

Analysis of Child Death in Dev Bhumi Dwarka, District of Gujarat

By

Shashank Khandal

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2017-2019



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TO WHOMSOEVER MAY CONCERN

This is to certify that Shashank Khandal, student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at National Health Mission Gujarat from 04/02/2019 to 11/05/2019.

The Candidate has successfully carried out the study designated to her during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



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17 May 2019



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Certificate

This is to certified that Dr.Shashank Khandal posted as a DPC (PM-JAY), Health & F.W. Dept, Dist. Panchayat, Devbhumi Dwarka (Khambhalia) on and from 04-02-2019 to 06-05-2019 has completed his project named "*Analysis of Child Death in Devbhumi Dwarka, Dist. of Gujarat*" under my mentorship.

He is laborius & dedicated for any job assigned to him. I wish him for evry success in his life.

Date : 06-05-2019

Place : Khambhalia (Dev.Dwarka)


(Dr.S.P.Singh) 6/5/19

Chief Dist. Health Officer
Dist. Panchayat, Devbhumi Dwarka
(Jam-Khambhalia)

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled “Analysis of child death in Devbhumi Dwarka district of Gujrat” and submitted by Shashank Khandal, Enrollment No 665 under the supervision of Dr. Piyusha Majumdar for award of MBA in Hospital and Health of the University carried out during the period from 04/02/2019 to 06/05/2019 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.


Signature

ACKNOWLEDGEMENT

It is a matter of great privilege for me to express my sincere thanks to all those who helped me through their expert guidance, active co-operation and goodwill in completion of this study even at the cost of their inconvenience.

My hearty gratitude is towards my guide Dr. Piyusha Majumdar, Professor, IIHMR Jaipur, for guiding this work. I am particularly indebted to him for providing the conceptual and theoretical background of this study as well as for suggesting me the line of approach. He has not only provided me stimulation off and again to collect and analyze me data but also shown his unique capacity of tolerance and direction to guide me at every crossroads. Without his keen interest and constant encouragement, this study would not have seen the light of the day. It is really a subject of great pride for me to work under such a learned expert. I pay my respects to him.

I express my gratitude towards my parents for their blessings and wife for her support. I am also thankful to my friends for helping me and the encouragement that they provided to me for carrying out this dissertation work.

Finally yet importantly, I am very much thankful to DDO Dev Bhumi Dwarka, CDHO Dev Bhumi Dwarka , ADHO Dev Bhumi Dwarka , DRCHO Dev Bhumi Dwarka , EMO Dev Bhumi Dwarka, DQAMO Dev Bhumi Dwarka, along with all THO,TPA, FA ,PHC MOs, NCD cell Dev Bhumi Dwarka, MPWs, FHWs & ASHAs of Dist Dev Bhumi Dwarka and beneficiaries of the field area for their co-operation and participation, without which my study would not have been possible.

Dr. Shashank Khandal

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1. ABBREVIATION

PHC : Primary Health Center

CHC: Community Health Center

SC: Sub Center

NCD Cell: Non Communicable Disease cell

CDHO : Chief District Health Officer

ADHO: Additional District Health Officer

DRCHO : District Reproductive and Child Health Officer

EMO: Epidemic Medical Officer

FHW: Female Health Worker

MPHW: Multipurpose Health worker

THO: Taluka Health Officer

MO: Medical Officer

LBW: Low Birth Weight

U5M: Under Five Mortality

ARI: *Acute respiratory infection*

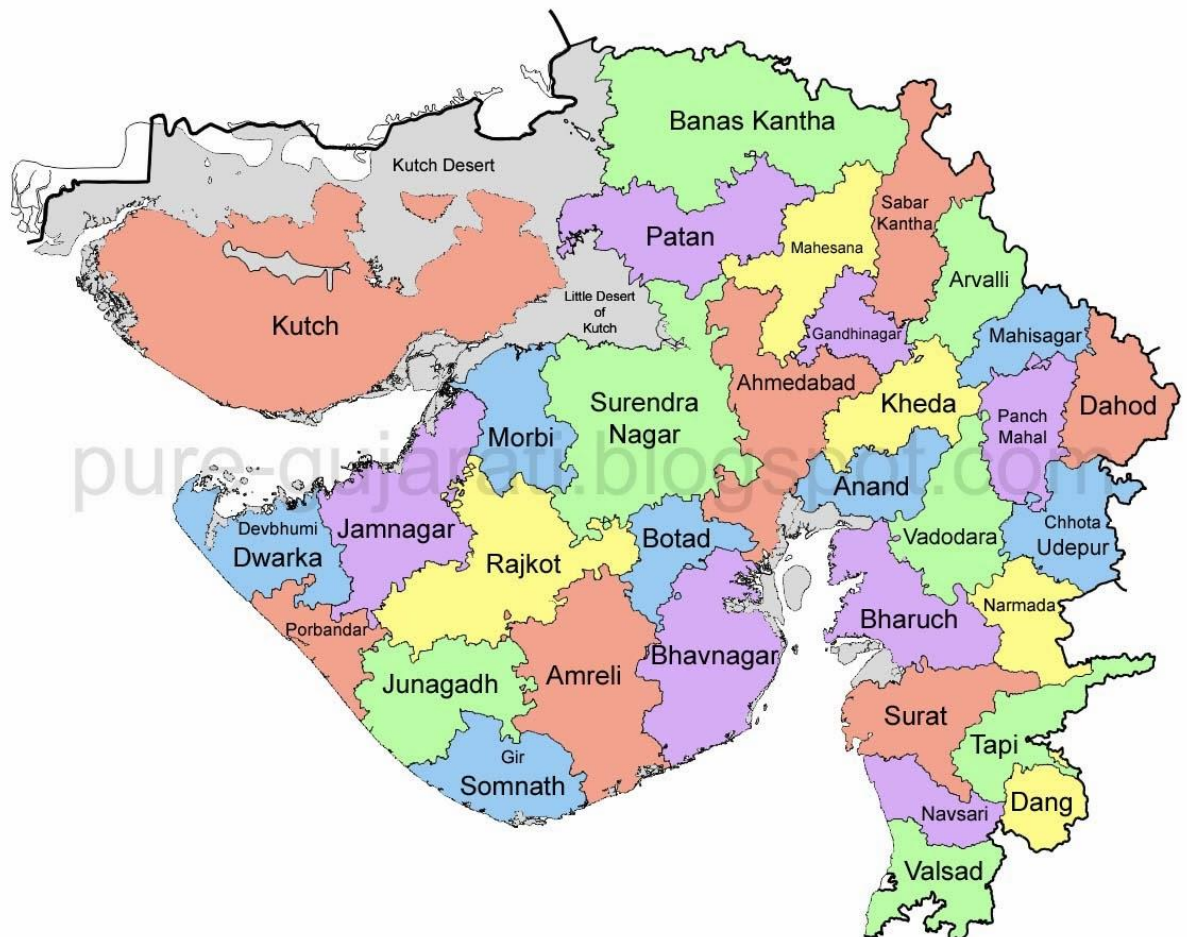
NHM: *National Health Mission*

BRGF: Backward Regions Grant Fund Programme

CMTTC: Child Malnutrition Treatment Centre

NRC: Nutrition Rehabilitation centre

2. Gujarat NHM State Profile



Geography

Gujarat is situated between 20°1' and 24°7' north latitudes and 68°4' and 74°4' east longitudes on the west coast of India. It is bounded on the west by the Arabian sea, on the north-west by Pakistan, on the north by Rajasthan, on the east by Madhya Pradesh and on the south and south-east by Maharashtra.

The state of Gujarat occupies the northern extremity of the western sea-board of India. It has the longest coast line 1290 km among Indian states. The state comprises three geographical regions.

- The peninsula, traditionally known as Saurashtra. It is essentially a hilly tract sprinkled with low mountains.
- Kutch on the north-east is barren and rocky and contains the famous Rann (desert) of Kutch, the big Rann in the north and the little Rann in the east.
- The mainland extending from the Rann of Kutch and the Aravalli Hills to the river Damanganga is on the whole a level plain of alluvial soil.

History

Gujarat forms an area that housed the regions of the Indus Valley civilization and Harappan sites. Around 50 Harappan sites are found in Gujarat. Lothal, Rangpur, Amri, Lakhabaval, Rozdi etc. are some of these sites. This makes it an important territory that reveals the history of India. The Dravidian tribes were said to be the original inhabitants of this region. Even before the Aryan occupation of Gujarat, it is said to have had trade contracts with Sumer, the Persian Gulf in about 1000-750BC. Rock edicts in the Girnar hills indicate that Ashoka extended his domain into Gujarat. It was during the Mauryan rule that this region witnessed the influence of Buddhism. The Mauryans also promoted trade and helped in spread of its culture. In about 150BC the Bactrian Greeks under Meander is said to have instilled their rule. Till 40AD they are said to have had trade contracts with Rome. From about AD130-390 the Scythians ruled it. After 300AD the Guptas established their reign which lasted till 460AD. The Vallabhi established their sway in between (500-700AD). After the death of Harshvardhana, the Gujjars controlled it till 746AD. The Solankis ruled over Gujarat till 1143. Gujarat attained its greatest territorial extent under the Solanki dynasty, from the 9th century. Muhammad of Ghazni attacked Somnath in Gujarat leading to the downfall of the Solankis. The conquest of Ala-ud-din Khilji king of Delhi in 1288 also influenced the conditions in Gujarat. The Sultans of Delhi had their sway over Gujarat from 1298-1392AD. Ahmad Shah I, the first independent Muslim ruler of Gujarat founded Ahmadabad in 1411. Then the Mughals ruled for about 2 centuries till the Marathas terminated their rule in the mid 18th century. It was during the 18th century that Gujarat was divided among number of chiefs. From 1803-1827 the British set up their administration. The British East India company first head quarters in India was at Surat. It was later moved to Bombay. Finally on May1, 1960, the state of Gujarat was formed from the north and west portions of Bombay state, the remainder being renamed the state of Maharashtra. The state of Gujarat has an area of 196,024 sq. km. and a population of 60.38 million. There are 33 districts, 230 blocks and 18539 villages. The State has population density of 258 per sq. km. (as against the national average of 312). Per capita GDP is 157000rs.

Health Profile

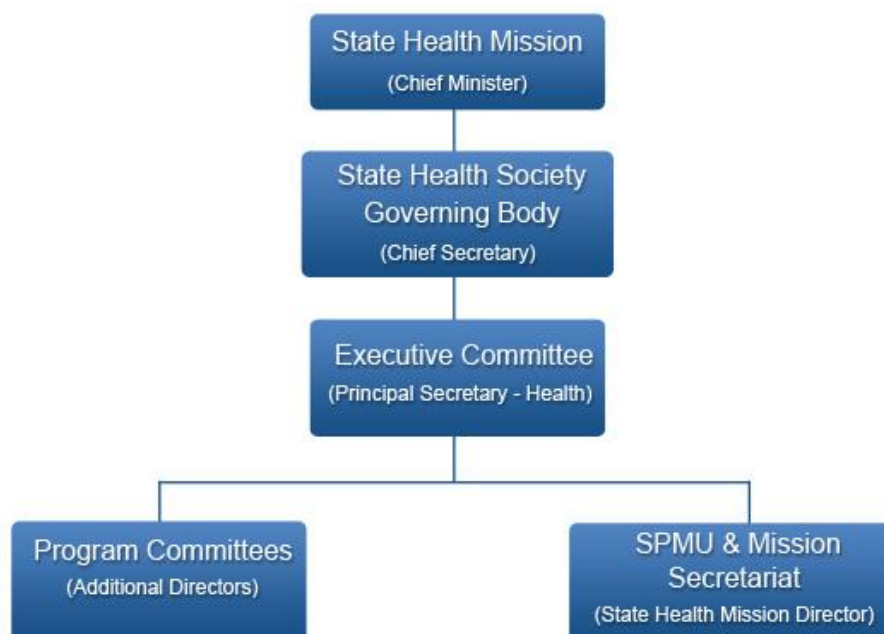
The Total Fertility Rate of the State is 2.2. The Infant Mortality Rate is 30 and Maternal Mortality Ratio is 91 (SRS 2016) which are lower than the National average. The Sex Ratio in the State is 919 (as compared to 943 for the country). Comparative figures of major health and demographic indicators are as follows:

Demographic, Socio-economic and Health Profile as compared to India:

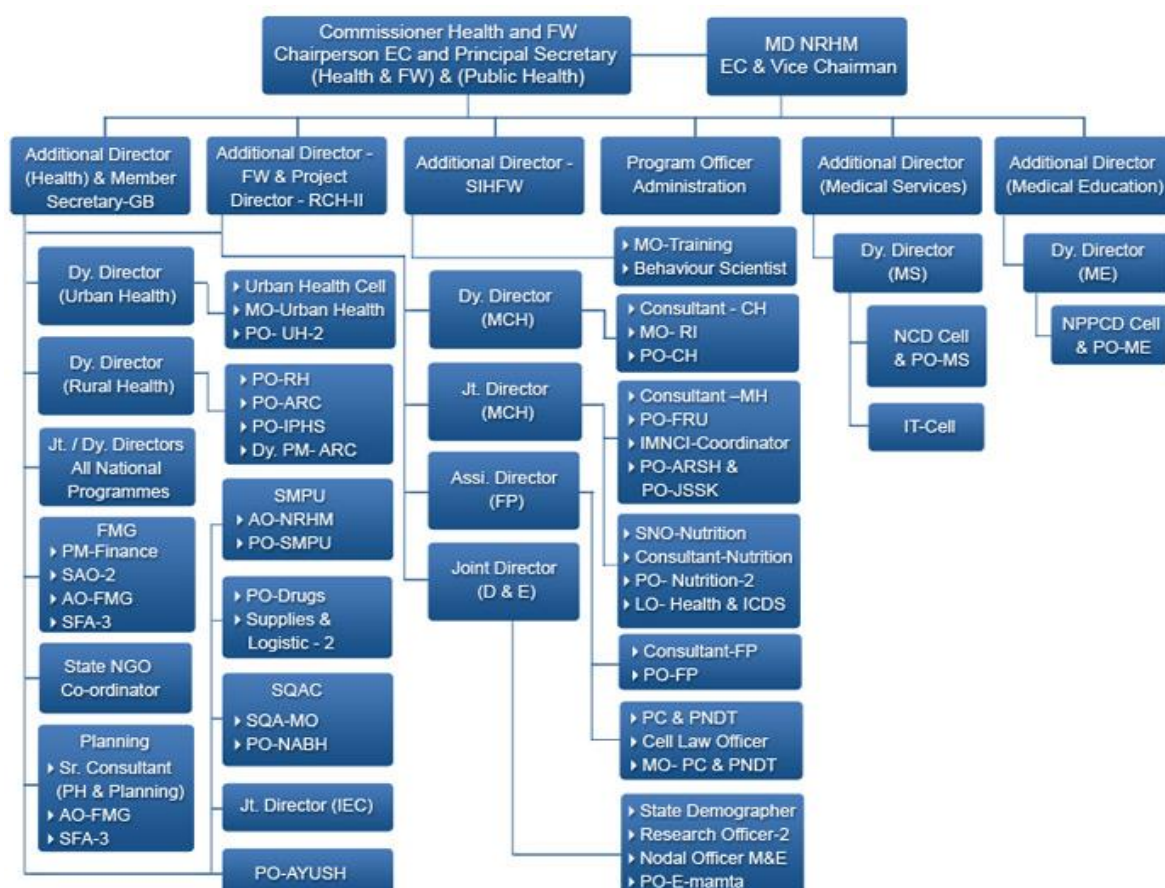
Indicator	Gujarat	India
Total population (In crore) (Census 2011)	6.04	121.01
Decadal Growth (%) (Census 2011)	19.3	17.64
Infant Mortality Rate (SRS 2016)	30	34
Maternal Mortality Rate (SRS 2016)	91	130
Total Fertility Rate (SRS 2016)	2.2	2.3
Crude Birth Rate (SRS 2016)	20.1	20.4
Crude Death Rate (SRS 2016)	6.1	6.4
Institutional Deliveries (NFHS 4)	88.7	78.9
Sex Ratio (Census 2011)	919	943
Child Sex Ratio (Census 2011)	890	919
Schedule Caste population (in crore) (Census 2011)	0.40	20.1
Schedule Tribe population (in crore) (Census 2011)	0.89	10.4
Total Literacy Rate (%) (Census 2011)	78.0	73.0
Male Literacy Rate (%) (Census 2011)	85.8	80.9
Female Literacy Rate (%) (Census 2011)	69.7	64.6

Particulars	Required	In position	shortfall
Sub-centre	10927	9245	1682
Primary Health Centre	1433	1138	255
Community Health Centre	393	363	30
Health worker (Female)/ANM at Sub Centres & PHCs	10432	8431	2001
Health Worker (Male) at Sub Centres	9274	6874	2400
Health Assistant (Female)/LHV at PHCs	2158	1875	283
Health Assistant (Male) at PHCs	2000	1600	400
Doctor at PHCs	1758	1478	380
Obstetricians &Gynaecologists at CHCs	348	119	229
Paediatricians at CHCs	348	53	295
Total specialists at CHCs	1372	176	1196
Radiographers at CHCs	518	368	150
Pharmacist at PHCs & CHCs	2076	2028	48
Laboratory Technicians at PHCs & CHCs	2476	2365	111
Nursing Staff at PHCs & CHCs	4384	3705	679

Health system Structure



Organogram



Dev Bhumi Dwarka District Profile

Geography

Dev Bhumi Dwarka district is an administrative district in the state of Gujarat in India. The district headquarters are located at Khambaliya. The district is bounded by Arabian sea in the north, by Jamnagar District in the east, by Porbandar district in the south and by Arabian sea in the west. The district occupies an area of 4,755 km² and has a population of 7,38,520 (as of Census 2011). It was 26.44% urban as of Census 2011.



History

Jam Shri Ravalji, head of Jadeja clan Rajput (Kshatriya) migrated from Kutch to Halar, established himself & set his throne at Khambhalia in V.S.1582 for some years it was his capital & new city in V.S.1596 named "Navanagar".

Jam Khambhalia is the head quarters of the newly created formed Devbhumi Dwarka District which was carved out of Jamnagar district on 15 August 2013. The district consists 4 talukas : khambhalia, Kalyanpur, Dwarka and Bhanvad. The named Devbhumi Dwarka is derived from the famous Dwarkadhish Temple of Dwarka city which is one of the four holy places according to Hindu mythology.

Devbhumi Dwarka District comprises of two sub-division named Khambhalia and

Dwarka.Khambhalia sub division includes Khambhaliya and Bhanvad talukas while Dwarka sub division includes Okha-mandal and Kalyanpur talukas.

Divisions

The district consists of 4 talukas: Bhanvad, Dwarka, Kalyanpur, Khambhaliya(DHQ).

Demographic Profile-

Indicator	Gujarat	Dev Bhumi Dwarka
Total Population (Census 2011)	60439692	7,38,520
Sex Ratio (Census 2011)	918	938
Child Sex Ratio (Census 2011)	890	940
Total Literacy Rate (%) (Census 2011)	79.31%	69%

Infrastructure Profile-

Number of District Hospital	1
Number of Sub District Hospital	1
Number of Community Health Centres	4
Number of Primary Health Centres	23
Number of Sub Centres	169
Number of Urban Centres	5

Details of Human Resource:**Regular Staff:**

H R	Year 2016-17		
	Sanctioned	Filled	%
Specialists (Gyane&Obs/Paed/Surgery/An aesthetist/ Surg.etc.	17	6	35.39 %
Doctors (General Physician - MBBS)	46	14	30.43 %
Doctors (AYUSH)	0	0	NA
Staff Nurses	50	41	82%
Pharmacist	23	11	47.82 %
Laboratory Technician	23	17	73.91 %
FHWs	170	122	71.76 %
MPHWs	164	128	78.04 %
FHS	32	23	71.87 %
MPHS	32	24	75%

HR Under NRHM:

H R	Year 2016-17		
	Sanctioned	Filled	%
Doctors (AYUSH)	7	7	100%
Staff Nurses	13	2	15.38%
Pharmacist	0	0	NA
Laboratory Technician	5	1	20%

3. Abstract

Analysis of Child Mortality in Dev Bhumi Dwarka District, Gujarat

Author: Dr.Shashank Khandal

Background: Child Death Review (CDR) is a strategy to understand the geographical variation in causes of child deaths and thereby initiating specific child health interventions. This information can be used to adopt corrective measures and fill the gaps in community and facility level service delivery, information can be compared over a period of time and common factors identified and addressed through the national programme.

Rationale: To identify major causes of child mortality which can be further used to improve quality of child health care delivery system.

Objective: To find causes of Child Mortality in Dev Bhumi Dwarka District of Gujarat from February to April 2019.

- To find what are the factors influencing Child Death.

Methodology: The following descriptive cross sectional study was conducted in Dev Bhumi Dwarka district of Gujarat. The study duration was 3 months during which primary data was collected with the help of form no 5a (line list).

Statistical Analysis Used: Interpretation of data was done by using excel and spss.

Results: Ninety Two Child Deaths occurred in Dev Bhumi Dwarka District in the month of February to April 2019 out of all deaths 37(40%) male and 55(60%) are female child. Twenty Seven (29%) of them are Still Births, 17 are Early Neonates (19%), 9 of them are Late Neonates (10%), 27(29%) are Infant Deaths and 12(13%) are Under Five Death. Major causes of mortality are Low Birth Weight (17), Pneumonia (11), and Prematurity (12). It was found that Sixty One percent of them were unimmunized at the time of death. Fifty Four percent children were having Low Birth Weight. Thirty Nine (42%) died at home or during transit.

In still birth the major causes for death were prematurity (8) and Low birth weight (8). In early neonate the same reason Prematurity (3) come the major reason. In Late Neonate period (4) Low birth weight was found to be major cause. Sepsis and Pneumonia (3) are the major reason found in case of Infant deaths. In case of Under 5 deaths (6) Pneumonia is the major cause.

Conclusion and Suggestions: It was observed that the major causes of child mortality were found to be Low Birth weight, Pneumonia and Prematurity. The key finding of this study is that sixty one percent of children were unimmunized at the time of death. Thus preventive measures can be taken by providing regular checkups to children and maintaining timeliness of the vaccination schedule.

4. Introduction

Child Death Review (CDR) is a strategy to understand the geographical variation in causes of child deaths and thereby initiating specific child health interventions. Analysis of child deaths provides information about the medical causes of death, helps to identify the gaps in health service delivery and social factors that contribute to child deaths. This information can be used to adopt corrective measures and fill the gaps in community and facility level service delivery, information can be compared over a period of time and common factors identified and addressed through the national programme. This contributes to overall improvement in quality of care and reducing child mortality.

Child death Review will be of two types

1. Community Based Child Death Review (CBCDR)
2. Facility Based Child Death Review (FBCDR)

Community Based Child Death Review (CBCDR)

Community based reviews are undertaken for deaths that occur in the specified geographical area, irrespective of the place it takes place: at home, in health facility or in transit.

Steps for CBCDR are as follows:

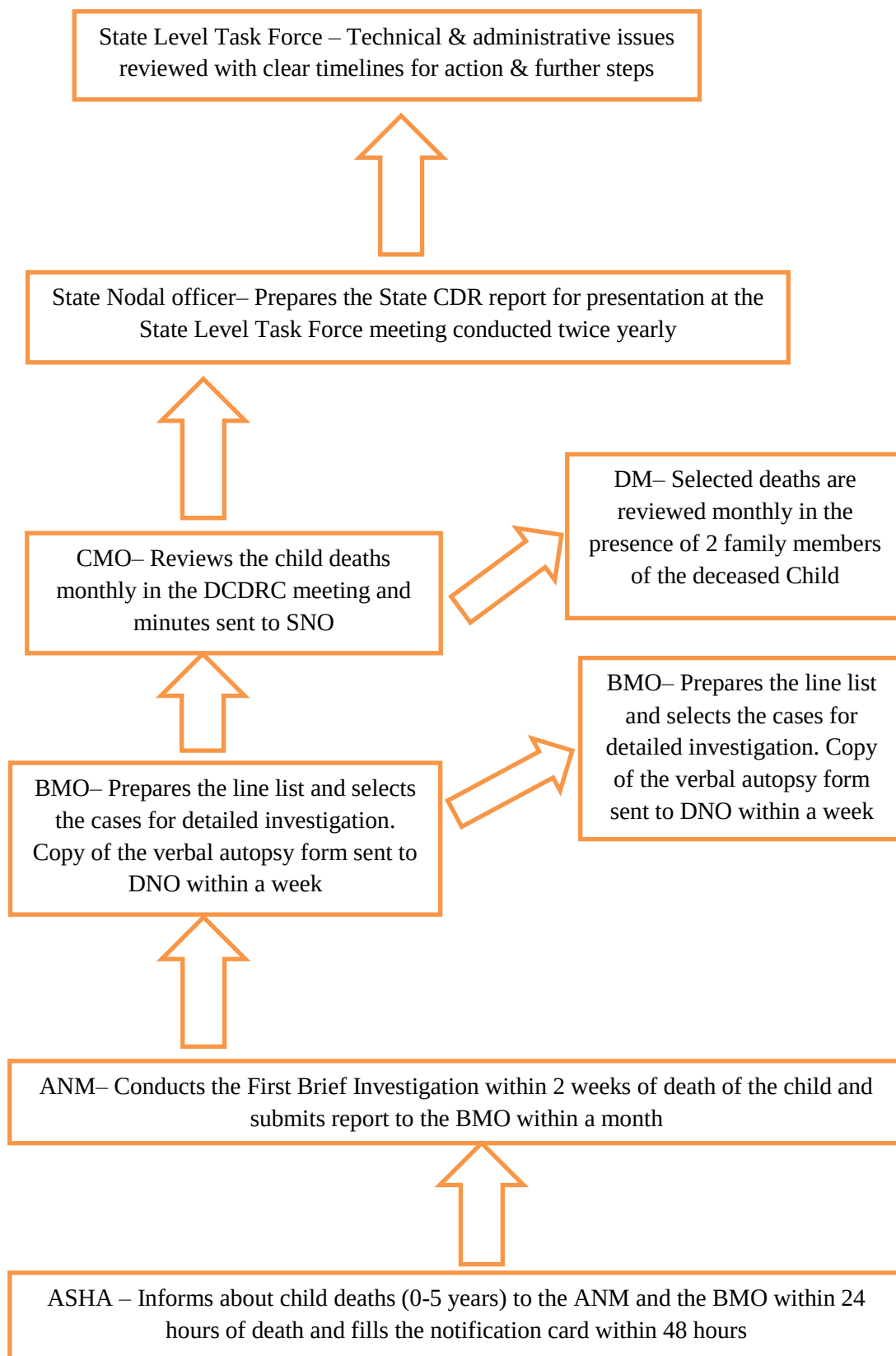
Step 1: Notification of child death

Step 2: Investigation of child death

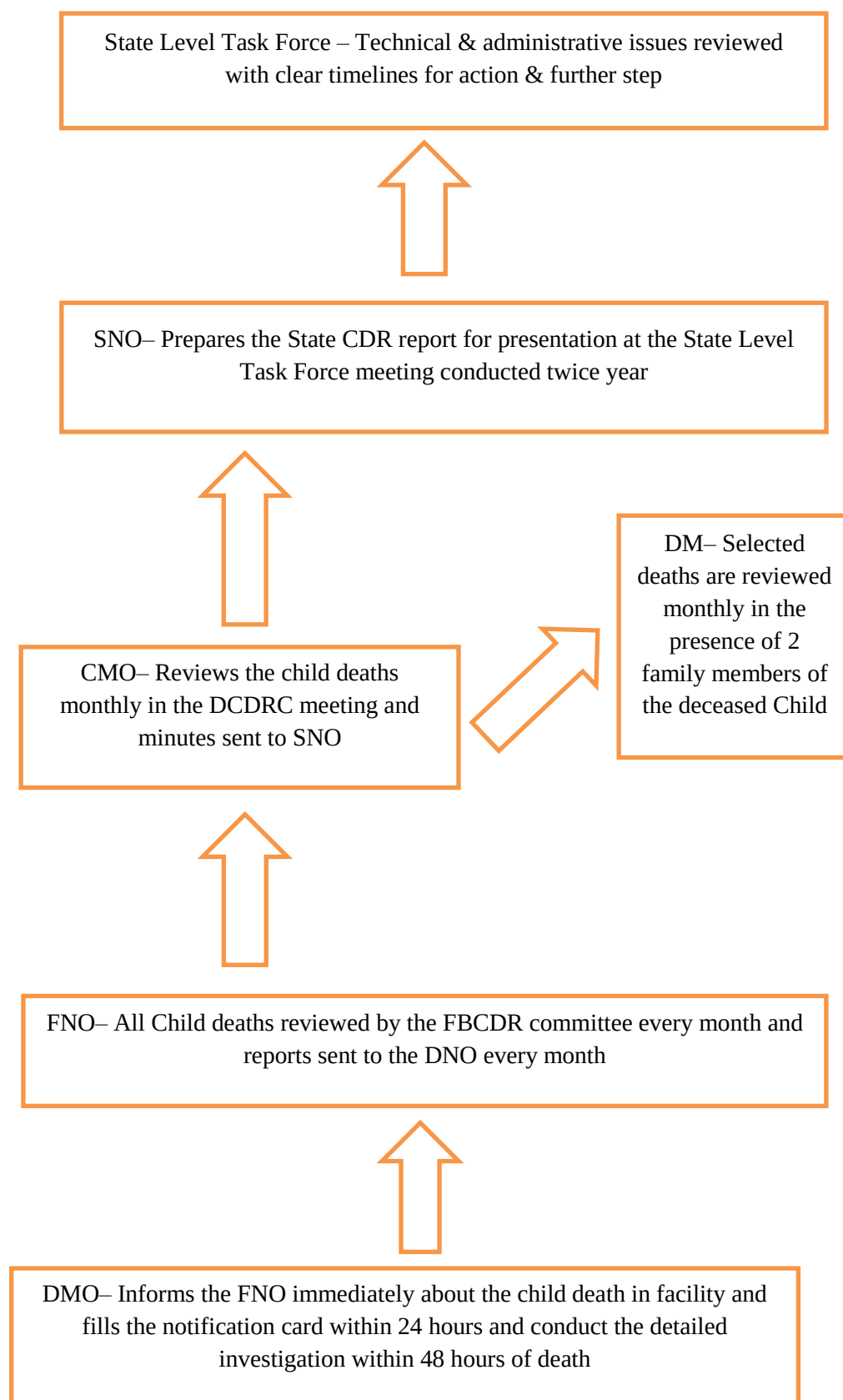
Step 3: Data transmission

Step 4: Analysis of the data and recommendations

Community Based Child Death Review (CBCDR) flow chart



Facility Based Child Death Review (FBCDR)



5. Literature Review

Reducing infant mortality is one of the key goals under NHM. Multi-pronged, evidence based strategies have been adopted in the national programme to prevent neonatal, infant and child deaths. The infant and under five child mortality has shown a steady decline over the last three years. However the progress is not uniform across the states and even intrastate (inter-district) variations are quite evident from the recent surveys like the Annual Family Health Survey 2018. Moreover the decline in neonatal mortality is slow and has not kept pace with the overall decline in child mortality. It is well understood that for any further progress to be made, the focus must shift to age groups, populations and geographical areas where mortality is higher/concentrated. For specific interventions to be made, the medical and systemic causes leading to mortality in new born and children < 5 years within a particular geographic area and populations must be known.

It is also essential that the annual planning process in districts and states takes into account the local context and implementation of key child health strategies are prioritized based on local morbidity and mortality patterns. This is possible only when a special effort is made to investigate and record the sequence of events leading to child deaths and inferences are drawn from the data generated locally. Such an analysis should guide the programme managers at all levels to recognize the key gap areas for service delivery and to institute corrective measures.

Child Death Review (CDR) is a strategy to understand the geographical variation in causes of child deaths and thereby initiating specific child health interventions. Analysis of child deaths provides information about the medical causes of death, helps to identify the gaps in health service delivery and social factors that contribute to child deaths. This information can be used to adopt corrective measures and fill the gaps in community and facility level service delivery. With uniform CDR process and formats across the states, information can be compared over a period of time and common factors identified and addressed through the national programme. This contributes to overall improvement in quality of care and reducing child mortality.

Data on causes of neonatal and child deaths are also useful for health planners, administrators, and medical professionals to evaluate trends in causes of mortality over time and thus assess the impact of the on-going health programme and to make a

decision on allocation of resources for different strategies to prevent and manage neonatal and childhood illnesses.

6. Rationale

Child mortality is a very important indicator which represents the health care status of any district, state and ultimately the whole country. Child mortality has always been a matter of prime concern for NHM. In order to control and reduce child mortality it is important to calculate the death of children under the age of five years and also to know the major reasons behind all such cases. Only then the preventive majors can be thought of and applied successfully.

7. Research Question

What are the major causes of Child Mortality in Dev Bhumi Dwarka District Gujarat?

8. Objective

- To find causes of Child Mortality in Dev Bhumi Dwarka District of Gujarat from February to April 2019.
- To find what are the factors influencing Child Death.

9. Methodology

Study type: Cross sectional descriptive study

Study duration: February to April, 2019

Study location: Dev Bhumi Dwarka District of Gujarat

Study population: Number of child deaths in Dev Bhumi Dwarka

Sampling process: Non randomised sampling process (Purposive sampling)

Data collection tool: Form 5 (a): Child Death and Still Birth Monthly Line List

Collected at district of child death

Data analysis: MS Excel and SPSS.

10.Results

- 1.) **Causes of death:-** Major causes of mortality are Low Birth Weight 17(18.48%), Prematurity 12(13.04%),and Pneumonia 11(11.96%). There are various other reasons 20(21.74%) which are not specified and thus are not clearly identified from the data.

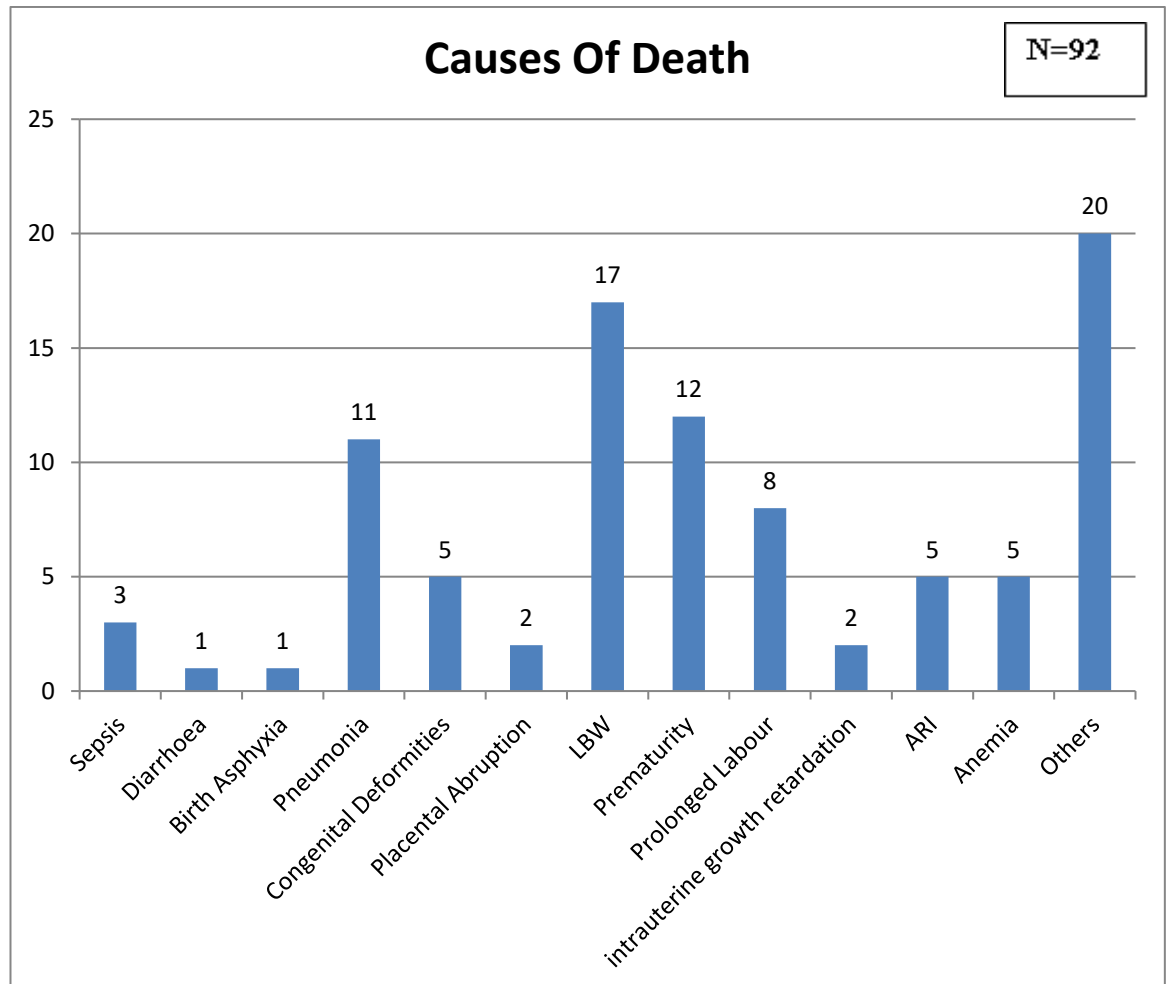


Figure 1 Causes of Death

- 2.) **Causes of child death as per age:-** In still birth the major cause for death were prematurity(8) and Low birth weight(8). In early neonate the same reason Prematurity (3) come the major reason. In Late Neonate period (4) Low birth weight was found to be major cause. Sepsis and Pneumonia (3) are the major reason found in case of Infant deaths. In case of Under 5 deaths (6) Pneumonia is the major cause.

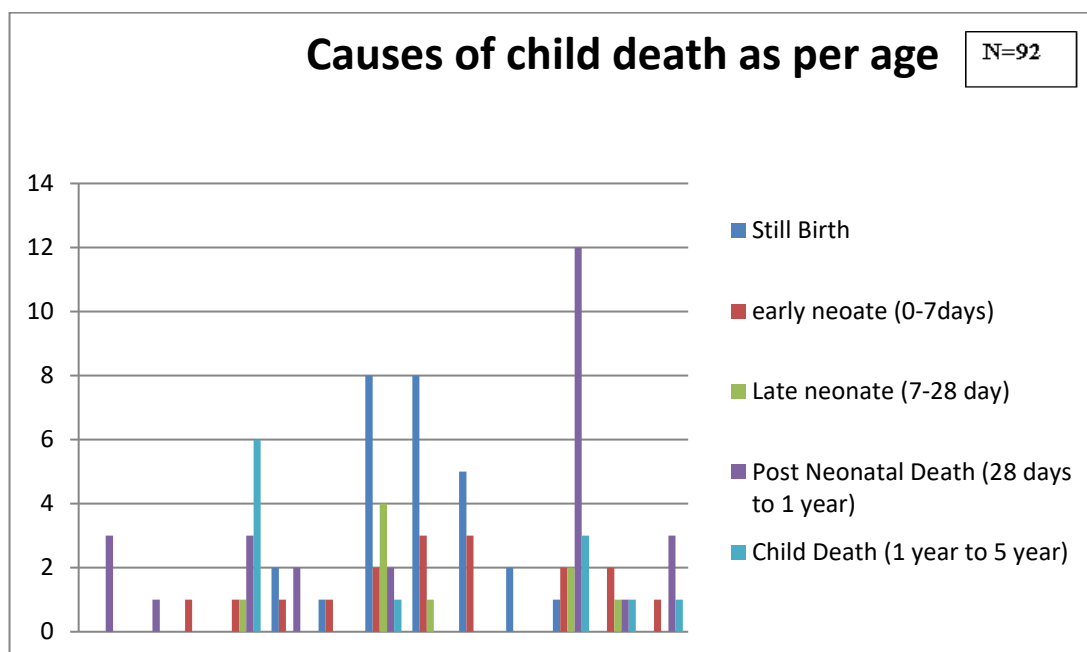


Figure 2 Causes of death as per age

	Cause of death												
Still Birth	0	0	0	0	2	1	8	8	5	2	1	0	0
early neoate (0-7days)	0	0	1	1	1	1	2	3	3	0	2	2	1
Late neonate (7-28 day)	0	0	0	1	0	0	4	1	0	0	2	1	0
Post Neonatal Death (28 days to 1 year)	3	1	0	3	2	0	2	0	0	0	12	1	3
Child Death (1 year to 5 year)	0	0	0	6	0	0	1	0	0	0	3	1	1

Table 1 Causes of death as per age

- 3.) **Age at death:-** Maximum (29%) deaths occurred in still birth and infants each. 19% were early neonates followed by 13% under 5 years whereas 10% were late neonates. Hence, two crucial periods came out to be very early days or even before a child is even born.

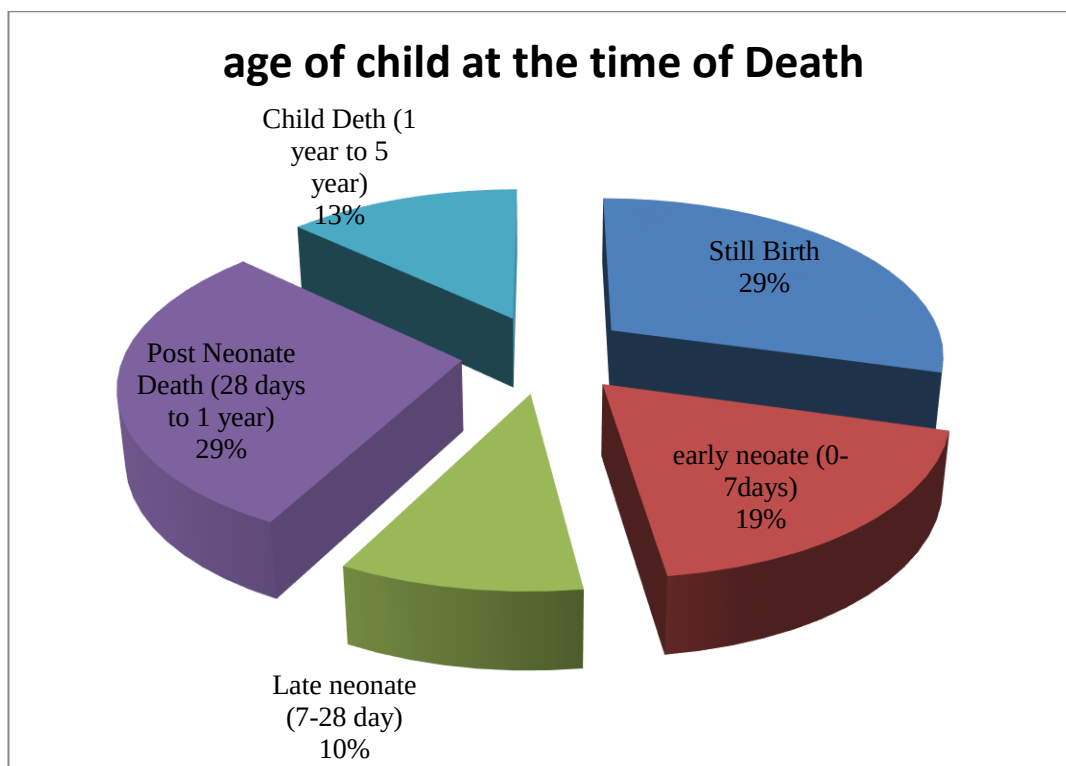


Figure 3 Age at the time of Death

- 4.) **Sex of child-** 55 deaths occurred in female child while 37 were male child, which suggests that there is still a need to show a bit more concern towards female child.

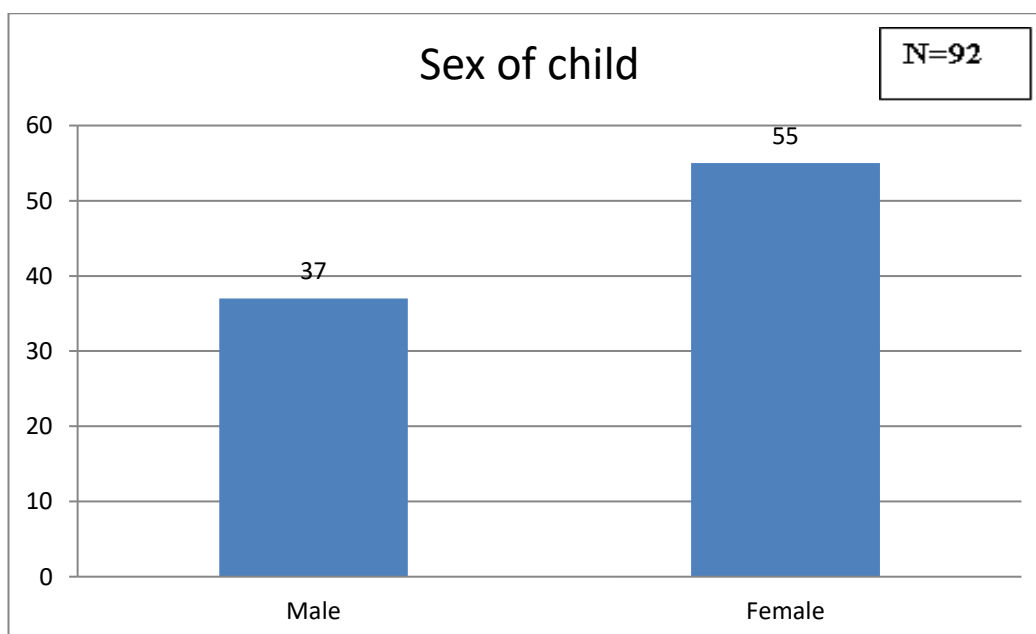


Figure 4 Sex of Child

- 5.) **Immunization status at the time of death-** 56 (61%) of children were unimmunised at the time of death so there is need to follow the vaccination schedule strictly.

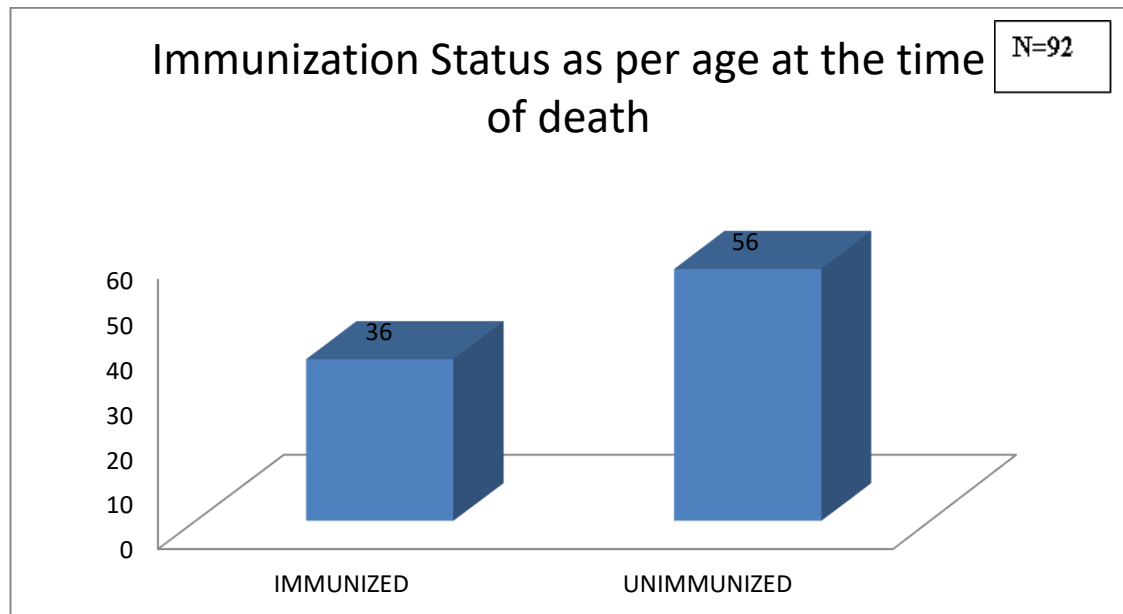


Figure 5 Immunization status of child

- 6.) **Weight at the time of birth-** out of 92 child deaths 50 were reported underweight at the time of birth. Low birth weight can be cured by sending them in CMTC and NRCs (Jamnagar).

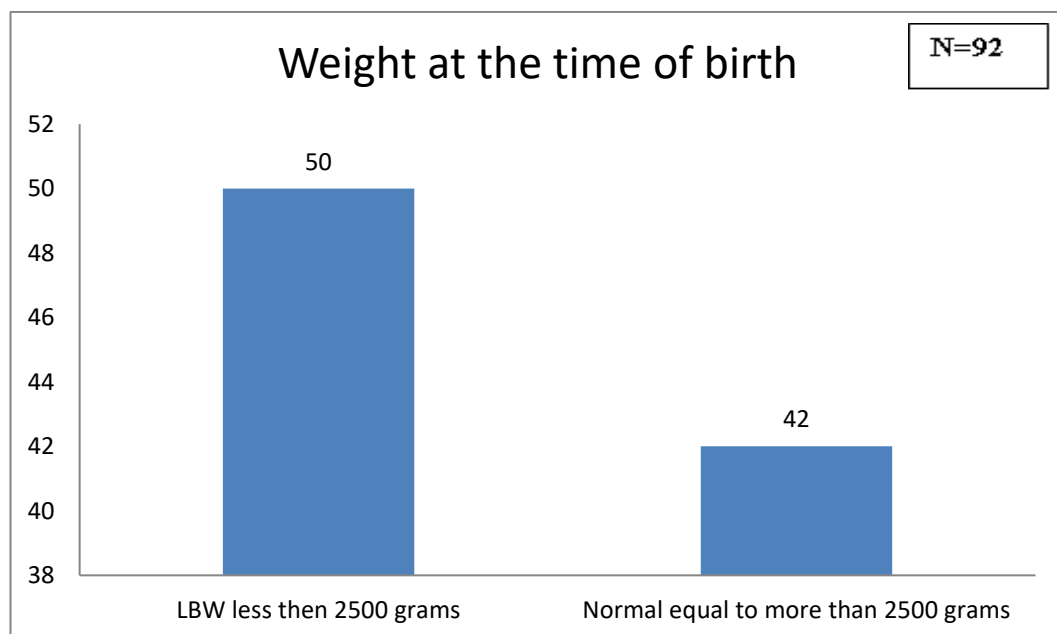


Figure 6 Weight at Birth

- 7.) **Place of Birth-** 88% of the deliveries were institutional which is good sign that shows people are now aware and concerned about their safety issues related to child delivery and have started to show faith in institutions.

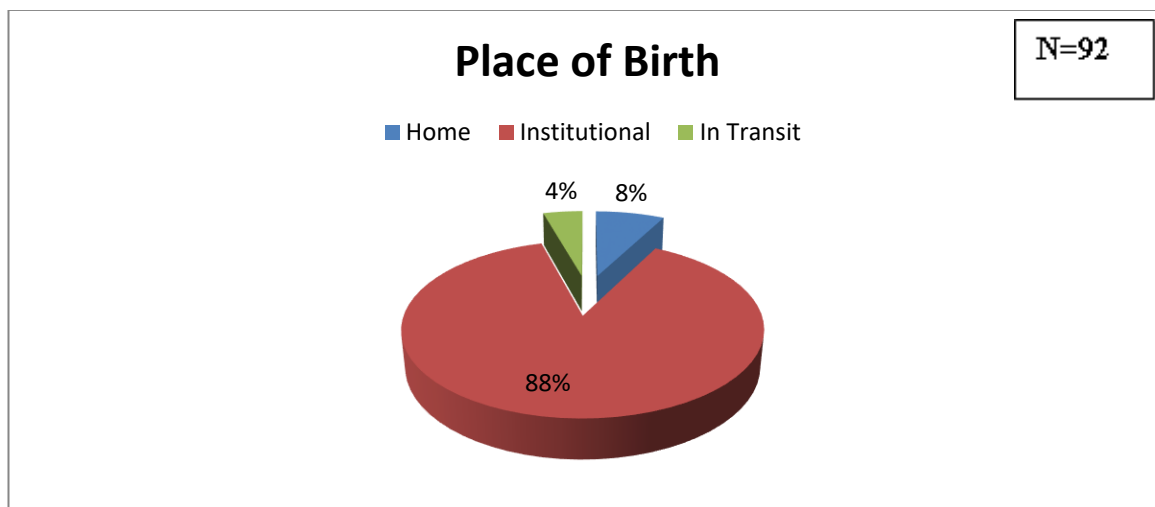


Figure 7 Place of Birth

- 8.) **Place of Death-** A total of 42% deaths occurred at home and in-transit.

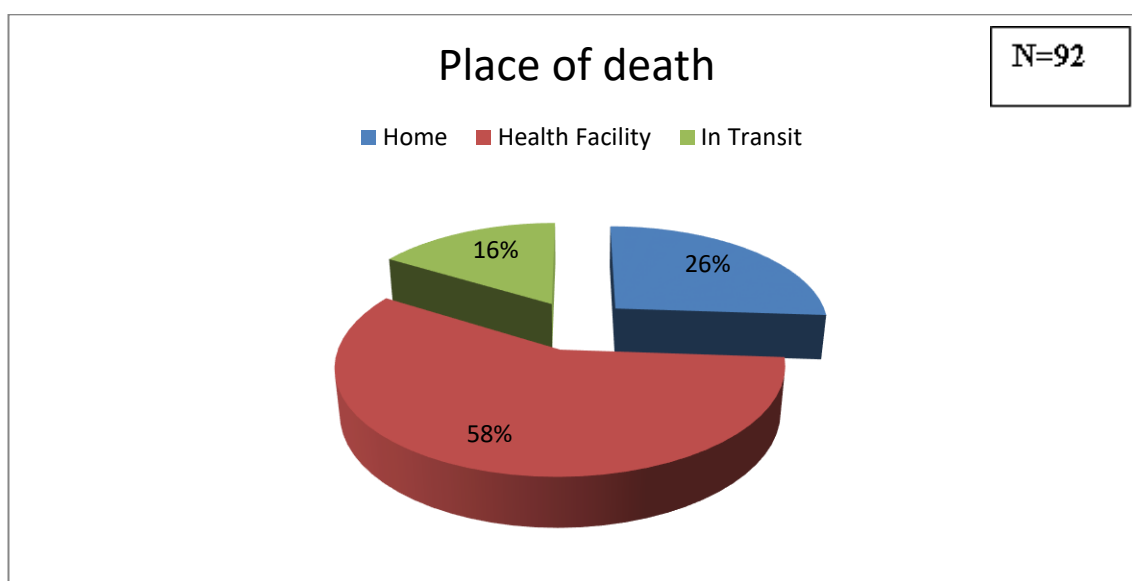


Figure 8 Place of Death

- 9.) **Caste of the child** – 93% of mortality deaths occurred in the vulnerable groups of society that is in schedule cast and schedule tribe.

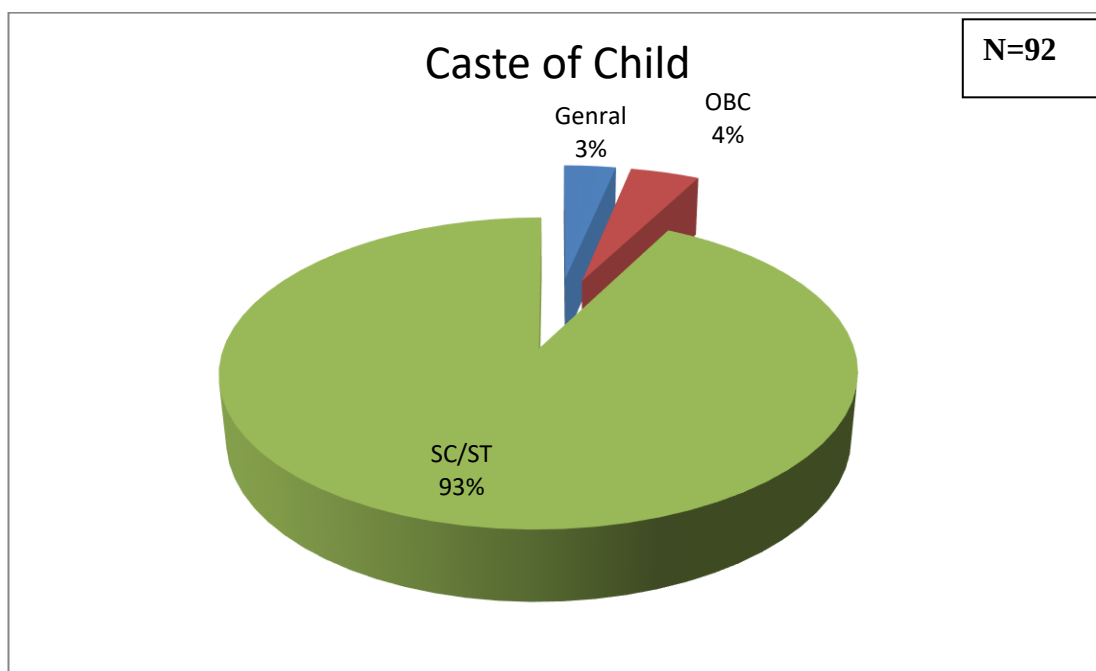


Figure 9 Caste of child

- 10.) **Total Deaths recorded in PHC-** PHC Vadatra was recorded highest number of child deaths (8) at the time of study period.

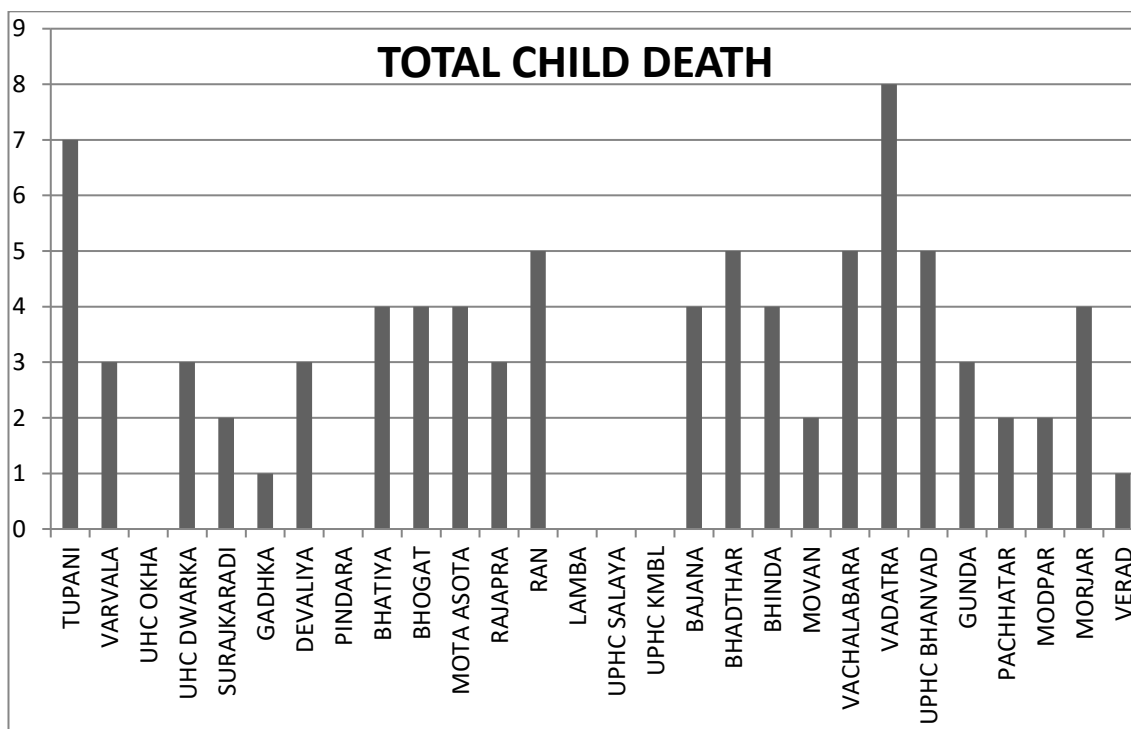


Figure 10 PHC wise Child Death Reporting in month of Feb. to Apr. 2019

11.) Discussion & Conclusions

The state of Gujarat has good health indicators but still child mortality is quite high. Although it is low in comparison to average mortality rate in India but still a state like Gujarat should be able to get rid of such a problem as it is rich in resources and has good health infrastructure. It is important to know the current mortality rate so as it bring it down.

There were 92 child deaths recorded in the month of February to April and major reasons were low birth weight, prematurity and pneumonia .One thing to notice here is that a big section is in OTHER category which needs be known. Maximum number of deaths occurred in still birth and infants. Female child are still the one to be given more attention. Number of female child deaths are 55 in comparison to 37 males. The vaccination schedule needs to follow strictly as 61% children were unimmunized at the time of death. A few of the deaths could have been avoided if the children were sent to CMTC and NRCs because they reported underweight at the time of birth. A good sign is that 88% of the deliveries took place in institutions. A major concern is that 58% death occurred at health facilities, they must be strengthened and provided with more advance facilities.92% of the deaths occurred in SC/ST categories.

12.) Limitations of the study

- A three month period was not much to cover such a vast topic.
- The response were not entered properly, nobody specified the reason in other category.
- The study area was small (only one district) and so the results cannot be generalized.

13.) Suggestions

- Specific answers should be provided in the other category.
- There should be no discrepancy in the data.
- Health facilities should be strengthened.
- Vaccines should be provided as per the vaccination schedule.
- Need of proper management of Low Birth weight cases as the number of deaths by this cause is high.

14.) References

- Chandrakant Lahariya, Burdon, et al. Differentials and Causes of Child Death in India: Indian J Pediatr (2010) 77:1312–1321 DOI 10.1007/s12098-010-0185-z
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