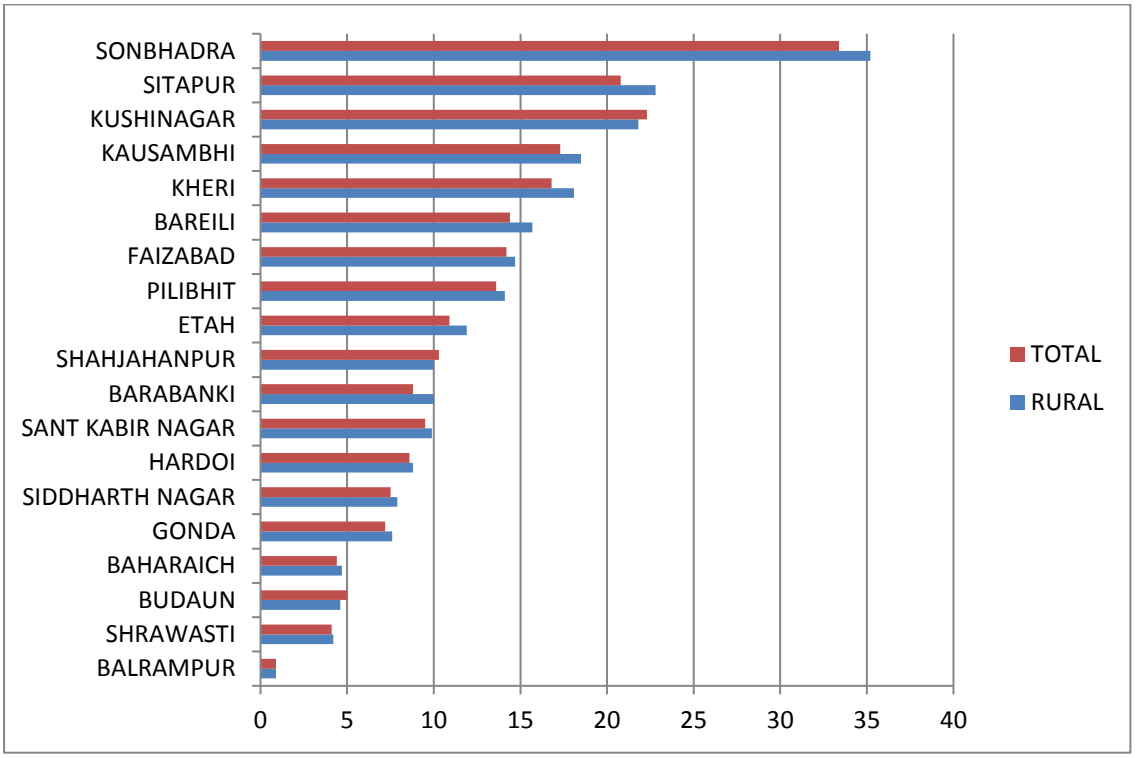
**Care during pre-pregnancy/reproductive age:**

*Fig 11. Use of any modern method for family planning (%)*



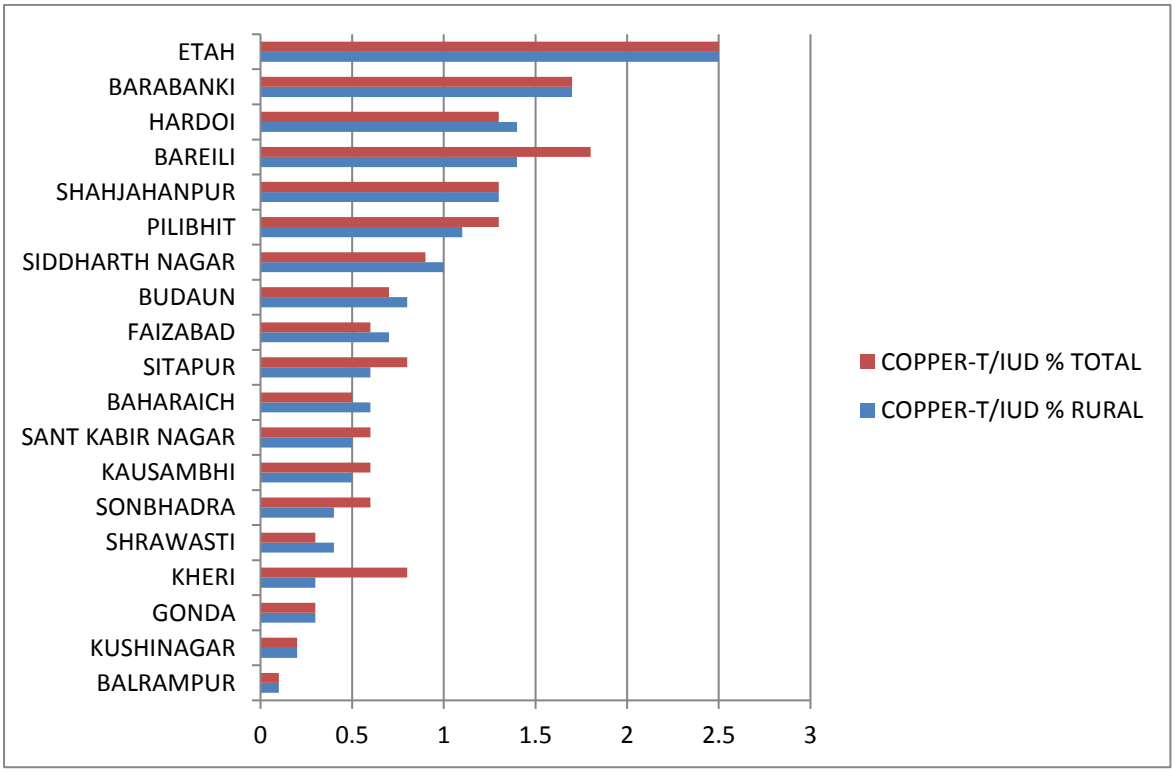

**Balrampur at 2.4%** had the lowest percentage of use of any modern method of family planning. The highest ranking district in this regard at 39.6% was Pilibhit, which was still higher than the state average of 21.7%.

*Fig 12. Female Sterilization:*




The rate of female sterilization **in Balrampur** was dreadfully low at 0.9%, and the highest recorded value for female sterilization was in Kushinagar with 21.8%.

*Fig 12. Use of IUCD:*



The use of Copper-T or any other IUCD in **Balrampur** was only among 0.1% of the women, which was the lowest recorded ICUD usage rate for the entire state. The highest recorded value was again less than the ideal amount, at 2.5%. However, it was greater than the state average of 1.2%.

## To rank the HPDs of Uttar Pradesh and to determine the 5 lowest performing districts within them:

On the basis of the CI described above, the HPDs were ranked. Percentiles was calculated and used to classify the districts. The index values up to 25th Percentile has been considered in the category of least developed districts. The districts having the composite index value between 25th and 75th percentile are considered as developing districts.

*Table 1: Ranking of HPDs according to Composite Index for NFHS 4 and AHS 3 respectively*

| Rank NFHS 4 | District | Composite Index | Percentile | Rank AHS 3 | Districts | Composite Index | Percentile |
|---|---|---|---|---|---|---|---|
| 1 | **Balrampur** | 0.124 | 25th | 1 | **Shrawasti** | 0.211 | 25th |
| 2 | **Bahraich** | 0.141 | 25th | 2 | **Budaun** | 0.266 | 25th |
| 3 | **Shrawasti** | 0.189 | 25th | 3 | **Balrampur** | 0.272 | 25th |
| 4 | **Gonda** | 0.235 | 25th | 4 | **Hardoi** | 0.300 | 25th |
| 5 | **Hardoi** | 0.333 | 25th | 5 | **Bahraich** | 0.318 | 25th |
| 6 | **Budaun** | 0.368 | 25th | 6 | **Sonbhadra** | 0.385 | 25th |
| 7 | **Sitapur** | 0.426 | 50th | 7 | **Shahjahanpur** | 0.391 | 50th |
| 8 | **Kheri** | 0.445 | 50th | 8 | **Bareli** | 0.406 | 50th |
| 9 | **Etah** | 0.446 | 50th | 9 | **Etah** | 0.445 | 50th |
| 10 | **Kausambhi** | 0.456 | 50th | 10 | **Gonda** | 0.464 | 50th |
| 11 | **Siddharth Nagar** | 0.463 | 50th | 11 | **Siddharth Nagar** | 0.472 | 50th |
| 12 | **Shahjahanpur** | 0.466 | 50th | 12 | **Kheri** | 0.489 | 50th |
| 13 | **Sant Kabir Nagar** | 0.468 | 50th | 13 | **Sant Kabir Nagar** | 0.500 | 50th |
| 14 | **Faizabad** | 0.512 | 75th | 14 | **Pilibhit** | 0.522 | 75th |
| 15 | **Sonbhadra** | 0.546 | 75th | 15 | **Kausambhi** | 0.527 | 75th |
| 16 | **Barabanki** | 0.562 | 75th | 16 | **Sitapur** | 0.560 | 75th |
| 17 | **Kushinagar** | 0.588 | 75th | 17 | **Kushinagar** | 0.581 | 75th |
| 18 | **Bareli** | 0.589 | 75th | 18 | **Faizabad** | 0.650 | 75th |
| 19 | **Pilibhit** | 0.679 | 75th | 19 | **Barabanki** | 0.699 | 75th |

On the basis of the composite index computed the lowest performing 5 districts were identified for NFHS 4 and AHS 3 within the HPDs. These were:

*Table 2: List of Lowest Performing Districts according to Composite Index*

| Lowest Performing District NFHS 4 | Composite Index | Lowest Performing District AHS 3 | Composite Index |
|---|---|---|---|
| Balrampur | 0.124 | Shrawasti | 0.211 |
| Bahraich | 0.141 | Budaun | 0.266 |
| Shrawasti | 0.189 | Balrampur | 0.272 |
| Gonda | 0.235 | Hardoi | 0.300 |
| Hardoi | 0.333 | Bahraich | 0.318 |

To compare the performance of these districts with non-HPDs, 5 other districts, comparable in terms of socio-economic and demographic status, in the administrative division were selected except for Shrawasti. Since Shrawasti is bordered with Nepal in the North, and surrounded on all other sides with other HPDs, Maharjgunj district in the Gorakhpur division was selected for its comparison owing to the socio-economic, demographic and geographical similarities between the districts.

**The comparison districts selected were as follows:**

*Table 3: List of comparison districts*

| Rank | District | Comparison |
|---|---|---|
| 1 | Balrampur | Gorakhpur |
| 2 | Bahraich | Rai Bareli |
| 3 | Shrawasti | Maharajgunj |
| 4 | Gonda | Basti |
| 5 | Hardoi | Unnao |

**To compare the change that has occurred in the maternal health indicators in the Bottom 5 Districts since AHS 3 and NFHS 4.**

**Antenatal Care:**

The following graphs show the status of all 5 lowest performing HPDs for indicators that reflect the level of pregnancy care the women receive between 2012 and 2016. **A paired sample t test** was then conducted to compare the indicators that reflect the status of maternal health in the 5 lowest performing districts in Uttar Pradesh from 2012 (Annual Health Survey) to 2016 (National Family Health Survey) to determine whether the changes witnessed within the districts were noteworthy or otherwise.

*Fig 13. Mothers who received ANC in the 1st Trimester:*

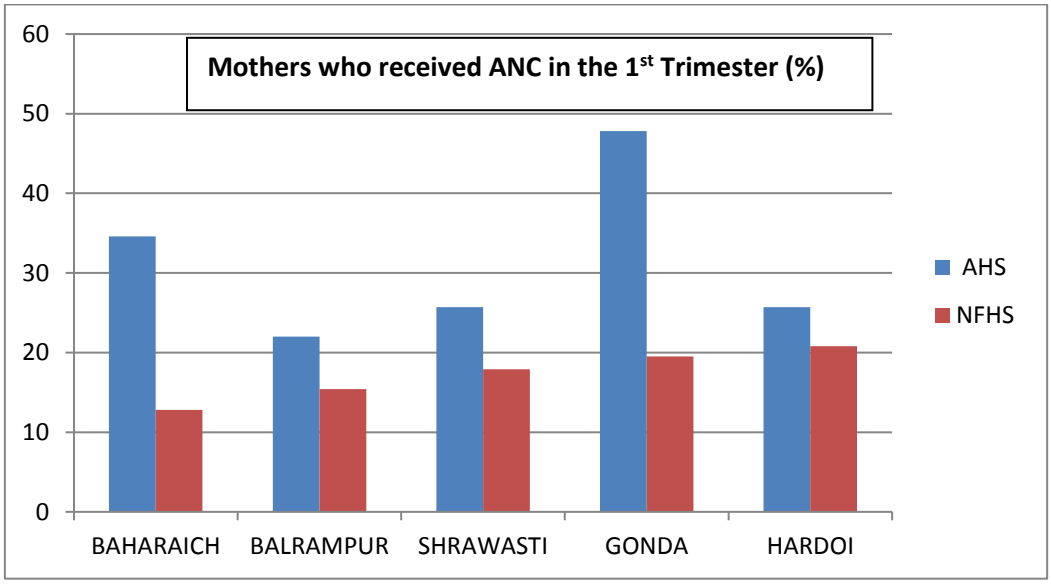



*Fig 14. Mothers who received at least one dose of TT:*

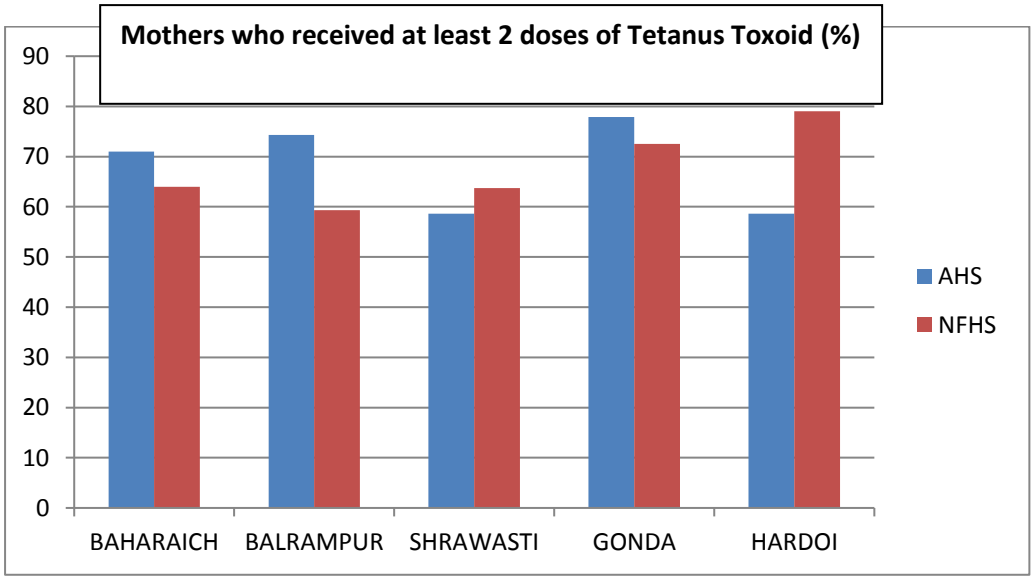


*Fig 15: Mothers who consumed 100 days of IFA:*

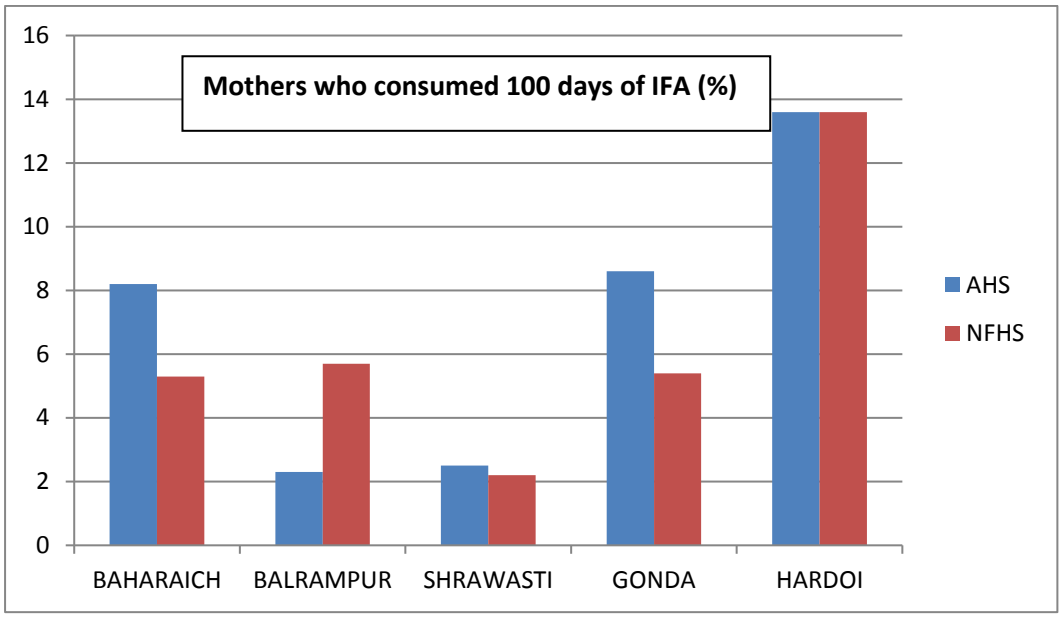
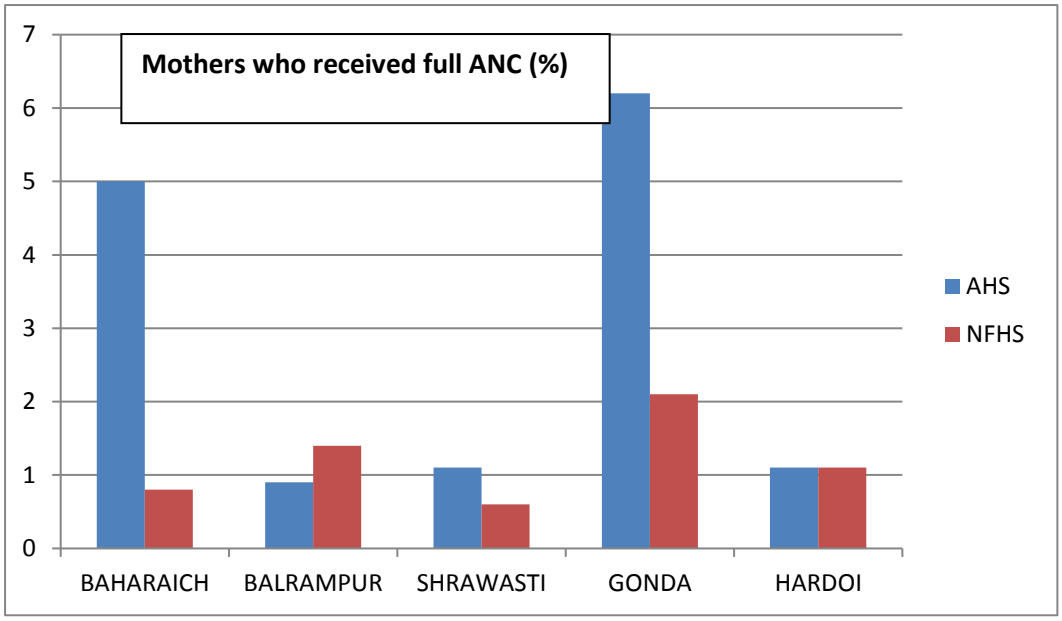



*Fig 16: Mothers who received full ANC:*




The paired sample t test was used to compare percentage of mothers who received antenatal care in according to AHS 3 and those who received antenatal care according to NFHS 4. There was a significant decrease in the score for mothers who received **ANC in the 1st trimester** between AHS 3 (M=31.16, SD=10.39) and NFHS 4 (M=17.28, SD=3.21) conditions; t (4) = 2.955, **p=0.042**, at 95% C.I. However, there was no significant change in the percentage of mothers who received at least **one dose of TT during** their pregnancy between AHS 3 (M=68.08, SD=8.99) and NFHS 4 (M=67.70, SD=7.92) conditions; t (4) =0.62, **p=0.953**. Similarly, there was no significant change in the percentage of **women who consumed IFA for 100 days** between the years since AHS 3 was conducted (M=7.04, SD=4.70) and NFHS 4 (M=6.44, SD=4.24) conditions; t (4) =0.503, **p=0.642**. Furthermore,

there was no significant change witnessed in the percentage of mothers who received **full ANC** in the lowest performing districts between 2012 (M=2.86, SD=2.53) and 2016 (M=1.2, SD=0.58) conditions; t (4) = 1.613, **p=0.182** at 95% C.I.

*Table 4: Paired t test for Antenatal Care*

| Pair 1 | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | t | dF | Sig (2 tailed) |
|---|---|---|---|---|---|---|---|
| **AHS_ANC_1 - NFHS_ANC_1 (Women who received ANC in their 1st trimester in AHS v/s NFHS)** | 1.388E1 | 10.503 | 4.697 | Lower.83857 Upper 26.92143 | 2.955 | 4 | 0.042 |
| **AHS_TT - NFHS_TT (Women who received at least one dose of TT in AHS v/s NFHS)** | 0.38 | 13.644 | 6.102 | Lower- 16.56096 Upper 17.32096 | 0.62 | 4 | 0.953 |
| **AHS_IFA - NFHS_IFA (Women who consumed IFA for 100 days in AHS v/s NFHS)** | 0.60 | 2.669 | 1.194 | Lower- 2.71434 Upper 3.91434 | 0.503 | 4 | 0.642 |
| **AHS_ANC_FULL - NFHS_ANC_FULL (Women who received full ANC in AHS v/s NFHS)** | 1.66 | 2.301 | 1.028 | Lower -1.19664 Upper 4.51664 | 1.613 | 4 | 0.182 |

## Delivery Care:

Delivery care comprises of 4 indicators against which districts are compared with each other. **A paired sample t test** was then conducted to compare the indicators that reflect the status of maternal health in the 5 lowest performing districts in Uttar Pradesh from 2012 (Annual Health Survey) to 2016 (National Family Health Survey) to determine whether the changes witnessed within the districts were significant or otherwise.

*Fig 17: Institutional Deliveries*

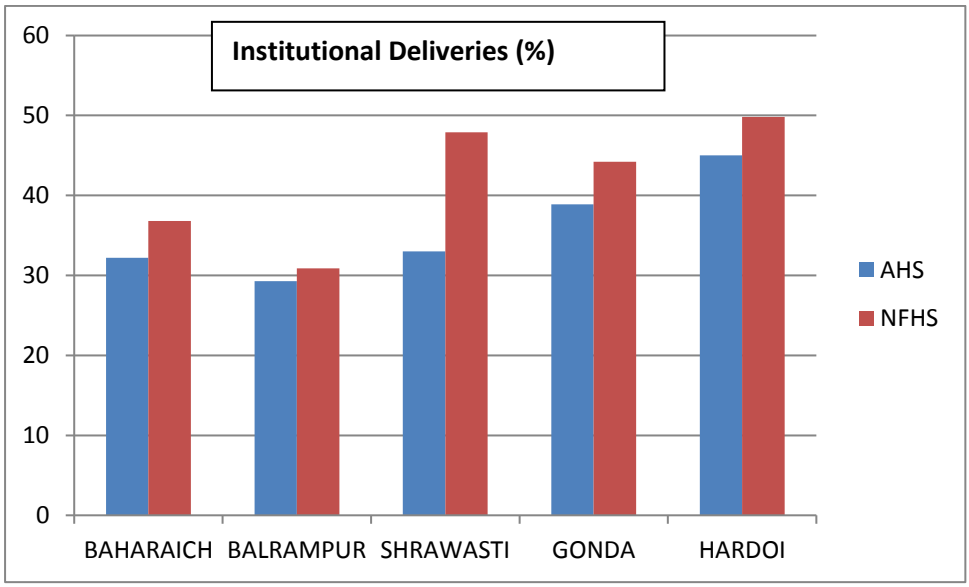



*Fig 18: Deliveries in Govt Facilities*

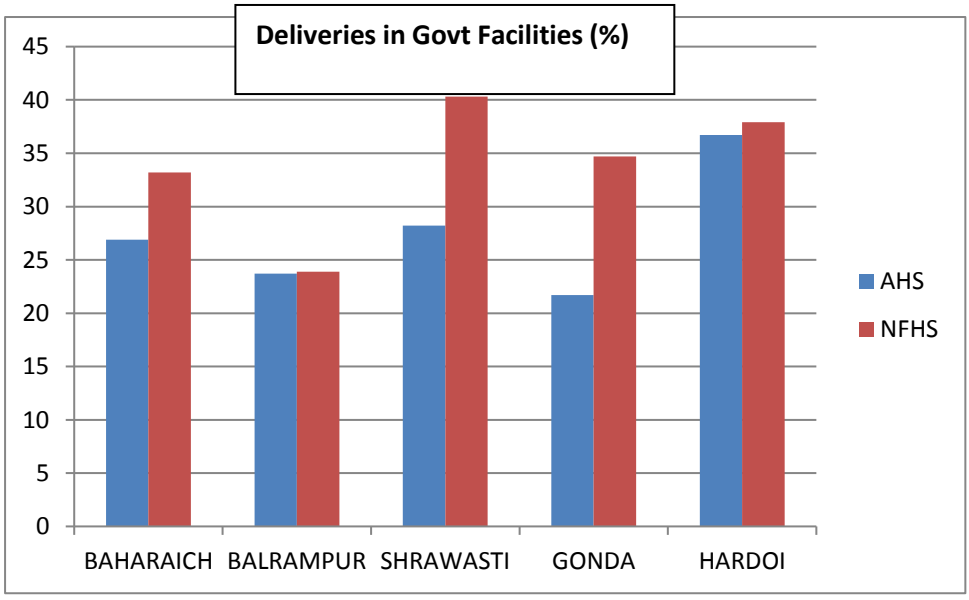


*Fig 19: Home deliveries conducted by SBA*

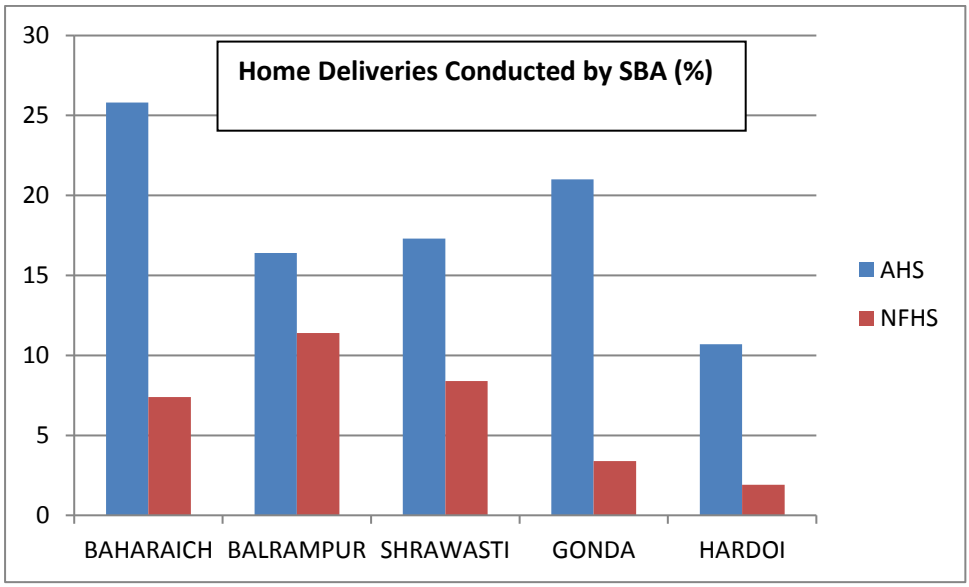
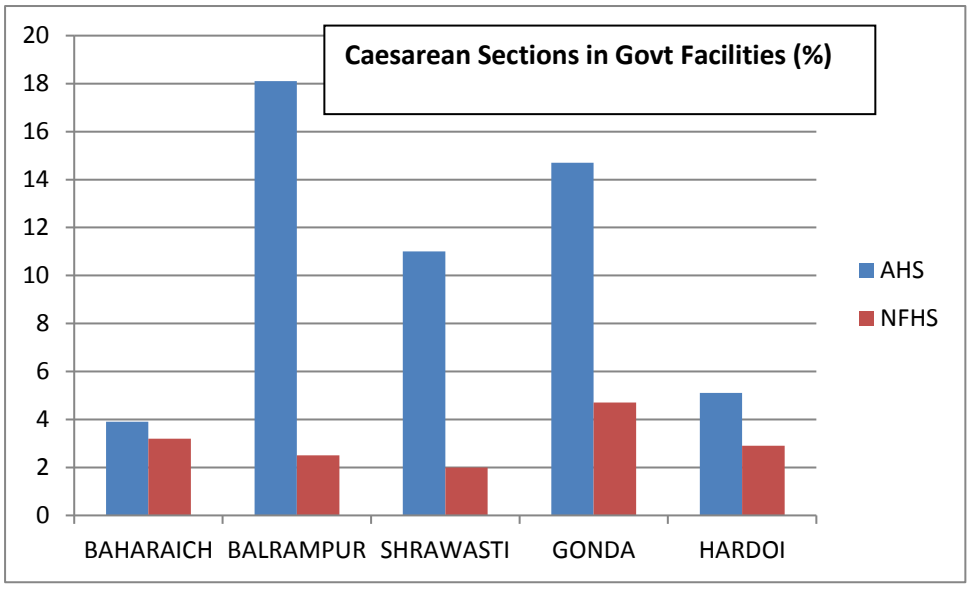



*Fig 20: Caesarean Sections conducted in Govt Facilities*




The paired sample t test was used to compare percentage of mothers who received delivery care at various stages according to AHS 3 against those who received delivery care according to NFHS 4. There was a **significant increase in the score for mothers who delivered in institutions** between AHS 3 (M=34.50, SD=6.06) and NFHS 4 (M=42.66, SD=8.34) conditions; t (4) = -2.905, **p=0.044**, at 95% C.I. However, there was no significant change in the percentage of mothers who delivered at **government facilities** between AHS 3 (M=28.74, SD=4.81) and NFHS 4 (M=35.12, SD=6.90) conditions; t (4) =-2.498**, p=0.067.** There was however a **significant reduction in the percentage of women who delivered at home in the presence of a skilled birth attendant** between the years since AHS 3 was conducted (M=17.5, SD=5.39) and NFHS 4 (M=7.5, SD=3.47) conditions; t (4) =4.485, **p=0.011**, at 95% C.I. This change can be attributed to the fact that a greater percentage of women delivered in institutions, leading to a consequent decrease in the home deliveries conducted

by SBAs/TBAs. There was **no significant change** witnessed in the percentage of mothers who underwent **Caesarean sections in public facilities** in the lowest performing districts between 2012 (M=10.56, SD=6.08) and 2016 (M=3.06, SD=1.02) conditions; t (4) = 2.053, **p=0.051** at 95% C.I.

*Table 5: Paired t test for Delivery Care*

| Pair | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | t | dF | Sig (2 tailed) |
|---|---|---|---|---|---|---|---|
| AHS_DC_INSTN - NFHS_DC_INSTN **(Women who received delivery care in the form of Institutional Deliveries in AHS v/s NFHS)** | -8.160 | 6.282 | 2.809 | Lower -15.960 Upper -.359 | -2.905 | 4 | 0.044 |
| AHS_DC_GOVT - NFHS_DC_GOVT **(Women who delivered in Govt facilities in AHS v/s AHS)** | -6.380 | 5.711 | 2.554 | Lower 13.471 Upper 0.711 | -2.098 | 4 | 0.067 |
| AHS_DC_HOME_SBA - NFHS_HOME_SBA (**Women who delivered at home with the help of a skilled birth attendant AHS v/s NFHS)** | 1.000E1 | 4.985 | 2.229 | Lower 3.809 Upper 16.190 | 4.485 | 4 | 0.011 |
| AHS_DC_CSGOVT - NFHS_DC_CSGOVT **(Women who delivered by Caesarean Section in Govt facilities in AHS v/s NFHS)** | 7.500 | 6.0912 | 2.724 | Lower -.063 Upper 15.063 | 2.753 | 4 | 0.051 |

**Postnatal Care:**

Only 2 parameters were considered for depicting the status of post natal maternal and new born care during NFHS 4. These were "Mothers who received PNC within 48hrs of delivery" and "New Born checked-up within 24hrs of birth". **A paired sample t test** was then conducted to compare the indicators that reflect the status of maternal health in the 5 lowest performing districts in Uttar Pradesh from 2012 (Annual Health Survey) to 2016 (National Family Health Survey) to determine whether the changes witnessed within the districts were significant or otherwise.

*Fig 21: Mothers who received PNC within 48hrs of delivery*

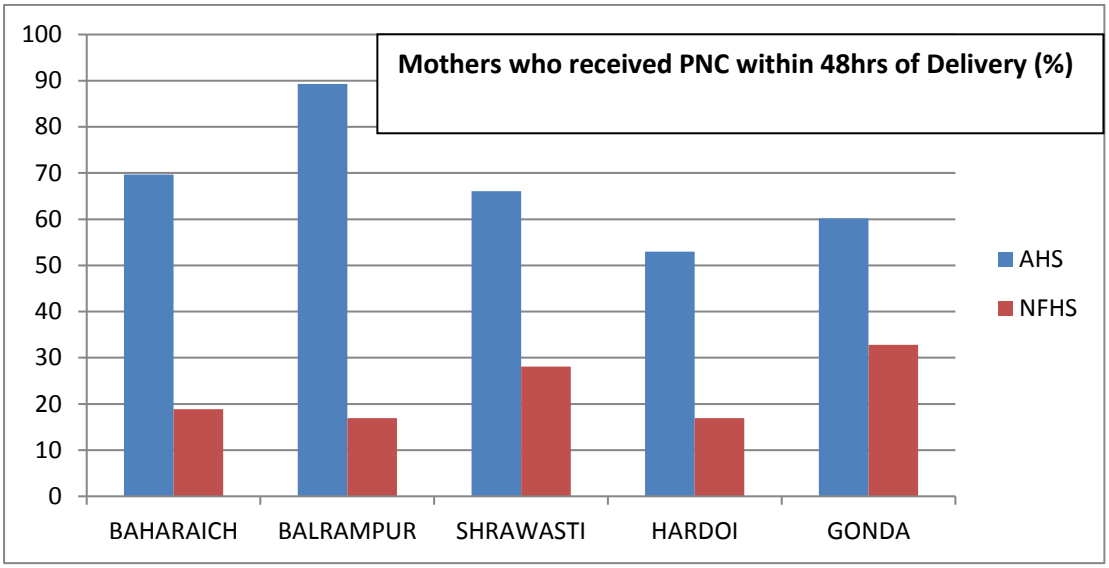
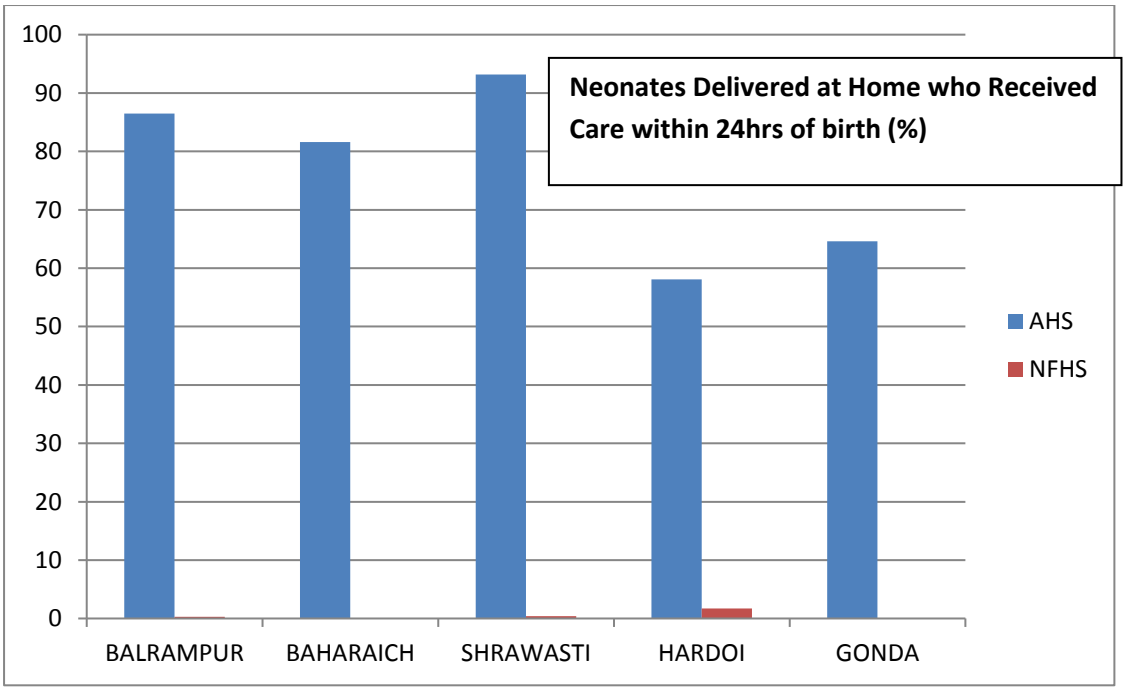



*Fig 22: Neonates delivered at home who received care from a caregiver within 24hrs of delivery*




The paired sample t test was used to compare percentage of mothers who had received postnatal care according to AHS 3 against those who received postnatal care according to NFHS 4. There was a **significant increase for mothers who delivered received PNC within 48hrs of delivery** between AHS 3 (M=67.66, SD=13.65) and NFHS 4 (M=25.54, SD=7.20) conditions; t (4) = 4.665, **p=0.010**, at 95% C.I. However, there was a **significant decrease inthe percentage of neonates who received care within 24hrs of birth** between AHS 3 (M=76.80, SD=14.67) and NFHS 4 (M=0.48, SD=0.70) conditions; t (4) =11.185**,**

**p=0.000**. This aspect requires further investigation since the series of data for neonates receiving care within 24hrs of birth recorded the value of 0, for almost all HPDs.

*Table 6: Paired t test for Postnatal Care*

| Pair | | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | t | dF | Sig (2 tailed) |
|---|---|---|---|---|---|---|---|
| AHS_PNC_TWO_DAYS - NFHS_PNC_TWO_DAYS **(Women who received postnatal care within 48hrs of delivery AHS v/s NFHS)** | 4.21200E1 | 20.19089 | 9.02964 | Lower 17.04970 Upper 67.19030 | 4.665 | 4 | 0.010 |
| AHS_PNC_NEWBORN_ONE_DAY - NFHS_PNC_NEWOBORN_ONE_DAY **(Neonates who received care from skilled personnel within 24hrs of delivery at home in AHS v/s NFHS)** | 7.63200E1 | 15.25818 | 6.82366 | Lower 57.37447 Upper 95.26553 | 11.185 | 4 | 0.000 |

**Family Planning:**

The parameters used for family planning as an indicator for the continuum of maternal care were use of any modern method of contraception (contraceptive prevalence rate), use of Copper-T/IUCD, and female sterilization (as opposed to male sterilization which is part of the 16 dashboard indicators as mentioned above. However, since the results for all districts for male sterilization in NFHS 4 ranged between 0-0.2% this parameter was not considered as a relevant indicator for the purpose of this study). **A paired sample t test** was then conducted to compare the indicators that reflect the status of maternal health in the 5 lowest performing districts in Uttar Pradesh from 2012 (Annual Health Survey) to 2016 (National Family Health Survey) to determine whether the changes witnessed within the districts were significant or otherwise.

*Fig 23: Use of any modern method of contraception*

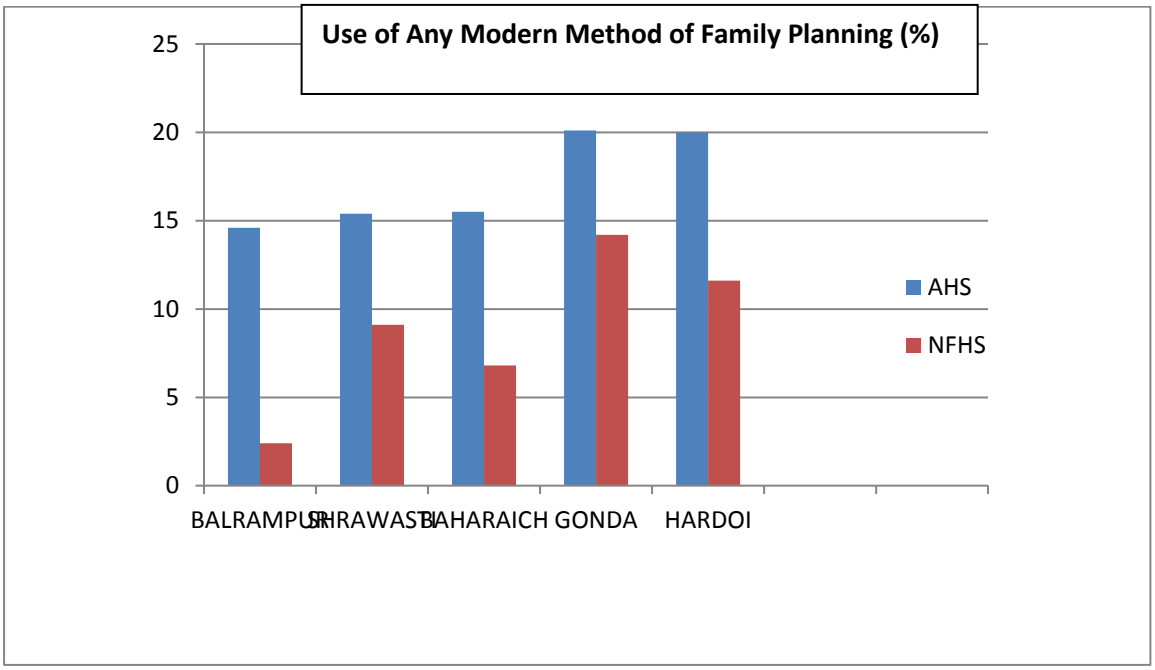



*Fig 24: Female Sterilization*

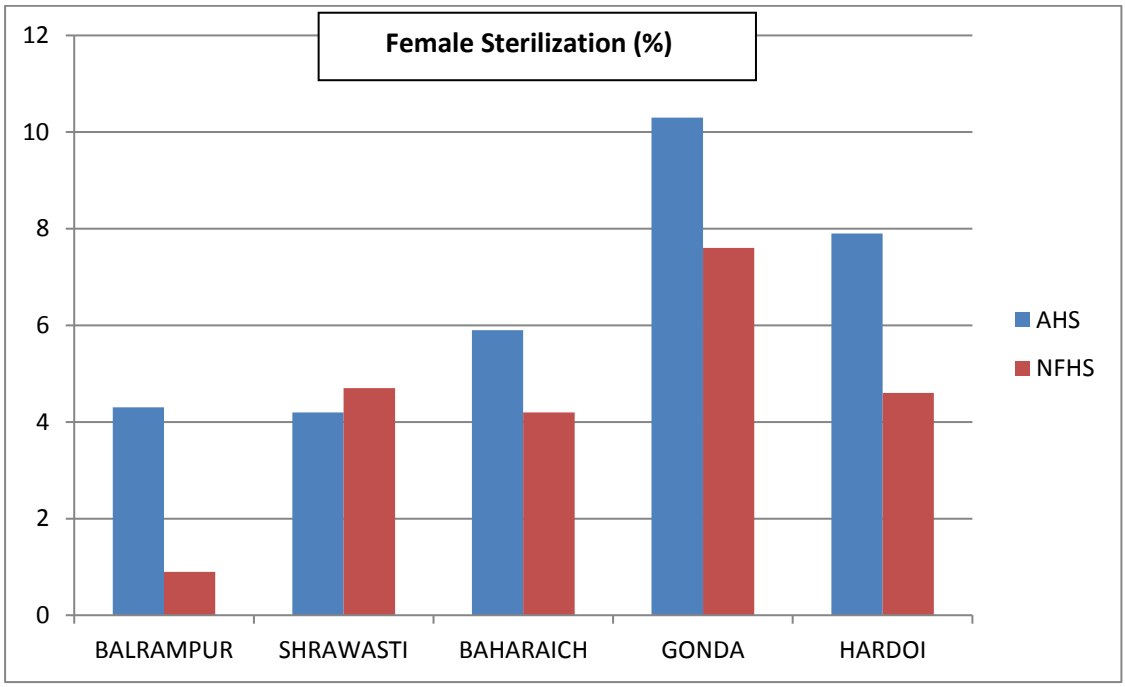
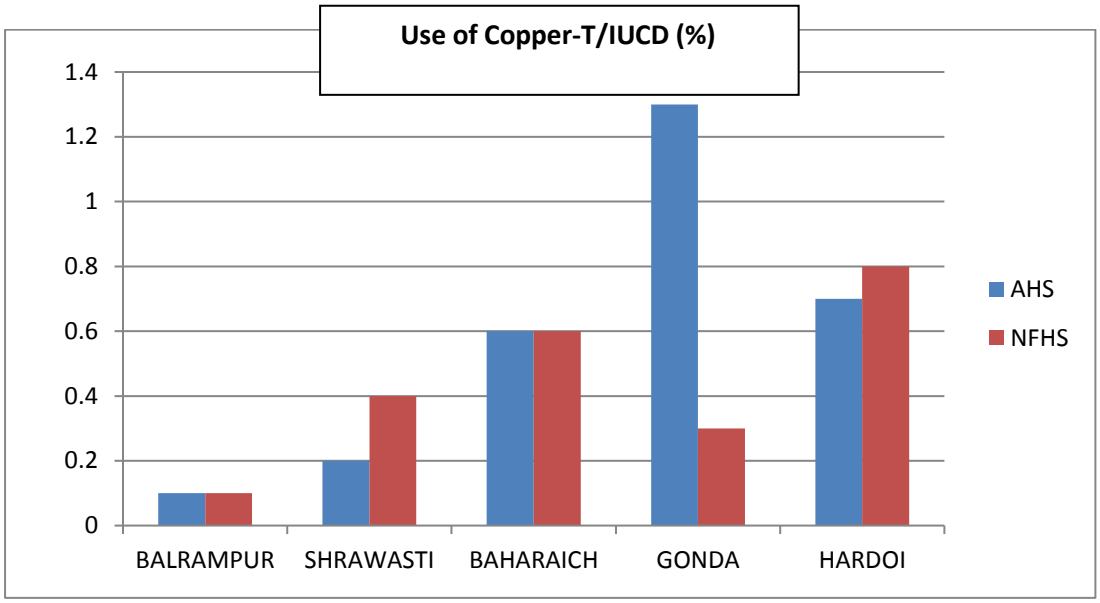


*Fig 25: Use of Copper-T/IUCD*




The paired sample t test was used to compare percentage of women who used contraception as a means of family planning according to AHS 3 against those who received postnatal care according to NFHS 4. There was a **significant decrease for used any modern method of family planning** between AHS 3 (M=23.74, SD=16.55) and NFHS 4 (M=9.98, SD=6.54) conditions; t (4) = 2.794, **p=0.049**, at 95% C.I. However, there was no **significant change inthe women who underwent sterilization** between AHS 3 (M=6.58, SD=2.63) and NFHS 4 (M=5.24, SD=3.10) conditions; t (4) =1.754**, p=0.154**. Similarly, **no significant change occurred in women who used Copper-T/IUCD** as a method of contraception between AHS 3 (M=0.80, SD=0.731) and NFHS 4(M=0.56, SD=0.50) conditions; t(4) =1.124, p=0.324.

*Table 7: Paired t test for Family Planning from AHS 3 and NFHS 4*

| Pair | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | t | dF | Sig (2 tailed) |
|---|---|---|---|---|---|---|---|
| AHS_ANY_MODERN_METHOD - NFHS_ANY_MODERN_METHOD **(Women who use any modern method of family planning AHS v/s NFHS)** | 1.37600E1 | 11.01059 | 4.92408 | Lower.08855 Upper 27.43145 | 2.794 | 4 | 0.049 |
| AHS_FEMALE_STERLIZE - NFHS_FEMALE_STERILIZE **(Women who underwent female sterilization in AHS v/s NFHS)** | 1.34000 | 1.70822 | .76394 | Lower -.78103 Upper 3.46103 | 1.754 | 4 | 0.154 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AHS_IUCD - NFHS_IUCD **(Women who underwent insertion of intrauterine contraceptives/Copper-T in AHS v/s NFHS)** | .24000 | .47749 | .21354 | Lower -.35289 Upper .83289 | 1.124 | 4 | 0.324 |

## To contrast the lowest performing districts with adjacent/comparable non high priority districts (non-HPDs) for the same indicators using NFHS 4 data.

After the lowest performing districts were identified using the Composite Index, they were compared against districts that were similar in every socio-economic and demographic way, but were not as "high priority" as the others. All 10 districts-**Balrampur, Bahraich, Shrawasti, Gonda, Hardoi, Gorakhpur, Rai Bareli, Maharjgunj, Basti and Unnao had 70% populations that resided in rural areas.** According to the Ministry of Panchayti Raj in 2006, all 10 of them were identified as few of the country's 250 most backward districts, and became eligible to receive funds from the Backward Regions Grant Fund Program over and above the allocated health budget from the Government of Uttar Pradesh and various funding partners.

According to the government, **Balrampur** is one of the Minority Concentrated Districts of India based on its socio-economic, demographic and basic amenities indicators.

**Bahraich** has been categorized as Socio-Economic Level "A" by the State Government, for having socio-economic and basic amenities parameters lower than the national average.

*Table 8: The demographic indicators of the 10 districts selected for this study*

| District | Division | Population | Literacy Rate | Sex ratio | District | Population | Literacy Rate | Sex Ratio |
|---|---|---|---|---|---|---|---|---|
| **Balrampur** | Devipatan | 2,149,066 | 51.76%. | 0.922 | **Gorakhpur** | 4,440,895 | 70.83% | 0.944 |
| **Bahraich** | Devipatan | 3,478,257, | 51.10% | 0.891 | **Rai Bareli** | 3,404,004 | 69.04%. | 0.941 |
| **Shrawasti** | Devipatan | 1,117,361 | 46.74% | 0.881 | **Maharjgunj** | 2,665,692 | 64.30% | 0.938 |
| **Gonda** | Devipatan | 3,433,919 | 58.71% | 0.921 | **Basti** | 2,461,056 | 69.69% | 0.959 |
| **Hardoi** | Lucknow | 4,091,380 | 68.89% | 0.856 | **Unnao** | 3,110,595 | 69.29% | 0.901 |

# Balrampur v/s Gorakhpur

*Fig 26: Pregnancy Care Balrampur v/s Gorakhpur*

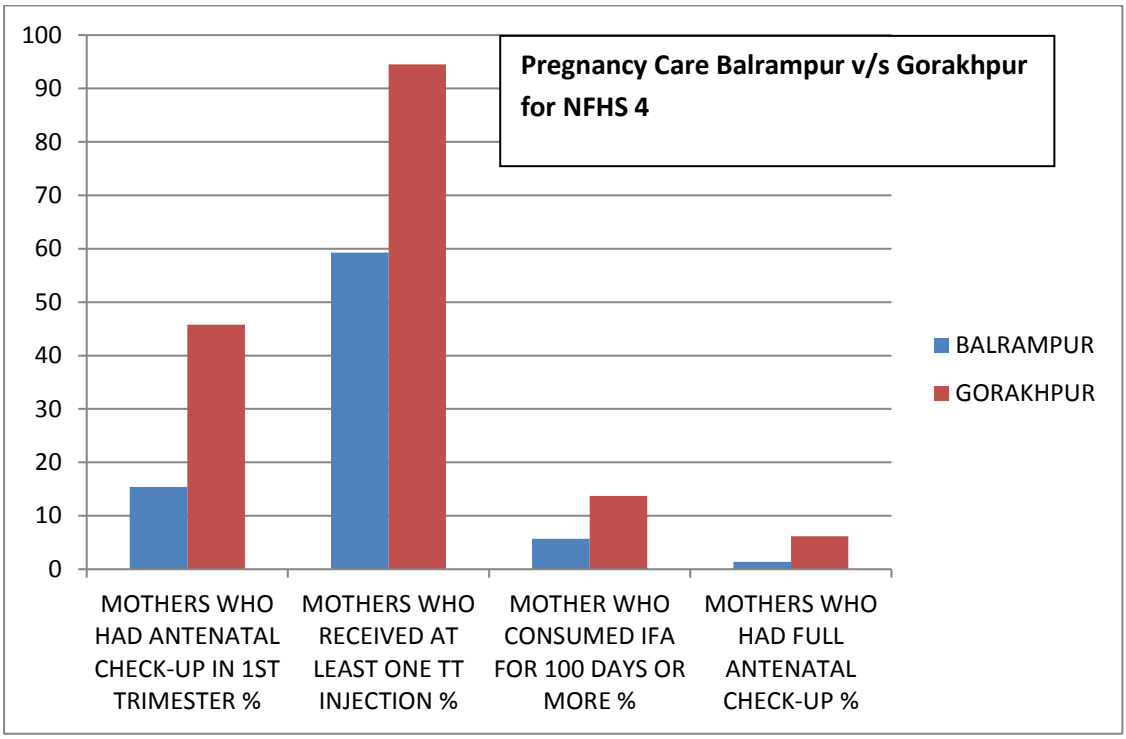



*Fig 27: Delivery Care Balrampur v/s Gorakhpur*

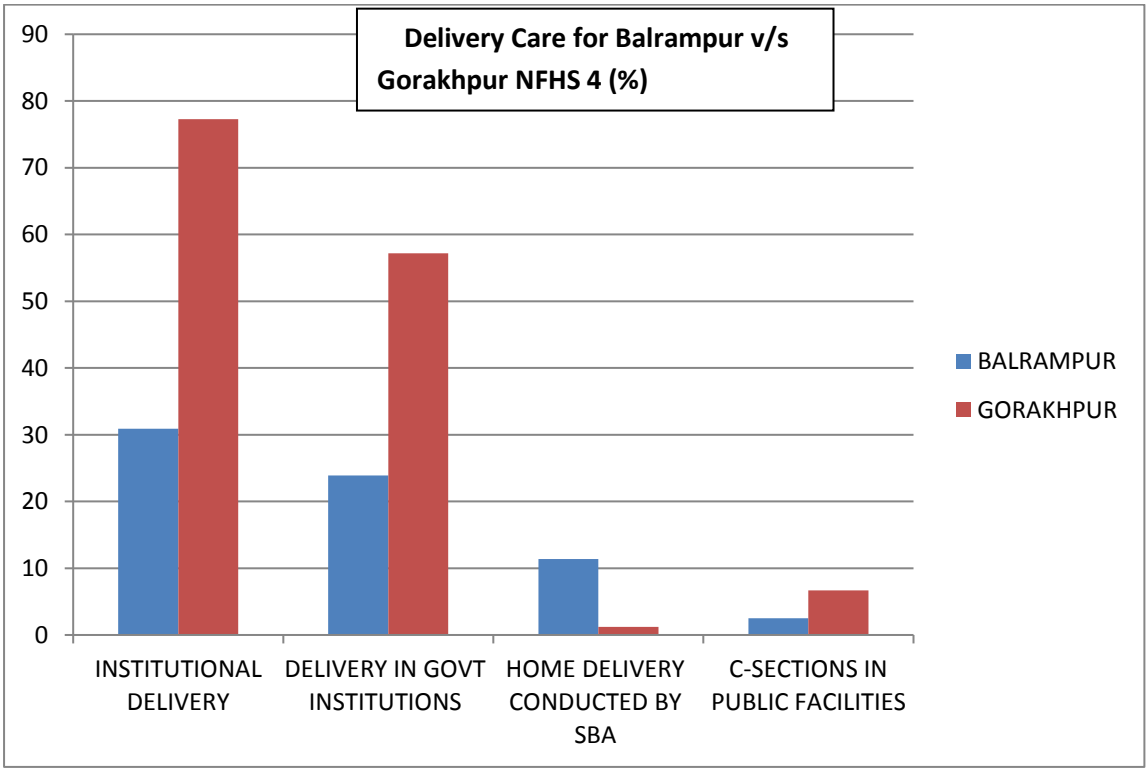


*Fig 28: Postnatal maternal and new born care Balrampur v/s Gorakhpur*

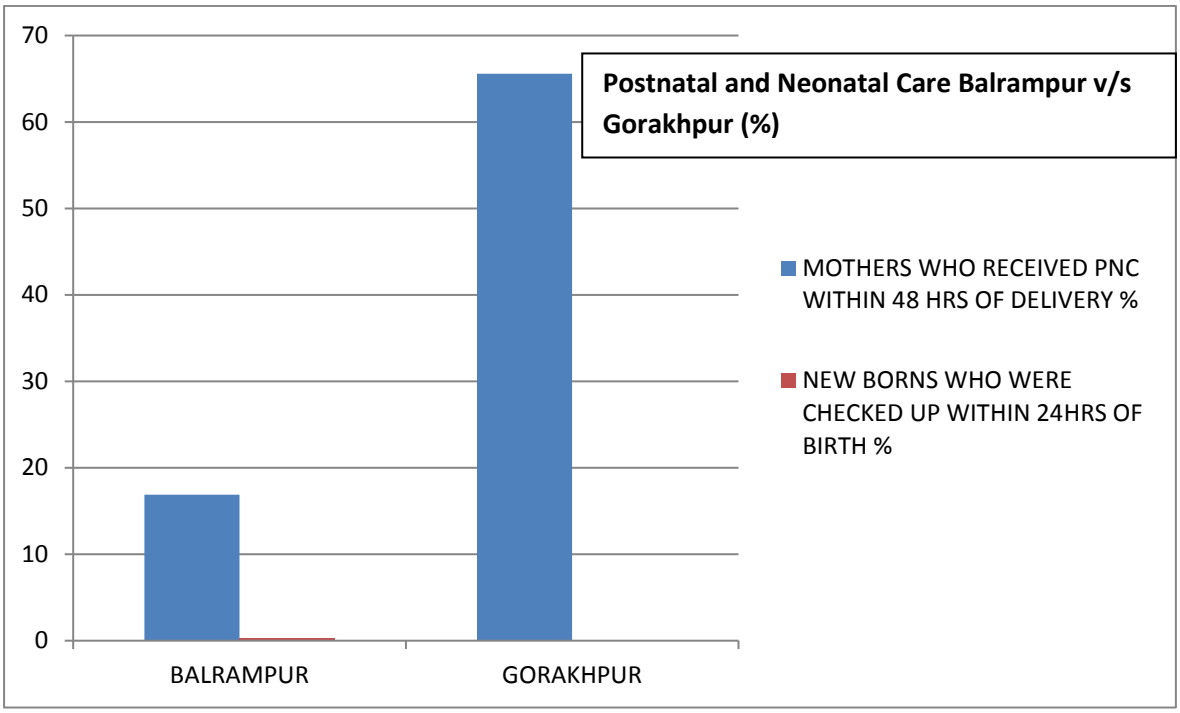
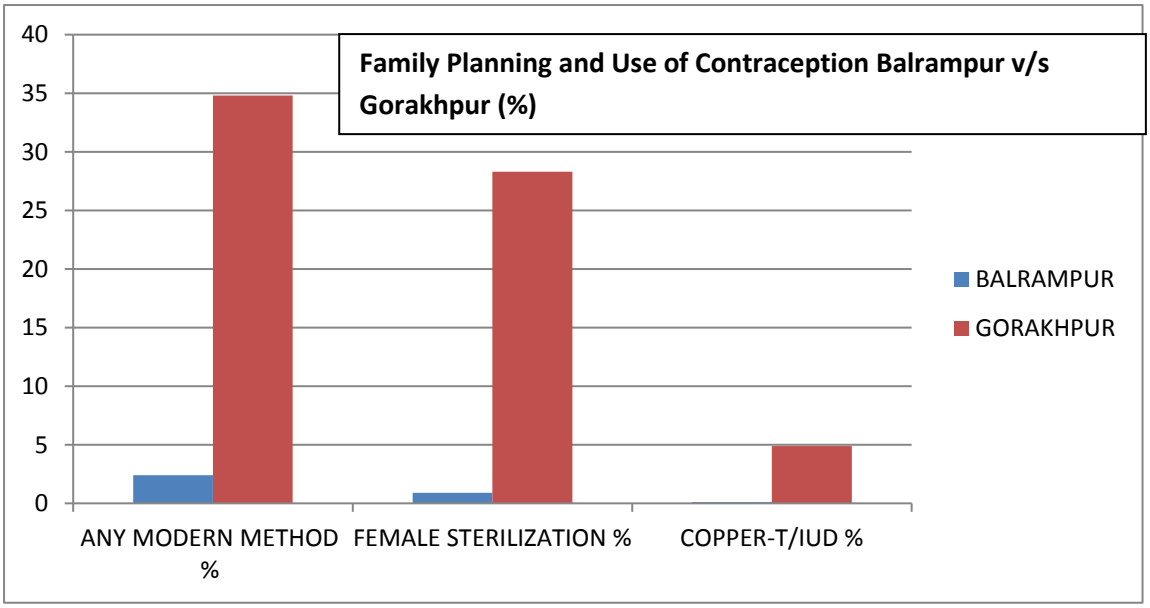



*Fig 29: Family Planning Balrampur v/s Gorakhpur*




The percentage of women receiving ANC in the first trimester for GKP is significantly more than those for Balrampur. Women who received at least one dose of tetanus toxoid during their pregnancy ranged between 59.3% for Balrampur and 94.9% in GKP during NFHS 4**, which showed a 3.3% increase for Gorakhpur but 15% decrease for Balrampur.**

13.7% women consumed iron and folic acid (IFA for 100 days or more in GKP according to NFHS-4. This is in sharp contrast to Balrampur, where only 5.7% of the women consumed IFA**, which was a 3.4% and 6.5% increase for Balrampur and GKP respectively from AHS 3.**

The percentage of women who received a full antenatal check-up in both these districts was appallingly low, with numbers as less as 1.4% for Balrampur. GKP also did not fare very well, with only 6.2% women receiving a full ANC during the entirety of their pregnancy, **which increased by 0.5% and 1.8% from AHS 3 for both districts respectively.**

The percentage of institutional deliveries was 30.9% for the district of Balrampur and 77.3% for GKP. **This showed an increase by 1.6% for Balrampur and 12% increase for GKP.**

The percentage of women opting for deliveries in Government Institutions also witnessed an increase for both districts, although the increase in GKP was higher in comparison with Balrampur. 23.9% women underwent delivery in govt facilities as per NFHS 4. But the numbers were almost double in GKP with 57.2% women having deliveries in govt institutions**. While this suggested only a 0.2% change in Balrampur, it was an increase by 16.4% for GKP from AHS 3.**

The statistics for deliveries conducted at home by skilled birth attendants (SBA) saw a slight change in the inherent pattern of indicators. Balrampur witnessed a higher percentage of home deliveries conducted by SBAs. A possible reason for this could be that a higher percentage of women chose to deliver at home rather than at a health centre. 11.4% in 2016 chose to deliver at home in Balrampur. As compared to the miniscule number 1.2% for GKP. **This was a decrease for both districts by 5 and 21.5% respectively.**

The percentages of births delivered by Caesarean section in public facilities were less than 5% in Balrampur, during NFHS 4. Even in GKP 6.7% women delivered via C-section in govt facilities. A possible reason for this could be due to a higher number of private facilities coming into practice, which conducted a total of 50.3% deliveries by C-section GKP. Similar data for rural Balrampur in the NFHS 4 factsheet showed that 18.6% births by C-section in private facilities were recorded for Balrampur district in total. However, the sample size for this data was only 25-40. **This was again a decrease by 15.6% for Balrampur and 3% from GKP from AHS 3.**

Mothers who received PNC within 48 hrs of delivery were appreciably higher for GKP than for Balrampur. Where only 16.9% mothers received postnatal care in Balrampur, 65.6% received care in GKP. **A decrease by 72.4% for Balrampur and 26.7% for GKP for women receiving PNC and a decrease by 89% for Balrampur and 86.2% for GKP for neonates checked up after home delivery suggests gross overestimation of data in AHS 3**.

The use of any modern method of FP for Balrampur was 2.4% CPR as compared to the drastically high numbers of 34.8% for GKP. This shows a decrease from AHS 3 by 12.2% and 8.2% for both Balrampur and GKP.

The percentage of female sterilization in Balrampur, although notably higher than the sterilization of their male counterparts, still fell short as compared with the comparable district of GKP. 0.9% women were sterilized in Balrampur as compared to 28.3% in GKP. This is dramatically poignant figure, and major steps in Balrampur need to be taken to achieve even $1/4^{th}$ the percentage of female sterilization of GKP. **It was an increase in female sterilization in GKP by 8.4%.**

The percentage of women using Copper-T or any other intra-uterine contraceptive device (IUCD) was atrociously low. However, the statistics for GKP were far better than any other non-HPD district in this regard. Where 0.1% women in Balrampur opted for IUCD as a method of contraception, 4.9% women in GKP opted for the same. **There was an increase in use of Copper T/IUCD from AHS 3 by 4.7% in GK**P. This proves that while a much greater attention must be paid to promotion of use of

IUCDs in women as an inexpensive and relatively long-term method of effective contraception, it is certainly a task that is not unachievable, as suggested by the spike in usage seen in Gorakhpur.

# Bahraich v/s Rai Bareli

*Fig 30: Pregnancy Care for Bahraich v/s Rai Bareli*

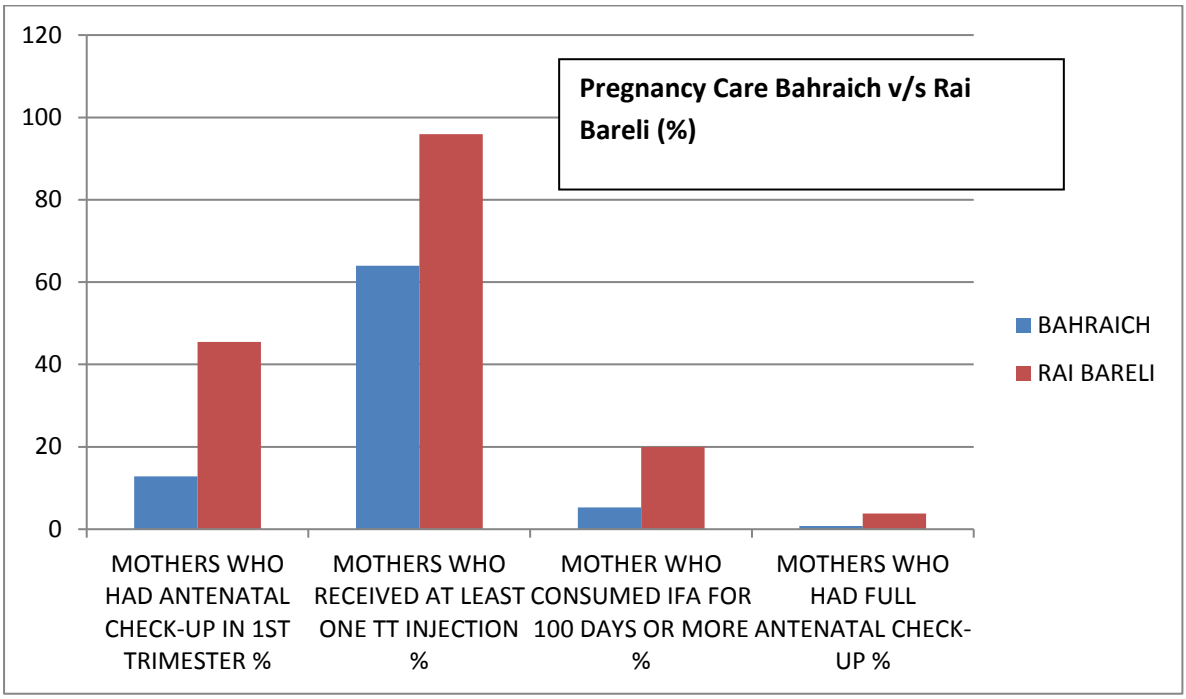



*Fig 31: Delivery Care for Bahraich v/s Rai Bareli*

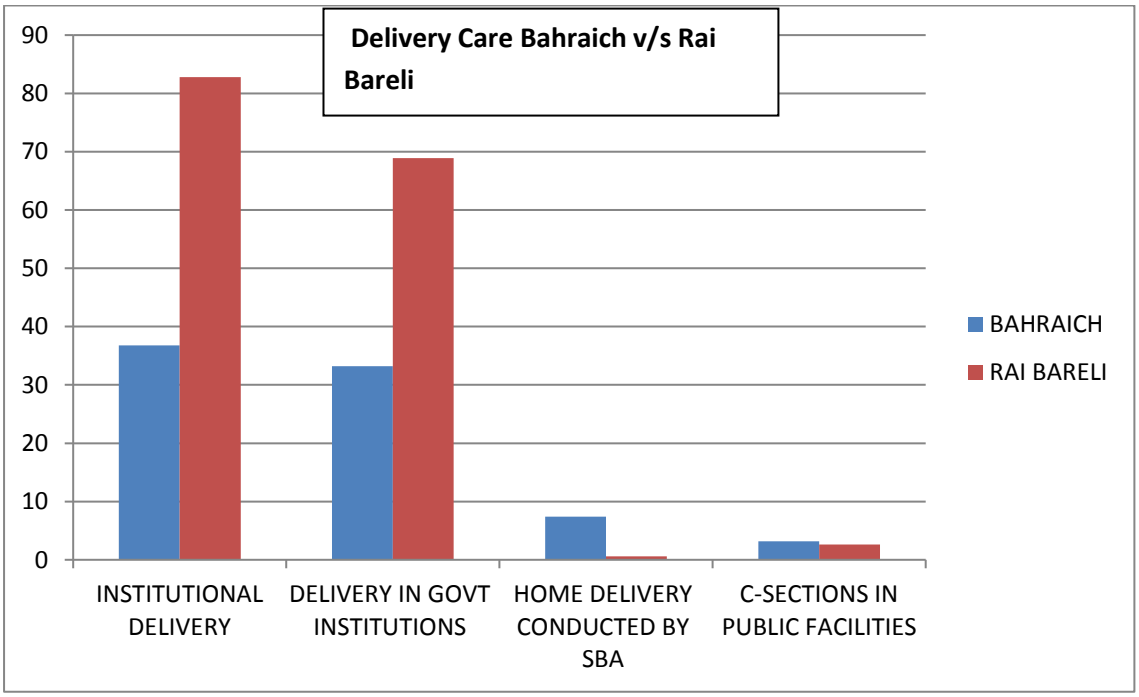


*Fig 32: Postnatal maternal and new born care Bahraich v/s Rai Bareli*

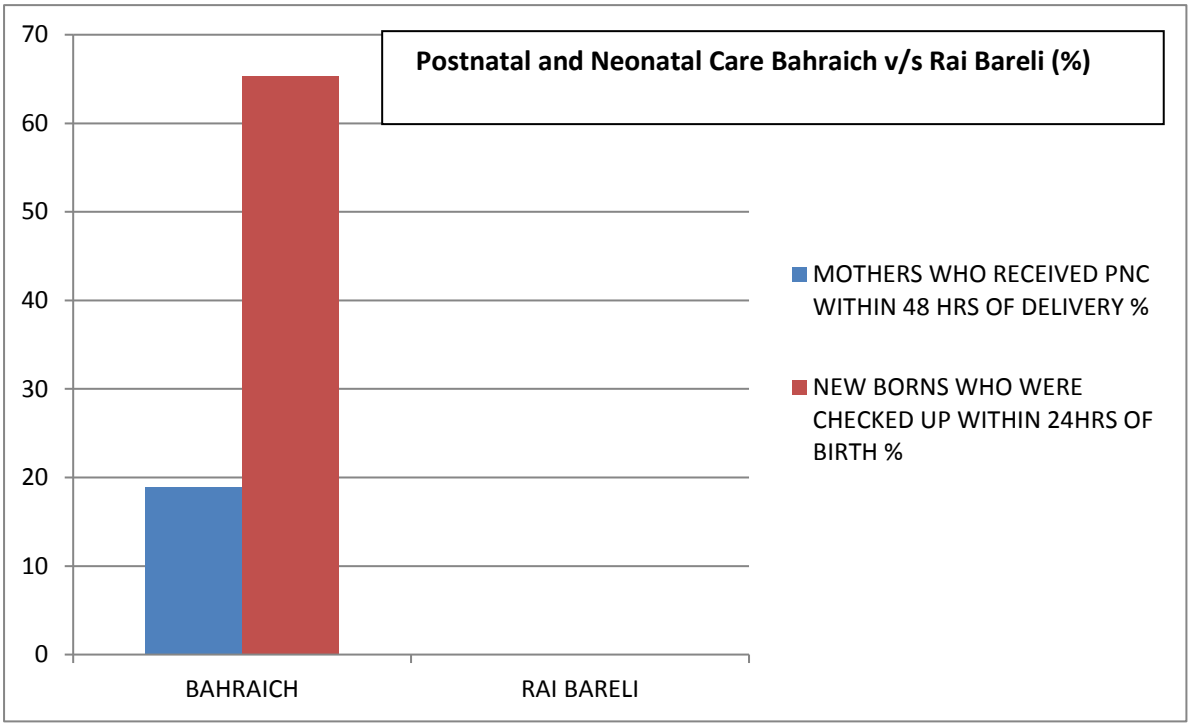
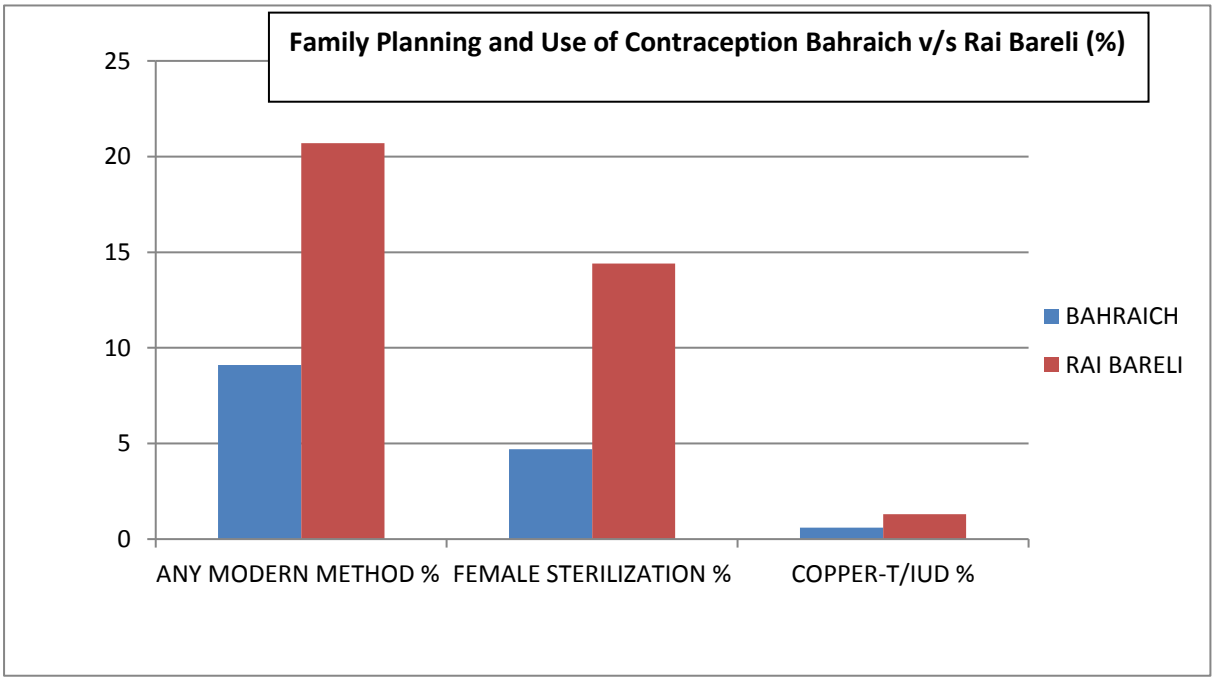



*Fig 33: Family Planning Bahraich v/s Rai Bareli*




Women who received at least one dose of tetanus toxoid during their pregnancy ranged between 64% for Bahraich and 95.9% in Rai Bareli during NFHS 4**. There was reduction for Bahraich by 7% whereas an increase in Rai Bareli by 10.9%.**

The percentage of women receiving ANC in the first trimester for Rai Bareli is significantly more than those for Bahraich. 45.5% women received ANC in their 1st trimester of pregnancy, as opposed to 12.8% from Bahraich. **There was a decrease for both from AHS 3 by 21.8% and 3.1% respectively.**

20% women consumed iron and folic acid (IFA for 100 days or more in Rai Bareli according to NFHS-4. This is in sharp contrast to Bahraich, where only 5.3% of the women consumed IFA. The percentage of women who received a full antenatal check-up in both these districts was abysmally low, with numbers as less as 0.8% for Bahraich. Rai Bareli also did not fare very well, with only 3.8% women receiving a full ANC during the entirety of their pregnancy. **There was a decrease for Bahraich by 2.9% but an increase for Rai Bareli by 8.9% from AHS 3.**

The percentage of institutional deliveries showed a significant increase during the interim period of AHS 3 and NFHS 4. The numbers increased from 32.2% to 36.8% for the district of Bahraich, and from 67.1% to 82.8% for Rai Bareli. **This data showed a decrease from AHS 3 for both districts by 4.2% and 2.9% respectively.**

The percentage of women opting for deliveries in Government Institutions also witnessed an increase for both districts, although the increase in Rai Bareli was higher in comparison with Bahraich. 33.2% women underwent delivery in govt facilities as per NFHS 4. Similar increases were seen in Rai Bareli, with 68.9% women having deliveries in govt institutions. **There was an increase for both districts by 4.6% and 15.7% respectively from AHS 3.**

The statistics for deliveries conducted at home by skilled birth attendants (SBA) saw a slight change in the inherent pattern of indicators. Both AHS 3 and NFHS 4 data revealed that Bahraich witnessed a higher percentage of home deliveries conducted by SBAs. A possible reason for this could be that a higher percentage of women chose to deliver at home rather than at a health centre. 7.4% in 2016 chose to deliver at home in the presence of a SBA in Bahraich. However in Rai Bareli, only 0.6% women delivered at home in 2016. **This again was an increase by 4.6^ and 11.6% for both districts respectively.**

The percentages of births delivered by Caesarean section in public facilities were less than 5% in both Bahraich and Rai Bareli, during NFHS 4. A possible reason for this reduced percentage could be due to a higher number of private facilities coming into practice, which conducted a total of 31.9% deliveries by C-section in Rai Bareli. Similar data for rural Bahraich was not available in the NFHS 4 factsheet, but 32.2% births by C-section were recorded for Bahraich district in total. However, the sample size for this data was only 25-40**. This was a major decrease from AHS 3 by 18.7% and 24.8% for both districts respectively.**

Mothers who received PNC within 48 hrs of delivery were higher for Rai Bareli than for Bahraich. Where only 18.9% mothers received postnatal care in Bahraich, 65.3% received care in Rai Bareli. **This also decreased from AHS 3 by 0.7% and 7.5% respectively.**

The women who used any modern method of FP for Bahraich and Rai Bareli was 9.1% CPR and 20% in 2016, respectively. In accordance with the trend being witnessed in this study, the CPR for Rai Bareli was higher than Bahraich. **This decreased by 50.8% for Bahraich and by 7% for Rai Bareli from AHS 3.**

The percentage of female sterilization in Bahraich, although significantly higher than the sterilization of their male counterparts, still fell short as compared with the comparable district of Rai Bareli. 4.7%

women were sterilized in Bahraich as compared to 14.4% in Rai Bareli which is almost 3 times the number. **This decreased by 1.2% and 0.6% respectively for both districts**.

The percentage of women using Copper-T or any other intra-uterine contraceptive device (IUCD) was appallingly low, with numbers for both districts falling shy of even 1%. Where 1.3% women in Rai Bareli opted for IUCD as a method of contraception, only 0.6% women in Bahraich opted for the same. **There was no change for Bahraich from AHS 3 and a 0.2% change for Rai Bareli**. These extremely low numbers suggest that a much greater attention must be paid to promotion of use of IUCDs in women as an inexpensive and relatively long-term method of effective contraception.

# Shrawasti v/s Maharjgunj

*Fig 34: Pregnancy Care Shrawasti v/s Maharajgunj*

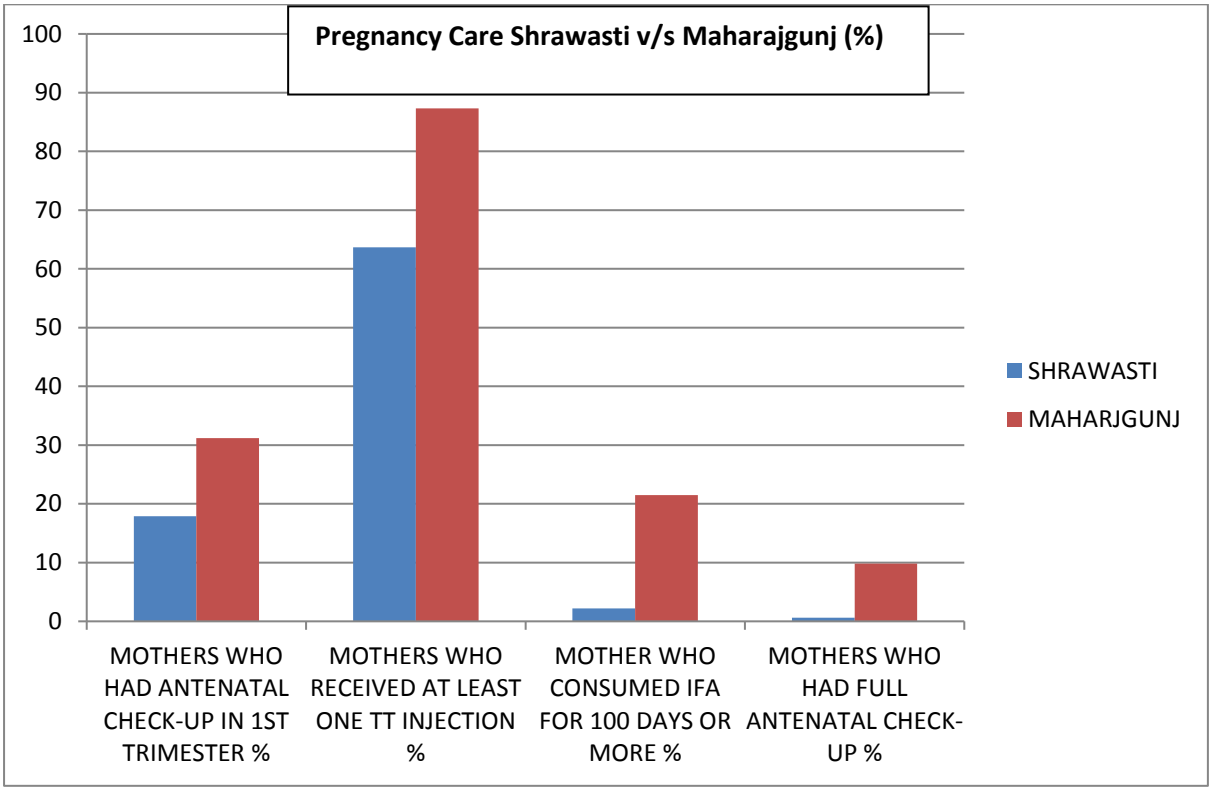



*Fig 35: Delivery Care Shrawasti v/s Maharajgunj*

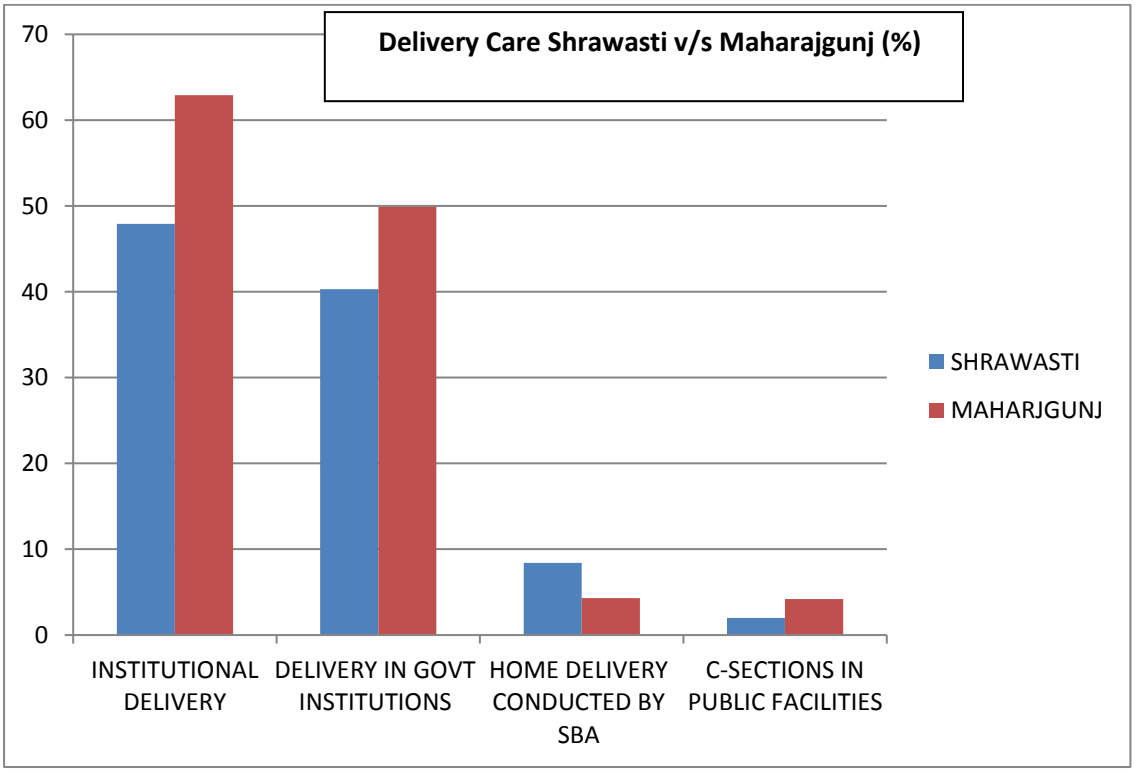


*Fig 36: Postnatal maternal and new born care Shrawasti v/s Maharajgunj*

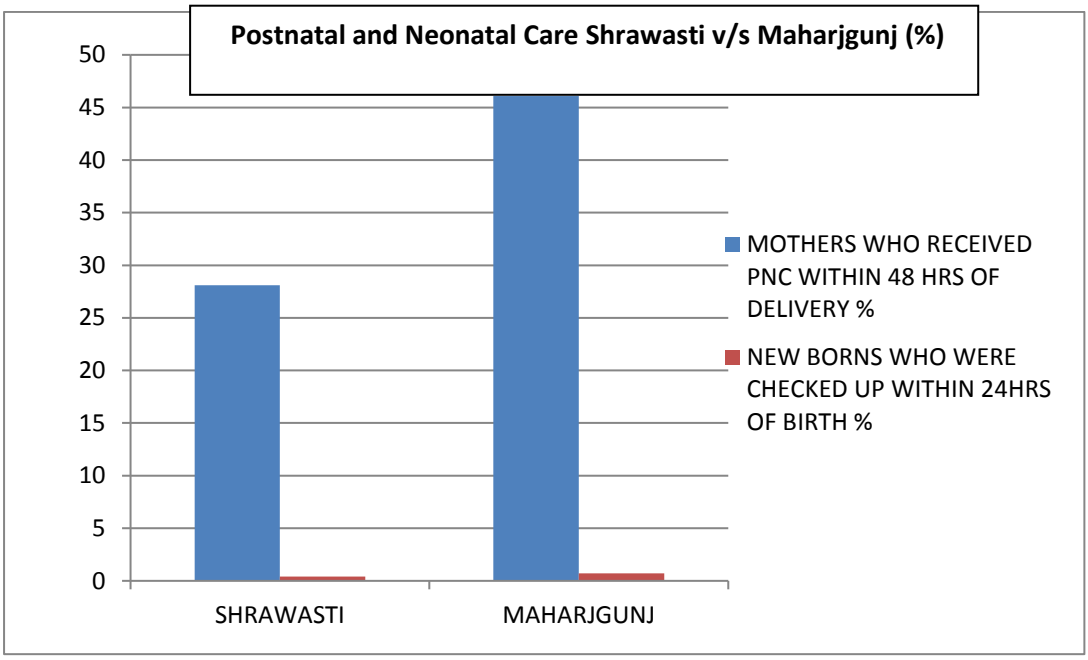
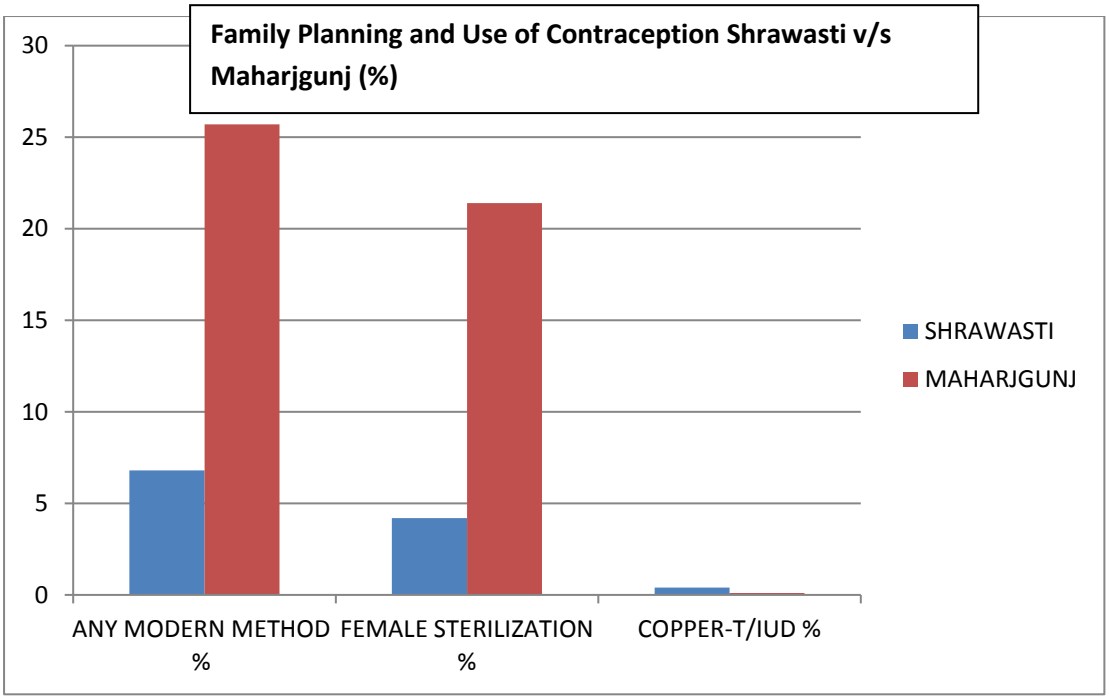



*Fig 37: Family Planning Shrawasti v/s Maharajgunj*




According to NFHS 4, the number of women who received ANC in their 1st trimester was 17.8% for Shrawasti district. These numbers are higher than for the district of Bahraich, but low when compared to the statistics of Maharajgunj where 31.2% women received ANC in their 1st trimester of pregnancy. **There was a decrease by almost 7% from the AHS 3 survey for both districts.**

Women who received at least one dose of tetanus toxoid during their pregnancy ranged between 63.7% for Shrawasti and 87.3% in Maharajgunj during NFHS 4. **There was an increase by 5% in Shrawasti from AHS 3.**

21.5% women consumed iron and folic acid (IFA) for 100 days or more in Maharajgunj according to NFHS-4. This is in sharp contrast to Shrawasti, where only 2.2% of the women consumed IFA**. There was negligible decrease in Shrawasti (0.3%) and an increase in Maharjgunj by 15.7% from AHS 3.**

The percentage of women who received a full antenatal check-up in both these districts was abysmally low, with numbers as less as 0.6% for Shrawasti. Maharajgunj also did not fare very well, with only 9.8% women receiving a full ANC during the entirety of their pregnancy, however this number was better than the district of Rai Bareli where only 3.8% women had received full ANC. **There was increase in Maharjgunj by 6% and a decrease in Shrawasti by 0.5% from AHS.**

The percentage of institutional deliveries was 47.9% for the district of Shrawasti, and 62.9% for Maharajgunj. **There was an increase by 15% for both districts from AHS.**

40.3% women in Shrawasti underwent delivery in govt facilities as per NFHS 4. Similar numbers were seen in Maharajgunj, with 49.9% women having deliveries in govt institutions. **There was an increase by almost 12% from AHS.**

8.4% women delivered at home with the help of a SBA in 2016, where only 4.3% women in Maharajgunj delivered at home with the help of a SBA. **There was a decrease by 8% for Shrawasti and 20% from Maharajgunj from AHS. 35% for both districts from AHS.**

The percentage of births delivered by Caesarean section in public facilities was 2% in Shrawasti in NFHS 4. In Maharajgunj, this number was only slightly higher at 4.2%. A possible reason for could be due to a higher number of private facilities coming into practice, which conducted a total of 55.1% deliveries by C-section in Maharajgunj. Similar data Shrawasti showed 10.1% C-sections taking place in private facilities, out of the total 1.6% births delivered by C-section.

Mothers who received PNC within 48 hrs of delivery were considerably higher for Maharajgunj than for Shrawasti. Where only 28.1% mothers received postnatal care in Shrawasti, 46.1% received care in Maharajgunj.

The use of any modern method of FP for Shrawasti and Maharajgunj was 6.8% CPR in 2016 and 25.7% in 2016, respectively. In accordance with the trend being witnessed in this study, the CPR for Maharajgunj was higher than Shrawasti.

**The percentage of female sterilization in Shrawasti, although significantly higher than the sterilization of their male counterparts, still fell short as compared with the comparable district of Maharajgunj. 4.2% women were sterilized in Shrawasti as compared to 21.4% in Maharajgunj which is almost 5 times the number.**

The percentage of women using Copper-T or any other intra-uterine contraceptive device (IUCD) was appallingly low, with numbers for both districts falling significantly shy of even 1%. Where 0.4% women in Shrawasti opted for IUCD as a method of contraception, only 0.1% women in Maharajgunj opted for the same. These numbers suggest that the use of ICUDs as a safe method of contraception is almost non-existent in these districts.

# Gonda v/s Basti

*Fig 38: Pregnancy Care Gonda v/s Basti*

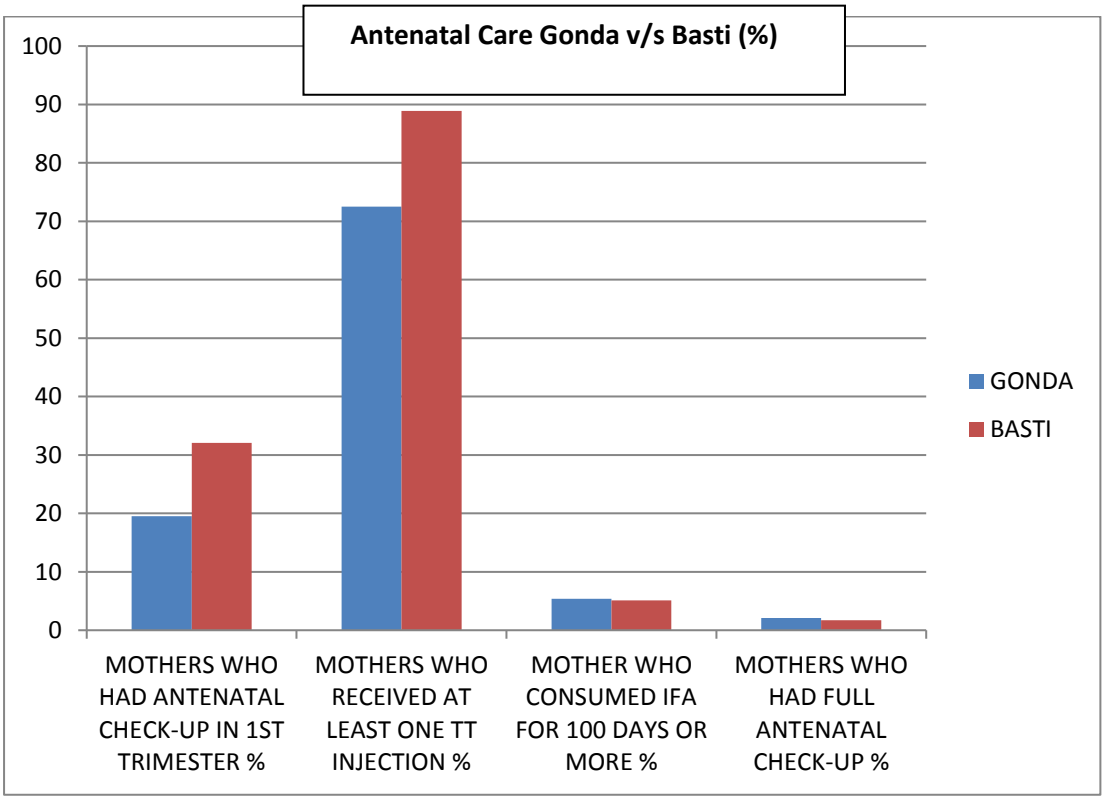



*Fig 39: Delivery Care Gonda v/s Basti*

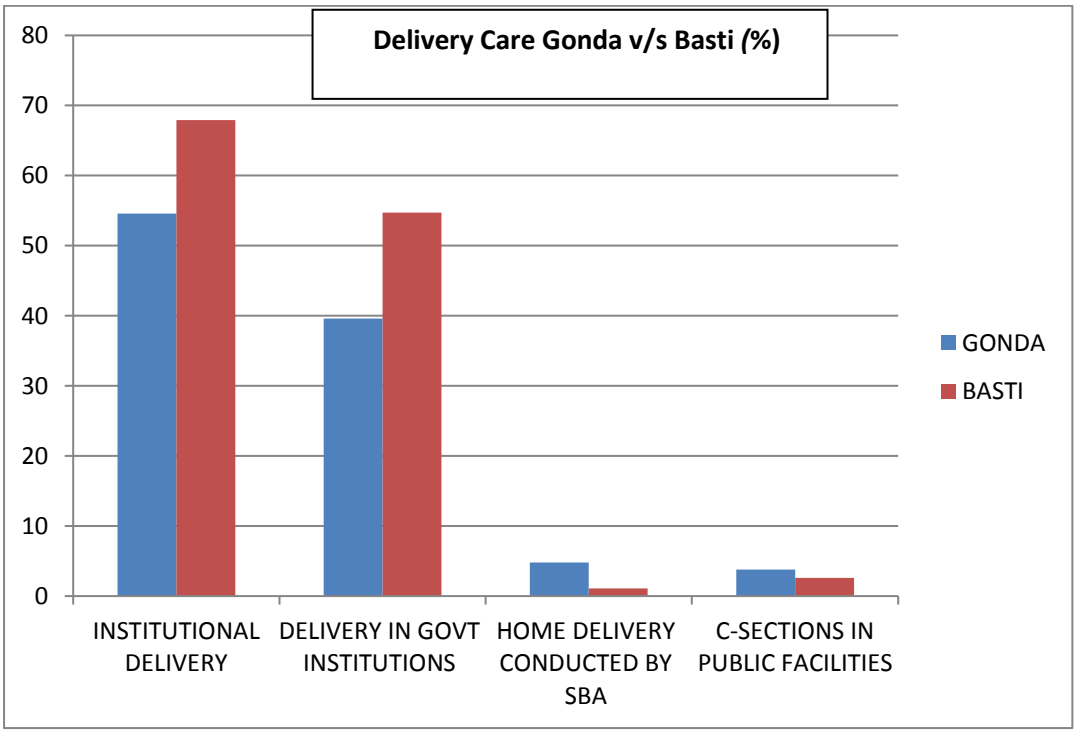


*Fig 40: Postnatal maternal and new born care Gonda v/s Basti*

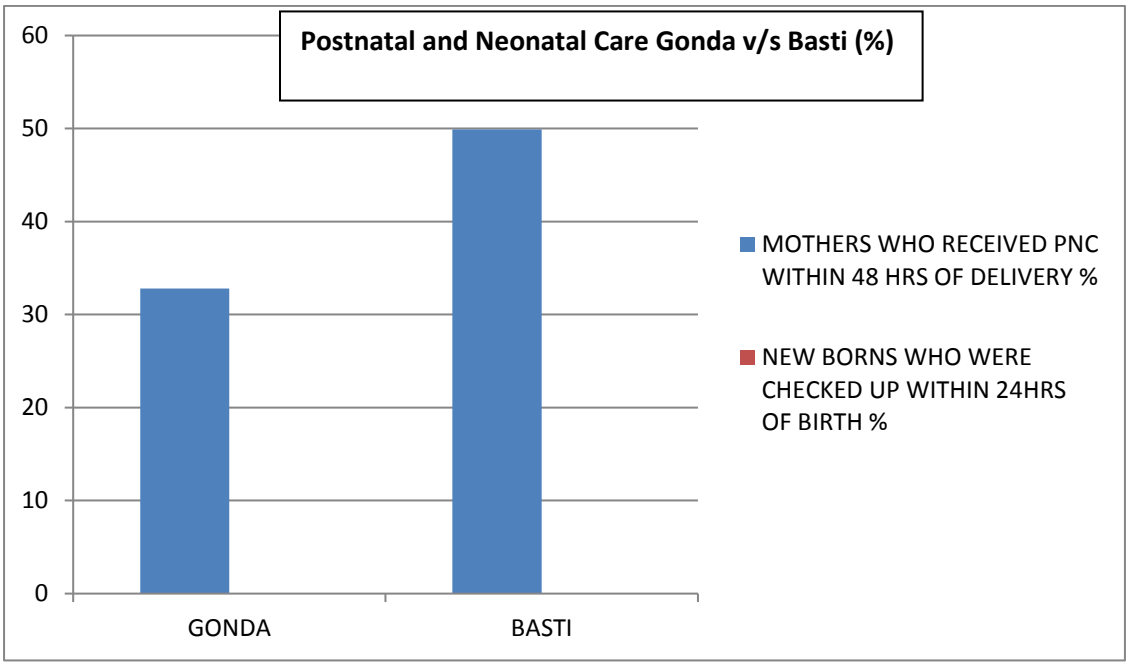



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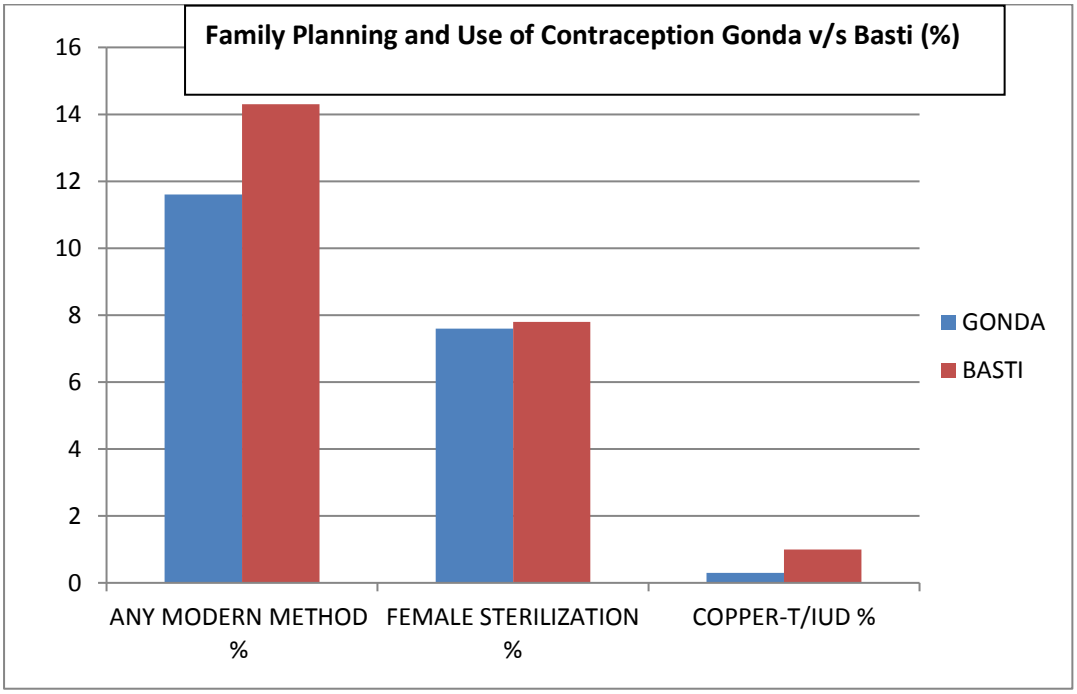
*Fig 41: Family Planning Gonda v/s Basti*



32.1%women received ANC in their 1st trimester of pregnancy in Basti, as opposed to 19.5% from Gonda. **There was a decrease from AHS for both Gonda and Basti by 28.3% and 8.9% respectively.**

Women who received at least one dose of tetanus toxoid during their pregnancy ranged between 72.5% for Gonda and 88.9% in Basti during NFHS 4. **This also witnessed a decrease by 5.4% and 0.6% from AHS for both districts.**

Statistics for consumption of IFA were extremely low for both districts in NFHS 4. 5.1% women consumed iron and folic acid (IFA for 100 days or more in Basti and 5.4% of the women consumed IFA in Gonda. **This also decreased from AHS by 3.2% and 0.4% for both districts respectively.**

The percentage of women who received a full antenatal check-up in both these districts was terribly low, with numbers as less as 2.1% for Gonda. Basti in fact performed worse than with only 1.7% women receiving a full ANC during the entirety of their pregnancy. **This indicator witnessed an increase for both districts by 9% and 25.6% respectively.**

The highest percentage for the indicator was for women who delivered in institutions in both district. While Basti had 68% women delivering in institutions, Gonda wasn't far behind with 54% women. Similarly, the deliveries in govt facilities were 40% and 52% for Gonda and Basti respectively. As is the visual trend, percentages were low for both home deliveries conducted by SBAs and Caesarean sections conducted at public facilities. **All of these 3 indicators witness a decrease by approximately 8%, 9.2% and 4.5% respectively.**

Mothers who received PNC within 48 hrs of delivery were higher for Basti than for Gonda. Where only 32.8% mothers received postnatal care in Gonda, 49.9% received care in Basti. **This was again a decrease from AHS by 27.4% for Gonda and 40.5% for Basti respectively.**

The contraceptive prevalence rate for both Gonda and Basti was 11.6% CPR and 14.3% in 2016, respectively. In accordance with the trend being witnessed in this study, the CPR for Basti was higher significantly than Gonda. **This too followed the trends of decrease from AHS by 8.5% and 10.6% respectively for both districts.**

The percentage of female sterilization in Gonda and Basti were almost similar in NFHS 4 records, with the percentage in Basti being slightly higher than Gonda. 7.6% women were sterilized in Gonda as compared to 7.8% in Basti. **Both these indicators showed a decrease by almost 3% for both districts.**

Where 0.3% women in Gonda opted for IUCD as a method of contraception, 1.0% women in Basti opted for the same in-keeping with the trend of low rates of usage of IUCDs as a safe and effective method of contraception. **There was a decrease for Gonda by 1% but Basti showed an increase by 0.8% for this indicator.**

## Hardoi v/s Unnao

*Fig 42: Antenatal Care Hardoi v/s Unnao*

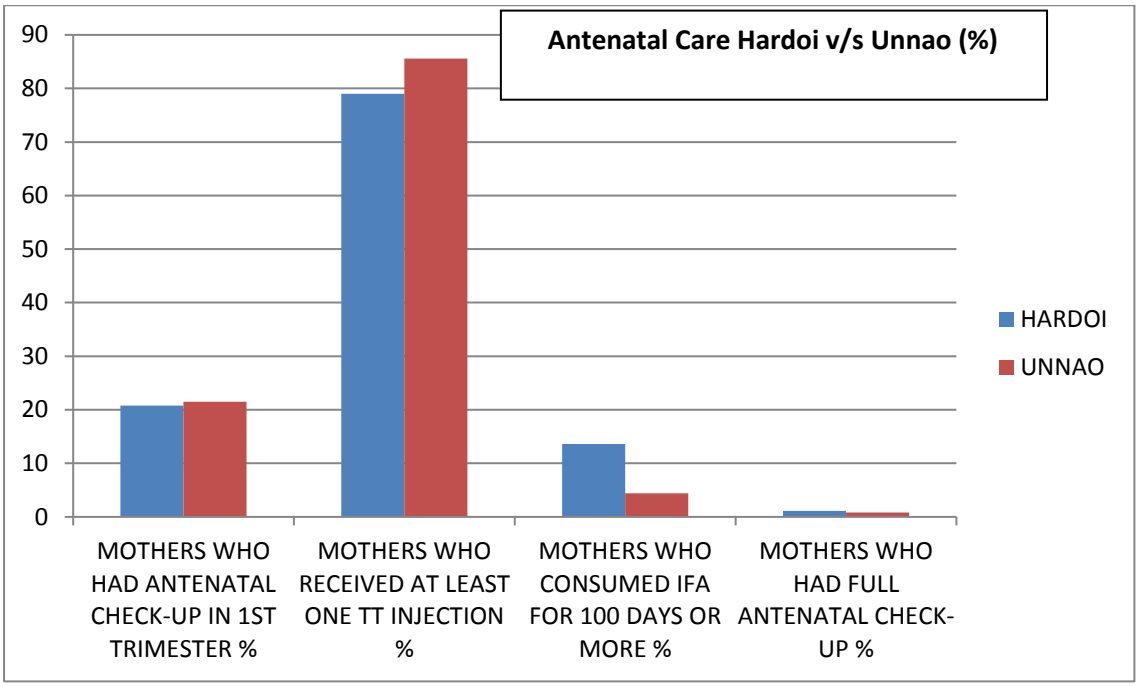



*Fig 43: Delivery Care Hardoi v/s Unnao*

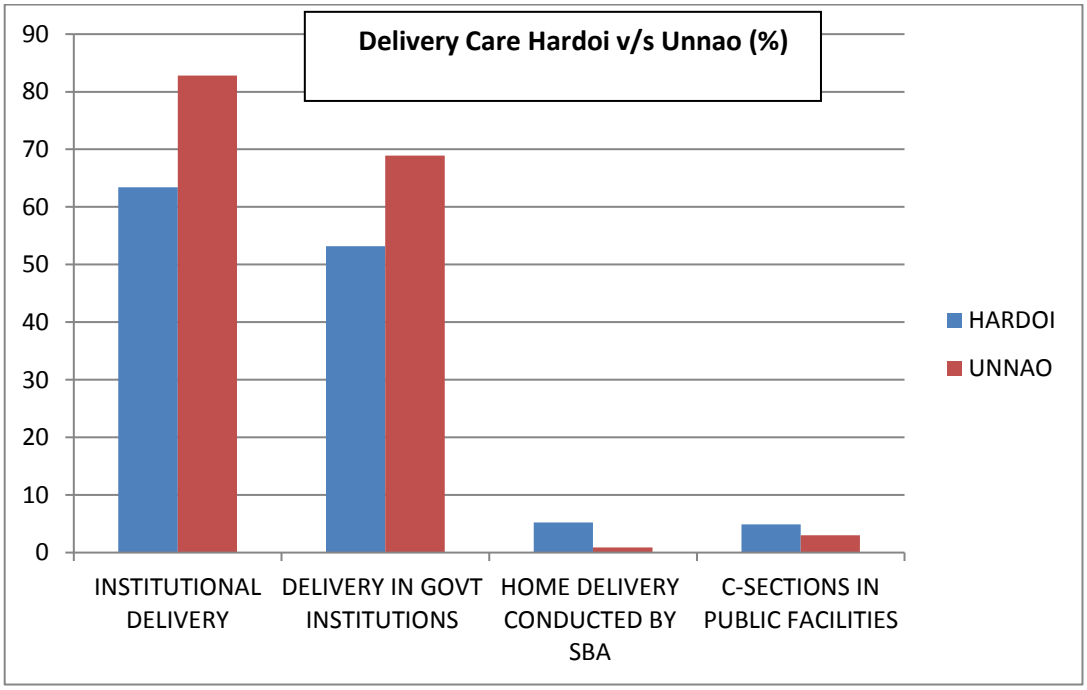


*Fig 44: Postnatal maternal and new born care Hardoi and Unnao*

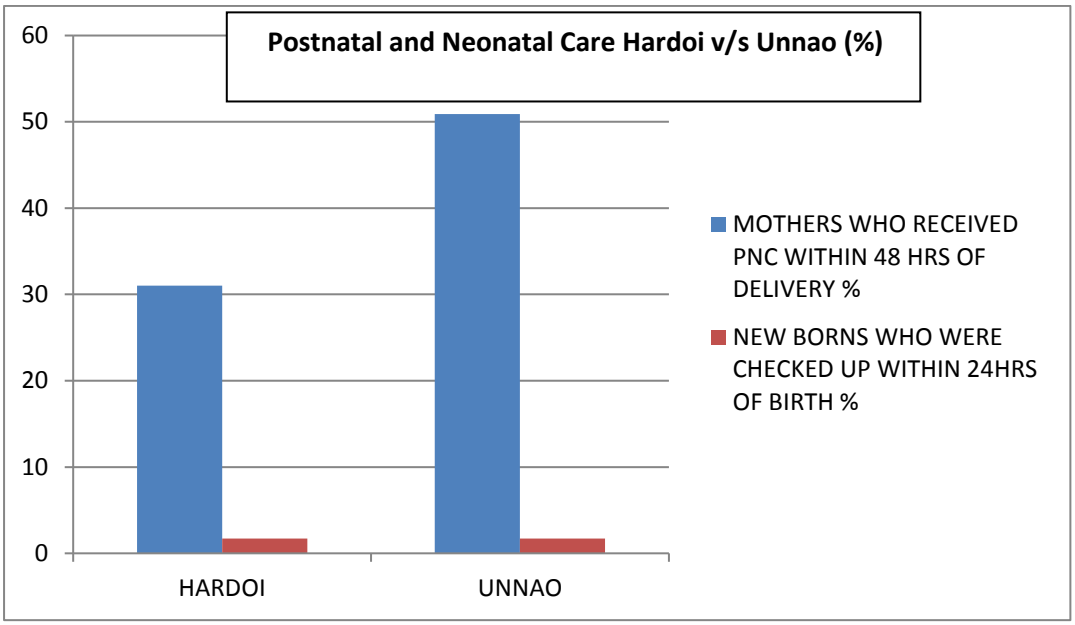
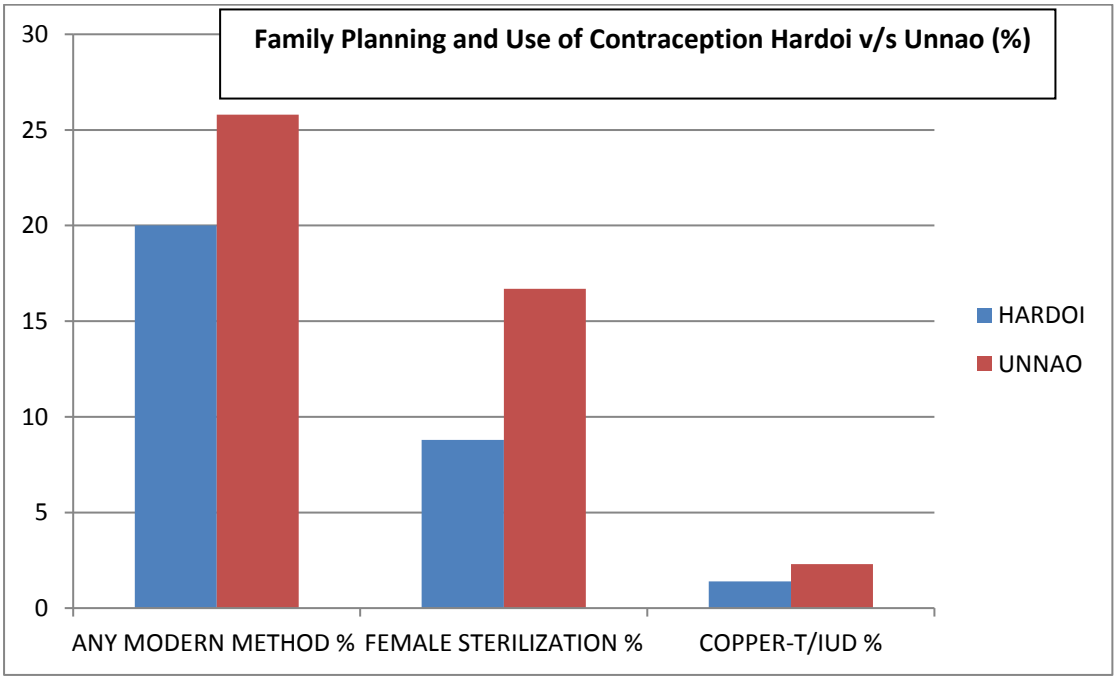



*Fig 45: Family Planning Hardoi v/s Gonda*



According to NFHS 4, percentage of women who received ANC in their 1st trimester was similarly low for both districts, ranging around 20%. **There was a decrease for both districts but more so for Unnao by 23.8% than for Hardoi (4.9%).**

The only indicator that crossed the 50% mark for antenatal care was the percentage of women who received at least one dose of tetanus toxoid during their pregnancy. This number ranged between 79% for Hardoi and 85.6% in Unnao during NFHS 4. **This indicator witnessed an increase by 20.4% for Hardoi, and a negligible decrease for Unnao (by 0.3).**

Where 13.6% women consumed IFA in Hardoi in 2016, only 4.4% women received the same in Unnao. This was a reversal of trend, with a HPD having a greater percentage of women consuming IFA tablets. **Although there was no change in Hardoi for this indicator, Unnao had a decrease by 9.2%.**

The percentage of women who received a full antenatal check-up in both these districts was dreadfully low, with numbers as less as 1.1% for Hardoi. Unnao in fact performed worse than with only 0.8% women receiving a full ANC during the entirety of their pregnancy. **Similar to the above indicator, there was no change for Hardoi, but a decrease for Unnao by 8.7%.**

The highest percentage for the indicator was for women who delivered in institutions in both district. While Hardoi had 62.5% women delivering in institutions, Unnao had a much higher percentage of just over 80%. **This was an increase by 22% for Hardoi and 13.2% for Unnao from AHS 3.** Similarly, the deliveries in govt facilities were above 50% for both districts with 52% and 68% for Hardoi and Unnao respectively, **increasing by 14.5% and 8.9% respectively for both districts.** As is the visual trend, percentages were low for both home deliveries conducted by SBAs and Caesarean sections conducted at public facilities, **which was a decrease from AHS 3 by 7.8% and 3.4% for both districts respectively.**

Mothers who received PNC within 48 hrs of delivery were higher for Unnao than Hardoi. Where only 31% mothers received postnatal care in Hardoi, 50.9% received care in Unnao. **This was a decrease from AHS 3 by 22% for Hardoi, and just half (11%) for Unnao.** The number of neonates delivered at home who were taken to a caregiver was equal for both districts at 1.7% for NFHS 4, **which was a decrease by 56.4% and 60.4% from AHS for both districts respectively.**

The women who used any modern method of contraception for both Hardoi and Unnao was 20% CPR and 25.2% in 2016, respectively, **which was a decrease by 20% and 34.7% from AHS 3 for both districts respectively**. In accordance with the trend being witnessed in this study, the CPR for Unnao was higher than Hardoi.

The percentage of female sterilization in Hardoi and Unnao were greater than the other mentioned districts in NFHS 4 records, with the percentage in Unnao being higher than Hardoi. 15.6% women were sterilized in Hardoi as compared to 9.8% in Unnao, which was **an increase from the AHS 3 by 1.2% and 3.3% for the districts respectively.**

Where 0.5% women in Hardoi opted for IUCD as a method of contraception, 1.2% women in Unnao opted for the same in-keeping with the trend of low rates of usage of IUCDs as a safe and effective method of contraception, **which was again a decrease from AHS 3 by 4.7% and 8.9% for Hardoi and Unnao respectively.**

## To identify different organizations working in the 5 lowest performing districts and to review health programs aimed at improving the maternal and child health indicators so as to attribute the apparent change to these programs.

The changes that have occurred over the years from 2012 to 2016 may be attributed to the work done by numerous government and non-governmental organizations enlisted below. These are popularly known as **Health Forum Partners**[15] that work in conjunction with the Government of Uttar Pradesh, providing them with technical, community based and facility based support since 2012. These include, but are not limited to organizations funded by Bill and Melinda Gates Foundation (BMGF), World Health Organization (WHO), JHEPIEGO, Clinton Health Associate Initiatives (CHAI), PATH International, PLAN, Save the Children, UNICEF, etc. These organizations work in multiple districts, including the high priority district.

*Table 9: List of Organizations working in Uttar Pradesh in the area of RMNCH+A*

| Name of Organization | Key Areas of Intervention | District of Work |
|---|---|---|
| **ABT Associates** | **DMPA Project** to address unmet need in the States of UP and Bihar through increasing knowledge of and access to quality service provision of DMPA- 3 Monthly Injectable Contraceptive | 70 cities within 62 districts of UP including all the HPDs except Balrampur and Shrawasti. |
| **BBC Media Action** | Mobile Kunji, Mobile Academy and GupShupPotli | Mobile Kunji & Mobile Academy across all 75 districts;<br><br>GupShupPotli across 103 focussed blocks in 19 High Priority Districts |
| **Community Empowerment Labs** | • 1000 Dreams<br>• Scaling up Kangaroo Mother Care in UP | Shivgarh, Rai Bareli |

| | | |
|---|---|---|
| | • Essential newborn care, a cluster randomized controlled trial<br>• BetterBirth | |
| **India Health Action Trust (IHAT)** | RMNCH+A<br>Family Planning<br>HIV/AIDS<br>Micronutrients | All 75 districts of UP |
| **Janani** | • Family Planning Services<br>• Social Marketing of contraceptive products. | Gorakhpur<br>Allahabad<br>Varanasi<br>/Mathura<br>Aligarh |
| **JHPIEGO** | • Family Planning<br>• Strengthening Pre Service Education across all GNM/ANM schools of the state<br>• Engaging Private sector | All 75 districts of UP across. PPIUCD services are being operationalized across 540 facilities of the state. |
| **MAMTA** | • AHANA Program<br>• Improving Maternal & Child health services and livelihood opportunities<br>• Nestle Project-2 (RMNCH+A)<br>• McArthur Project Phase-2 (RMNCH+A with special focus on Pre-Conception Care) | 31 districts of UP<br>Banda &Kaushambi<br>Lucknow, Varanasi, Allahabad, Banda and Kaushambhi<br>RMNCH+A with special focus on Pre-Conception Care |
| **Marie Stopes India** | Safe Abortions and Family Planning | Barabanki, Faizabad, Bareilly, Budaun, Pilibhit, Shahjahanpur, Etah,Kanshiram Nagar, Bahraich, Shrawasti, Gonda,Balrampur, Sitapur, Lakhimpur-Kheri, |
| **PATH International** | Cervical Cancer, Vaccines, Drugs, Diagnostics, Devices, and System and Service innovations | Bahraich, Gorakhpur, Deoria, Maharajganj, Kushinagar*, Basti, Siddharthnagar, Sant Kabir Nagar, Rae Bareilly and Fatehpur |

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|---|---|---|
| **Pt G B Pant Institute of Studies on Rural Development (PISRD)** | RMNCH+A including AHANA<br>Behaviour Change Communication<br>Public Health Advocacy | Lucknow<br>Gonda<br>Hardoi |
| **PSI India** | RMNCH+A, Family Planning, Child Survival, TB Control, HIV/AIDS including BetterBirth | 35 districts of the state |
| **Public Health Foundation of India (PHFI)** | RMNCH | Include 17 out of the 19 HPDS- ,Baeily, Balrampur, Barabanki, Basti, Badaun, Faizabad, Gonda, Hardoi, Kaushambi, , Kheri, Sant Kabir Nagar, Shajahanpur, Sitapur, Siddharth Nagar, Sonbhadra, Sultanpur,. |
| **Vatsalya** | • Maternal and child health<br>• Sex selective elimination & PCPNDT Act<br>• Wash and Menstruation Hygiene management<br>• ReMind Project<br>• Comprehensive abortion care(CAC)<br>• Addressing adolescent's right to sanitation & hygiene (ADARSH) | Lucknow, Sitapur, Barabanki<br>Lucknow and Baghpat<br>Lucknow (41 Panchayats)<br>Kausambhi<br>Lucknow, Unnao, Kanpur Nagar, Kanpur Dehat, Kannauj, Faizabad,Raibareli, Hardoi, Barabanki, Bareily,Rampur, Badaun,Shahjahanpur, Pilibhit<br>Lucknow (80 schools of all 08 Blocks) |
| **UNICEF** | Garima Project | Jaunpur (190 Villages of Khuthan Block) |

# Discussion

As high priority districts lag behind in health and development indicators, the general consensus is that most of the reduction in morbidity and mortality can be achieved by special focus on the planning and implementation of health programs in these districts. However, as is seen in the analysis, not a lot of difference has occurred in the maternal health indicators over the last 4 years, between the last Annual Health Survey conducted in 2012 and the more recent NFHS 4 conducted in 2016. Some changes that may be perceived as improvement may as well be a part of the general regional development.

Uttar Pradesh as of 2016 had an IMR and U5MR 64 and 78 respectively per 1000 live births[14]. This was a decrease from the data recorded in NFHS 3 in 2005-2006 (73 and 96 per 1000 live births respectively)[14]. While NFHS 4 did not provide district-wise data on IMR and U5MR, this data was provided in the AHS 3 for each district, especially since IMR was the principle and decisive indicator for the execution of the AHS survey. Similar unavailability was detected for district-wise data on Total Fertility Rate (TFR), which for the state was quoted as 2.7 in NFHS 4[14] (a decrease from 3.8 in NFHS 3)[12], it still fell short of the desired national number of 2.1. Again, this data had been made available district-wise in the AHS 3. **Questions pertaining to Maternal Mortality Rate (MMR) were completely forgone in the NFHS 4, and not even a consolidated value for the state was provided in the factsheet. This was in sharp contrast to AHS 3, which provided district-wise data on MMR.**

The indicators identified to be used in the Guidelines for HPDs for the RMNCH+A Strategy by the NHM and the indicators used in the NFHS 4 survey varied. For example, for indicators reflecting antenatal care, the questions formulated in the guidelines specified *"Registration during 1st Trimester, Complicated cases attended during delivery and Pregnant Woman receiving 3rd ANC check-up*"[13]. However the NFHS 4 survey constituted dissimilar questions for the same realm. This dissimilarity persisted for postnatal care as well, like percentage of women who stayed at the health facility till 48hrs of delivery mandated in the guidelines as compared to the indicator used in NFHS 4 which stated "Percentage of women who received PNC 48hrs after delivery" which have very different connotations for determining the kind and quality of postnatal care a woman receives. Questions such as "ANC for complicated cases of pregnancy", "percentage of neonates born weighing less than 2.5kg", "percentage of women who underwent postpartum sterilization" were not asked during NFHS 4.

**Bahraich, Budaun, Faizabad, Gonda, Sant Kabir Nagar, Siddharth Nagar, Sitapur and Sonbhadra were among the districts that recorded 0% neonates being checked-up within 24 hrs of birth[14]**. Since NFHS 4 is being considered as the gold standard against which future surveys will be based, this data, although not questionable, is certainly alarming. The highest figure reported for this region was for the district of Barabanki, which recorded a figure of 2.4%, which in itself is an appallingly low number[14].

On the basis of the composite index constructed for maternal health indicators, 5 districts of **Balrampur, Bahraich, Shrawasti, Gonda and Hardoi** were identified as the lowest performing districts in 2016. When a similar composite index was developed for the list of

districts from AHS 3**, Shrawasti, Budaun, Balrampur, Hardoi and Bahraich** were identified as the lowest performing in 2012. Comparisons done between these districts for maternal health indicators for this time period showed very slight changes. However, the inference drawn from the analysis is that these districts were consistently lowest performing since 2012 for the entire state, with the exception of Budaun, and the health interventions focused on these districts were unclear.

Upon comparison with AHS data, there were found to be gross overestimation for almost all indicators for districts which were the lowest performance. This was apparent when the indicators were compared between the non-high priority districts. The percentage change among the districts was found to be higher for districts that were non-high priority between the 2 surveys than the prioritized ones.

The National Health Mission (NHM) proposed district action plans for all HPDs, according to which several activities were planned for implementation[15]. These included-establishment & strengthening of Urban Health Cell at District, Establishment of urban PHCs, Selection of Human Resources, Selection of Urban ASHA, Formation of Mahila Arogya Samiti (MAS) among other plans to ensure Community Participation, and Capacity Building of Staff[16]. The state health department concentrates mostly on the strengthening the districts hospitals in these areas because those are the centres where much of the populace receives healthcare[17]. The maternity wings called "Maa Satyabai Matri Shishu Kendra" at Jaiprabhagram at Balrampur District Hospital[18] and "Ghasiyaripura District Hospital" at Bahraich receive special mentions upon literature review[19].

**ABT Associates, BBC Media Action, IHAT, JHPIEGO, MAMTA, PATH International, PHFI, PSI India, WHO and UNICEF are organizations that work in more than 50% of the districts in the state, and claim to have "more focus on the HPDs"[20].** Additionally, organizations such as Corporate Social Responsibility of the Balrampur Sugar Mills[20], the Art of Living Foundation[19,20] and the Aga Khan Foundation[19] provide support for maternal and child health activities in Balrampur and Bahraich specifically.

There is strong evidence to support that antenatal screenings and measures are effective in reducing maternal mortality. Where measures only account for the frequency and timing of visits, in the cases of National Level Surveys, focus often shifts from the quality of antenatal care provided[21]. For the entire state of Uttar Pradesh (total), only 45.9% of the women received ANC in their 1$^{st}$ trimester, which was a definite increase from the 25.1% from NFHS 3 (2005-2006). Where 86.6% women had their neonates protected from tetanus, only 12.9% consumed IFA for 100 days of their pregnancy. Shockingly, only 5.9% of women received full ANC in 2016 in Uttar Pradesh, according to NFHS 4. A study performed by Gaurav Sharma, *et al*, published in the World Health Bulletin found that the quality of care was generally poor in both public and private facilities of Uttar Pradesh[21]. The personnel providing ANC, labour and child care to mothers and neonates were mostly found to be unqualified, with very lax adherence to protocols[21]. Moreover, the score for overall quality of antenatal care in private facilities were much higher than the score obtained in public facilities[21].

A study performed by Vinod Kumar Paul, *et al*, published in the Lancet on India towards Universal Health Care cites the reason for increased institutional deliveries to the Janani Surakshya Yojana (JSY) initiative by the GOI[22]. According to this study, after 2-3 years of implementation of JSY scheme, high odds of women delivering in facilities were reported, and reduction of 4 peri-natal and 2 neonatal deaths was recorded[22]**.** This study confirmed the use of JSY scheme by individuals who were poor. Building on these findings **48.7% women of the state of Uttar Pradesh, 26.3% urban and 55.4% rural women residents utilized this scheme[12]**. Consequently, 67.8% women gave birth in institutions according to NFHS 4 as compared to only 20.6% according to NFHS 3 (2005-2006)[12]. However, no evidence is provided in the NFHS 4 factsheets, or in AHS 3 data sets to correlate this increase in institutional deliveries with the JSY scheme. Hence, the author can only make an educated guess and attribute this change to the cash base incentives provided under the aegis of the NHM.

A major shortcoming of the JSY incentive as cited by authors Stephen S Lim, *et al* published in the Lancet, is that most mothers and neonates are discharged within a few hours of delivery[23]. The reasons for this are mainly because hospitals do not have requisite amenities for housing the mother and baby, and also because the family wishes to return home after receiving the cash benefits[23]. This leaves very little time for post-partum stabilization, recognition of danger signs and counselling regarding breastfeeding, kangaroo mother care, etc. Nevertheless, the percentage of women who received PNC from a skilled caregiver increased significantly from 12.3% in 2005-06 to 54% in 2016 for the entire state of Uttar Pradesh. However, mothers who stayed in hospitals/institutions for up to 48hrs after delivery were not recorded in NFHS 4, as was mandated by the 16 Dashboard Indicators of the RMNCH+A. Moreover, neonates who were taken to a health facility following birth at home remained abysmally low at 0.8%[14].

The unmet need for family planning was 18.1% for the state according to NFHS 4, which was a reduction from 23.1% as recorded in NFHS 3[14]. The questions asked pertaining to use of family planning methods were about any method, any modern method, female and male sterilization, use of IUCD and PPIUD, use of pills and condoms. However, questions pertaining to family planning in the RNMCH+A strategy outlined by the GOI focused on percentage of male sterilization, percentage of post-partum sterilization and the percentage of IUCD inserted[16], none of which were adequately (or at all) asked for in the NFHS 4. The data collected on certain indicators like male sterilization (which did not go beyond the figure of 0.2%, even for non-high priority districts, and were consistently revealing the percentage of 0 for most HPDs) reveals a gross misinterpretation of the RMNCH+A strategy guidelines as well as a gap in the analysis for the desired indicators.

# Limitations

The author faced certain limitations while researching for health programs that were specifically focused for the high priority districts. Although an overview of program implementation plan were available in the public domain, reports on actual implementation of these programs, their monitoring and evaluation and/or the impact on individual high focus districts were not available. **The website of the National Health Mission gave detailed budget outlines for implementation of health programs for each district of the state, but the District Action Work Plan was not accessible, and required higher levels of authority for accessing the information.** Moreover, every report about the RMNCH+A Strategy were centred on the 1st round of project implementation, i.e., in 2012-2013. No reports were available for the years following this strategy, either from funding partners or the NHM/MoHFW. The official report of NFHS-4 survey is due to be released in October 2017. The author also faced limitations while searching for studies and research articles published in peer reviewed journals focussed on the continuum of maternal health care in Uttar Pradesh. While most of the studies focussed on the importance of antenatal care, postnatal care, and increase in institutional deliveries to JSY, publications about the research findings of the various Health Partners aforementioned were not available.

# Conclusion

It has been 5 years since the RMNCH+A Strategy was launched all over the country and adopted by various states to achieve improvements in reproductive, maternal, child and adolescent health. However, it still appears to be in its very nascent stages of implementation. On the basis of this study it can be concluded that the performance of the districts in terms of maternal health vary radically even among the 19 high priority districts. While the districts of **Balrampur, Bahraich, Shrawasti, Gonda and Hardoi were identified to be the lowest performers for all maternal health indicators and were below the 25 percentile for the state**, districts such **as Faizabad, Sonbhadra, Barabanki, Kushinagar, Bareli and Pilibhit were in the 75th percentile** within the HPDs according to NFHS 4. This trend was similar for ranking done according to AHS 3 data, with the exception of Kausambhi which replaced Sonbhadra at 15th place in the list. **Sonbhadra was ranked as the 6th lowest performing district in Uttar Pradesh in 2016, which is in stark contrast with its position in the AHS 3**. The rise in position due to its lowest performance requires further exploration. The changes analysed in the maternal health indicators between AHS 3 and NFHS 4 were only significant for certain indicators like percentage of women who received ANC in the 1st trimester, women who delivered in institutions, and the women who received postnatal care within 48hrs of delivery. There were discrepancies between the two surveys mostly due to the gross overestimation of the data for AHS 3, which resulted in huge differences between prioritized and non-prioritized districts. However, the percentage change was higher in non-prioritized district, leading to the conclusion that the special "focus" being put to the lowest performing districts has not yet yielded the desired results. **There were large differences between the maternal health indicators for high priority districts and the non-high priority ones,**

**even when the same organizations worked in both. Even though the control districts that were selected were very similar in terms of demographic features, there appeared to be great differences in the health indicators.** Thus it may be concluded that independent improvements in maternal health cannot be attained without an overall social and economic development.

Numerous questions pertaining to maternal health remain unanswered by the NFHS 4 data. Gross discrepancies between the AHS 3 and NFHS 4data were seen for many indicators. For example, **the percentage of women who received ANC in the 1st trimester for the district of Bahraich was 34.6%, according to AHS 3 in 2012. However, the same indicator showed a value of 12.8% according to NFHS 4.** This prompted discussions with experts on the matter and the general consensus was that AHS 3 data was unreliable in many ways and NFHS 4 data must be considered as the benchmark against which further surveys would be conducted. AHS 3 was considered as a means of comparison for this study because it had comparable populations, sample sizes, use of the same health indicators and data collection methods with the NFHS 4. However, the authenticity of the data was questioned while performing the analysis especially for indicators which showed a drastic decrease between 2012 and 2016.

The study concludes that questionnaire for the NFHS 4 must be tailored to reflect the indicators that were established in the RMNCH+A Strategy. Many indicators that were mandated in the RMNCH+A guidelines for maternal health were not even mentioned in the NFSH 4 questionnaire, thus concluding that a higher focus must be placed on these indicators in future surveys to get a more comprehensive view of the status of maternal health. The questions which reflect indicators that wish to be analysed in such surveys must be in accordance with those outlined in the guidelines provided by the NHM. Furthermore, greater attention must be paid to the collection of data on certain indicators which have been consistently reported as erroneous/inadequate (male sterilization, number of children breastfed within 1 hr of birth).

The country as a whole has made monumental leaps and considerable progress in terms of healthcare. However, the latest data and the consequent trends that have emerged from this survey demands a more unified, interrelated and cohesive approach, especially in the districts that have been tagged as “high priority”. Various gaps are still required to be filled at life stages of every woman for better attainment of health, and a greater reduction of maternal mortality.

# References


1. Census of India 2011 http://www.censusindia.gov.in/2011-Common/CensusData2011.html

2. Wikipedia, Uttar Pradesh, https://en.wikipedia.org/wiki/Uttar_Pradesh

3. Paul, V. K., Sachdev, H. S., Mavalankar, D., Ramachandran, P., Sankar, M. J., Bhandari, N., . . . Kirkwood, B. (2011). India: Towards universal health coverage 2: Reproductive health, and child health and nutrition in india: Meeting the challenge. *The Lancet, 377*(9762), 332-49. Retrieved from https://search.proquest.com/docview/856796143?accountid=136944

4. Kumar, V., Mohanty, S., Kumar, A., Misra, R. P., Santosham, M., Awasthi, S., . . . Darmstadt, G. L. (2008). Effect of community-based behaviour change management on neonatal mortality in shivgarh, uttar pradesh, india: A cluster-randomised controlled trial. *The Lancet, 372*(9644), 1151-62. Retrieved from https://search.proquest.com/docview/199025405?accountid=136944

5. India-WHO Statistical Profile http://www.who.int/gho/countries/ind.pdf

6. Burden of Disease in India; National Commission on Macroeconomics and Health; http://www.who.int/macrohealth/action/NCMH_Burden%20of%20disease_(29%20Sep%202005).pdf

7. National Health Mission; 12th Five Year Plan-Social Sector; http://nhm.gov.in/images/pdf/publication/Planning_Commission/12th_Five_year_plan-Vol-3.pdf

8. A Strategic Approach to RMNCH+A in India; MoHFW; Government of India; January 2013; http://nhm.gov.in/images/pdf/RMNCH+A/RMNCH+A_Strategy.pdf

9. Kujala, Sanni Waiswa, Peter Kadobera, Daniel Akuze, Joseph Pariyo, George and Hanson, Claudia 2017. Trends and risk factors of stillbirths and neonatal deaths in Eastern Uganda (1982-2011): a cross-sectional, population-based study. *Tropical Medicine & International Health*, Vol. 22, Issue. 1, p. 63.

10. Factsheet-Uttar Pradesh; Annual Health Survey 2012-2013; MoHFW; Government of India file:///C:/Users/Tanya/Desktop/Capstone/FACTSHEET-UTTAR_PRADESH-ALS%202012-13.pdf

11. List of High Priority Districts; Press Information Bureau; MoHFW; Government of India; April 24th 2015 http://pib.nic.in/newsite/PrintRelease.aspx?relid=118620

12. Guidance Note for implementation of RMNCH+A interventions in High Priority Districts http://www.venturecenter.co.in/collab/health/wp-content/uploads/2015/11/High-priority-districts.pdf

13. List of 16 Dashboard Indicators http://www.nrhmorissa.gov.in/writereaddata/Upload/Documents/16%20DASHBOARD,%20HMIS.pdf

14. NFHS 4 Factsheet-Uttar Pradesh; http://rchiips.org/NFHS/factsheet_NFHS-4.shtml

15. District Wise Work Plan; National Health Mission; http://upnrhm.gov.in/district-work-plans.php

16. India's RMNCH+A Strategy; A Case of Extraordinary Government Leadership; MCHIP-USAID; June 2014 http://www.mchip.net/sites/default/files/RMNCH+A%20in%20India.pdf

17. Langlois, É. V., Miszkurka, M., Zunzunegui, M. V., Ghaffar, A., Ziegler, D., & Karp, I. (2015). Inequities in postnatal care in low- and middle-income countries: A systematic review and meta-analysis. *World Health Organization.Bulletin of the World Health Organization*, *93*(4), 259-270G. Retrieved from https://search.proquest.com/docview/1670199862?accountid=136944

18. Corporate Social Responsibility Policy; Balrampur Chinni Mills Limited; http://www.chini.com/policies/CSR_Policy.pdf

19. City Guide; Bahraich Online; http://www.bahraichonline.in/city-guide/healthcare-facilities-in-bahraich

20. Health Partners Forum; National Health Mission; Dept of Health and Family Welfare; Government of Uttar Pradesh; http://upnrhm.gov.in/health-partners.php

21. Sharma, G., Powell-Jackson, T., Haldar, K., Bradley, J., & Filippi, V. (2017). Quality of routine essential care during childbirth: Clinical observations of uncomplicated births in uttar pradesh, india. *World Health Organization.Bulletin of the World Health Organization*, *95*(6), 419-429. doi:http://dx.doi.org/10.2471/BLT.16.179291

22. Paul, V. K., Sachdev, H. S., Mavalankar, D., Ramachandran, P., Sankar, M. J., Bhandari, N., … Kirkwood, B. (2011). Reproductive health, and child health and nutrition in India: meeting the challenge. *Lancet*, *377*(9762), 332–349. http://doi.org/10.1016/S0140-6736(10)61492-4

23. India's Janani Suraksha Yojana, a conditional cash transfer programme to increase births in health facilities: an impact evaluation Lim S.S., Dandona L., Hoisington J.A., James S.L., Hogan M.C., Gakidou E. (2010) *The Lancet*, 375 (9730) , pp. 2009-2023.

24. **For the construction of Composite Index: K.**, Venkaiah et al. Development of composite index and ranking the districts using nutrition survey data in Madhya Pradesh, India. **Indian Journal of Community Health**, [S.l.], v. 27, n. 2, p. 204 - 210, june 2015. ISSN 2248-9509.