

Analysis of the Magnitude of Different Causes of Infant Death at Kutch District, Gujarat

By

Rohit Singh Raghuvanshi

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

Academic year, 2016-2018



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TO WHOMSOEVER MAY CONCERN

This is to certify that **Dr. Rohit Singh Raghuvanshi** student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at National Health Mission, Gujarat from **5th February 2018 to 5 May 2018**.

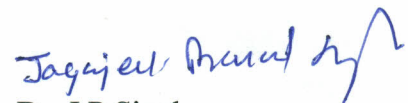
The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific, and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.



Col (Dr.) Ashok Kaushik
Dean, Academics and Student Affairs
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Dr. J P Singh
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DISTRICT HEALTH SOCIETY

District Panchayat Bhuj, Kutch

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Date: 10 May 2018

The certificate is awarded to

Dr. Rohit Singh Raghuvanshi

In recognition of having successfully completed his
Dissertation in the department of

Ministry of Family and Health Welfare

And has successfully completed his Project on

"Analysis of the magnitude of different causes in Infant death at
Kutch district, Gujarat"

From: 5 February 2018 to 5 May 2018

At National Health Mission, Gujarat

He comes across as a committed, sincere & diligent person who has
a strong drive and zeal for learning

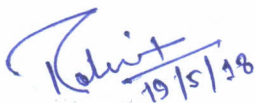
We wish him all the best for future endeavors.


Dr. P. T. Pande
9±fBBS, DPH)
Chief District Health Officer
District Panchayat Kutch.

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **“Analysis of the magnitude of different causes of infant death at Kutch District, Gujarat”** and submitted by **Dr. Rohit Singh Raghuvanshi** Enrollment No **IIHMR/PGDHM/2016-18/ 0483** under the supervision of **Dr. J. P. Singh** for award of MBA in Hospital and Health Management in Health and Hospitals of the University carried out during the period from 5th February 2018 to 5 May 2018 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.


19/5/18

Signature

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In the end I thank all those fellows and colleagues who have helped me in making this project a success and my apologies to anyone whose name I would have inadvertently forgotten to mention here.

Dr. Rohit Singh Raghuvanshi

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ABBREVIATIONS

ADHO- Additional District Health Officer

CDHO- Chief District Health Officer

CDMO- Chief District Medical Officer

CMTC- Child Malnutrition Treatment Centre

DTO- District Tuberculosis Officer

DMO- District Malaria Officer

DDM- District Data Manager

DIECO- District Information, Education, & Communication Officer

DFA- District Finance Assistant

DFO- District Finance Officer

DPC- District Program Coordinator

DPA- District Program Assistant

DUPC- District Urban Program Coordinator

DPHN- District Public Health Nurse

DQAMO- District Quality Assurance Medical Officer

DVSCM- District Vaccine Store Manager

EMO- Epidemic Medical Officer

LBW- Low Birth Weight

M&E- Monitoring and Evaluation

RI- Routine Immunisation

RCHO- Reproductive Child Health Officer

SMO- Senior Medical Officer

PA-ARC- Program Assistant-ASHA Resource Centre

VCCM- Vaccine Cold Chain Manager

WCD- Women and Child Department

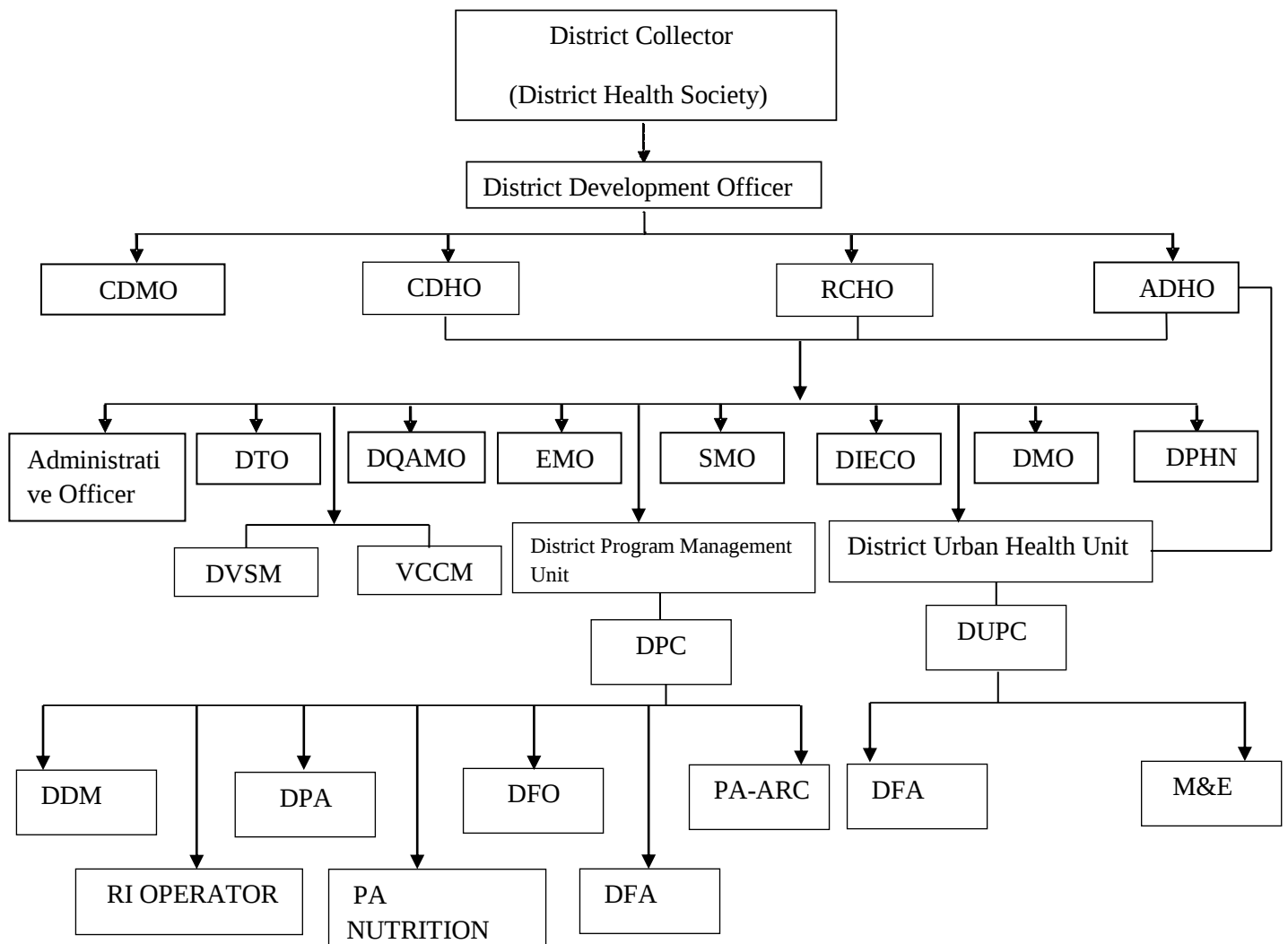
DISTRICT-KUTCH



General Information	Statistics
(i) Geological Area	45,691.895 square kilometres
(ii) Administrative Division	
Number of Blocks	10
Number of villages	939
(iii) Population	2,092,371
(v) Population Density (per sq. Km.)	46
(vi) Sex Ratio	908
(vii) Literacy Rate	70.59

(Source- Census 2011)

DISTRICT HEALTH SOCIETY: ORGANOGRAM



INTRODUCTION

“Today’s Children are tomorrow’s citizen; thus, it is extremely important to ensure, good health for children. Child health plays a vital role in the, development of a country. The first six years of life constitutes the most crucial span, in life. At this stage of life, the foundation is laid, for mental, physical, and social development. New-born particularly infant and under-five children are more vulnerable to malnutrition, mortality, and other diseases, which can be easily, prevented or treated. According to the data released by the Office of the Registrar General of India, indicate that although mortality rate especially infant and under-five mortality rate is declining, over the years, yet there are some states where these rates are very high.”

“Globally 2.6 million children died in the first month, of life in 2016. There are approximately 7000 new-born deaths every day, amounting, to 46% of all child deaths under the age of 5-years. The infant mortality rate (IMR) has, decreased from an estimated rate of 64.8 deaths per 1000 live births in 1990 to 30.5 deaths, per 1000 live births in 2016. Annual infant deaths have declined, from 8.8 million in 1990 to 4.2 million in 2016 (WHO, 2016).”

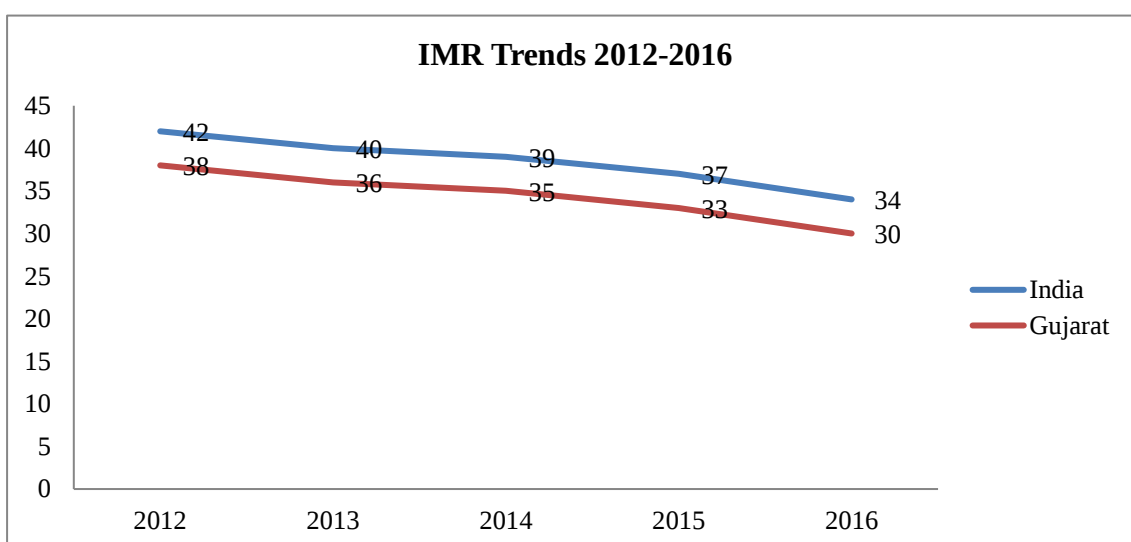
“According to recently released SAMPLE REGISTRATION SYSTEM bulletin, India has registered, a significant decline of 8% in infant mortality rate (IMR) in 2016. IMR in India has declined, by three points from 37 per 1000 live births in 2015 to 34 per 1000 live births in 2016.²”

“In Gujarat, according to data released by the Office of the Registrar General and Census Commissioner, India, the IMR has been, falling continuously. The infant mortality rate was 41 in 2011 and has dropped to 30 in 2016. The data reveals, that the state’s IMR in 2004-06 was over, 53 and in 2014-15 it was slightly less than 33. The average IMR has thus fallen by around 39%. Similarly, in rural areas, the fall was around 41%, while in urban areas it was about 43% between 2004-06 and 2014-16. Similarly, the neonatal mortality rate was 21 in 2016 as compare, to 23 in 2015. Neonatal mortality in 2016 was 27 for rural areas and 13 in urban areas, as compare to 29 in rural areas and 15 in urban areas in the year 2015.²”

Kutch district is one of the High Priority District (HPDs) of Gujarat state and second largest district of Asia after Laddakh. As per Registrar General of India 2011, the population of Kutch was 2,092,372 and the district is spread across 10 talukas, 939 villages and 6 municipalities. Coastal line and desert areas are more in Kutch district, so migration of the population is high. As per Census 2011, the population density in Kutch is 46 inhabitants per sq. km., which is very low. The scattered population means longer average distance from home to health facility. This is particularly relevant for the people as they are less mobile to access the government health facility.

Rationale of the Study

Reduction of IMR has been the priority agenda of state Govt. of Gujarat. The below Figure is showing the steady trend of decline in the IMR which is evident from SRS data (2012-2016).



SRS data shows that the state's IMR has been falling continuously. The IMR was 38 in 2012 and has dropped to 30 in 2016 whereas the Kutch district statistical reported data reveals that the infant mortality rate was dropped to 13 in 2013 which was 15 in 2012. The IMR remained same i.e. 14 from 2014 to 2016. 2017-18 District statistical data shows that the IMR of Kutch has increased by 3 points, so it is necessary to know which causes are accountable to raise the infant deaths. It indicate that there are gaps in utilization and availability of resources, equipment's and manpower, with adopted strategies by state's government at block level. This is relevant to explore the issue further.

LITERATURE REVIEW

“The infant mortality rate (IMR)—probability of dying before one year of age expressed per 1000 live-births, Infant Mortality Rate comprises of two components, Neonatal Mortality Rate (Number of infant deaths of less than 29 days per thousand, live births during the year) and Post Neonatal Mortality Rate, (Number of deaths of 29 days to less than one year per thousand live births during the year), The level of Neonatal mortality is greatly affected by biological and maternal factors, including nutritional status of the mother and under-five mortality rate (U5MR)—probability of dying between birth and age 5 expressed per 1000 live-births have been used as, measures of children’s well-being for many years.”

: Infant and child mortality rates are considered as sensitive indicators of living and socioeconomic, conditions of a country. This recognition has made the international organizations as well as, National Governments to intensify their efforts to reduce infant mortality and improve, child survival. As a result, there have been considerable improvements in the infant, and child mortality rates for the world in recent years.

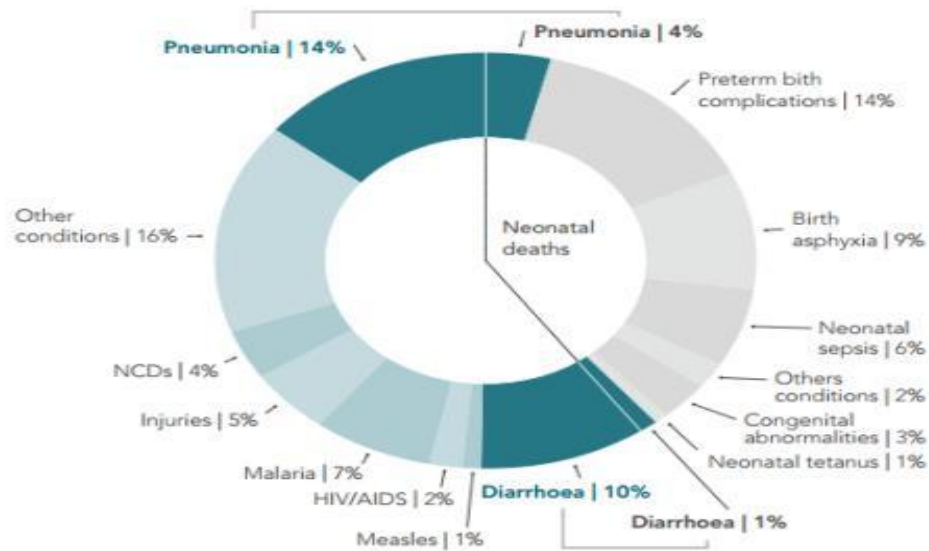
“In India, evidence of child health inequalities exists along several dimensions. There are huge differentials across states and socio-economic, groups in terms of health outcomes, access to health services and utilization of health, services. Disparities in health outcomes are explained not only by disparities in utilization, of services but also by the differential pace of economic and social development, differentials, in the distribution of the benefits of development and the inadequacy of the public health, care systems to deliver equitable health services. (NIPCCD,2014)³”

“Neonatal mortality in India contributes towards 56% of all deaths in childhood, (up to age 5 years) and 70% of infant deaths (below one year of age)”.

“Preterm birth, intrapartum-related complications (birth asphyxia or lack of breathing at birth), and infections, cause most neonatal deaths. From the end of the neonatal period and through the first, 5 years of life, the main causes of death are pneumonia, diarrhoea and malaria. “Malnutrition” is the underlying contributing factor, making, children more vulnerable to severe diseases.”

“Although concerted global and national efforts have, been made to improve child mortality, especially in the post neonatal phase, less, attention has been given to determinants of perinatal and neonatal mortality. Neonatal, mortality has gradually increased as a percentage of total child mortality, because of, a faster decline in the post neonatal mortality rate.”

“Causes of Infant Mortality:”



(Source: WHO Global Health Observatory)

“Child health and wellbeing is influenced by multiple factors, all of which can impact on early, childhood development. Adverse early life experiences can have lasting effects across, the life course, sustaining inequalities and resulting in negative consequences for the health, and wellbeing of individuals and society. The potential to influence future outcomes, via early intervention is widely accepted; there are numerous policy initiatives, programmes, and interventions, clustered around the early year’s theme, resulting in a broad and disparate, evidence, base. (MNH Toolkit,2013)⁴

“Infants are most vulnerable part for our Society and only dependent, on the mothers. They don’t know how to live in the social environment so the probability, for risk of dying before the age of one are increased. A high IMR is an indicator of risk, of death and is indicative of unmet health needs and unfavourable environmental factors. Girls in India, have lower mortality in the neonatal period but then have higher mortality than boys, thereafter throughout the childhood.”

“IMR and U5MR fell to a level of 80 in 1990, 68 in 2000 and 50 in 2009 & 118 in 1990, 93 in 2000 and 66 in 2009 respectively. These levels are lowest among children

born to, mothers between the age of 20-24, and highest among mothers under 20. The effect of, maternal age on mortality is highest during the neonatal period and progressively, diminishes during the post neonatal and 1-4 age groups i.e. low age of mother has an, independent effect on mortality. Study also suggests that if the birth order is more than 3, it will lead to risk of dying in neonatal and post neonatal period and spacing among the, birth orders are less than 2 years of the previous birth is directly linked with considerable, excess mortality during neonatal as compare to post neonatal period. (ICMR, 2012)⁵

“Infant mortality is an indicator of the health status not only of infants, but also of the whole population and of their poverty ridden social and economic status, in the country. They face excessive vulnerability, as underprivileged, to a hostile, environment and suffer malnutrition and serious health problems; all this leads to high, rates of infant mortality and morbidity.”

“The Socio-economic factors like household income, female education, access to health services and immunization, programmes are important determinants to assess status of infant mortality. Others, emphasise, how demographic, factors impact on infant mortality, and vaguely touch on many other socio-economic, factors that have contributed to high infant mortality: These include proximate factors, such as medical care of the mother during antenatal period, care at birth, preventive and, curative care in the post-natal period. Maternal factors, i.e.: age at marriage, age at first, birth, parity and birth intervals, and household and community level factors. (ITISC, 2006)⁶

“The proportion of neonatal deaths occurring during early neonatal period (<7 days) has, remained around 50 percent during the 25 years of period. Prematurity and low birth, weights continue to be the most important cause of neonatal mortality. Furthermore, Acute Respiratory infection and Diarrhoea continue to be the chief causes of post, neonatal, mortality. They have contributed to roughly half of the post neonatal mortality. “The study shows that the there is need to be identify strategies to bring down neonatal, mortality. As the most important determinant of neonatal mortality is low birth weight, there is need to tackle this immediately. Strategies to improve birth weight by ensuring, the administration of IFA supplements with improving mother nutrition. There is also, needed to be focus on neonatal services at peripheral levels across the country. (Anand et, al 2000)⁷

RESEARCH QUESTIONS

- 1) What are the levels of infants' death according to background characteristics of infants at Kutch district, Gujarat?
- 2) What are different causes accountable for infant death at Kutch district, Gujarat?

OBJECTIVES OF RESEARCH

- To understand the levels of infants' death according to background characteristics of infants at Kutch district, Gujarat.
- To understand different causes of infant death at Kutch district, Gujarat.

LIMITATION OF THE RESEARCH

- It is an area specific study, so the results of this study cannot be generalised for the whole state.
- Unreported cases cannot be find out from the study.
- It is difficult to find out the multiple underlying cause of infant death because only few cases are selected for verbal autopsy .

METHODOLOGY

Research Design:

“The study was Descriptive Cross-sectional type in nature that included infants to understand the levels of infant deaths according to their background characteristics and factors accountable to increase infant deaths. The study area comprised 10 blocks of the district with a total population 2,092,371”.

Study Area: Kutch district, Gujarat

Duration of the Study: 3 Months (5 February to 5 May, 2018)

Data Analysis Procedure:

“After the collection of data, it was compiled in Microsoft excel. Most of the data, analysis was done on Microsoft excel by Using frequency table, cross tabulation, method and Figures in Microsoft excel.”

Type of Data Collection:

“Secondary data collection: Child Death Review reports, Infant death reports of Kutch district collected from the DPMU of district Kutch.”

Sample Size:

“1442 Deaths of under-five age Children reported in Kutch District from April 2017 to March 2018. We included all 847 children who had died during infancy period.”

ANALYSIS OF THE STUDY

Age of Infants at the time of death

Analysis is carried out to know about the Age of infants at time of death in days of Kutch district. The results of the same are presented in Figure-1.

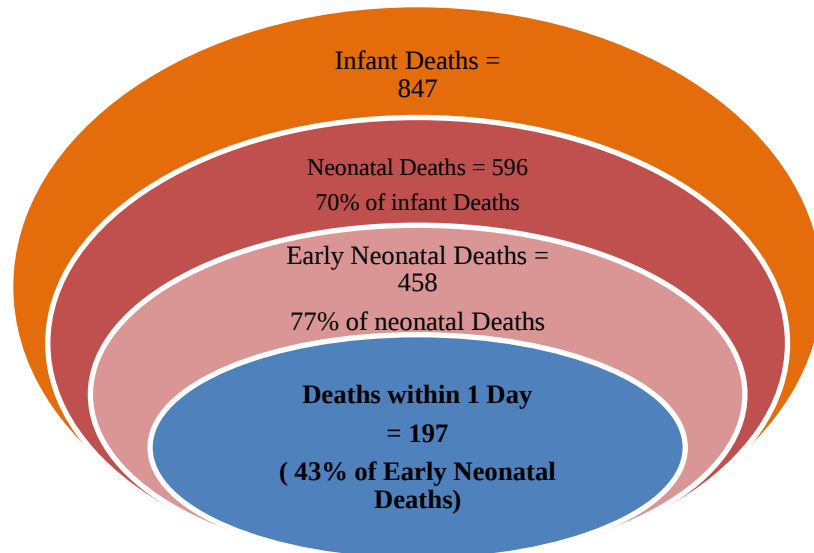


Figure-1

It was observed that nearly three-fourth (70 percent) of the infants died within 28 days (Neonatal period). Out of which nearly three-fourth (77 percent) of Neonatal died within 6 days of birth (Early neonatal period). Furthermore, it was analysed that, more than one-fourth (nearly 43 percent) of the Early neonatal died within 1 day.

Gender-wise contribution in Infant death

Analysis was carried out to know about the Gender-wise contribution of Infants death at Kutch district. The results of the same are presented in Figure-2. The analysis points to the fact that males contributed more to infant death which is around 54 percent as compared to the female that contributes to only 46 percent.

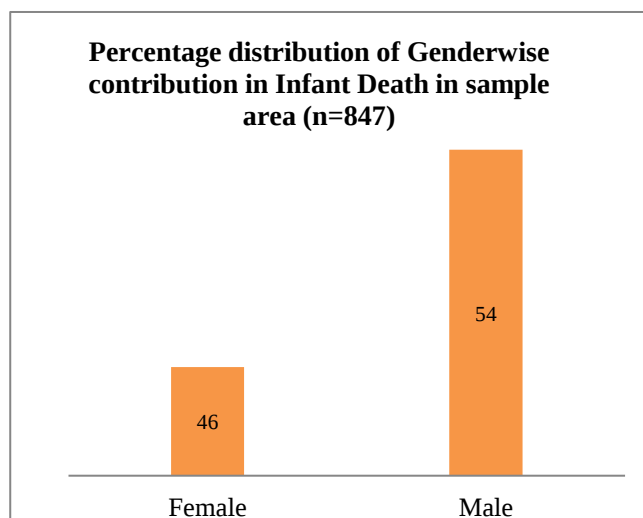


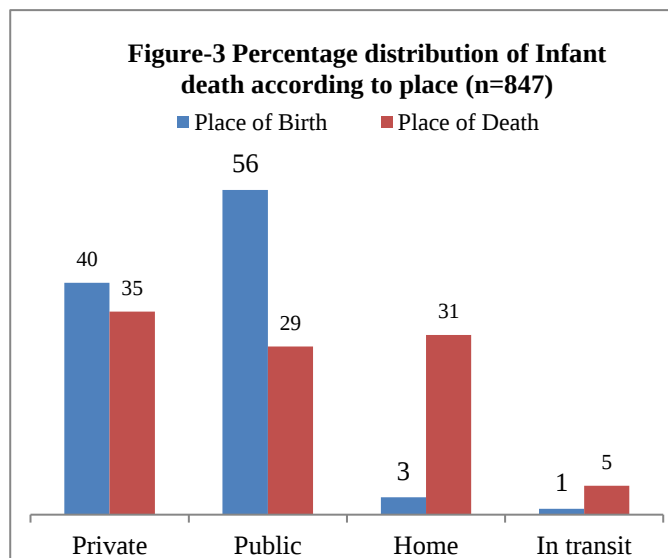
Figure-2

Distribution of Infant death according to place

The result of analysis carried out on Place of birth and death of infants at Kutch district, Gujarat is presented in Figure-3.

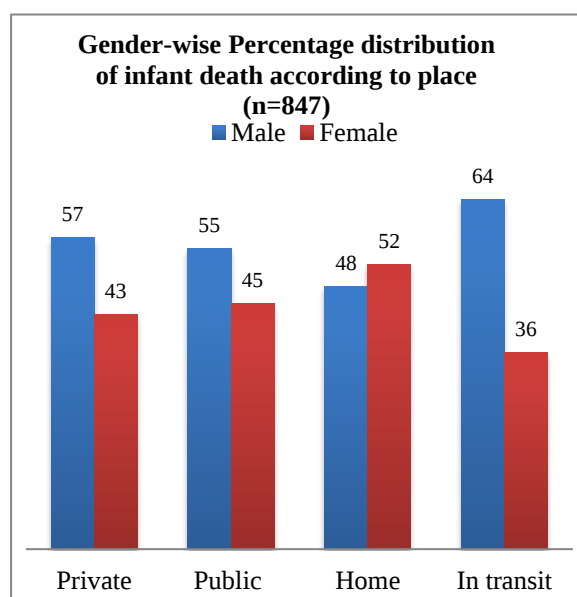
Again, it was noticed that around 40 percent of the infants were born in private facility and 56 percent were born in public facility whereas only 3 percent of them were delivered at home,

while merely one percent of there were delivered on the way. Furthermore, analysis pertaining to place of birth showed, more than one-fourth (35 percent) infants died at the private facility whereas nearly one-fourth (29 percent) infants died at public facility. It was also observed that the more than one-fourth (31 percent) of infants died at public facility while 5 percent infants lost their lives before reaching the facility.



Gender wise place of death of infants

Figure no.4 shows the result of analysis that was carried out to know about the Gender-wise place of death of infants at Kutch district, Gujarat.



Analysis pertaining to gender-wise place of infant death conveyed that the more than half (57 percent and 55 percent) of the male infants died at private and public facility respectively whereas more than two-fifth (nearly 48 percent) male infants lost their life in their respective homes. Adding to it, nearly two-third (64 percent) males

Figure-4

died before reaching any facility. On the other hand, nearly half (43 percent and 45 percent) of the female infants died at private and public facility respectively and 48 percent of the female infants lost their lives at home whereas more than one-fourth (36 percent) females are died on the way i.e. before to reach any facility.

Comparison of estimated and reported infant death

Result of the Analysis pertaining to block wise Estimated and reported infant death at Kutch district, Gujarat was presented in Figure-5. It was observed that more than half (56 percent) infants' deaths were not reported.

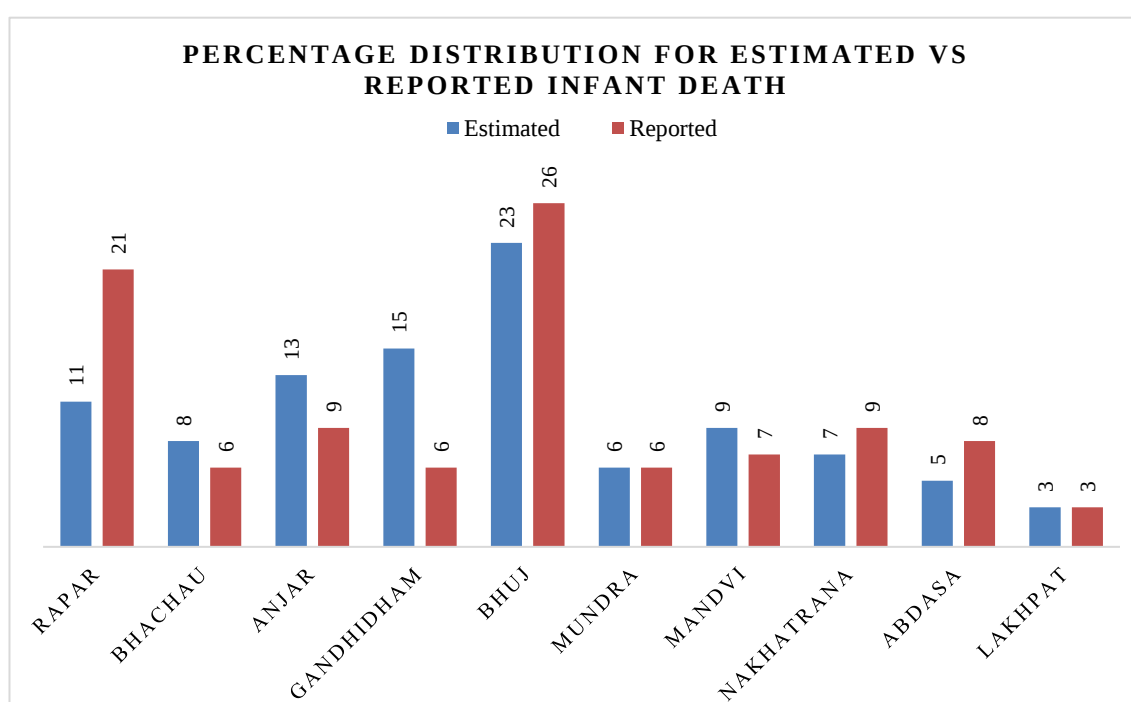


Figure-5

Analysis related to block wise Estimated and reported infant death shows that four blocks (Bhachau, Anjar, Gandhidham, and Mandvi) reported (6 percent, 9 percent, 6 percent, 7 percent respectively) less infants death on contrary to their estimation (8 percent, 13 percent, 15 percent, 9 percent respectively) whereas Rapar, Bhuj and Nakhatrana(21 percent, 26 percent, and 9 percent respectively) reported more number of infants death in comparison to the estimated death(11 percent, 23 percent, and 7 percent respectively).

Causes of Infant death

Figure no.-6 shows the various causes of infant death, it was observed that more than half (54 percent) infants died due to other causes like low birth weight, fever with unknown origin, convulsions, injuries etc. Low birth weight was a major concern to contribute in infant death. In addition to it, less than one fourth (18 percent) of infants expired due to birth asphyxia whereas only 9 percent of infants died because of pre-term birth complications. Further adding to it, data revealed, Pneumonia, congenital deformity, sepsis, and diarrhoea contribute only 9 percent, 4 percent, 3 percent, and 2 percent respectively to infant death.

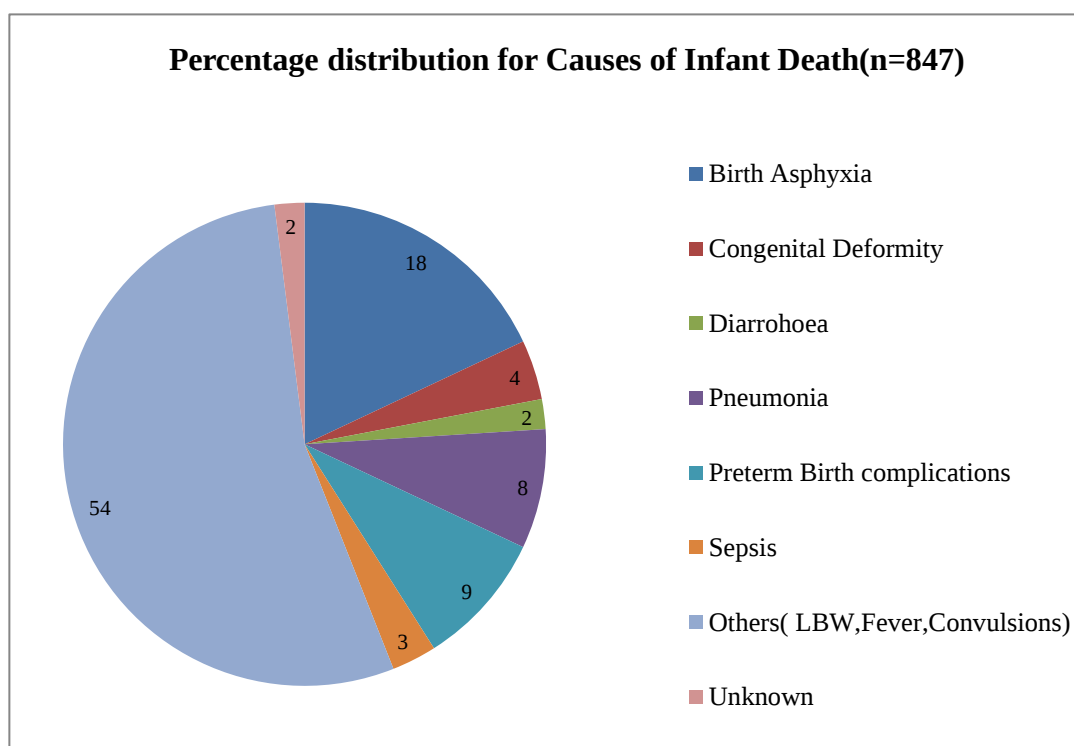


Figure-6

Distribution of Birth-weight of infants

Analysis was carried out to know about Birth-weight of infants at Kutch district, Gujarat. The results of the same are presented in Figure-7. Analysis showed that more than half (53 percent) infants had normal weight at birth whereas more than one-fourth (35 percent) infants weighed less than from 2500gms. Further adding to it, 8 percent infant had weight less than 1500gms and 4 percent of infant were born with extremely low birth weight.

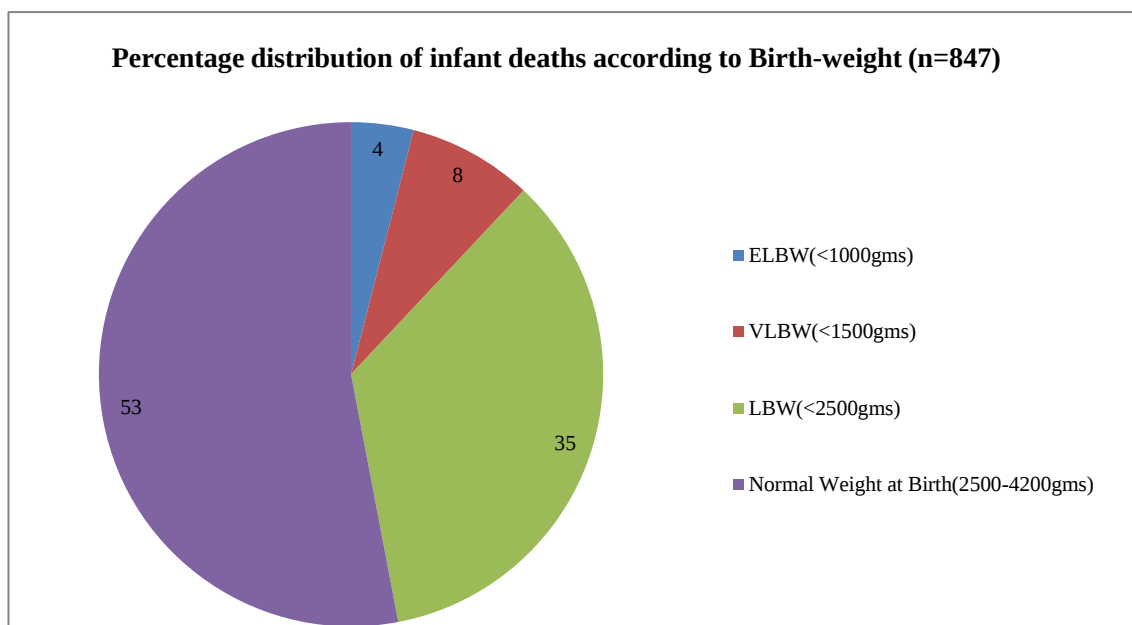


Figure-7

Distribution of causes of infant death according to place of infant death

Figure-8 shows the different cause of death at various place of birth. Analysis pertaining to place of infant death versus cause of infant death revealed that irrespective of place of death, infant died more of “other reasons” mostly LBW, Fever, convulsions etc as compared to any other factor in private facility only 27 percent infants lost their lives due to birth asphyxia.

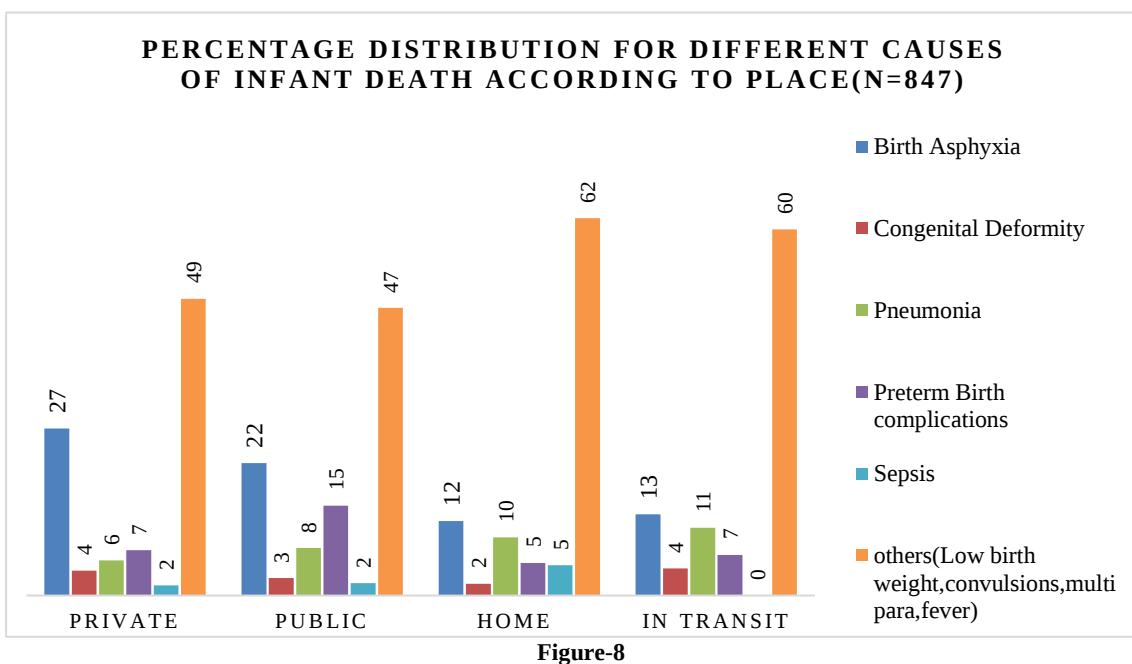
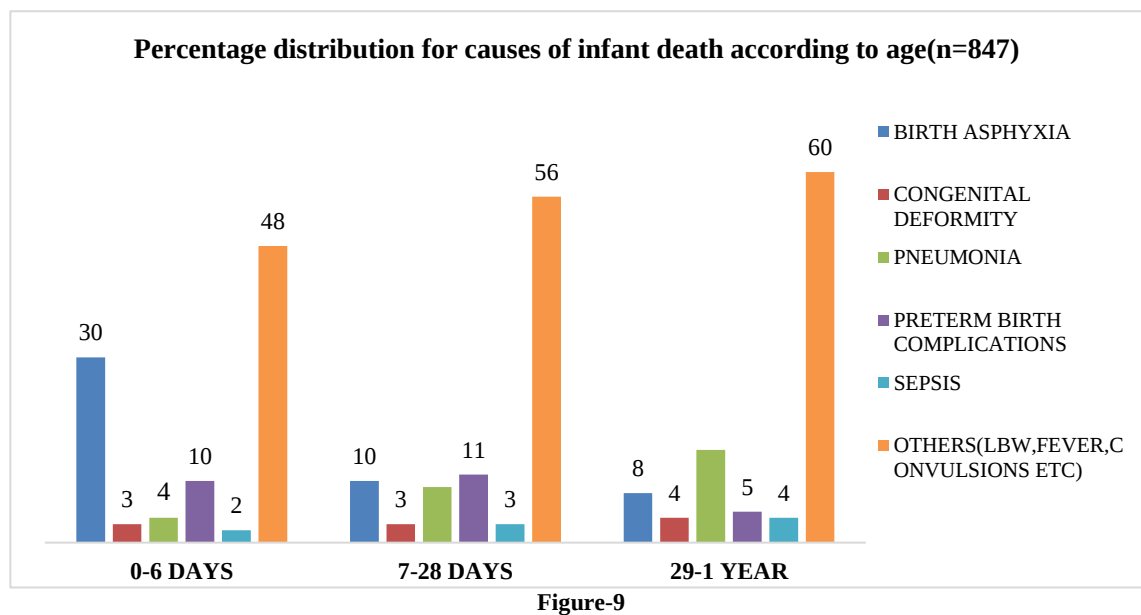


Figure-8

Adding to it, merely 7 percent of the infants who had preterm birth complications died at private facility whereas pneumonia contributed to only 6 percent of infant deaths. Furthermore, 4 percent of infants died due to congenital deformity and 2 percent of infant's death occurred due to sepsis. In addition to it, more than two-sixth (47 percent) infants died at public facility due to other reasons comprising mostly LBW, Fever, and convulsions etc whereas more than one-sixth (22 percent) of infants died due to birth asphyxia. Furthermore, data revealed that 8 percent infant death occurred due to pneumonia. At public facility 3 percent infants died of congenital deformity and only 2 percent of infants died due to sepsis. Adding to it, it was also observed highest percent of infant death (62 percent) due to reasons like LBW, fever, convulsion etc. were more at home. Less than one-sixth (12 percent) infants lost their lives due to birth asphyxia at home. In addition to it, less than one-sixth (10 percent) infants died with pneumonia and 5 percent of infants died due to sepsis and preterm birth complications. Furthermore, more than three-sixth (60 percent) died due to other reasons mostly by LBW, Fever, and convulsions etc on the way before reaching to the facility whereas less than one-sixth (13 percent) infants lost their lives due to birth asphyxia. Adding to it, less than one-sixth (11 percent) infants died due to pneumonia and 7 percent with preterm complication whereas congenital deformity contributed 4 percent of infant death.

Distribution of causes of infant death according to their age

Figure-9 shows the different cause of death at various ages of infants. Analysis pertaining to age wise cause of infant death showed that less than two-sixth (48 percent) infants died due to other reasons mostly by LBW, Fever, and convulsions etc at early neonatal period whereas 30 percent died due to birth asphyxia, another 10 percent early neonatal died due to preterm birth complications. 30 percent died due to birth asphyxia, another 10 percent early neonatal died due to preterm birth complications.



It is also observed that around 4 percent of early neonatal died with pneumonia whereas 2 percent of early neonatal died with sepsis. Furthermore, more than half (56 percent) infants died due to other reasons mostly by LBW, Fever, and convulsions etc at late neonatal period whereas around 11 percent infants died due to preterm birth complications at late neo-natal period. Data reveals that 10 percent infants died due to birth asphyxia and 9 percent died due to pneumonia at late neonatal period whereas 3 percent of infants died with congenital deformity. In addition to it, more than half (60 percent) infants died due to other reasons (LBW, Fever, and convulsions etc) at post neonatal period whereas 15 percent infants lost their lives due to pneumonia. Adding to it, 8 percent of infants died because of birth asphyxia and 5 percent of infants died with preterm birth complications. Only 4 percent of infant death reported with congenital deformity and sepsis at postnatal period.

10. DISCUSSION

“As is seen from the data and presented in form of Figures, it is observed that among all, the components of the infant mortality, early neonatal mortality is constantly contributing, to slow decrease in IMR. Analysis shows that overall performance is well, but we must, accelerate activities like HBNC to reduce the early neonatal deaths through strengthening, of ASHA support at community level.”

“Proper reporting of infant death is important to recognise the danger signs, if any, in the, infants. Therefore, it is of great importance that all the staff is well trained and, experienced in reporting infant death accurately. This would help in timely detection of, danger signs and thus timely initiation of corrective measures to be taken.,”

“A functional radiant warmer is necessary, without fail, to ensure the management of any, new-born who has either respiratory distress/ birth asphyxia or is of low birth weight. “Such new-borns need essential new-born care which cannot be provided at the labour, table or in the mother’s lap. The radiant warmer is necessary to prevent hypothermia in, the new-born and if the new-born requires resuscitation. A functional AMBU bag with, masks of sizes 0 and 1 should always be available at the radiant warmer. Also, it is imperative that the staffs posted in the labour room are trained to use it effectively on the new-born.”

“The reasons of low performance:”

- Lack of convergence with WCD
- Lack of Skilled Human Resources
- Less focus on CMTCs Centres
- Weak Referral System for infants
- Weak HBNC services
- Lack of awareness in community about child curative health services
- More unreported cases
- Poor Monitoring and follow-up by front-line workers

CONCLUSION

“It is evident from the study that loads of neonatal death, can be prevent only when all the procedure and protocols are followed according to the services like, HBNC, NBCC etc.along with a positive supportive supervision and good communication at all levels, (block-district-state) to converse and fill the gaps, are the key to deliver satisfactory, services to pregnant women. Only planning and initiating programs once is not the way, to meet the goals or objectives of any programme. For this, regular monitoring and, supervision is required, starting right from the ground level up to the highest, administrative level. Only then will the gaps be identified in time, and corrective measures, planned, and appropriate action taken.”

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