

# Infant Mortality in Karnataka – An Overview

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## **Abstract**

*Infant Mortality Rate is one of the indicators of development of a nation. The rate of child death in a country reflects the health standards of people. Most of the developing countries of East Africa and Asia have the lowest HDI which reflect the high infant mortality rate. Similarly, India being a developing country has a higher IMR. However, IMR in India has declined from more than 50 per 1000 before 2005 to less than 50 in the recent years. However the IMR varies from state to state particularly southern states like Kerala, Tamil Nadu and Karnataka which have lower IMR which indicate a better standard of living. Karnataka state has 35 per 1000 births which is better than many states in the country. However, there are regional disparities in IMR particularly in the districts like Gulbarga, Raichur, Koppal, Bagalkot and Bidar which have higher IMR than the southern districts of Karnataka. This regional disparity is attributed to social, economic and religious issues. Despite the regional disparities, Karnataka has the lowest IMR next only to Kerala state illustrating comparatively better health profile of the population. In the last five years there has been a sharp decline in the Infant Mortality Rate.*

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## **INTRODUCTION**

Infant Mortality Rate is one of the indicators of development. Most of the developing countries have high infant mortality rate. This high Infant Mortality Rate is due to several reasons like poverty, illiteracy, unemployment inadequate pre and postnatal care, etc. Mortality rates are better indicators

of health and healthcare in the communities. Infant mortality is considered as a very important indicator of health which reflects the standard of living of people in the community and socio-economic development of the country in general and effectiveness of maternal and child health services offered in particular. Infant Mortality Rate (IMR) is defined as the number of infants dying within one year in a sample of 1000 live births. In India, the IMR is declining rapidly over the years but not upto the expected targeted level. Inter state variations are predominant as clearly reflected in the Human Development Index. As per SRS study 2010, Infant Mortality Rate for the country as a whole stands at 47; while Goa stands the lowest with 10 and Madhya Pradesh stands highest at 62 meaning Goa has a better health profile of the population than Madhya Pradesh. As per annual report on the registration of births and deaths of 2010, the average IMR in Karnataka is 35 for every 1000 live births. In Karnataka the highest IMR is found in Raichur district with 67. (Table 1)

#### **IMR IN KARNATAKA**

Table 1 – Infant Mortality Indicators at District Level in Karnataka 2011

<b>Sl.No.</b>	<b>Districts</b>	<b>IMR</b>
1.	Udupi	11
2.	Bangalore	15
3.	Dakshina Kannada	19
4.	Hassan	20
5.	Chikmagalur	22
6.	Shimoga	24
7.	Uttara Kannada	25
8.	Mandya	26
9.	Bangalore Rural	27
10.	Ramanagaram	27
11.	Kodagu	29
12.	Bidar	31
13.	Bijapur	34
14.	Tumkur	34

15.	Chamarajanagar	34
16.	Kolar	34
17.	Chikkaballapura	34
18.	Dharwad	35
19.	Haveri	35
20.	Belgaum	37
21.	Davanagere	38
22.	Mysore	39
23.	Chitradurga	42
24.	Bagalkot	43
25.	Gulbarga	49
26.	Yadagir	49
27.	Gadag	50
28.	Bellary	55
29.	Koppal	58
30.	Raichur	67
<b>Average</b>	<b>Karnataka</b>	<b>35</b>

The decline in IMR has been steady from 2005 onwards. The biggest decline of 4 points occurred in 2008-2009. This is attributed largely to a considerable increase in the rate of institutional delivery in Karnataka. Neonatal Mortality Rate (NNMR) where infants dying in the first 28 days of child's birth and which constitute 65% of IMR is also on the decline. Now Karnataka has taken up the task of bringing down NNMR in a phased manner to effectively decrease IMR.

### **REGIONAL DISPARITY**

The status of indicators as enumerated above is not uniform in all the regions of Karnataka. The indicators are very good comparable with those of Kerala state, in the coastal districts of Udupi, Dakshina Kannada, Karwar and Coorg. IMR in some of the districts like Bidar, Gulbarga, Yadgir, Raichur, Koppal, Bijapur and Bagalkot is quite high and comparable with those prevailing in the states of Uttar Pradesh, Bihar, Orissa and Madhya Pradesh. This regional disparity is obvious because in those districts where IMR is

very high, HDI index is very low compared with coastal districts of Karnataka.

The neonatal mortality is common in rural areas due to existing socio-economic conditions of maternal mothers. The causes and factors responsible for Infant Mortality are multi-factorial.

**1. Causes for Neonatal Mortality (0-4 weeks)**

- a. Low birth weight and pre-maturity
- b. Birth injury and difficult labour
- c. Sepsis
- d. Congenital anomalies
- e. Haemolytic diseases of newborn
- f. Conditions of placenta and cord
- g. Diarrhoeal diseases
- h. Acute respiratory infections

**2. Causes for Post Neonatal Mortality (1-12 months)**

- a. Diarrhoeal diseases
- b. Acute respiratory infections
- c. Other communicable diseases
- d. Malnutrition
- e. Congenital anomalies
- f. Accidents

Infant mortality is due to interaction of a combination of several factors. These may be due to biological, economic and social factors. This plays a major role in eliminating the IMR and health of maternal mothers particularly in rural area.

**1. Biological factors**

**a. Birth weight**

This is a major determinant of infant and prenatal mortality and morbidity. Babies with birth weight of less than 2.5 kgs and more than 4 kgs run a special risk of mortality. Low birth weight is often due to poor maternal nutrition which is again associated with poverty.

**b. Age of the mother**

Chances of infant death are more when mother is below 19 years and above 30 years .

c. **Birth order**

First births and more than third births run a higher risk of mortality.

d. **Birth spacing**

Repeated pregnancies pave way to infant mortality. They cause malnutrition, anaemia in the mother which again pre-dispose to low birth weight and infant death. Wider spacing of births curtails infant mortality.

e. **Multiple births**

Infants born in multiple births face a greater risk of death than those born in single births as they are born often with lower birth weights.

f. **Family size**

Infant mortality increases with family size. Children in bigger families are deprived of optimum maternal care and also run into infections, mal-nutrition, etc.

g. **High fertility**

High fertility and high infant mortality often go together.

2. **Economic factors**

The availability and quality of healthcare and the nature of child's environment are closely linked to socio-economic status. Infant mortalities are highest in slums and lowest in rich families.

3. **Cultural and Social factors**

a. **Breast feeding**

Infant health is related to breast feeding because of the nutritional content and anti-bodies contained in mother's milk. Bottle fed infants run more risk of infections than exclusively breast fed infants due to low level of immunity.

b. **Religion and caste**

Age old habits, customs, traditions related to health, eating, clothing, child care, attributable to religion and caste play important role in infant deaths.

c. **Early marriages**

Teenage mothers have highest risk of infant deaths.

d. **Sex of the child**

Female infant deaths are much more than male infant deaths due to negligence of female children in Indian custom.

e. **Quality of mothering**

Survival of the child depends on the quality of maternal care the child receives. A woman who has borne children earlier will be a better mother than a woman who delivered for the first time.

f. **Maternal education**

Illiteracy is the greatest barrier for health improvement. Well educated mothers have lesser infant deaths than uneducated mothers.

g. **Quality of health care**

Healthcare received by the mother during her ante-natal, natal and post-natal period determines the health of the infant. Home deliveries carry a higher risk of infant deaths.

h. **Broken families**

Infant mortality tends to be high where the mother or father is dead or separated.

i. **Illegitimacy**

Children born out of wedlock are unwanted by mother and society. Hence they do not receive sufficient care and are at risk.

j. **Beliefs and customs**

Age old customs and beliefs like depriving the baby of colostrums, frequent purgation, branding of the skin, application of cow-dung to umbilical cord, faulty feeding practices and early weaning result in infant deaths.

k. **Unsafe deliveries**

Deliveries conducted by traditional *dai* who is untrained and often uneducated may result in infant deaths due to sepsis.

l. **Poor environmental sanitation**

Infants are highly susceptible to unsanitary conditions. Lack of safe water supply, poor housing conditions, bad drainage, over-crowding, and mosquito menace may lead to infant mortality.

## CAUSES FOR INFANT MORTALITY IN KARNATAKA

As per 2010 data the IMR in Karnataka is 35 for every 1000 births.

During 1951 the IMR in Karnataka was 160 per 1000 births and from 1981 onwards there has been a gradual decline in the IMR particularly after 2005 it has come down to less than 50 which is a good indication of improvement in child and maternal health. Government has initiated new programmes to arrest IMR in Karnataka. Leading reasons which are responsible for majority of infant deaths and are being addressed by National Rural Health Mission are as following;

**1. Addressing neo-natal mortality**

Neonatal deaths (occurring within first 28 days after birth) which constitute 65% of all infant deaths were not addressed in the state amply till 2009-10.

**2. Lack of quality in institutional delivery**

Institutional delivery aims at bringing down IMR (and MMR), because the presumption is that, in an institution if deliveries are conducted in an aseptic manner, by qualified, trained and experienced functionaries and complications are foreseen and addressed at the earliest, Infant death can be avoided.

But unfortunately these are not happening in the real sense. The definition of institutional delivery has narrowed down to conducting delivery within the four walls of a health facility which could be a government facility as sub centre, PHC, CHC, TLH or a District hospital, state level hospital or a private clinic, nursing home or hospital.

Consequently 24% infant deaths are occurring due to infections acquired in the labour theatres of health facilities by non-observance of aseptic techniques and 23% are occurring due to asphyxia. It is due to wrong techniques and lack of sufficient and quality training given to health functionaries.

**3. Non-staying of mothers after delivery in health facilities**

Though the state supports and subsidizes 94% institutional delivery, the gains of the institutional delivery are being nullified by the early discharge of mothers and newborns from the health facilities than the stipulated period.

**4. Lack of quality care of newborn in home settings in the neonatal period**

Good neonatal care is very essential to salvage 65% of infants after

their births. This will be available to them only as long as the babies are present in health facilities (for the first 48-72 hours). The next 25 days babies have to be cared for and fed in a home setting. Lack of sufficient care may lead to death of a neonate for simple reason as hypothermia, hypoglycaemia; milk aspiration, etc.

#### **5. Nutritional levels in children are not improved**

As brought out by NFHS, there is decline in the nutritional parameters over the years. As per NFHS-3, 41% of children (under 3 years) are underweight, 38% are stunted, and 17.9% are wasted. Severe Acute Malnutrition (SAM) contributes to 53% of the deaths in 0-5 years children. This is especially so when malnutrition is coupled with infections.

#### **6. Inadequate immunisation**

Infant deaths are occurring as a result of attacks of measles leading to post-measles complications such as bronchopneumonia, encephalitis etc., especially in northern districts where measles coverage of children is low compared to southern districts.

#### **7. Diarrhoea**

This continues to contribute to high infant deaths. This is compounded by the fact that zinc is not administered to children during treatment of diarrhoea along with ORS.

#### **8. ARI (Acute Respiratory Infection)**

ARI, especially pneumonia, causes sizeable number of deaths. Early diagnosis and proper and adequate treatment in a home setting or a facility setting needs to be instituted.

#### **9. Lack of quality ANC services**

This is leading to non-diagnosis of complications such as pre eclampsia, placenta – previa, etc., leading to infant deaths. Lack of iron and folic acid tablets (coupled with low acceptance by community) and insufficient treatment of anemia contribute to infant mortality.

#### **10. Non-recognition of congenital malformations of the foetus**

This during ANC period and lack of proper management is leading to sizeable number of infant deaths.



## **MEASURES TAKEN BY THE STATE TO PREVENT INFANT MORTALITY**

The state has already implemented enough measures to address the problem of neonatal deaths beginning in 2009-10.

### **1. SNCU (Sick Newborn Care Unit)**

Health department has been set up in all the district hospitals and major maternity hospitals under the control of Health and Family Welfare department. Three MBBS doctors and 12 staff nurses hired on contract under NRHM have been trained in neonatology for 3 months period and placed in SNCUs and adequate equipment have been provided. Presently there are 33 SNCUs operating.

### **2. NBSU (Newborn Stabilization Units)**

This was started in all the FRUs of the state. Two contractual staff nurses have been provided in these facilities. Doctors and staff nurses are being trained in FBNCC. There are 200 NBSUs functioning presently.

### **3. NBCC (New Baby Care Corner)**

Every 24x7 PHC conducting deliveries is equipped with new baby care corners to render basic primary level neonatal care in a PHC setting.

### **4. Upgrading NICUs in government medical colleges**

This has been taken up to help impart treatment to sick neonates belonging to poor families. Indira Gandhi Institute of Child Health which is the apex institution for childcare under the government has been strengthened to take care of Tertiary care facilities.

### **5. HBNCC (Home Based Neonatal Care)**

Training in neonatal care is being imparted to ASHAs and ANMs to help them care for the neonates in home setting. Both Gadchiroli model and Government of India model of neonatal care are adopted.

### **6. FBNCC**

Facility based neonatal care training is being imparted to doctors and staff nurses of the state.

**7. NSSK (Navajata Shisu Suraksha Karyakram)**

Under this pediatricians of the department are being trained to treat and take care of sick neonates.

**8. IMNCI (Integrated Management of Neonatal and Child Illness)**

IMNCI has been scaled up in all districts of the state. ANMs, AWWs and medical officers have been trained under this.

**9. Focusing on Universal immunisations**

The state's performance in universal immunisation needs to be improved further. Coverage Evaluation Survey-2009 puts the percentage of FII (Fully Immunised Infant) at 78.4% which is not encouraging. Considering the year 2011 which was officially proclaimed by the state as "Year of immunisation" several measures as doing precise micro-planning to bring migrants under routine immunisation, taking help of medical colleges to improve monitoring and supportive supervision for routine-immunisation, etc. have been taken up. Also second dose of measles has been introduced in RI from 1-1-2011 to improve nutrition.

**10. To improve Nutrition**

- a. Nutritional Rehabilitation Centres have been started in all district hospitals.
- b. MNRCS (Modified Nutritional Rehabilitation Centres) have been started from 2011-12 in all the backward taluks of the state.

**11. Infant death review**

This was started in the state in 2010. This aims at finding out preventable causes for infant deaths so that preventive measures can be taken to arrest such infant deaths in future.

**12. Infant and Young Child Feeding (IYCF)**

Under this promotion of early breast feeding, exclusive breast feeding for six months and complimentary feeding to the infants are being focused.

## **MEASURES TO REDUCE IMR IN KARNATAKA**

### **1. Strengthening SNCUs, NBSUs, NBCCs, NRCs, MNRCs and IYCF programme**

Presently all the above are not operating to their optimum levels. Infrastructure must be strengthened, through human resources supplementation and adequate training. Monthly reports from all the above centres must be obtained and reviewed periodically.

### **2. Strengthening all infant health related trainings**

Training has been a one-time phenomenon in the state. Hence periodic refresher training for all concerned should be taken up. There is a tendency among the officers and staff to take training as a non serious activity. To prevent this, pre-tests and post-tests are compulsorily to be held and the performance of the trainees in the training should become a part and parcel of his annual performance report and considered for his promotions, increment, etc. Also all training should be evaluated and feedback from evaluation incorporated in the training to improve the quality of training.

### **3. Birth spacing**

Spacing of births and temporary method of Family Planning is not happening adequately in the state. Family planning is a major part limited to permanent methods of sterilisations.

### **4. Strengthening universal immunisation and increasing coverage for measles**

Universal immunization proposed to attain at least 95% of FII (Fully Immunized Infant) coverage.

### **5. Emphasis on administration of Zinc along with ORS in cases of Diarrhoea needs to be focused**

### **6. IEC activities to prevent consanguineous marriages**

Such marriages lead to congenital deformities in the infants. Also adequate ultra sound scanning facilities should be provided so that congenital malformations can be diagnosed early and such foetus can be aborted through MTP (Medical Termination of Pregnancy).

### **7. Health Insurance (assurance) for infants**

This is a new area which can be explored further. Presently RSBY imparts neonatal care to infants. Ways and means of including neonatal

surgeries under Vajpayee *Arogyashri* may be considered.

## **CONCLUSION**

Karnataka is one of the developed states in India as per the HDI ranking is concerned. But in terms of IMR Karnataka ranks 12<sup>th</sup> in the country which requires accelerated improvement in pre and post-natal services. The NRHM has been effectively implemented in Karnataka, as a result of it the death of infants have been reduced considerably. Apart from this Rural Health programmes like Integrated Child Development Programme, *Thayi Bhagya*, *Madilu*, *Prasoothi Arai*ke, etc., also are contributing for better child health in Karnataka. If the existing health schemes are further strengthened the rate of Infant mortality will come down in future.

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