

# MCH Services in Mysore District: A Spatio-Temporal Analysis

Rajeshwari  
Research Scholar, D.O.S in Geography  
Manasagangothri, Mysore

Dr. B. N. Shivalingappa (Retd)  
Professor, D.O.S in Geography  
Manasagangothri, Mysore

**Abstract:-** The present investigation aims at assessing the regional disparities in the levels of MCH services utilization in Mysore District. Almost complete ANC and child immunization services have been taken into consideration to assess the level of utilization in the district. Taluk wise secondary data has been collected from District health office. Composite score method has been computed to ascertain the level of utilization, which is depicted in choropleth map. Simple statistical methods, graphs, tables are also used for data analysis. The analysis reveals that Mysore taluk has high level of MCH services utilization when compared to other taluks from 2015-16 to 2017-18.

**Keywords:-** Maternal and Child Health, Antenatal Care.

## I. INTRODUCTION

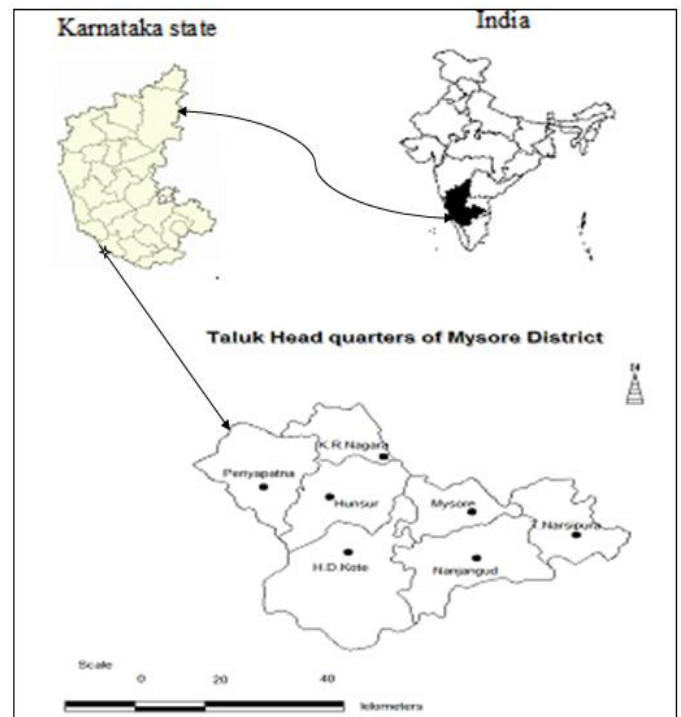
A major portion of illness and deaths among mothers and children is largely preventable. Immunization is one of the key interventions to protect mother and children from life threatening conditions, which are preventable. The immunization for pregnant women is an important strategy, not only to protect the mothers from infection but also to provide immunity to the young infants.

Therefore, the level of immunization services to mother and children which lead to the intensity of MMR (Maternal mortality rate) and IMR (Infant mortality rate) in a region. Because of this reason, in recent years MCH services (Maternal and child health) have received attention in the field of medical science, psychology, sociology and also in geography. The geographer's important work is to analyse the spatial differences among different regions. Which can give a suggestions to the planners and policy makers to implement necessary policies and programmes.

In this context, present paper is an attempt to analyze the utilization of MCH services in Mysuru district. The study covers Mysuru district as a whole and taluks are units of analysis. Here MCH services means (MCH) the promotive, preventive, curative and rehabilitative health care for mothers and children.

## II. STUDY AREA

Mysuru district the cultural capital of Karnataka situated between 11°30' N to 12°50' N latitudes and 75°45' E to 77°45' E longitudes, The total area of Mysore district is 6307 sq. km. Mysore district with a total population of 30, 01,127(2011census) of which male and female were 1,511,600 and 1,489,527 respectively and stands at 3rd place in the State. Spread across 7 taluks namely Mysore, Tirumakudalu Narasipura, Nanjangud, Heggadadevanakote, Hunsur, Piriapatna and Krishnarajanagara.



Map.1 Location of Mysuru district

## III. DATA BASE AND METHODOLOGY

The present study is mainly based on secondary data and collected from Mysore district health office. Kendal's ranking method was used to show the level of utilization of MCH services in all the taluks of Mysore district. For identify composite score (total score) the rank of all the indicators for each taluk were added. Than the total score arranged in descending order to delineate the zones indicating various levels of services utilization viz., High, medium and low. Graphs, tables and maps are also used for the data analysis.

**IV. DISCUSSION**

Health care services during maternal period are important for the survival and well-being of both the mother and the infant. A major initiative has to be implementing for the system of tracking pregnant women and children to ensure timely antenatal and post-natal care, safe deliver and universal immunization of child. In this context, the present section aims at to show the spatial distribution pattern of MCH services utilization in Mysore district at taluk level. For the study purpose the MCH services divided in to Antenatal health care services (Maternal health) and child health care services.

*4.1 Antenatal care services (Maternal health)*

Antenatal care is a pregnancy related services provided by health professionals, to pregnant women. Antenatal care (ANC) is very important to a pregnant women, as it helps prevent maternal and child mortality and also for timely detection and treatment for pregnancy complications it is necessary to have a complete monitoring of pregnancy.

A complete package of ANC services is includes, Minimum 3ANC visit, Receipts of IFA tablet and Minimum 1 TT injection is received by pregnant women.

The total number of pregnant women has been decreased from 38632 in 2015-16 to 38592 in 2017-18 (Appendix-1). The number of registered pregnant women for ANC services also decreased from 33606 (87%) in 2015-16 to 32589 (84%) in 2017-18. Further the number of TT vaccination and iron folic acid tablet taken pregnant women raised from 32369(84%) to 38022(98%), the percent of pregnant women who have received 3 or 4 more ANC check ups have been declined from 38172(98%) to 37608 (97%) in the same period (table1a&1b).

The concentration of primary health clinic (PHC’S), the level of medical services and transportation facilities etc, are the most important factors for uneven distribution of ANC services in all the taluks (Fig:1)

SL.NO	TALUKS	First Trimester		T T 1		IFA tablets		BP was measured		3 ANC check ups		Hb level<11 (tested cases)		Hb<7) treated at institution		Deliveries conducted (Including C-Sections)		Post Natal Care (PNC) between 48 hours and 14 days		Total Rank
		(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	
		1	H.D.Kote	11.17	5	10.65	4	10.76	4	2.53	4	10.15	5	10.15	5	6.19	5	7.74	3	
2	Hunsur	11.76	3	10.43	5	10.54	5	1.39	6	10.75	4	10.77	4	6.61	4	7.03	5	10.55	3	39
3	K.R.Nagara	8.40	7	7.17	6	9.35	6	7.68	2	9.75	6	9.75	6	10.15	3	6.02	6	7.14	6	48
4	Mysore	31.88	1	37.41	1	39.34	1	80.43	1	35.22	1	35.77	1	60.84	1	59.05	1	46.62	1	9
5	Nanjangudu	15.73	2	15.65	2	13.84	2	5.35	3	13.92	2	13.92	2	1.20	7	8.56	2	13.43	2	24
6	Periyapatna	9.61	6	7.48	7	4.30	7	0.89	7	9.13	7	9.13	7	3.30	6	4.37	7	7.96	5	59
7	T.Narsipur	11.45	4	11.21	3	11.87	3	1.73	5	11.08	3	11.08	3	11.71	2	7.23	4	9.27	4	31

Table 1a:- Spatial Distribution of Antenatal Care Services in 2015-16 (Source- Computed by the Authors)

SL.NO	TALUKS	First Trimester		T T 1		IFA tablets		BP was measured		3 ANC check ups		Hb level<11 (tested cases)		Hb<7) treated at institution		Deliveries conducted (Including C-Sections)		Post Natal Care (PNC) between 48 hours and 14 days		Total Rank
		(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	
		1	H.D.Kote	10	5	9.33	4	7.79	7	5.98	4	6.23	7	8.67	5	9.74	2	8.51	2	
2	Hunsur	10.96	3	8.55	5	10.29	4	1.84	6	8.92	4	9.78	3	4.35	6	3.16	5	6.72	3	39
3	K.R.Nagara	8.03	7	7.73	6	8.45	6	8.13	2	7.76	5	6.18	6	8.72	4	4.51	3	6.11	5	44
4	Mysore	38.30	1	45.01	1	41.65	1	70.04	1	47.68	1	43.10	1	58.15	1	74.42	1	63.37	1	9
5	Nanjangudu	14.01	2	12.46	2	12.67	2	7.83	3	12.48	2	10.53	3	9.48	3	4.36	4	5.40	6	27
6	Periyapatna	8.33	6	6.79	7	8.51	5	5.73	5	7.46	6	6.02	7	3.51	7	2.01	7	4.29	7	57
7	T.Narsipur	10.37	4	10.13	3	10.64	3	0.45	7	9.47	3	15.72	2	6.05	5	3.03	6	6.23	4	37

Table 1b:- Spatial Distribution of Antenatal Care Services in 2017-18

The most striking feature of the distribution of ANC services is the maximum utilization of services are more in Mysore taluk when compared to other taluks. Hence on the basis of distribution of ANC services, the taluks have been divided into three regions (Table 2).

- Areas of high utilization of ANC Services
- Areas of medium utilization of ANC Services
- Areas of less utilization of ANC Services

Utilization of ANC services	Years	
	2015-16	2017-18
Below 10 (Less)	1(14)	1(14)
10 – 40 (Medium)	3(43)	4(57)
40 above (High)	3(43)	2(29)
Total taluks	7	7

Table 2:- Utilization of ANC Services and No. of Taluks  
Source: Compiled by the Author

➤ *Areas of high utilization of ANC Services:*

The taluks of high utilization of (total score below 10) ANC Services stretches over only one taluk namely Mysore taluk (total score is 9 in both the years) may be because of the availability of medical services, No.of hospitals, the level of transportation services, awareness about the health schemes, education level etc.(Mysore city is the capital of the district)

➤ *Areas of medium utilization of ANC Services:*

The total score between 10 – 40 represents the moderate level of ANC Services utilization. The moderate level has been found in three taluks covering 43% of the total taluks in 2015-16 and further increased to 4 taluks (57%) in 2017-18. Hunsur, T.Narasipura and Nanangud taluks are having moderate utilization both in 2015-16 and 2017-18. But H.D.Kote shifted from low level to medium level of utilization from 2015-16 to 2017-18 mainly because of the improvement in the medical services (Fig.1).

➤ *Areas of less utilization of ANC Services:*

Both K.R.Nagar and Periyapatana taluks (more than 40 total score) are less utilizing the ANC Services both in 2015-16 and 2017-18.

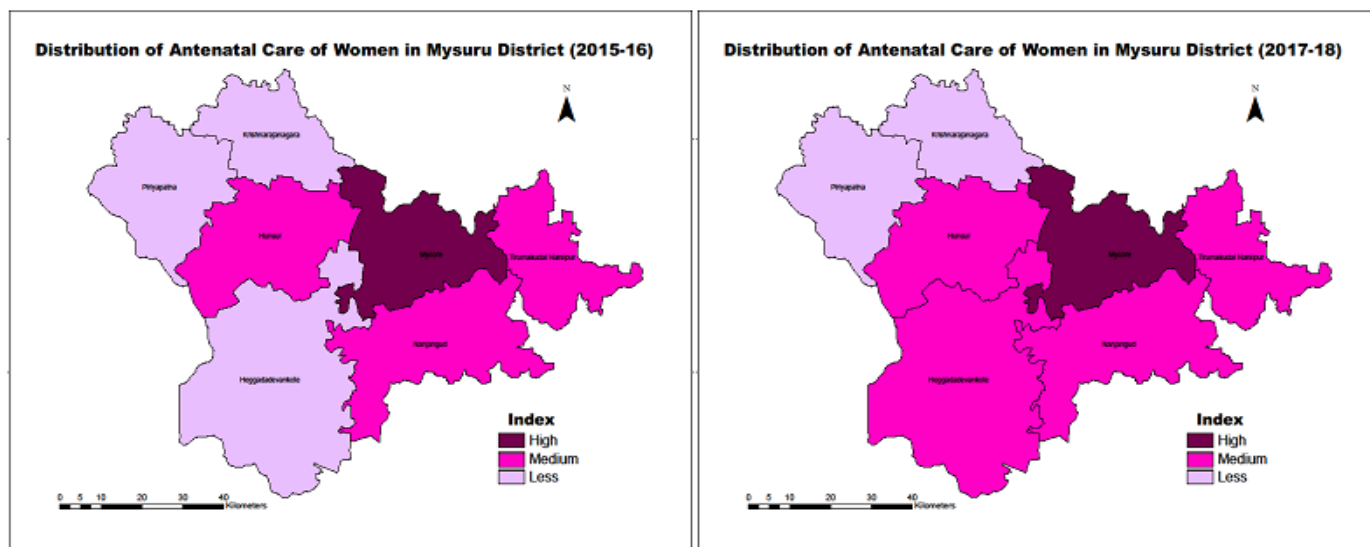


Fig 1:- Spatial distribution Antenatal care services in 2015-16 and 2017-18

4.2 Child Health

Child Immunization is one of the key interventions for protecting of children from life threatening conditions which are preventable. The complete schedule of child immunization includes,

- BCG
- 3 Doses of DPT
- Polio
- Measles,
- At least one doses of vitamin A
- IFA tablet/liquid for iron supplementation are considered complete immunization of infant.

DPT protects against Diphtheria, Tetanus, Pertussis. OPV protects against Polio, MMR protects against Measles, mumps, and rubella (German measles) and Hepatitis ‘B’-0 to prevent perinatal transmission of Hepatitis B (infection of liver). Immunizing children against vaccine preventable diseases can greatly reduce childhood morbidity and mortality. In Mysuru district 98% of children in 2017-18 have received all basic vaccinations against six major childhood illnesses which are tuberculosis, diphtheria, pertussis, tetanus, polio, and measles. Only 2 percent of the children have not received any vaccinations.

Three doses of DPT, Polio and BCG vaccinations have been increased from 2015-16 to 2017-18. It increased

from 62.8% to 78%, 93% to 99% and 90% to 98% respectively. In addition to this each year about 97% of children are receiving at least one doses of hepatitis B, Vitamin A vaccine from 99.65% to 96.53% in the same period (Fig.2).

The distribution of child health services are not uniform all over the district, there are regional variations. On the basis of this reason, the district has been divided in to three regions.

SL.NO	TALUKS	BCG		Weigh		breastfed		Pentavalent 1		Pentavalent 2		Pentavalent 3		OPV 0 (Birth Dose)		OPV 1		OPV 2		OPV 3		Hepatitis-B 0		Measles		Vitamin A Dose		fully immunized		Total Rank
		(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	
		1	H.D.Kote	8.58	3	8.33	2	8.54	2	10.04	5	9.95	5	9.83	5	8.21	2	9.80	5	9.85	5	9.90	5	8.51	2	9.51	5	8.86	5	
2	Hunsur	5.82	4	5.51	4	5.38	5	11.87	3	12.17	3	12.24	3	5.57	4	11.81	3	12.17	3	12.33	3	5.59	4	12.22	3	11.52	4	2.62	6	42
3	K.R.Nagara	5.75	5	4.94	6	5.04	6	8.12	7	8.17	7	8.23	7	5.06	6	8.10	6	8.18	7	8.27	7	4.83	6	8.08	7	8.85	6	7.13	3	87
4	Mysore	57.81	1	65.82	1	65.25	1	36.87	1	36.45	1	36.68	1	65.17	1	37.64	1	36.69	1	36.72	1	64.87	1	36.89	1	37.60	1	60.78	1	14
5	Nanjangudu	10.96	2	6.47	3	6.50	3	13.54	2	13.43	6	13.21	2	6.41	3	13.14	2	13.35	2	12.96	2	6.58	3	13.19	2	13.13	2	6.31	5	35
6	Periyapatna	5.57	6	3.58	7	3.76	7	8.95	6	8.99	2	8.98	6	4.17	7	8.99	7	8.94	6	8.98	6	4.02	7	9.07	6	8.19	7	16.41	2	85
7	T.Narsipur	5.51	7	5.35	5	5.45	4	10.61	4	10.81	4	10.82	4	5.41	5	10.53	4	10.81	4	10.85	4	5.60	5	11.04	4	11.85	3	0.28	7	67
	Total	100		100		100		100		100		100		100		100		100		100		100		100		100		100		

Table 3a:- Spatial Distribution of Number of Child Immunization 2015-16 (Source- computed by the Authors)

SL.NO	TALUKS	BCG		Weigh		breastfed		Pentavalent 1		Pentavalent 2		Pentavalent 3		OPV 0 (Birth Dose)		OPV 1		OPV 2		OPV 3		Hepatitis-B 0		Measles		Vitamin A Dose		fully immunized		Total Rank
		(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	(%)	Rank	
		1	H.D.Kote	8.08	2	8.48	2	8.44	2	9.32	5	9.32	5	9.38	4	7.80	2	9.43	7	9.25	5	8.95	5	8.17	2	8.68	5	8.72	5	
2	Hunsur	4.13	5	3.16	5	3.16	5	10.30	3	10.3	3	10.99	3	3.24	5	10.22	3	11.02	3	11.09	3	3.14	5	10.58	3	10.95	3	10.86	3	52
3	K.R.Nagara	5.90	4	4.50	3	4.51	3	7.91	7	7.91	7	8.30	7	4.75	3	8.08	6	8.91	7	8.12	7	4.47	4	7.92	7	7.92	7	7.30	7	74
4	Mysore	66.92	1	74.46	1	74.34	1	42.99	1	42.99	1	41.88	1	74.72	1	43.07	1	42.12	1	42.46	1	74.21	1	43.16	1	43.55	1	42.99	1	14
5	Nanjangudu	7.12	3	4.32	4	4.39	4	11.49	2	11.49	2	11.53	2	4.23	4	11.46	2	11.54	2	11.52	2	4.49	3	11.63	2	11.52	2	11.23	2	36
6	Periyapatna	4.00	6	2.07	7	2.08	7	8.52	6	8.52	6	8.55	6	2.30	7	8.41	5	8.48	6	8.26	6	2.40	7	8.11	6	7.96	6	7.81	6	90
7	T.Narsipur	3.85	7	3.01	6	3.08	6	9.47	4	9.47	7	9.37	5	2.96	6	9.47	4	9.40	4	9.60	4	3.12	6	9.38	4	9.38	4	9.82	5	67
	Total	100		100		100		100		100		100		100		100		100		100		100		100		100		100		

Table 3b:- Spatial Distribution of Number of Child Immunization 2017-16 (Source- computed by the Authors)

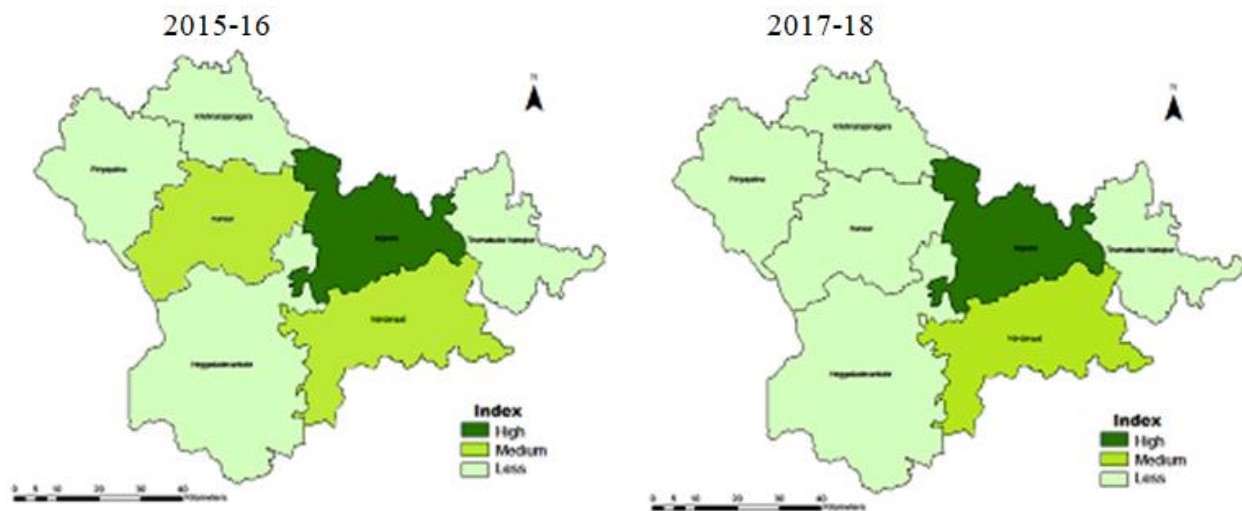


Fig 2:- Utilization of Child Health Services in 2015-16 and 2017-1

Areas of high utilization of Child Health Services are found in only one taluk namely Mysore taluk both in 2015-16 and 2017-18 (total score is below 20). May because of the good medical facilities.

Ares of medium utilization of Child Health Services are found in Nanjangud and Hunsur taluks in 2015-16. But in 2017-18 Hunsur taluk shifted from medium to low level of Child Health Services may be due to the negligence of mothers and also the accessibility of the medical facilities.

Ares of less utilization of Child Health Services are found in Hunsur, T.Narasipura K.R.Nagar, Periyapatana, H.D.Kote both in 2015-16 and 2017-18 (total score is above 50). May be due to the lack of awareness, medical facilities and lack of transportation facilities, etc.

## V. SUMMARY

The analysis made above can be summarised as below:

The total number of pregnant women has been decreased from 38632 in 2015-16 to 38592 in 2017-18 (Appendix-1). The number of registered pregnant women for ANC services also decreased from 33606 (87%) in 2015-16 to 32589 (84%) in 2017-18. Further the number of TT vaccination and iron folic acid tablet taken pregnant women raised from 32369(84%) to 38022(98%), the percent of pregnant women who have received 3 or 4 more ANC check ups have been declined from 38172(98%) to 37608 (97%) in the same period.

The taluks of high utilization of (total score below 10) ANC Services stretches over only one taluk namely Mysore taluk (total score is 9 in both the years) may be because of the availability of medical services, No.of hospitals, the level of transportation services, awareness about the health schemes, education level etc. Hunsur, T.Narasipura and Nanangud taluks are having moderate utilization both in 2015-16 and 2017-18. But H.D.Kote shifted from low level to medium level of utilization from 2015-16 to 2017-18

Both K.R.Nagar and Periyapatana taluks (more than 40 total score) are less utilizing the ANC Services both in 2015-16 and 2017-18. Three doses of DPT, Polio and BCG vaccinations have been increased from 2015-16 to 2017-18. It increased from 62.8% to 78%, 93% to 99% and 90% to 98% respectively. In addition to this each year about 97% of children are receiving at least one doses of hepatitis B, Vitamin A vaccine from 99.65% to 96.53% in the same period. Areas of high utilization of Child Health Services are found in only one taluk namely Mysore taluk both in 2015-16 and 2017-18 (total score is below 10). May because of the good medical facilities.

Ares of medium utilization of Child Health Services are found in Nanjangud and Hunsur taluks in 2015-16. But in 2017-18 Hunsur taluk shifted from medium to low level of Child Health Services may be due to the negligence of mothers and also the accessibility of the medical facilities. Ares of less utilization of Child Health Services are found in Hunsur, T.Narasipura K.R.Nagar, Periyapatana, H.D.Kote both in 2015-16 and 2017-18 (total score is above 40). May be due to the lack of awareness, medical facilities and lack of transportation facilities, etc.

## VI. CONCLUSION

It is clear from the analysis made above, Mysore taluk has utilized maximum level of MCH services whereas K.R.Nagar, and Periyapatana taluks have low level of utilization both in 2015-16 and 2017-18.

## SUGGESTIONS

The findings of the study recommend that, the health provider should advise and increase the knowledge of pregnant women on complete intervention of MCH services through organize MCH campaigns at village level. The government and Non- government organization should devise and adopt appropriate strategies to improve the health facilities in those areas where MCH services utilization is relatively low.

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## Appendix - 1

SL.NO	TALUKS	First trimester	TT1	IFA tablets	BP was measured	3 ANC check ups	Hb level<11 (tested cases)	(Hb<7) treated at institution	Deliveries conducted (Including C-Sections)	Post Natal Care (PNC) between 48 hours and 14 days
1	H.D.Kote	3753	3999	3482	51	3875	2958	103	2148	1914
2	Hunsur	3953	3914	3411	28	4102	4038	110	1950	4014
3	K.R.Nagara	2825	2692	3025	155	3721	2521	169	1669	2719
4	Mysore	10713	14041	12734	1624	13446	21114	1013	16385	17747
5	Nanjangudu	5286	5873	4479	108	5313	6330	20	2375	5111
6	Periyapatna	3229	2809	1394	18	3487	2330	55	1214	3029
7	T.Narsipur	3847	4205	3844	35	4228	1659	195	2005	3531
	TOTAL	33606	37533	32369	2019	38172	40950	1665	27746	38065

Table 4a:- Taluk wise Utilization of ANC services by Pregnant Women in 2015-16 (Source- Mysore district health office)

SL.NO	TALUKS	First trimester	TT1	IFA tablets	BP was measured	3 ANC check ups	Hb level<11 (tested cases)	(Hb<7) treated at institution	Deliveries conducted (Including C-Sections)	Post Natal Care (PNC) between 48 hours and 14 days
1	H.D.Kote	3753	3999	3482	51	3875	2958	103	2148	1914
2	Hunsur	3953	3914	3411	28	4102	4038	110	1950	4014
3	K.R.Nagara	2825	2692	3025	155	3721	2521	169	1669	2719
4	Mysore	10713	14041	12734	1624	13446	21114	1013	16385	17747
5	Nanjangudu	5286	5873	4479	108	5313	6330	20	2375	5111
6	Periyapatna	3229	2809	1394	18	3487	2330	55	1214	3029
7	T.Narsipur	3847	4205	3844	35	4228	1659	195	2005	3531
	TOTAL	33606	37533	32369	2019	38172	40950	1665	27746	38065

Table 4b:- Taluk wise Utilization of ANC services by Pregnant Women in 2017-18 (Source- Mysore district health office)

SL. NO	TALUKS	BCG	weigh	Breast fed	Pentaval ent 1	Pentaval ent 2	Pentaval ent 3	OPV 0 (Birth Dose)	OPV1	OPV2	OPV3	Hepatitis-B0	Measles	Vitamin A doses	Fully immunised
1	H.D.Kote	3532	3129	3125	4298	4210	4192	3087	4226	4172	4211	3093	3962	3312	1284
2	Hunsur	2397	2072	1970	5082	5151	5220	2094	5094	5156	5245	2034	5097	4331	520
3	K.R.Nagara	2363	1856	1843	3476	3456	3508	1902	3492	3466	3517	1755	3369	3310	1414
4	Mysore	23793	24726	23878	15779	15430	15641	24510	16236	15539	15621	23590	15382	14056	12061
5	Nanjangudu	4510	2432	2409	5792	5695	5635	2410	5669	5653	5513	2393	5499	4907	1253
6	Periyapatna	2292	1344	1375	3831	3808	3831	1571	3878	3790	3819	1463	3782	3035	3255
7	T.Narsipur	2269	2008	1995	4540	4576	4615	2035	4541	4577	4615	2037	4603	4431	58
	<b>TOTAL</b>	41156	37567	36595	42798	42326	42642	37609	43136	42353	42541	36365	41694	37382	19845

Table 5a:- Spatial Distribution of Child Immunization in 2015-16 (Source- Mysore district health office)

SL. NO	TALUKS	BCG	weigh	Breast fed	Pentaval ent 1	Pentaval ent 2	Pentaval ent 3	OPV 0 (Birth Dose)	OPV1	OPV2	OPV3	Hepatitis-B0	Measles	Vitamin A doses	Fully immunised
1	H.D.Kote	3286	3558	3471	3924	3851	3659	3333	3914	3790	3675	3299	3518	3504	4067
2	Hunsur	1677	1326	1300	4336	4517	4564	1384	3399	4517	4555	1268	4287	4400	4423
3	K.R.Nagara	2396	1890	1854	3331	3409	3358	2028	4819	3355	3333	1805	3209	3185	2974
4	Mysore	27184	31246	30576	18100	17206	17625	31920	3983	17261	17433	29980	17534	17506	17507
5	Nanjangudu	2892	1813	1804	4838	4736	4748	1808	4517	4730	4728	1813	4713	4630	4571
6	Periyapatna	1623	868	857	3586	3511	3424	983	17261	3473	3393	970	3290	3200	3181
7	T.Narsipur	1562	1262	1266	3987	3850	3950	1263	3473	3852	3943	1263	4016	3772	3997
	<b>TOTAL</b>	40620	41963	41128	42102	41080	41328	42719	41366	40978	41060	40398	40567	40197	40720

Table 5b:- Spatial Distribution of Child Immunization in 2017-18 (Source- Mysore district health office)