

# Infant Death Analysis in Mahisagar Gujarat and the Challenges Hindering Its Reduction

*By*

*Rashmi*

*Dissertation submitted for the partial fulfillment of the  
MBA Hospital and Health Management*

*Academic year, 2016-2018*



**The IIHMR University, Jaipur**

1, Prabhu Dayal Marg, Sanganer, Airport  
Jaipur 302029, Rajasthan  
Ph: 0141 3924700, Fax: 3924738  
Website: [www.iihmr.edu.in](http://www.iihmr.edu.in)

# Infant Death Analysis in Mahisagar Gujarat and the Challenges Hindering Its Reduction

*By*

*Rashmi*

*Dissertation submitted for the partial fulfillment of the  
MBA Hospital and Health Management*

*Academic year, 2016-2018*

*National Health Mission, Gujarat*



**The IIHMR University, Jaipur**

1, Prabhu Dayal Marg, Sanganer, Airport  
Jaipur 302029, Rajasthan  
Ph: 0141 3924700, Fax: 3924738  
Website: [www.iihmr.edu.in](http://www.iihmr.edu.in)

**TO WHOMSOEVER MAY CONCERN**

This is to certify that **Dr. Rashmi** student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at National Health Mission, Gujarat from **February 5th, 2018 to April 4<sup>th</sup>, 2018.**

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

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



Col. (Dr.) Ashok Kaushik  
Dean, Academics and Student Affairs  
The IIHMR University, Jaipur



Dr. Arindam Das  
Associate Professor  
The IIHMR University, Jaipur

## **TO WHOMSOEVER MAY CONCERN**

The certificate is awarded to

**Name** Dr.Rashmi

In recognition of having successfully completed her internship in the department of

**Name of the department** Health and Family Welfare department

and has successfully completed her project on

**Title of the project** "Infant Death Analysis in Mahisagar district of Gujarat and The Challenges in reducing it"

**Date** 5<sup>th</sup> Feb 2018 to 4<sup>th</sup> May 2018

**Organization** National Health Mission, Gujarat

She came accrossas a committed, sincere and dilligent person who has a strong drive and zeal for learning

We wish him/her all the best for future endeavours



**Reproductive and Child Health Officer**  
**District Panchayat Mahisagar**  
**LUNAWADA**

**District Panchayat Mahisagar**

**THE IIHMR UNIVERSITY, JAIPUR**

**CERTIFICATE BY SCHOLAR**

This is to certify that dissertation titled **“Infant death analysis in Mahisagar district of Gujarat and the challenges in reducing it”** and submitted by Dr. Rashmi, Enrollment no IIHMR-U/01//2016-18/0479 under the supervision of Dr. Arindam Das for award of MBA in Hospital and Health of the University carried out during the period from 5<sup>th</sup> February 2018 to 4<sup>th</sup> May 2018 embodies my original work and has not formed the basis of award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

  
Signature

## **Acknowledgement:**

I would like to express my thanks to my mentor Dr.Arindam Das, who has always encouraged me and showed his interest for the project. He has continuously and persuasively conveyed a spirit of adventure in relation to the research project and also excitement in teaching. Without his supervision and constant help this project would not have been possible.

I would thank Dr.S.B.Shah, Chief District Health Officer, Dr.B.Singh, Additional District Health Officer, who was my mentor in the organisation and Dr.S.Chauhan, Reproductive and Child Health Officer, for the useful comments, remarks and engagement through the learning process of this project. Furthermore I also thank Dr.Saxena, Taluka Health Officer Balasinor; Dr.J.K. Patel, Taluka Health Officer, Lunawada; Dr.Vankar, Taluka Health Officer , Santrampur and ASHA sisters and MPHWs and ANM at the facility for sincere and continuous support throughout the survey.

I like to give special thanks to Dr. S. Chauhan sir for his continuous support, guidance and encouragement throughout the project.

Also would also like to thank all the participants in my survey, who have shared their precious time during the process of Interview.

## **Table of contents**

| Sl.No. | Title              | Page No. |
|--------|--------------------|----------|
| 1      | Abstract           |          |
| 2      | Introduction       |          |
| 3      | Literature Review  |          |
| 4      | Research Question  |          |
| 5      | Objective          |          |
| 5.1    | Specific Objective |          |
| 6      | Methodology        |          |
| 6.1    | Study Design       |          |
| 6.2    | Source of Data     |          |
| 6.3    | Duration of study  |          |
| 6.4    | Study Site         |          |
| 6.5    | Sampling Technique |          |
| 6.6    | Data Collection    |          |
| 6.7    | Inclusion          |          |
| 7      | Data Analysis      |          |
| 8      | Conclusion         |          |
| 9      | Recommendation     |          |

# **INFANT DEATH ANALYSIS IN MAHISAGAR, GUJARAT AND THE CHALLENGES IN REDUCING IT**

## **Abstract**

Infant mortality is a major cause of concern in our country. It is estimated that approximately 26 million children are born every year as per census 2011. The share of children belonging to age group 0 to 6 years, accounts for approximately 13 percent of total population in the country. An estimated 12.7 lakh children die every year before completing 5 years of age. However 81 percent of Under 5 mortality takes place before 1<sup>st</sup> birthday of his/her life and accounts for nearly 10.5 lakh infant deaths and 57 percent of under 5 deaths takes place within 1<sup>st</sup> month of life and accounts for approximately 7.3 lakh neonatal deaths every year in the country.

Infant Mortality Rate is one of the most sensitive and reliable indicators of the health status of a country, state or any defined geographical area. Infant Mortality Rate explains the probability of occurrence of death between birth and exactly one year of age of the baby expressed per 1000 live births. IMR in combination with other parameters is used to assess the physical quality of life index and Human Development Index. It is indicative of the quality of child and maternal health services of a country. Therefore reduction in IMR is a global goal.

Definition of Infant Mortality Rate (IMR) = (Total number of deaths under one year of age /Total number of live births) in a calendar year in a defined geographical area

As per recent data India's IMR has declined from 37 per 1000 live births in 2015 to 34 per 1000 live births in 2016 but it still has to go a long way so as to reach the target of 28 per 1000 live births till the year 2019. Most of which is attributed to conditions like birth asphyxia, pneumonia, birthing complications, neonatal infections, diarrhea, malaria, and malnutrition.

The study was conducted in district Mahisagar in the state of Gujarat for a period of 3 months and the study involved a population of 185 and was conducted in Lunawada, Santrampur, Balasinor, Khanpur and Kadana blocks of Mahisagar district. Study suggests that 37.66 percent of deaths occur within 48hrs of birth, 55.23 percent of deaths occur within 7 days of birth and 71.97 percent of deaths occur within 28 days of birth out of total infant deaths in a year. The leading causes of deaths among infants are:

- Perinatal condition
- Respiratory infection
- Diarrheal disease
- Other infections and parasitic diseases and
- Congenital anomalies

The major cause of neonatal death is found to be

- Premature birth and low birth weight
- Asphyxia
- Infections such as Pneumonia, septicemia and umbilical cord infection.

On looking into the matter why these babies could not be saved, the data reveals-

1. People are apprehensive about the quality of services available at the government facilities and cannot afford to go to private hospitals.
2. Delay in identifying that the baby is in trouble, which is also suggestive of that ASHA is not doing routine HBNC (Home Based New Born Care) follow up.
3. Delay in taking him/her to hospital as many of the babies died on their way to hospital.
4. Few mothers do not even feed their babies if they are female, in preference for male child, as reported by FHW.
5. There is no fully functional essential new born care unit and also not all PHCs conduct deliveries and in private hospitals deliveries are mostly done by unqualified nurses.

Moreover in district Mahisagar none of the SNCUs, NBSU or NBCC is fully functional. Doctors do not even know the status of NBCC, whether they are

functioning or not as they have never used it. Under Bal Sakha 3 Yojna also 3 hospitals are empanelled in the list in entire Mahisagar district, which make it out of reach for many individuals. Under this Rs.7000/- is given to the child's family for treatment of the diseased, food and stay of the attendant for a maximum of 7 days.

Government facilities are not equipped with providing essential services for the entire care of new born thus making it a compulsion for the parents of sick new born to go to private facilities for treatment of their babies. Moreover many people are not even comfortable with the behavior of staff and doctor. They do not even trust the quality of services available at government hospital.

## Introduction

India contributes to one fifth of the global live births. Infant mortality is the probability that a newborn dies before completing his/her 1<sup>st</sup> birthday i.e, within 1<sup>st</sup> year of his/her life and it is calculated per 1000 live births.

Definition of Infant Mortality Rate (IMR) = (Total number of deaths under one year of age /Total number of live births) in a calendar year in a defined geographical area.

Forms of infant mortality:

- **Perinatal mortality** is late fetal death (22 weeks of gestation to birth), or death of a newborn upto 1 week postpartum.
- **Neonatal mortality** is newborn death occurring within 28 days postpartum. Neonatal death is often attributed to inadequate access to basic medical care during pregnancy and after delivery. This accounts for 40-60 percent infant mortality in developing countries.
- **Post natal mortality** is the death of children aged 29 days to 1 year. Major contributors are: malnutrition, infectious diseases, troubled pregnancy, sudden infant death syndrome and problems in the home environment.

**IMR has two components:**

1. Neonatal mortality, which is before 28 days of life
2. Post neonatal mortality, which is after 28 days and upto 1 year of life.

**IMR is affected by:**

- Nutritional status of mother and
- External environmental factors.

**Factors that contribute to infant mortality are:**

- Mothers level of education
- Environmental conditions and political and medical infrastructure

It is estimated that 26 million children are born every year as per census 2011. 13 percent of total population in the country belongs to children from 0 to 6 years of age. It is estimated that 12.7 lakh children die every year before completing 5 years of age and which 81 percent of children die before celebrating their 1<sup>st</sup> birthday. The prominent causes of death among infants are:

- Perinatal conditions (46 percent)
- Respiratory conditions (22 percent)
- Diarrheal disease (10 percent)
- Other infections and parasitic disease (8 percent)
- Congenital anomalies (3.1 percent)

**The major causes of neonatal death are:**

- Infections (33 percent) such as pneumonia, septicemia and umbilical cord infection
- Prematurity (35 percent) i.e, birth of new born before 37 weeks of gestation
- Asphyxia (20 percent) i.e, inability to breathe immediately after birth and leads to lack of oxygen.

Thrust areas under child health are:

Thrust area 1:

- There should be essential new born care at every delivery point at the time of birth
- Availability of facility based sick new born care at FRUs and District Hospitals
- Home based new born care to be strictly followed by ASHAs

#### Thrust area 2:

- Promotion of Infant and Young Feeding Practices
- Vitamin A and Iron Folic Acid supplementation
- Vitamin K injection to be administered to Low birth weight babies
- Promotion and initiation of breast feeding within one hour of birth
- Management of SAM (severe Acute Malnourished) children

#### Thrust area 3:

- Integrated management of Neonatal and Childhood Illness (IMNCI), such as:  
Management of diarrheal diseases  
Management of pneumonia and acute respiratory infections

#### Thrust area 4:

- Intensified Routine Immunisation
- Polio eradication
- Elimination of measles related deaths

Early initiation of breast feeding within one hour of birth along with exclusive breast feeding can reduce approximately 20 percent of all new born deaths. For this Government of India has made guidelines in the past so as to promote breast feeding , which are “Enhancing Optimal and young feeding practices”, “Kangaroo Mother care and optimal feeding of low birth weight babies.” However still there are many challenges in making complete utilization of human [milk.

Recent statistics suggest that present status of IMR in India is 34 per 1, 00,000 live births. While there has been significant decrease in IMR in past few decades but the National Health Ministry is dedicated to bring it in single digit. The study suggests that IMR is highest among people who fall in poverty or below poverty

line, people belonging to tribal areas and also those people who live in hilly terrains and hard to reach areas. Thus it is important to educate the masses regarding neonatal health- how to take care of new born, nutrition (nutrition of infant and mother), and sanitation.

The first six months is very crucial and has deep impact on the baby's entire life. Breast milk is an elixir for the baby and proper counseling should be done of expecting and new mothers regarding this. Owing to these factors it is very important to regularly screen expecting mothers to ensure proper development and optimal health of mother, doing this sincerely will not just show our humanitarian values but also will be contribution towards reducing infant death and improving the socio-economic condition of our country.

## **Literature Review**

Studies say, Infant Mortality Rate is not only indicator of infant health but also of the entire population. Though IMR has reduced in India as well as in Gujarat but it is still high as compared to the Developed Nations. IMR has drastically reduced after commencement of NHRM (National Rural Health Mission) in the mid 2005. With the country moving towards development it is important to identify the factors hindering prevention of Infant Death. There is a huge disparity between Rural-Urban, Rich – Poor, Gender differentials .In reduction of IMR, there is an interplay of different demographic, educational, socio-economic, biological and care seeking factors which are responsible for differentials and high burden of Infant death and high burden of Infant death. Addressing inequity is an important action to cut down Infant death rate.

According to a systematic analysis of Global, National and Regional causes of child mortality in 2013 identified, Preterm birth complications and infections to be the major causes of neonatal death in India. The review, which included the data from the Million Death Study from India, found Perinatal Asphyxia and Malformations to be other two significant causes of Neonatal Mortality and these findings are very similar to the global pattern.

A prospective study done by Baqui et al. provided data on the timings of cause specific neonatal deaths:

It states, among all deaths 98 percent is due to asphyxia and it happens within 1<sup>st</sup> week of life and 70 percent of them occurring within 24 hours. More than 75 percent of deaths is due to prematurity occur in the first week of life and 30 percent among them within 24 hrs, <50 percent of neonatal deaths due to secondary sepsis occur in the 1<sup>st</sup> week of life, about 30 percent deaths related to sepsis occur in the second week whereas around 20 percent in the third and fourth weeks. Three fourth of deaths due to malformation occur within first week with 50 percent of them dying.

A high level expert group appointed by the Planning Commission of India has considered health and social inequality interface, the poor and disadvantaged are more vulnerable for diseases. This includes:

- Urban and rural poor
- Women and children
- Specially abled persons
- Traditionally marginalized and excluded communities, such as- adivasis, or STs, dalits, or SCs and ethnic and religious minorities

These vulnerable sections of society have higher probability of being kept deprived from availing the health services.

Rationale:

Infant Mortality Rate of India is 34 per 1000 live birth (SRS 2015-16), Infant Mortality Rate of state of Gujarat is 30 (SRS 2016) and IMR of district Mahisagar is 71 per 1,000 live births in 2016-2018 (E-mamta). Since there is huge discrepancy between the status at National as well as State level and the district level, despite various efforts from the state and district, therefore it is important to look into this matter so as to find out a way to rule out the existing issues.

**Research question:**

1. What are the major causes of infant death?
2. What are the factors hindering prevention of infant death?

**Objectives:**

1. To evaluate the causes of infant death
2. To analyse other than biological determinants which attribute to infant death

**Specific Objective:**

1. To analyse various factors which are creating hindrance in reduction of infant death.

**Methodology:**

Study type: Descriptive Cross – sectional and quantitative study.

Study Site: This study has been conducted in Mahisagar district of Gujarat in five blocks of the district namely, Lunawada, Khanpur, Kadana, Balasinor, and Santrampur.

Sampling Technique: Purposive sampling

Sample size: 185

Source of Data: E-mamta and HMIS

Duration of study: 3 months (5 February 2018 to 4 April 2018)

Study tool: In depth interview, verbal autopsy form

Study technique: Interpersonal interview, structured questionnaire

Participatory factor: 50 in depth interview with relatives of descendant.

Data Collection: Qualitative and quantitative data collection

- Primary data has been collection:
  - Data collected from quantitative method in the form of verbal Autopsy forms
  - Qualitative data collected from in depth interview with relative of descendant
- Secondary data collection:
  - HMIS
  - E-mamta

Inclusion criterion: All Infant deaths in all the five blocks of the district.

Ethical consideration: Informed consent was taken from the beneficiary.

The objective of this study is to understand the reasons which are hindering factors in reducing infant mortality rate.

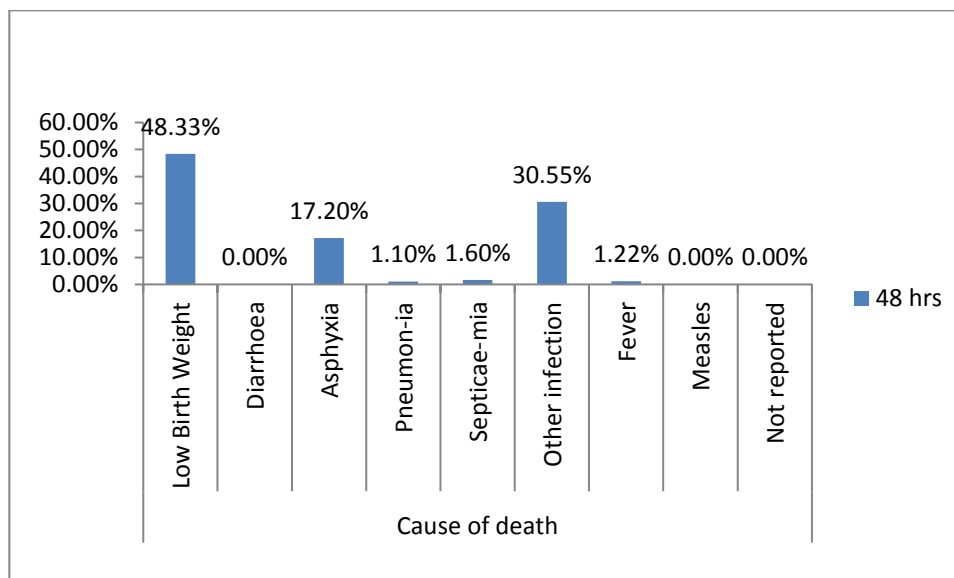
## **Data Analysis:**

The study shows that 96 percent deliveries are done in hospital either private or government. Out of these 81 percent deliveries are done in private hospital and 16 percent of deliveries happened in government hospital. Also, 3 percent deliveries happened on the way to hospital, one percent at home and one percent in 108 Ambulance. On interrogation it was found that people do not trust the quality of services and care provided at the government hospital, if they can afford they prefer to go to private institution for delivery, ANC or any kind of other services. People even complain of the behavior of staff and doctors at the government institution. Under Bal Sakha Yojana also, only three hospitals are empanelled in entire Mahisagar and the amount given for sick and attendant is Rs.7000/- only for seven days which is always not sufficient.

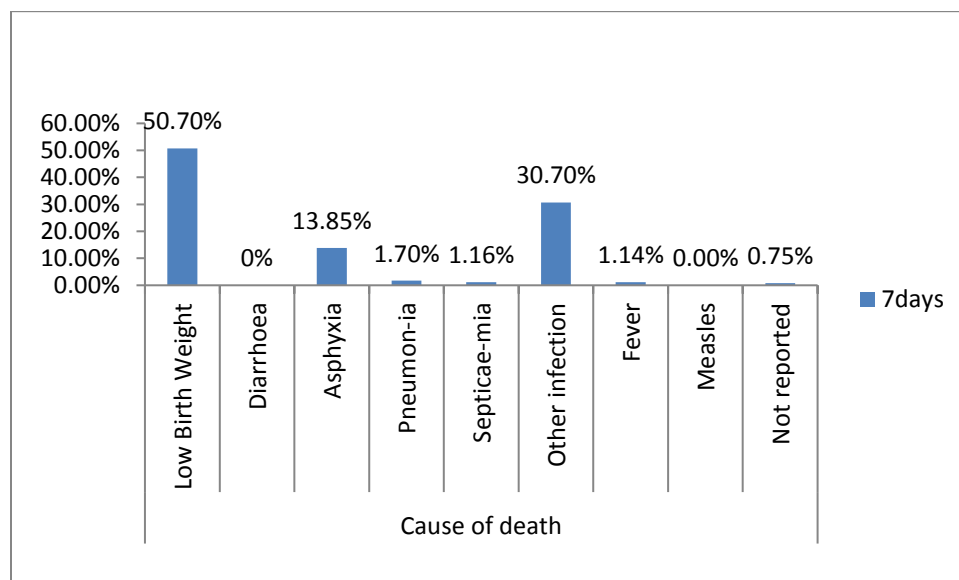
Out of all deaths 38 percent of deaths occur within 48 hours of delivery among which 48 percent is due to Low birth weight, 31 percent is due to infection, one percent and two percent is due to pneumonia and septicaemia respectively, whereas 17 percent of deaths is due to asphyxia. 55 percent of deaths occur within seven days of life, among which maximum deaths occur due to low birth weight, i.e, 51 percent, followed by other infections which is 31 percent, deaths due to asphyxia is 14 percent, two percent due to pneumonia, one percent due to septicaemia, one percent are fever related deaths and the reason for one percent deaths is not mentioned.

72 percent occur within 28 days of life out of which 50 percent of deaths occur due to low birth weight, 13 percent due to asphyxia, 32 percent of deaths due to other infections, two percent due to pneumonia, two percent due to fever, one percent due to septicaemia, and the reason for one percent of deaths are not mentioned. Within one year, 44 percent of deaths are due to low birth weight, 36 percent of deaths are due to other infections, 11 percent of deaths are due to asphyxia, six percent of deaths are due to pneumonia, two percent of deaths are fever related.

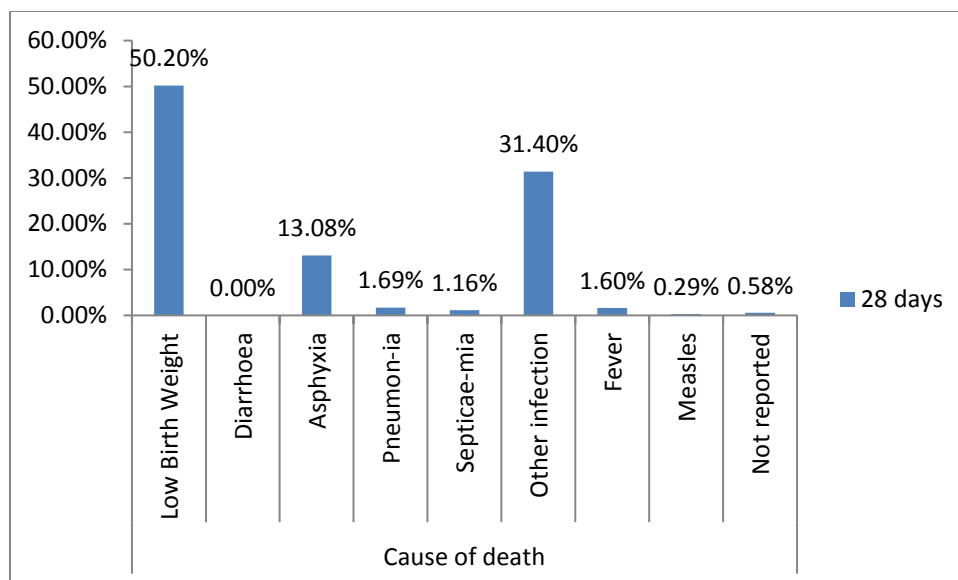
Graph 1: Cause of deaths within 48 hours of birth (N=70)



Graph 2: Cause of deaths within 7 days of birth (N=21)



Graph 3: Cause of infant deaths within 28 days of birth (N=35)



Graph 4: Cause of infant deaths within 1 year of birth.

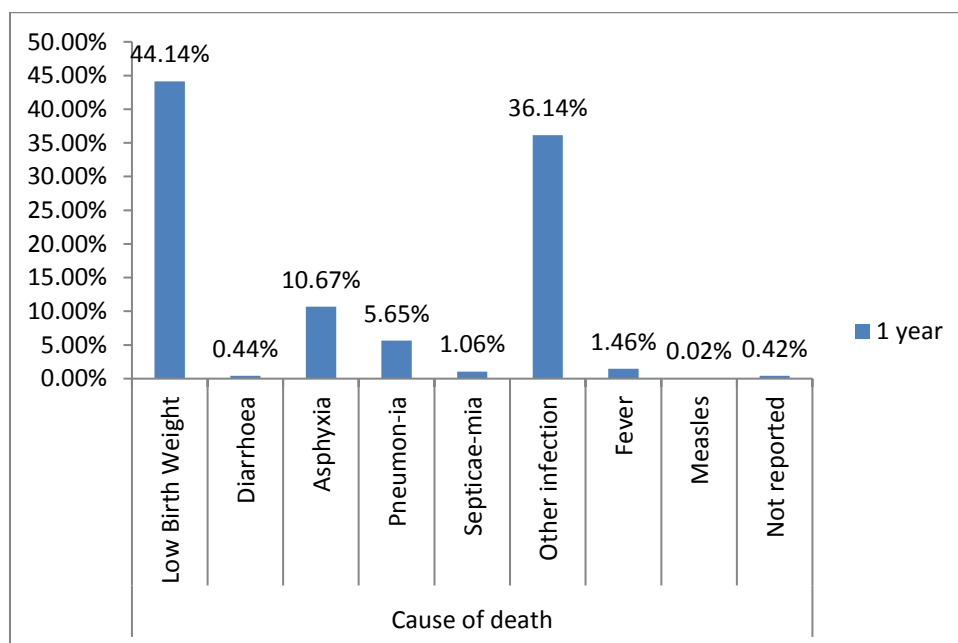


Table 1: Educational status of the respondents (N=185)

| Sl.No. | Educational Status                          | Percent |
|--------|---------------------------------------------|---------|
| 1      | Illiterate                                  | 9.52    |
| 2      | Literate upto standard 5 <sup>th</sup>      | 19.04   |
| 3      | Literate more than 5 <sup>th</sup> standard | 11.42   |
| 4      | Literate upto 10 <sup>th</sup> standard     | 60      |

Among all infant deaths, none of the families were literate more than Matriculation. Among all 10 percent of the respondents in the deceased's family were illiterate, 19 percent of the respondents were educated upto 5<sup>th</sup> standard, 11 percent of the respondents were educated more than 5<sup>th</sup> standard and 60 percent of the respondents had completed their education till 10<sup>th</sup> standard.

Among all death three percent of the families belonged to General category, three percent belonged to SC/ST category, 94 percent belonged to OBC category and among these 11 percent belonged to ethnic and religious minorities.

Table 2: Caste and religion of the respondent (N=185)

| Sl.No. | Category       | Percent distribution of the respondents |
|--------|----------------|-----------------------------------------|
| 1      | General        | 2.86                                    |
| 2      | OBC            | 94.28                                   |
| 3      | SC/ST          | 2.86                                    |
| 4      | Hindu          | 89.52                                   |
| 5      | Other religion | 10.48                                   |

Among all deaths 49 percent were females and 51 percent males. Infant death was maximum in hard to reach, hilly areas of the district, in Santrampur block and 37 percent of all infant deaths happened in this block.

Table 3: Sex of the infants died (N=185)

| Sl.No. | Sex of the infant | Percentage of descendants |
|--------|-------------------|---------------------------|
| 1      | Male              | 51%                       |
| 2      | Female            | 49%                       |

## Conclusion:

Infant mortality rate is a sensitive indicator of the socio-economic conditions of the country. Premature birth and low birth weight are the major contributors to the IMR. Other leading causes of infant death are birth asphyxia, pneumonia, and birth complications such as abnormal presentation of foetus umbilical cord prolapse, or prolonged labour, neonatal infection, diarrhea, malaria, measles and malnutrition. Government facilities lack adequate essential new born care unit at every delivery point. Moreover at many PHCs delivery is also not being conducted, for this reason also people are going to private facilities where maximum deliveries are conducted by untrained nurses, leading a threat to life of both mother and child.

There should be proper counseling of pregnant and new mothers regarding breast feeding, exclusive breast feeding for 6 months, ANC check up and immunisation.

There should be timely HBNC visit done by ASHA and proper inspection to be done by her, if in case the child is not well she should inform the Medical Officer and refer him/her as required. There should be paid more focus on tribal and hard to reach areas.

Deaths are more among children of people who are less literate, who belongs to OBC category, whose mothers are anaemic and are residing in hard to reach areas.

In order to decrease infant death it is important for the health organisation to have functional SNCUs, NBSUs and more hospitals to be empanelled under various schemes proposed by government, which are meant to provide financial assistance to the poor.

## **Suggestions:**

- It is important to sensitize people at all levels in the organization.
- Already available NBSU, SNCU should be made functional.
- NBCC should be used when required.
- There should be timely HBNC visit done by ASHA and proper inspection to be done by her, if in case the child is not well she should inform the Medical Officer and refer him/her as required.
- There should be paid more focus on tribal and hard to reach areas.
- Sufficient number of hospitals must be empanelled in the list under Bal Sakha Yojana.

## **References:**

- M.J.Sankar, S.B.Neogi, J Sharma, M Chauhan, R Srivastav, P.k. Prabhkar , A Khera, R Kumar, S Zodpey, V K Paul, State of new born in india;Dec7, 2016
- Amul Patel, Pradeep Kumar, Naresh Godhara, Vikas k Desai; A Socio demographic profile of infant deaths in a tribal block of south Gujarat.
- V.Raman Kutty, Pankaj Shah, Dhiren Modi, Shobhana Shah, Mala Ramanathan, A.R.Archana; Reducing Neonatal Mortality in Jhagadia block, Gujarat: We need to go beyond promoting hospital deliveries, 1 February 2013,
- Registrar general of India. Sample Registration System (SRS) statistical report 2016. New Delhi 2016.
- Liu L, Jhonson HL, Cousens S, Perin J, Scott S, Lawn JE et al. Causes of neonatal and child mortality in India: a nationally representative mortality survey. Lancet 2010;376:1853-1860 [PMC free article] [PubMed]
- ICMR Young Infant Study Group. Age profile of neonatal deaths. Indian Pediatr 2008; 45: 991-994. [PubMed]

- E- mamta, Govt of Gujarat; Online Mother and Child Tracking System 2017-18.
- Health Management and Information System 2017-18, Govt of India.

## ANNEXURE

1. Name of the infant\_\_\_\_\_

2. Age of the infant\_\_\_\_\_

3. MCTS No.\_\_\_\_\_

4. Name of the respondent\_\_\_\_\_

5. Relationship with the deceased\_\_\_\_\_

6. Did ASHA come for HBNC visit

Yes ☐

No ☐

7. Who advised you to go to doctor?

ASHA ☐

AAW ☐

FHW ☐

TH Helper ☐

Other (Specify)\_\_\_\_\_

8. After you found, your baby is ill, how long did it take you to go to the hospital? \_\_\_\_\_

9. Which facility did you choose?

Private ☐

Government ☐

10. Why did you prefer a Government/ Private facility?

\_\_\_\_\_