



## AN EPIDEMIOLOGICAL STUDY OF INFANT MORTALITY IN COASTAL VILLAGES OF GANJAM DISTRICT, ODISSA

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**Abstract:** The main objective of the study is to

1. To study the extent of infant mortality in the study population.
2. To assess the influence of various factors related to the mortality among infants.
3. Access the knowledge, attitude and practices of mothers on availability and utilization of maternal and child health care services in the study area,
4. Recommend remedial measures for reduction of infant mortality, in the coastal villages.

**Keywords:** Epidemiological Study, Infant Mortality, Coastal Villages

### INTRODUCTION

The first year is crucial in laying the foundation of good health and improving quality of life. Of the millions of children born every year, few are likely to see their first birthday. The infant mortality rate (IMR), defined as the number of deaths in children under 1 year of age per 1000 live births in the same year, has in the past been regarded as a highly sensitive (proxy) measure of population health. This reflects the apparent association between the causes of infant mortality and other factors that are likely to influence the health status of whole populations such as their economic development, general living conditions, social well-being, rates of illness, and the quality of the environment.

Way back in sixties Bourgeois-Pichat (1964) identified two types of factors viz. 'endogenous' and 'exogenous' that affect infant mortality. Exogenous factors of infant mortality are dependent on environment in which an infant is exposed and include deaths to infants due to infectious, parasitic and respiratory diseases. Such causes normally occur in the post-neonatal period (1 to 11 months of age of infant) and they are easier to control. On the other hand, endogenous causes of mortality are more biological in nature and include deaths due to congenital malformations and birth process. They occur in the neonatal period (less than 1 month of age of infant) and are rather difficult to control. Mosley and Chen (1984) provided an analytical framework for child survival in developing countries. They grouped the proximate determinants into five categories viz. maternal factors (age, parity and birth interval); environmental contamination (air, food/water etc.); nutrient deficiency; injury (accidental, intentional); and

personal illness control (preventive measures and treatment). Gandotra and Das (1988) latter categorized the underlying factors behind the immediate causes of infant deaths into five broad groups: demographic factors; socio-economic factors; environmental, sanitation and hygienic factors; nutrient availability factors; and medical care factors. Recently, Pandey *et al.*, (1998) while analyzing the NFHS-1 data considered child's year of birth, child's sex, mother's age at child birth, residence, mother's literacy, religion – caste/tribe membership, mother's exposure to mass media, availability of toilet facility, type of cooking fuel and ownership of goods scores as the covariates of infant mortality. The present study tries to see the impact of some of these covariates on infant mortality in coastal villages of Ganjam District of Odissa state.

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### MATERIALS AND METHODS

#### Study Area:

It was undertaken in 3 sub centers, situated in the coastal region, under Kelluapalli P.H.C. The PHC of Kelluapalli caters the coastal villages, extending from Gopalpur on sea to Tullu village, in a radial distance of

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5-7kms from sea. These villages are mainly inhabited by Odiya and Telugu speaking people. All the houses are narrow, elongated in set up and with adjacent wall without any set back area. Most of the women are fisher women. People follow traditional cultural practices. Very few go for institutional deliveries.

#### Sample Size:

The IMR of odissa according to SRS 1999 is 97/1000 live birth. The sample size to be surveyed was calculated as follows, keeping 5% allowable error.

$$P=4PQ/L^2;$$

p=sample to be surveyed=positive character=1-p.L  
=Allowable error.

$$4 \times 97 \times 903 / 5 \times 5 = 14,014.$$

The average population of a sub center is taken to be 5000, so 3 sub centers were randomly chosen from coastal villages, Kelluapalli PHC.

#### Study Duration:

One year, follow up study. All the live births and infant deaths in the study areas were noted by regular visit of investigator, along with the female health worker to the households. Questionnaire was used to collect the Data.

Data so collected were analyzed in the Department of community medicine, M.K.C.G Medical College, Brahmapur.

## RESULTS

**Table.1:** Population of study area according to household size.

| Sub Centers     | <4           | 4-7           | >7            | Total       |
|-----------------|--------------|---------------|---------------|-------------|
| Korapalli       | 253          | 785           | 445           | 1483        |
| Dura            | 202          | 1277          | 591           | 2075        |
| Gopalpur On Sea | 203          | 555           | 571           | 1329        |
| Total           | 658 (13.55%) | 2618 (53.73%) | 1607 (32.73%) | 4887 (100%) |

It shows the distribution of study population according to household size. There are 1483, 2075 and 1329 household in Korapalli, Dura and Gopalpur on sea.

**Table.2:** Age and area wise distribution of infant death.

| Sub Centers     | Total Live Births | Total Neonatal Deaths | Total Post Neonatal Deaths | Neonatal Mortality Rate | Post Neonatal Mortality Rate | Infant Mortality Rate |
|-----------------|-------------------|-----------------------|----------------------------|-------------------------|------------------------------|-----------------------|
| Korapalli       | 156               | 6                     | 4                          | 38                      | 25                           | 64                    |
| Dura            | 97                | 7                     | 2                          | 72                      | 20                           | 72                    |
| Gopalpur On Sea | 273               | 11                    | 7                          | 40                      | 25                           | 66                    |
| Total           | 526               | 24                    | 13                         | 46                      | 25                           | 70                    |

Out of the 37 deaths, 24 occurred during the neonatal period, whereas 13 deaths were recorded during post neonatal period. The Infant Mortality rate of the study area during study period was 70 per 1000 live births. The neonatal mortality rate was 46 per 1000

live births and post neonatal deaths rate, 25 per 1000 live births.

**Table.3:** Time and sex distribution of infant deaths

| Time Of Infant Death | MALE       | FEMALE     | Total Infant Death |
|----------------------|------------|------------|--------------------|
| Neonatal period      | 14(58.30%) | 10(41.66%) | 24(64.84%)         |
| Post Neonatal period | 8(61.50%)  | 5(38.50%)  | 13(35.14%)         |
| Total                | 22(59.40%) | 15(40.50%) | 37(100%)           |

24 (64.84%), of deaths were recorded in the neonatal period and 13 (35.14%) were seen in the post neonatal period. 14 (58.30%) of total neonatal deaths were in males and 10 (41.66%) neonatal deaths were amongst females, during the study period. Post neonatal death was 8 (61.50%) in males, 5 (38.50%) in females.

**Table.4:** Antenatal care and infant death

| Antenatal care | Total live births | Neonatal deaths | Post neonatal death | Total infant deaths |
|----------------|-------------------|-----------------|---------------------|---------------------|
| Regular        | 213               | 2 (66.6%)       | 1 (33.4%)           | 3 (100%) (8.1%)     |
| Irregular      | 215               | 7 (63.6%)       | 4 (36.4%)           | 11 (100%) (29.7%)   |
| No ANC         | 98                | 15 (65.2%)      | 8 (36.8%)           | 23 (100%) (62.16%)  |
| Total          | 526               | 24              | 13                  | 37 (100%)           |

Mortality was high among the infants, whose mothers got no antenatal care (62.16%). Percentages of infant deaths were less, when mother received regular antenatal care (8.1%).

The difference between acceptance of antenatal care and infant death, was found to be highly significant, ( $\chi^2 = 52.1$ ,  $df=3$ ;  $p < 0.001$ ).

**Table.5:** Infant death and place of delivery

| Delivery place                                | No of live births | No of infants deaths |
|---|-------------------|----------------------|
| Delivery without presence of trained personal | 211 (40.1%)       | 18 (48.6%)           |
| Delivery in the presence of trained personal  | 236 (39.9%)       | 10 (27.0%)           |
| Institutional delivery                        | 79 (20%)          | 9 (24.3%)            |
| Total   | 526 (100%)        | 37 (100%)            |

The place of delivery has a great impact on infant mortality. 48.6% of infant death was noted when delivery was conducted without the presence of trained personal.

The association of place of delivery and infant death was found to be statistically significant. ( $\chi^2 = 8.66$ ;  $df = 3$ ,  $p < 0.05$ ).

## CONCLUSION

The infant mortality rate in the coastal villages during the study period was 70/1000 live births. During the one year study period, 526 live births took place and 37 infant deaths were recorded. 64.84% Infant death in neonatal period and 35.14% infant death was

noted in post neonatal period. Mortality was high among the infants, whose mothers got no antenatal care (62.16%). Percentage of infant deaths were less, when mother received regular antenatal care (8.1%). The difference between acceptance of antenatal care and infant death, was found to be highly significant, ( $\chi^2 = 52.1$ ,  $df=3$ ;  $p < 0.001$ ). Report of Registrar General of India Sample Registration System (RGI-SRS), The latest IMR for the country as per SRS 2011 is 44 per 1000 live births. As per the Report published by UNICEF, India (2012) titled "Committing to Child Survival; A Promise Renewed" India ranks 45 out of 195 countries in the world in descending order of IMR.

Under the National Rural Health Mission, the key steps being taken by the Government of India to reduce IMR:

- Promotion of institutional deliveries through Janani Suraksha Yojana (JSY).
- Capacity building of health care providers in basic and comprehensive obstetric care, Integrated Management of Neo-natal and Childhood Illness (IMNCI) and Navjaat Shishu Suraksh Karyakaram

(NSSK) etc. Awareness about the national health programmes can go a long way in reducing the Infant deaths in under privileged population and numerable precious life can be saved.

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