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Status of Maternal and Child Health (MCH) in Telangana

Venkatanarayana Motkuri and Lakhiram Hansda[‡]

I Background

The present note is about the status of maternal and child health (MCH) in the state of Telangana. The erstwhile undivided state of Andhra Pradesh was *bifurcated* and a separate state of Telangana¹ was formed on June 2, 2014. Telangana emerged as the 29th and the youngest state of Indian federation. This study aims at bringing out the performance of the state of Telangana in continuum from the levels it had inherited from the undivided state of Andhra Pradesh and its relative performance in comparison with residual state of Andhra Pradesh.

Telangana state, land locked southern state, is the twelfth largest state of India in terms of area and population as well. According to Census (2011), its population is 3.51 crores (out of total population of 8.45 crores of the undivided state of Andhra Pradesh) and its geographical area is 1.12 lakh Sq. Kms. Telangana accounts for 3.5 per cent of the total geographical area and contributes 2.9 per cent of population in the country. The population density of the state is 307 per Sq.Km. which is less than the national average. The decadal growth rate (2001-11) of the state population was 13.58 per cent (1.2 per cent per annum) which is one of the lowest across states of India. Of the total state population, 38.64 per cent are concentrated in urban areas.

Telangana economy continued to be in the high growth trajectory with 8 to 10 per cent annual rate of growth in Gross State Domestic Product (GSDP) of the state during last three years. The per capita income of the state at Rs. 1.40 lakhs in 2015-16 is 40 per cent higher than the national average². While contributing nearly 4.0 per cent of the country's GDP, Telangana state emerged as one of the relatively prosperous states of India³. The state has made considerable progress in the fields of health, education⁴, industry and services sectors. As per the Human Development Report, 2017 (HDR) of Telangana state, the performance of the state is not only relatively better than national average but also its rank in all-India context (across major states) has improved

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¹ The present Telangana state was part of the Nizam's Hyderabad state before it integrated with India in 1948 and part of independent Hyderabad state from September 17, 1948 to November 1, 1956. When it was merged with Andhra state and formed the Andhra Pradesh state in 1956, it was part of that united Andhra Pradesh for nearly 58 years until it was bifurcated in 2014.

² Socio-Economic Outlook-2017 (Reinventing Telangana: Looking Back and Ahead), Planning Department, Government of Telangana, Hyderabad.

³ Despite being agricultural dependent economy, the growth in Telangana was mainly driven by the industry and services sectors. Telangana is performing well in the fields of information technology and biotechnology. It is one of the top IT exporting states in India. Hyderabad has been remained as one of the growth centre of industry related to Information Technology and bio-technology in India.

⁴ Although historical neglect of primary education during Nizam's rule and when it was part of undivided Andhra Pradesh, haunting the educational backwardness in terms of very low literacy rate at 66.5 per cent (Census 2011) which was well below the national average, its performance at present in school and higher education is remarkable and the state stands above the national average.

from 13 in 2004-05 to 10 in 2011-12 (CESS, 2017). Further, the report has shown that the improvement is not only in the overall index (HDI) but also in each of three components (i.e. Economics, Health and Education dimensions) of the Index (HDI).

The Government of India's (NITI Aayog) recent report ranking the states based on their overall performance and their incremental change in respect of health outcomes and health governance during the last two years, places the state of Telangana in the middle, eleventh position out of twenty-one major states of the country (see GOI, 2018). Although the state is doing better in respect of key health outcomes, its performance in intermediate outcomes, governance and other processes indicators it is lagging (*ibid*).

Telangana state has inherited the demographic transition that undivided state of Andhra Pradesh had witnessed during the 1990s and 2000s (see CESS, 2008; Dev *et al.*, 2009). The fertility rate in the undivided state had declined to little below replacement level (i.e. 2) by the turn of 21st century and continued to be so thereafter. The estimates of third National Family Health Survey (NFHS-3) have shown that the fertility rate of undivided Andhra Pradesh in 2005-06 was 1.8 (children per women in the reproductive age) and the recent NFHS-IV (2015-16) estimates indicate the same. Its achievements in family planning leading to fertility transition that ultimately resulted in low population growth considered as demographic transition, is well appreciated. But its performance in many aspects of health outcomes is still far behind in respect of required or ideal situation / outcomes and when compared to some other states. It was observed that the disproportionately-high focus on family planning towards population stabilization in the undivided Andhra Pradesh since 1970s had diluted the focus / emphasis on maternal health (see Prakasamma, 2009).

In this backdrop, the present note is on the status of maternal and child health (henceforth MCH) in the undivided state of Andhra Pradesh and the state of Telangana after bifurcation. The focus in this note would be on: infant mortality, maternal health, breastfeeding; births - institutional and other related issues such as Caesarean section births etc.; immunizations; the impact of Integrated Child Development Scheme (ICDS) on child health, such as nutrition, immunization; and health care infrastructure in the state of Telangana. It also covers rural-urban differentials and possibly for social groups. This note is primarily based on multiple secondary sources of data: the estimates of Sample Registration System (SRS); the National Family Health Survey (NFHS); District Level Household Survey (DLHS), the National Sample Survey Office (NSSO) survey on Health as parts of its 71st Round (2014) survey on *Social Consumption*, Census of India and supplemented with findings of some research studies and reports.

Maternal and child health is most crucial components of the human health. In the health systems the maternal health encompasses the family planning, preconception, pre-natal, child birth (delivery) and postnatal care⁵. Hence, the aim of maternal health concerns with reducing the maternal morbidity and mortality. Similarly, the child health in general covers health of a child as a foetus during pregnancy, child birth environment, breast-feeding and post-natal child health involving the childhood diseases and nutrition till a minimum of five years age of the child. In the health care dimension of the child health it encompasses anti-natal checkups and pre-natal care, skilled attendance at child birth, immunization and nutrition. In a health system, it appears

⁵ In general maternal health covers the health of women during pregnancy, childbirth, and the postpartum period.

there is a overlapping between maternal and child health when each of them is observed separately. Hence one needs to look at it in a continual form and together comprehensively.

II Maternal and Child Health in Andhra Pradesh and Telangana

Before proceeding to status of the maternal and child health in these two Telugu-speaking states, we place here some of the special characteristics of these states in respect of women's reproductive health. Both the states are among the few states standing top in respect of very low fertility rate (TFR below replacement level), early marriages of women, child bearing (pregnancy or live birth) and high incidence of sterilisation in their early ages and prevalence of hysterectomy. The recent NFHS IV (2015-16) estimates indicate that fertility rates (TFR) in these states are below replacement level and are harmonised across socio-religious groups (see IIPS and ICF, 2017).

The analysis of Census 2011 data (C Series of Table 4) indicates that more than 80 per cent of ever and currently married women (of all ages) in the undivided Andhra Pradesh were married before they were 22 years old, two-thirds of them married before 20 years of their age, and two-fifth of them married before 18 years of age which is a legal minimum. The recent NFHS IV (2015-16) estimates indicate that the median age at first marriage is 18.8 years among presently 20-49 years old women in Telangana state (see IIPS and ICF, 2017). It also shows that more than one-fourth (26%) of women aged 20-24 years got married before they attained legal minimum age of 18.

About 11 percent among women aged 15-19 years in Telangana, have already begun childbearing. Although knowledge of contraception is almost universal (98%) in Telangana, the contraceptive prevalence rate and the modern contraceptive prevalence rate among currently married women aged 15-49 years are both remained at 57 percent (see IIPS and ICF, 2017). Female sterilization, at 54 percent, accounts for 95 percent of all contraceptive use in the state. Among the currently married women in Telangana, 5 per cent of 15-19 years old, one-fourth (24%) of 20-24 years old and half (48%) of 25-29 years old women have undergone procedure of female sterilisation.

Along with female sterilisation, hysterectomy (surgical removal of uterus) is prevalent in Telangana. NFHS4 (2015-16) estimates indicate that about eight (7.7%) per cent of women in the age of 15-49 years have had hysterectomy (see IIPS and ICF, 2017). Such procedure is higher among women with no schooling or below primary education, Schedule Tribes (STs) women, and among rural women. However, unlike the female sterilisation which is largely (more than three-fourths of cases) conducted in the public health facility, hysterectomy in most of the cases (81% of cases) is conducted in private health facility. Such a surgical procedure is considered to be more than medical necessity it is an unethical practices of private healthcare centres / hospitals in a business mode, sometimes making use of state health insurance schemes like Rajiv Arogya Sri (see Mamidi and Pulla, 2013).

Infant Mortality

To begin the analysis of present note on maternal and child health in Telangana state with infant mortality rate (IMR), estimates based on both the Sample Registration System (SRS) and National Family Health Survey (NFHS) data sources indicate that the state of Telangana is

having considerably high IMR especially when observed against the required outcome. As per SRS estimates, IMR in the state in 2016 was 31. It is found to be high when compared to that of the ideal situation and to that of the other southern and neighbouring states like Kerala (10), Tamil Nadu (17), Maharashtra (19) and Karnataka (24) (see Figure 1). But, it seems that its performance is relatively better in terms of IMR in comparison with all India average and that of residual state of Andhra Pradesh (see Table 1 and 4 and Figure 1). While taking the baseline level of IMR at 39 in 2013 of undivided Andhra Pradesh, the rate of decline in Telangana seems to be faster / higher during the last three years (2013-16) compared to that of All India average and that of residual state of Andhra Pradesh. Moreover, as per the NFHS-IV estimates the Telangana state appeared to have reached near to the IMR target at 28 of the Millennium Development Goals (MDGs) set for the year 2015 (see Table 4).

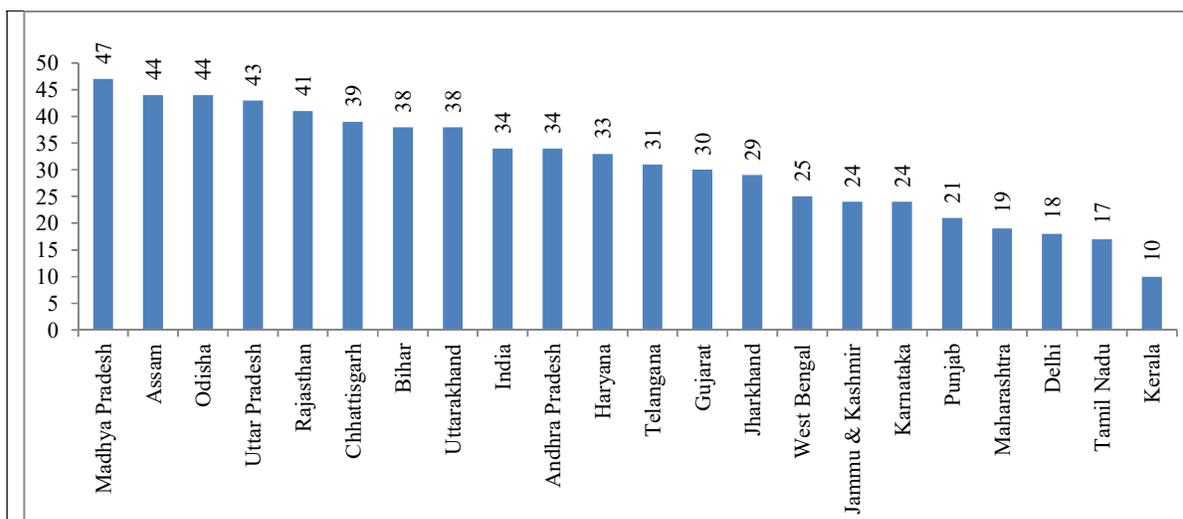
**Table 1: Infant Mortality Rate (IMR)
in Telangana, Andhra Pradesh and India : 2006-2016**

State	Total										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
India	57	55	53	50	47	44	42	40	39	37	34
Andhra Pradesh	56	54	52	49	46	43	41	39	39	37	34
Telangana	-	-	-	-	-	-	-	-	35	34	31

Notes: 1. Infant Mortality Rate (IMR) is per 1000 live births; 2. Figures up to 2013 are for undivided Andhra Pradesh and those since 2014 are for residual state of Andhra Pradesh; 3. '-' indicates data is not available separately for Telangana but included in undivided Andhra Pradesh.

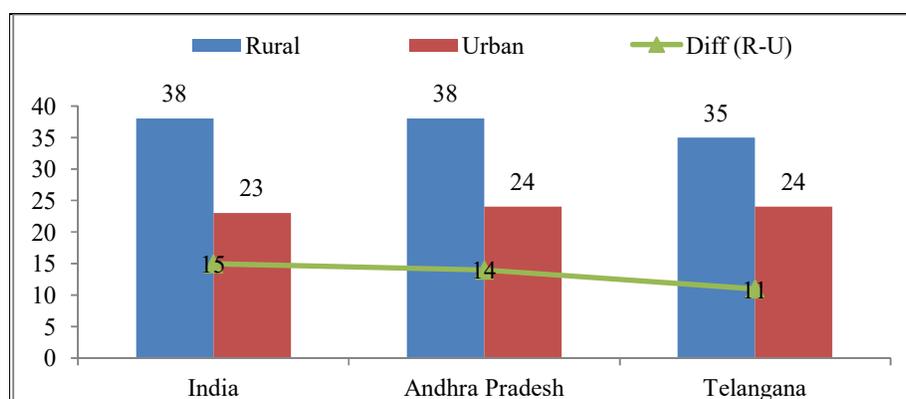
Source: Sample Registration System (SRS) – Statistical Reports.

Figure 1: Infant Mortality Rate (IMR) across Major States in India, 2016



Source: Sample Registration System (SRS) – Bulletin (2017).

There is a considerable level of variation in IMR between rural and urban areas of Telangana. But, such a difference however appears to be relatively low in the state when compared to the residual state of Andhra Pradesh and that of the national average (see Figure 2).

Figure 2: Rural-Urban Difference in IMR, 2016

Note: Diff (R-U) – difference between rural and urban IMRs.

Source: Sample Registration System (SRS) – Bulletin (2017).

Recently, the state government launched the Telangana Newborn Action Plan, (TNAP), which is a part of the India Newborn Action Plan (INAP), an initiative of Government of India (GOI) launched recently. It is ‘a targeted strategy for accelerating the reduction of preventable newborn deaths and stillbirths’ in the State and elsewhere in the country.

Maternal Mortality

A high level of maternal mortality⁶ in *India* is a cause of concern. It is observed that India contributes to one-fourths of maternal deaths in the world (see CMS, 2016). Within India, the undivided state of Andhra Pradesh seems to have witnessed relatively less disadvantaged position and has been showing a better performance in reducing such maternal mortality. The maternal mortality ratio (MMR) in the state has been found to be much lesser than the all India average. The undivided Andhra Pradesh was found to be fourth best state in India on the basis of having low MMR following the state of Kerala, Tamil Nadu and Maharashtra (CESS, 2017).

Table 2: Maternal Mortality Ratio (MMR) in India and undivided Andhra Pradesh

Year	Source	India	Andhra Pradesh
1997	SRS	408	220
1997-98	SRS	398	197
2004-06	SRS	254	154
2007-09	SRS	212	134
2010-12	SRS	178	110
2011-13	SRS	167	92

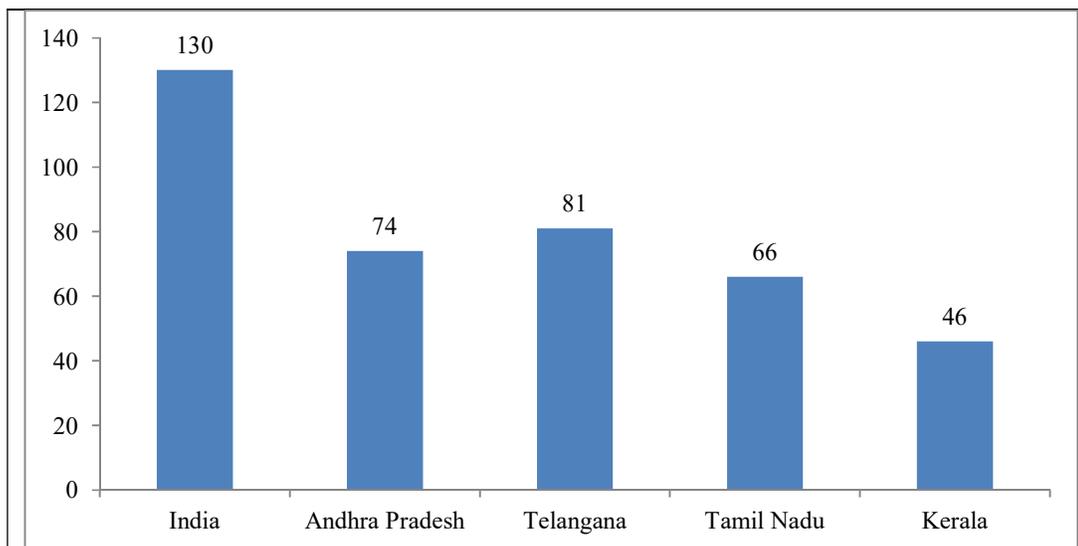
Notes: 1. Maternal Mortality Ratio (MMR) is number of deaths per one lakh live births; 2. Figures up to 2014 are for undivided Andhra Pradesh and those since 2014 are for residual state of Andhra Pradesh; 2. For the case of Telangana state, no separate estimates are available but estimates of undivided state of Andhra Pradesh are inclusive of the Telangana.

Sources: 1. SRS estimates at NITI Ayog website see at <http://niti.gov.in/content/maternal-mortality-ratio-mmr-100000-live-births>; 2. World Bank.

⁶ The World Health Organisation (WHO) defines maternal mortality as the death of a woman during pregnancy or in the first 42 days after the birth of the child due to causes directly or indirectly linked with pregnancy.

The SRS estimates indicate that the undivided Andhra Pradesh had achieved the MDGs target of MMR at 109 much before the terminal year of target i.e. 2015. Telangana state appeared to have inherited such a relatively less disadvantaged position and better performance in this respect. There has not been any separate estimate for the state of Telangana as a region of undivided Andhra Pradesh before bifurcation. Post-bifurcation, the latest SRS Bulletin released in 2018 and that provided the estimates of MMR across states for the reference period 2014-16 provides the first estimate for the state of Telangana. The SRS estimates show that although the state of Telangana⁷ has MMR much below the national average and the MDG target, its MMR is higher than that of the other southern states including residual state of Andhra Pradesh (see Figure 3).

Figure 3: Maternal Mortality Ratio (MMR) in Telangana and other Southern States, 2014-16



Source: RGI (2018) **Special bulletin on Maternal Mortality in India 2014-16**, SRS, RGI, Govt. of India, New Delhi, May 2018.

It has been observed that a large number of maternal deaths are preventable through safe deliveries and adequate maternal care. The World Health Organisation (WHO) guidelines indicate that skilled attendance at birth backed up with emergency obstetric care when needed reduces risks of maternal deaths due to complications during delivery. Also, as WHO observes, when the expected mothers have certain antenatal care check-ups (a minimum of eight) during their pregnancy, it can reduce the risk of maternal mortality to a great extent.

Institutional Deliveries

In respect of institutional deliveries, although both states (Telangana and Andhra Pradesh) are ahead of the national average and having more than 90 per cent of institutional deliveries, as per the SRS data Telangana appears to be marginally lagging behind its counterpart (Table 3). But,

⁷ However, a media reported observation is that over a period of three years maternal deaths in the state have fallen from 380 (2013-14) to 363 (2014-15) to 230 (2015-16) (The Hans India, 2016). As the Commissioner of Health and Family Welfare, Government of Telangana has reported, the total deliveries in the state were 6.06 lakh in 2013-14 and 6.11 lakh in 2014-16. If we consider these figures as live birth, one may derive the MMR of the Telangana state as 60.

the NFHS-4 estimates shows that its performance is not less than that of residual state of Andhra Pradesh (see Table 4). As regards the rural-urban difference in institutional deliveries, both states are having same rural-urban gap of 6 percentage points, which is much lower than the national average of nearly 20 percentage points (Table 3).

Table 3: Institutional Delivery - percent of live births where the mothers received medical attention at delivery at hospitals (Government or Private)

State/Location		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<i>1</i>		<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>
India	Total	34.9	38.6	47.1	58.2	60.5	66.6	73.1	74.4	78.5	79.3
	Rural	24.9	28.7	38.3	49.2	53.9	60.7	67.9	69.7	73.2	74.2
	Urban	71.0	74.5	78.5	87.3	84.2	87.9	92.0	92.1	93.2	93.5
Andhra Pradesh	Total	56.2	63.7	70.9	74.4	88.1	90.7	92.1	93.6	94.9	95.5
	Rural	44.1	53.5	62.6	66.5	84.4	87.5	89.4	91.3	92.6	93.6
	Urban	91.8	92.7	93.7	95.5	98.1	98.6	99.2	99.7	99.8	99.8
Telangana	Total	-	-	-	-	-	-	-	-	90.6	92.0
	Rural	-	-	-	-	-	-	-	-	88.3	89.5
	Urban	-	-	-	-	-	-	-	-	94.4	95.6

Notes: 1. Figures up to 2013 refer to undivided Andhra Pradesh and that since 2014 refer to residual state of Andhra Pradesh; 2. '-' not available separately for Telangana but included in undivided Andhra Pradesh.

Source: Sample Registration System (SRS) – Statistical Reports.

The NFHS-IV estimates in respect of Antenatal care (ANC) indicate that the percentage of mothers who had attended antenatal check-ups (during their pregnancy) in the first trimester is high in Telangana (83.1%) and residual state of Andhra Pradesh (82.4%) when compared to the national average (58.6%) (Table 4). Despite of their relatively better performance and having marginal differences between them, both the Telugu-speaking states have been lagging behind the targeted outcome i.e. universal coverage. The percentage of mothers who had at least four antenatal check-ups during their pregnancy is much lower. Further, worse is the situation of mothers covering with all required ANCs. Less than half of the mothers in these two states are covered with all ANCs and the national average is further low. As regards the post-natal or post-partum care, around three-fifths of mothers had such care within two days of child birth (Table 4). These are the some of the concerns still continued to rest with health care system of the state.

Very High Rate of Caesarean-section Births that specific to Telangana State

Although both the Telugu-speaking states are equally performing well in respect of institutional births having little above 90 per cent of total births, the unique feature of the state of Telangana is that it has **very high percentage of births in Caesarean section (C-section births) at 58 per cent** (Table 3). It is considered as one of the highest incidence among major Indian states (see CESS, 2017). As a high proportion of institutional births in Telangana are associated with private hospitals it is something that must be related to interest of the private hospitals rather than medical necessity. A study in the past, based on NFHS-1 (1992-93) data, observed that in some states including the undivided state of Andhra Pradesh, the risk of undergoing caesarean

section in private sector institutions is four or more times higher than that in the public sector (Mishra and Ramanathan, 2002).

Table 4: Selected Indicators of Maternal and Child Health in Telangana in comparison with Andhra Pradesh and All India

Sno	Indicator	All India		Andhra Pradesh		Telangana
		2005-06	2015-16	2005-06	2015-16	2015-16
1	2	3	4	5	6	7
1	% of mothers who had ANC – first trimester	43.9	58.6	-	82.4	83.1
2	% of mothers who had ANC – four visits	37.0	51.2	86.0	76.3	75.0
3	% of mothers who had ANC – full	11.6	21.0		43.9	42.2
4	% of mother who had post-natal care within two days of child birth	34.6	62.4	71.2	79.7	81.8
5	% Institutional births	38.7	78.9	68.6	91.6	91.5
6	% of births in Caesarean section	8.5	17.2	-	40.1	58.0
7	% of Children (< 3 years) Breastfed – within hour of birth	23.4	41.6	22.4	40.1	37.1
8	% of Children (< 6 months) Breastfed – exclusively	46.4	54.9	62.7	70.2	67.3
9	Infant Mortality Rate (IMR – per 1000)	57.0	41.0	68.4	35.0	30.0
10	Under Five Mortality Rate	74.0	50.0	78.7	41.0	32.0
11	% of Children (< 5 Yrs) Stunted	48.0	38.4	38.4	31.4	28.1
12	% of Children (< 5 Yrs) Underweight	42.5	35.7	29.8	31.9	28.5
13	% of Children (< 5 Yrs) Wasted	19.8	21.0	14.9	17.2	18.0
14	% of Children (6-59 months) with Anaemia	69.4	58.4	79.6	58.6	60.7
15	% of women (15-49 Yrs) with Anaemia	55.3	53.0	62.7	60.0	56.7
16	% of Pregnant women with Anaemia	57.9	50.3		52.9	49.8
17	% of Women with < normal BM	35.5	22.9	30.8	17.6	23.1
18	% of Children (12-23 months) fully immunised / vaccinated – All	43.5	60.0	46.0	65.3	68.1
19	% of mothers benefited from JSY	-	36.4	-	17.4	12.3

Notes: 1. Infant mortality rate is per 1000 live births; 2. ‘-’ not available; 3. Fully vaccinated / immunized means having BCG, measles, and 3 doses each of polio and DPT; 4. ANC – Antenatal Care; JSY – Janani Suraksha Yojana.

Source: NFHS-3 (2005-06), NFHS-4 (2015-16) Fact Sheets.

According to the estimate of NFHS-4, the proportion of institutional births in public facility is 31 per cent in Telangana, 38 per cent in the residual state of Andhra Pradesh while the national average is 52 per cent. The rest of the child births have taken place in private health care institutions of varying size. It is interesting to note that when compared to that of national average and the residual state of Andhra Pradesh, the percentage of live births in C-sections is higher in the state of Telagana in both the private (75%) and public (40%) hospitals (see NFHS-4, 2017: Factsheets). It is fairly higher when seen against the WHO’s benchmark pointing it to be at 10 to 15 per cent of live birth deliveries (CESS, 2017). Telangana state registered much higher than 25 percent of births in Europe and 41 percent of births in North America that occurs via a C-section (see Keag *et al.*, 2018). Research studies have shown that undesirable C-section delivery is associated with certain long-run risks for both the mother and child (Keag *et al.*, 2018). In this regard, it is observed that a valuable medical procedure has some undesirable social consequences because of its inappropriate utilization (CESS, 2016). It has some serious implications for both the health of mother and burdening cost of health care on poor and lower economic classes.

Costs of Delivery Care: Expensive Child Births in Telangana

When we examine the average cost (medical and other costs) of child birth in hospital per case, as estimated by National Sample Survey Office (NSSO) based on its 71st round (2014) survey on social consumption (health), it is found to be higher in Telangana state as compared to the national average and that of residual state of Andhra Pradesh (Table 5). There is a huge difference in cost of child birth between private and public hospitals; it is so across states and at the national level but such a public-private difference is relatively higher in Telangana.

**Table 5: Expenditure (Rs.) on Child Birth, 2014
: Average Expenditure per Hospitalised Child Birth during the last 365 Days**

Sno	State	Rural			Urban		
		Private	Public	Both	Private	Public	Both
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
1	All India	16698	2647	6863	21919	3208	13039
2	Andhra Pradesh	15418	2776	10015	18896	2485	13657
3	Telangana	22101	2647	15083	25261	3585	20645
4	Rajasthan	14958	1707	4069	14933	1942	6339

Notes: 1. Including Medical and Other expenditure combined; 2. Reference period of expenditure is last 365 days.

Source: NSSO (2016) *Health in India*, Report No. 574 based on its 71st Round (2014) Social Consumption Survey on Health.

This higher average cost of child birth in Telangana state must be due to higher percentage of child births in private hospitals in the state and higher percentage of C-section births which inevitably accompanied with extra cost of surgical procedures and medicals along with more number of days stayed in hospital per child birth as compared to the normal deliveries. In fact the NSSO estimates show that the average number of days of stay in hospital in case of child birth is one of the highest in Telangana (NSSO, 2016). It is obvious that C-section births require the mother to stay more number of days in hospital than that of normal delivery. When the average cost of child birth combining all those in public and private hospitals (i.e. both) is considered, the national average and that of residual state of Andhra Pradesh is two-thirds of what Telangana spends. Further, if compared with a state having very low cost of child birth, for instance Rajasthan, it is three to four times in Telangana state (see Table 5).

Breastfeeding and Nutritional Status of Children

Breast feeding is crucial in ensuring good health among infants. Early initiation of breast feeding by the mother is very important for the physical and cognitive development of the child. In this regard, not only the achievement of Telangana state is far from the required but also the performance of state in this regard in comparison to residual state of Andhra Pradesh is marginally lagging behind. As the NFHS-IV (2015-16) estimates show, around two-thirds of children below six months in the Telangana state are being exclusively breastfed and it is found to be lesser at around little above one-third of them among children below three years of age (Table 4).

As regards the nutritional status of children, under-nutrition among children is at considerable level in the state of Telangana (Table 4). As the estimates of recent NFHS-4 (2015-16) indicates, around 28 per cent of children below five years of age in the state of Telangana are stunted and

same percentage of them are found to be underweight. Another disorder ‘wasting’ reflecting the under-nutrition is observed for 18 per cent of these children.

With regard to the immunisation of children, NFHS-4 (2015-16) estimates show that only two-thirds of children (12-23 months old) in the Telangana state are fully immunised in having all the prescribed / recommended vaccination (see Table 4) and rest one-third of the children are not immunised. Achievement is falling short of required (universal coverage of children), its performance is relatively better when compared with national average and that of residual Andhra Pradesh.

Prevalence of anaemia among women and children appears to be considerably high at all India level and in Andhra Pradesh (residual) and Telangana. Around three-fifths of children (6-59 months) and more than half of the women reproductive age (15-49 years) in general are affected with anaemia (see Table 4). Around half of the pregnant women have been found to be anaemic at national level and in both the Telugu states. The anaemia which indicates the low level of haemoglobin in blood, has detrimental effect on health of women and children. Especially, anaemia among pregnant women increases the risk of premature delivery, pre-natal mortality and maternal mortality (Sekhar, 2017).

In all, although its performance in certain indicators (for instance, IMR) is relatively much better than all India average and performing no less than residual state of Andhra Pradesh, achievement of the Telangana state in respect of maternal and child health is falling far short of ideal situation or required health outcomes and when compared with the rest of other south Indian states.

The Government of India’s recent report ranking the states based on their over performance and their incremental change in respect of health outcomes and governance during the last two years places the state of Telangana in the middle, i.e. eleventh position out of twenty-one major states of the country (see GOI, 2018). If we decipher over performance ranking, it is based on the performance in three different dimensions: Health Outcome, Governance and Process. In fact, the state of Telangana doing relatively better in terms health outcomes particularly in the key outcomes consisting of infant mortality rates. The state secured sixth rank in this regard. Based on the Government of India’s Health Management Information System (HMIS) data, Telangana is frontrunner in respect of the proportion children with low birth weight. It is one of the top five states having high percentage of institutional deliveries (see GOI, 2018). However, its performance in intermediate outcomes and the other two dimensions is little lagging behind.

IV Health Inequalities: across Social Groups

According to HDR 2017 of Telangana that has constructed human development index across social groups indicate that inequalities across social groups in general and in the health dimension in particular in the state of Telangana are very narrow (see CESS, 2017; Table 6). Health index constructed for HDR 2017 was based on the household survey estimates of District Level Household Survey (DLHS). For constructing health index, the coverage under safe motherhood and childhood facilities were taken into account (see CESS, 2017).

Table 6: Health Inequalities: Health Index of HDI across Social Groups in Telangana

Sno	Location	Year	All	SC	ST	BC	OC
1	Total (Rural and Urban)	2002-04	0.478	0.499	0.423	0.481	0.477
		2012-13	0.750	0.752	0.796	0.744	0.742
2	Rural	2002-04	0.483	0.514	0.419	0.478	0.513
		2012-13	0.747	0.725	0.789	0.746	0.805

Note: HDI – Human Development Index; SC –Scheduled Caste; ST – Scheduled Tribe; BC – Backward Classes / Castes; OC – the Other Classes / Castes.

Source: CESS (2017): HDR 2017 of Telangana State.

According to another study that examined the inequalities in certain health outcomes in the state of Telangana and performance of the state in selected health indicators across socio-religious groups based on the analysis of DLHS-4 unit record data, inequalities in respect of nutrition status among children below five years of age in the state, as presented in Table 7 below, were not so significantly high but there are differences across socio-religious groups (see Unisa and Usman, 2017).

The research studies that focused on the performance of Muslim community in the state in respect of their health conditions observed that on some of the parameters such as IMR, institutional deliveries, nutritional status of children, Muslim community is performing better as compared to any other religious communities in the state (see Sekhar, 2017; Unnisa and Usman, 2017; Bhagat and Ali, 2017; Naidu, 2017; COI, 2016).

Table 7: Percentage of Children under age five years classified as Undernourished according to three anthropometric indices across socio-religious categories

Nutritional status	Prevalence by socio-religious categories						
	Hindu - SCs	Hindu - STs	Hindu - OBCs	Hindu - OCs	Muslim - OBCs	Muslim - Others	Total
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
<i>Undernourished</i>							
Stunting (Short for age)	24.6	19.1	24.3	26.0	21.7	19.8	23.8
Wasting (Low weight for height)	26.5	32.7	32.0	22.8	23.9	23.3	29.5
Underweight (low weight for age)	32.1	26.4	29.3	21.9	31.3	23.7	29.5
<i>Severely Undernourished</i>							
Stunting (Short for age)	13.2	11.9	13.9	16.0	13.0	11.9	13.3
Wasting (Low weight for height)	16.9	16.8	19.6	12.0	15.2	20.9	18.3
Underweight (low weight for age)	13.7	11.7	13.8	11.4	11.5	10.5	13.2

Notes: Computed for children below age five from the individual level anthropometric data file of Telangana, District Level Household Survey (DLHS -4), 2012-2013.

Source: Unisa and Usman (2017).

The recent NFHS-4 (2015-16) estimates show that fertility rates low and harmonised across social and religious groups in the state (see IIPS and ICF, 2017). It also observed that the child vaccination do not vary much with background characteristics (*ibid*).

However, there are differences in certain indicators. In respect of contraception use in general and female sterilisation in particular, as per the NFHS-4 (2015-16) estimates, it is lower among Muslim and scheduled tribes (STs) women. As regards the hysterectomy it is low among Muslim women and very high among scheduled tribes' women (see IIPS and ICF, 2017). Infant Mortality Rate (IMR) is higher among the scheduled tribes and castes (STs and SCs) and very low among the other communities. With regard to antenatal care (ANCs) it is lower among ST women and higher among Muslims women. In respect of institutional deliveries, except STs who are lagging behind in this regard, in all the other communities it is 90 per cent or more (*ibid*). And another striking observation is that percentage of women (mothers) who received financial assistance under Janani Suraksha Yojana (JSY) is the lowest among STs and highest among SCs.

V Healthcare Infrastructure: Health Workers and Care Facilities

One of the most important factors in health care in general and maternal and child health care (MCH) in particular is availability of health care facilities and health care workers particularly the skilled health professionals such as doctors (Physicians, surgeons and specialists) and nurses along with other paramedics. Based on Census 2001 and 2011 data we have examined the availability of health workers while standardising their availability to population per health worker (P/HW) and health workers per 1000 population (HW/1000P). Census B series Tables provide information on workers by national industrial classification (NIC) and classification of occupations (NCO). As there is no other better source, for a quick assessment we have used B Series Table of Census 2001 and 2011 (B-18 Table) providing information on workers by their industrial classification (NIC-98). It is to be noted that it is in crude form because this health workforce by this classification (NIC) consists of all kinds and categories of workers (incl. unskilled attendants to skilled doctors) engaged in health care sector⁸ (see Motkuri *et al.*, 2017).

When examined the availability of health workers by standardised indicators (P/HW or HW/1000P) for the year 2001 and 2011, a couple of general observations are as follows. It is interesting to note that there was a remarkable improvement across states in this regard during the last decade (2001-11). At the all India level the size of the workforce health sector is almost doubled during the period. It is true for some of the states including the selected ones in the above Table 8. Rural areas also witnessed such an improvement during the period. At all India level the increase is 2.4 times in rural areas. It is observed that a large portion of such an increment (doubling) in size of workforce in health sector especially in rural areas must be due to induction into the system large number of Accredited Social Health Activist (ASHA) workers since inception of National Rural Health Mission (NRHM) in 2005 (see Motkuri and Mishra, 2018). But, the availability of health workers in rural areas is far lower than that of the situation in the case when rural and urban are combined. It is due to heavy concentration of health care facilities and thereby health workers in the urban centres. It is true for all the states in India.

⁸ For any further exposition on this aspect of sources and information and analysis on health workers see Motkuri and Naik (2009); Motkuri (2011); Motkuri *et al.* (2017);

Table 8: Availability of Health Workers in Telangana and Selected other States, 2001

Sno	State	Rural and Urban				Rural			
		P/HW		HW/1000P		P/HW		HW/1000P	
		2001	2011	2001	2011	2001	2011	2001	2011
1	2	3	4	5	6	7	8	9	10
1	All India	442	263	2.3	3.8	838	395	1.2	2.5
2	United Andhra Pradesh	437	251	2.3	4.0	718	347	1.4	2.9
3	Residual Andhra Pradesh	498	261	2.0	3.8	799	352	1.3	2.8
4	Telangana state	371	239	2.7	4.2	616	349	1.6	2.9
5	Tamil Nadu	404	233	2.5	4.3	987	389	1.0	2.6

Notes: 1. **P/HW** – Population per Health Worker; **HW/1000P** – Health Workers per 1000 Population; 2. For Telangana state and residual state of Andhra Pradesh district level data is aggregated to derive the respective states' figures.

Source: Author's Calculations based on Census 2001 and 2011 (B-18 Table) Data.

Among the selected states one could find that Telangana state was relatively better than residual Andhra Pradesh and the national average. More interestingly, Telangana is faring in this respect even better than Tamil Nadu (Table 8). For the two indicators presented in the Table 8, lower value of P/HW and higher value of HW/1000P for a state indicates relatively better performance. But with sparsely populated state with population density of 312 in 2011 Telangana needs more number of health workers than Tamil Nadu which is, relatively, densely populated having the density of population at 555. Further, Telangana is having sparsely populated tribal population (STs) at around 10 per cent state population whereas it is only one per cent in Tamil Nadu. One can observe that health outcomes especially those of maternal and child related ones in Tamil Nadu state are much better than in the state of Telangana despite of having lower health workers density (i.e. health workers per 1000 population) than that of the latter state, Telangana.

If referred to the World Health Organisation's (WHO's) threshold of 4.45 skilled health professionals per 1000 population (see WHO, 2016), the shortage in availability even all kinds of workforce in health care sector is very huge in India and also in Telangana. Although we do not have specific data here on the number of skilled health workers per 1000 population, but one can say the situation in this respect is even worse.

However, the performance of major states (22 excluding Delhi) in India on these select indicators, the state of Telangana is found to be among top five states performing relatively better in 2001 but slipped down to tenth best state in 2011. It is competing with the other southern states like Tamil Nadu and Karnataka. Telangana state is having certain edges as it has been witnessing since 1990s a fast growing private health sector variable in size, ranging from small clinics to super speciality and corporate hospitals. Mostly they are largely concentrated in urban areas of the state and in Hyderabad. Despite of this imbalance distribution of health workers, Telangana state in this regard is faring better even rural areas. Growing connectivity (through roads and transportation) between rural villages and urban towns and cities has been facilitating the access to emerging private health care in the urban landscape of the state. The fact that more than two-thirds of the institutional deliveries in the state in 2015-16 took place in

private sector and distinctively high cost of delivery reflecting the growing dependency on the private health care and acting as an incentive for its further expansion in the state.

One can infer that it may be due to this advantage in terms of availability of health workers the infant mortality rate is declining faster in the state of Telangana. As Motkuri and Naik (2009) that found significantly a strong negative correlation (coefficient of -0.87) between the availability of health workers and infant mortality rate across major states in India⁹.

Rural Health Care Facilities

Rural health care situation in general and that of maternal and child health in rural area in particular has always been a cause of concern. According to Government of India's report¹⁰ the state of Telangana, in 2015, consists of 4863 health sub-centres (HSCs), 668 primary health centres (PHCs) and 114 community health centres (CHS) to serve healthcare needs particularly mother and child healthcare needs of the rural population in the state (see GOI, 2015). Along with 87 urban health centres (UHCs), the state of Telangana has there are 42 Area hospitals and 8 District hospitals¹¹ at the referral and/or tertiary level. Along with 102 hospitals catering maternity and child health services, besides other services 5 hospitals meant for mother and child care and 5 teaching hospitals serving this purpose. Besides, at the village level in rural areas, at least one 'Accredited Social Health Activist' (ASHA) per village which is a component of National Rural Health Mission (NRHM) 2005, has been placed in the state. According to estimate of the DLHS-4 in 2012-13, nearly 94 per cent of villages in the state of Telangana were found to have ASHA workers. At present there are about 27474 ASHA workers in the state¹².

The estimates of DLHS-4 (2012-13) indicate that nearly 86 per cent of villages in Telangana have a HSC within three kilometers (kms.) distance and about two-thirds (64.6%) of villages in the state have PHC within 10 kms. distance. Although most of the PHCs and CHCs are reportedly facilitating 24x7 services, availing such services from these centres seems to be poor. As per DLHS-4 estimates only little above one-thirds (39%) of PHCs in the state conducted at least 10 deliveries during last one month on 24x7 hours basis (throughout the day and week). One must understand this as shortage of skilled human resources in the public facilities (see Motkuri *et al.*, 2017). Going by the estimates of DLHS-4 (2012-13) a less than half (43%) of PHCs in the Telangana state have a lady medical officer and only 21 per cent of PHCs have residential quarter for medical officers. Against such odds, the usage of private health facilities has been increasing in the state. Besides, certain other things are also at work in facilitating their access to private services. As we have observed above less than one-third of institutional deliveries in the state have taken place in public facility, and the rest of them are private hospitals. Similarly, for the other healthcare needs of mother and child, private healthcare facilities are more preferred than the public ones in the state.

⁹ But it contrasts with a particular case analysis that compares the situation in Telangana and Tamil Nadu. One has to explore the other factors as well in this respect.

¹⁰ i.e. ***Rural Health Statistics 2014-15***.

¹¹ Commissionerate of Health and Family Welfare, National Health Mission, Government of Telangana. See at: <http://chfw.telangana.gov.in/getInfo.do>.

¹² The 2nd Quarterly Report 2017-18 (July-Sep.), Commissioner of Health and Family Welfare, Govt. of Telangana.

Health Insurance – Rajiv Aarogyasri Scheme (RAS)

One of the two important features of healthcare in both states is the implementation of Rajiv Aarogyasri Scheme (RAS), which is a health insurance scheme applicable for the families living in below poverty line (BPL). As per the report¹³ of the Rajiv Aarogyasri Health Care Trust, Government of Telangana, there were around 1.2 lakh patients in 2014 and 1.8 lakh in 2015 benefited with healthcare treatment under the RAS. Of which around 4500 children below one year age (infants) in 2014 and 6500 in 2015 comprising 4 per cent (of total beneficiaries) benefited with the healthcare treatment under the Scheme.

As per the DLHS-4 (2012-12) estimates about 53.5 per cent of households in Telangana state are covered under the state Government Health Insurance Scheme which is largely under the RAS. Along with other insurance schemes or arrangements (such as RSBY¹⁴ - 2.8%, community based health insurance – 2.2%, Mediclaim – 0.8% and any private ones – 2%) in public and / or private, around 60 per cent of the households were covered under one or the other health insurance scheme (Unisa and Usman, 2017). As per the latest NFHS-4 (2015-16) estimates, nearly two-thirds (66%) of households in the state are covered with health insurance (i.e. with any usual member covered by a health scheme or health insurance). Health insurance coverage in Telangana is more common in rural areas (77%) than in urban areas (54%) (see IIPS and ICF, 2017).

Undoubtedly, despite of certain ideological and functional issues¹⁵ associated with the RAS along with certain inefficiencies in administering the same, still in the absence of any other better alternative it is to some extent serving the poor and saving lives. There are instances of misuse by private health care institutions (for instance see Mamidi and Pulla, 2013; Vijay, 2012). More than 70 per cent of total patients benefited the healthcare treatment under scheme have got the treatment in private hospital. High incidence hysterectomy particularly more prevalent in the state of Telangana is an instance for misuse of the scheme (Mamidi and Pulla, 2013).

Emergency Medical / Health Services (EMS)

The other one is providing emergency medical service (EMS) or emergency care through ‘108’ ambulance service transportation vehicles¹⁶. In this service, the emergency medical technicians (EMTs) provide pre-hospital care while transporting patient / victim to appropriate hospital for stabilization. It is able to connect the remote and rural areas to nearby referral health facility and facilitating access to healthcare.

¹³ See at <http://www.aarogyasri.telangana.gov.in/web/guest/data-tables>, accessed on 03/03/2018.

¹⁴ Rashtriya Swasthya Bima Yojana (RSBY) a Government of India’s Health Insurance Scheme launched in early 2008 following the Unorganised Workers Social Security Act 2008, for the Below Poverty Line (BPL) families with the objectives to reduce out-of-pocket (OOP) expenditure on health and increase access to health care.

¹⁵ For exposition on these please see Prasad and Raghavendra (2012); Vijay (2012); and Mamidi and Pulla (2013).

¹⁶ They are operated through Emergency Management and Research Institute (EMRI) in the private-public partnership (PPP) mode that currently operated by a corporate body GVK. Such an initiative was launched in 2005 by state Government of united Andhra Pradesh (see Motkuri and Mishra, 2013; Mamidi and Pulla, 2013; Vijay, 2012; Prasad and Raghavendra, 2012).

Along with '108' EMS service, there are '102' Mother and Child Safety service called as Janani Shishu Suraksha Karyakram or Yojana (JSSK) Pick and Drop Back services and the Janani Ambulances. The Government of India launched Janani Shishu Suraksha Karyakaram (JSSK) in 2011 providing free and cashless health services particular in public facilities, for pregnant women and new-born children. One of the entitlements under scheme is free transport from home to healthcare facility and back home.

The major service provider of such emergency services are the Emergency Management and Research Institute (EMRI) set up in 2005 in Hyderabad by the state of Government of united Andhra Pradesh as a not-for-profit professional organization operating in the Public Private Partnership (PPP) mode presently under GVK. The GVK-EMRI with a fleet of 10731 ambulance vehicles is at present operational in 15 States and 2 Union Territories¹⁷.

For such services of GVK-EMRI, in Telangana there are 334 ambulance vehicles meant for 108 EMS services, 41 ambulances for '102' JSSK services and 219 of Janani ambulances. The later ones (Janani ambulances) served 84 thousand women (mothers) so far in Telangana since inception of such service in the state. As per the information¹⁸ provided by GVK-EMRI, women and children in Telangana state are found to be least benefited from the JSSK free transport services available in the state.

ICDS / Anganwadi

Under the Integrated Child Development Scheme (ICDS) and through Anganwadi Centres (AWCs) certain measures were undertaken in the state for providing healthcare and nutritional services to children below 5 years. In Telangana state there are about 35700 AWCs covering 22.28 lakh stakeholders consisting of pregnant and lactating women and children aged between seven months old to those of below six years in the state¹⁹. As part of ICDS, the state government is providing healthcare needs such as vaccination and medicines to children below 5 years and to ensure proper nourishment of the children the state Government is providing eggs and 'balamrutam' nutritional food to children in the state. The state has initiated ***Arogya Lakshmi scheme*** on 1st Jan, 2015 to improve nutritional status among pregnant and lactating women and to reduce low birth weight, IMR, malnutrition among children below six years²⁰.

Governance

Governance is one of the three dimensions of the composite health index that Government of India's report composed for states and ranked them according to their overall performance and

¹⁷ They are: Andhra Pradesh, Telangana, Gujarat, Uttarakhand, Goa, Tamil Nadu, Karnataka, Assam, Meghalaya, West Bengal, Himachal Pradesh, Chhattisgarh, Uttar Pradesh, Rajasthan and 2 Union Territories, Dadra & Nagar Haveli and Daman & Diu.

¹⁸ See at: <http://www.emri.in/our-presence/>

¹⁹ As reported by the Women and Child Welfare Department, Government of Andhra Pradesh. See at <http://wcdw.tg.nic.in/>.

²⁰ Under ***Arogya Lakshmi*** programme 16 eggs, per month are provided to the children in the age group of 7 months to 3 years, along with eggs, wheat, milk powder, red gram, sugar and oil. Children between the age group of 3 and 6 years are provided daily with one egg, rice, dal, curries and snacks. There are about 10.4 lakh children between 7 months to 3 years age group, 7.4 lakh children between 3 years to 6 years and 4.7 lakh pregnant and lactating women availing the programme.

incremental change during the last two years. Despite its better performance of Telangana state in respect of key health outcomes it secured middle position because its performance in governance in respect of its health sector is not up to the mark (see GOI, 2018).

VI Concluding Remarks

The present note is about the status of Maternal and Child Health (MCH) in the undivided and residual state of Andhra Pradesh and Telangana. It aimed at bringing out the performance of the state of Telangana in continuum from the levels inherited from the undivided Andhra Pradesh. The analysis above indicates that the achievement of Telangana state in respect of maternal and child health is falling far short of required health outcomes. The only solace is that its performance is relatively much better than all India average and performing no less than residual state of Andhra Pradesh. The associative factors one could observe for the relatively better performance of Telangana state in this regard is perhaps its relative advantage in respect of infrastructure particularly that of the availability of health workers.

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