

Mortality as a Measure of Development : A Cross-Cultural Study From Andhra Populations

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ABSTRACT Mortality control is viewed as the best indicator of population development. An attempt is made to assert this view through a cross-cultural study of Tirupati populations, Andhra Pradesh. The results of the study indicate higher infant (63) and maternal (25) mortality rates occurred in Government Hospital characterised by low income groups and lower infant (13) and maternal (7) mortality rates in private nursing homes characterised by high income groups. The child mortality (21) rate is also high in five rural villages. The mean number of children for family planning user couple is 1.42, while for non-users it is 2.68. Similarly, low mean number of dead children in users (0.03) and in non-users (0.32) of family planning methods.

INTRODUCTION

The demographic transitions that have occurred among human populations reveal that fertility always lags behind mortality. The main developmental aspect of humans is their medical technology through which they could able to contain death rates. Thus, mortality control marks an important demographic indicator for population development. To consider a country's progress in health, medicine and education it is only through the efforts made by the countries in containing the mortality rates especially in infant, child and maternal mortalities. The WHO gives top priority in these areas of research and categorizes the countries accordingly in to developed, developing and under developed. The United Nations Fund for Population Activities (UNFPA) also kept its goals on mainly mortality reduction of infant, child and maternal and increase in life expectancy.

Many demographic studies have emphasised that fertility and mortality are strongly associated with socio-economic conditions (Bradley and Johnston, 1979; Caldwell, et al., 1982; Stan D'Souza and Abbas Bhuiya, 1982), health status (Antonovsky, 1979), education

(Caldwell, 1974; Kitagawa and Hauser, 1982; Oyeka, 1989) and nutrition (Chowdhury et al., 1982). Studies are scarce in understanding the development of the population by either fertility or mortality. In view of the major demographic transitions that have occurred clearly indicate the drastic reduction in fertility rates in most of the developed countries through their medical technology, but in developing countries the matters are confused because of high registering mortality rates, though fertility rates are declined. The changing demographic profiles of populations, their socio-economy and utilization of health and population development programmes sponsored by Government are, however, to be tested. The unique feature of India is that it has innumerable populations inhabiting various habitats and experiencing wide socio-economic disparities. There is an urgent need to see the status of various rural and urban populations in terms of their progress in limiting fertility and mortality through family planning and other measures, and increasing survivorship of infant, child and mothers. With this above background an attempt is made in this paper to measure mortality rates of infants, children and mothers taking in to consideration of socio-economic conditions of the populations, rural-urban disparities in a specified area like Tirupati and few surrounding villages in Chittoor district of Andhra Pradesh, with a population of 189030 (males 97,563 and females 91,467).

MATERIALS AND METHODS

The study embodies a cross-cultural populations of Tirupati evaluate the present condition of the population and its progress in controlling the mortality aspects of infant, child and maternal in relation to family planning practice.

The materials for the present study are utilized from Government hospitals, private nursing homes and further, primary data from 5 villages of Tirupiti surroundings. The data thus collected pertaining to Government maternity hospital (number of deliveries 3682; number of infants died are 233), private nursing home (number of deliveries 594; number of infants died 8) and primary data of 5 villages (number of deliveries 28; number of infants died 4). The data on maternal mortality covers 99 cases and child mortality 384 cases in all the study areas. For child mortality the age ranges between 1-5 years and for maternal mortality 15-44 years. 458 couples are practised family planning methods. The following demographic indices are used for drawing meaningful results.

(i) *Infant Mortality Rate (IMR)* =

$$\frac{\text{No. of death under one year of age}}{\text{No. of live births}} \times 1000$$

(ii) *Child Mortality Rate (CMR)* =

$$\frac{\text{No. of child deaths aged 1-5 years}}{\text{No. of live births - deaths prior to one year}} \times 1000$$

(iii) *Maternal Mortality Rate (MMR)* =

$$\frac{\text{No. of deaths due to maternal causes in females}}{\text{No. of live births}} \times 1000$$

RESULTS AND DISCUSSION

Infant Mortality: Table 1 describes the infant mortality rate (IMR). From the total of 3682 deliveries taken place in Government hospital 233 infants were died within 28 days of birth. Thus the IMR is arrived at 63. Where as, for the 594 deliveries taken place in private nursing homes, only 8 infants were died. Thus bringing IMR to 13. The primary data from 5 villages shows that out of 28 deliveries, 4 infants were died and the IMR is 143.

Table 1: Infant Mortality Rate (IMR)

Place of occurrence	No. of deliveries	No. of Infants died	Male deaths	Female deaths	IMR
Govt Hospital	3682	233	155	78	63
Private Nursing Homes	594	8	5	3	13
5-Villages	28	4	2	2	143

Maternal Mortality: It is clear from the table 2 that for 3682 deliveries in Government hospital 92 mothers were died due to complications

at the delivery time. So the maternal mortality rate (MMR) is 25. In private nursing homes the number of maternal deaths are minimum, because only 4 mothers were died for 594 deliveries. In village data the MMR is more, where 3 maternal deaths for a total of 28 deliveries taken place in the houses.

Table 2: Maternal Mortality Rate (MMR)

Place of occurrence	No. of deliveries	No. of mother died	MMR
Govt Hospital	3682	92	25
Private Nursing Homes	594	4	7
5-Villages	28	3	107

The results of infant and maternal mortality are tangible and show clear difference over the item and the place of occurrence. The total 3682 deliveries taken place at Government hospital are those women who hail from poorer section of the society. The information available at the time of their admission in the hospital shows that their annual income is below Rs. 6000/- per annum. It is doubtful that these women had taken any pre-delivery medical care. Many of them appear to be anaemic. Most of the cases arrived at the hospital when some complications are developed already at house. The IMR (63) is said to be higher, when compared to the IMR of India (38) and developed countries like America and England, where, it is only 2 to 5 for every 1000. Further, out of these 3682 deliveries as many as 92 women have died due to various complications during delivery time, thus bringing MMR (25) to be very high, when compared with MMR of the country (5) and developed countries (2).

In rural 5 villages both the IMR (143) and MMR (107) are high, because women are mostly anaemic specially due to heavy worm infestation and they usually do not take any pre-delivery care. However, The IMR (13) and MMR (7) seem to be low for the deliveries taken place at private nursing homes. This is possible because the women are from better off section of the society and most of them have utilised pre-delivery care in all respects.

Child Mortality (CMR): The data for this have exclusively been collected through primary data, i.e., data from 5 villages. Table 3 shows

that out of 384 children whose age range is between 1-5 years, 8 of them died out before completion of 5 years, thus the CMR has been put at 21. This value is some what higher, when compared with India (11) and developed countries (0). However, the considerable decline in child death rate among rural areas is due to the fact that greater utilization of public health immunisation programmes spread all over the country irrespective of rural and urban disparities.

Table 3: Child Mortality Rate (CMR)

Place of occurrence	No. of Children	No. of deaths	Males	Females	CMR
5-villages	384	8	5	3	21

It holds good here to initiate further discussion on these important demographic events namely, infant, child and maternal mortalities that measure county's progress in the field of health and medicine and also in the improvement of socio-economic conditions and raising the standard of living. There has been in past, all around the world, populations have registered higher infant, child and maternal mortalities. Available demographic data from various coun-

Table 4: Infant Mortality since 1898 of selected countries

Country	1898-1902	1918-1922	1956-1960	1972	1980
Group-I					
Sweden	98	65	17	11.7	9
Japan	155	172	36	13.0	9
Norway	88	-	20	13.8	9
Denmark	131	84	24	14.8	10
France	154	112	32	15.1	11
England & Wales	152	85	23	18.4	14
United States	162	85	26	19.2	13
Group-II					
USSR	-	-	81	24.4	31
Hungary	204	-	-	34.0	24
Spain	190	158	49	27.9	16
Italy	167	141	47	29.2	18
Argentina	-	-	61	58.0	45
Group-III					
Nigeria	-	-	-	180	157
Kenya	-	-	-	135	83
India	200	212	198	139	134
Mexico	-	-	76	69	70
Guatemala	-	-	95	92	76

Source: Based on data from population Reference Bureau, Inc. and Demographic Year Book, 1979. (cf. Stephen Molnar, 1983).

tries indicate that they can be grouped in to three categories depending upon the progress of these countries in combating infant mortality since 1889 (Table 4). Countries like Sweden, Japan, Norway, Denmark, France, England and United States had experienced higher rates of infant mortalities, say 88 to 162 during early 1900 to 9 to 13 by 1980's. These rates have now further dropped to 5 by now, i.e., 1997. These countries can be classified under Group-I. Countries like USSR, Hungary, Spain, Italy and Argentina, come under Group-II classification, where these countries contained infant mortality rates from 200 in 1900s to 45 to 16 by 1980. India falls under Group-III. Countries like Nigeria, Kenya, Mexico and India could control infant mortality from 200 to 134 during 1900 to 1980. The national figures for the event even by 1997 is just below 100.

The last few generations, as infant mortality has declined maternal health has improved and childbirth related deaths have been reduced drastically. The maternal mortality of selected countries is given in table 5. In America maternal death rates of 320 per 100000 a century ago have decreased to 22 per 100000 today. Pakistan registers for high maternal mortality (194 for every 100000 live births) while India has an improved condition with only 37 maternal deaths for every 100000 live births.

Table 5: Maternal mortality of selected countries

Country	Maternal deaths per 100000 live births
America	22
Kenya	82
Malawi	48
Nigeria	34
Senegal	35
Bangladesh	54
Bhutan	55
India	37
Pakistan	194

Source: C. Abouzahr and E. Royston: Maternal Mortality a Global Fact Book. WHO (1991).

The combined effects of lower infant, child and maternal mortality rate have been attributed to an increase in population size. Further improvement of maternity services in developing countries should also add to increase in population. However, when these are coupled with fertility checks especially through family planning practice that would definitely lead to decline in population increase.

Table 6: Frequency distribution of family planning users and non-users

Village	Family planning		Total
	Users	Non-Users	
Chiguruwada	46	45	91
A.P. Agraharam	54	35	89
Kupuchandrapet	46	44	90
Durgasamudram	62	37	99
Adapareddy palli	53	36	89

Family Planning: The foregoing discussion on infant, maternal and child mortality holds good when it is tested with the primary data. As has been discussed earlier that a definite way of controlling population improving infant and child survivorship and maternal health, is through adoption of family planning (Ravenholt, et al., 1993). In the present analyses an attempt has been made to see the mortality component of infant, maternal and child through a primary data collected from 5 villages of Tirupati surroundings and the results are shown in table 4 and 5. Out of 458 couples studied in the age groups of 20 to 40 + years, 261 couples (57%) practice permanent method of family planning and 197 couples (43%) do not use any method. Couples using family planning have 371 everborn children, out of them 7 are everdead and 365 are everliving children. Whereas non-users have 528 ever born children, out of them 76 are everdead and remaining 452 are everliving ones. The mean number of children in users, is 1.42, while in non-users it is 2.68. Similarly the mean number of dead children for users is 0.03 and for non-users it is 0.32 indicating low mortality of children in users than non-users of family planning methods. This is due to the fact that users of family planning have also utilized health care facilities for their children, and many of the non-user couples have not fully used these health care facilities. The results further emphasize a lot about the advantages and development attributes of family planning practice. Demographers consider it as one of the best indicators of country's level of progress in standards of living and progress in the fields of health and education.

The present study has clearly shown that the mortalities of infant, child and maternal depends on the socio-economic status at one hand and the other is in utilizing infrastructural health services. Higher control of mortality is possible for

Table 7: Details of family planning adoption and fertility and mortality trends

Family planning	Total		Everborn children		Everdead children	
	No.	%	No.	Mean	No.	Mean
Users	261	57	371	1.42	7	0.03
Non-users	197	43	528	2.68	76	0.38

the populations who enjoy good socio-economic conditions. The poorer sections of the society are however lagging behind higher income group. The overall declining death rates whether at national or regional level are attributed to improved socio-economic conditions, mass control of diseases through immunization and other health infrastructure, advance in medical technology and impact of national health programmes and improvement in education, food and nutrition.

Further, reduction in mortality will lead to higher life expectancy and this is a good indicator of population development. Thus demographers and WHO also consider it as one of the best indicators of country's level of development and overall health status of its population.

REFERENCES

- Antonovsky: Implication of socio-economic differentials in mortality for health systems. *Paper presented at the Mexico city Conference (1979).*
- Caldwell, J.C.: Education as a factor in mortality decline - an examination of Nigerian data. *Paper presented at the Mexico city Conference (1979).*
- Caldwell, J.C., Reddy, P.H. and Caldwell, P.: Demographic change in rural South India. *Population and Development Review*, 8: 689-729 (1982).
- Chowdhury, A.K. M.A. et al.: The interaction of nutrition, infection and mortality during recent food crises in Bangladesh. *Food Research Institute Studies*, 16: 47-67 (1977).
- Doring-Bradly, B. and Johnston, R.: Socio-economic classification for the study of mortality differentials. *Paper presented at Mexico city Conference (1979).*
- Kitagawa, E.M. and Hauser, P.M.: *Differential Mortality in the United States: a Study in Socio-Economic Epidemiology*. Harvard University Press, Cambridge, Mass (1973).
- Ravenholt, T. T., Bhackett, J.B. and Chao, L.C.: *Family Planning Programmes and Fertility Patterns*. Population Reports, Series No. 1, Washington D.C. (1973).
- Stan D' Souza and Bhuiya, Abbas: Mortality differentials in rural Bangladesh. *Population and Development Review*, 8: 753-769 (1982).
- Oyeku, I.C.A.: Influence of the number of living sons on contraceptive use among female teachers in Nigeria. *Studies in Family Planning*, 20 (1989).