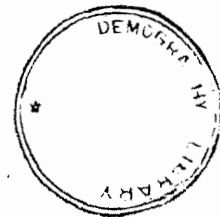MARRIAGE PATTERNS AND INFANT AND CHILD MORTALITY:

A CASE STUDY OF KIBAHA DISTRICT

BY

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ABSTRACT

This study aimed at investigating the effect of marriage patterns on infant and child mortality. The study was conducted in Kibaha District in the Coast Region. This region was chosen for the study because it is characterised by persisting high infant and child mortality. Moreover, the region is mainly rural with characteristics of multiple marriages. Thus it provided a basis for examining whether there are any infant and child mortality differentials among polygynous and monogamous households.

The data were mainly collected from household interviews, documentary sources, observational and in depth studies. The results from the explanatory factors and in mortality analysis are grouped either under polygyny or monogamy. Grouping reduces problems of interpretation of nuptiality data.

As mortality data in Africa are incomplete, indirect estimations were done by using Trussel's method. It was found that polygyny is associated with higher infant and child mortality than monogamy. Thus the type of marriage to a great extent contributes in increasing infant and child mortality. Factors used to explain these differences

[handwritten margin notes:]
factors
education both parents
income
housing condition
*household size*
Wifes agriculture and supplementary activities
Use of health facilities.

include, education of the parents, income and property, housing condition and household size. Other's are wife's agriculture and supplementary activities and use of health facilities.

The findings have revealed that high infant and child mortality is associated with low levels of income and property among polygynous and monogamous unions. The higher the income the lower the infant and children dead. Household size has been found to be associated with higher infant and child mortality to polygynous husbands than their counterparts. This implies that polygyny accelerates high fertility which is accompanied by high mortality. In almost all the explanatory factors, polygyny is associated with high infant and child mortality.

The number of infants and children dead in relation with environmental conditions, (that is types of toilets, sources of water and the environment) were found to be insignificantly different. This is because all respondents reside in rural areas with similar socio-economic characteristics. This indicates that socio-economic factors work through proximate factors to influence infant and child mortality.
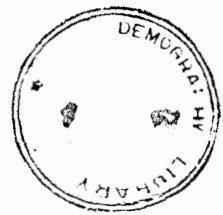
The Coast Region, and specifically Kibaha District, has been selected for this study because of the following reasons. Firstly, the region is among those with very little change in under five mortality, less than one percent per year. That is, there is persisting high infant and child mortality in the region. For example, the IMR and CMR for the Coast Region according to the 1978 census was 121 and 204 while the 1988 census gave the figures of 113 and 189 respectively with an average annual rate of reduction of under five mortality rate (U5MR) 1978-1988 of 0.8 percent (URT, 1988 Population census). Secondly, there is a persistence of polygyny which is partly allowed traditionally and partly religiously.

1.4 STATEMENT OF THE PROBLEM

The persistence of high rates of infant and child mortality in Kibaha District suggests that there might be a necessity for further research on other overlooked socio-economic factors affecting infant and child mortality. The analysis of socio-economic factors and their effect on infant and child mortality have been very widely done in several regions of Tanzania (Kamuzora (1972), Sembajwe (1973, 1983), Kitula (1987), Igosha (1990) and Mohani (1992)). However the analysis of some socio-economic factors such as marriage pattern and its effect on infant

and child mortality is not yet fully done in the Tanzanian context.

This study intends to examine the extent to which polygyny affects infant and child mortality in Kibaha district. It should also be noted that this factor does not work singly but is inter-related with other socio-economic factors such as income and property, education, household size, wife's supplementary activities, housing condition and use of health facilities.

1.5 CONCEPTUAL FRAMEWORK

The marital status of the parents, especially that of the mother, is a very important factor which influences the health and life of children. For example many studies discussing marital status and child mortality, such as that of Caldwell (1979), arrived at a conclusion that polygyny reduces the chances of survival because most of these children are born to mothers with no or little education and thus are ignorant of modern child care practices. Furthermore the economic situation in polygynous households may lead to inadequate resources to be used to ensure child survival.

Figure 1 The conceptual frame work for infant and child

mortality analysis in Kibaha district
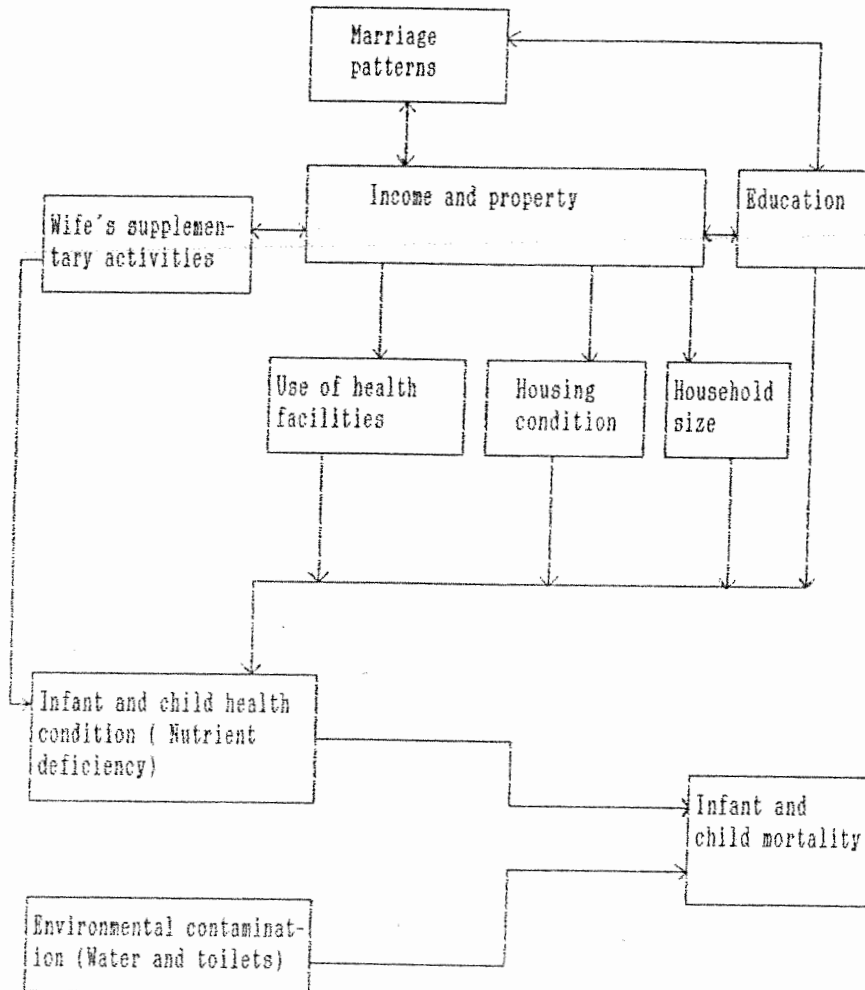
Source: Kibaha household survey 1993.
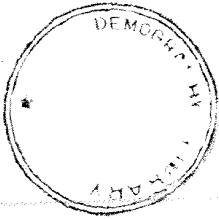
Household size is also very interrelated with income and property. With higher income one can buy better implements so as to improve agricultural output for the household consumption and selling for cash. Thus if income increases one may be able to take care of a larger household, otherwise infant and child health will be exposed to higher risk of death. All the above socio-economic factors work through proximate determinants to influence infant and child mortality. Only nutrient deficiency and environmental contamination will be considered in this study.

1.6 RESEARCH QUESTIONS

Our research questions for this study are as follows:
(a) Does the expansion of household size in polygynous unions have any effect on infant and child mortality?.

Under this research question, it is assumed that polygynous households have larger household size compared to monogamous ones. The income of the parents, especially that of the father, is likely to be insufficient in rearing the children from all wives thus deteriorating infant and children health conditions leading to their increased risk of death.

(b) Does infant and child mortality in polygynous unions decline with the increased wife's supplementary activities?.

The second research question assumes that, infant and child mortality in polygynous unions decreases if the mother, other than agriculture, is doing supplementary activities, such as selling charcoal, local brews, groundnuts, cassava and burns. This is because such activities raise her income which can be used to buy household needs when the husband fails to contribute in child care.

(c) Do the women in monogamous unions have the needed resources to ensure child health and survival?.

It is assumed that infants and children in monogamous unions receive more resources than children in polygynous marriages and it is possible that their health status is better than that of their counterparts. Thus their potential for survival is increased.

are conceded more authority in the household even when they are young brides. Moreover their views are likely to be taken more seriously by their husbands and others.

Infant and child mortality is lower at higher levels of mother's education, and that risk is associated with low educational levels (Cramer, 1987:302).

Chojnacka (1980), found that the educational attainment of the mother is more important in lowering child mortality than that of the husband. When educational attainment and the standard of living are controlled, differences in child mortality between the two types of marriage seem to be smaller for illiterate mothers than at higher levels of educational attainment, and lower than at higher standards of living. This implies that, under high rate of illiteracy and poor standards of living (low income) polygynous households will have higher infant and child mortality than their counterparts.

On the level of education Kamuzora (1972:147), in his study of mortality differentials in four selected regions in Tanzania, two of high and two of low mortality, it was found that Arusha Region which had low mortality could not be explained by the differentials in educational levels as compared with Singida and Coast Regions. This is because

they were of more or less the same level. It was thus concluded that educational level did not provide a clear explanation for differences in mortality level between the four regions.

Under such conditions one may argue that, the different studies which suggest that infant and child mortality may be lowered if the mother is educated, may not be necessarily the only solution for the problem of persisting high infant and child mortality in most Developing countries and particularly in Tanzania. It seems that there are other hidden or unresearched factors which contribute to persisting high infant and child mortality. Educational level, especially that of the mother has been mentioned and studied to be important in reducing infant and child mortality (Caldwell, 1979). This should be linked with other partially and unresearched factors so as to ensure infants and children's health and survival.

In a study done in Kibaha, Kitula (1987), found that infant and child mortality decreases with increased literacy rate. Also in a study conducted by Igosha (1990), in Shinyanga it was found that infant and child mortality are higher to mothers with only primary education.

CHAPTER THREE

STUDY AREA AND RESEARCH METHODOLOGY

3.1 STUDY AREA

As stated in chapter one, the study was undertaken in rural Kibaha District (Coast Region). The selection of this area depended on the nature of the study. The area needed was supposed to be a rural one with characteristics of multiple marriages, so as to provide a basis for examining whether there are any infant and child mortality differentials among polygynous and monogamous households. Other factors which made the researcher select this area included the persistence of polygyny as it is allowed traditionally and by Islamic laws as well as the persistence of old traditions. For example the 'mwali' custom and the associated rites as well as some of taboos concerning gestation period. Furthermore, the area has persisting high infant and child deaths. For example from the 1967, 1978 and 1988 population censuses IMR were 127, 121 and 113 per thousand live births. The 1978 and 1988 population censuses reveal CMR's of 204 and 189 per thousand live births, with only 0.8 percent reduction of under five deaths per year. Furthermore in this area marriage is universal and the mean age at first marriage is only 17 years, slightly below the Tanzania Marriage Act of

1971 which puts the age at first marriage of 18 years established by the Marriage Act of 1971 .

Another reason for choosing Kibaha District as the study area is that, some of the villages lie along the Morogoro road and therefore more accessible. The district is also near Dar-es-Salaam and the accessible Morogoro road facilitates easy transport.

3.2   GEOGRAPHICAL CHARACTERISTICS

The Coast Region has an area of 32,407 square kilometers. It is bordered by Dar-es-Salaam Region and the Indian Ocean to the east, Tanga Region to the north, Morogoro Region to the west and Lindi Region to the south (Tanzania Atlas 1987). The headquarters of the region is located in Kibaha district (map 1).

Kibaha district, which has an area of 1,630 square kilometers, is a new one in the Coast region. It was formed in 1978 from parts of Bagamoyo and Kisarawe districts, thus it was nonexistent during the 1967 and 1978 population censuses. Other districts in the region are Bagamoyo, Kisarawe, Rufiji and Mafia making a total of five districts. Formerly Kibaha district was considered to be mainly rural but during recent years some wards have

The researcher selected the divisions at district level. The selection of the divisions considered the distance and accessibility of the villages from the main road. Furthermore, since the funds provided for the fieldwork were inadequate, the researcher selected villages which were easily reached by walking short distances. The district has three divisions, Kibaha, Mlandizi and Ruvu. Only Kibaha and Mlandizi were purposefully selected for the fieldwork because they were easily accessible.

There were five wards belonging to the two divisions: Kibaha, Soga and Tumbi in Kibaha Division and Mlandizi and Visiga in Mlandizi Division. For the same reasons stated above, two wards from Kibaha Division and one ward from Mlandizi Division were purposefully selected, making a total of three wards. The selected wards were Kibaha and Tumbi from Kibaha division and Visiga from Mlandizi division.

The three selected wards have a total of sixteen villages. Six villages from the three wards were purposefully selected for the fieldwork. The villages selected were Visiga, Misugusugu in Visiga ward, Kongowe and Mwendapole in Kibaha ward, and Bokotimiza and Pangani in Tumbi ward. Six villages were selected because it was thought that they would be enough to provide the total
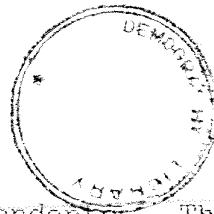
required sample size of 1200 respondents. Thus 10.1 or approximately 10 percent of the population was to be interviewed. The sample size of the target population was obtained from the total of adult population 15-65+ years for the six villages. The total adult population was 11,921; with 5,655 males and 6,266 females. The sample size for each village was calculated proportional to the total adult population of each village.

At village level the number of ten cell leaders to be visited were randomly selected from each village. There after the village chairmen and secretaries were requested to inform the selected ten cell leaders. In turn the selected ten leaders were requested to convey the message to the respective respondents about the interview and the day of visit. In some of the cases the ten cell leaders had more than ten households. However during the interview not all households were visited. We mainly concentrated on households of married couples and in very few cases of ever married couples and never married. To each ten cell leader we interviewed all currently married couples who were available for the interview.

Table 3.1 summarizes the distribution of divisions, wards and villages in the study area. It also shows the total population, expected and actual number of respondents

as well as the number of ten cell leaders for each selected
village. The expected number of respondents were not all

Table 3.1 Expected, actual number of respondents, number
of ten leaders or each of the six selected
villages.

Divisions	Wards	Villages	Population			Expected number of respondents.	Actual number of respondents.	Number of ten cell leaders
			Male	Female	Total			
Kibaha	Kibaha	Kongowe	1733	1886	3619	364	366	36
		Mwenda-pole	1479	1689	3168	319	204	21
	Tumbi	Bokoti-miza	319	344	663	67	34	04
		Pangani	424	442	866	88	43	05
Mlandizi	Visiga	Visiga	1086	1231	2317	234	236	24
		Misugu-sugu	614	674	1288	128	126	13
Total	3	6	5,655	6,266	11,921	1200	1009	103

visited. This is because some of the ten cell leaders were not
given the message in time. This caused some delay. With these
and other problems, the actual number of respondents interviewed
was only 1009 instead of the expected 1200 respondents.

analysed by the use of the SPSS/PC+ Programme. The estimation of infant and child mortality was done by using Brass's modified version (LOTPAK ~\SURVIVAL.1WK) or Trussel's method.

3.8 PROBLEMS ENCOUNTERED

During data collection the researcher encountered the following problems:

(i) Harvesting season - The data collection coincided with the harvesting season. During that period some of our respondents were temporarily staying in their fields. This caused difficulties in getting the required people, especially the wives.

(ii) Age mis-reporting - The interviewers encountered difficulties in establishing exact ages for members of households. This was because of the absence of vital statistics and no records are kept by the head of households. Most often parents didn't know their exact ages and that of their children. Thus it was necessary for the interviewers to use other methods in order to establish ages of some of the respondents. Some ages were established in reference to some memorable events that took place in the village. The
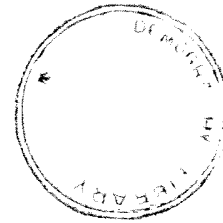
same case applied to the age at first marriage, as
some of the respondents could not remember their age
at first marriage. As a result this delayed data
collection since some of our time was used to estimate
ages.

(iii) **Shortage of funds** - The amount of money which is
allocated for research is not revised regularly. As a
result they were inadequate since the cost of living
is rising day by day.

(iv) **Lack of communication** - In some of the villages it
happened that some of the ten cell leaders were not
informed earlier about our visit. This caused delay
in data collection.

(v) **Unwillingness to give information** - some of the
respondents were not ready to be interviewed on a
question concerning number the of children who had
died. This was partly so for households which had
children who had died recently as they felt that they
are being reminded of those who had passed away; and
partly because of beliefs and taboos that to mention
the deceased may bring a misfortune to them.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 INTRODUCTION

This chapter presents the findings and discussion on the effect of marriage types on infant and child mortality in Kibaha district. It is divided into three parts. The first part, section 4.1 is on the quality of the survey data and population profile. The second part, section 4.2, is about the estimation procedure of infant and child mortality in Kibaha district by using Brass's modified version (Trussel's method): Section 4.2.1 is on the estimated levels of infant and child mortality in the study area. The third part is on the effect of marriage types on infant and child mortality; evidence from income and property. Other evidences are from education, housing condition, household size, wife's agricultural and supplementary activities, use of health facilities, infant and child health condition and environmental contamination in sections 4.3 - 4.14.

4.1 THE QUALITY OF THE SURVEY DATA

The data used in this study were obtained mainly by the use of questionnaire on household interviews. Documentary sources like clinic cards, data from Tumbi

district hospital and District Agricultural office were
used. Other sources of data were observational and in
depth studies.

The quality of data in most African countries is mainly
affected by the problem of age errors such as age
misreporting, digit preference, or heaping. Furthermore,
mortality data in Africa are unreliable and inconsistent;
the same applies to marriage data.

Nuptiality data are mainly affected by three
factors. First is the absence of a universal definition of
marriage which varies from society to society and culture
to culture. Secondly, it is affected by the respondent's
current age and dates of marriage which are often known
approximately. Thirdly, there is the misreporting of age
at first marriage. In our research the problem of
definition of marriage was solved by using the Tanzanian
definition as defined in chapter one. The problem of
misreporting age at first marriage is widespread to the
extent that it allows early unions to be hidden from the
interviewer, or their durations to be systematically mis-
stated. In order to minimize such problems more questions
were asked on when a woman was married. Was it immediately
after being secluded for the Traditional Mwali rites or if
she stayed for some years before marriage. Other questions
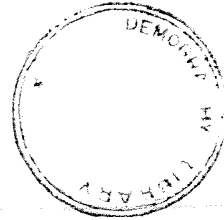
were whether she was married before being in the current union. This is because in Kibaha district divorce and re-marriage rates are high as we explained previously. From the total number of children ever born and children surviving we obtained the number of children dead by deduction. This is because there is a tendency for older women to forget their children due to memory lapse.

The accuracy of dating this particular type of event as with vital events, is to a great extent a function of the importance of dates in each society, which in turn, depends on the social and cultural characteristics, especially the level of literacy and development of the society. But in case of nuptiality, the type of union that exists may be self- introduced or exaggerate problems of dating (Singh, 1985). The problem of misreporting of dates was solved by using major events during their birth and in some few cases age at first birth was used to estimate the current ages.

Marital status is closely tied with household structure and its impact on mortality still needs to be researched. However, other than the problem of definition, collection, processing and interpretation of data on marriage, are hampered by age mis-statement and age heaping as it was stated earlier. In order to detect this

problem, age ratio method is used. It is defined as the ratio of the population in the two adjacent age groups. The age ratio (AR) is defined by :

$$A.R = \frac{5px}{1/2\ [\ (5px-5)\ +\ (5px+5)]} \times 100$$

The computed age ratios are then compared with 100 which is the expected value (Kpedekpo, 1982). The discrepancy at each age group is a measure of net age misreporting. An overall measure of the accuracy of an age distribution is called an age accuracy index. This is derived by taking the average deviation regardless of the sign from 100 percent of the age ratios and summing overall age groups. The lower this index is, the more adequate the survey data on age. The age ratios are calculated for males and females separately with an exception of the youngest and oldest age groups.

Table 4.1:   Survey population age ratios by age groups
              and sex

Age group	Males			Age group	Females		
	Number	Age ratio	Deviations		Number	Age ratio	Deviations
15-19	00	x	x	15-19	29	x	x
20-24	16	94.12	-5.88	20-24	86	95.03	-4.97
25-29	34	79.07	-20.93	25-29	152	128.27	+28.27
30-34	70	123.89	+23.89	30-34	151	92.92	-7.92
35-39	79	101.28	+1.28	35-39	173	116.89	+16.89
40-44	86	92.97	-7.03	40-44	145	73.60	-26.40
45-49	106	115.85	+15.85	45-49	221	x	x
50-54	97	82.20	-17.80				
55-59	130	119.27	+19.27				
60-64	121	130.81	+30.81				
65-69	55	83.33	-16.67				
70+	11	x	x				
Total	805	159.41			594	84.45	
Mean		15.94				16.89	

Source: Computed from Kibaha survey 1993.

Table 4.1 summarizes the evaluation of age data of the respondents in the study area. The overall age deviations for both males and females is 243.86, whereas the overall mean for both males and females is 16.23. The table shows that among males age groups 30-34, 45-49, 55-59 and 60-64 are affected by serious age heaping while age groups 25-29, 50-54 and 65-69 are affected by age avoidance. The concentration of male respondents mainly at mid-age groups may be partly due to age misreporting or misclassification. Partly it may be due to the fact that rate of polygyny increases with age. That is during the early years of

When a population is accurately classified according to the types of marriage, separately by sex and age group, useful information is provided on each of the major aspects of nuptiality (Kabir 1980). Due to such problems data in this study is arranged according to the type of marriage, separately by age and sex. This enables one to see clearly the information of each age group. For example the number of males and females under polygyny is given in tables according to age and sex. Furthermore inorder to reduce the effects of age misstatement, mothers were classified into five year age interval during the computation of infant and child mortality rates. This is because if the respondents show the traditional digit preference, then grouping of ages can be used to reduce the problem.

4.1.1 POPULATION PROFILE

In this survey 1009 households were interviewed. Respondents who were interviewed from these households were 1934. Table 4.2 summarizes the number and the percentage of the respondents in the study area. Female respondents were aged 15 to 49 years and that of males were from 20 to 70+ years.

Table 4.2:   Number of respondents in the study area

Type of marriage	Males	Females
Polygyny	321 (39.9)	460 (40.7)
Monogamy	484 (60.1)	497 (44.0)
Others Divorced	–	82 (7.2)
Widowed	–	74 (6.7)
Single	–	16 (1.4)
Total of others	–	172 (15.3)
Total no. of Males and Females	805 (100.0)	1129 (100.0)

(handwritten note: interesting that males don't participate in these groups!)

Source: Kibaha household survey 1993.

Note: Number in brackets are percentages.

:   Others refer to other types of marriage as indicated.

4.2   ESTIMATION OF INFANT AND CHILD MORTALITY BY USING BRASS'S MODIFIED VERSION IN KIBAHA DISTRICT

In this section data on children ever born (CEB) and children dead are used to estimate infant and child mortality in Kibaha district in polygynous and monogamous households.   Thus inorder to estimate infant and child mortality, the most recent version of the original Brass estimation procedure is used (Trussel's method) with the North family life table.   This estimates the probabilities

of dying at ages 2, 3, 5, 10, 15 and 20. They are designated as $q(2)$, $q(3)$, $q(5)$, $q(10)$, $q(15)$ and $q(20)$ respectively. Also the periods which they refer to can be estimated in cases where a smooth change in mortality can be assumed. The estimation requires the following type of data :

(i) The number of children ever born classified by five year age group of the mother.

(ii) The number of children dead (or surviving) classified by age group of the mother.

(iii) The total number of women (married under polygyny and monogamy) classified by five year age group.

When using this method the following assumptions are made:

(i) The age specific fertility rate and infant and childhood mortality rates were approximately constant in the recent past .

(ii) There was no powerful association between the age of the mother and infant mortality or between death rates of the mothers and children.

(iii) The rate of omission of dead children and surviving children was approximately the same.

(iv) The age pattern of mortality of infants and children conformed approximately to the model life table.
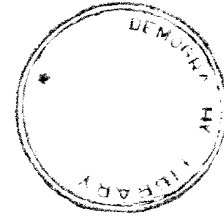
(v) The risk of dying of a child is a function of the age of the child only and not of other factors like age of the mother or the child's birth order and so the longer the period of risk the higher the mortality level (UN Manual X, 1983:73).

The modified Brass's version or Trussel's formula, using the North family of the Coale - Demeny model life table to estimate infant and child mortality was applied to the 1967 census, National Demographic Survey (NDS) of 1973 and was also applied to 1978 census. In all it gave plausible results (Egero and Henin, 1967; Henin, Ewbank and Sekatawa, 1973; and Sembajwe, 1978). Furthermore, the North family of Coale - Demeny model life table has shown a mortality pattern which is similar to that of Tanzania. That is, the North family life table is characterized by comparatively low infant mortality coupled with relatively high child mortality. Life expectancy in these tables range from 44.4 to 74.7 years (UN Manual X, 1983:13). For these reasons, the researcher feels that this method of estimating infant and child mortality in Kibaha District will still give plausible results.

The proportion of CEB who have died is an indicator of childhood mortality and can yield robust estimates of childhood mortality. The births to a group of women follow

some distribution over time, and the time since birth is
the length of exposure to the risk of dying of each person.
The proportion dead among the CEB by a group of women will
therefore depend upon the distribution of the child by
length of exposure to the risk of dying and upon the
mortality risks themselves. The proportion of children
dead classified by mother's five year age group can
provide estimates of the probabilities of dying between
births and various childhood ages.

The probability of dying at age x, $q(x)$ was calculated
by converting % dead or $D(i)$ values into $q(x)$, where
$q(x) = 1.0 - l(x)$, where $l(x)$ refers to children surviving
at exact age (x). However the basic form of the estimation
equation which was proposed by Brass is $q(x) = K(i) . D(i)$.
Here the multiplier $K(i)$ is used to adjust the proportions
dead for the effects of the pattern of child bearing and
are calculated from the ratios P1/P2 and P2/P3 (where P1,
P2 and P3 are the mean number of CEB alive to women in age
groups 15-19 (P1), 20-24 (P2) and 25-29 (P3), together with
standard regression coefficients as given below :

$$K(i) = a(i) + b(i) . P1/P2 + c(i) . P2/P3.$$

The regression coefficients $a(i)$, $b(i)$ and $c(i)$ are taken
from the appropriate family of the model life tables North,
South, East and West, selected as a suitable reflection of
the age pattern of mortality in the observed population.

In this study the North family model life table appears to be the most appropriate (see appendix 1). The details for the results are shown in Appendix 4 Tables 4.3 (a) and 4.3 (b).

The average obtained was taken as the IMR and was then compared with the IMR from the 1991/92 TDHS for Coastal area. The same was done for both q(1) and q(5) for women under polygynous and monogamous unions. The results were then compared so as to see in which type of marriage there is a higher risk of infant and child mortality. Thus the probability of infant and child mortality in polygynous households is:

q(1) = (0.0981 + 0.0803) / 2

     = 0.08920 or 89.2 per 1000 live births.

q(5) = (0.1604 + 0.1279) / 2

     = 0.1442 or 144.2 per 1000 live births.

where as the probability of infant and child mortality in monogamous households is:

q(1) = (0.0698 + 0.0863) / 2

     = 0.0781 or 78.1 per 1000 live births.

q(5) = (0.1091 + 0.1387) / 2

     = 0.1239 or 123.9 per 1000 live births.

These results are summarized in Table 4.4.

Table 4.4 Infant and child mortality rates
by mother's type of marriage

Type of marriage	Polygyny	Monogamy
IMR	89	78
CMR	144	124

Source: Computed from Kibaha household survey 1993.

From this survey the IMRs were computed as 89.2 and 78.1 per 1000 live births for women in polygynous and monogamous unions. The CMRs computed from the study area were 144.2 and 123.9 per 1000 live births for polygynous and monogamous women respectively as shown in figure 2.

4.2.1 THE ESTIMATED LEVELS OF INFANT AND CHILD MORTALITY.

The previous section established the levels of infant and child mortality in Kibaha District. This section gives explanation of the estimated levels of infant and child mortality and compares the results with the available documentary sources.

The estimation of infant and child mortality was done with respect to the mothers because mothers are the ones who can give correctly their fertility and mortality

Table 4.5 Proportion of currently married women to
          polygynous husbands according to age groups
          and village

Age group	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Villages								
Visiga	3	2	25	27	26	15	41	139(23.4
Kongowe	2	28	21	15	34	44	67	211(35.5
Mwendapole	3	15	22	31	35	20	17	143(24.1
Misuguaugu	0	0	3	19	15	17	11	65 (10.9
Pangani	0	0	4	4	1	0	8	17 (2.9)
Bokotimiza	0	0	3	11	1	2	2	19 (3.2)
Total no. of women %	8 *	45 (12.3	78 (19.6	107 (25.0)	112 (25.9)	98 (23.5	146 (31.4	594 (22.9)
% of women under P(a)	(12.8	(12.0	(23.6	(32.1	(31.0)	*	(20.4	(22.3)

Source: computed from Kibaha household survey data 1993.

Note : Number in brackets are percentages.

      : Sample is very small and is discarded.

P   : Polygyny

(a)   : TDHS 1991/92. * In the data for Coast region means
        the rate is based on fewer than 25 women and has
        been suppressed.

    It is observed from Table 4.5 that the percentage of
women under polygyny increases with age of the wife. That
is, as the wife gets older the husbands tends to marry
additional wives. Males marry at an age of 20 years and
above (see Table 4.6 Appendix 2). Since the sample of
women married under polygyny in age group 15-19 is very
small, it was disregarded in the computation of the
overall mean. As a result, the percentage of currently

married women under polygyny was found to be 22.9 percent. It is found that, in Kibaha District polygyny concentrates at ages 25-39 years. That is, it raises gradually from age 25-39 years, then declines slightly at ages 40-44 years and rises again at ages 44-49 years. Moreover, the computed results from Kibaha survey show that polygyny reaches higher percentage at an early age of 25-29 years. This may probably be because those who do not get married to a monogamous husband by that age decide to be married to any available husband. Also it seems that there are more males than females due to migration of young males to the city of Dar-es-Salaam.

When these findings are compared with the 1992/93 TDHS results for the Coast Region, the percentage of polygynous women in Kibaha District shows the same trend as that for the Region (see Table 4.5). However, at age group 40-44 region-wise, the data was unreliable or too small. The percentage in age group 45-49 years is smaller than the mid-ages. Also in the 1991/92 TDHS polygyny reaches higher percentage at an early age of 25-29 years.

In the past it was known that women married to a polygynous husband bear fewer children than women under monogamy. However, research done in 1980's and 1990's have revealed that fertility of women in polygynous unions

Table 4.7 Polygyny, Monogamy and infant and child

mortality rates in Kibaha District by village

Type of marriage	Polygyny		Monogamy	
Name of village	IMR	CMR	IMR	CMR
Visiga	91	244	76	65
Kongowe	137	198	64	56
Mwendapole	79	275	70	83
Misugusugu	132	198	52	6 2
Pangani	104	254	52	96
Bokotimiza	92	173	101	72
Total	108	228	68	67

Source: Kibaha household survey 1993.

Moreover it is found that, infant mortality rates in polygynous households are almost twice as high as those in monogamous households (108 compared to 68). At the same time child mortality is three times as high in polygynous as in monogamous households (228 compared to 67).

The higher infant and child mortality in polygynous households is likely to be a result of other several factors associated with polygyny. These may include differences in income and property, high illiteracy rates, poor nutritional status, non use of health facilities and

Education provides men and women with more choices about their lives. It also affects their decision on the type of marriage they prefer or select.

Table 4.9 Distribution of infants and children dead by father's educational attainment and type of marriage

Type of marriage	Polygyny (P)			Monogamy (M)		
Education	Infants	Children	Total	Infants	Children	Total
No education	176	411	587(62.2)	83	82	165(56.5)
Primary	112	224	336(35.6)	60	54	114(39.0)
Secondary +	6	5	11(1.2)	3	6	9(3.1)
Not stated	10	–	10(1.0)	1	3	4(1.4)
Total	292(32.2	640(67.8	944(100)	147(50.3)	145(49.7)	292(100)
X^2-test	$X^2=19.98$ df=3 $X^2 0.05, 3=7.82$			$X^2=2.31$ df=3 $X^2 0.05, 3=7.82$		

Source: Computed from Kibaha household survey 1993

Note : Figure in brackets are percentages

From Table 4.9 it is found that ignorance is associated with high infant and child mortality under both polygyny and monogamy. 62 percent of infants and children born to polygynous fathers who are illiterate died, compared to 57 percent who were born to monogamous fathers. A chi-square test of association between type of marriage,
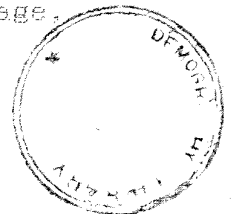
4.5 THE EFFECT OF MARRIAGE PATTERN ON INFANT AND CHILD MORTALITY : EVIDENCE FROM HOUSEHOLD SIZE.

In this section we intend to investigate whether or not IMR and CMR vary with household size. From Table 4.10 it is observed that polygynous unions have a mean household size of 8.7, infant and child deaths of 304 (or 108 per 1000 live births) and 640 (or 228 per 1000 live births) respectively. At the same time monogamous unions have a mean household size of 4.5, infant and child deaths of 147 (or 68 per 1000 live births) and 145 (or 67 per 1000 live births) respectively.

Table 4.10 Summarized CEB, number of households and size, children dead in polygynous and monogamous households

Type of marriage	Polygyny (P)	Monogamy (M)
No. of CEB	2806	2177
Infants dead	304 (108)	147 (68)
Children dead	640 (228)	145 (67)
Total no. of H/H	321	484
Mean H/H size	8.7	4.5

Source: Computed from Kibaha household survey data 1993

Note : Number in brackets are proportions dead (prodead)
Prodead = everdied/everborn x 1000 (From Chojnacka 1980)
H/H = Household.

likely that infants and children in their houses receive smaller shares than children in monogamous households.

Income and property affects the health and survival of infants and children. Lower income and property is found to be associated with an increased number of infant and child mortality. In their study on the relationship between ownership and mortality in three types of households, owning one, two or three cows respectively,

Table 4.11 Type of marriage, by father's income and property

Type of marriage	Polygyny	Monogamy
INCOME Below 20,000	159 (49.5)	215 (45.7)
Between 20,000 and 40,000	132 (41.1)	188 (40.0)
Between 50,000 and 70,000	17 (5.3)	34 (7.2)
Above 70,000	15 (4.8)	33 (7.0)
Total	321	470

Source: Kibaha household survey data 1993.

Note: Number in brackets are percentages.

D'souza and Bhuiya (1982) found that there was higher mortality in a household with less income. Thus higher mortality was found to be in a household owning only one

Table 4.12 presents findings on the relationship
between type of marriage and infant and child mortality by
using evidence from father's income and property. The
results show that, 52 and 50 percent of infants and
children born to fathers with incomes below 20,000 Tshs
died in polygynous and monogamous households respectively.

Table 4.12   Distribution of infants and children dead by
type of marriage and father's income and
property

Type of marriage	Polygyny			Monogamy		
Income	Infants	Children	Total	Infants	Children	Total
Below 20,000	156	337	493(52.2)	74	72	146(50.0)
Btn 20 and 40	112	256	368(39.0)	59	57	116(39.7)
Btn 50 and 70	17	28	45(4.8)	9	6	15(5.1)
Above 70,000	8	18	26(2.8)	3	4	7(2.4)
Not stated	11	1	12(1.2)	2	6	8(2.7)
Total	304(32.2)	640(67.8)	944(100)	147(50.3)	145(49.7)	292(100)

Source : Computed from Kibaha household survey 1993.

Note   : Number in brackets are percentages.

It is found that, infants and children dead from
polygynous and monogamous husbands decrease with increasing
income and property. Low levels of income is associated
with higher infant and child mortality. This indicates

Table 4.13: Distribution of respondents by type of
marriage and housing condition

Type of marriage	Polygyny	Monogamy
TYPES OF HOUSE Poles, mud and makuti	188 (58.6)	258 (53.8)
Mud, bricks, tins and cor. iron sheet	133 (41.4)	222 (46.2)
Total	321	480

Source: Kibaha household survey 1993.

Note: Number in brackets are percentage.
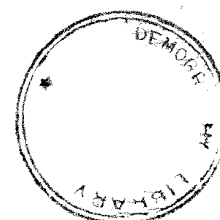
This implies that, generally most of the polygynists have houses of poor quality than their counterparts. Having a large household size means one needs to build a bigger house or several houses where he can accommodate all the members. Type of house, materials it is made of, number of persons per room, and window size for ventilation, may have an influence on child mortality. Houses of better quality and which are more spacious and well ventilated may probably reduce the risk of death especially among infants and children. That is, there will be no crowding and the spread of diseases such as tuberculosis, meningitis and pneumonia can be minimized.

It is observed that most of the respondents have houses with three rooms. Table 4.16 reveals that, 57 percent of infants and children died in polygynous houses with three rooms, while 52 percent died in monogamous houses with the same number of rooms. The number of rooms in a house show a significant role in accelerating or decelerating infant and child mortality. A house with many rooms in relation to the household size is an important factor in ensuring infant and child health and survival.

TABLE 4.8   THE RELATIONSHIP BETWEEN MARRIAGE PATTERN AND INFANT AND CHILD MORTALITY: EVIDENCE FROM USE OF HEALTH FACILITIES

The availability as well as utilization of medical services are important factors in ensuring infant and child health and survival.

Table 4.17 Distribution of respondents by type of marriage and distance from health facilities

Type of marriage	Polygyny	Monogamy
Distance to hosp. Below one km	187 (58.3)	296 (61.8)
Between 1-4 km	80 (24.9)	107 (22.3)
Above 4 kms	54 (16.8)	76 (15.9)
Total	321	479

Source: Kibaha household survey 1993.
Note :   Number in brackets are percentages.

Table 4.18 Distribution of infants and children dead by
type of marriage and distance from health
facilities

Type of marriage	Polygyny			Monogamy		
Distance to hosp.	Infants	Children	Total	Infants	Children	Total
Below 1 km	174	362	536(56.8)	76	51	155(53.1)
Between 1 and 4 kms	28	41	67(7.0)	27	10	37(12.7)
Above 4 kms	101	238	339(35.9)	43	55	98(33.6)
Not stated	1	1	2(0.2)	1	1	2(0.6)
Total	304(32.2)	640(67.8)	944(100)	147(50.3)	145(49.7)	292(100)

Source: Kibaha household survey 1993.

Note : Number in brackets are percentages.

Previous findings show that, even when sufficient medical facilities such as hospitals, dispensaries and rural health centres are provided, clinical attendance is very low in rural area (Jiwani, 1976). Therefore what is important is not only the presence of health facilities but also the utilization of such services.

The under utilization of medical facilities may be due to the fact that most of the respondents under polygyny are less educated than those under monogamy. Thus they are

to evaluate it. Thus one may use information on the frequency of consumption of selected types of food which are thought to provide some indication on the state of nutrition in the households of all the surveyed villages and the Coast Region in general.

Table 4.19 Distribution of respondents by type of marriage and infants and children's nutritional status

Type of marriage	Polygyny	Monogamy
No. of meals for u5 Twice	10 (5.6)	19(7.6)
Thrice	166 (93.3)	213(85.2)
Four or more times	2 (1.1)	18(7.2)
Total	178	250
Food for underfive Milk	4 (2.2)	11(4.4)
Porridge	66 (36.7)	112(44.4)
"Uji lishe"	30 (16.7)	53(21.0)
Others	80 (44.4)	69(27.4)
Total	180	252
No. meals for family Once	2 (0.4)	2(0.4)
Twice	90 (19.7)	63(12.8)
Thrice	366 (79.9)	429(86.8)
Total	458	494

Source: Kibaha household survey 1993.
Note :   Number in brackets are percentages.

Table 4.20 Distribution of infants and children dead by type of marriage and their nutritional status

Type of marriage	Polygyny			Monogamy		
No. of meals for under 5	Infants	Children	Total	Infants	Children	Total
Two times	13	6	19(7.6)	7	6	13(10.2)
Three times	83	147	230(92.4)	58	51	109(85.5)
Four or more times	-	-	-	1	4	5(3.9)
Total	96(38.6)	153(61.4)	249(100)	66(52.0)	61(48.0)	127(100)
Food for underfive						
Milk	1	3	4(1.6)	2	2	4(3.1)
Porridge	40	58	98(39.4)	32	30	62(49.2)
"Uji lishe"	12	19	31(12.4)	6	5	11(8.7)
Others	28	88	116(46.6)	24	25	49(38.9)
Total	81(32.5)	168(67.5)	249(100)	64(50.8)	62(49.2)	126(100)
No. meals for family						
Once	3	5	8(0.8)	-	-	-
Two times	57	122	179(19.0)	30	20	50(17.1)
Three times	243	511	754(79.9)	117	122	239(81.8)
Not stated	1	2	3(0.3)	-	3	3(1.0)
Total	304(32.2)	640(67.8)	944(100)	147(50)	145(49.7)	292(100)

Source: Kibaha household survey 1993
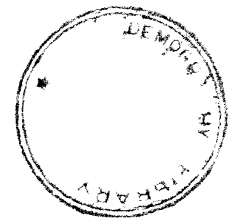
Note: Number in brackets are percentages

Table 4.21 Distribution of respondents by type of marriage
and environmental condition

Name of village	Polygyny	Monogamy
Type of toilet Pit built and thatched	18 (5.6)	52 (10.8)
Pit not thatched	299 (93.1)	421 (87.7)
No toilet	4 (1.2)	7 (1.5)
Total	321	480
Surroundings Pit for garbage	212 (66.0)	333 (69.4)
No pit for garbage	109 (34.0)	147 (30.6)
Total	321	480

Source: Kibaha household survey 1993
Note: Number in brackets are percentages.

In Kibaha district most of the respondents in
polygynous and monogamous households use piped water and
only few of them fetch water from wells. In some villages
such as Bokotimiza and pangani residents depend solely on
water from wells. The distance to water source is less
than one kilometre.

A majority of the villagers reported to have some kind
of latrines. Almost all of them were using pit latrines
and they ranged from well constructed with cement floor,
walls and corrugated iron roofs those with mud floor,
thatched or with open roofs. Furthermore, it was observed

Table 4.22   Distribution of infants and children dead by
type of marriage and environmental conditions

Type of marriage	Polygyny			Monogamy		
Type of toilet	Infants	Children	Total	Infants	Children	Total
Pit built and thatched	21	54	75(7.9)	15	10	25(8.6)
Pit, not thatched	269	572	841(89.1)	130	133	263(90.0)
No toilet	13	13	26(2.8)	2	2	4(1.4)
Not stated	1	1	2(0.2)	-	-	-
Total	304(32.2	640(67.8	944(100)	147(50.3	145(49.7	292(100)
Surroundings With garbage pit	195	423	618(65.5)	94	109	203(69.5)
Without garbage pit	108	216	324(34.3)	53	36	89(30.5)
Not stated	1	1	2(0.2)	-	-	-
Total	304(32.2	640(67.8	944(100)	147(50.3	145(49.7	292(100)

Source: Computed from Kibaha household survey 1993.
Note :   Number in brackets are percentages.

It is known that infants and children are more sensitive to environmental changes.   Children are especially more affected by the environment during their second year of life.   It is found from Table 4.22 that poorly built latrines are associated with high infant and child mortality. 89 and 90 percent of infants and children born in polygynous and monogamous households respectively, with poorly built pit latrines died.   The absence of toilets accelerates infant and childhood mortality.   For

Table 4.23 Type of marriage, by wife's

supplementary activities

Type of marriage	Polygyny	Monogamy
OTHER ACTIVITIES Sell charcoal	20 (4.3)	13 (2.7)
Sell groundnuts	84 (18.3)	82 (16.9)
Sell local brew	18 (3.9)	25 (5.2)
Others	10 (2.2)	29 (6.0)
No other activity	328 (71.3)	336 (69.3)
Total	460	485

Source: Kibaha household survey 1993.

Note: Number in brackets are percentages.

There is a slight difference between wives who do supplementary activities under the two types of marriages as is indicated in Table 4.23. Wives in polygynous households who do secondary activities are likely to have lower infant and child mortality as those under monogamy. Thus secondary activities form a good indicator of raising income inorder to reduce the risk of infant and child mortality. These findings support our second research question. Whenever women in polygynous unions do most of the work on their own such as food production as well as supplementary activities, their children are likely to have a good health as those under monogamy.

Table 4.24 Distribution of infants and children dead by
type of marriage and mother's supplementary
activities

Types of marriage	Polygyny			Monogamy		
Other activities	Infants	Children	Total	Infants	Children	Total
Sell charcoal	7	6	13(2.9)	1	7	8(2.7)
Sell groundnuts	42	55	97(21.5)	28	16	44(15.1)
Sell local brew	2	14	16(3.5)	11	5	16(5.5)
Others	7	5	12(2.7)	3	6	9(3.1)
Nothing	125	186	311(69.0)	103	110	213(72.9)
Not stated	-	2	2(0.4)	1	1	2(0.7)
Total	183(40.6)	268(59.4)	451(100)	147(50.3)	145(49.7)	292(100)

Source: Computed from Kibaha household survey 1993.

Note: Number in brackets are percentages.

Table 4.24 shows that women under both polygynous and monogamous unions who do not have secondary activities have high infant and child mortality. The table shows that 69 and 73 percent of infants and children born to women under polygynous unions who do not do supplementary activities died. Supplementary activities are associated with lower percentages of infants and children death under both polygynous and monogamous unions compared to those without secondary activities.

Table 4.25 Distribution of infants and children dead by

type of marriage and mother's educational level

Type of marriage	Polygyny			Monogamy		
Educational level	Infants	Children	Total	Infant	Children	Total
No education	137	172	309(68.5)	97	84	181(62.0)
Primary	46	93	139(30.8)	47	53	100(34.2)
Secondary +	-	3	3(0.7)	2	1	3(1.0)
Not stated	-	-	-	1	7	8(2.7)
Total	183(40.6)	268(59.4)	451(100)	147(50.3)	145(49.7)	292(100)
X^2-test	$X^2=7.09$ df=2 $X^2 0.05,2=5.991$			$X^2=6.115$ df=3 $X^2 0.05,3=7.815$		

Source: Computed from Kibaha household survey 1993

Note: Number in brackets are percentages.

Table 4.25 shows that higher infant and child mortalities are associated with mother's illiteracy level in both polygynous and monogamous households. 69 percent of infants and children of mothers in polygynous unions with no education died compared to 62 percent of infants and children who died to mothers with no education in monogamous unions. A chi-square test of association between type of marriage, infants and children dead by mother's educational level show that they are significantly associated at 5 percent level among women under polygynous

Each household in the district is supposed to have two acres of food crops and one acre for cash crop, making a minimum of three acres by law of Local Government (Kibaha District Report 1992).

Table 4.26 Type of marriage, by wife's income and property.

Type of marriage	Polygyny	Monogamy
INCOME Below 20,000	442 (96.1)	461 (92.8)
20,000 and above	18 (3.9)	33 (7.2)
Total	460	497

Source: Kibaha household survey data 1993

Note: Number in brackets are percentages.

However, most of the women did not own shambas, as they are considered as mere producers. Among women under polygyny, 41 percent owned shambas, whereas 35 percent of wives in monogamous unions owned shambas. Since the study was done in a rural area, it was expected that most of the women could own a shamba. But the findings show that it is not so, even though most of them are engaged in agricultural activities.

is men's control of income, property and women's labour
(Cain, 1978:406).

Infant and child mortality is found to be high at low
levels of income. From Table 4.27 it is observed that 94.5
and 94.9 percent of infants and children of mothers in
polygynous and monogamous unions with incomes below 20,000
died. This results show the same trend as it was found in
reference to fathers. A chi-square-test of association
between type of marriage, infants and children dead by
mother's income and property show that they are
significantly associated at 5 percent level among women
under polygynous unions. The association is insignificant
among women under monogamous unions.

Table 4.27 Distribution of infants and children dead by
type of marriage and mother's income and
property

Type of marriage	Polygyny			Monogamy		
Income	Infants	Children	Total	Infants	Children	Total
Below 20,000	176	250	426(94.5)	136	141	277(94.9)
20,000 and above	4	17	21(4.7)	6	4	10(3.4)
Not stated	3	1	4(0.9)	5		5(1.7)
Total	183(40.6	268(59.4	451(100)	147(50.3	145(49.7)	292(100)
X^2-test	$X^2=6.099$ df=2 $X^2 0,05,2=5.99$			$X^2=5.477$ df=2 $X^2 0.05,2=5.991$		

Source: Computed from Kibaha household survey 1993.

Note: Number in brackets are percentages.

Women's access to the cash economy contributes
significantly to the economic condition of households.
This is because it is the women who, in most African
societies, have the primary responsibility of rearing
children. With a high income it is possible for mothers to
take care of their children therefore ensure their health
and survival.

4.14   CORRELATION RESULTS

Correlation analysis is used to show the relationship between different types of variables.   In this case the degree of the relationship is examined by the use of simple correlation method.   The correlation coefficient measures the degree of closeness of the relationship of the variables analysed.

Table 4.28 summarizes the correlation results for polygynous husbands and Table 4.29 for monogamous husbands. The variables correlated are : husbands income (inco), and number of children ever born to a polygynous husband (polcheb). Others are husbands education (educ), number of wives (nowi) and the number of children dead (nochded). Children ever born (CEB) to monogamous husbands is abbreviated by (chbmo).

Variables in Table 4.30 and 4.31 are for the wife (wives) in the two types of marriage.   These are : other activities (secondary activities (othera)), education, CEB, and number of children dead.

The correlation results for the husband under both polygyny and monogamy show that there is strong positive correlation between father's education and income. The coefficient is significant at 0.001 level in both cases.

This implies that the higher the father's educational level the higher is their income. Also in a study done by Cochrane (1979:78) it was found that education is associated with high income.

Table 4.28 CORRELATION RESULTS FOR POLYGYNOUS HUSBANDS

	Income	Nowi	Polcheb	Educ	Nochdead
Income	1.0000				
No. of wives	0.1127	1.0000			
Polcheb	0.0472	0.3773**	1.0000		
Education	0.2297**	-0.0570	-0.1728*	1.0000	
Nochdead	0.1556*	-0.0519	0.3943**	-0.1633*	1.0000

(N = 238)

Table 4.29 CORRELATION RESULTS FOR MONOGAMOUS HUSBANDS

	Inco	Chbmo	Education	Nochdead
Inco	1.0000			
Chbmo	-0.0640	1.0000		
Education	0.4353**	-0.2944**	1.0000	
Nochdead	-0.1390	0.5740**	-0.2499**	1.0000

(N = 193)

Note: * -.01 1-tailed significance

         ** -.001 2-tailed significance

Furthermore, the result show that there is a strong positive correlation between CEB in polygynous households (polcheb) with the number of wives (nowi). The coefficient is significant at 0.001 level. Also education shows a weak negative correlation with the number of children ever born to polygynous husbands (polcheb). The coefficient is significant at 0.01 level. This reveals that as a polygynous husband increases the number of wives, the CEB also increases. These results supports our first research question. That is polygynous households have a large household size and that a high income is needed to maintain such households. The weak negative correlation between education and children ever born to polygynous husbands means that, the higher the father's educational level the lower the number of children of ever born to polygynous husbands.

The correlation results for monogamous husbands show a strong negative correlation between father's education and the number of children ever born to monogamous husbands. The coefficient is significant at 0.001 level. This indicates that the higher the CEB among monogamous households the lower the father's educational level. Thus generally educational level is an important determinant of CEB in a household. Husbands with high educational attainment are likely to have fewer children than those who are less educated or illiterate.

Among polygynous husbands the number of children dead show a weak negative correlation with income. The coefficient is significant at 0.01 level. This implies that the higher the number of children dead the lower the income. Thus polygynous husbands have higher infant and child mortality due to low incomes they have. In monogamous households the number of children dead show a negative correlation with income. However the relationship is statistically insignificant.

Again, the number of children dead among polygynous husbands shows a weak negative correlation with education. The coefficient is significant at 0.01 level. Also the number of children dead shows a strong positive correlation with the number of children ever born to a polygynous husband. The coefficient is significant at 0.001 level. Thus the higher the number of children dead the lower the educational level. Also the higher the number of children dead the higher the number of children ever born to polygynous husbands. That is as the household expands the more the resources are needed. In cases where resources are inadequate infants and children are at a higher risk of dying.

The number of children ever born show a strong positive correlation with the number of children dead

(chbmo). The coefficient is significant at 0.001 level. The result shows that the higher the number of children ever born the higher the number of children dead. Correlation results for the heads of households show that the larger the household size the higher the number of children dead.

The results summarized in Tables 4.30 and 4.31 show correlation results for women in polygynous and monogamous unions. For women under polygyny, education shows a positive correlation with income. The coefficient is significant at 0.01 level. However for women under monogamy, education shows a strong positive correlation with income. The coefficient is significant at 0.001 level. The result reveals that the higher the educational level of the wife the higher is her income. It is expected that high income is associated with low mortality. However, among wives in polygynous unions it has been found that their children have a higher risk of death than among wives in monogamous unions. Probably this is accelerated with larger household size and higher percentage of illiterate wives in polygynous unions.

Table 4.30   CORRELATION RESULTS FOR POLYGYNOUS WIVES

	Income	Polcheb	Education	Othera	Nochdead
Income	1.0000				
Polcheb	-0.0369	1.0000			
Education	0.2030*	-0.2716**	1.0000		
Othera	0.0426	0.0367	-0.0880	1.0000	
Nochdead	-0.1602	0.4569**	-0.1587	-0.0258	1.0000

(N = 174)

Table 4.31   CORRELATION RESULTS FOR MONOGAMOUS WIVES

	Income	Chbmo	Education	Othera	Nochdead
Income	1.0000				
Chbmo	0.0467	1.0000			
Education	0.3407**	-0.2596**	1.0000		
Othera	-0.0149	0.2059*	-0.0479	1.0000	
Nochdead	-0.0885	0.5879**	-0.2591**	0.2227	1.0000

(N = 163)

1-tailed significance   -.01 *

2-tailed significance   -.001 **.

Again income and property indirectly determines the health and survival of infants and children. To both polygynous and monogamous wives CEB shows a strong negative correlation with education. The coefficient is significant at 0.001 level. The result implies that the lower the mother's the educational level the higher the number of children ever born.

The relationship between secondary activities with income under polygyny, show that the more the wife is involved in secondary activities (othera), the higher is her income. The relationship is statistically insignificant. However under monogamy the more the wife is involved in supplementary activities the lower the income. The relationship is also statistically insignificant. This indicates that under polygyny women's supplementary activities contribute to the overall income of the household. The contribution appears to be small yet is still important. Other reasons may include the fact that under polygyny each wife has the primary responsibility to rear her children. The incomes of wives under monogamous unions from secondary activities is very low probably because they are mainly assisted by their husbands.

Among wives under polygynous and monogamous unions the number of children dead show a strong positive correlation with CEB. The coefficient is significant at 0.001 level. Thus, the higher the number of children ever born the higher the number of children dead.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 INTRODUCTION

Chapter five intends to give the summary of the findings and recommendations. The main aim of this study was to examine whether there are any infant and child mortality differentials among polygynous and monogamous households in Kibaha District.

Also household size and income in the two types of marriage and their effect on infant and child mortality are compared.

5.1 CONCLUSION

The number of years of active life lost in high mortality countries, such as Africa is roughly 15-20 years, while in industrialized countries is only 2 or 3 years. Estimates show that less than 1/2 of the children born would celebrate their sixteenth birthday (FAO, 1986).

The results from the explanatory factors show that, polygynous households have larger household size compared to monogamous ones. Moreover, it is found that family labour is mainly comprised of a husband with his wife

(wives). The available labour is likely to be inadequate
to produce enough resources which can be used in rearing
their children. This appears to be one of the reasons for
higher infant and child mortality in polygynous households.

The results of the effect of marriage pattern on
infant and child mortality reveals that there are high
infant and child mortality in polygynous than in monogamous
households. The reasons for these differences are mainly
associated with differentials in socio-economic conditions
among the two types of households.

Polygyny, which is a man's cultural right to marry
several wives, can lower the status of women and affect
their economic welfare. This in turn may affect infant and
child health condition since the greatest responsibility
of caring for children is left to women. Women under
polygyny, have the primary responsibility to care for their
children.

The findings in this study show that polygynous
households have lower income and property than their
counterparts. With high income, one can build a better
house. Furthermore, high income enables one to get easy
access to health facilities and therefore reducing infant
and child mortality.

The transformation from high to low mortality levels must include changes in the economic and social organization. Despite the efforts done to reduce infant and child death rates the prospects are still far from success. This is because the rates are still high. For instance. Malaria is still the major cause of death mostly to infants and children. The rate of spread of AIDS is still a threat to most of the population. The custom of men to marry multiple wives appears to be contributing to a large extent on infecting their wives with AIDS (Uhuru, 1994:9). Moreover the culture which does not give women freedom to discuss with their husbands on issues concerning their marriage and to question husbands' bad habits also contributes to the spread of AIDS. Socially polygyny is still preferred inspite of the worsening economic conditions and the decline of the value of children. Moreover, immunization is not well covered as some do not attend clinic. The success of public health education seems to be hampered by high illiteracy rates and the deteriorating economic conditions amongst the population especially in rural areas.

Other factors such as housing conditions reveal that monogamous houses are of a much better quality than those of polygynists. In terms of nutritional status it was found that children in monogamous households received foods of

better quality and have more meals per day than infant and children under polygyny. Nutritional status may be the other contributing factor to the persisting high infant and child mortality in Kibaha district.

In this research it has been found that, most of polygynous and monogamous households are living near the dispensaries. Surprisingly, it has been found that higher infant and child mortalities are concentrated in polygynous households residing within one kilometre from medical services.

Public health education could be used to enlight the parents on the importance of going to hospital when they fall sick. Moreover it could be more effective if it were community based rather than clinic oriented as it is at present time.

It has been found that inaccessibility of markets to sell agricultural produce necessitates women to engage in supplementary activities in order to generate incomes of their own. In this study, it has been found that infants and children born in households in which mothers do supplementary activities are likely to be more healthy than those in households in which mother's do not. Such secondary activities should be encouraged as they

substantially raise the household income and improve infants and children's health condition.

The level of education among women in polygynous unions is found to be lower than those in monogamous unions. A well educated woman is likely to be employed and therefore capable of increasing the household income. Also increased educational level for women may increase female autonomy and therefore raise age at marriage and increase the likelihood of being married under monogamous unions.

5.2 RECOMMENDATIONS TO POLICY MAKERS AND SOCIAL PLANNERS

In order to have a further decline in infant and child mortality the following recommendations are provided:

(a) Types of Marriage

Given the disadvantages of polygyny, it is therefore, recommended that polygyny should be restricted. If an individual must marry multiple wives, then he should first prove his ability to take care of all his wives and the children before he is allowed. Moreover, men in the study area and elsewhere in Tanzania should be advised to practice monogamy. This will enable the husbands to use more time and resources for their single wives and few children.

(b) Improvement of Agricultural Production

Production of crops such as cashewnut, coconuts and oranges should be increased. This can be done by weeding, adding fertilizer or manure in their plots and spraying with appropriate insecticides so that they can increase their incomes. The increased income can help them to build modern houses and buy other household needs.

(c) Housing condition

Modern housing should be emphasized in Kibaha district. Residents should be encouraged to use treated and boiled water for drinking and make use of health facilities. Campaigns to control diseases should be done in co-operation with the community.

(d) Public Health Education

Public health education and MCH clinic should be intensified. That is it should be carried out within the community rather than being clinic oriented. This may help the attendants to understand the real life condition of his/her clients. Thus finding better ways of teaching public health education.

(e) Women and Development

The treatment of women as one of the special groups in the Tanzanian Population Policy may help to alleviate problems of poverty among women. Loans of low interests should be mainly given to women in rural areas with the aim of raising their incomes. However this should be done hand in hand with the seminars to educate them on how to do supplementary activities.

(f) Improvement of Education

It is recommended that, parents who do not send their children to schools should be penalized. This may force the parents to send their children to school. Furthermore, the chances of enrollment in schools should be equalized between boys and girls, from primary to tertiary levels.

5.3 RECOMMENDATIONS FOR FURTHER RESEARCH

This study had been done for Kibaha district in the Coast Region. It is suggested that the study should be extended to the other regions and districts in the country. The persisting high infant and child mortality appears to be associated with social and cultural factors. It is suggested that further studies should consider social and cultural factors which are related with child care.

APPENDIX 2

Table 4.18 Number of Polygynous husbands by age and village

Age group	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70+	total
Village												
Visiga	1(1.2)	1(1.2)	2(2.4)	1(1.2)	8(28.6)	12(31.6)	4(4.8)	30(36.1)	20(24.1)	4(4.8)	1(1.2)	83 (25.5)
Miaugusugu	-	-	-	6(18.2)	1(3.6)	-	-	2(6.1)	16(48.5)	6(18.2)	2(6.1)	33 (10.3)
Kongowe	3(9.1)	1(3.0)	1(3.0)	5(15.2)	5(15.2)	12(36.4)	21(63.6)	30(90.9)	24(72.7)	13(39.4)	3(9.1)	118 (36.8)
Mwendapole	-	1(1.5)	6(9.1)	8(12.1)	10(15.2)	10(15.2)	12(18.2)	11(16.7)	7(10.6)	1(1.5)	-	66 (20.6)
Pangani	-	-	-	-	2(22.2)	2(22.2)	2(22.2)	-	3(33.3)	-	-	9 (2.8)
Bekotimisa	-	-	-	-	2(16.7)	2(16.7)	4(33.3)	2(16.7)	-	2(16.7)	-	12 (3.7)
Total	4(1.2)	3(0.9)	9(2.8)	20(6.2)	28(8.7)	38(11.8)	43(13.4)	75(23.4)	70(21.8)	25(7.8)	6(1.9)	321

Note : Number in brackets are percentages

APPENDIX 3

Table 4.8 Type of marriage and by Parent's educational attainment.

Parents	Husbands		Wives	
Type of marriage	Polygyny	Monogamy	Polygynous	Monogamous
Educational level No education	177 (55.0)	193 (41.0)	288 (62.6)	256 (51.0)
Primary	140 (44.0)	240 (51.0)	170 (37.0)	232 (47.0)
Secondary and above	4 (1)	37 (8.0)	2 (0.4)	9 (2.0)
Total	321	470	460	497

Source : Computed from Kibaha household survey

Note   : Numbers in brackets are percentages

Appendix 4

Table 4.3 (a)   Estimation of infant and child mortality using
modified Brass's technique for women under
polygyny.

Age groups (1)	(2)	Women (3)	Ever born (4)	Dead (5)	% dead (6)	P(1) (7)	x (8)	q(x) (9)	Reference date (10)	Time trends in	
										q(1) (11)	q(5) (12)
15-19	1	8	15	2	0.1333	1.8750	1	0.1145	1.3	0.1145	0.1913
20-24	2	45	123	19	0.1557	2.7111	2	0.1237	3.2	0.0981	0.1604
25-29	3	78	260	37	0.1423	3.3333	3	0.1114	6.0	0.0803	0.1279
30-34	4	107	393	61	0.1556	3.6636	5	0.1311	9.2	0.0821	0.1311
35-39	5	112	438	85	0.1941	3.9107	10	0.1777	12.5	0.0944	0.1535
40-44	6	98	394	138	0.3503	4.0204	15	0.3310	15.3	0.1549	0.2618
45-49	7	146	615	144	0.2341	4.2123	20	0.2139	18.7	0.0974	0.1592
Total		594	2238	486		3.7643					

Table 4.3(b) Estimation of infant and child mortality using
modified Brass's technique for women under monogamy.

Age group (1)	(2)	Women (3)	Ever born (4)	Dead (5)	% dead (6)	P(1) (7)	x (8)	q(x) (9)	Reference date (10)	Time trends in	
										q(1) (11)	q(5) (12)
15-19	1	23	34	0	0.0000	1.4782	1	0.0000	3.9	0.0000	--
20-24	2	52	196	18	0.1599	3.3615	2	0.0849	5.5	0.0605	0.1091
25-29	3	85	259	36	0.1398	3.8236	3	0.1207	5.4	0.0863	0.1367
30-34	4	77	590	38	0.1254	4.9351	5	0.1332	5.9	0.0833	0.1332
35-39	5	81	650	92	0.1771	4.3210	10	0.2109	7.0	0.1097	0.1822
40-44	6	89	436	78	0.1514	5.2319	15	0.2143	7.5	0.1048	0.1729
45-49	7	107	693	143	0.2153	5.1215	20	0.2461	8.9	0.1116	0.1858
Total		497	2107	373		4.2009					

Source: computed from Kibaha survey data 1989