

Key Determinants of Infant Health: Empirical Findings from Rural Dakshina Kannada District in Karnataka

*** Dr. Ashalatha**

Abstract

The health status of infants in any country is the reflection of the socio-economic development of that country. Child malnutrition is the central health problem in India and the largest human development gap that the nation faces (Shivakumar, 2006). Deaths in infancy are indicative of a poor state of maternal and child health services (Bose, 2006). The results of the recent National Health Family Survey (NFHS) show that not only the nutrition and health status of children in the country is poor, but also they are showing very slow signs of improvement. For instance, 46 percent of children under the age of three are under-weight which is an improvement of only one per cent age point compared to National Family Health Survey-2 which was carried out 8 years back. The corresponding level of child malnutrition is much lower in most other countries- 28 per cent in Sub-Sahara Africa, and 8 per cent in China (Shivakumar, 2006). In the fitness of things, 'human development' should always precede 'human resource development' in India.

The state of health of infants in the rural areas of Dakshina Kannada was surveyed and the principal determinants of infant health were assessed and the linkage between family planning and infant health was established as a possible means to provide solutions to the infant health on the basis of primary survey conducted in the region. The Dakshina Kannada district has 71 Primary Health Centres (PHC) providing infant health and family planning services at the at covering 356 villages. Using Disproportionate stratified random sampling technique 852 respondents were interviewed with a structured questionnaire to elicit necessary information. Care was taken to select the respondent having a child less than 3 years of age.

Keywords: *Infant, Child health, Human Development*

* Associate Professor of Commerce, Shree Gokarnaatheshwara College, Mangalroo - 575003 Email : ashu6458@gmail.com

Introduction

The health status of infants in any country is the reflection of the socio-economic development of that country. It is determined by various factors such as the level of income, standard of living, housing, sanitation, education, health consciousness, personal hygiene, availability, accessibility and use of public health distribution system. The poor health status is the product of inadequate nutrition during the early period of a child's growth. A child during the earliest period of its life is referred as 'infant' in the Oxford Dictionary. From the time of delivery up to the third year of age is considered 'infant' stage. During this stage the child begins to walk, talk and begins to consume solid food. Physical and sensual development also begins (Muthuswamy, 2000). Proper nutritional care and development during this period will lead to a healthy and productive life. Therefore, growth monitoring, health check up, identification of risk cases, treatment of minor diseases, de-worming, prophylactic measures and referral of serious cases, etc., should become the major concern of everybody. Deaths in infancy are indicative of a poor state of maternal and child health services (Bose, 2006). In the fitness of things, 'human development' should always precede 'human resource development' in India.

However, child malnutrition is the central health problem in India and the largest human development gap that the nation faces (Shivakumar, 2006). India is performing poorly by most indices of well-being of children. The results of the recent National Health Family Survey (NFHS) show that not only is the nutrition and health status of children in the country is poor, but also they are showing very slow signs of improvement. For instance, 46 per cent of children under the age of three are under-weight which is an improvement of only one per cent age point compared to National Family Health Survey-2 which was carried out 8 years back. The corresponding level of child malnutrition is much lower in most other countries- 28 per cent in Sub-Sahara Africa, and 8 per cent in China (Shivakumar, 2006). Ranked on an index that adjusts child malnutrition level to GDP, India had the second highest level of malnutrition- worse than

all of Africa, second only to Bangladesh, and closely followed by Nepal and Pakistan. A high proportion of children is nutritionally challenged even prior to birth, with as many as 25 percent of all babies born with low birth weight. This high proportion of under-nourished children cannot be a matter of pride in a food-surplus economy, where government is regularly mooted public health programmes to combat the situation. Despite its vibrant programmes like Integrated Child Development Services (ICDS), Reproductive and Child Health (RCH), National Rural Health Mission (NRHM), the malnutrition among infants continues unabated.

In the fitness of things, the state of health of infants in the rural areas of Dakshina Kannada was surveyed and the principal determinants of infant health were assessed and the impact of the interventions as a possible means to provide solutions to the issue was determined on the basis of primary survey conducted. The Dakshina Kannada district has 71 Primary Health Centres (PHC) providing infant health and family planning services at the at covering 356 villages. Using Disproportionate stratified random sampling technique 852 respondents were interviewed with a structured questionnaire to elicit necessary information. Care was taken to select the child respondent having less than 3 years of age.

Objectives of the study:

- To assess the health status of the infant.
- To assess and evaluate the linkage between family planning adoption and the health status of the infant.
- To find out the key determinants of infant health based on the study.

Maternal Care during Pregnancy

Maternal care includes care during pregnancy and begins from the early stages of pregnancy. Women can get antenatal care (ANC) either by visiting health centre or from health workers during their domiciliary visits. One of the most important components of ANC care is to offer information and advice to women about pregnancy-related complications and possible curative measures for the early detection and management of complications (Mondal, 1997). A

healthy child is a national asset. The poor health status of a child is the product of inadequate nutrition intake and improper health care of mothers during pregnancy. To explore the issues related to mother's care during pregnancy, the following enquiries were made in the study region.

Table No. 1: ANC Check-up Undertaken during Pregnancy

In only 2 percent cases, ANC check is not done by pregnant mothers (Table No. 1). Binomial test shows that ($p < 0.0001$) highly significant proportion (98 percent) of mothers sought regular health check-up during pregnancy in rural parts of the district. They were well informed about this.

Table No. 2: Intake of Nutritious Food during Pregnancy

Chi-square test shows that ($p < 0.0001$) majority of the respondents (96.7 percent) were aware of the need for nutritious food during pregnancy and its impact on child's health thereafter (Table No. 2).

Source: Field Survey Data

Table No. 3: Intake of Required Doses of Tetanus and Iron and Folic Tablets

Intake of Tetanus and Iron and Folic Tablets	No		Yes		Total	
	No. of respondents	Percentage	No. of respondents	Percentage	No. of respondents	Percentage
Tetanus	5	0.6	847	99.4	852	100.0
Iron and folic acid tablets	6	0.7	846	99.3	852	100.0

Source: Field Survey Data

In the study region, almost 100 percent respondents had taken the required doses of tetanus and iron and folic acid tablets. Proper care during pregnancy was universally known to expecting mother, as exhibited in Table No. 3.

Table No. 4: Place of Delivery

Place of delivery	N=852	
	No. of respondents	Percentage
Public health centre	423	49.6
Private nursing home	463	54.3
At home	64	7.5

Source: Field Survey Data

As shown in Table No. 4, majority of the (54 percent) deliveries took place in private nursing homes, while 50 percent deliveries were in public health institutions, and 7.5 percent delivered at home. Above all, institutional deliveries were given prominence by the rural folk in Dakshina Kannada district.

Table No. 5: Delivery Option of Child

Delivery option	No. of respondents	Percentage
By choice (planned)	804	94.2
By chance (unplanned)	48	5.8
Total	852	100

while 6 percent respondents stated that their child was by chance, unplanned and unintended (Table No. 5).

Table No. 6: Health Status of Newborn Child

Health Status of Child	No. of respondents	Percentage
Healthy	653	76.6
Unhealthy	199	23.4
Total	852	100

When enquired about the health status of a newborn child, 76.6 percent reported that they had delivered a healthy child, while a little over 23 percent revealed that the child delivered was unhealthy (Table No. 6). Binomial test shows that significantly higher proportion of respondents had delivered a healthy child. But, poor health status of 23 percent cannot be undermined.

Table No. 7(a): Health Status of Infants and Annual Income of Respondents

Source: Field Survey Data

Of the children who were born unhealthy, nearly three-fourth (74.4 percent) families had income less than Rs. 12,000 and of the children who were born healthy; nearly 82 percent families had income more than Rs. 30,000. Higher the income level of respondent, higher was the health status. Thus, it was found from the Chi-square test, that ($\chi^2 = 11.57$, $p=0.0009$, $d.f=3$) there was highly significant association between income of the respondent and health status of children [Table No.7(a)].

Table No. 7(b): Health Status of Infants and Annual Income of Family

and the second percentage totals 100 for the column

Source: Field Survey Data

The Table No. 7(b) and the Chi-square test show that ($C^2 = 8.72$, $p=0.033$, sig d.f= 3) there is significant association between health status of infants and annual income of family.

In Table No. 8(a), the state of health of the child and education status of father is presented and it showed that ($C^2=5.953$, $p=0.311$), there was no significant correlation between health status of infant and education status of father. As the level of education increased there was no corresponding raise in health status of children as revealed in the study.

Table No. 8(a): Health Status of Infants and Education of Father

row and the second percentage totals 100 for the column.

Source: Field Survey Data

Table No. 8(b): Health Status of Infants and Education of Mother

and the second percentage totals 100 for the column

Source: *Field Survey Data*

When analysed the state of health of the child and education status of mother through a Chi- square test, it showed that ($\chi^2 = 18.43$, $p=0.005$), there was highly significant association between health status of infant and education status of mother (Table No. 8(b)).

Table No. 9: Health Status of Infants and Religion

$\chi^2=1.9$

and the second percentage totals 100 for the column.

Source: Field Survey Data.

Thus, the Table No. 9 reveals that ($\chi^2=1.922$, d.f=3 p=.589), the association between state of health of infants and different religious groups is not statistically significant.

Table No. 10 provides that there is no significant association as far as infant health and number of children in the family is concerned. The Chi-square test conducted reveals this fact ($\chi^2= 1.240$, p=0.871, d.f=4, NS).

Table No. 10: Health Status of Infants and Number of Children

the column.

Source: *Field Survey Data.*

Among the adopters of family planning 81 percent of the children were healthy and 19 percent were unhealthy. While among non-adopters of family planning, 73 percent were healthy and 27 percent were unhealthy. Among the unhealthy children, 64.3 percent had not adopted family planning and 35.7 percent had adopted family planning (Table No. 11). Thus chi-square test shows that ($\chi^2=6.923$, $p=.009$ d.f=1, HS), the association between health status of infants and adoption of family planning is statistically significant. Thus, if family planning is adopted for limiting the size, it can contribute to child's health. Thus, family planning adoption and infant health is closely associated.

Table No. 11: Health Status of Infants and Adoption of Family Planning

$C^2=6$

100 for the row and the second percentage in the parentheses totals 100 for the column.

Source: Field Survey Data

Table No. 12: Mother's Age at First Delivery

It is to be observed that 57 percent of the deliveries took place at a very young age even before attaining 20 years of age in Dakshina Kannada (Table No. 12).

From the Table No. 13, it is observed that, ($C^2=15.514$, $p=.001$), the association between state of health of infants and mothers age at delivery was highly significant. Higher the age of mother during delivery, lower the health problem of child.

Table No. 13: Health Status of Infants and Mother's Age at Delivery



100 for the row and the second percentage in the parentheses totals 100 for the column.

Source: Field Survey Data.

Infant Health Care Procedures and Practice: Regarding infant healthcare procedures and practice almost universal awareness was seen among mothers as shown in the Table No. 14.

Table 14: Awareness of Infant Health Care Procedures and Practices

A large black rectangular box redacting the content of Table 14.

Note: n=number of respondents

Child Feeding Practices: The link between malnutrition and infant feeding has been well established (Chowdhry, 2006). Even the scientific evidence reveals that malnutrition directly or indirectly contributes to about 50 percent to 55 percent of all deaths among children under 5 years annually, and two-third of these deaths are often associated with inappropriate feeding practices occurring during first year of life.

Table No. 15: Feeding Practices up to Six Months

A large black rectangular box redacting the content of Table No. 15.

Breast milk constituted the major source of food upto six months (98.5 percent) as exhibited in Table No. 15. Respondents had sufficient knowledge about it.

Table No. 16: Supplementary Feed Offered during the First Six Months

A little over 65 percent respondent had not supplemented anything more than the breast milk during the first six months of their delivery. But 34.6 percent respondents had supplemented in addition to breast milk during these days (Table No. 16).

Nearly 30 percent respondents were going for regular health check-up of their children, 33 percent - only on need and similar proportion occasionally used to visit the doctors for health check-up. Around 3 percent did not go for health check-up. Significantly larger proportions of respondents were not undertaking regular health check-up of their children (Table No.17).

Table No. 17: Frequency of Child's Health Check-up

As shown in Table No. 18; vast majority of respondents (98.7 percent) had followed the immunisation schedule properly and have regarded it as a core function. Chi-square test shows that ($p < 0.0001$) highly significant portion of the respondents (98.7 percent) followed immunisation schedule in the rural DK District.

Table No. 18: Promptness in Following Immunisation Schedule
Table No. 19: Place of Child's Immunisation Undertaken

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With regard to the place of immunisation done, large majority (92.5percent) stated having done in public health institution (PHI) while only 7.5 percent had gone to private health institutions (Table No. 19). Thus, Binomial test proves that ($p < 0.0001$) people prefer public health institution to private health institutions for immunisation.

Infant health care programmes are mooted jointly by the Central government under Family Welfare Department, Integrated Child Development Services, NRHM, RCH and the State government through its Women and Child Welfare Department and Family Welfare Departments. The aided and unaided awareness for all these programmes are given in Table No. 20. Thus, awareness for all these programmes ranged from 62 to 99 percent .

Table No. 20: Awareness on Infant Health Care Programmes

	Recall				Unaware		Total	
	Aided		Unaided		n	Percent	n	Percent
	n	Percent	n	Percent				
Supplementary nutrition provided at AWC's	4	0.5	842	98.8	6	0.7	852	100.0
Mother's meeting held every month	7	0.8	810	95.1	35	4.1	852	100.0
<i>Janani suraksha yojane</i>	25	2.9	724	85.0	103	12.1	852	100.0
Free immunisation programme of Govt. hospitals	1	0.1	847	99.4	4	0.5	852	100.0
<i>Bhagyalaxmi Scheme</i> for girl child	39	4.6	714	83.8	99	11.6	852	100.0
Baby show held once a year	20	2.3	661	77.6	171	20.1	852	100.0
<i>Prasuti Araiike yojane</i>	43	5.0	486	57.0	323	37.9	852	100.0
<i>Madilu yojane</i>	60	7.0	518	60.8	274	32.2	852	100.0

Source: Field Survey Data

Note: n=Number of respondents

The Chi-square test shows that ($p < 0.0001$), significantly greater proportion of respondents seek the medical treatment for their infants from the PHCs as shown in Table No. 21. However, similar proportions of respondents had inclination for private hospitals and local doctors.

Table No. 21: Health Centre Preferred for Infant Health Care

Too due to multiple responses. Multiple Response Rate (MRR) = 1.07.

Source: Field Survey Data

Table No. 22: Follow-up Service after the Provision of Infant Health Care

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Large majority (98 percent) reported that follow-up service was provided by the Government health personnel after infant health care service was provided as shown in Table No. 22.

Table No. 23: Necessity of Public Health Institution

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Universally all have agreed that public health centres are inevitable in rural areas. As seen in Table No. 23, 99.9 percent of the respondents suggested that public health centres are absolutely necessary in the rural areas.

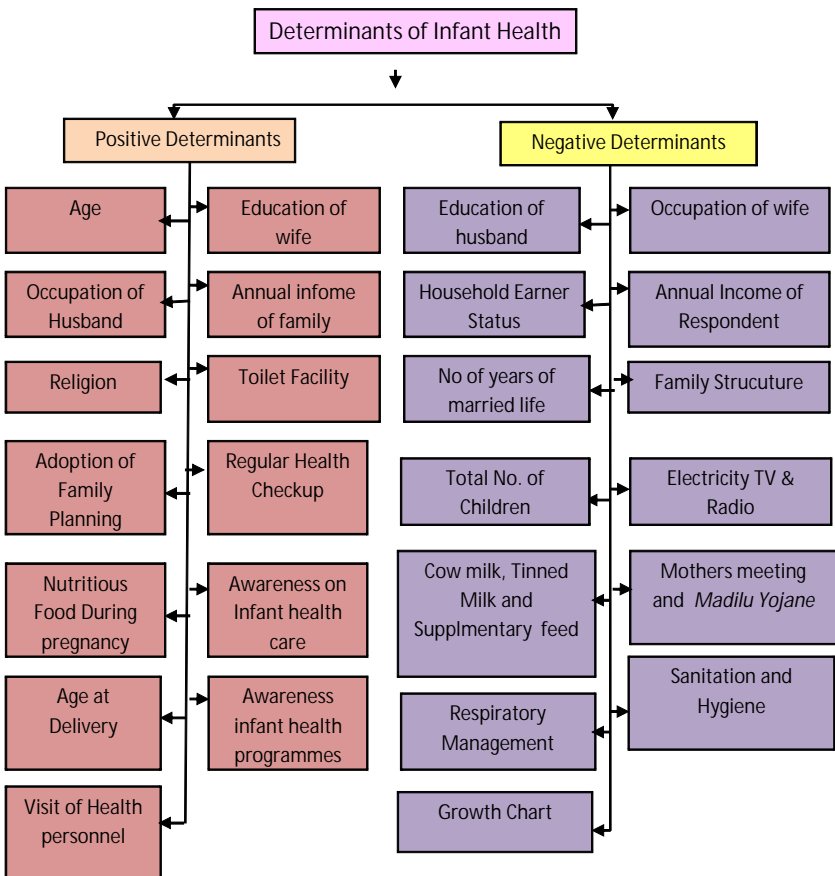
Determinants of Infant Health

Discriminate Analysis was performed to identify the influence of various factors on infant health. The parameters taken were age, education level of husband and wife, annual income, household earner status, religion, number of years of married life, family structure, facilities at home, number of children, healthcare during pregnancy, adoption of family planning, awareness on infant health care, health care programmes, supplementary feed, health check up of infants, role of service providers, and media support. These parameters/factors were taken to explore the influence on infant health.

The key determinants of the health status of infants were identified in the study region. Thus, it is understood that younger population is positively responding to health care. Education level of the mother, annual income of the family, Hindu population, nuclear families, adoption of family planning, number of children, availability of toilet facilities, awareness on infant health care, nutritious food intake during pregnancy, following regular immunisation, regular visits by health personnel have found to have favourable impact on infant health in the District.

Dual earning status, mass media, irregular health check-up, cow's milk, tinned milk, supplementary feed, mothers meeting, *prasuti arike* programme have negative impact on child health in the region.

Figure 1(a): Showing the Determinants of Infants Health



Conclusion

Childhood is a significant stage of life and the health care deprivation during this period can have a long term adverse impact on the well-being of children. One needs to understand the proximate determinants or intermediate causes of poor health conditions among children. If these identified determinants are addressed properly, infant health will reach the rural parts of the district. Education, empowerment, proper knowledge dissemination, creation of awareness through service providers and mass media will have a long lasting effect on infant health care.

Deficient Mother with her underweight unhealthy baby
(Farangipete in Bantwal Taluk)



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