Though an extensive research work on bio-social determinants of infant mortality in general population has been carried out in India, very negligible efforts had been made even on similar lines among specific cultural groups like tribals, ethnic groups and so on. In this context, emphasis on socio-cultural and health aspects of life is highly relevant, since tribals are mostly in the primitive stage of socio-economic development. However, much work has been done about the ethnographic aspect of several tribal communities in India (Roy Burman et al, 1961; Vidyarthi, 1988 and Census of India, 1971), but identification of various socio-cultural and health determinants of infant mortality among the tribals have not been so far attempted. On Indian tribes, literature on determinants of infant mortality is woefully very scanty. Under these circumstances, the present study deals with a priority area of study, focusing on socio-cultural and health determinants of infant mortality in its right perspective.
Of course, other conventional variables of determinants of infant mortality namely, socio-economic, demographic, health, nutritional and breast feeding factors are also explored out through this study.

The major objectives of the present research are to study:

1. The socio-economic determinants of infant mortality;
2. The demographic characteristics such as age at marriage, total number of live births, birth order, birth interval, age and sex of the infant, and mother's age at birth of the deceased child in relation to infant mortality;
3. The cultural factors like type of marital relationship, customs and habits, kinship interaction, desire for son(s) and their influence on infant mortality;
4. The health factors such as place of delivery, birth attendant, medical and health care during pre-natal and post natal period, utilization of health services from peripheral health workers, and their influence on infant mortality;
5. The nutritional and breast feeding practices such as intake of nutritious food, avoidance of food practices during pregnancy and lactation, initiation of weaning/supplementary food practices to infants, pre-lacteal feeds, initiation of breast feeding, frequency of breast feeding, and duration of breast feeding and their influence on infant mortality.
A multi-stage simple random sampling technique was adopted for selection of the sample. The universe of the sample was confined to Anantapur district of Rayalaseema region in Andhra Pradesh. From Anantapur district, two revenue mandals namely Kalyanadurg and Beluguppa were randomly selected to get the representative population of this region. Based on the size of population, the revenue villages of these two mandals were classified into large, medium, and small and proportionately selected. Subsequently their households were enumerated. The respondents were selected at random from the enumerated list of households. From every household, ever married woman who was in the age group of 15 to 45 years (eligible couple), having at least one live birth was considered as a sample unit. In the case of households having more than one eligible couple, one of them was selected at random as most of their background characteristics were the same. Thus, a total sample of 600 respondents (women), 300 each from Kalyanadurg and Beluguppa mandals were selected at random for the present study.

A schedule was developed and used for the purpose of data collection. To supplement the schedule and to improve the quality of data, observation technique was also used wherever needed. The analysis was done using computer facility. The presentation of data largely made through
several types of tables like one-way, two-way and three-way cross tabulations. Besides extensive tabulations, a step-wise multiple regression analysis was applied to examine the percent of variation in the prevalence of infant mortality explained by each independent variable. The findings are presented in 9 chapters.

Socio-economic Determinants

Socio-economic variables have significant influence on infant mortality which are: parental education and occupation, family income, socio-economic status of parents, type of family, and social status of woman. Considering the educational level of mother, a pronounced association with the experience of infant deaths is noticed. It is noteworthy that the experience of infant deaths among illiterates is two times higher than that of the literates with above primary education.

Usually among Sugalis, both husband and wife used to engage in the same occupation. In case of occupational level of mother, higher proportion of agricultural labourers (56.9 percent) have experienced one or more infant deaths as compared to house wives (23.8 percent). When the present age of the mother is controlled, among older mothers, the agricultural and non-agricultural labourers have experienced higher infant mortality as compared to younger mothers.
case of the occupational level of father, the experience of infant mortality be apt to decline with the increase in occupational level from agricultural labourers to others viz., trade/business, industrial workers and employees. The experience of infant mortality is varied significantly among different income groups (significant at 1 percent level). Annual income of the family has a profound association with infant mortality i.e., the risk of infant mortality found to be higher for an infant of lowest income group than the infant of highest income group. The present analysis discloses that majority of the mothers (59.2%) have experienced one or more infant deaths among the lowest income group with Rs. 2000/- or less and correspondingly declined to 26.4 percent for the highest income group with Rs. 5001/- and above. A similar relationship has been observed for both the younger (upto 30 years) and older mothers (above 30 years).

Further, an index is prepared to measure the overall socio-economic status and to know the combined influence of all the socio-economic variables on the prevalence of infant mortality. The variables included were: type of house, education, occupational status of husband, family income, possession of irrigated and unirrigated land. Based on these factors, the socio-economic status is categorised into 'low', 'medium', and 'high'. The data shows that the
experience of infant mortality is significantly higher among low socio-economic status groups as compared to higher socio-economic status groups (significant at 1 percent level). While considering the type of family, it was highly associated with the experience of infant deaths. The data shows that, among the nuclear families, more than half (52.5 percent) of the mothers have experienced one or more infant deaths as against joint families (33.9 percent). This is because of the non-availability of their kins in the nuclear families, secondly more parental attention and care given to infants health in joint families. The analysis of the present study reveals that the association between social status of woman and experience of infant mortality has been found significant. In other words, the higher social status of woman would bear the lower experience of infant mortality.

Trends in Infant Mortality

The study on levels and trends of infant mortality has gained an unique importance. The data used for the present study revealed slight variations in the family wise proportion of infant mortality among Sugalis. Of the 600 mothers interviewed, 281 mothers (46.8 percent) have experienced infant mortality with the total number of 348 deaths. Further, the proportion of mothers experienced
infant deaths is significantly higher among the older mothers (above 30 years) as compared to younger mothers (up to 30 years). Of the 322 younger mothers interviewed, 128 mothers (39.7 percent) have experienced one or more infant deaths. On the contrary, of the 278 older mothers interviewed, 153 mothers (55 percent) have experienced one or more infant deaths. Further, when we examine the actual number of infants died, it is much higher among the older mothers (204) as compared to younger mothers (144). In other words, the mean number of infant deaths for the older mothers is 0.73 per woman, while younger mothers it is 0.45. This trend is based on the cumulative infant mortality among the couples over a period of 5 years.

Considering the differential trend and the level of infant mortality rate, in the present study the estimated level of infant mortality rate is found to be higher among Sugalis (136.4 per 1000 live births) for the year 1989, as compared to Anantapur district (128) and for the State of Andhra Pradesh, it was only 78 per 1000 live births (Ministry of Health and Family Welfare, Government of Andhra Pradesh, 1988).

Demographic Determinants

The incidence of mortality during infancy has been influenced by demographic factors like, present age of mother, age at marriage of woman, duration of married life, total number of live births, age of mother at first
conception, birth order, birth interval, age of mother at birth of the deceased child, age and sex of the infant. All these demographic variables have a relatively mechanical impact on survival of the infants. Of these variables, age at marriage of woman, birth interval and age of mother at first conception/birth are negatively influenced on infant mortality. The findings disclosed that a higher proportion of mothers (60.1 percent) have experienced infant mortality among those who were married at the age of 15 years or below and consistently declined to 25.6 percent for the mothers who were married at the age of 20 years and above.

Under the demographic characteristics, duration of birth interval plays a pivotal role in determining the prevalence of infant mortality. The duration of interval between two successive births is conditioned by several factors like patterns of sexual behaviour, sex preference of the child, traditional mores concerned to lactation and the practice of family planning. The data shows that majority of infants (41.4 percent) died with the duration of birth interval of upto 12 months (less than one year) as against the birth interval of 37 months and above (only 10.4 percent). Also, the data reveals that the influence of birth interval is more pronounced among neonatal deaths than post-neonatal deaths. Age of mother at first birth has been significantly associated with infant mortality (significant
at 1 percent level). The experience of infant mortality is found to be higher for the mothers who had their first birth at the age of 17 years or below and gradually declined with the increase in the age at first birth.

The age of mother at birth of the deceased child showed a U-shape relationship with infant mortality. In terms, infant mortality is high when the mother is either very young or relatively older. In the present study, it is observed that, the risk of infant mortality is higher among the children born to the mothers who are at the age of 19 years and below and the lowest is in between the ages 25 and 29 years. On the contrary, the risk of infant mortality is increased uniformly with the increase in maternal age of 35 years and above. A similar relationship has been found among neonatal and post-neonatal deaths, when the age of infant is controlled.

There is an enough evidence that infant mortality is closely associated with birth order. Infant mortality is high for the first birth order, declines slowly up to the third birth order and then again takes an upward turn. In the present study, it is found that the prevalence of infant deaths (27.6 percent) was high at the first birth order and subsequently dropped to 6.6 percent at the third birth order. Further, the risk of infant deaths is gradually
increased with higher order of births reaching sixth and more (25 percent). Similarly, an analysis of neonatal and post-neonatal deaths at various birth orders reveals that the post-neonatal deaths are comparatively more for the second, third, and fourth birth orders, while neonatal deaths are more for the first, fifth and sixth and above birth orders. The plausible reasons may be early age at marriage/conception, and at the time of higher order of births, the mother may become physically weak on account of too frequent/many pregnancies with the short duration of birth interval.

On the contrary, present age of mother, total number of live births, and duration of married life have a positive influence on infant mortality. The data explains that a higher proportion of mothers (60.6 percent) have experienced one or more infant deaths among who are at the age of 35 years or above as against the mothers who are at the age of 24 years or below (35 percent). It is also found that the total number of live births of the mother has significant influence on the prevalence of infant mortality. It is to note that higher proportion of mothers (68.3 percent) have experienced infant mortality among the mothers who had six or more live births as against it is only 23.7 percent for the mothers who had less than two live births. Similar profound association has been found among the
younger and older mothers. Further, the duration of married life would have considerable influence on the prevalence of infant mortality. It is to note that the experience of infant mortality is found to be higher (71.8 percent) among the mothers whose duration of married life is 15 years and more as compared to the mothers whose marital duration was upto 8 years (33.4 percent).

Considering the infant mortality at various important periods of infancy, that is: the same day after birth, 2 to 7 days, 8 to 28 days, 1 to 3 months and 4 to 12 months, the risk of mortality has been valid significantly. The data reveals that the prevalence of mortality is higher during the early neonatal period (0-7 days) and also during the period of 4 to 12 months. The present analysis discloses that more than one-third (36.5 percent) of the infants died during the early neonatal period (0-7 days) followed by the last age group of four to twelve months period (35.3 percent). However, mortality was relatively less during rest of the neonatal (8.9 per cent) and post-neonatal periods (19.3 percent). Further, the risk of neonatal, post-neonatal and infant deaths are significantly differentiated by sex of the child. It is evident that the prevalence of neonatal, post-natal and infant deaths are comparatively higher among males than females. Among the
female children, the prevalence of neonatal deaths (42.4 percent) are comparatively lower than post-neonatal deaths (45.3 percent).

Health Determinants

The availability and effectiveness of health delivery system is an important determinant of the health status of mothers and children. It is a complex variable by itself which is influenced by a variety of factors. Since the health variables form a major determinant of infant mortality, only selected and salient aspects are discussed. In the present study, majority of the women still prefer to have their deliveries at home, attended by indigenous dais (traditional dai) or relative/neighbours. The results reveal that more than half of the mothers have experienced infant mortality among whose deliveries have taken place at home, attended by indigenous dai or relative/neighbour and used kitchen knife to cut the umbilical cord. Further, it is noteworthy that a higher proportion of mothers (66 percent) have experienced infant mortality among those who used other indigenous instruments like, stones, split bamboos, and thread to cut the cord. After cutting the cord, majority of the mothers applied a variety of unhygienic materials ranging from harmful (fatal) to harmless for dressing the cord. The mothers who applied ash, mud, and cowdung for dressing of the cord, have
experienced higher infant deaths (59.7 percent) followed by 'others' like pepper, jajikaya, vamu, and latex from creepers (51.2 percent).

The type of medical and health care during pregnancy is an important variable in determining the prevalence of infant mortality. The analysis discloses that higher proportion (66.7 percent) of mothers have experienced infant mortality among those who did not receive medical and health care during their pregnancy rather than those who received care from medical personnel. Further, the experience of infant mortality was significantly influenced by type of medical and health care received for illness of infants (significant at 1 percent level). Among the mothers who used home remedies (herbal medicines), majority of them (61.5 percent) have experienced one or more infant deaths. Similarly, the mothers who did not receive medical and health care during illness of their infants, 57.1 percent of them have experienced infant mortality followed by magic of the witches, sorcerers, and offering to God (56.9 percent). Further, when the present age of mother is controlled, more than two-thirds of the older mothers (67.4 percent) have experienced one or more infant deaths among those who have given home remedies. On the contrary, 61.5 percent of the younger mothers have experienced infant deaths among those who received medical treatment from magic of the witches, sorcerers or offering to God for illness of infants.
Utilization of medical and health services from primary health centre/sub-centre has been significantly associated with infant mortality (significant at 1 percent level). In terms, the better the medical and health services received from PHC/SC, the better the survival chances of infants. The data shows that the experience of infant mortality is found to be low among the mothers who received medical and health services from primary health centre and or sub-centre. It is also observed that, there is a great disparity in receiving the medical and health services of peripheral health workers (PHWs) which has a greater influence on the prevalence of infant mortality (significant at 1 percent level). The mothers who did not avail the health services of PHWs, a greater proportion of them (62 percent) have experienced one or more infant deaths. This is similar for both the younger (upto 30 years) and older mothers (above 30 years). Further, the analysis reveals that majority of the respondents (68 percent) are living in poor sanitary conditions of the house, which has been significantly associated with higher incidence of infant mortality (significant at 1 percent level).

Considering the individual causes of death of infants, dysentary/diarrhoea is the single major cause of death, which accounted for 25 percent, followed by maternal factors (19.8 percent). Tetanus also constituted a major cause of
death, which accounted for 18.1 percent. During the neonatal period, more number of neonatal deaths (43.7 percent) were caused by maternal factors namely prematurity, birth injury, multiple births, low birth weight, and birth asphyxia. Tetanus constituted the second major killer (31 percent) of infants during neonatal period, which may be on account of: (a) the deliveries were conducted by indigenous dais (traditional/untrained dai), who are ignorant of infections and used household/kitchen knife, sickle or other unscientific instruments to cut the umbilical cord, and (b) the wounds were dressed/treated with dust, ashes, cowdung, and even with mud. Of the post-neonatal deaths, dysentery/diarrhoea is the single largest cause of death (37.9 percent), which may mainly due to unhygienic rearing and feeding practices, lack of personal hygiene of mothers, use of contaminated water, and poor environmental sanitation. The second important cause of death was meningitis (20.5 percent), which is the result of central nervous system disorder usually called as brain disease.

Cultural Factors

Culture as an independent variable has several dimensions viz., customs, beliefs, values, and norms which have greater influence on values attached to the marriage, value of children, use of traditional and modern medicines,
food practices during pregnancy and later lactation, pre-lacteal feeds, weaning practices and practices of traditional medicines to ward-off diseases, which are reported to be differentially shown their influence on infant mortality. In view of these, an association between selected cultural variables and infant mortality is analysed briefly.

In most tribal communities, consanguineous type of marriages are arranged between the children of uncle-niece, matrilateral cross-cousin and patrilateral cross-cousin. In the study area, an overwhelming proportion (82.7 percent) of Sugalis have followed consanguineous marriages. It has been learnt that, about half of the mothers (51.2 percent) have experienced one or more infant deaths among those who are married within consanguineous groups. The practice of monogamous marriage is the well known system of Sugalis, but in some cases they practice polygamous as well. An overwhelming proportion of wives (88.8 percent) and husbands (81.3 percent) have practised monogamous type of marriage.

In high mortality societies particularly tribals, parents may fear the loss of children. Hence, they may strive to have additional births than they would otherwise, in order to ensure or replace the actual death of a child. In the present study, the data shows that among the mothers who desired to have three or more children, 69.7 percent of
them have experienced infant mortality. In contrast, the mothers who have no desire for extra children, have experienced lower infant mortality. Thus, the experience of infant mortality may lead to the desire to have extra children. In traditional and agrarian societies particularly in patriarchal societies, sons are considered functional for minimising economic and non-economic utilities. Couples with a strong preference for son(s) may go beyond their desired family size, which has a significant influence on infant mortality. In the present study, the mothers who intended to continue till a son is born, majority of them (62.8 percent) have experienced infant mortality rather than who had no preference for son.

Traditionally, the Sugali women have very close attachment towards their kins and had strong belief in them. Generally, their female kins advise the pregnant and lactating mothers for better care using traditional medicines and objecting the intake of certain foods, and medicines during pregnancy and lactation period. All these factors have an indirect influence on the prevalence of infant mortality. It is significant to note that the mothers who were advised by their kins, more than half of them (52.1 percent) have experienced infant deaths rather than those who did not receive advice (33.9 percent). Numerous customs and habits of chewing betel nut leaves with
lime paste and tobacco, consumption of country arrack, are greater responsible for low birth weight, shortened gestation, higher perinatal mortality, spontaneous abortions, and more complication of labour and delivery. In view of these, the present study analysed the association between the experience of infant mortality and customs and habits. The data reveals that among the mothers who have the habit of chewing betel leaves with lime and tobacco, two thirds of them (66.1 percent) have experienced infant mortality, followed by chewing only tobacco leaves (53.8 percent).

Nutritional and Breast Feeding Determinants

Inadequate intake of nutritious food is due to the beliefs and taboos on dietary practices, besides the unhygienic way of processing the foods, non-availability and inability to acquire adequate food on account of poverty. All these factors may lead to undernourishment during pregnancy and indirectly influence on prevalence of infant mortality. Cross cultural comparison of the intake of food, the findings of the study shows that among the mothers who practice poor choice of food, 54.5 percent of them have experienced infant mortality as against the mothers who practice moderate foods (only 24.3 percent). Further, maternal anaemia resulting on account of the iron deficiency affects the health of the babies through its effect on the
foetus during pregnancy. In view of this, the present study examined the association between status of maternal nutrition (external symptoms) and the prevalence of infant mortality. The findings discloses that the experience of infant mortality was higher among the mothers who had anaemia (62.4 percent). The practice of avoiding certain foods from normal diet during pregnancy and lactation period has a significant influence on infant mortality (significant at 1 percent level). It is found that the mothers who avoided certain foods during their pregnancy and lactation, have lower experience of infant mortality. Besides breast feeding, inappropriate weaning/supplementary food practices during infancy have greater affect on infant's health. The findings of the study shows that the mothers who weaned their children with gruel and solid/liquid foods, have greater experience of infant mortality (55.9 percent) rather than cow milk and marketed foods (28.8 percent).

The present study highlights that there are certain important beliefs and cultural practices related to the initiation of breast feeding after birth, the kinds of pre-lacteal feeds administered to the new born, age at initiation of supplementary food, frequency of breast feeding (per day), and the duration of breast feeding. In the case of Sugali women, breast feeding is not initiated for the first three days after the child birth. The new
born infants are given various types of pre-lacteal feed like donkey/goat milk, sweetened water (sugar/glucose, honey), musk, neem oil and other lactating mother's milk. It is learnt that among the mothers who fed their infants by donkey/goat milk, majority of them (66.7 percent) have experienced infant mortality rather than the mothers who have given breast milk/other lactating mothers milk (only 21.1 percent). After the child birth, initiation of breast feeding is an important determinant of infant mortality. Customarily the Sugali women did not give first breast milk (colostrum) to the new born babies during the first two or three days after the birth, as believed that the new born baby is difficult to digest the breast milk and lead to diarrhoea. The findings of the study reveals that over three-fourths of the mothers (76.7 percent) have experienced one or more infant deaths among those who initiated their breast milk on the fifth day of birth of the infant, followed by fourth day (62.6 percent).

The age at initiation of weaning/supplementary food practices has a significant influence on infant mortality (significant at 1 percent level). The mothers who have given weaning/supplementary food to infants at the age of 6-7 months, are found to have greater experience of infant deaths (61.0 percent), followed by 5 months or earlier (48 percent) on account of infections. Further, the frequency
of breast feeding (per day) given to the infants has a significant influence on prevalence of infant mortality. Usually, Sugali women breast feed their babies 3 to 5 times in a day. It is found that the experience of infant mortality is negatively influenced by the frequency of breast feeding. Among the mothers who have breast fed their children whenever they cry, have experienced lower infant deaths (only 23.5 percent). In the study area, most of the Sugali women believed that the use of breast milk or animal milk may cause indigestion or diarrhoea. To protect the infants from the diseases and other health problems, different types of beverages (traditional medicines) viz., indigenous medicines, herbs and leaves, castor oil, and others (gripe water, medicated tonic) are given to infants, besides breast milk. In the present study, the data shows that the mothers who have given indigenous medicines, herbs and leaves, greater proportion of them (59.9 percent) have experienced one or more infant deaths as compared to others (17.4 percent).

The duration of breast feeding has a negative influence on prevalence of infant mortality. That is, longer duration of breast feeding is significantly associated with lower experience of infant deaths (significant at 1 percent level). It is clear that the mothers who breast fed their babies upto 12 months or less, majority of them (67.6 percent)
have experienced one of more infant deaths as against the mothers who breast fed their babies for a period of more than 25 months (26.5 percent).

Differential influence of different variables on infant mortality

Apart from the bivariate cross-tabulations made to examine the influence of several independent variables on prevalence of infant mortality, a step-wise multiple regression analysis technique was adopted to identify the crucial determinants of infant mortality. Separate regression analysis was also carried out to predict the experience of infant mortality of the younger (upto 30 years) and older mothers (above 30 years) and for the total mothers.

For identifying the appropriate and important variables that affect the death of infants, initially 26 major linear variables were examined to assess the correlation coefficients. Out of these thirteen variables, were retained based on their high degree of correlation coefficients. Among thirteen variables, 44.55 percent of the total variation in prevalence of infant deaths was explained by eight variables for the total sample as a whole. Out of these, initiation of breast feeding was found to be the most prominent predictor, individually
contributing to 10.57 percent of the total variation. Next important variables are the medical and health care during pregnancy (prenatal), occupation of mother, number of live births, duration of married life, duration of breast feeding, birth attendant, and socio-economic status have been significantly influencing on infant mortality (significant at 1 percent level).

Further, when it is analysed by present age of the mother, it is found that nine variables were accounted to 46.94 percent of the total variation in infant deaths of the younger mothers (upto 30 years). Out of these variables, initiation of breast feeding was one of the most powerful predictors, which alone contributed to 11.81 percent of the total variation. The order of importance of major determinants of infant mortality are: medical and health care for infants (during illness), medical and health care during pregnancy, duration of breast feeding, medical and health services received from MPHWS, number of live births, occupation of mother, birth attendant and socio-economic status.

In the case of older mothers (above 30 years), 49.45 percent of the total variation in the experience of infant deaths is explained by nine major variables. Among them, type of medical care during pregnancy is found to be a prominent variable which contributed to 9.42 percent,
followed by duration of married life (7.63 percent), occupation of mother (7.36 percent), house sanitation (6.64 percent), and number of live births (4.37 percent). The other variables namely duration of breast feeding, type of prelacteal feed, age of mother at first conception, socioeconomic status are also have been significantly influenced on infant mortality.

Thus, a combination of socio-cultural, demographic, health, nutritional and breast feeding factors together and differentially influence the existing variations in the experience of infant mortality across the younger and older mothers, and total mothers as a whole in this sugali tribal community. Hence, for a further reduction in the level of infant mortality among Sugalis, the inputs must be increased.

IMPLICATIONS

1. Education is one of the most neglected aspects among Sugalis. Their literacy rates are significantly low. The arresting of education at the primary level seems to be the obstacle to further development. Therefore, atleast one functional literacy centre should be opened in this area with a view to make all adults, both men and women functionally literate.
2. It is needless to state that improvement in education and socio-economic status can minimise infant mortality. Therefore, certain financial aid, supplementary nutritious feeding programmes, and adult education for pregnant and lactating mothers can effectively minimise infant mortality.

3. Sugalis are largely depending on agricultural and non-agricultural works and their income is mostly unsteady. During lean seasons, these people are out of employment and do not earn anything for their livelihood. As a result, most of the families are in partial starving deteriorating their nutritional status. Hence, distribution of food grains, vegetables, cooking oil etc., through cooperative stores at subsidised price will be a relief for this population to save themselves from acute condition of poverty.

4. To avoid the possible risk of neonatal as well as infant mortality, the girls have to delay their age at marriage for 20 years and more and also they have to postpone their first child birth as well. Necessary steps have to be taken to educate the women about the consequences of early marriages.

5. Effective provision and promotion of contraceptive methods for spacing of children would help to reduce the infant mortality, as the adoption of contraceptive methods reduce the incidence of short birth intervals.
6. To reduce the greater risk of infant mortality for the first and higher order of births, marriage-cum-pregnancy counselling coupled with health education should be given to all marriageable girls in this community.

7. Since the largest chunk of infant mortality happens during the neonatal period, most of our efforts must be directed to deal with the determinants of neonatal mortality.

8. Either neonatal or post-neonatal deaths could be brought down substantially by proper spacing of children, nutritional supplements coupled with health education to expectant mothers and effective pre and post-natal care.

9. All the traditional or untrained dais may be recruited and given periodic training on a continuing basis not only to reduce their harmful/risky services to mothers and children, but also to render them helpful services.

10. To avoid fatal situation to the infant as well as mother, it is necessary to supply the sterilised medical kits with knife/scissors freely to all untrained birth attendants and they may be trained to use them hygienically.

11. Higher proportion of infant deaths have taken place at home deliveries which were attended by indigenous/untrained dais in an unhygienic environment prevailing
at home. Therefore, an effective health education may be imparted to the women about the advantages of hospital deliveries.

12. To avoid or reduce the possible risk of mortality of the mother and baby, pregnancy-cum-delivery counselling coupled with health education should be given to all mothers, when they are pregnant.

13. An effective health education may be imparted for every expectant mother to receive expert care during the entire period of pregnancy so as to safeguard her and her infant, and thus help to save many precious lives. This would result in lowering the incidence of infant mortality of Sugalis.

14. Since, most of the existing health centres are not being utilized by the clients, necessary improvements and all round efforts may be made to attract the clients to them. It may be better, if the mobile health clinics are organised to render the services at villages for better health promotion of the people.

15. From time to time necessary information may be passed to the clients to familiarise themselves with the use of health centres.

16. Most of the Sugalis depend upon unqualified persons for medical services. This state of affairs needs to be changed as soon as possible through the special recruitment of more trained para medical personnel or
midwives to work in the tribal areas. Further, some of the local dais (untrained/traditional) may be selected and trained to attend the deliveries.

17. Mothers and other family members who take care of babies may be educated to observe strict hygienic practices to avoid morbidity and mortality due to infection through contact, beverages, and other food items by keeping the vessels and hands always clean.

18. Since post-neonatal deaths are found to be higher, maternal and child health service personnel should provide post-natal health services to the possible extent during home visits in the study area.

19. To control dysentary/diarrhoeal deaths, improvement in environmental sanitation, supply of protected drinking water to infant may have to be assured.

20. Since tetanus is a major cause of infant death, tetanus toxoid may be given to all the mothers during the pregnancy period. Subsequently they may be assured of delivery care with optimum hygiene, a sterilized knife for removing the umbilical cord, timely education, counselling and follow-up services.

21. Maternity clinics may be established on a preferential basis for all remote villages to prevent tetanus and other problems connected with deliveries.
22. Strategies for the treatment of acute lower respiratory infections (particularly pneumonia), improved home care of low birth weight babies, and domiciliary treatment of malnutrition need to be made as integral part of the concept of primary health care in these areas.

23. To avoid the birth defects or infant deaths, through medical personnel, scientific education should be imparted to these women about the risks of consanguineous marriages.

24. The relevance of child survival by limiting family size is need to be widely propagated within the programme of maternal and child health. The community should be motivated to understand clearly about limiting the family size.

25. Further an indepth research is needed to examine the influence of chewing betel nut leaves, lime paste, tobacco, and consumption of alcohol on the risk of infant's health.

26. Nutritional status is varied among Sugalis on account of the improper choice of foods, besides the unhygienic way of food processing and preserving, and inability or ignorance to take good nutritious food may influence low birth weight of the baby resulting in higher incidence of infant mortality. Therefore, provision may be made for nutritional education in choosing the
locally available foods to give a balanced diet, for preparing foods without loss of nutrients, and for proper weaning practices.

27. Since, cultural beliefs, superstitions and ignorance significantly affect the food habits, harmful food taboos and prejudices during pregnancy and lactation must be identified and corrected through nutritional education programme, namely applied nutrition programme.

28. Mothers may be advised to wean their babies with good nutritional foods such as cereals, proteins, fruits, milk, and other marketed foods which are locally available, so as to avoid possible risk of infant mortality on account of malnutrition, infections and other causes.

29. All round efforts should be made to educate the women about the advantages of colostrum (first breast milk) and motivate them to initiate the breast milk immediately after the child birth.

30. Nutritional deficiency and problems during pregnancy may cause low birth weight. Therefore, regular and periodic medical check-up should be arranged for pregnant mothers by the para-medical staff at the nearest health centre. Added to this, provision may be made to give nutritious supplementary food to pregnant mothers through the Anganwadi programme or Mid-day meal programme or through ICDS.
31. Necessary education may be imparted to the expectant mothers through mass-media, for prolonging and promotion of breast feeding practices which may raise the immunity level of babies, so as to minimise the incidence of infant mortality.

32. The health aid agencies should come forward to recommend appropriate, inexpensive balanced diets for the women. Recipes for weaning / supplementary diets based on inexpensive local foods which are suitable for infants and children should also be promoted/provided.