THE EFFECT OF SOME SOCIO-DEMOGRAPHIC FACTORS ON INFANT AND CHILD DEATHS

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ABSTRACT

The purpose of this study is to investigate the effect of maternal age, parity, birth interval duration of breastfeeding, education and availability of health facilities on infant and child mortality.

Tanzania is still faced with a problem of high infant and child mortality despite the observed trend of mortality decline in developing countries in the twentieth century.

The study was carried out in Kibaha district in coast region. Data from 612 women in child bearing period with children dead were analysed in this study.

The findings were that maternal age, parity, birth interval and education of mothers have an effect on infant and child deaths. Availability of health facilities has no effect while duration of breastfeeding could not be analysed. Maternal age showed an L - shaped relationship with infant and child deaths. Parity indicated a J - shaped relationship while birth order had a U - shaped

relationship. Education of the mothers indicated a declining trend as education level of the mothers increased. Villages with and those without health facilities showed no difference in death rates. Over 84 percent of the children were breastfed for a duration of 0 -3 months. Very few children were full breastfed for over 3 months. Such data therefore could not be analysed.

It is recommended that effort be made to establish as soon as possible the population policy and the body that will deal with population activities. Age at marriage for females be raised. Child spacing and nutrition campaigns be enhanced women be discouraged to have more than four children. Family life education preparations for students and adults be given priority in order to take off as soon as possible. Family life education teachers be trained. Vacational training courses be established both in rural and urban areas to cater for those who complete primary education and transport net work and health facilities services should be improved in the villages.

2. To assess the degree of relationship between the socio demographic variables and infant and child deaths.

3. To recommend on measures to be taken in order to lower infant and child deaths in Tanzania.

1.4. Hypotheses.

Hypotheses made in this study are as follows:-

1. Children born to women whose age is below 20 years or above 35 years have high rates of death.
2. First born children and high birth order children (from 5th order and above), have high rates of death.
3. Children born after a short birth interval of less than 24 months and those born after a longer interval of over 48 months have high rates of death.
4. Children who are breastfed for a shorter period of less than 6 months have high rates of death.
5. As the level of education of the mothers increases the rate of death of their children decreases.
6. As distance from area of domicile to health facilities increases, the rate of infant and child deaths increases.

2.2. Preparation for Data Collection

The stage for data collection preparation is crucial. This is because, the success of actual data collection will depend on the effort put in the preparation stage.

2.2.1. Data Required.

The data to be collected was determined by the hypotheses that were to be tested in the study as presented in table 4.

TABLE 4: Data required for each hypotheses.

HYPOTHESES	DATA REQUIRED	SOURCE OF DATA
1. Children born to women whose age is below 20 years and above 35 years have higher death rates.	Age of mothers at the time of birth of the dead children	Interviews by means of a questionnaire.
2. First born children and high birth order children (from 5th and above), have higher death rates.	Birth order of the children dead	"

Continues

3. Children born after a short birth interval of less than 24 months and those born after a longer interval of over 48 months have higher death rates.	Birth Interval of the children dead	"
4. Children who are breast-fed for a shorter period of less than 6 months have higher death rates.	Duration of full breast-feeding of the children dead.	"
5. As the level of education of the mothers increases the rate of death of their children decreases.	Level of education of the mothers whose children are dead	"
6. As distance from the area of domicile to health facilities increases the rate of infant and child deaths increases.	Distance from place of residence to health facilities.	"

Villages in the four selected wards were 24. Only one third of these villages could be visited, these were 8 villages. Half of them had health facilities and the other half had no health facilities. This was to enable to compare the effect of distance to health facilities on infant and child deaths.

It was found out that there was one health centre in each ward. Therefore, the four villages with health centres were automatically selected. Villages without health facilities were randomly selected, one from each of the four wards. The villages selected were as shown in table 5.

TABLE 5: NAMES OF DIVISIONS, WARDS AND VILLAGES SELECTED FOR THE FIELD STUDY

DIVISIONS	WARDS	VILLAGES	
		WITH HEALTH FACILITIES	WITHOUT HEALTH FACILITIES
KIBAHA	Kibaha	Mwendapole	Viziwaziwa
	Tumbi	Maili Moja	Mkuza
MLANDIZI	Visiga	Kongowe	Visiga
	Mlandizi	Mlandizi A	Mlandizi B

2.3.2. Sample size of the Target Population

The target population for this research was, all women in the child bearing period in Kibaha district. According to the December 1985 household enumeration in the district, the number of women in the child bearing period was 16,000. Due to limited time and funds, a 10 percent of the target population was taken as the sample size which is 1600 women.

The number of women in the child bearing period for each village was not available. Figures for the village register of eligible voters for the October, 1985 election were used to estimate women in the target population for each village. As the figures were both for women and men, a sex ratio for each of the villages basing on the 1978 census was calculated. The sex ratios were then used to calculate the number of women eligible voters for each village. Then, a 10 percent of the women eligible voters was calculated for each village selected, to get the village target population sample size. A total number of 1144 women was taken as sample size for all the eight villages as indicated in table 6 below:

TABLE 6: ESTIMATED NUMBER OF RESPONDENTS FOR EACH VILLAGE

VILLAGE NAME	NO. OF ELIGIBLE VOTERS	SEX RATIO (IN PERCENTAGE)	ESTIMATED NO. OF WOMEN ELIGIBLE VOTERS	PERCENTAGE OF ESTIMATED NO. OF WOMEN ELIGIBLE VOTERS
Mwendapole	2705	95	1385	139
Viziwaziwa	515	117	238	24
Maili moja	5391	87	2877	288
Mkuza	2048	109	978	98
Kongowe	3135	96	1598	160
Visiga	4265	90	2240	124
Mlandizi A	1908	90	1004	100
Mlandizi B	2109	90	111	111
				TOTAL 1144

The sample size of the target population basing on the district figure was 1600. But the sum from the B selected villages is 1144, this can be seen from table 6 above. The deficit was expected to be compensated in the actual data collection considering the fact that, the child bearing group of women below age 18 was not included and that, in some of the Ten-Cell leaders jurisdiction, more than 10 women would be

interviewed instead of the estimated 10 women. Therefore, the estimated number of women for each village were left as it is indicated above as guiding figures.

2.3.3. Selection of Ten-cell Leaders for Each Village

After establishing the villages to be visited and the number of women to be interviewed in each village, the number of Ten-cell Leaders to be visited in each village was also to be established. The number of these leaders was dictated by the number of women to be interviewed in each village. It was estimated that ten women would be interviewed in each Ten-cell leader's jurisdiction. Therefore, the number of women to be interviewed in each village was divided by ten to get the number of ten cell leaders to be visited. After establishing the number of Ten cell leaders to be visited in the villages, their names were randomly selected.

Table 7 below gives the number of Ten Cell Leaders selected for each village:

TABLE 8: ACTUAL NUMBER OF RESPONDENTS INTERVIEWED IN EACH VILLAGE

VILLAGES	NO. OF RESPONDENTS
Mwendapole	244
Maili moja	238
Mkuza	195
Kongowe	235
Visiga	160
Mlandizi A	74
Mlandizi B	184
TOTAL	1330

Failure to obtain the 1600 target population sample size was due to the following reasons.

The time of the field study coincided with harvesting time. Most of the women had temporarily outmigrated to Ruvu area for harvesting rice. Such women were not interviewed. The interviewers failed to go to Viziwaziwa and Kiluvya B villages due to transport problems. Women expected to be interviewed there, were thus not interviewed. It was also expected that 10 women could be interviewed in every ten households. This was not the case in the field. Hardly 5 women were interviewed in some cases. The rest were old women of over 50 years and young girls.

expressed in death rates per thousand births. Before the rates are calculated the data on deaths and births are smoothed by three point moving average.

Some variables interrelate and some work through other variables to influence infant and child deaths. Due to this situation, a control for variables like age and education is carried out in order to analyse the effect of other factors.

In the process of analysis, it was intended to establish the degree of effect of the 6 variables listed in this study through a multivariate analysis. Unfortunately, this could not be done due to problems of computing facilities.

Cross tabulation tables and graphs are used as illustrative tools in the presentation of the findings.

3.1.3 Smoothed data

All the data in the tables given in the analysis chapter are smoothed. Data were smoothed for the purpose of reducing fluctuations that would have occured when drawing the graphs that were used as tools for analysis.

A three point moving average method was used to smoothen the data. In this method values of the first three numbers of the raw data in the column are added together. The sum is divided by three to get the average or the central value of the number involved. The average is placed on the second number of the three added values. For the following value either the second, third and fourth numbers were added and divided by three to get the second central value, or, the first value was subtracted from the total just calculated and the fourth value was added. The sum was divided by three to get the second central value. This process is continued until all the values in the column are involved. The calculated central values were therefore the smoothed figures.

3.1.4 Profile of the study population.

Women respondents with children dead were 612. These women had given birth to 3353 children. And of these children, 1057 had died representing 31.5 percent of the children born alive. About 77 percent of these women were married, 3.3 percent widowed, 13.7 percent divorced and 6 percent had never married

TABLE 9 DEATH RATES OF INFANTS AND YOUNG CHILDREN BY THEIR AGE AND BY AGE OF THEIR MOTHERS.

Age of Mothers	Smoothed No. of Births	Smoothed No. Infant deaths	Smoothed No. of Child deaths.	Infant deaths per Thousand	Child Deaths per thousand
15 - 19	29	8	10	276	345
20 - 24	259	66	35	255	135
25 - 29	489	111	63	226	129
30 - 34	666	141	79	212	119
35 - 39	679	120	81	177	119
40 - 44	618	107	66	173	107
45 - 49	537	102	49	190	91
TOTAL	3277	655	383		

TABLE 10 DEATH RATES OF CHILDREN BY THEIR BIRTH ORDER

Birth order	Smoothed No. of Births	Smoothed No. of Infant Deaths	Smoothed No. of child	Infant death per thousand	Child deaths per thousand
1	1100	190	96	173	87
2	694	129	77	186	101
3	445	89	63	200	142
4	345	70	48	203	139
5	289	60	37	208	128
6	222	49	27	220	122
7	156	39	19	250	122
8	111	27	16	243	144
9	77	18	11	234	143
10	53	11	8	208	151
11	39	8	4	205	103
12	25	2	2	80	80
13	13	1	1	77	77
14	1	1	0	1000	0
	3370	694	409		

FIGURE 4.
DEATH RATES OF INFANTS AND YOUNG CHILDREN BY BIRTH ORDER

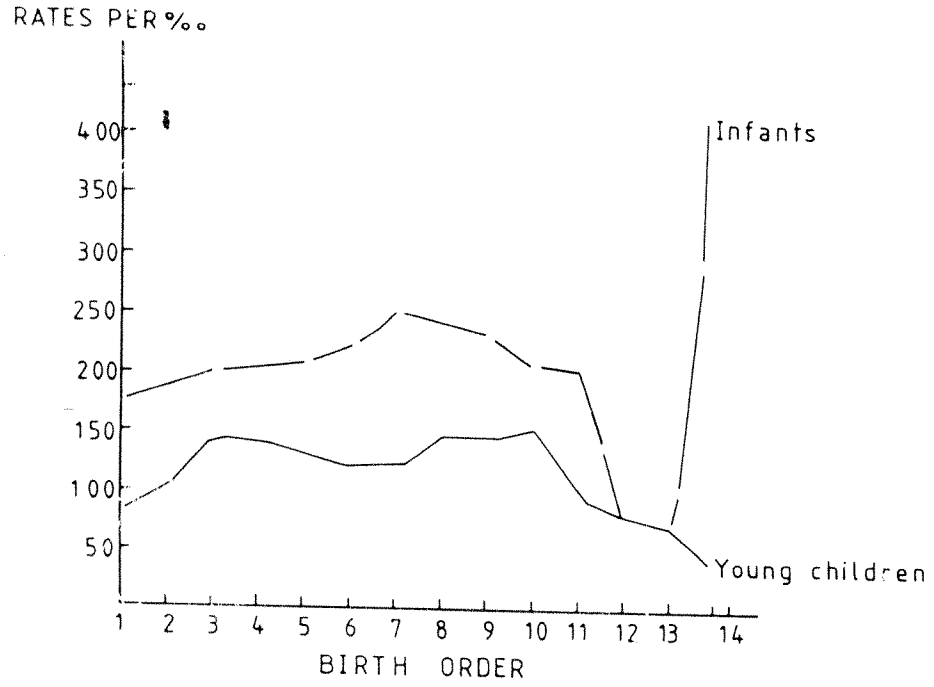


TABLE 11 DEATH RATES OF CHILDREN BORN TO WOMEN AGED 20-24 BIRTH ORDER

Birth Order	No. of Birth	Infant deaths	Child deaths	Infant death Rates per thousand	Child death rates per thousand
1	98	34	14	347	143
2	70	22	10	314	143
3	39	11	5	282	128
4	11	5	3	455	272
5	2	2	0	1000	0
6	1	1	0	1000	0
	221	75	32		

FIGURE 5
INFANT AND CHILD DEATH RATES BY BIRTH ORDER AND BY AGE OF MOTHERS

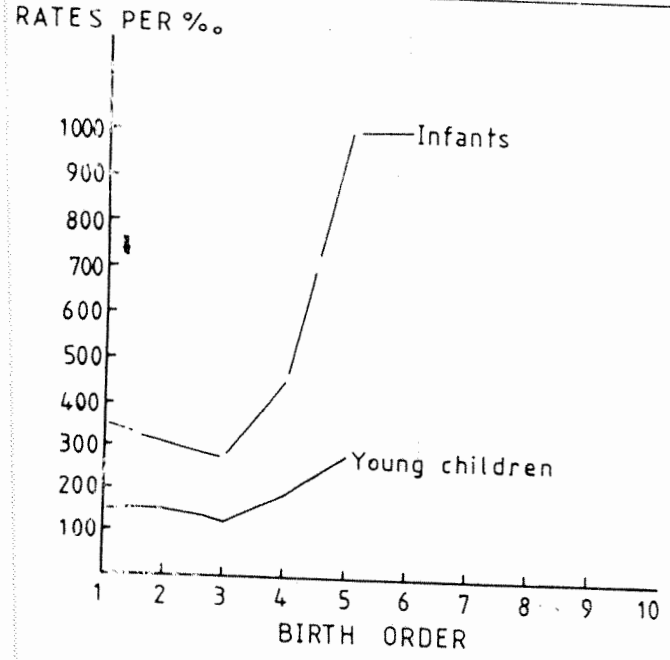


TABLE 12 DEATH RATES OF CHILDREN BORN TO WOMEN AGED 35-39 BY BIRTH ORDER

Birth Order	Smoothed No. of Births	Smoothed No. of infant deaths	Smoothed No. of Child deaths	Infant deaths per thousand	Child deaths per thousand
1	191	26	12	136	63
2	114	17	9	149	79
3	80	13	0	163	113
4	89	12	13	135	146
5	90	14	13	156	144
6	86	14	11	163	128
7	59	12	6	203	102
8	39	8	4	205	103
9	15	4	2	267	133
10	7	3	1	429	143
11	5	2	1	400	200
12	5	2	0	400	0
13	1	1	0	1000	0
14	1	1	0	1000	0
TOTAL	782	129	72		

FIGURE 6.

INFANTS AND CHILD DEATH RATES BY BIRTH ORDER AND BY AGE OF MOTHERS

TABLE 13 DEATH RATES OF CHILDREN BY BIRTH INTERVAL FOR WOMEN AGED 20-24

Birth Interval in Months	Smoothed No. of Births	Smoothed No. of Infant deaths	Smoothed No. of Child deaths	Infant Deaths per thousand	Child deaths per thousand
< 24	99	35	14	354	141
24-35	73	25	11	342	150
36-47	41	13	6	317	146
48-71	16	6	2	375	125
72+	0	0	0	0	0
TOTAL	229	79	33		

FIGURE 7

DEATH RATES OF INFANTS BORN TO WOMEN OF AGE GROUP 20-24 BY BIRTH INTERVAL

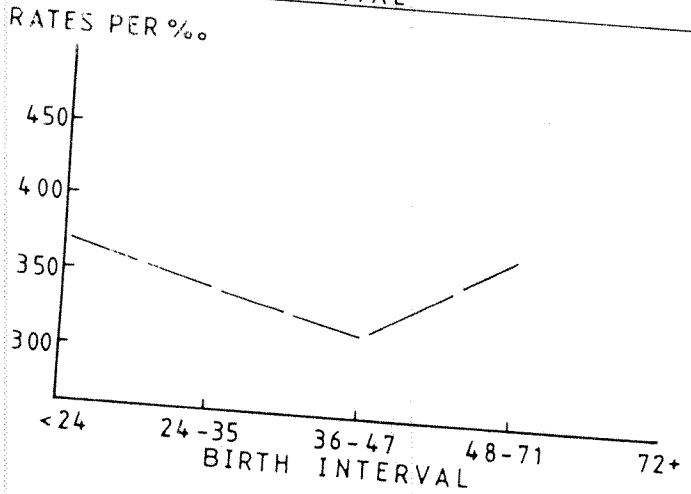


TABLE 14 DEATH RATES OF CHILDREN BY BIRTH INTERVAL FOR WOMEN WITH EDUCATION LEVEL OF 1-4 YEARS

Birth Interval in Months	Smoothed No. of Births	Smoothed No. of Infant deaths	Smoothed No. of Child deaths	Infant Deaths per thousand	Child Deaths per thousand
< 24	214	45	21	210	98
24 - 35	231	41	30	177	129
36 - 47	164	27	23	68	58
48 - 71	64	10	10	156	156
72+	0	0	0	0	0
TOTAL	673	123	84		

FIGURE 8

DEATH RATES OF INFANTS AND YOUNG CHILDREN BORN TO WOMEN WITH EDUCATION 1-4 YEARS BY BIRTH INTERVAL

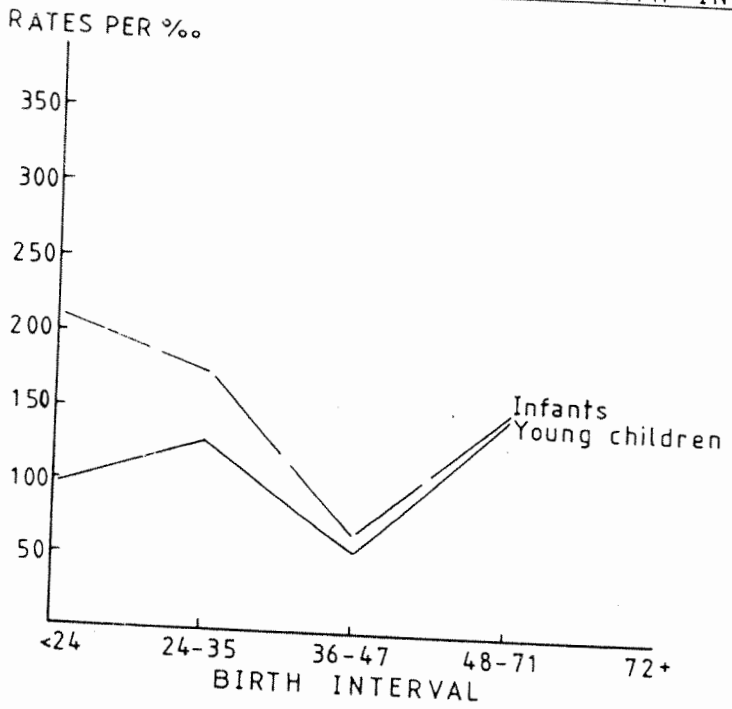
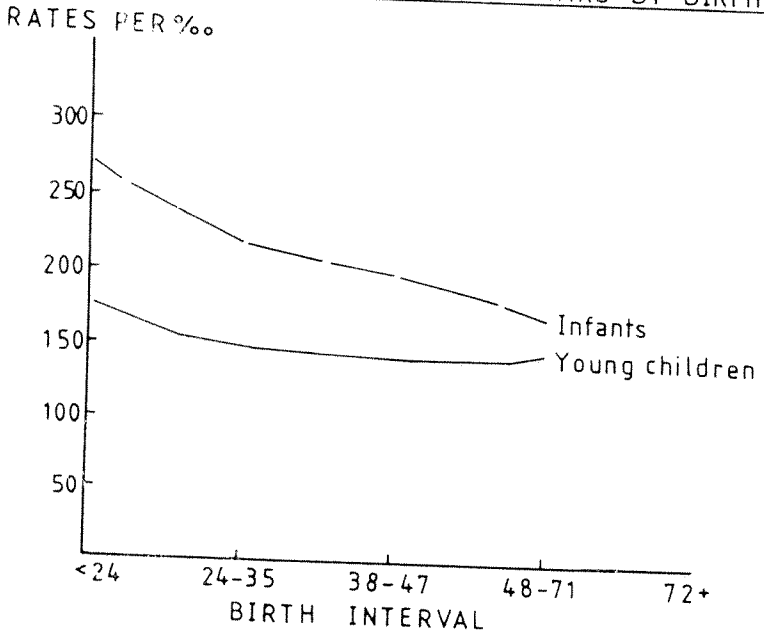


TABLE 15 DEATH RATES OF CHILDREN BY BIRTH INTERVAL FOR WOMEN WITH EDUCATION 5-8 YEARS

Birth Interval in Months	Smoothed No. of births	Smoothed No. of Infant deaths	Smoothed No. of Child deaths	Infant Deaths per thousand	Child deaths per thousand
< 24	188	51	22	270	177
24 - 35	180	40	27	220	150
36 - 47	119	24	17	200	143
48 - 71	41	7	6	170	146
72+	0	0	0	0	0
Total	528	122	72		

FIGURE 9:

DEATH RATES OF INFANTS AND YOUNG CHILDREN BORN TO WOMEN OF EDUCATION LEVEL OF 5-8 YEARS BY BIRTH INTERVAL



death rates in the second six months of life than those breastfed for six or more months.

3.5.1. Findings.

Children breastfed fully for a duration of 0-3 months represented 84.9 percent of all the children born to women interviewed in this study. Those breastfed fully for 4-5 months were 0.99 percent, 1.9 percent were breastfed for 6-12 months, 8.9 percent were breastfed for 13-18 months and 2.2 for those breastfed for over 19 months.

TABLE 16 DISTRIBUTION OF CHILDREN BY DURATION OF BREASTFEEDING.

DURATION OF BREASTFEEDING (IN MONTHS)	NUMBER OF CHILDREN	PERCENT OF CHILDREN
0-3	2832	84.9
4-5	33	0.99
6-12	65	1.9
13-18	297	8.9
19+	108	3.2
	3335	99.89

TABLE 17 DEATH RATES OF CHILDREN BY LEVEL OF EDUCATION OF THEIR MOTHERS

Level of Education in Years	Smoothed No. of births	Smoothed No. of Infant deaths	Smoothed No. No. of Child deaths	Infant deaths per thousand	Child deaths per thousand
0	2109	414	236	196	112
1- 4	1120	221	131	197	118
5-8	433	86	55	198	127
9+	48	9	5	188	104
Total	3710	730	427		

FIGURE 10

DEATH RATES OF INFANTS AND YOUNG CHILDREN BY LEVEL OF EDUCATION OF THEIR MOTHERS

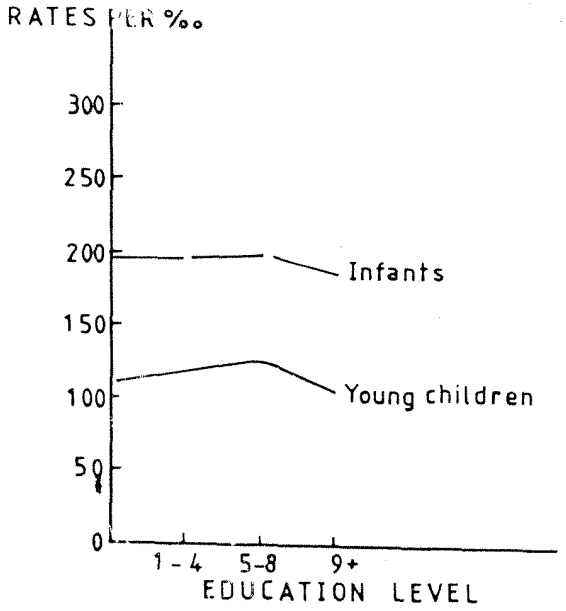


FIGURE 11
DEATH RATES OF INFANTS AND YOUNG CHILDREN BY AGE AND EDUCATION LEVEL OF THEIR MOTHERS

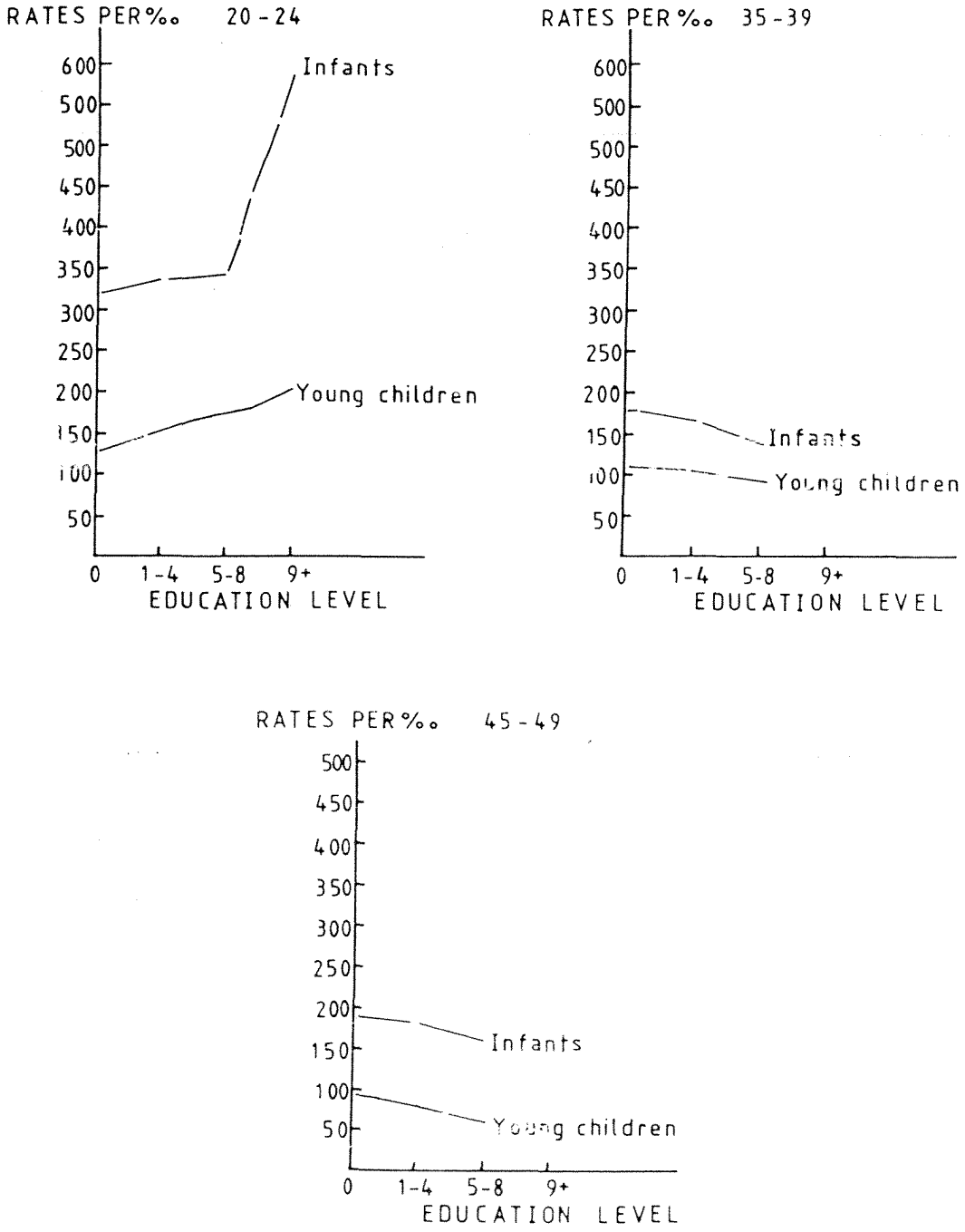


TABLE 18 DEATH RATES OF CHILDREN BY LEVEL OF EDUCATION OF WOMEN AGED 35-39.

Level of Education in Years	Smoothed No. of Deaths	Smoothed No. of Infant Deaths	Smoothed No. of Child Deaths	Infant deaths per thousand	Child Deaths per thousand
0	529	93	57	176	108
1 - 4	252	42	26	167	103
5 - 8	78	11	7	141	90
9+	0	0	0	0	0
TOTAL	859	146	90		

TABLE 19 DEATH RATE OF CHILDREN BY LEVEL OF EDUCATION OF WOMEN AGED 45-49

Level of Education in Years	Smoothed No. of deaths	Smoothed No. of Infant Deaths	Smoothed No. of Child Deaths	Infant deaths per thousand	Child Deaths per thousand
0	455	88	43	193	94
1 - 4	183	34	16	186	87
5 - 8	32	5	2	156	63
9+	0	0	0	0	0
Total	670	127	61		

TABLE 20 DEATH RATES OF CHILDREN BY DISTANCE TO HEALTH FACILITIES

Distance to health facilities	Smoothed No. of births	Smoothed No. of infant deaths	Smoothed No. of Child death	Infant deaths per thousand	Child deaths per thousand
1 km	279	55	32	197	115
1-3 km	907	178	106	196	117
4-6 km	1063	202	123	190	116
7+	747	145	82	194	110
Total	2996	580	343		

TABLE 21 DEATH RATES OF CHILDREN FOR VILLAGES WITH AND THOSE WITHOUT HEALTH FACILITIES

VILLAGES WITH HEALTH FACILITIES - 0-3 Km.					VILLAGES WITHOUT HEALTH FACILITIES - 4+ Km.				
Name of Village	Number of Women	Number of Births	Number of Death	Death rates per thousand	Name of Village	Number of Women	Number of Births	Number of Deaths	Deaths rates per thousand
Mwendapole	115	644	208	323	Mkuza	94	555	185	333
Maili Moja	93	453	145	320	Visiga	80	450	147	327
Kongowe	120	757	250	330	Mlandizi B	82	438	141	322
Mlandizi A	28	170	57	335					

CHAPTER 4

4.0 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

4.1 SUMMARY OF CONCLUSIONS

This study is based on the hypothesis that Maternal age, Parity, Birth Interval, Duration of Breastfeeding, Education and Availability of health facilities influence infant and child mortality.

From the investigation made, four hypothesis have been accepted, one rejected and another could not be investigated. Below is the summary of what was concluded in the analysis.

On maternal age, it was found out that age of the mother has an effect on infant and child deaths. Death rates are highest for children born to women of less than age 20 years of age. Older ages of the mother seem to have a slight effect on infant deaths but no effect on deaths of young children. It was also concluded that infant death rates are higher than those of young children. It was further concluded that infants die more during the first seven days of life followed by the period when they are age 1-4 and 5-8 months.

Parity also has an effect on infant and child deaths. Death rates are highest for children of high birth orders (from birth order 5), followed by first borns. Rates are lowest for second and third borns. Death rates therefore show a J-shaped relationship with parity. It was also observed that the effect of birth order is stronger on infants than on young children.

It was found out that birth interval has an effect on infant and child deaths. Higher death rates are for children born within a birth interval of less than 24 and birth interval 48-71 months. Lower death rates are observed for children born in birth intervals of 24-47 months. It was also observed that the impact of birth interval is higher on infants than on young children.

On Education Variable, it was concluded that as education rise to post primary school level, death rates show a decline. It was also noted that children born to women with education level 1-4 and 5-8 make very little difference in death rates from children born to women with no formal education. Moreover, it was observed that infants are more affected than young children.

As for the Availability of health facilities in the area of residence of the respondent in relation to infant and child deaths, the hypothesis was rejected. Further investigation was carried out to find out the causal factor for this finding. It was found out that 75 percent of the women use public transport when taking their children to health facilities for vaccination or treatment. It was also found out that 90 percent of these women take their children to health facilities every time they get sick. It was therefore concluded that as long as the transport system is effective, availability of health facilities ceases to be a factor that influences infant and child deaths. It was also concluded that poor services of the four available health facilities may have contributed to having no difference in death rates between villages with and those without health facilities.

4.2.0 Implications and Recommendations

The goal is to lower the high rate of infant and child deaths. To achieve this, measures have to be taken to control the factors that influence it. Such a task needs an organized body that can chart out plans and make a follow up of programmes aimed at reducing this high rate of deaths. The plans should have a base, a policy on population for the country. So far, there is lack of these two things in Tanzania. It is

APPENDIX 4

TABLE 22: DISTRIBUTION OF WOMEN BY MARITAL STATUS

Marital Status	Married	Divorced	Widowed	Single	Total
Number of Women	471	84	20	37	612
Percent of Women	77	13.7	3.3	6	100

TABLE 23: DISTRIBUTION OF WOMEN BY AGE GROUPS

Age groups	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Number of Women	15	79	129	130	107	88	64	612
Percent of Women	2.5	12.9	21.1	21.2	17.5	14.4	10.4	100
Grouped Percent		15.4		42.3		31.9	10.4	100

TABLE 24: DISTRIBUTION OF WOMEN BY LEVEL OF EDUCATION

Level of Education in Years.	0	1-4	5-8	9+	Total
Number of Women	329	130	143	10	612
Percent of Women	53.8	21.2	23.4	1.6	100

TABLE 25: DISTRIBUTION OF WOMEN BY DISTANCE TO HEALTH FACILITIES.

Distance to health facilities in Kms.	1km	1-3km	4-6km	7+ km	Total
Number of women	50	248	184	130	612
Percent of Women	8.2	40.5	30.1	21.2	100

APPENDIX 4

Table 25: Death rates of infants by their age and by age of their mothers

Age of mothers	No. of Births	No. of Deaths	Deaths of infants by age						Death rates of infants per thousand births					
			1 - 7 days	8 - 14 days	15 - 29 days	1 - 4 months	5 - 8 months	9 - 11 Months	1 - 7 days	8 - 14 days	15 - 29 days	1 - 4 months	5 - 8 months	9 - 11 months
15 -19	29	8	2	1	1	2	2	0	69	34	34	69	69	0
20-24	220	75	32	4	1	2	13	4	145	18	5	9	59	18
25-29	529	115	40	8	5	26	23	13	16	15	9	49	43	25
30-34	720	142	50	6	2	39	30	15	69	8	3	54	42	21
35-39	748	126	41	2	1	26	43	13	55	3	1	35	57	17
40-44	570	92	28	8	0	27	18	11	49	14	0	47	31	19
45-49	537	102	27	4	3	32	29	7	50	7	6	60	54	13
TOTAL	3353	660	220	33	13	154	158	63	513	99	58	323	355	113

Table 27: Deaths of Children born to women aged 15 - 19 by birth Order

Birth Order	No. of Births	Infant deaths	Child deaths	Infant deaths per Thousand	Child per Thousand
1	16	6	6	375	375
2	8	1	3	125	375
3	5	1	1	200	200
4					
Total	29	8	10		

Table 28: Death rates of children by birth Interval

Birth Interval in months	Smoothed No. of births	Smoothed No. of Infant deaths	Smoothed No. of child deaths	Infant deaths per Thousand	Chief deaths per Thousand
/ 24	1186	209	110	126	98
24 - 35	1120	218	131	195	117
36 - 47	757	154	96	200	127
48 - 71	263	52	35	198	133
72+	9	1	1	111	111
TOTAL	3335	634	373		

Table 29: Death rates of children by level of Education of Women aged 20-24

Level of Education in years	Smoothed No. of births	Smoothed No. of infant deaths	Smoothed No. of child deaths	Infant deaths per Thousand	Child deaths per Thousand
0	63	20	8	317	127
1 - 4	72	24	11	333	153
5 - 8	53	18	9	340	170
9+	5	3	1	600	200
TOTAL	193	65	29		

Table 30: Death rates of children by distance to health facilities for women with no formal education

Distance to health facilities	Smoothed Number of births	Smoothed Number of infant deaths	Smoothed Number of child deaths	Infant deaths per Thousand	Child deaths per Thousand
< 1km	176	35	20	197	114
1-3 km	565	108	64	191	113
4-6 km	657	125	71	193	108
7' km	452	90	49	199	108
TOTAL	1850	358	204		

Table 31: Death rates of children by distance to health facilities for women with education level 1-4 years.

Distance of health facilities	Smoothed Number of births	Smoothed Number of infant deaths	Smoothed Number of child deaths	Infant deaths per Thousand	Child deaths per Thousand
/ 1 km	65	12	8	185	123
1 - 3km	195	35	22	179	113
4 -6 km	217	37	26	170	120
7+ km	132	24	17	182	128
TOTAL	609	108	73		

Table 32: Death rates of children by distance to health facilities for women with education level 5 - 8 years

Distance to health facilities	Smoothed Number of births	Smoothed Number of infant deaths	Smoothed Number of child deaths	Infant deaths per Thousand	Child deaths per Thousand
< 1 km	36	8	5	222	139
1-3 km	133	31	18	233	135
4-6 km	171	38	24	222	140
7+ km	152	33	20	217	132
TOTAL	492	110	67		