FACTORS AFFECTING CHILD SURVIVAL IN ASEGO DIVISION, HOMA BAY DISTRICT

By

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A THESIS SUBMITTED AS A PART FULFILLMENT OF THE DEGREE OF MASTER OF ARTS IN THE DEPERTMENT OF SOCIOLOGY, UNIVERSITY OF NAIROBI

1999
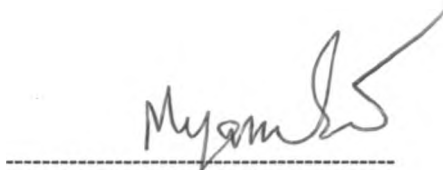
DECLARATION

THIS THESIS IS MY ORIGINAL WORK AND HAS NEVER BEEN PRESENTED FOR A DEGREE IN ANY OTHER UNIVERSITY

WILLICE O. ABUYA

THIS THESIS HAS BEEN SUBMITTED FOR EXAMINATION WITH MY APPROVAL AS UNIVERSITY SUPERVISOR

DR. MAURI YAMBO

DEDICATION

This work is dedicated to my father **Elisha Abuya** and to all the mothers in Homa-Bay District who despite their best efforts lost a beloved child while under the age of five years.

ACKNOWLEDGEMENTS

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ABSTRACT

The study focuses on the identification of factors which affect child survival in Asego Division, Homa-Bay District, Nyanza Province. In 1979, child mortality was highest in Nyanza Province and Coast Province, the rates standing at 174 and 177 per 1000 live births, respectively. In 1991, the then South Nyanza District of Nyanza Province had the highest Infant and Child Mortality (ICM) rates of 216/1000 live births in the whole country. In 1993, ICM rates in South Nyanza District was exceptionally high, nearly twice that of the second highest, Coast Province (D.H.S., 1993:85). It is for this reason that the research was initiated. The objective of the study was therefore to identify, from six known factors of ICM, four of these factors, namely:Environmental Factors (household sanitary standards), Demographic Factors (maternal birth interval and age at first birth), Medical and Health Care Factors (accessibility of healthcare facilities and most prevalent diseases in the study area) and Socio-Cultural Factors (breastfeeding practices and the role of education in controlling child death). The other two ICM factors (Political & Economic Factors and Geographical Factors) were not considered as they were beyond the scope of this study and for the fact that the considered Factors are perhaps the most crucial. Maternal awareness of the above factors and their health behaviour with respect to this factors were also highlighted. Two hypotheses were formulated for testing((a)Socio-cultural factors are associated with ICM rates and (b)Medical and Health Care factors are associated with ICM factors :in which maternal education was the variable considered under the socio-cultural factors while accessibility was the variable considered under the Medical and health care factors; in which the intervening variables were cleanliness/sanitary standard and maternal awareness/behaviuor, for each hypotheses respectively)

Cluster sampling method was used to pick respondents from one rural Location (E.Kanyada) and from one urban Location (Homa-Bay Town Location) which were purposely picked to enable a rural-urban comparison to be made. Data was collected by use of the interview schedule, direct observation and unstructured interviews. Secondary data were also used to compare with the results obtained. Data analysis was both quantitative and qualitative in nature. The Z -test was used for hypothesis testing while the Chi-square test and the Personian Product Moment of Co-efficient were used to test associations among variables.

The study revealed that the inhabitants of Asego Division lived in deplorable conditions. Only 16% and 53% of the respondents in East Kanyada and Homa-Bay Locations had toilet facilities. This represented only 46% of the respondents in Homa-Bay District. Only 56.7% of the inhabitants of Homa-Bay district practiced hygienic methods of solid waste disposal, whereby 46% and 68% of the respondents in East Kanyada and Homa-Bay Town locations respectively practiced this. As for waste-water disposal, only 23.3% of the respondents were found to be practicing hygienic methods of its disposal. The study also revealed that only 24% of the inhabitants of East kanyada had safe sources of water while 72% had this in Homa-Bay Town location. This accounted for only 48% for the whole District.

The study also found out that only 24% of the respondents lived within 2 Km from a health facility. It was also revealed that maternal health behaviour was also very poor. In relation to action taken in seeking treatment for a sick child, no respondent was found to prefer taking her child to hospital for routine medical check-up. The majority of the respondents in E. Kanyanda Location

(38%) unadvisable only took their children to hospital when they were critically ill, while only 64% of the inhabitants in Homa-Bay Town Location took their children to hospital when they feel sick. When it comes to natal care (which has a direct influence in child survival) it was discovered that only 23% of the inhabitants of Homa-Bay District visited the clinics for complete natal care. In the rural Location, only 16.4% of the respondents received all the natal care required, while only 41% in Homa-Bay received the same. The study also showed that measles and malaria are the most prevalent illnesses/diseases in the two Locations, while measles, respiratory diseases, and diarrhoeal diseases are the three major killers in these Locations.

On Demographic Factors, the study revealed mean maternal birth interval for Homa-bay District to be 28.8 months between the first and the second birth and 31.8 months between the last and previous birth (26.1 months and 30.8 months for E.Kanyada and 33.7 months and 33.1 months for Homa-Bay,respectively). Mean maternal age at first birth was found to be 17.5 months for the District. 56% of the inhabitants in E.Kanyada Location had had their first birth while they were below 18 years of age compared to 53% in Homa-Bay Town Location.

On Socio-Cultural factors, mean months for unsupplemented breastfeeding was found to be 3.9 months which was way below the W.H.O recommended period of six months (4 months and 3.7 months for the rural and urban Location respectively). As for supplemented breastfeeding, the mean was found to be 23 months (23.1 and 27 months for E.Kanyada and Homa-Bay respectively) which was way above the recommended period of 12 months.

On health awareness on the above factors, the study revealed that maternal awareness was

quite low. The two hypotheses tested were also proven to be true. Socio-Cultural Factors (in this case maternal education) was found to influence ICM levels as mothers with higher education were found to maintain a cleaner surrounding that reduced breeding of viruses, parasites and germs which could infect and kill the under-5. However, for there to be a significant difference among the various educational levels, one needs to have eight or more years of education for a significant difference to be observed. Medical and Health Care Factors were also found to be associated with ICM levels. Closer accessibility to health facilities positively influenced maternal health behaviour and practices which in turn acted positively in ensuring child survival. However, the influence is only observable if one lives within 5km from the nearest health facility.

Hence, certain Factors were found to be responsible for the observed high ICM rates while others were not

CHAPTER ONE

STATEMENT OF THE PROBLEM

The death of a child is indeed one of the greatest tragedies that can befall a mother. It becomes more painful when it is discovered that it was caused by factors that could have easily been prevented. Reducing infant and child mortality has therefore held high priority in developing countries because, the sheer value of life aside, children are a major resource for both poor families and nations. According to UNICEF (as quoted by Adongo, 1991:4) approximately one hundred and thirty (130) million children die annually around the world from diseases such as diarrhea, acute respiratory diseases, measles, tetanus, and malaria among others. These diseases can be prevented through immunization, vaccination and proper sanitary upkeep.

It should, however, be noted that infant and child mortality (ICM) levels have been falling gradually around the world. Compared to other developing countries of Asia or Latin America, it is on the other hand noted that levels of infant and child mortality are much higher in Africa. The ICM rates in Asia and Latin America are 78 and 108 per 1000 live births, respectively; while the rate in Africa stands at 167 per 1000 live births (E.C.A, 1991:1). UNICEF is of the view that ICM rates in Africa will rise dramatically to even higher levels due to rising levels of poverty in the continent.

It has been noted in several studies in the African Region that the most striking feature of mortality in Africa is the predominance of deaths among children under five (5) and the high incidences of deaths of children in the second and third years of life. It is estimated that in Africa,

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between 1985 and 1990, about 4.1 million children died annually before their fifth (5th) birthday (Ewbank and Gribble, 1993:5).

It is however, noted that ICM levels in Africa itself vary from region to region. In Southern Africa the level stands at 103 per 1000 live births; in North Africa it is 129 per 1000; in Eastern Africa it stands at 191 per 1000; in West Africa it is 188 per 1000 while in Central Africa it is 178 deaths per 1000 live births (E.C.A.,1991:1). It is evident from the above that Eastern Africa has the highest infant and child mortality rates. In Eastern Africa, Kenya has the lowest infant mortality rates of 87-90 per 1000 live births (Mooley, 1991:108). Its child mortality rate is also the lowest in the region. However, there exist regional variations of ICM rates in Kenya itself. From the 1979 census data, the Coast Province and Nyanza Province had the highest infant mortality rates of 177 and 174 per 1000 live births respectively, while the lowest mortality rates were found in Central Province (67/1000) and Nairobi Province (93/1000). This differential however, changed with time. It is stated that by 1991, the then South Nyanza District had the highest ICM rates of 216/1000 followed by Kilifi (212/1000), Siaya (211/1000), Lamu (200/1000), Kisumu (199/1000), Kwale (190/1000) and Baringo (171/1000) (Adongo, 1991:5), such that by 1993, child mortality was highest in Nyanza Province where about 19% of the children born did not live to their fifth birthday (D.H.S, 1993:85). The D.H.S. report continues to state that mortality continued to be lowest in Central, Nairobi, Rift Valley and Eastern Provinces where it was less than 70/1000 live births. It reports that Infant mortality rate in South Nyanza is now exceptionally high, almost twice that of the second highest rate (Coast Province).

It is evident from the above facts that Nyanza Province has a big and worrying problem as concerns child survival. In 1978, the World Health Organization (WHO) Assembly set the goal of health for all by the year 2000. Consequently, the first concern of many African Nations was therefore to provide children with a reasonable chance of living a long healthy life (as it is estimated that in Africa, between 1985 - 1990 about 4.1 million children died annually from disease before their fifth birthday). In September of 1990, at the World Summit for children, representatives of 159 countries agreed on a plan of action for implementing the World Declaration on the Survival Protection and Development of children (WKDSPDC) in the 1990s. The plan includes several goals, the first of which is targeted to be completed between 1990 - 2000: a reduction of infant and under 5 mortality rates by 1/3 or to 50 -70 per 1000 live births, respectively, whichever is less. It can be noted that Kenya is yet to meet the above objective, as its ICM rates are still way above the recommended 70/1000 live births. It is therefore, necessary that if Kenya is to meet the above objectives, it should therefore move fast and quickly and curb the worrying high infant and child mortality levels in Nyanza Province. This Province's ICM rates ought to be reduced to levels equal to those of Central and Nairobi Provinces. This will be in line with the Bamako initiative in which Heads of States and governments at the OAU summit in 1988 endorsed the initiative to protect the health and education of children. According to the Bamako Initiative, it was agreed that African governments were to identify the major health causes of infant and child mortality and move quickly to curb these causes. It was further agreed that for the above to be achieved, each government was to put up its own child survival Programme (CSP) whose goal was expanded to include the UN agreed objective of reducing ICM levels to 50/1000 live births by the year 2000. It is the above factors which prompted the research to be focused on Homa-Bay.

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Studies carried out worldwide have identified the following causes/factors which contribute to infant and child mortality:-

(i)   Demographic factors - this refers to those factors which affect the health of the mother to the extent of exposing her offsprings to a higher risk of infant mortality (Demographic in this case refers to the bodily or biological mechanism of the mother). These demographic factors include: (a) The age of the mother at birth. It is stated that if a woman gives birth at a very early age (i.e. below 18 years of age) this enhances mortality risk (Chen, 1983: 207; Potts and Thapa, 1991:3; Shryock et al. 1976:176; Mooley, 1991:114). At a younger age, the mother's body may not have been well developed for child bearing and/or the teenage mother may be less knowledgeable about child rearing and these exposes their children to risk. At an older age (above 45 years of age), the woman also exposes her child to higher mortality risk as she may give birth to a child who is not well developed due to problems associated with older birth such as anaemia and child bearing fatique; (b) The birth interval. Parity (number of births and the interval period between each birth) also affects childhood mortality (Chen,1983:207). Evidence show that children of high parity mothers who also experience shorter birth intervals die quickly. It has been established that longer birth intervals save lives (Potts & Thapa ,1991:8); (c) Sex and age of the child. It has been found that male children die more often than female children due to biological reasons (Meegama, 1980:17). As for age, it is known that the younger a child is, the higher at risk it is of dying than when it is older (AMREF, 1989; Odile & Dakuyo, 1985).

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(ii) <u>Economic & Political factors</u> - this is at the macro-level (the country's economic standing) and at the micro-level (households economic standing). The macro-level refers to a country's ability to provide for its citizen i.e. provide jobs and adequate supply of food, while at the micro-level reference is made to a household's economic ability to provide for its family i.e. provide decent housing, adequate food, which in most cases is directly related to the level of education of both parents and the type of occupation each holds (Meegama, 1980:17). This relates to income which reflects household capability to provide a good diet and modern medical health care which contributes to good health (Da Vanzo and Habich, 1984:14).

(iii) <u>Environmental factors</u> - many deaths are due to infections spread by environmental factors. Hygienically constructed lavatories and availability of uncontaminated drinking water can curb most of the gastro-enteritis-related diseases such as diarrhea, typhoid, cholera and others (Nag, 1981:17).

(iv) <u>Medical and health care factors</u> - these are believed to have an effect from the very first day of a child's birth. The provision of adequate and accessible health services contribute to the decline of Infant and child mortality (Ewbank and Gribble, 1993:15).

(v) <u>Socio-cultural factors</u> - these are also said to have an effect on mortality rates (Meegama, 1980:19). Customs and attitudes towards a child's upbringing (i.e. weaning practices) could determine the survival of a child past its fifth birthday. Attitude towards breast-feeding (and practice of the same) also plays a major role in determining child survival as breast-feeding provides

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a child with immunity against diseases (Chen, 1983:209). Other factors such as food taboos, sexual practices, marriage customs e.t.c. also play a big role in child survival. Customs and attitudes also determine how various populations' view and respond to diseases, and this may also have an effect on infant and child mortality.

(iv) Geographical factors - this can also contribute to infant and child mortality even when other factors are constant (Meegama, 1980:20). Extreme climate conditions i.e. very hot or very cold weather can lead to high ICM levels. Weather and soil conditions also do determine a population's ability to provide itself with sufficient food and hence arrest problems related to poor nutrition.

Justification

Identification and isolation of factors responsible for the high infant and child mortality rates in Nyanza Province needs to be therefore urgently carried out and addressed. There is need to know exactly the factors/causes that contribute to the persistence of this problem. The availability of this information will greatly assist planners in instituting measures to arrest this worrying situation. Two Districts in Nyanza Province, which are profoundly known as having high ICM rates, are Homa-Bay District and Kisumu District. Rachwonyo is the other third District. Work on the first two Districts and the newly created district of Rachwonyo have been carried out but it is felt that not enough research has however been carried out. Most research done has mainly concentrated on Kisumu while very little (e.g. only AMREF(1992) work on Rusinga Island was found) has been done on Homa-Bay. A lot more therefore needs to be carried out to bring out comprehensive findings. This is more so due to the fact that specific causes of child mortality in the whole District are not available and hence Homa-Bay District hospital statistics are used as a proxy for the District

(Ministry of Health 1994:31). Comprehensive identification of these causes is therefore crucial. Previous studies did not also endeavor to rank these factors. This study therefore sought to do so for Homa-Bay District. All the above-mentioned ICM factors are prevalent in Homa-Bay District and hence the reason why it has been chosen for this research. Asego Division is selected for this study for the reason that as the District's headquarters is situated in this division, findings from this Division could reflect the situation in the other outlying Divisions. This division has also been chosen as it gives good comparative grounds between an urban setting (Homa-Bay Town Location) and a rural setting (Kanyada East Location). Specific findings and confirmation of the various ICM factors ought to be therefore documented for further action. This particular research also intends to go a step further from where other studies have stopped at. Most of the previous studies simply tended to identify the factors responsible for the high ICM rates and have not attempted to go any further. This study however, intends to go further by exploring into the mother's awareness of the above factors and to bring out their health behaviour towards these factors.

Apart from the justification already stated above, decrease in infant and under-5 mortality rates is not only important due to the fact that children are a major resource for both poor families and the Nation at large, but also because it leads to reductions in fertility (Da Vanzo & Habich, 1984; Potts and Thapa, 1991:11). It has been argued that there exists a relationship between higher fertility and high infant and child mortality. It is said that it is only after infant and child mortality levels are reduced will parents recognize that they need not have large families to insure the survival of a few. The decrease of ICM rates would therefore significantly continue to reduce Kenya's fertility rate which is among one the highest in the world.

Reduction in population, especially in the rural areas of Kenya and in particular in Nyanza Province and its districts, will eliminate the vicious cycle of poverty and death which is related to and associated with high population. The ICM level of a country is also used as an indicator of its development. The lower its ICM rates, the higher the level of its development and vice-versa. Kenya's level of social, political and economic development can therefore be termed as low given its high infant and child mortality level which need to be quickly curbed. By extension, Nyanza Province and Homa-Bay District in particularly, economic level of development can be said to be low and hence needs to be up-lifted.

The objectives of this study were therefore to research on four (consider the most important factors) ICM factors, specifically, to:

1 Identify some of the factors which contribute to high infant and child mortality levels. Specifically:-

(a) ENVIRONMNETAL FACTORS

Identify households sanitary conditions (i.e. its source of water and means of waste disposal : water, solid and human waste) and assess its relationship with reported infant and child mortality rates.

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(b) DEMOGRAPHIC FACTORS

Identify the birth interval of children born to mothers in the said region and assess its relationship to infant and child mortality levels. This will be done to check whether the interval preceding the first birth and subsequent births was short (less than fifteen (15) months) as this variable is associated with infant mortality directly and indirectly through its effect on birth-weight and competition for attention (i.e. breastfeeding) among closely born siblings. Maternal ages at first birth will also be noted as young maternal age is a well-known correlate of higher infant mortality.

(c) MEDICAL AND HEALTH CARE FACTORS

(i)   Identify households' proximity (accessibility) to medical services.

(ii) Assess the effect that c(i) has on infant and child mortality rates.

(iii)   Identify some of the most prevalent diseases afflicting children in the area.

(d) SOCIO-CULTURAL FACTORS

(i)   Measure number of months of unsupplemented and supplemented breastfeeding of children and assess its relationship with reported infant and child mortality rates. Duration of breastfeeding may measure nutritional intake and protection against certain diseases through maternal anti-bodies. It also determines rate of exposure to contaminated water.   Recommended period of unsupplemented milk is six (6) months while for supplemented milk is twelve (12) months. Weaning customs thereby play a crucial role here.

(ii) Identify causes/reasons for cessation of breastfeeding i.e. due to another pregnancy or feeling that maternal milk supply was not nutritious or adequate enough for the child.

Identification of these factors will be most useful as specific causes of mortality in the whole District are not available and therefore Homa-Bay District hospital statistics are used as a proxy for the District. This research's finding will therefore go a long way in assisting to provide vital data to pinpoint these factors/causes.

2. Assess maternal awareness of the above factors in 1 (a), (b), (c) and d(i), which affect child survival. The salient questions which will be important here are:-

(i)   Whether the mothers are aware that short birth intervals are risky to the new borns.

(ii) Whether they are aware that safe sources of water and hygienic waste disposals are important factors in determining child survival.

(iii) Whether they are aware of the great value of prolonged breastfeeding.

(iv) Whether they are aware that availability and accessibility of health facilities are crucial to the survival of their children.

3. Highlight maternal health behaviour towards combating the factors mentioned in (1) above.

CHAPTER TWO

LITERATURE REVIEW

2.0.0 BACKGROUND INFORMATION

Mortality rates for all ages have been on a downward trend globally. High mortality levels (or low mortality levels for that matter) have in most cases been associated with either high or low infant and child mortality levels. According to the state of the World's Children 1991 UNICEF report (as quoted by Adongo, 1991:4), it is estimated that approximately one hundred and thirty(130) million children die annually from measles, diarrheal diseases, acute respiratory infections, tetanus, malaria and other fatal diseases.

Infant and child mortality (ICM) levels have globally been falling. However, compared to other developing countries of Asia and Latin America, levels of mortality are much higher in Africa. The infant-child mortality rates in Asia, Latin America and Africa are 78/1000, 108/1000 and 167 per 1000 live births respectively. In Africa itself, these levels are also different. In Southern Africa it is 103/1000 live births; In N. Africa it is 129/1000; In E. Africa it is 191 deaths per 1000; In W. Africa it is 188/1000, while in Central Africa it is 178 deaths per 1000 live births. It can be observed from the above that in Sub Saharan Africa, ICM levels remains among the highest in the world. Ewbank and Gribble (1993:1) also notes this fact. It can further be noted that East Africa

has the highest ICM rates while Southern African has the lowest. It has been noted in several studies in the African region that the most striking feature of mortality in Africa is the dominance of deaths of children in the second and third years of life (U.N., 1984:112). In E. Africa, Kenya is however noted as having the lowest Infant Mortality rate of 87 - 90/1000 (Mooley, 1991:108) Its child mortality rate is also the lowest in this region. In Kenya itself, there are regional variations with Nyanza Province and Coast Province leading in ICM rates, while Central and Nairobi Provinces having the lowest (Kenya Demographic & Health Survey, 1993:85).

It was because of the world's interest in lowering all mortality rates and specifically infant and child mortality rates that at a United Nations meeting held in September of 1990 (at the world summit for children) that representatives of 159 countries agreed on a plan of action for implementing the world declaration on the survival, protection and development of children in the 1990s. The plan included several goals, the first of which is targeted to be completed between 1990 - 2000; a reduction of infant and under 5 mortality rates by 1/3 or to 50 - 70/1000, respectively whichever is less. This goal strengthened the Bamako Initiative of 1988 in which Heads of States and governments at the OAU summit in 1988 endorsed the initiative to protect the health and education of children. The two meetings were also in line with the W.H.O. 1978 Assembly which set the goal of health for all by the year 2000. W.H.O. defines good health as complete mental, physical and social well being and not simply the absence of pain. The aim of many nations, particularly those in developing countries became therefore to provide children with reasonable chance of living a long and healthy life. Factors that caused high infant and child mortality rates had therefore to be found, recorded and action taken against these factors.

2.1.0 FACTORS AFFECTING INFANT AND CHILD MORTALITY RATES

Studies carried out worldwide have identified the following as the factors most responsible for infant and child mortality rates:-

2.1.1 DEMOGRAPHIC FACTORS

These can be divided into the following two factors:-

a) Factors which affect the health of the mother to the extent of exposing her offsprings to a higher risk of infant mortality. These are:-

1. Age of the mother

Young maternal age is a well-known correlate of higher infant mortality. A mother's age at the time of her first birth is a crucial determining element on the life of the new born.

It is said that if a woman gives birth to a child when she is too young (below eighteen years of age) or when she is old (above 45 years) then the child is at a greater risk of dying (USAID ,1990:32; Mooley, W.H.1991:114; Shryock et al, 1976; Meegama, 1980:17). Da Vanzo and Habich (1984:3) state that very young mothers usually exhibit different mortality risks from those of

mothers in more prime child bearing years. They continue to say that young maternal age is a well-known correlate of high infant mortality. This is because young mothers give birth to children who are not mature and have congenital debility. Due to the fact that their bodies are not usually well developed for giving birth, they suffer from child bearing traumas which usually leads to birth injuries to both the mother and the child, and to the child, this could lead to neo-natal deaths while future children could be affected by injuries incurred by the mother (Meegama, 1980:21). Meegama also states that the older a mother is the higher the probability of her being anaemic, or be suffering from diabetes, heart diseases e.t.c. factors which could influence the health of an unborn child. Meegama (ibid:24) adds that in his research in Sri-Lanka, he found out that the age of a mother at birth had a strong influence on neonatal mortality. Younger mothers may also not be quite aware of what it takes to care for a baby properly and many may underestimate the child's problem or demonstrate inadequate awareness of hygienic behaviors which may affect the child. Very young women who give birth and are not married are also more likely to have dead children (as marital status and a healthy life are associated) as married people have a healthier life than those who are single (Benjamin, 1965:37). Kenya's D.H.S. (1993:87) also tells us that the relationship between childhood and mother's age at birth show the expected U-shaped pattern with higher mortality for children of younger mothers (who are less than twenty years of age) and older women.

The Mortality rate for neonates of mothers aged 40 - 49 is said to have been twice that of younger mothers aged between 20 - 24 (i.e. 55 verses 24 per 1000 respectively).

Chen (1983:207) also agrees that child bearing at early age and old age enhances mortality risk. A research carried out in an area of high ICM rates (Rusinga Island) by AMREF in 1992 on Women, Child Survival and Development, found out that women in that area who were mothers were very young. Of the 33 interviewed, more that 1/2 were in their 20s, the rest were above 30 and only one, a widow was in her early 40s. These women had children who were below five years of age. It can be deduced from this that most of the mothers in this region gave birth to their first borns when they (the mothers) were very young.

Potts and Thappa (1991:3) states that one of the benefits of family planning is that it allows young women, whose infants are prone to higher mortality, to delay child bearing till later in life. They also state that family planning is of benefit as it allows older and especially high parity women, whose infants are at considerable high risk of dying to stop having babies. In their research findings, they report that child mortality was found to be higher among births to teenage mothers (180/1000 live births) than to women aged 20-34(150/1000) found in Kenya.

2. Birth interval

Birth interval between siblings also plays a role in child survival. It is said that when an interval between siblings is short (less than 15 months) this exposes the children to higher risk of dying due to the fact that the mother had not yet recovered well enough to give birth to another child (E.C.A., 1991:1; USAID 3rd Report, 1989;UNICEF, 1985:179;Mooley W.H., 1991:114;Meegama, 1980:176).

This variable is therefore said to be associated with infant mortality directly and also indirectly through its effect on birthweight and in competition between siblings which leads to poor nourishment of either the previous child or the latter child or both (Da Vanzo and Habich, 1984:15). Shorter interval could lead to nutritional depletion of mother, gestational prematurity, competition of previous young and surviving infant for mother's attention (Benjamin, 1965:436). A child's weight and size at birth is also an important determinant of its survival, particularly during the first month of life. D.H.S. report informs us that there is a relationship between birth interval length and infant mortality. The data showed that short intervals significantly reduces a child's chances of survival. Children born less than two years after the preceding siblings are nearly twice as likely to die in infancy as those born after an interval of 4 or more years (81 verses 45 per 1000 respectively). This suggests that family planning or programs and traditional practices such as breastfeeding need to be emphasized for child spacing. It can be noted that Potts and Thapa (1991:3) also agree that one of the benefits of family planning is that it contributes to longer intervals between births, which have been found to improve infant and child survival.

Chen also tells us that children of younger high-parity mothers who also experience shorter birth intervals die quickly (Chen, 1983:207). Potts and Thapa (opp. cit:8) also gives us statistics on how birth interval saves life:-

-less than 24 months   80/1000

-24 - 27 months   60/1000

- 48 or more   40/1000

USAID fifth report (1990:32) also states that when a child is born too soon after the birth of a sibling, its risk of dying before its first birthday increases significantly. It states that child spacing is therefore important as it has great impact on child survival as closely spaced births jeopardize the live of the previous child as well as the mother's. The USAID report concludes that the health of the mother is linked to the health of the child and as such, mothers should allow themselves some time off to fully recover and care for the born child before they can start giving birth again.

3. Birth order and parity

Birth order is also viewed as an important factor in determining child survival (Meegama, 1980:17; Chen, 1983:207). First borns are said to be more likely to die than latter children. D.H.S. (1993:73) states that birth order is correlated with mothers age and states further that it is not surprising that mortality risks are elevated among first births (which are predominantly to younger women) and births of order seven (7) or higher (which are generally to older mothers). Chen also agrees that first birth is risky and the risk declines during the second and third year.

Parity (number of children per age group) also affects Infant and Child Mortality rates (Mooley, opp.cit.:14) Women with high parity usually experience higher child mortality rates than those with low parity. In an AMREF 1992 study of Rusinga Island (a region of high ICM rates) it was found that mothers were young (in their 20s) and already had five kids (of the 23 interviewed

one of three already had five children). And considering their age, they were more likely to have more.

No wonder then that this region had high infant and child mortality rates. Chen on the other hand associated maternal age and parity and states that if the two are combined, the live of the born children are more at risk than if the alternate is the case.

b) Variables which refer to the sex and age of the child. There are significant differentials in mortality at different stages of childhood and as regards the infant's sex. It is stated that more male children die than female children due to biological reasons. Females are biologically superior and can fight off diseases better than their male counterparts. Males are 14% more likely to die in infancy than their female counterparts and experience about 9% higher mortality before their 5th birthday. Infant mortality rate for males and females are 57 and 59/1000 respectively (D.H.S., 1993:87).

As for the age, children are more likely to die in their first year of life than in later life. This risk therefore decreases with age. Children are said to have an unexceptional high risk of dying within the first year of life, and as few as half may survive to their 5th birthday (Odile & Dakuyo, 1985:17) This demonstrates that with age, the risk ebbs down. AMREF 1989, reports that 18.9% of infants are likely to die on day one as compared to 16.3% on day 2 - 6, and 11.9% on day 7 - 21, 10.6% on month 1 - 2, 11.5% on month 3 - 5, 18.5% on month 6 - 8 and 12.3% on month 9 - 11.

2.1.2 ENVIRONMENTAL FACTORS

The environment is said to be a major factor in determining child survival (Nag, 1981:17). Many diseases are contracted from the environment as a result of exposure to communicable pathogens i.e. contaminated food, water, over-crowding in houses, poor sanitation e.t.c (Chen, 1983:210) Paterson et al, 1989; UN, 1984:154; Shyrock et al, 1976; Adongo, 1991:10).

Recognizing the above problem, the Kenyan Government in its Program of Action for Children Report (1992:34) has indicated that clean water and its supply and appropriate sanitation should be available to its citizens as it has significant impact on child illnesses by arresting diarrheal illness and other water related diseases. Water and sanitation for Health (W.A.S.H.) program is aimed at achieving this goal. Diseases which one can contract from the environmental conditions surrounding him include diarrheal diseases, acute respiratory infections, measles, tetanus, whooping cough, tuberculosis, malaria among others. The existence of water and good sanitary conditions determines exposure of child to gastrointestinal diseases through contaminated water and food and to the other mentioned diseases through lack of personal hygiene (Da Vanzo & Habich, opp. cit.:14). Following their research in Peninsular Malaysia, the two concluded that it was the improvements in water and sanitation that contributed to the decline of infant mortality rate in Malaysia. The type of sanitary facilities available and source of drinking water and their interaction with the weather determines the level of exposure that one is faced with in relation to the mentioned diseases. A household which has no lavatory and which obtains its drinking water from unprotected wells will have a higher infant

mortality rate (Meegama, 1980:15). Meegama mentions that many deaths in 3rd world countries are mostly due to infections spread by environmental factors. He states that availability of uncontaminated drinking water and toilet facilities are two factors which determine incidences of disease. Lack of the above leads to breeding of flies and to the transmission of diseases either through food taken by the infant or by the flies settling on or near the mouth of an infant. If a child is born in a dwelling with poor or no toilet facilities, infections could be transmitted to the newborn by flies or through the mother who in all probability would also have unhygienic habits.

An infant born in medical institution can be infected during the first few days of its stay, since some hospitals and maternity homes do not have flush systems of sewage disposal or even worse, do not have stable supplies of water throughout the year. In his research, Meegama found out that child mortality seemed to be influenced mainly by environmental conditions.

Benjamin (1965:37) on his part states that housing conditions also affects incidence of infectious diseases. The more a house is crowded, the higher the risk of passing infection. Odile and Dakuyo (1985:30) emphasize that a child's immediate environment relates to child survival. Purity of water deters disease infection they state. Its abundance ensures hygienic conditions. They continue that sanitation is also associated with reduced childhood mortality. In their study, they also found out that children were not allowed to use latrines due to reasons ranging from superstitions that they may fall inside the latrine, dirty it, to those that they will look inside the toilet and as a result, the children were forced to dispose their wastes anywhere, which leads to environmental

degradation. They concluded that supply of piped water and provision of proper sanitation improves conditions for child survival.

Mooley (opp. Cite.:114) also recognize that the environment plays a crucial role in determining a child survival. They state that an environment contamination with infectious diseases leads to high ICM rates. They state further that contamination of air, food, water, fingers, skin and soil makes one easily susceptible to vectors which causes disease.

UN (1984:154) also recognized availability of sanitation, electricity, housing conditions, water supply, type and sewage disposal as being related to infant and child mortality. The UN report states that access to toilet facilities showed that there is a relationship between this and early childhood survival in Sri-Lanka and Mexico. AMREF (1989) report also notes that Kisumu has a high ICM rate because the most pronounced casual factor is its swampy nature and abundant stagnant water ponds, which brings about contaminated water and provides breeding grounds for mosquitoes, typhoid and other vectors, resulting in malaria prevalence, diarrheal diseases, upper respiratory diseases, skin diseases, schistosomiasis (intestinal worms), eye infections, urinary tract infection, ear infection e.t.c. which lowers child survival chances.

It is therefore not surprising that in their 1990 meeting, the Kenya Medical Women's Association (KMWA), recommended that safe water supply, sanitary excreta disposal, disposal of solid wastes, drainage of surface water and adequate housing safeguards against the prevalence of disease (KMWA, 1990:68). It is worth noting that the Kenya government objective is to supply

safe water to all its the citizens by the year 2000. But water coverage of the Kenya population is only 10-20%. In Homa Bay District, only 14% of the population had access to potable water by 1990, while only 25% had access to adequate sanitary facilities (KMWA, 1990:71). Obstacles in meeting the demand for clean water provision to the remaining 80% of the Kenyan population include unpredictability and harshness of climatic conditions in most parts of the country and consequent scarcity of water resources in these areas (about two thirds of Kenya is semi-arid and arid.)

2.1.3 MEDICAL AND HEALTHCARE FACTORS

These are said to have an effect on the very first day of life of a child. Lack of ante-natal and post-natal clinics could have a negative effect on mortality (Da Vanzo and Habich, opp. cit.:2). For children to survive therefore, it is important that regions should have clinics which are easily accessible, well-equipped and well manned/staffed. It is said that one of the factors which have contributed to the decline in infant and child mortality has been the provision of health services (Ewbank and Gribble, 1993:5). Adongo (1991:9) on the other hand informs us that low accessibility to basic services such as health facilities has been one of the major factors responsible for high ICM and Maternal mortality in the then S. Nyanza District, Kilifi, Siaya, Lamu, Kisumu, Kwale and Baringo Districts. Benjamin (opp. cit.:52) also concurs that the availability of medical services decreases cases of mortality. These services have however to be accessible.

Africa is said to have a high ICM rates because of the higher disease load prevalent in its environment and as such, the availability of medical care services (such as ante-natal, neo-natal,

post-natal care, immunization, treatment and other services) is therefore important as it betters chances of child survival (Odile and Dakayo, 1985:253). One of the major causes of death to children is disease (UN, 1984:43; Chen, 1983:210; Cameron and Hafvander, 1992:) and therefore their prevention and treatment is very important and this can only be done when these medical facilities are easily available. Mooley, (opp.cit.) also concur that control factors of personal diseases (their prevention and treatment) is very important in controlling infant and child mortality. It is estimated that 12 million children die annually around the world from diseases which are aggravated by incidence of malnutrition (Adongo, 1991:4), which can however be easily avoided by simple treatment or by keeping at bay factors which aggravates the incidence of these diseases and result in death.

The aforementioned could therefore have been the reason why USAID (1990:43) identifies the development of health services as necessary to ensure intervention. It therefore recommends healthcare reforms and strengthening of these facilities as factors which can insure child survival. Providing healthcare to rural folks is also important as it noted that less than 15% of the rural population have access to health services (Roemer, 1976:68). USAID further suggests that the private sector should also come in and assist in this field. In a study carried out in Mombasa, it was noted that the lack of physical health facilities and accessibility is one of the factors that causes high ICM rates (Urban Basic Services 1989:3).

Diseases

Studies reveal that measles, diarrheal diseases, acute respiratory infections and malaria are the leading causes of death among children less that five years of age (Ewbank and Gribble, opp. cit.:1). Adongo (opp. cit.:4) ranks diarrheal, acute respiratory diseases, measles, tetanus and malaria, in that order, as the top five diseases that kill most children. He says that they claim 5,000,000 (34% share of the total), 4,000,000 (27.7%), 2,000,000 (13.8%), 1,800,000 (12.4%) and 1,000,000 (6.9%) deaths respectively. He states that these and other diseases claim approximately 130 million lives of children annually. Nyanza and Central Provinces are said to lead in ARI prevalence, while Nairobi which has most health facilities the lowest (DHS, 1993:96).

Diarrhea prevalence is said to be higher among children in Central Province (DHS ibid.). Malaria, diarrheal diseases and measles are said to be some of the health problems that afflict Rusinga Island, Homa Bay District (AMREF, 1992:5). Malaria, upper tract infection are recorded as affecting the livelihood of children in Kisumu, Nyanza Province (AMREF, 1989). USAID (1990:16) also recognizes measles, neonatal tetanus, pertussis (whooping cough). diphtheria and tuberculosis as those diseases that threaten the lives of children. Meegama (1980) identifies dysentry, gastrointestinal infections, ankylostomiasis and other diseases due to helminths, respiratory infections, asitaminosis and other deficiency states and anaemias, immaturity and congenital debility and convulsions and six of the broad groups of diseases that account for most of post neonatal and child mortality.

It would be beneficial if an examination of the above diseases is given to enable us know and understand how they are caused and what it takes to treat them. The details given below are as primarily provided by Ewbank and Gribble (1993).

(a)   **Measles**

Is said to claim 1.5 million children around the world annually (USAID, 1992:16). It is also said to be one of the leading causes of infant and child mortality in Sub-Saharan Africa (Ewbank and Gribble, opp. cit.:29). It is caused by paramyxovirus called morbilli. It is said to be highly infectious and can thus spread very quickly with deadly results in crowded areas.

As for its vaccine efficacy, Shwarz vaccine is the most preferred and commonly used vaccine in Africa. It is said to be very effective. The recommended age for vaccination is 9-11 months for tropical Africa, 12-15 months in Europe and U.S.A. Treatment for measles is also said that it can be improved through improved treatment of complications such as diarrhea and acute respiratory infections (ARI) and through treatment by vitamin A.

(b)   **Pertussis (Whooping cough)**

It is reported that it has been a neglected area of research throughout the world and in developing countries in particular, maybe because it is a less visible infectious disease than others. USAID (1990:16) claims that it takes the lives of about 500,000 children annually. Although it is a frequent cause of death, it kills in a quick and dramatic way as measles, small pox and cholera. It is a bacterial respiratory infection caused by <u>Bordetella pertussis</u>. Death (which is sudden) results

from asphyxia. It can also induce pulmonary, encephalitic and nutritional complications. It is symptomized by cold-like symptom which occur one to two weeks before the typical whooping cough begins. The main strategy for reducing pertussis mortality is through immunization programs. Studies in Machakos showed that incidences of pertussis among vaccinated children were 54% lower that among non-randomized controls of the same birth cohort.

(c)   Tuberculosis

It is said to be perhaps responsible for more deaths world wide that any other diseases caused by a single pathogen. Because of the link between tuberculosis and HIV, more deaths are likely to occur. It is said to be very difficult to diagnose. In children, it is usually benign and self-limiting. It is caused by M. Tuberculosis and M. Africanum. The basic health approach to tuberculosis is vaccination with Bacille calmette Guerin (BCG).

(d)   Tetanus

It is said to be major cause of neonatal death in much of Africa. It occurs in the first month of life as a result of unsanitary practices surrounding childbirth and it is almost always fatal, killing 775,000 infants in a year (USAID, 1990:16). Vaccination of mothers during or before pregnancy protects the infants. But because of the small number of population protected by immunization at all but childhood ages and large proportion of births that occur under poor hygienic conditions related especially to home deliveries, tetanus mortality rates in Africa are probably among the highest in the world (Ewbank and Gribble, above cit.:62). Home delivery is therefore usually taken as an indicator of likelihood of tetanus susceptibility. Peterson et al (1989) states that infant's place

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of birth is usually indicative of whether the child was born in hospital. Babies born in hospital he states, have lower infant mortality rates than those delivered at home. DHS (1993:98) reveals that Nyanza was ranked third (61.0%) after Coast (67.9%)and Western (66.0%) on mothers who delivered at home.

It also reveals that delivery is more common at home to older women (aged 35 and above) than among those aged 20 and below. There was also urban-rural differential in place of delivery, where 65% of rural births are delivered at home compared to 21% of urban births. Lack of antenatal and post-natal care is also an indicator of the same. Ewbank and Gribble report that in 1989, the WHO Assembly called for worldwide elimination of neonatal tetanus by 1995. Two policy options are improving delivery practices and providing immunization. One way of improving deliveries is to increase deliveries in hospitals where appropriate anti-septic practices can be maintained; and the other is to immunize pregnant women which provides temporary immunity to the fetus and protects the new born for several months till it can be vaccinated. Because of high cost and unavailability of hospital deliveries, for most African Women in rural areas, authorities have recommended training traditional birth attendants (TBA) in aseptic procedures for cutting the umbilical cord and caring for the umbilical stamp. Studies of antenatal immunization against tetanus in other parts of the world have shown that two injections of tetanus toxoid early in pregnancy are 95% effective in preventing neonatal tetanus in the child born of that pregnancy. DHS (1993:96) showed that Nyanza was among those who had the highest percentage of women who did not receive tetanus vaccination.

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(e)   **Diarrheal Diseases**

The term diarrheal diseases refer to a heterogeneous group of illnesses characterized by frequent loss of liquid stools and is caused by a variety of viral and bacterial pathogens, as well as a few parasites. The peak rates of incidence and prevalence appear to occur in children 6-18 months old. In sub-saharan African, diarrhea is generally the most common cause of death during the post-neonatal period and the most common among children aged 1-4 years. Diarrhea is said to be most prevalent during weaning which will be discussed later.

Treatment of diarrheal diseases is by oral rehydration therapy (ORT) plus selective use of intravenous fluids.

(f)   **Malaria**

It is said to one of the major causes of deaths in Africa. It accounts for 20-60% of all illness seen in health facilities in the region. Its treatment is complicated by its resistance to chloroquine. It is spread by mosquitoes, the most dangerous species being Plasmodium falciparum. Others include P. ovale and P. malariae. Its clinical manifestations are cycles of shaking chills, intense fevers and drenching sweats. Self-treatment is also very common in sub-saharan Africa (DHS, 1993). Its common treatment is still by chloroquine.

(g)   **Acute Respiratory Infections (ARI)**

These are groups of upper and lower respiratory tract illnesses caused by bacterial, viral and fungal infections. Of these infections, acute lower respiratory infections, predominantly pneumonia,

are the most serious and major causes of mortality in developing countries among children of under five years of age. Treatment is by antibiotic therapy.

Postnatal and antenatal care also plays an important part in ensuring child survival. Lack of ante-natal care leads to death of unhealthy born infants by unhealthy mothers, while lack of adequate guidance in post natal care and hygiene so that well intentioned mothers could make fatal errors (Meegama, 1980:19). Nag (opp. cit.:20) states that the use of health centres for the above and other reasons (i.e. treatment and immunization) usually ensures survival of children. Hence the proximity of health centres enables mothers to seek for these services. While in these centres, they get to learn more about the rearing of babies and how to make good decisions as concerns the same. This is the reason why in his comparative study, Nag found out that the population of Kerala had healthier babies and less mortality rates than children of West Bengal because they (the Kerala population) used these services more than those of W. Bengal, despite the fact that types and number of medical and health facilities in both areas seem to balance. He nonetheless, attributes this differential to the accessibility of medical facilities to the people in rural Kerala than in rural W. Bengal. If medical facilities are more accessible to the inhabitants they are expected to better utilize them (ibid:28). Warmock (1967:42) infact aptly puts it when he states that the environment in which one is living serves a crucial role in determining individual's perception and conduct.

Benjamin (1993:86) states that maternal care during pregnancy and delivery in medical institutions/centres, is strongly associated with childhood mortality. He states that children born to mothers who obtained both ante-natal and delivery care from medically trained persons have lower ICM than those who only received ante-natal or delivery care. He further informs us that in urban

areas 30% of women see doctors, compared to 22% in rural areas. The report (page 95) further states that over half (56%) of births in Kenya benefit from ante-natal care before 6 months of gestation. However, one third of pregnant women do not receive ante-natal care until 6-7 months of pregnancy. It is recommended that ante-natal care should start immediately pregnancy takes place. It should be made monthly for the first seven months, fortnightly in the 8th month and then weekly until birth (i.e. 12-13 visits in total).

It should be appreciated that the presence of health centres also assist in family planning which ultimately leads to lower ICM rates. AMREF (1989) noted that lack adequate health centres and lack of service delivery and coverage contributed to the high level of ICM rates in Kisumu.

As a result of government's awareness of the above factors it intends to increase post natal clinic attendance from the current known figure of 71.2% to 90% by the year 2000 (Kenya Program of Action for Children 1992:26). It also aims at increasing immunization coverage through its Expanded Program on Immunization so as to reduce morbidity through the above diseases. AIDS is also recognized as a new phenomena in this field which threatens child and maternal survival.

Having recognized the importance of maternal care, USAID has on the other hand launched a 5 year US $ 17.5 million project termed 'Medical and Neonatal Health and Nutrition or Mother care in selected African countries.

The rural areas are said to have the lowest level of health centres as only 6-7% of the national budget (Kenya's) is allocated to the Health sector of which only one-tenth of this is spent on rural health services, while over two-thirds is spent on urban hospitals (Mooley ., opp. cit.:107). As a result of this there is only one health facility for every 10,000-20,0000 people in the rural areas,

and only 10-55% of the rural population are within 2km from these facilities. Majority of these facilities are understaffed and constantly short of essential drugs. Nyanza Province and Homa Bay Districts are a point in case. As a result of this the then South Nyanza District lost 14,000 children annually through death by diseases which could have easily been prevented had medical facilities been readily accessible (AMREF, 1992:2).

There are those who however contend that the lack of medical centres/facilities and service delivery and coverage is not the single most important factor that ultimately determines rates of ICM. They argue that accessibility (in both physical and financial terms) alone may not be enough in ensuring good/better health behaviour and health awareness among the targeted population. In other words, they are stating that accessibility of health services and health centres may not nurture new and/or better health behaviour and thus lower ICM rates. Meck (1971:48) states that there are many cases in Kenya whereby when a person falls sick, the family often first consults a local practitioner in traditional medicine even if a medical unit is easily accessible. In other words, the accessibility of the health centre does not determine their health attitude and practice. His (Meck's) views contradicts that held by Nag (opp. cit.:20) who states that if medical facilities are accessible to people, they utilize them more and this affects their health behaviour. So if a particular area is well served with medical facilities, the inhabitants health behaviour will be ruled by their existence. Nag hence is a supporter of Wormack (1967:42) who states that the environment in which one is living in serves a crucial role in determining individual's perception and conduct. Hence if the environment is 'infested' with modern medical facilities, people's perception and conduct will be influenced and determined by their existence. Meck, however, puts the above assertion in a

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questionable position by his views expressed earlier on. Meck adds that most people visit a health clinic when the local medicine man fails to cure him or his condition worsens. He adds further that even after having visited the health clinic, most of these people will still thereafter go back to the traditional medicine man for complete satisfaction. But even before visiting the hospital or health facility, the affected party will have first tried the available painkillers, purgatives and worm medicines from shops located in the local market. Meck continues to report that many ethnic groups, not only in Kenya, but in most of Africa, also observe certain taboos which affects their health behaviour i.e. women and children not allowed to eat certain types of food; children not allowed to use latrines; members of religious sects not allowed to present themselves for medical treatment e.t.c. Luijk (1974:63-64) in fact comments that in most of Africa, modern medicine tends to be in competition with traditional health practices. People's socio-cultural patterns are often crucial in the epidemiology of disease (it affects their attitude and responses to health needs). Coe (1971:1) on his part observes that people tend to view the event of disease or ill-health from the perspective of their culture, and based on these perspectives, they tend to respond to diseases in predictable ways. He reports that in most African cultures, people will first try out their own traditional methods first, and only upon their failure and the worsening of their physical condition, will they resort to modern medicine.

In light of the above, research would therefore be useful in exploring this grey area and provide insights into specific inhabitants behaviour vis-a-vis accessibility of modern health facilities and cultural behavioural patterns.

2.1.4 SOCIO-CULTURAL FACTORS

These can also affect mortality rates. Customs and attitudes towards a child's upbringing (i.e weaning practices, food taboos during and after pregnancies, sexual practices and health behaviours) can have a say in the survival of children. Another social factor which can affect mortality rates is paternal and especially maternal education. This is due to the fact that paternal level of education can determine a household's economic level (this will be discussed later in detail under economic factors to assess how it affects ICM levels) while maternal education can determine the hygienic standards of the household, which as we have seen before, has a direct effect on ICM levels. The two factors which will be discussed here are maternal education and weaning practices. Most researches carried out have tended to correlate higher maternal formal education with lower infant mortality (Da Vanzo and Habich, 1984:6) Peterson et al, 1989; Nag, 1981:29-30;E.C.A., 1991:1). When its effect on child mortality is independent of income, they acknowledge that this probably reflects a mother's knowledge of how to care for her children, and her awareness and use of appropriate health care services. Hence higher education equals more knowledge of how to tend to children which equals to better health behaviour. There are those who are of the view that education per se can not be used as a yardstick for determining one's health awareness and health behaviour.

Let us however, first review what the supporters of higher maternal formal education vis-a-vis good behavior have said. Benjamin (1965:46) states that one's level of formal education (which he rates to intelligence) determines one's standards of prenatal and maternal care, level of hygiene

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and seeking medical care. He adds that level of education and culture (in which culture encourages maternal formal education) affects mortality level. Ebanks (1985:42) from his studies in Trinidad and Tobago found out that children born to mothers with higher formal education have higher survival rates. This, he states, is the reason why infant mortality rates in the rural areas are usually higher than urban areas because urban women are usually better educated than those in the rural areas (ibid:43). Children of educated mothers are said to be more likely to be taken to hospital for treatment of disease (hence their survival chances are enhanced) than those with no education (DHS 1993:99).

AMREF (1985:214) reports that education has recently received increased attention because of its seemingly inverse relationship to childhood mortality. They report that maternal education has been noted as being extremely important in determining childhood survival. Maternal education, AMREF postulates, inculcates modern health knowledge, beliefs and practices, improves health behaviour (i.e. feeding practices and child care), changes mothers roles in the family enabling her to take necessary measures to promote child health, including effective use of modern health services. Maternal formal education, in addition to the above, is also associated with other variables such as paternal education, income e.t.c. which promotes child survival. From their study in Malaysia, Da Vanzo and Habich (earlier cit.:6) attributes the decline of ICM levels between 1946-1975 to rises in maternal education, as one of the factors. They suggest that further advancement in mothers' education will lead to further improvements in infant and child survival prospects. Nag (1981:40) on his part (following his comparative study in Kerala and West Bengal) found out that higher literacy in Kerala particularly among the females plays a major role in

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decreasing child mortality levels, as it increases awareness about the need and right to use public facilities, including health facilities. Peterson et al (1989) also supports this view. In his research results, he noted that a mother's educational level seem to affect child mortality as they were better informed and projectedly therefore, had better health behaviour which kept mortality rates down. They therefore knew how to better care for their children.

The DHS Report (1993) also has something to report on this. Its datum indicate that high childhood mortality rates were found to be higher for children whose mothers had no education or who have not competed primary education. It also reports that there is a positive relationship between education and receipt of antenatal care. It reveals that 20% of mothers with no education received ante-natal care compared to 26% with secondary education. It further reveals that women with no education are more likely to receive no ante-natal care than educated women. It also states that there is a relationship between maternal education and place of delivery. The proportion of births delivered at home decrease from 77% among mothers with at least some secondary education (ibid:96). Conversely, the proportion of births delivered in health facilities increase to 22% among mothers with no education to 71% among mothers with secondary education. It at the same time reports, surprisingly, that children of mothers with incomplete primary education experienced higher child mortality before age 5 (121/1000) than those whose mothers have no formal education (100/1000).

The assertion that higher formal education denotes good/better childcare and hence low ICM rates is therefore questionable if one uses the last finding.

There are those who have also questioned the linkage between formal education and better child care. We have seen before how some researchers have associated formal education with better childcare as they are deemed to have better knowledge than the uneducated ones in this area. However, other researchers like Goldthorpe and Meck have questioned this assertion.

To begin with, Goldthorpe (1990:188) makes a distinction between education in general and formal education (or schooling). He says that schooling refers to formal class-room setting while education includes all that people learn in their whole life experience. He states that one may learn more about childcare through life experiences i.e. socialization, than through schooling. In most cases anyway, childcare does not form part of the syllabus. Goldthorpe states that in many African societies, young people learnt by doing and helping their parents and others older than themselves. Some institutions such as tribute labour had educational functions where young men and women called to work at the chief's court saw and heard what went on there. In some African societies there were/are initiation ceremonies that included tests of fortitude and instructions in the duty of men and women. He thus questions the assertion that higher formal education measures one's level of better health behaviour and mortality rates. Gish (1970:67) on his part states that maternal health education through clinic attendance is the kind of education which is needed for child survival, thus formal education plays a very minimal role in ingraining health awareness and behaviour. An example can be obtained from the DHS (1993:112) findings. The report indicates that education and one very important health behaviour, breastfeeding, have an inverse relationship.

It reports that rural women, who have less formal education were found to have higher breastfeeding infrequency than those educated, mostly residence in urban centres. These educated mothers also tend to stop breastfeeding much earlier than their rural counter-parts mostly due to pressure of work and ability to purchase milk substitutes (Cameron and Hofvander, 1992:21; USAID, 1990:29) which as discussed later, is not a proper health behaviour. In conclusion therefore, it will be of interest to carry out more research to resolve this issue of the association between formal higher education, health behaviour and ICM rates. This is important as good health behaviour, as Odile & Dakayo (earlier cit.:30) report is directly related to child survival. A mothers hygienic practices such as washing of own hands, washing of baby often, disposing of baby's and other fecal waste, boiling of water, clinic attendance e.t.c. increases chances of child survival. Does formal education determine this?

Weaning cultural practices is the other cultural factor which can affect the livelihood of a child. The term to wean means 'accustom', thus it has come to mean the period which an infant gradually becomes accustomed to foods other than breastmilk (Cameron and Hofvander, 1992:21). Pitcairn (1963:ix) defines it as the process of changing baby's food from milk diet to diet containing solid food. Customs of early weaning could lead to serious problems especially among poorer groups in the population (Meegama, 1980:20; Cameron and Hofvander, above cit.:56). It is said that one of the greatest dangers of the weaning period is its association with the highest rate of infection, particularly of the gastrointestinal tract. Infections in turn, prepare the way for malnutrition and increase the bad effects of dietary deficiencies (ibid:21). Importance of breast-feeding include the following:-

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(i) Breast milk is clean and readily available.

(ii) Provides the infant with immunity and hence have lower mortality rate.

(iii) Gives mother emotional satisfaction and gives psychological bonding.

(iv) It is critical to an infant's nutritional status.

(v) It reduces the risk a child will be infected by disease through contamination of food.

(vi) It acts as a natural contraceptive as it delays ovulation for it stimulates the hormone prolactin, which delays return of menses, hence prolongs postpartum amenorrhea and birth interval (whose importance we have already discussed).

(vii) It develops the child's teeth and jaws.

(viii) The child obtains anti-bodies from the mother which gives it immunity against diseases

-(Chen, 1983;Pitcairn, 1963;Cameron and Hofvander, 1992:22;USAID, 1990:29).

In most traditional rural societies, extended breastfeeding is nearly universal. Recently however, an unfortunate trend is occurring in urban areas of developing countries for poor nations to abandon breastfeeding. This has predictably contributed to high ICM (Chen, above cit.:210).

Early cessation of breastfeeding is as a result of some of the following:-

(a) Loss of confidence, or feeling that the child does not get sufficient food, even though no sign of underfeeding are apparent.

(b) Intensive and repetitive advertising that many mothers are unable to resist.

Economic factors - working mothers have little time to breastfeed their kids as only few nations allow mothers time off to breastfeed.

Many western-trained doctors and other health workers lack interest in methods of feeding. They promote artificial feeding.

Status - use of tinned milk products is seen as a sign of status symbol.

Social factors - concern that breastfeeding in public is immodest and/or will spoil the mother's figure.

meron and Hofvander (1992:21) USAID (1990:29) includes the following to the above list:-

a)   Increasing urbanization.

b)   Breakdown of social support system.

c)   Women's growing participation in labour force.

d)   Availability and marketing of breastmilk substitutes.

Breastfeeding at times stops due to development of another

pregnancy (AMREF 1992).

It is in view of the above that it is recommended that breastfeeding should continue for as ng as it is possible due to its crucial benefits. Weaning period, it is recommended, in poor states ould extend over one to two years and should be gradual (Cameron and Hofvander, opp. Cit.:22). troduction of supplementary foods to the children is therefore of great importance as it exposes em to gastrointestinal diseases.

Timing of supplementary foods in addition to breastmilk has important implications to the child and the mother. DHS (1993:112) data reveals that in Kenya, there is early supplementation of breastmilk with other liquids as well as with solids and mushy foods. The median duration of breastfeeding in Kenya is 21 months. It is recommended that an infant should be exclusively fed on breastmilk for the first 6 months before weaning could commence. Breastfeeding frequency was also noted as being an important factor in child nutrition. DHS data revealed that Coast, Western and Rift Valley Provinces had the highest level of breastfeeding frequency of more than six times a day than other provinces. Rural women were also more likely to breastfeed their babies more frequently than urban women and breastfeeding frequency was also found to be higher among mothers with no education.

Da Vanzo and Habich (opp. cite.:v) report that reduction in breastfeeding has kept the infant mortality rate from declining as rapidly as it would have otherwise. They state that the detrimental effect of reduced breastfeeding have more than offset the beneficial effects of improvement in water and sanitation. Duration of breastfeeding (unsupplemented and supplemented) may therefore measure nutritional intake and protection against certain diseases through maternal anti-bodies. Extent of supplementation or substitution reflects the likelihood of ingestion of pathogens with breastmilk supplements or substitutes (ibid:14). Since breastfeeding, especially if unsupplemented, reduces exposure to contaminated water and food, its relationship with the environment can therefore be clearly viewed. Hence the detrimental effects of inadequate water and sanitation should be less the longer breastfeeding lasts. Similarly, breastfeeding should have less of a beneficial effect on child survival if hygienic water supplies are available.

Peterson et al (1989) reflects that infant and child mortality rates were highest in the poorest states of peninsular Malaysia between 1945-75 because of breastfeeding practices. She says that breastfeeding in the first twelve (12) months of life is very crucial to the life of a child. Its duration measures nutritional intake and protection against certain diseases through maternal anti-bodies. She therefore concurs with the other researches on this point. As for child mortality analysis, she says that children with longer duration of breastfeeding in the first year of life may be healthier at the start of their at-risk period (1-5) and thus have a better chance of surviving the period. She states that her findings revealed that amount and type of breastfeeding in the first twelve (12) months significantly affected subsequent mortality.

Potts and Thapa (opp. cit.:9-10) state that breastfeeding reduces incidences of diseases and saves infant lives. About 29.8% of infants, they state, are saved through breastfeeding. Data from Cebu in the Phillipines show that infants of two months of age who are given breastmilk experience lowest incidence of diarrhea. It is then not surprising that one of USAID aims is to promote breastfeeding as it has many benefits (USAID 3rd Report).

Other socio-cultural factors such as:-

Peoples' perception of present situation and interest in and susceptability to change, reasons for acceptance/rejection of previous attempts at upgrading, level of hygiene education, religious and cultural factors affecting hygiene and technological choice, location or use of facilities by both sexes and all age groups, attitude towards resource reclamation and attitude towards communal or shared facilities could directly influence sanitary situations (Kalbermatten et al 1980) which could in turn

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affect child survival negatively as has already been discussed. Coe (1971:1) observes that people tend to view the event of diseases or ill health from the perspective of their culture, and based in part of these perspectives, they tend to respond to disease in predictable ways.

2.1.5. ECONOMIC FACTORS

These are also said to affect ICM rates as noted by Meegama (opp. cit.:17). These factors can be divided into two groups:

(i)   operating at the macro-level and the other,

(ii)   operating at the household level.

The macro level variables represent the economic level of the country. It questions whether the country has the resources to provide well spread and accessible network of ante-natal and post-natal clinics, maternity homes, trained midwives and health care centres. This macro-level variable also affects the general educational level of the country, which in turn affects the level of understanding of mothers and would-be mothers and their ability to follow and understand not only the instructions given by health workers, but also their ability to realize when a child should be taken to hospital.

In micro-level terms, the economic level of the household or family can greatly influence the health of the child. It can determine efficient ante-natal care, which in turn can determine the health of new born children. Economic well being can also be important in providing adequate food to children after the neonatal stage, especially in groups where there is early weaning. Economic

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well being can also determine whether a family can provide private health care services and quick transport. It can also determine the level of sanitation as well as that of the availability of uncontaminated drinking water and the community and household levels.

Nag (opp. cit.:18) found out that income and consumption expenditure was higher among the people of West Bengal than among those of Kerala hence the noted differences on mortality rates. Benjamin (opp. cit.:17) also recognized the level of household living as an important variable in determining child survival. He noted that ICM rates are lighter in professional and managerial level and higher in unskilled workers. Casterline et al (1992.253) also concluded from his study on mortality in rural Egypt that a household's high economic status betters child survival. Ebanks (1985:42) on his part also concluded from his research on infant and child mortality and fertility in Trinidad and Tobago, Guyana and Jamaica that occupation (of either mother or father, which usually signifies income and hence level of living) as relating to child survival. The better the household's occupation, the lower its ICM rates. Shryock et al (1976) also states that a household's socio-economic status (e.g. occupation, literacy, and educational attainment) correlates with child survival. Adongo (earlier cit.:9) also recognizes poverty as one of the factors responsible for high ICM rates in Kenya. An AMREF research in Rusinga Island (in the then S. Nyanza District) in 1992 found out that the inhabitants socio-economic status was very low as most women's husbands had no steady source of income hence the high rates of ICM observed. Mooley . (earlier cit.:106-107) also states that despite geographical differences, trends and differential in child mortality seem to be more closely related to economic conditions.

which is also a factor in ICM (Benjamin, 1965:17). But following their under-5 supplementary feeding program, the children's nutritional status in Ngwatu, Makindu, Kikumbulya and Mtito Andei locations greatly improved.

Adongo (earlier cite.:9) also tells us that following nutrition program in Kochieng' sub-location in Kisumu district, the percentage of children who were underweight was reduced from 52% to 22% in 1988. He recognizes poor food security in Baringo district as an ICM factor.

Maternal nutritional status which is also to some extent dependent on geographical factors, also influences ICM rates. Poor nutritioned mothers give birth to under weight children and they themselves (the mothers) suffer from birth traumas, which will consequently affect the next born (Chen, 1983:208).

The above are therefore the factors most responsible for the persistent high ICM rates in Kenya and elsewhere in the world. It should be noted that all these factors are associated and related to each other. One may find that one factor causes or influences the existence of the other. For example, religious attitudes (which is a socio-cultural factor) towards hospital attendance may affect clinic attendance (which is a medical factor) and age at first birth which is demographic factor. One factor can therefore not be considered in isolation of the others.

2.2.0 HYPOTHESES

From the Literature Review, the following two hypotheses have been formulated:

1. That Socio-cultural Factors are associated with ICM rates(where Socio-Cultural Factors is the Independent variable and Infant and Child Mortality is the Dependent variable.

The variable being considered under the Socio-Cultural Factors is **education** (mothers') which is said influences ICM rates. It however influences ICM through certain intervening variables, which directly causes under-5 death. The intervening variable in this instance is household sanitary conditions/standards (that is its level of cleanliness) which either promotes or deters incidence of disease which causes death. Hence maternal educational level is associated with household sanitary condition which is inturn associated with ICM. Hence:

Independent Variable	Intervening Variable	Dependent Variable
Socio-Cultural Factors (Maternal education)	Sanitary Conditions (All types of waste disposal and source of water)	ICM (Death of an under five)

2. That Medical and Health Care Factors are associated with ICM rates (whereby medical and health care factors is the Independent variable while ICM is the Dependent variable.

The variable considered under the medical and healthcare factors is easy access to medical/health supportive facilities which is said to have an impact on ICM levels. Like in the first hypothesis, there is an intervening variable between the independent variable (access to medical facilities) and the dependent variable(ICM). The intervening variable in this case is (maternal) health bahaviour and awareness. Availability and access(easy) to health facilities is not directly related to under-5 mortality. Rather, easy access to health facilities inculcates positive health

awareness and behaviour, and it is this bahaviour that determines whether a child will live or not. It is therefore the intervening variable, which affects ICM levels. Hence:

Independent Variable	Intervening Variable	Dependent Variable
Medical and Health Care Factors (Access to health facility)	Health Awareness and Behaviour (Knowledge of ICM factors and acts to contain them)	ICM (Death of an under five)

The above two are considered the most important hypotheses not only due to the fact that they are directly related to mortality occurrence by also due to the fact that they are the two factors (maternal education and accessibility to health facilities) that have generated debate. As has been seen in the literature review, there are those who have equated maternal educational level to health behaviour and ICM rates (Da Vanzo and Habich, 1984:6; Peterson et al, 1989; Nag, 1981:29-30; E C.A., 1991:1). They argue that the higher the maternal educational level, the higher their level of health behaviour and the lower their ICM levels will be. There are however, those who state that maternal educational level cannot be used as an indicator of intelligence and hence cannot be tied to maternal health behaviour and ICM rates (Goldthorpe, 1990:188; Gish, 1970:67; Meegama, 1980). In light of this debate, an hypothesis can be formulated to bring out which of the two sides has a stronger argument than the other. Sanitary conditions has been picked as an indicator of health behaviour as sanitary conditions are a major factor in determining child survival (Nag, 1981:17;

Peterson et al, 1989; UN, 1984:154; Shryock et al, 1976; Adongo, 1991:10). The two most important sanitary factors mentioned in the literature review are water and lavatories.

Accessibility of health facilities and health awareness and behaviour is the other item that, as stated in the literature review, has generated debate. There are those who argue that once health facilities are put on the ground and made accessible to the local inhabitants this will lead to a change in their behaviour and make them aware and have better health behaviour (Nag, 1981:20; Benjamin, 1965:5; Warmock, 1967:42). There are those who however, contend that accessibility of health facilities is not the single most important factor that ultimately determines health behaviour and ICM rates (Meck, 1971:48; Luijk, 1974:63-64; Coe, 1971:1). They state that these health facilities may be accessible but the inhabitants may not use them because of cultural factors and the like. Hence it is their attitude and cultural practices which affects their health behaviour and not the accessibility (both in physical and financial terms) of health facilities. The second hypothesis has therefore been formulated to ascertain which side has a stronger argument.

The study focuses on the two Factors of ICM (Socio-cultural and Healthcare Factors)not only because they generated debate but also because they can be positively and statistically tested

2.3.0. THEORETICAL FRAMEWORK

The theory picked for this study is the attitude behaviuor theory. The theory postulates that people's attitudes (towards certain phenomenon) usually determines their behaviour (towards that particular phenomenon) (lindgen, 1969:246 ; Gordon, 1971: 246). Backman and Secord (1966:166) define attitude as an end-product of certain schedules of social learning while Shaver (1977:97)

defines attitude as an organized predisposition to behave in a favourable or unfavourable way towards a specific class of social objects. Sherif (1956:488) on his part states that an attitude is inferred from an individual's positive and negative stand towards its referents. It determines a consistent, characteristic mode of reaction in relevant situation, which may involve people, an issue, an institution or object or value.

Jones and Herald (1967:157) state that the products of socialization (defined as the adoption and internalization by individual's of values, beliefs and way of perceiving the world that are shared by a group, is attitudes, which is a combination of belief with a value. They state that two cognitions (e.g. my child is sick; if taken to hospital for treatment he will improve) make a belief and a belief plus a value (which refers to a wide range of motivational phenomena – that which defines phenomena's attractiveness and repelling sectors) equals to attitude. They continue to state that attitudes are formed through experience and can again be changed through experience.

Attitudes, thus like beliefs and values, are learnt through contact with others and they determine the kind of behaviour people display and kind of reinforcement they expect. Attitudes may terminate directly in on expression of liking or disliking of a particular phenomena, as may involve intermediate steps in which factual beliefs may be addressed with respect to one having a choice of scale and with the preference order of the chosen scale, which ultimately determines behaviuor (Havrre and Second 1972:294). Attitudes are also said to promote adjustive economy by providing on individual with a ready basis for making decisions (Jones and Gerald, 1967:432). Once attitudes are formed, people's behaviour are usually a reflection of these attitudes.

Gordon (opp.cit.) states that beliefs lead to the formation of attitudes which in turn leads to the formation of opinions which terminate to relevant action behaviuor. He describes beliefs are relatively stable, emotional and cognitive dispositions, usually directed at abstract ideas. These, he states, takes long to change. He describes attitudes as less stable dispositional relationships within certain aspects of individual's experiences. Attitudes are determined by socio-cultural factors and mostly influenced by, (a) experience, particularly those with high emotional content; (b) education (in-school and out) and indoctrination and, (c) novelties in the individual's perspective of his relationship to society caused by manners.

He describes opinions as malleable dispositions towards an object, institution, person or artifact in the individual's world of perception, mediated to him in any manner. They are capable of relative precise articulation, and when compared to attitudes and beliefs, are generally spun from, or involve further articulation of positive or negative cognitions and feelings. Opinions then relate, either in eventual outcome or fantasy, to probable actions an individual believes he will take when faced with a situation demanding choice between two or three alternatives. Hence we observe that attitudes determines or predicts one's eventual action/behaviour.

Attitudes are also formed/molded or changed by three factors which are : (i) The re-examination of the person's attitude towards the object before and while he takes action occasioned by the induction; (ii) Exposure to new experiences in relation to the object which yields new information about it, occasioned by the action and (iii) Changes in the psychological situation in which the person finds himself in as a result of having taken the action and the new forces that are

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thus brought into play (Backman and Secord, 1966;151). They conclude that behaviuor is a product of the above process.

Sherif (ibid: 538-539) elucidates that in attitude formation, we consider two factors. First are the internal factors which are described as existing attitudes and other motives relevant to the object, person, issue e.t.c. to which the individual is exposed to. Second are the external factors which are points of views or stands represented in the stimulus material, the initiates of the point of view (who sponsors it), who represent it, the form of presentation, the medium and the social context at the time.

Shaver(1977:1147) states that attitudes consists of three components: (i) The cognitive components which includes all the individual's beliefs about the attitude object. (ii) The affective component which represents the individual's evaluation of the members of the object class, and (iii) The behaviuoral component. He states that attitudes are general predisposition to action, and in principle it reflects the individual's beliefs and feelings. He adds that attitudes have four functions. The first being the instrumental function. This relates to identification of the best way/means/methods through which one can achieve a goal. The second function is that referred to as the value-expressive function. This enables people develop attitudes which are consistent with, and expressive of their broader value system. The third function is that which is called the knowledge function. People develop attitudes that help bring structures to their social worlds. These attitudes simplify a person's experience, provide organizing principles and guide information gathering on topics of importance to the person. The fourth function is referred to as the ego-

Attitudes help people develop attitudes that have the effect of shielding them from conscious recognition of their own inadequacies and failings.

The above theory has been selected for this study as it is deemed as being the most appropriate in the eventual analysis and understanding of the results obtained. Since the study is concerned with maternal awareness and behaviour towards infant and child mortality factors, we are bound to find out that maternal awareness of these factors would have been obtained through their life experiences and hence they will have developed attitudes based on these experiences. Consequently, their behaviours towards child health will rest on these formed/learned attitudes. The theory will therefore allow us to understand the populace's attitude towards early birth (and early marriages), quick or slow birth rates, preferred number of children, sanitary conditions and breastfeeding among others, attitudes which will translate into behaviour; these are three core objectives of this study. This theory is also chosen as it is at the root of all awareness campaigns (thus knowledge-attitude-practice; otherwise known as KAP).

CHAPTER THREE

METHODOLOGY

3.0.0 Research site

The research study was undertaken in Asego Division of Homa-Bay District of Nyanza Province. Homa-Bay District is located in southwestern Kenya along the shores of Lake Victoria. It borders Rachwonyo and Siaya Districts to the north, Kisii and Nyamira Districts to the East, Migori District to the South and the Republic of Uganda in the West.(see Map 1, appendix B).

The District covers an area of 1129 square meters inclusive of water surfaces. The District has four Divisions namely, Ndiwa Division, Rangwe Division, Nyarongi Division and Asego Division. Asego Division is the Division selected for this study, reason being that it being the Division where the District's headquarters is situated, findings in this Division will provide a good reflection on the situation in the the outlying Divisions, especially Nyarongi which is the least developed in this region.

Two Locations in Asego Division, namely Homa-Bay Town Location and E.Kanyada Location were purposively selected for this study (Asego Division has three locations of which West Kanyada was the one left out), so as to provide a rural-urban comparison. Homa-Bay Town Location is essentially an urban location while E.Kanyada is a rural location.

3.0.1. Topography, geology and climate

Homa-Bay District's main relief region is what is termed as the lake shore lowland region. The other is the upland plateau which mainly runs along the border of Ndiwa in the East. Lambwe valley is located to the West of the District (in Rangwe Division) which is used for wildlife conservation and it is in this valley that Ruma National Park is situated. At the end of the lakeshore lowlands is Lake Victoria, which offers rich, fishing ground and sandy beaches. There are many rivers which crisscross the District but the major one is Ragwena River. Like many in this region it originates in Kisii District and drains into Lake Victoria. Like most of them, it is polluted by sewage effluent from Kisii Town as well as chemicals from pesticides and fertilizers.

The under types of base rocks are basalt, granite grit, conglomerate, turf ashes and various deposits. Basalt is most common in Mfangano Island. Granite is distributed in parts of Ndhiwa and eastern parts of Rangwe. Miocene deposits are common in Rusinga Island.

As for climate, the District has an inland equatorial type of climate modulated by altitude and proximity to Lake Victoria. It receives annual rainfall of 700-800mm. The long rains start in

February/March while short rain comes between August and November. Parts of Rangwe have reliable long rains while this reduces westwardly in Ndhiwa, Nyarongi Division and parts of Rangwe. The lake shore areas lowlands are however, including Rusinga and Asego Division, characterized by very dry conditions. Temperatures range between 17.1 C to 18.6 C. High temperatures prevail throughout the year with December, February and March having the highest temperatures. Minimum temperatures show little variation and are between 17.1 C to 18.6 C. Temperatures are hotter in Asego Division and western parts of Rangwe as you move towards the Lake.

3.0.2. Population

In 1989, Asego Division had a population of 55,858, which was projected to rise to 70,321 by the year 1997. Homa-Bay District's growth is calculated to be 2.92% per annum.

Asego Division as per the 1989 census, had the lowest male -female ratio in Homa-Bay District. In Asego Division, males were counted to be 27,269 while females were 28,589 (ratio 1:1.05). Asego Division was also found to lead in regard to population density with 304 people per square kilometer, followed by Rangwe (245 people per square kilometer), Ndhiwa (150 people per square kilometer) and last Nyarongi. Asego Division has high population density because it includes the District's headquarters and Homa-Bay Municipality. Homa-Bay District, including Asego Division, has a very young population. In 1989, 19.5% of the population were below the 5 years, while 50% were found to be older than 60 years. The District therefore has a very large in-

built momentum for substantive future increase in size as it contains young people with high future reproductive potential.

3.0.3. Major economic activities

The major food crops grown in the District are sorghum, maize, beans, rice and groundnuts. Crops like seed sorghum, cotton, tobacco, simsim and sunflower are also grown. Maize and sorghum occupy most of the arable land. Sweet potatoes and cassava are also grown.

Cattle, poultry, sheep and goat rearing are also part of the economic activities. Fishing is also an important economic activity as by 1993, Asego Division had 300 registered fishermen by the fisheries department, Homa Bay. Asego Division has three (3) landing beaches which by 993, 2,722,362 kilograms of fish were landed.

No major industries are found in the District. Two (2) fish industries operate in Homa Bay town. One flour-milling factory operates in Homa Bay town. Homa Bay municipality has most of the traders, trading in grocery, wholesale, butchery, carpentry, tailoring, shoes and watch repair, garages, hotels, etc. Jua Kali activities are also common in Homa Bay town.

3.0.4 Health Facilities

In 1994, Asego Division had six health facilities of which one was a government hospital, one was a private health centre, two were government dispensaries and two church dispensaries.

Nyarongi was the least served as it had only two (2) health facilities. Currently, Asego has one government hospital, four private health centre, three government dispensaries and two church dispensaries. It should be noted that all these facilities (save for one government dispensary and one church dispensary situated in West Kanyada) are situated in Homa Bay Town Location . In terms of bed and patient ratio, Asego Division in 1994 was the best served in the District. It had a ration of 1:229. Most disadvantaged was Nyangori where no beds had by then been put up against a population of 37,170. Homa Bay District hospital is situated in Asego Division in Homa Bay Town Location.

3.0.5 Education Facilities

Rangwe has the highest concentration of primary schools followed by Ndhiwa, Asego and Nyarongi in that order. Rangwe has one Teacher Training College while Asego has one Medical Training Centre in the District. Ndhiwa and Nyarongi have the highest rates of girls dropouts.

3.0.5 Water Supplies

Homa Bay District has only one commissioned water supply which produces 1,500 cubic metres while the demand is over 4,000. In each sub-location in E. Kanyada Location, there is a bore-hole whose use is by membership (currently standing at 100/= per year). The Town Location has two bore-holes situated at the water department.

3.0.7 Electricity, transport and communication

Electricity is only available in Homa-Bay Town Location while E.Kanyada has none. Homa-Bay District as a whole has very poor roads. Most are not motorable during the rainy season. Ndhiwa Location is normally cut off during the rainy season. Only the road running from Kisii Town, through Rongo to Homa-Bay Town is a bitumen road. There is a secondary road of earth and gravel running from Homa-Bay Town to Kendu Bay where bitumen road emerges. The rest of the roads in the Divisions are only rural access roads.

3.0.2 SAMPLING PROCEDURE

Household cluster sampling was method used in the study. To better understand how the above was carried out, it would be prudent to first explain the residential organization existing in the two locations which prompted the choice of the preferred sampling method.

Residential organization in the rural setting (E. Kanyada Location) is such that a number of households are built round a given circumference to form a cluster. A household cluster is composed of a man, his wife (or wives) and his children (sons, either married with children or still unmarried). Residential organization in the urban Location (Homa-Bay town Location) was of two types. One type consisted of the system similar to that found in E. Kanyada. The other type was where people lived in plots consisting of rented houses. Others lived in estates.

As mentioned before, the household cluster system was the method employed in this study. Since household clusters already existed in E. Kanyada, those where a woman lived who had given birth to children in the last 60 months preceding the study were identified and listed. The last 60 months

re chosen as this ensured that only mothers who had children who were under five years of age, those who had children but had since died while still under five years of age were interviewed. for the urban location, various plots where rented houses and estates were clustered and once this s done, only those clusters in which a woman had given birth to an under five (5) child in the last months were identified and listed.

total, 524 clusters were identified in E. Kanyada while 301 were identified in Homa-Bay Town cation. This was done by the assistance of six research assistants. 75 clusters were then to be cked from each location. Sampling of these 75 from each location was carried out in the lowing way. All the identified clusters in each location were recorded in separate pieces of paper d then placed in two boxes, one for each location. These were then shuffled and from each box, pieces of paper were randomly picked each representing a cluster.

cm each cluster, one household was then sampled. In cases where several qualified women isted in a single cluster, these women were sampled by using the same simple random system (i.e. mes indicated in pieces of paper, then placed in a small box which was then shuffled and one ece was then randomly picked). By use of the method described above, 75 individuals from each cation were thus picked. These 75 individuals also represented a household in each location. A usehold in this case is defined as comprising of a man, and his wife and her children who are und by ties of kinship, who live together under a single roof and who share a community of life in at they are answerable to the same head and share a common source of food. They also share a set f values, norms and believes Single men and women are also included in this definition but in this

case, only women were of our concern. The sample size for this study was 150 (75 from each location) and for a population of 21,433 and 23,375 for E. Kanyada and Homa-Bay Town Location respectively by 1989, and a projected 57,269 by 1997 this figure is representative enough for the Division.

3.2.0   VARIABLES, OPERATIONAL DEFINITION AND MEASUREMENTS

3.2.1   Hypothesis 1

(That Socio-Cultural Factors are associated with ICM rates)

Independent Variable

This is the Socio-Cultural Factors. Under this factor, the variable to be considered is maternal educational level, which is defined as the formal education that the respondent has received. This is said to influence an individual's maintenance of health (most importantly maintenance of cleanliness in the household) which then has a direct influence on ICM.

Intervening Variable

As stated above, and in section 2.2.0, the intervening variable is what directly translates into an under - 5 death. The intervening variable is defined as the type of cleanliness/sanitation within which the household exists and that in which the child is brought up.

Dependent Variable

This is the infant child mortality. This is defined as the physical death of a child below five years of age.

The linkage and transition between the three variables is explained in section 2.2.0.

Indicators and Measurements

(i) Independent Variable

This is the stage of formal learning at which the individual reached. This includes primary level, secondary level, and tertiary college level e.t.c.

Measurement of the Indicator

This is measured by the years of formal schooling that an individual has had.

(ii) Intervening Variable

This is defined the sanitary conditions existing in the individual's household. The type of sanitation determines the level of cleanliness present within the household.

Measurement of the Indicator

Cleanliness (sanitation) is measured by the type of water source that an individual uses (piped, river, pond, e.t.c.), the type of toilet facilities that the household uses (latrine or bush) and the type of waste disposal practical by the individual (hygienic methods consisting of burning the waste or having a site for its disposal which is situated far away from the homestead; and unhygienic

methods consisting of throwing the waste in the shamba, or anyhowly within the household compound).

(iii)   Dependent Variable

This is the death of an under-5 within the household

Measurement of the Indicator

The number of respondents who report an under-5 death will be the measurement used.

3.2.2   Hypothesis 2

(That Medical and Healthcare Factors are associated with infant and child mortality)

Independent Variable

This is the Medical and Healthcare factors. The variable being considered under this factor is the accessibility of health facilities to the respondents. Accessibility is defined as proximity (in terms of distance) of the health facility to the respondent which should be close. The closer an individual is to a medical facility the more likely he is expected to make use of the facility which is expected to minimize under-5 death.

Intervening Variable

This is the level of health behaviour and awareness that an individual posses which is said to be molded through frequent visits to health facilities. As stated in section 2.2.0 this intervening variable terminates to the determination of an under-5 death.

Dependent Variable

This is the death of an under-5 (ICM)

Indicators and Measurements

(i) Independent Variable

This is the existence and accessibility of medical facilities within the respondents' area of residency.

Measurement of the Indicator

The measurement of this indicator will be in distance (in kilometers) between an individual's place of residency and the medical facility that she visits.

Intervening Variable

This is the individual's health awareness and behaviour which is defined as the individual's perception of mortality factors and the individual's health practices (which includes deciding stage at which to take child to hospital when sick, taking child for immunization schedules, adopting birth control methods to space children, deciding age at which she should have a child e.t.c

<u>Measurement of the Indicator</u>

Perception is measured by means of the respondents' view or knowledge of ICM factors. Individual health practices is measured by maternal use of health facilities and maternal deliberate and conscious practices that enhances child survival.

3.3.0   DATA COLLECTION

Data was collected by use of the following methods:

(a)   Interview schedule, which were personally administered, were used to collect both quantitative and qualitative data. A pilot exercise to test its effectiveness was carried out a month prior to the fieldwork.

(b)   Visual observation technique was also used to collect and verify data.

(c)   Unstructured interviews (to gather data from key informants such as District Officers, Chiefs, Health Officers etc) were also carried out.

(d)   Secondary data was also used to supplement the primary data obtained and for comparative purposes.

3.4.0   DATA ANALYSIS

Data analysis was both qualitative and quantitative in nature. Graphs and cross tabulation have been used for data presentation and analysis. The Chi-square test has also been used to test association, while the personian product moment coefficient and the Z-test was also used to test the formulated hypotheses. In testing the hypotheses, the dependent variables

(i.e. sanitary conditions) were first broken down (i.e. the type of water source, type of disposal method etc), individually tested for association (between it and the independent variable) using the Chi-square test and thereafter, all these broken variables were then amalgamated and then collectively tested as a unit using the Z-test.

3.5.0 PROBLEMS ENCOUNTERED DURING THE STUDY

There were several problems which were encountered during the course of this study. The first problem had to do with the terrain of the land (in which the research was carried out). Asego Division's landscape is made up of several steep hills, steep valleys and long open grass. Due to the random sampling of respondents, most of those sampled lived far away from each other. The researcher had therefore to walk many kilometers on foot (as no transport was available and due to the terrain, bicycles could also not be used to reach respondents) and coupled with the harsh weather (the region is extremely hot as it is next to the lake), going up hills and down valleys was particularly trying. And due to the non-availability of clean water and shops from which to buy snacks, the researcher and his assistant had therefore to carry a sizeable weight each day. With a weight on your shoulder and the described terrain coupled with the hot weather, the going was quite rugged.

Another factor which worked both as an obstacle and as a blessing (to be explained how later) was the Polio Immunization Programme which was being carried out by the Government of Kenya with the assistance of donors at the same time the research was taking place. This acted as an obstacle in that there were some villagers and town dwellers who associated the Programme with

the Government's perceived intention "to finish them". Some villagers and town dwellers believed that the KANU Government was using the cover of this campaign to carry out some sort of family planning exercise against them (the Luo Community) since in the last general elections they had voted for Ford-K candidates. Some even believed that the polio vaccine being administered was actually some sort of poison aimed at killing their children. This was mostly a view held by the men folk. They therefore associated the present study with the Polio Campaign Programme and hence instructed their wives not to entertain any visitors of my like. It therefore took a lot of persuasion to convince them that the study was for a good cause and secondly, that the study, though not directly associated with the campaign, was nevertheless just as important. It was mostly due to the strong persuasive skills that me and my assistant (who is a permanent resident of the region) possessed that we were able to succeed in interviewing all the selected respondents. On the other hand, the campaign assisted the study in that as a forerunner, it sensitized the inhabitants on issues revolving around child-survival and those with genuine interest in the polio campaign thus easily accepted us.

Another problem faced by the study was the interference by the respondent's husband and other members of the family. The study elicited a lot of interest in the homesteads and hence the respondents' husbands and family members chose to stay behind and witness the interviews. The problem with this was that most of these family members chose to stay behind and witness the interviews. Family members, and especially the respondents' husbands, at times chose to answer some of the questions on behalf of the (present) respondent. The researcher had therefore to

tactfully ease the family members out of the room in order that only the respondent remained to be interviewed.

The study also faced another problem and this time this had to do with religion. The period of the study coincided with that of the Seventh Day Adventist (S.D.A.) religious festival of "kitche". These are weeks of daylong prayers during which most members of this religion spent most of their time at church. It therefore proved difficult to interview respondents belonging to this church and hence proper prior arrangements had to be made before interviews could be held. Since most of the inhabitants in this region belonged to this religion, a lot of man-hours were therefore spent just scheduling for meetings and waiting for the scheduled time to come. Some of the interviews had therefore to be conducted at the church compounds moments before or after the services, or at times very late in the evenings when the respondents retreat to their homes.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1.0 HYPOTHESIS 1

The first hypothesis which is used to guide the research states as follows:-

That Socio-Cultural Factors are associated with Infant Child Mortality rates.

The variable to be discussed under Socio-Cultural Factors is maternal education and how it is associated with ICM rates. However, in this section, we shall first look at the standard cleanliness in the respondents households and then in section 5.1.1 the thesis will zero-in on how this is associated with maternal education and reported Infant and Child Mortality levels. Section 2.2.0 demonstrates how the below mentioned is linked to ICM and the Independent Variable.

4.1.1 SANITATION

Sanitation plays a very important role in ensuring the survival of the under five. Many diseases are obtained from the environment as a result of exposure to communicable pathogens i.e. contaminated food and water, overcrowding in houses, poor sanitation, etc. (Chen, 1983:10; Mondongo, 1991:10). The existence of clean water and good sanitary conditions determines exposure of child to gastrointestinal diseases through contaminated water and food and lack of good personal hygiene. Diseases which one can contract from the environmental conditions surrounding him include diarrheal diseases, acute respiratory infections, measles, tetanus, whooping cough, tuberculosis, malaria, among others. This research focused on four aspects of sanitation namely, water, latrine availability and disposal of solid waste and dirty/used water.

A child who is brought up in an environment where clean water is lacking, where toilet facilities are not available and where solid waste and dirty/used water are disposed of in an unhygienic manner, stands a higher risk of catching one or two of the above mentioned diseases and this exposes the child to a higher risk of dying. Lack of toilet facilities, proper method of solid waste disposal and dirty water disposal leads to the contamination of the environment as the inhabitants will use the bushes to answer the call of nature. And the solid waste and dirty/used water thrown about within the homestead leads to the breeding of flies and to the transmission of diseases either through food taken by the infant or by flies settling on or near the mouth of an infant. If a child is born in a dwelling with poor or no toilet facilities, infections could be transmitted to the newborn by flies or through the mother who in all probability would also have unhygienic habits. This is where the issue of education comes in. Education has recently received increased attention because of its seemingly inverse relationship to childhood mortality. In this research, educational

el was taken or measured by the number of years of schooling (formal education) that a mother

. It has been found in a number of researches that there exists a constant decline in the mortality

children for all age groups with the increase in the level of education of the mother. An analysis

the 1989 Kenya Population census carried out by the Central Bureau of Statistics found out that

successive declines are such that lower primary education of a mother caused an average

uction of 26% in child mortality from the level of the children whose mothers never attended

ool. Maternal education is associated with level of intelligence which in turn is believed to

ulcate modern health knowledge, beliefs and practices, improves health behaviour, etc. Hence a

other with a higher level of education will ensure that she uses clean water, disposes of her solid

d wastewater hygienically and that her homestead has a proper latrine which in turn ensures child

vival.   An association between the two variables will be discussed in Chapter 5 of this thesis.

r now only findings associated with sanitation will be discussed. The findings in Asego Division

Homa-Bay District as concerns sanitation was as follows:

1.2. LATRINES

The two locations in Asego Division yielded the following results:-

From the data provided in Table 4.1 below, it is observed that the rural location of Homa-

ay District (i.e. East Kanyada Location) falls short of having adequate latrines to serve its

opulace, as only 16% of the respondents interviewed had latrines compared to 53% in the urban

ocation (Homa-Bay Town Location). The outlook in East Kanyada reflects that of the other rural

locations and indeed of the other Divisions. As being the Division which houses the District's headquarters, it is believed to be better endowed in terms of this particular aspect of sanitation. On the whole, Asego Division reveals that only 46% of its population have toilet facilities while 54% have none. It should be noted that all the respondents whose homes do not have toilet facilities stated that they do not consider it necessary as the bush adequately serves this purpose. This also demonstrates their lack of awareness of the crucial importance of having toilet facilities as a basic requirement of good sanitation. Comparably, however, the respondents in the urban location seems to be more aware of this as only 24% of them said that the bush serves them adequately compared to 84% of the respondents in the rural location who responded likewise to the same question.

LOCATION	NUMBER OF MOTHERS WHOSE HOMES HAVE LATRINES/TOILETS	NUMBER OF MOTHERS WHOSE HOMES DO NOT HAVE LATRINES/TOILETS	ROW TOTAL
East Kanyada Location	12 (16%)	63 (84%)	75 (100%)
Homa-Bay Town Location	53 (76%)	18 (24%)	75 (100%)
COLUMN TOTAL	69 (46%)	81 (54%)	150 (100%)

Source: Survey Data

On the whole, however, it can be noted from table 4.1 that out of the 69 mothers whose homes have toilet facilities, only a total of 19 mothers (representing 27.5% of the total) reported an under five death in the home compared to 81 mothers who do not have toilets in their homes of which 65 mothers (representing 80.2% of the total) who reported an under 5 death in their homes.

This echoes the finding first noted in regard to the urban location, that is that there seems to be a relationship between the availability or non-availability of toilet facilities and under five deaths.

This compares well with the Central Bureau of Statistics (C.B.S., 1996d:37) findings on its analysis of the 1989 census report in which it reported that the use of toilet facilities yielded the lowest proportion of child mortality whereas disposal of waste in the bush resulted in the highest child mortality for all age groups of mothers. On average, it states, the use of bush increased child mortality by about 53% as compared to use of main sewer.

It can thus be concluded that Homa-Bay District in general and Asego Division in particular suffers higher child mortality rates due to lack of adequate toilet facilities.

3. DISPOSAL OF SOLID WASTE

Hygienic disposal of solid waste is just as crucial in ensuring child survival as hygienic posal of human waste is. Solid waste here refers to substances such as food gone bad and has to disposed of and other food materials (i.e. banana, mango orange peels etc), dirty and used paper the like. Haphazard disposal of these will provide a perfect breeding ground for flies and other teria and vectors which could ultimately infect the under five and most probably kill him. Four thods of solid waste disposal were identified in Asego Division and these were:-

Just throwing the waste anyhowly around and within the homestead.

Burning the solid waste at one spot or at different spots.

Disposing of the waste in the Shamba.

Disposing of the waste at a designated garbage site situated some distance away from the mestead.

Of the four methods of solid waste disposal described above, only the burning of solid waste d disposing of it at the garbage site are considered as hygienic methods, as these methods ensure at breeding ground for flies and other bacteria are curtailed or are far from the homesteads. The ambas are within the homestead and though the waste may be good as manure, disposing it in the

shamba is not hygienic. The respondents preferred methods of solid waste disposal in E. Kanyada Location was found to be as follows:-

TABLE 4.2: PREFERRED METHOD OF SOLID WASTE DISPOSAL, E. KANYADA LOCATION

Method of solid waste disposal	Number of respondents	Percentage (%)
Just throw their waste	8	10.7
Burn their solid waste	10	13.3
Throw solid waste in Shamba	32	42.7
Throw solid waste at garbage site	25	33.3
Column Total	75	100

Source: Survey data

In Homa-Bay Location, the outlook was as follows:-

TABLE 4.3. PREFERRED METHOD OF SOLID WASTE DISPOSAL, HOMA-BAY TOWN LOCATION

Method of solid waste disposal	Number of respondents	%
Just throw their solid waste	11	14.7
Burn solid waste	14	18.7
Throw solid waste in the shamba	13	17.3
Throw solid waste at the garbage site	37	49.3
Column Total	75	100

Source: Survey data

The above finding reveals that the most preferred method of solid waste disposal in E. Kanyada is disposing of the waste in the shamba while in Homa-Bay Town Location is disposing of it at the garbage site. This demonstrates that the residents of the urban location have a better disposal

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method than their rural counterparts. As mentioned earlier, disposing of the garbage (solid waste) in the shamba is not a hygienic method as though they may act as manure in the shamba, they provide breeding grounds for flies and bacteria and since these shambas are very close to the houses, contamination of food and water stored in the house is very high. When the four methods are strictly polarized into two sides, that of it being either hygienic or unhygienic method of solid waste disposal, the outlook in both location is as follows:-

TABLE 4.4: SANITARY DISPOSAL OF SOLID WASTE, E. KANYADA LOCATION

(a) Number of respondents using hygienic method of solid waste disposal (i.e. burning the waste and disposing it at the garbage site).	35 (46.7%)
(b) Number of respondents using unhygienic methods of solid waste disposal (i.e. throwing the waste in the shamba and just throwing the waste about).	40 (53.3%)

Source: Survey Data

TABLE 4.5: SANITARY DISPOSAL OF SOLID WASTE, HOMA-BAY TOWN LOCATION

(a) Number of respondents using hygienic method of solid waste disposal (-ditto- as above)	51 (68%)
(b) Number of respondents using unhygienic method of solid waste disposal (-ditto- as above)	24 (32%)

Source: Survey Data

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From Table 4.4 and 4.5 above, it can be comfortably concluded that in terms of positive solid waste disposal, Homa-Bay Town Location fairs much better than East Kanyada. For while 68% of its respondents have adopted hygienic methods of solid waste disposal, only 6.7% have done the same in neighbouring E. Kanyada Location. This implies that there are factors in Homa-Bay Town Location which favour their choice and which does not exist in the rural location. These could include such factors as literacy level and accessibility to health facilities. These two variable will be discussed shortly. Urban residency thus demonstrates a higher level of sanitation as compared to rural residency. With its higher level of sanitation, child mortality will thus be expected to be low. It is instrumental to note that in East Kanyada, 43 respondents reported child mortality while in Homa-Bay Town Location, only 23 respondents reported child mortality. This finding compliments that of C.B.S. (1996:31) in which the place of residence of the mother was found to be a very crucial factor as it produced wide range of variations in child mortality. Overall child mortality was found to be about 15 per cent higher in rural than urban areas as per the C.B.S. report. How this relates to Infant and Child Mortality is elucidated in section 5.1.1

4.1.4 RESPONDENTS' HEALTH AWARENESS ON SOLID WASTE DISPOSAL

When respondents were asked to state the reason(s) why they had chosen their preferred method of solid waste disposal, their recorded responses were as follows:-

TABLE 4.6 METHOD OF SOLID WASTE DISPOSAL AND HEALTH AWARENESS, ASEGO DIVISION

PREFERRED METHOD OF SOLID WASTE DISPOSAL	REASON ADVANCED			
	Because it is convenient/harmless	Because it is safe and healthy	For manure	ROW TOTAL
1. Just throw it	19	0	0	19
2. Burn it	2	22	0	24
3. Throw it in shamba	10	2	34	46
4. Throw it at garbage site	5	56	0	61
COLUMN TOTAL	36	80	34	150

Source: Survey data

It can be observed that only 78 respondents (representing 52% of the total) are aware of the positive health reason that their method of solid waste disposal portend. These are those respondents who disposed of their solid waste hygienically by either burning it (22 respondents) or throwing it at the garbage site 56 respondents) because they viewed these methods as safe and healthy and hence of benefit to them and their families. The rest of the respondents 72(48%) carry out their preferred methods of solid waste disposal without being aware of either the health benefits or health hazards that are associated with their actions. This comprises those respondents (19) who simply throw their waste to those (2) who burn their waste because it is convenient to those (10) who throw their waste in the shamba because it is convenient or harmless, safe and healthy (12) or simply for manure(34). Those (10) who dispose their solid waste in the garbage site and those (5) who

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considered it as a convenient method are also included in this group. This is derived from Table 4.5. How section 4.1.3 and 4.1.4 is related to ICM is elucidated in section 5.1.1 of this thesis.

4.1.5. DISPOSAL OF WASTE WATER

Disposal of dirty/waste water is also an important issue in the preservation and maintenance of a clean environment. When water is disposed of in a proper hygienic manner, then sanitation is improved; but when it is simply thrown aside, then the environment gets contaminated with the attendant consequences leading to ICM. In this instance wastewater refers to that which has been used to wash dishes and clothes within the homestead. From the data collected in the two locations, the outlook on how wastewater is disposed of is as shown below:-
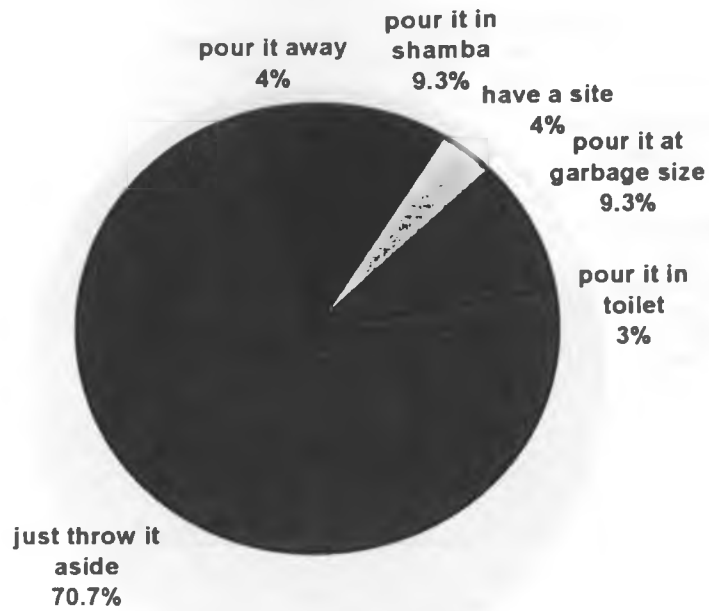
FIGURE 1: DISPOSAL OF WASTE WATER IN E. KANYADA
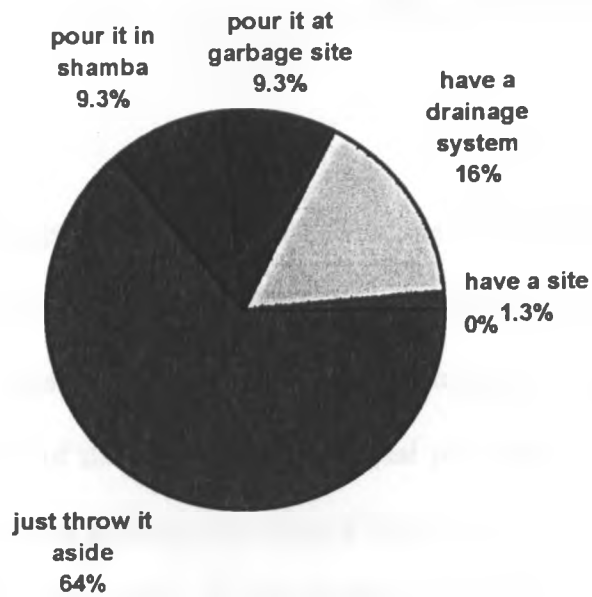
FIGURE 2: DISPOSAL OF WASTE WATER IN HOMA-BAY TOWN LOCATION

pour it in shamba
9.3%

pour it at garbage
site
9.3%

have a drainage
system
8%

pour it in toilet
1.3%

pour it far away
2%

have a site
2.7%

just throw it aside
67.3%
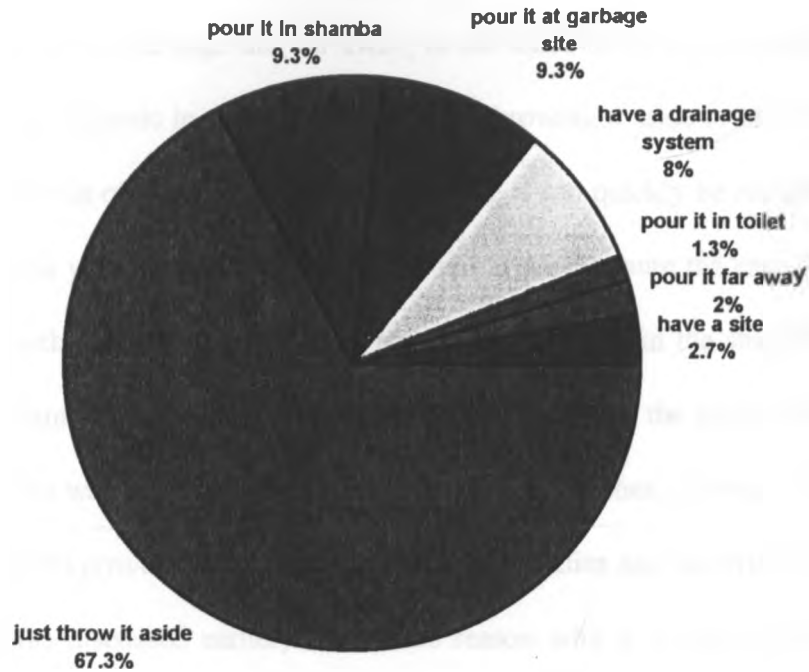
FIGURE 3: DISPOSAL OF WASTE WATER IN ASEGO DIVISION, HOMA-BAY DISTRICT

From the above-presented findings it can be seen that the mode of wastewater disposal is indeed wanting. On the whole (see Fig.3) it can be observed that the majority of the inhabitants of Asego Division simply just toss their wastewater aside as their chosen means of disposing it. Those who practice this comprise of 67.3% of the population. An equal percentage of 9.3% each pour the wastewater in the shamba and at the garbage site. Only 8% per cent of Asego's population have a drainage system to dispose their dirty water. As seen in Fig.2, all persons with a drainage system reside in the urban Location. For better analysis of the pattern of waste water disposal, it is deemed fit to yet again classify the various listed methods of disposal into two, namely that which is

considered as being hygienic in way of its disposal and those considered unhygienic. Hence disposing of waste water at the garbage site, far away, in the toilet/latrine and through the drainage system are listed as being hygienic in way of disposal. Just throwing it aside or into the shamba are listed as unhygienic methods of waste water disposal. While it can quickly be recognized that it is unhygienic to simply toss your waste water aside, this might not be quite the case when one first considers the second method listed as inhygienic, namely disposing it in the shamba. While this might be good to the plants in the shamba by way of nourishing them, the health risks introduced cannot be neglected. This waste water derived from washing dirty dishes, clothes, the houses, e.t.c. when poured in the shamba provide perfect breeding grounds for flies and bacteria in the same way that solid waste does (as discussed earlier). Thus the reason why it is listed under unhygienic method of waste water disposal. Having classified the various methods into the two classes, it can be observed then that 115 respondents representing 76.7% of the total dispose of their waste water inhygienically, while only 35 respondents, representing 23.3% of the total, dispose their waste water hygienically. This portends grave danger to the under five, as contamination of the environment is quite enormous and disease outbreak is quite likely as a result.

Comparison between the two locations reveal that the majority of people living in these areas have both chosen to simply throw their waste water aside as their most preferred method of disposal. This is at 70.7% and 64% for E. Kanyada and Homa-Bay town location respectively. An equal percentage standing at 9.3% for disposing of the waste in the shamba and at the garbage site can be observed for both E. Kanyada Location and Homa-Bay Town Location. However, on the other hand it is observed that it is only at Homa-Bay Town Location that there exist respondents

who have a drainage system as their means of waste water disposal. They represent 16% of the total in this location and 8% of the total in the entire Division. In E. Kanyada, no respondent was found to possess this system.

Upon comparison, it is noted that 80% of the population in E. Kanyada Location use unhygienic methods of disposal while 73.3% practice the same method in Homa-Bay Location. It is further noted that in this respect, rural E. Kanyada is worse off than urban Homa-Bay Location. On the other hand it is observed that 26.7% of the urban Location prefer hygienic method of waste water disposal while only 20% of the rural population prefer hygienic method as their chosen means of waste water disposal. Again, it is observed that the urban location fairs off better than the rural location is this respect as well.

On the respondents' awareness that proper waste water disposal is an important factor in ensuring child survival, the table provided below gives an indication of the trend:-

TABLE 4.7: HEALTH AWARENESS AND METHOD OF WASTE WATER MANAGEMENT, ASEGO DIVISION

Method of waste water disposal	Reason given			
	Safe and healthy	Convenient/harmless	For manure	TOTAL
Just throw it	2	99	0	101
Pour in shamba	2	4	8	14
Have a drainage	12	0	0	12
Have a site	4	0	0	4
Pour at garbage site	14	0	0	14
Pour far away	3	0	0	3
Pour in latrine	2	0	0	2

Source: Survey data

Table 4.7 indicates that only 35 of the respondents (representing 23.3%) of the total sample are aware of the fact that waste water should be disposed of in a safe and healthy manner as this is beneficial to the survival of the under five(5). These respondents include those whose preferred method include having a drainage system(12); having allocated a distant spot for disposing of this water(4); pouring it at the garbage site(14) or in the latrine(2) or far away from the homestead(3) and most importantly, because they chose these methods as they considered them to be safe and healthy(2). All those who picked up the other methods as they either viewed them as being convenient and/or harmless or simply for agricultural purposes (and not for health reasons) and those who picked up unhygienic methods while of the view that they are safe and healthy are listed as being unaware of the importance of proper waste water disposal to the survival of their under

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five. 115 respondents (representing 76.7% of the total sample) were listed in this latter category. The relationship between this and child mortality levels is elucidated in section 5.1.1.

4.1.6. WATER SOURCE AND ACCESSIBILITY

Water is essential in almost all man's physiological processes. It is fundamental in biological needs and the maintenance of both personal hygiene and environmental sanitation. It can be dangerous if contaminated. Water source usually reflects the safety of the water. Ponds, rivers, lakes as sources of water are considered as poor/unsafe sources of water, while wells are viewed as relatively safe. Piped water is considered safe.

Respondent's sources of water in East Kanyada and in Homa-Bay Town Locations were found to be as follows:-

TABLE 4.8: WATER SOURCE, E. KANYADA LOCATION, ASEGO DIVISION

Water source	Number of respondents using this source	%
Piped	0	0
Well with pump	14	18.7
Well without pump	4	5.3
River	5	6.7
Ponds	44	58.7
Lake	8	10.7
Spring	0	0
TOTAL	75	100

Source: Survey Data

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TABLE 4.9: WATER SOURCE HOMA-BAY TOWN LOCATION DIVISION

Water source	Number of respondents using this source	%
Piped	54	72
Well with pump	0	0
Well without pump	0	0
River	14	18.7
Ponds	0	0
Lake	7	9.3
Spring	0	0
TOTAL	75	100

Source: Survey data

Comparatively, it can be observed from Table 4.8 and Table 4.9 that the main source of water in E. Kanyada is Ponds (where 58.7% of the respondents use this source), while in Homa-Bay Town Location the main source of water is piped (where 72% of the respondents use this as their source). Out of the 75 respondents sampled in E. Kanyada, none was found to use piped water as their source of water. Hence the main source of water in each Location is not used at all in the other locations. This is an interesting finding. An equal number of respondents, eight in each Location, were on the other hand found to utilize the lake as their source of water.

The overall outview on water source in Asego Division as a whole is as presented below:-

WATER SOURCE	NUMBER OF RESPONDENTS USING THIS SOURCE	%
Piped	52	36
Well with pump	14	9.3
Well without pump	4	2.7
River	19	12.7
Ponds	44	29.3
Lake	15	10
TOTAL	150	100

Source:survey data

It is noted from Table 4.10 that the majority of the sampled population (54;36%) use piped

water as their source of water. This is followed by ponds (44;29.3%), river (19;12.7%), lake

(15;10%), well with pump (14;9.3), and well without pump (4;2.7%) in that order.

When the afore-mentioned method of classifying a practice into either hygienic or

unhygienic (in this case, safe or unsafe sources of water) is used, the outlook is as follows:-

TABLE 4.11: SAFE/UNSAFE SOURCES OF WATER, HOMA-BAY DISTRICT

Number of respondents using unsafe sources of water	78(52%)
Number of respondents using safe sources of water	72(48%)

Source:Survey Data

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From the above it is evident that the majority of the populace (actually slightly more than half) use unsafe sources of water. This spells bad news to the inhabitants of this region, especially to the under-5. As mentioned before, water is essential in all of man's physiological processes. Hence water plays a very fundamental part in meeting man's biological needs, in the maintenance of his personal hygiene and environmental sanitation. Contaminated water can lead to the prevalent of gastroenteritis related diseases such as diarrhea, typhoid, cholera and to others such as tuberculosis, tetanus and even malaria, among others. These mentioned diseases are major killers of the under-5. Details on the number of children that they claim is provided in chapter two of this thesis. Most of the respondents and particularly their children are therefore greatly exposed to infection by disease causing vectors. This paints a rather grim picture for the under-5 in Asego Division, more-so to those residing in E. Kanyada where most of the respondents use unsafe sources of water.

Section 5.1.1 of this thesis informs that only 22.2% of respondents using safe sources of water reported child mortality while 64.1% of respondents using unsafe sources of water reported child mortality. This affirms further that safe sources of water plays a crucial role in child survival. Comparatively, the town location demonstrates lower rates of child mortality vis-a-vis safe sources of water when contrasted against the rural location (at 13% and 50% respectively). Almost similar rates were reported as concerns child mortality and unsafe sources of water (at 76.2% and 63.2% for Town Location and E. Kanyada Location respectively)

Water accessibility is also an important element in the maintenance of personal hygiene. The closer one is to her source of water the more likely she is expected to maintain high standards

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of personal hygiene and clean environmental sanitation. Should water be difficult to obtain, when gathered, it will normally be used sparingly and thus reduce standards of personal hygiene and sanitation. Water accessibility which was measured in terms of distance, was found to be as follows:-

TABLE 4.12:WATER ACCESSIBILITY, EAST KANYADA LOCATION

DISTANCE IN KM	NUMBER OF RESPONDENTS	%
Home	2	2.7
1 km	22	29.3
2 km	26	34.7
3 km	23	30.7
Over 4 km	2	2.7
TOTAL	75	100.1

Source: survey data

TABLE 4.13:WATER ACCESSIBILITY, HOMA-BAY TOWN LOCATION

DISTANCE IN KM	NUMBER OF RESPONDENTS	%
Home	36	48
1 km	24	32
2 km	11	14.7
3km	2	2.7
Over 4 km	2	2.7
TOTAL	75	100.1

Source: survey data

It is noted (Tables 4.12 and 4.13) that in Asego Division, majority of the respondents are at least within 1 km from from their source of water (30.7% of the total population are within this distance), while few of the respondents (2.7% of the total sampled population) live over 4 km away from their source of water. Hence since only a quarter of the population (25.3%) have water situated at home, water accessibility in Asego Division can be summarized as overly poor. The respondent's standards of personal hygiene and environmental sanitation would in all possibility be low. This does not in the long ran augur well for the survival of the under five, since the afore-mentioned aspect are fundamental in curbing diseases and infection which could result in death.

When compared to secondary data provided by C.B.S. (1996:36), the data provided above compared well with the secondary data. C.B.S. states that due to the various types of water-borne diseases which afflict children, the source of water for domestic use has a direct influence on the level of child mortality. Their analysis of the 1989 population census data evidenced that proportions of children dead increased with various sources of water degree of clean and safe water progressively decreased. They found that jabias (rain water harvested from any catchment into a tank for domestic purposes) accounted for the least proportion of children dead, followed by stream/river , dam , well, bore-hole pond and lake in that order . It can be noted that the C.B.S. finding on lake death reflects and agrees with that of E. Kanyada. Its finding on piped water also agrees with the finding on Homa-Bay Location and Asego Division as a whole on the least number of reported death from mothers using this as a source of water. However , as C.B.S. concedes, these figures by themselves do not provide conclusive evidence to prove that there is a causal link with

child mortality since other factors such as level of education of the mother, accessibility of health facilities, e.t.c. have their own impact on child mortality.

To assess the awareness of the respondents on the value of safe water, the respondents were asked to state whether they considered their sources of water as being safe or not. Their responses are reflected below:-

TABLE 4.14:SOURCE OF WATER AND ATTITUDE ON SAFETY, ASEGO DIVISION

SOURCE OF WATER	ATTITUDE ON SAFETY			ROW TOTAL
	very safe	safe	unsafe	
Well with pump	0	12	2	14
well without pump	1	1	2	4
river	0	2	18	20
ponds	0	10	34	44
Lake	0	1	15	16
piped	2	32	18	52
COLUMN TOTAL	3	58	89	150

Source:survey data

The data provided in Table 4.14 above shows that 89 respondents out of a total sample of 150 (representing 59.3%) consider their water source as unsafe. This reflects a high level of awareness. Forty-five respondents correctly considered their water source (well with or without a pump and piped water) as safe and this is an acceptable view. It also portrays awareness on the importance of water on child survival. However, those who stated that their sources of water was safe, while their sources of water included rivers, ponds and lake, reflected lack of awareness. They totalled 13

respondents which represented 8.7%of the sampled population. Three respondents considered their sources of water as being very safe (two on piped water and one on well without a pump) and they can be termed as moderately aware. This is due to the fact that piped water itself cannot be considered as very safe as it is alleged that in Kenya not enough chlorine is used in the treatment of water. Well water may also not be very safe as it can get contaminated especially when it is not protected or when it is not served with a pump. Hence the reason why these three respondents (representing 2% of the total sampled population) are considered as being moderately aware of the place clean water plays in child survival. In conclusion the above data tells us that 91.3% of the population are aware of the importance of safe water to the survival of their children, which is a good sign.

The ninety-two respondents who stated that their source of water was not safe made the following attempts to make their water safe:-

TABLE 4.15:RESPONDENTS' EFFORTS TO MAKE WATER SAFE

ATTEMPTS MADE TO MAKE WATER SAFE	NUMBER OF RESPONDENTS	%
Boil it	71	77.2
Sieve it	8	8.7
Use chemicals	3	3.3
Make no attempt	10	10.8
TOTAL	92	100

Source:survey data

It is evident from Table 4.15 that the majority of the respondents who consider their water sources as not safe do make some attempt to make their water safer. Only 10.8% of those, who though feel that their water sources are not safe, make no attempt to make it safer. Thus they are the ones who are most at risk together with those who had earlier been reported as having stated that their water sources are safe and yet these include rivers, lakes and ponds (totaling 13 respondents in number, representing 8.7%). Thus 23 respondents (15.3%) use sources of water which they either consider unsafe or view them as safe and yet they are not, and then goes ahead and makes no attempt to make it safer. The effectiveness of their method (for those who attempt to purify their water) is something which should be scientifically examined so as to determine just how safe they do make their water.

4.2.0 HYPOTHESIS 2

The second hypothesis that was used to guide the research states as follows:-

That Medical and Health Care Factors are associated with Infant and Child Mortality rates.

Under Medical and Health Care Factors, accessibility of health care facilities is what will be discussed and how this affects/influences their health behaviour will also be explored. Section 5.1.1 will zero-in on how these factors relate to observed Infant and Child Mortality levels. Section 2.2.0 demonstrates how the below discussed is linked to ICM and the independent variable.

4.2.1 MEDICAL AND HEALTHCARE FACILITIES AND THEIR ACCESSIBILITY

Medical and healthcare factors are said to have an effect on the very first day of life of a child. Lack of clinics and their in-accessibility (financial and distance wise) could have a negative impact on child survival. It is said that a country's ICM rates can only be controlled when health facilities are made available to its citizens. But availability alone is not enough; the residents living next to these facilities must also be seen to make use of these clinics. Of which is the most important (the availability of health facilities or the active use of these facilities by the inhabitants) has generated a lot of debate.

There are those who argue that once health facilities are put on the ground and made accessible to the people, this leads to a change in their behaviour as well as making them be better aware on health matters and makes them also adopt better health behaviour (Nag, 1981:20 ;Benjamin 1965:5 ;Warmock, 1967:42). There are those who argue that accessibility of health facilities in itself cannot ultimately determine health behaviour and ICM rates (Meck, 1971:48; Luijk, 1974:63-64 ;Coe, 1971:1). They state that health facilities may be accessible but the

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inhabitants may not use them due to cultural factors and the like. Hence it is their attitude and cultural practices which affects their behavior and not the accessibility (both in physical and financial terms) of health facilities.

This study therefore set forth to ascertain the effect that the accessibility (in terms of distance) that health facilities have on a population's health awareness and health behaviour and ICM rates. Nag, Benjamin, and Warmock (ditto above) state that once health facilities are put on the ground and are close to the people, they will visit these facilities more frequently and in so doing, they will be taught on health issues, which will make them adopt better health behavior which will ultimately lower ICM rates. Thus this study was carried out with the aim of finding out the effect, if any, that distance from health facilities has on respondents health behaviour and awareness and ICM rates.

The health behaviors which have been examined here include the following: Natal care, use of health facility, immunization of children, breastfeeding and birth control.

Ante-natal, neo-natal and post-natal care are very important as they play a crucial role in determining the survival of the under-5 (Da Vanzo and Habich, 1984:12). Lack of ante-natal and post-natal clinics could therefore have a negative effect on child survival. This study will therefore examine whether the accessibility of these clinics influence maternal behavior vis-a-vis this particular health variable (natal care).

The importance of immunization can never be overstated. One of the major causes of death to children is disease (UN, 1984:5) and therefore their prevention and treatment is very important. This can only be done when medical facilities are easily accessible (Ewbank and Gribble, 1993:5).

This study will therefore examine whether accessibility of health services determines the rate at which mothers seek this crucial service from these centres.

Accessibility of health centres are also said to determine inhabitant's use of these centres. The closer or the further a health centre is will determine the stage at which a mother takes her child to the hospital. It is a well known fact that if a child is taken to hospital only when its condition worsens, it is more likely to die than when it is taken at the onset of the illness. Does accessibility of health clinics influence this?

Breastfeeding is the other important factor. Early weaning practices can lead to serious problems because of its association with the highest rate of infection and the consequent death (Meegama, 1980:20). It is said that if health centres are easily accessible, more mothers will visit them more often and in so doing will learn more about caring for their siblings, and this includes prolonging the duration of breast-feeding. The present study will examine this linkage.

The same argument applies to family planning practices. Family planning adoption ensures spacing of children and low parity among mothers which insures child survival (Chen, 1983:207). This health behaviour will also be assessed against accessibility of health centres to determine their association. The association between the two sets of variables will be tested and determined in Chapter 5 of this thesis.

4.2.2. ACCESSIBILITY OF HEALTH FACILITIES

As mentioned before, the distance between one's house and the nearest health facility is deemed crucial in determining one's attendance to health facilities, one's health behaviour and health awareness. The findings in relation to this in E.Kanyada and Homa-Bay Town Locations were as follows: In Homa-Bay Town Location, 49.3% of those interviewed were found to live within 2 km

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away from the nearest health centre, 32% were within 3-4 km while 18.7% lived 5 km and more from the nearest health facility. In E.Kanyada Location, 42.7% of those sampled were within 4-8 km, while 9.3% were between 9-13 km while 48% of the sampled population lived 14 km and more away from the nearest health centre.

The study revealed that all existing health facilities were located in the Town Location. Those living in the rural Location have to travel to the Town Location for treatment. Hence those in the Town Location have easy access to health facilities than those in E. Kanyada.

When Asego Division was looked at as a whole, the respondents access (in terms of distance as this is our focus) to the nearest health facility was as follows:- 44.7% of the sampled population lived within 4 km from the nearest health centre; 22% lived between 5-9 km from ; 33.3% lived 10 km and more from the nearest health centre. We can therefore state that only 44.7% of the sampled population have easy access to health services. The rest, 55.3% lived 5 km away from the nearest health centre.

The above finding concurs with Mooley's (1991:107) observation that only 10-55% of the rural population are within 2 km from the nearest health facility. The data obtained for Asego Division revealed that only 24.7% of the population are within 2 km from the nearest health centre. This obviously does not augur well for the survival of the under-5. AMREF (1992:2) reports that S Nyanza District (which has since been split into Migori, Homa-Bay and Rachwonyo Districts) lost 14,000 children annually through death by diseases which could have easily been prevented had medical facilities been readily accessible.

A subjective view was obtained from the respondents as regards their feeling on how accessible the health facilities are to them. The responses recorded revealed the following:-

TABLE 4.16:RESPONDENTS' VIEWS ON ACCESSIBILITY TO HEALTH FACILITY, HOMA-BAY LOCATION

Distance in km	Inadequate	Adequate	Walking distance	No means	Row total
1-2 km	1(2.7%)	20(54.1%)	16(43.2%)	0(0%)	37(100%)
3-4 km	0(0%)	25(89.3%)	3(10.7%)	0(0%)	28(100%)
5 km & +	1(10%)	9(90%)	0(0%)	0(0%)	10(100%)
column total	2(2.7%)	54(72%)	19(25.3%)	0(0%)	75(100%)

source: survey data

TABLE 4.17:RESPONDENTS' VIEW ON ACCESSIBILITY TO HEALTH FACILITY, E. KANYADA LOCATION

Distance in km	Inadequate	Adequate	Walking distance	No means	Row total
4-8 km	17(53.1%)	14(43.8%)	0(0%)	1(3.1%)	32(100%)
9-13 km	2(28.6%)	0(0%)	0(0%)	5(71%)	7(100%)
14 km +	4(11.1%)	0(0%)	0(0%)	32(88.9%)	36(100%)
column total	23(30.7%)	14(18.7%)	0(0%)	38(50.7%)	75(100%)

Source: survey data

The data provided above reveals that in the Town Location, the majority of the respondents were of the view that the distance between where they live and the health centre they visit is adequate, while in E.Kanyada the majority of the respondents stated that there was no means of transport between where they live and the health facility they visit. The percentages stand at

72% and 38% respectively. Thus whereas those in the urban location have adequate means of transport to the health centres, the majority of those in the rural location have to walk many kilometers to the nearest health centre as there is no means of transport. With this kind of picture, infant and child mortality is expected to be high in rural E. Kanyada Location than in the Town Location, as those living far away will expectedly only take their children to hospital at the last possible minute, when it may be too late to save their lives. The next section elucidates this.

4.2.3.USE OF HEALTH FACILITY

An assessment was then made to demonstrate how the respondents' utilize the available health facilities. This was done by asking the respondents to state how often they do take their children to hospital. This would also bring out the respondents' health behaviour. Findings were as follows for both locations:-

TABLE 4.18:USE OF HEALTH FACILITY, HOMA-BAY TOWN LOCATION

STAGE WHEN CHILD IS TAKEN TO HOSPITAL	NO. OF RESPONDENTS	%
When critically sick	3	4
when sick	48	64
When local remedies have failed	24	32
For regular check-ups	0	0
TOTAL	75	100

Source:survey data

TABLE 4.19:USE OF HEALTH FACILITY, E.KANYADA LOCATION

STAGE WHEN CHILD IS TAKEN TO HOSPITAL	NO.OF RESPONDENTS	%
When critically sick	29	38.7
When sick	26	34.7
After local remedies have failed	20	26.7
For regular check-ups	0	0
TOTAL	75	100.1

Source:survey data

The above data from Table 4.19 shows that the majority of the respondents (64%) in Homa-Bay Town Location take their under-5 children to the health centre when they fall sick (i.e.immediately the child becomes ill) while in E.Kanyada the majority (38%) take their children to hospital only when they are critically sick. This finding agrees with that observed by AMREF (1992) in Rusinga Island, in which they found out that most respondents in this rural island took their children to the hospital only when they were really sick. Usually it is after the local medicine man had been first consulted. One interesting observation was that none of the respondents was found to take their children to hospital simply for medical check-up. Distance here seems to have an influence on hospital visit. Those living close to health facilities (i.e those residing in Homa-Bay Town Location) find it easy to take their kids to the hospital immediately they fall sick, while those living far away from health clinics only do so when the child is critically sick. When strictly categorized into good health behaviour (which implies quick and adequate response to a child's illness; this includes taking the child to the clinic for regular check-up or/and immediately they fall sick) and bad health behaviour (which implies slow and inadequate response to a child's illness ; this

includes taking the child to the hospital only when it is critically ill or when local remedies from shops and herbs have failed, in most cases when it is too late to save the child's life), it was found that in Homa-Bay Town Location 27 respondents (representing 36% of the sampled population) were found to practice bad health behaviour, while 48 respondents (64%) practice good health behaviour. In E. Kanyada, 49 respondents (65.3%) were found to practice bad health behaviour while 26 respondents (34.7%) practiced good health behavior. Comparatively, therefore it can be observed that the majority of respondents in the urban location practice good health behaviour while the majority in the rural location practice bad health behaviour. This could give a lead on the mortality rate difference between the two locations. This finding probably echoes the CBS (1996:31) in which the 1989 census revealed that there was apparent higher mortality in rural areas than in urban areas. The above detected varying health behaviour could offer the explanation for this difference. On the whole, 49.3% of respondents were found to practice good health behaviour while 50.7% were found to practice bad health behavior. It is evident from the above that most of the respondents in Asego Division practice poor/bad health behaviour when it comes to treating their children's illness. This could account for the high ICM rates observed in this District.

4.2.4. VISIT TO HEALTH CENTRE DURING LAST PREGNANCY

Ante-natal, Neo-natal and Post-natal care is considered to be a crucial factor in ensuring child survival. Care for the mother extends to care of the unborn child. Care of the mother during pregnancy ensures that the unborn child develops well in the womb. Delivery care ensures that the child is born in hygienic surroundings devoid of bacteria and other vices which can lead to infant and child mortality through diseases and infections. Most children born at home are said to die

mainly from tetanus due to infections arising through delivery in unhygienic surroundings. It is because of this reason that ante-natal, neo-natal and post-natal care is considered important and investigated in this study.

The first finding of the study revealed that in E. Kanyada, only 67 respondents (89.3%) visited the various health centres during their last pregnancy. Eight of the respondents (representing 10.7%) did not and thus did not receive pregnancy care during their last pregnancy. In Homa Bay Town Location, seventy-three respondents (representing 97.3% of those sampled in this location) visited the health clinics and received pregnancy care, while only two (2.7) did not visit any health centre for pregnancy care. In all, one hundred and forty respondents (93.3%) visited the available health centres for pregnancy care while only ten respondents (6.7%) did not visit any health centre for pregnancy care.

The eight who did not visit any health centre in E. Kanyada gave the following as their reasons for having not done so:-

TABLE 4.20: REASONS FOR LACK OF PREGNANCY CARE, E. KANYADA, ASEGO DIVISION

REASON ADVANCED	NO. OF RESPONDENTS	% (N=8)
Health centre too far	4	50
Health centre too costly	0	0
Taken care of by local medicine man	1	12.5
Did not see the necessity	3	37.5
TOTAL	8	100

Source: Survey data

It is understandable that the majority stated that distance was the main reason for their having not visited the health clinic during their last pregnancy. This is due to the fact that in E. Kanyada most of the residents (53.3%) live 10 Kms and more from the nearest health centre (which in all cases are located in the town centre). None stated that they failed to do so as the health centres were too costly. This is due to the fact that all the public health centres provide pregnancy care free of charge. Three respondents did not see the necessity for visiting the health centre for pregnancy care. This reflected their lack of awareness of the importance of pregnancy care. In all, all the eight respondents (representing 10.7% of those sampled) in E. Kanyada Location demonstrate lack of awareness on the health benefits derived from visiting health centres for proper and thorough medical pregnancy care. Strictly speaking, distance should not be a reason for one to miss out on pregnancy care. In Homa Bay Town Location, the two respondents who did not visit any health centre all stated that they failed to do so as they did not see the necessity for such visits and the

attendant care received. In this location therefore, only 2.7% of the respondents demonstrated lack of awareness of this important process.

In all of Asego Division then, 6.7% of the respondents demonstrated lack of awareness of the benefit of modern medical pregnancy care.

4.2.5. TYPE OF PREGANCY CARE RECEIVED

The distribution of the type of care received by the respondents who visited the health centres was as follows:-

TABLE 4.21: PREGNANCY CARE RECEIVED, E. KANYADA

TYPE OF CARE RECEIVED	NO. OF RESPONDENTS	% (N=67)
Only ante-natal care	37	55.2
Only neo-natal care	0	0
Only post-natal care	0	0
Ante and neo natal Care	9	13.4
Neo-natal and post-natal care	0	0
Ante-natal and post-natal are	10	14.9
Ante, Neo and post-Natal care	11	16.4
TOTAL	67	100

Source: Survey Data

TABLE 4.22: PREGNANCY CARE RECEIVED, HOMA BAY TOWN LOCATION

TYPE OF CARE RECEIVED	NO. OF RESPONDENTS	% (N=73)
Only ante-natal care	20	27.4
Only neo-natal care	0	0
Only post-natal care	0	0
Ante-natal and neo-natal care	16	21.9
Neo-natal and post-natal care	1	1.4
Ante-natal and post-natal care	6	8.2
Ante, Neo and Post-natal care	30	41.1
TOTAL	73	100

Source: Survey Data

The above data from Table 4.21 and Table 4.22 reveals that whereas in E. Kanyada Location the majority of the respondents (55.2%) only received ante-natal care, in Homa Bay Town Location the majority of the respondents (41.1%) received all the pregnancy care required. This further reveals that those in the urban location received better care than those in the rural location. This is derived from the fact that whereas only 16.4% of the respondents in E. Kanyada received all the pregnancy care required, a reasonable 41.1% in Homa Bay Town Location received the same care. Majority of the respondents (55.2%) in E. Kanyada received only one type of pregnancy care (to be precise, only ante-natal care) compared to 27.4% in Homa Bay Town Location received the same. 23 respondents (30.7%) in Homa Bay Location received at least two types of pregnancy care (be it only ante and natal care or neo and post-natal care or ante and post-natal care) compared to 19

(25.3%) respondents in E. Kanyada who received the same type of care. Thus even in this, the respondents in the urban location faired better than those in the rural location.

Looking at the whole picture presented of Asego Division, it is observed that only 41 respondents (27.3%) received all the pregnancy care required. They are the only ones who can therefore be said to be fully aware of the importance of this care. Since only 27.3% of the inhabitants of Asego Division received all the pregnancy care required and going by the argument presented on the importance of these care, it can be said that lack of this care could be a contributory factor to the high ICM rates experienced in this region. As mentioned before, care during pregnancy ensures that the unborn child develops well, it is born in hygienic conditions and through the treatment of the mother, this also benefits the child in the long run. Thus, if natal care is not administered, the new-born child may be born with some defections or abnormalities making it easily susceptible to disease and death.

4.2.6. IMMUNIZATION

Immunization of children under five years of age plays an integral part in the survival of these children. This is due to the fact that with immunization, children are offered some immunity against diseases which could have otherwise infected them and killed them as happens in most cases. Mothers are therefore usually urged and encouraged to take their new-borns to the health centre for immunization schedules. Immunization of the child begins at the point it is about to be delivered. She (the mother) is immunized against any infection (usually against tetanus) that may

occur during the process of delivery. This immunization extends to the unborn child who is thus also immunized against the same. After the child is born, it has to be immunized again against polio, measles, tuberculosis, pertussis and others (Ewbank and Gribble, 1993).

Research carried out in E.Kanyada revealed that of the 75 children investigated on, 41 children (54.7%) had been fully immunized, while 34 (45.3%) had not. Reasons advanced by the mothers as to why their last born children immunization was not complete were recorded as follows:-

TABLE 4.23:REASONS FOR INCOMPLETE IMMUNIZATION, E.KANYADA

REASON GIVEN	NO.OF RESPONDENTS	% (n=34)
Child sick	2	5.9
Mother sick	1	2.9
Clinic too far	4	11.8
Impolite staff	2	5.9
Vaccine out of stock	2	5.9
No need as child not sick	1	2.9
Not told to go back by medical staff	1	2.9
Child died before completing schedule	2	5.9
Child still undergoing schedules	19	55.9
TOTAL	34	100

Source: survey data

In Homa-Bay Town Location, the research revealed that of the 75 last born children investigated on, 44 (58.7) had been fully immunized, while 31 kids (41.3) had not. Reasons advanced as to why the children have not been fully immunized were as follows:-

TABLE 4.24:REASONS FOR INCOMPLETE IMMUNIZATION, HOMA-BAY TOWN LOCATION

REASON GIVEN	NO. OF RESPONDENTS	% (n=31)
Child sick	1	3.2
Lack of time	3	9.7
Clinic too far	1	3.2
Impolite staff	2	6.5
Vaccine out of stock	2	6.5
No need as child not sick	1	3.2
Child still undergoing schedules	21	67.7
TOTAL	31	100

Source:survey data

It can be observed from Table 4.23 and Table 4.24 that the major reason advanced by respondents in both Locations as to why their under-5 are yet to be fully immunized was due to the fact that the kids were still under ages nine months and as such, they were still undergoing their immunization schedules. From the data provided above, it can also be deduced that of the 65 mothers whose children have not been fully immunized, 19 of these mothers were not fully aware of the importance of immunization to the survival of their children. Three of the respondents answered that their children had been sick and this was the reason why they had not been taken for immunization. This demonstrates lack of awareness, because the child's sickness would have been

enough reason for the child to be taken to the hospital, and while there, complete his/her immunization schedule. One respondent stated that it was her own illness that prevented her from taking her child to be immunized. This is not a good reason and demonstrates lack of awareness. The respondent could have delegated this duty to someone else. In any case, her illness could not have lasted five years! Five respondents stated that the clinic was too far and this was the reason why they had been unable to take their kids for immunization. This reason cannot be accepted as there were other mothers who lived within the same distance or even further and yet they managed to have their children immunized. Four respondents stated they failed to have their children fully immunized as they had encountered impolite staff. This too cannot be accepted as a valid reason due to the fact that the impoliteness being referred to here was when the staff in question had enquired from the mothers as to the reason why they had greatly delayed in bringing their children for immunization. Since the life being saved here is that of their own children, the mothers should not let a little "rudeness" stand in the way of the survival of their children. Two respondents stated that they did not take their children to be immunized as they did not see the need to do so as their children had not been sick. Immunization is not carried out only when the child is sick. It is simply done at any time, but more often than not it is administered when the child is well to guard her/him against future incidences of ill-health. The two respondents hence demonstrated lack of awareness in this particular issue.

2.7. HEALTH BEHAVIOUR ASSESSED AGAINST ILLNESS OF AFFECTED LAST ORNS.

The study revealed that in the last two weeks preceding the study, 118 children had been ck in the two locations. What was of interest in this case was to observe the attempts/actions taken y the affected mothers to get their children off the sick list. Another point of interest was to find ut whether or not distance from the health clinic determined the action that the mothers took. The eason why distance is of interest has already been discussed before and it is these same reasons that re being applied in this instance as well. The last concern is covered in section 5.2.3

Table 4.25 and Table 4.26 below provides data on the actions taken by the affected mothers n the two locations:-

TABLE 4.25:ACTION TAKEN ON CHILD'S ILLNESS,E.KANYADA LOCATION

ACTION TAKEN	NO. OF RESPONDENTS	% (n=57)
Took child to hospital	24	42.1
Took child to private doctor	1	1.8
Took child to traditional healer	5	8.8
Gave modern medicine at home	8	14.0
Gave herbs at home	7	12.2
Took no action	12	21.1
TOTAL	57	100

Source:survey data

TABLE 4.26:ACTION TAKEN ON CHILD'S ILLNESS, HOMA-BAY TOWN LOCATION

ACTION TAKEN	NO. OF RESPONDENTS	% (n=61)
Took child to hospital	33	54.1
Took child to private doctor	5	8.2
Took child to traditional healer	2	3.3
Gave modern medicine at home	16	26.2
Gave herbs at home	1	1.6
Took no action	4	6.6
TOTAL	61	100

Source:survey data

In both locations it is noted that the majority of the respondents took their sick children to hospital (42.1% and 54.1% for E. Kanyada and Homa Bay Town Locations respectively). Six respondents (representing 5.1% of the total-118) also took their sick children to see a doctor at private clinics. 55 respondents (46.6%) however did not take appropriate measures to treat their sick children. These are those respondents who took their sick children to traditional healers (a trained medical doctor is preferred), gave modern medicine to the child at home (one must take the child to the hospital as not being a doctor, she does not quite know what is ailing the child), gave herbs at home (same argument as the previously mentioned one applies here) and worse yet, those who took no action at all.

One of the objectives of the study was to identify some of the most prevalent diseases in Homa-Bay District as it afflicted the last borns. The findings in both locations was as follows:-

TABLE 4.27: PREVALENT DISEASES IN E. KANYADA LOCATION

DISEASE/ILLNESS	NO. OF TIMES IT AFFLICTED CHILDREN
Coughs	19
Colds	6
Diarrhea and Vomiting	14
Measles	16
Worms	1
Skin Rashes	9
High Body Temperature	16

Source: Survey Data

TABLE 4.28: PREVALENT DISEASES IN HOMA BAY TOWN LOCATION

DISEASE/ILLNESS	NUMBER OF TIMES IT AFFLICTED KIDS
Coughs	13
Colds	9
Malaria	22
Diarrhea and Vomiting	13
Pneumonia	1
Measles	5
Skin Rashes	2
Anaemia	1
High Body Temperature	17

Source: Survey Data

The above results from Table 4.28 and Table 4.27 reveals that in E. Kanyada, the most prevalent diseases/illnesses are coughs, measles and high body temperature tie, followed by diarrhea

and vomiting in that order. In Homa Bay Town Location, they are Malaria, high body temperature, coughs and diarrhea and vomiting tie, followed by measles in that order.

According to the medical personnel interviewed, the high prevalence of coughs, measles and diarrhea and vomiting in E. Kanyada can be attributed to the environmental conditions that the residents live in, primarily the poor sanitary conditions found in the area. The three diseases can be easily obtained from the environment as a result of the exposure to communicable pathogens like contaminated food, water, poor sanitation e.t.c. As has been earlier on observed, E. Kanyada's sanitary standards are very poor. Only 17.3% of the residents have latrines; only 46.7 % practice hygiene methods of the population use unhygienic methods of solid waste disposal while 53.3% do not; 80% of the population use unhygienic methods of disposing their waste while 76% use unsafe sources of water for domestic use. It is thus easy to see why the three diseases are ranked high in the list. The three mentioned diseases are high in the list. The three mentioned diseases are also major killers of the under-five (Adongo, 1991:4). As for the high body temperature, the medical personnel interviewed stated that they treat this more like an illness than as a symptom of the other diseases. This is due to the fact that being next to the lake and hence located at a low level, the region is extremely hot and this high temperature adversely affects the under-five, especially those below the ages of three. The prevalence of this illness is therefore as a result of the geographical and climatic conditions of this region.

In Homa Bay Location, malaria, coughs, diarrhea, and vomiting and measles and high body temperature are listed as the most prevalent diseases in this region. The first four (4) diseases are

also obtained from the environment. The high prevalence of malaria can be explained by the fact that the region is situated near the lake (Victoria) which provides perfect and adequate breeding grounds for mosquitoes. The medical personnel state that with the emergence of the hyacinth weed in the lake waters of this region, the infection rates have increased as these 'stagnant' weeds have increased and provided more breeding grounds for mosquitoes. The prevalence of the other three diseases can be explained by the following observations: 24% of the population do not have latrines; 24% of the residents use unhygienic methods of solid waste disposal, 73.3% of the population practice unhygienic methods of waste water disposal while 30.7% have unsafe sources of water. Those factors facilitate infection rates as the sanitary standards of the region are very poor. It is not a wonder then that these diseases are prevalent in this location. The prevalence of high body temperature can be explained by the same reasons advanced in explaining its existence in E. Kanyada Location.

The frequency by which the diseases/illnesses have hit children in Asego Division as a whole is as follows:

TABLE 4.30: PREVALENT DISEASES IN ASEGO DIVISION

DISEASE/ILLNESS	NUMBER OF TIMES IT HAS HIT CHILDREN
High body temperature	33
Coughs	32
Diarrhea and Vomiting	27
Malaria	26
Measles	21
Skin rashes	11
Worms	1
Pneumonia	1
Anaemia	1

Source: Survey Data

The above ranking reveals that high body temperature, coughs, diarrhea and vomiting, malaria and measles are the most prevalent diseases in this region. This compliments Ewbank's and Gribble's (1993:1) findings and Adongo's (opp. cit.:4) as well when they stated that measles, diarrhea diseases, acute respiratory infections (coughs) and malaria are the leading causes of death among children. AMREF's findings (1992:5) revealed that malaria, diarrheal diseases and measles were some of the health problems that afflicted children in Rusinga Island, Homa-Bay District. The present finding thus supplements and concurs with that of AMREF 1992.

4.2.8. BREASTFEEDING

Breastfeeding is one of the important issues considered under socio-cultural factors which affect child mortality. Breastfeeding gains prominence when weaning practices are discussed. Weaning as defined before, is the process of changing baby's food from milk diet to diet containing solid food. Customs of early weaning could lead to serious health problems. One of the greatest dangers of the weaning period is its association with the highest rate of infection, particularly of the gastrointestinal tract. Infections in turn, prepare the way for malnutrition and increase the bad effects of dietary deficiencies (Pitcairn, 1963:ix). Discussion on prolonged breastfeeding is covered in chapter two. It is however important to reiterate that duration of breastfeeding may be used to measure nutritional intake of a child and protection against certain diseases through maternal anti-bodies. The longer the duration of breastfeeding, the lower a region's mortality rate is expected to be (Da Vanzo and Habich, 1984:v). It is for the above reasons that breastfeeding was selected for examination in this study.

4.2.9. AGE OF LAST BORN CHILD AT CESSATION OF SUPPLEMENTED BREASTFEEDING

At the time of the study, it was noted that in E. Kanyada, 25 respondents had stopped breastfeeding their last borns while in Homa-Bay Location, 29 respondents had stopped breastfeeding their last borns. Of the 25 in E. Kanyada, 5 respondents had been forced to stop breastfeeding their last borns as they (the children) had died while still breastfeeding. Hence only 20 had voluntarily stopped breastfeeding. In Homa-Bay Location, all the 29 had voluntarily stopped breastfeeding. Of the 49 respondents (who had voluntarily stopped breastfeeding), the

mean months for cessation was found to be 23 months. The mode for cessation was found to be 17 months. The World Health Organization (WHO) recommends that breastfeeding should last for at least 12 months. Hence the mean duration of the respondents was found to be way above the WHO recommended limit. In this regard, the population of Asego Division's health behaviour in this particular respect is proper. The above finding also compares well with that of D.H.S 1993 in which the medium duration of breastfeeding in Kenya was found to be 21 months.

When viewed separately, the medium duration of breastfeeding in E. Kanyada was found to be 23.1 months and the mode was 27 months, while that of Homa-Bay Location was found to be 23 months while the mode stood at 24 months. Hence both locations have good health behaviour in regard to this practice. In conclusion, problems associated with early cessation of breastfeeding was not found to exist in Asego Division. This can therefore be deleted as a cause for child mortality in this area.

4.2.10: REASONS FOR CESSATION OF BREASTFEEDING

One of the objectives of the study was to find out the major reasons for cessation of breastfeeding in Asego Division. Chapter two of this study provides eleven (11) reasons that precipitate cessation of breastfeeding. This study was interested in finding out which of these eleven (11) reasons feature prominently in Asego Division of Homa-Bay District. Further, it is felt that there is need to find out these reasons such that, as it is now feared that an unfortunate trend is occurring in which urban areas of developing countries of poor nations are abandoning

breastfeeding, steps can be taken in the right direction to curb incidences and reasons for early cessation of breastfeeding. The crucial benefits of breastfeeding has already been stated before and hence all should be done to ensure that early cessation of breastfeeding does not become a common feature. This can only be arrested if the reasons for cessation of breastfeeding are known. A comparison between the urban location and the rural location is made to assess the similarities and differences between the two locations. The various reasons unearthed in the two locations were as follows:

TABLE 4.31: REASONS FOR CESSATION OF BREASTFEEDING, E. KANYADA LOCATION

REASON FOR CESSATION OF BREASTFEEDING	FREQUENCY
Insufficient milk	2
Baby refused on its own to continue breastfeeding	12
Child died	11
Child fell sick and stopped breastfeeding	1
Child reached weaning age	19
Mother became pregnant	21
Mother fell sick	1
TOTAL	67

Source: Survey Data
(n=67 as 8 are still breastfeeding and only have one child, hence had to be left out of the poll)

TABLE 4.32:   REASONS FOR CESSATION OF BREASTFEEDING, HOMA BAY TOWN LOCATION

REASONS FOR CESSATION OF BREASTFEEDING	FREQUENCY
Inconvenient	1
Had to work	4
Insufficient milk	2
Baby refused on its own to continue breastfeeding	19
Child died	2
Child fell sick and stopped breastfeeding	5
Child reached weaning age	19
Mother became pregnant	15
Mother fell sick	1
TOTAL	63

Source: Survey Data
(n=63 as 12 respondents only have one child who are still breastfeeding)

It should first be noted that the above question (reason why mother stopped breastfeeding her child) was put to those who had stopped breastfeeding their last borns and to those who were still breastfeeding their last born but who have a previous child who had already stopped breastfeeding. Hence those who were still breastfeeding and only had one child (i.e. those whose last born child are also the first born child) were left out. The former totaled 130 in number while the latter totaled 20 for both locations.

It is noted from the above that the main reasons for cessation of breastfeeding in E. Kanyada was because the mother became pregnant while in Homa-Bay Location two reasons tied, namely

due to the reason that the baby breastfed till it left doing so on its own accord and other that the mother felt that the child had become of age and hence stopped it from breastfeeding. The number two reason in E. Kanyada was that of the child having come of age, while in Homa-Bay Location, emergence of another pregnancy was the cause for cessation. It is obvious that the reasons from both locations are very close/similar to each other and hence no marked difference is observed.

Looking at the Division as a whole, the observed major cause/reason for cessation was found to be that of the child having reached weaning age. Bearing in mind that the medium duration of breastfeeding in this Division was found to be 23 months while WHO recommended minimum limit is 12 months, it can be concluded that most mothers therefore breastfeed their children till they are at least two years and then they stop as they correctly felt that the child had now reached weaning age. Development of another pregnancy and the baby refusing on its own to breastfeed took position two and three respectively. On the issue of pregnancy, as will be extensively discussed in the coming sections, birth interval between the first and second birth was found to be 28.6 months while between the last birth and previous was found to be 31.9 months, and in this respect, it can be concluded that this reason is also a fairly good reason for cessation of breastfeeding. WHO recommended period between birth interval is 15 months and hence tying this to the respondents' reason, it can be concluded that their health behaviour in this particular respect is commendable. The third reason is also a valid one and health-wise, a good reason as well. This is due to the fact that there is very little that a mother can do when a child refuses to breastfeed. But going by the mean duration of breastfeeding, all indications point to the fact that it is most probably

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that the mother breastfeeds the child for such a long period that a child gets 'bored' of breastmilk and hence refused to continue breastfeeding.

In conclusion therefore, it can be stated that the population of Asego Division have healthy breastfeeding practices and awareness. As a factor that causes child mortality rate, this particular one can therefore be left out.

4.2.11. UNSUPPLEMENTED BREASTFEEDING

Since duration of breastfeeding by itself has just previously been disregarded as a factor in child mortality in Asego Division, it remains to be seen whether unsupplemented breastfeeding could be the causal factor in the issue of breastfeeding. This section therefore examines unsupplemented breastfeeding as a possible causal factor of ICM in Asego Division. WHO recommends that unsupplemented breastfeeding should last at least six (6) months. Early supplementation of new borns exposes the child to the likelihood of ingestion of pathogen with breastmilk supplements or substitutes. Unsupplemented breastfeeding reduces exposure to contaminated water and food. Extended unsupplemented breastfeeding also ensures that the child takes in enough nutrition and he/she develops protection against certain diseases through maternal antibodies. Thus, the longer the period of unsupplemented breastfeeding, the better for the child. In E Kanyada and Homa-Bay Locations, the period of unsupplemented breastfeeding was found to be as follows:-

(a)   In E. Kanyada, the mean months for unsupplemented breastfeeding was found to be 4 months while the mode was noted to be 3 months.

(b)   In Homa-Bay Town Location, the mean months for unsupplemented breastfeeding was found to be 3.7 months while the mode was noted at 3 months.

Only 19 respondents (out of 142) in Homa-Bay Town Location exclusively breastfed their kids for 6 or more months.   Hence only 13.9% of respondents were aware of the importance of exclusive breastfeeding for 6 months to the survival of the under-5.   Mean duration for both regions was therefore found to be 3.9 months.

From the above it is observed that most of the last borns were breastfed exclusively for only three months.   This is way below the 6 months WHO recommended limit.   In E. Kanyada, only 15.1% of those affected satisfied the WHO recommendation, while in Homa-Bay Town Location, only 10.1% of those affected satisfied the WHO requirement.   This does not reflect well for the survival of the under five.   Although therefore the respondents' medium during for breastfeeding is way above the WHO recommended limit, the noted medium of exclusive breastfeeding is on the other hand way below the WHO recommended limit.   This latter case may therefore undermine the benefits derived from extended breastfeeding.   This is made clear when it is observed that the medium age at which most of the children who were reported to have died (see section 4.2.16 on) was 8.2 months and 8.4 months for Homa-Bay and E. Kanyada respectively.   This practice could help explain why child and infant child mortality takes place mostly between the ages of eight months and thereabouts.   It seems that since early weaning is practiced by most respondents in Asego Division, the children are therefore exposed to dangerous pathogens at a very early age (3

months which is the mode of exclusive breastfeeding) and no wonder then that most die at the stated age. Section 4.2.16 on mortality will deal more on the issue of disease and medium age of death. Briefly however, measles, respiratory diseases, diarrhoeal diseases and malaria were found to be the major killers in this area. Early cessation of exclusive breastfeeding thus exposes these children to agents that spread the mentioned diseases. This unhealthy practice therefore does contribute significantly to the high rate of infant and child mortality observed in this region.

4.2.12. MATERNAL AWARENESS ON THE IMPORTANCE OF BREASTMILK

The importance of breastmilk over other milk substitutes cannot be over emphasized. The emerging interest and preference for breastmilk substitutes over breastmilk has recently been causing worries in many quarters. This emerging trend has been witnessed more in urban areas than in rural areas due to the fact that the employed mothers who mostly inhabit urban centres find that they have little time to breastfeed their children and have hence opted for milk substitutes whose perceived benefits are constantly advertised in the media. This erroneous perception have trickled slowly to the rural areas whereby rural women have been made to believe that milk substitutes are superior to breastmilk as they are asserted to have more nutritional values. It is however, now common knowledge that the reverse is the true case in this discussion. Breastmilk is by far superior to any milk substitutes standing on the shelves of our supermarkets. When one knows the importance of breastmilk and it superiority over other milk substitutes, she will endeavour to breastfeed her child for a longer period than those who start supplementing breastmilk with milk substitutes. The outlook in E. Kanyada and in Homa-Bay Town Location was as follows:

(a)   In E. Kanyada Location, the research revealed that 88%

of the respondents favoured breastmilk over other milk substitutes. They believed that

breastmilk is better for kids as it has more vitamins.

(b)   In Homa-Bay Town Location, 73.3% of the respondents favoured breastmilk over milk

substitutes. This positive health awareness is easy to derive. This is because African culture has

since time in immemorial advocated for breastmilk for its obvious nutritional benefits. It is

therefore easy to understand why breastfeeding goes on for so long in African societies. In African

societies, breastmilk has also been praised as the society believed that it nurtured a close

relationship between the mother and the child (Cameron and Hofvander 1992:22).

4.2.13 BIRTH, BIRTH INTERVAL AND BIRTH CONTROL

The above factors also influence ICM rates in various ways. As explained in chapter 2,

maternal age at first birth is crucial in determining the survival of the under-five. Briefly, if a

mother gives her first birth while she is below 18 years of age, her child and subsequently children

have a higher risk of dying as her body had not been well developed for birth and this may damage

her body to the detriment of her future births. As for birth interval, it is recommended that a lapse

of 15 months should exist between births. Too many births too quickly is not healthy to the mother

and to the siblings. Detailed explanation on this is provided in chapter 2. This is where birth

control comes in. It ensures that the recommended interval period between births is attained.

4.2.14. FIRST BIRTH

Maternal age at first birth is very crucial to the survival of the first born and to the subsequent siblings as has been observed.

Respondents' age at first birth was found to be as follows:-

TABLE 4.33: MATERNAL AGE AT FIRST BIRTH, E. KANYADA

AGE AT FIRST BIRTH	NO. OF RESPONDENTS	%
Below 18 years of age	42	56
18 years of age and above	33	44
TOTAL	75	100

Source: Survey Data

TABLE 4.34: MATERNAL AGE AT FIRST BIRTH, HOMA-BAY TOWN

AGE AT FIRST BIRTH	NO. OF RESPONDENTS	%
Below 18 years of age	40	53.3
18 years of age and above	35	46.7
TOTAL	75	100.0

Source: Survey Data

Looking at the data provided in Tables 4.33 and 4.34 above, it is observed that in both locations, a larger number of the respondents (54.7%) had their first birth when they were below eighteen years of age (56% and 53.3% for E. Kanyada and Homa-Bay Town Location respectively). Going by the previous arguments that it is dangerous for a mother and her offspring if she had her

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first birth when she was below 18 years of age, it can be stated that as a factor of infant and child mortality, this appears to exist in Asego Division. Mean maternal age was found to be 17.5 years. Comparison between age at first birth and reported mortality are found in section 5.1.1

To find out whether the respondents were aware that early birth has a negative impact on the survival of the under-5, they were asked to state reasons why they had had their first birth at the ages they did. Their responses were as follows:-

(i)Of the 94 respondents who gave birth while below 18 years of age, 75.5% stated that they did so because they got married before age 18. 24.4% attributed this to unplanned pregnancy.

(ii)Of the 56 respondents who gave birth after 18 years of age, 57% said they did so because they got married after age 18, while 20% said that they had done so due to unplanned pregnancy. 21% stated that they had planned not to give birth before age 18 while 2% of the respondents stated that this had happened because they simply were not able to give birth earlier.

The above reasons does not only provide us with information as to why the respondents had their first birth at the ages they did, but it also provides us with the necessary insights on the respondents awareness of the disadvantages associated with earlier child birth. On this crucial issue, it is observed that only 12 respondents (representing 8% of the total sample) were found to be aware of this fact. These are those respondents who gave birth after 18 years of age out of choice, as they wanted to wait till they were adults to do so. Those who said that they gave birth while under 18 years of age because they got married before age 18, and those who said that they gave birth after age 18 simply because they got married after age 18 demonstrate lack of awareness of the factor

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under discussion. Marriage was the only reason why they gave birth at the time they did. They had no desire to delay birth for health reasons.

All those who responded that they gave birth at the ages they did due to unplanned pregnancy, also demonstrated lack of awareness. For had they not wanted to give birth before they reached age 18, they would have prevented this by practicing some form of birth control. Since they did not (see section 4.2.15. which shows respondents limited use of birth control), this demonstrates their lack of awareness. The single respondent who said that she gave birth after 18 years of age simply because she was unable to conceive also portrays lack of awareness. It is noted that she got married at age 22 years and her first birth came when she was 28 years of age. Her reason implies that she would have given birth even at age 15 had she been able to do so.

In conclusion therefore, we can state that the noted lack of awareness identified in the respondents could be one of the major reasons why their health behaviour towards this was poor and hence why this can be identified as a mortality factor in this Division.

4.2.15. PLACE OF BIRTH OF LAST BORNS

Place of birth also plays an integral part in the future health of a child. This is due to the fact that the child who is born in a hospital has a better chance of survival than that born at home, as that delivered in hospital is given birth to in hygienic conditions and hence it is not susceptible to disease especially tetanus. Furthermore, since the mother is cared for, (i.e. immunized against infection moments before delivery) this care also extends to the yet to be born child. A child who is born in hospital is also more likely to be taken back for immunization than that born at home. Hence place

of birth is an important health behaviour which has an impact on child survival. A mother who also delivers in hospital is also more likely to take her child to the hospital for medical care than use local remedies when the child gets sick than those who delivers at home. The findings as concerns place of birth in the two locations was as follows:-

(a)E.Kanyada Location

(i) 56 children (representing 74%.7% of the total) were born at home.

(ii) 19 children (representing 25.3%) were born in hospitals.

(a)Homa-Bay Town Location

(i) 24 children (representing 32% of the total) were born at home.

(ii) 51 children (representing 68% of the total) were born in hospitals.

The above findings compare well with those of DHS (1993). This report states that Nyanza Province was ranked third (61.0%) after Coast (67.9%) and Western (66.0) on mothers who delivered at home. The above data shows that 53.3% of the mothers in Asego Division delivered at home compared to 46.7% who delivered in hospitals. The DHS report further states that there was a noted difference in place of birth in relation to maternal place of residence. It reports that 65% of rural births are delivered at home compared to 21% of urban births. The data provided above shows that 74.7% of the rural location's birth were delivered at home compared to 32% of those in the urban location. The rural-urban differential is in this case affirmed.

Comparatively, more children were born in hospitals in the urban location while more children were born at home in the rural location. Thus, mothers residing in Homa-Bay Town Location have better health behaviour than those in E. Kanyada Location in this respect. This

though, can easily be explained when it is noted that all the health centres are located in the Town Location. Hence, residents here have better access to health facilities. This disparity is therefore expected.

On mortality, it is observed that of all the last borns in the two locations, five of these children had died. Incidentally, all the five came from the rural location. It is clear that where most respondents gave birth at home is where we find the higher number of mortality. The data collected shows that all the five dead children had been delivered at home. The DHS finding (which states that babies born in hospitals have lower infant mortality rates than those delivered at home) is hereby supplemented by the above findings. Of the dead children, two died of measles, one from tetanus, while two died of anaemia. It can be seen that the majority (three) died from environmentally related diseases (tetanus and measles) in which their place of birth (home) could have contributed to this. Of the three, only one, who died of anaemia, had been fully immunized. Had they been born in hospital, they would have probably been immunized against the diseases that had claimed their lives. Therefore place of birth and mortality are associated.

4.2.16. BIRTH CONTROL

Birth interval (or birth control) also plays an integral part in ensuring child survival. As reported by Potts and Thapa (1991:3), one of the benefits of family planning is that it allows young women, whose infants are prone to higher mortality, to delay child bearing till later in life. It also allows older and especially high parity women, whose infants are at considerable risk of dying, to stop giving birth. Birth control is closely associated with birth interval. If the interval between

siblings is short (less than 15 months) this exposes the children to higher risk of dying due to the fact that the mother had had little time to recover well enough to give birth to another child. (ECA 1991 :1). DHS data also reveals that short intervals significantly reduce a child's chances of survival. Thus family planning which controls birth ensures that the preferable interval period is achieved and parity is controlled. It is the association between these two variables that lead to their being researched on.

On birth control, the study revealed that in Homa-Bay Town Location, 22 respondents (29.3%) were currently using one form or another of birth control, while 53 respondents (70.7%)were not. There were those who looking at their previous birth, had gaps of 15 months or more between births. When asked whether they had planned for these gaps, 11 respondents (19.6%) revealed that they had indeed used birth control methods to bring about this, while 45 respondents (80.4%) stated that they had not planned for this. They attributed this to God's own plans on their lives. (N in this instance was 56 as 19 respondents had only one child hence evidence between births could not be assessed).

Turning to E. Kanyada Location, the findings revealed that 9 respondents (12%) were currently using one form or another of birth control, while 66 respondents (88%) were not. On usage of previous birth control methods, it was found that 3 respondents (4.7%) attributed the gaps (of 15 or more months) to usage of family control methods, while 61 respondents (95.3%) stated that they had not planned for these gaps. They attributed this to God's design on their lives.

It can be noted from the above results that usage of birth control methods in Asego Division is very limited. Though more respondents in Homa-Bay Location (29.3%) currently were using

birth control methods compared to E. Kanyada (12%), the overall result was that only 20.7% of the respondents in both Locations were found to be making attempts to delay pregnancy. 79.3% of the respondents were not making any attempts to do so.

On previous use of birth control methods, it is again noted that more respondents in Homa-Bay Location (19.6%) used some form of birth control methods to delay past pregnancies compared to E. Kanyada Location (4.7%). Overall though, only 11.7% of the respondents in Asego Division were found to have previously used birth control methods to delay birth, while 88.3%, though had gaps, had not used birth control methods to achieve this. Hence only 11.7% of the respondents were aware of the importance of this practice to child survival.

Oddly enough, though use of birth control methods was very limited, birth intervals in both locations were found to be very high. The birth interval between the first and second birth and between the last and previous birth were measured and found to be as follows:-

(a) E. Kanyada Location

(i) Birth interval between 1st and 2nd birth   = 26.1 months

(ii) Birth interval between last and previous birth = 33.7 months

(b) Homa-Bay Town Location

(i) Birth interval between 1st and 2nd birth   = 30.8 months

(ii) Birth interval between last and previous birth = 33.1 months

(c) Asego Division

(i) Birth interval between 1st and 2nd   = 28.8 months

(ii) Birth interval between last and previous birth = 31.8 months

The above birth intervals are way above the WHO recommended 15 months interval between births. In both cases, however, it is noted that the birth interval for Homa-Bay Location surpasses that of E. Kanyada. The small difference noted can be attributed to the higher use of birth control methods in Homa-Bay Town Location. The noted commendable interval in both Locations can be attributed to the previously discussed prolonged duration of breastfeeding (which was found to be 23 months and which was way above the W.H.O recommended 12 months). Prolonged breastfeeding is said to act as a natural contraceptive as it delays ovulation by stimulating the hormone prolactin; which delays return of menses, hence prolongs postpartum amenorrhea and birth interval (Pitcairn 1963:36). It is important to note that most respondents engaged in prolonged breastfeeding without being aware of its "birth control" benefits. This was because when they were asked whether they used any form of birth control to delay pregnancy, be it by use of traditional methods or by using modern methods (i.e oral contraceptives, condoms e.t.c) most responded that they do not. They thus did not consider prolonged breastfeeding as a method/form of birth control. Only 20.7% of the respondent interviewed used one form or another of birth control. 79.3% stated that they currently do not use any method. Only 11.7% were found to have previously used birth control methods to delay pregnancy while 88.3% stated that the gaps observed were not planned for. It is highly likely that the gaps observed were due to the respondents' beneficial practice of prolonged breastfeeding though they were not aware of this fact. It should be noted that 120 respondents had gaps of 15 months or more between births. In conclusion, it can be stated that birth interval is not a problem in this area. Perhaps what could be a problem, which was not researched on in this study, is the question of parity which could arise easily due to the respondents' practice of having their first birth at a very long early age and continuing to do so till very late in life. This

could be an interesting area to cover to ascertain or confirm whether this is a child mortality reason/cause factor.

4.2.17 MORTALITY OF UNDER FIVE IN ASEGO DIVISION

Nyanza province tops the list of those provinces which records high rates of infant and child mortality. Kisumu, Homa-Bay and Rachwonyo Districts are the three leading Districts on ICM rates in this Province. An assessment was therefore made to find out the major causes (diseases) of death in Asego Division.

Findings pointed out that of the 75 respondents interviewed in E. Kanyada Location, 43 (57.3%) had reported to have had at least one death in their household. This is compared to 23 respondents (30.7%) who reported child mortality in Homa-Bay Town Location.

Thirty-two respondents (42.7%) reported no death in E.Kanyada while in Homa-Bay Town, 52 (69.3%) respondents reported no death.

In E. Kanyada location a total of eighty children had been reported dead by the 75 respondents interviewed while in Homa-Bay District a total of forty children had been reported dead by the 75 respondents interviewed. The foregoing data shows us that Homa-Bay Town Location reported lower mortality than E. Kanyada Location. This compares well with the reported rural-urban differentials in child mortality in which it is pointed out that rural regions reports more child mortality than urban areas (C.B.S, 1996:31)

Of the 43 respondents who had reported an under-five death in E. Kanyada Location, it is noted that of the 80 dead children, 52 were males while 28 were females. In Homa-Bay Town Location, of the 40 dead children, 24 were males while 16 were females. In all, 76 males died while

44 female children died. This leads credence to the fact that more male children usually die as compared to females (as put forward by Meegama, 1980:17)

Table 4.35 provided below presents the causes of death of the children in the two locations:-

TABLE 4.35: CAUSE OF CHILD DEATH, E.KANYADA LOCATION

CAUSE OF DEATH	NO OF CHILDREN WHOSE LIVES IT CLAIMED (n=80)
Measles	39 (48.8%)
Anaemia	7 (8.8%)
Diarrhea diseases	11 (13.8%)
Complicated delivery	2 (2.5%)
Yellow fever	2 (2.5%)
Tetanus	4 (5%)
Respiratory diseases	12 (15%)
Malaria	2 (2.5%)
Polio	1 (1.3%)
Total	80 (100%)

Source: Survey data

TABLE 4.36: CAUSE OF CHILD DEATH, HOMA-BAY TOWN LOCATION

CAUSE OF DEATH	NO. OF CHILDREN WHOSE LIVES IT CLAIMED (n = 40)
Measles	23 (57.5%)
Malaria	3 (7.5%)
Respiratory diseases	9 (22.5%)
Diarrhoea diseases	5 (12.5%)
TOTAL	40 (100%)

Source: Survey data

In both Locations, measles is recorded as the number one child killer. Respiratory diseases are recorded as the number two child killer in both locations. Diarrhoea diseases are reported as the number three child killer disease in both Locations. While anaemia is reported as the number four child killer in E. Kanyada, malaria takes this slot in Homa-Bay Town Location.

Overall, the ranking of causes of death for both Locations (when collectively analyzed) is as follows:- Measles, Respiratory diseases, Diarrhoea diseases, Anaemia, Malaria, Tetanus, Yellow fever and complicated delivery, and last polio in that order. The above causes compliments those suggested by M.O.H.(1994:32) in which it listed Malaria, Respiratory disease, Measles, Diarrhoea diseases among others as the major causes of child mortality in Homa-Bay District. A study carried out by AMREF(1992:5) had indicated that malaria, diarrhoea diseases, anaemia, measles, malnutrition and scabies and schistosomias as the major heath problems in Rusinga Island of Homa-Bay District. Their finding revealed that of the 19 respondents who had stated that they had children who had died the previous year, ten(10) had died from measles, two(2) from respiratory diseases, two(2) from diarrhoea diseases, two(2) from wasting, while three(3) respondents could not tell exactly which disease had claimed the lives of their children. Hence in both cases, measles, respiratory diseases and diarrhoea diseases top the list as the major causes of death. The three are therefore confirmed as the major causes of child death in this region (Homa-Bay District.) All these diseases are associated with sanitary standards. And as we have observed that Homa-Bay District's sanitary standards are very low, the emergence of these three diseases as the leading causes of death for infants and the under-5 can be easily understood.

In conclusion, it can be quickly noted that in E. Kanyada, of the 80 children who passed away, only 29 had died in hospital while 51 had died at home. In Homa-Bay Town Location, of the

40 children who had died, 22 children had died in hospital while 18 had died at home. It is evident that more children died at home in E. Kanyada as compared to Homa-Bay Town. This can confidently be explained by the fact that most respondents in the urban location have easy access to health facilities (distance wise) and are thus able to more often take their children for treatment. Thus these children die in hospital while undergoing treatment.

CHAPTER FIVE

ANALYSIS OF HYPOTHESES

5.1.0. HYPOTHESIS 1

That Socio-Cultural Factors (maternal education) are associated with ICM rates.

5.1.1. AVAILABILITY OF TOILET FACILITY VIS-A-VIS MATERNAL EDUCATION

As mentioned in Chapter 5, education is believed to play an important role in the choice of one's method of human waste disposal. It is said that the higher the formal education of the mother, the higher her level of sanitation and hygiene upkeep will be, and the lower the ICM rates the mothers will experience (Da Vanzo and Habich, 1984:6; Nag, 1981:29-30; E.C.A, 1991:1). Thus mothers with higher level of education are expected to significantly have more toilet facilities than those with lower level of education. The research data obtained revealed the following:-

TABLE 5.1:   MATERNAL EDUCATION AGAINST TOILET AVAILABILITY IN ASEGO DIVISION, HOMA-BAY DISTRICT.

YEARS OF SCHOOLING	NO. OF RESPONDENTS WITHOUT TOILET FACILITIES	NO. OF RESPONDENTS WITH TOILET FACILITIES	ROW TOTAL
0-4	16(59.26%)	11(40.74%)	27(100%)
5-7	46(66.67%)	23(33.33%)	69(100%)
8 & above	19(35.19%)	35(64.81%)	54(100%)
COLUMN TOTAL	81(54%)	69(46%)	150(100%)
$x(cal.)^2$=12.4531 d.f=2 0.01=9.210			

Source: Survey Data

The x^2 for Table 5.1 indicates that education and availability of toilet facility are associated. Hence we fail to reject the hypotheses that mother's education has a significant influence on sanitary condition (in this regard, human waste disposal facility. Consequently, maternal education affects the survival of her under-five. In Homa-Bay District, lack of adequate toilet facility can therefore be attributed to the low level of formal education that the mothers possess. It can be further noted from Table 5.1 that only 54 respondents (representing only 36% of the total) have eight years and above of formal schooling. Since an association has been established between years of schooling and sanitary condition (in this instance availability of toilet facility), it will be expected that very few households will have toilet facilities. This concurs well with our earlier finding which revealed that only 46% of the population in Asego Division have toilet facilities (see Table 4.1 of chapter 4).

The intervening variable is then assessed against reported mortality. The results revealed the following:

TABLE 5.2: TOILET FACILITY AND ICM , ASEGO DIVISION

TOILET FACILITIES	ICM		ROW TOTAL
	NO. OF RESPONDENTS WHO REPORTED DEATH	NO. OF RESPONDENTS WHO REPORTED NO DEATH	
NO. OF RESPONDENTS WITH TOILET	20(26.7%)	55(73.3%)	75(100%)
NO. OF RESPONDENTS WITHOUT TOILET	46(61.3%)	29(38.7%)	75(100%)
COLUMN TOTAL	66(44%)	84(56%)	150(100%)
$x(cal.)^2$=18.29 df=1 0.001=10.827			

Source: survey data

The x^2 for Table 5.1.1. indicates that availability of toilet facility and ICM are associated. It can therefore be comfortable be concluded that maternal level of education does affect the availability of toilet which in turn affects ICM rates. Socio-Cultural (educational) is indeed therefore associated with ICM rates.

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5.1.2. METHOD OF SOLID WASTE DISPOSAL VIS-A-VIS MATERNAL EDUCATION.

As mentioned before in Chapter 4, education is believed to play an important role in determining one's sanitary practices. It is believed that it (education) inculcates modern health knowledge and that it improves one's health behaviour among other things (Nag, 1981:29-30; E.C.A., 1991:1). It is in line with this that it was deemed important to assess its (education) impact on respondents preferred method of solid waste disposal, which is an important sanitary variable. In this instance the four choices of method disposal outlined in Chapter 4, Table 4.3, were classified into two, namely those that denote hygienic methods of solid waste disposal and those that do not. Hence disposing of the waste anyhowly and in the shamba were classified as unhygienic methods of solid waste disposal while burning of the same and disposing it at the garbage site were listed as hygienic methods of solid waste disposal. The findings on this on the two locations (separately and when combined) were as follows:-

TABLE 5.3: MATERNAL EDUCATION AND SANITARY METHOD OF SOLID WASTE DISPOSAL, E. KANYADA LOCATION.

YEARS OF SCHOOLING	HYGIENIC METHOD OF SOLID WASTE DISPOSAL	UNHYGIENIC METHOD OF SOLID WASTE DISPOSAL	ROW TOTAL
0-4	5(41.7%)	7(58.3%0	12(100%)
5-7	17(37.8%)	28(62.2%)	45(100%)
8 & above	13(72.2%)	5(27.8%)	18(100%)
COLUMN TOTAL	35(46.7%)	40(53.3%)	75(100%)

Source: Survey Data

TABLE 5.4: MATERNAL EDUCATION AND SANITARY METHOD OF SOLID WASTE DISPOSAL, HOMA-BAY TOWN LOCATION.

YEARS OF SCHOOLING	HYGIENIC METHOD OF SOLID WASTE DISPOSAL	UNHYGIENIC METHOD OF SOLID WASTE DISPOSAL	ROW TOTAL
0-4	6(40%)	9(60%)	15(100%)
5-7	17(70.8%)	7(29.2%)	24(100%)
8 & above	27(75%)	9(25%)	36(100%)
COLUMN TOTAL	50(66.7%)	25(33.3%)	75(100%)

Source: Survey Data

Comparison of the two locations reveals that at 0-4 years of schooling, the respondents' choices are almost at par. For while in E. Kanyada 41.7% of the total who had 0-4 years of schooling chose hygienic methods for waste disposal, 40% of the total did the same in Homa-Bay Town Location. On unhygienic method of solid waste disposal, percentages of the total were also

very close, being 58.3% and 60% for E. Kanyada and Homa-Bay Town Location, respectively. This close similarity can also be observed when respondents who have eight years of schooling and above are contrasted among the two locations. While 72.2% of the total chose hygienic method of solid waste disposal in E. Kanyada, 75% did the same in Homa-Bay Town Location. On unhygienic method of solid waste disposal, the percentages stood at 27.8% and 25% for E. Kanyada and Homa-Bay Town Location respectively. The above observation insinuates a likely association between years of schooling and sanitary condition (in this case method of solid waste disposal). The only variation observed was between the respondents who had between 5-7 years of schooling in the two locations. While 37.7% of the total choose hygienic method in E. Kanyada Location, 75% opted for hygienic methods of solid waste disposal in Homa-Bay Town Location.

To statistically prove the above observation (an association between education and sanitary condition - method of solid waste disposal), the observation in the two locations were combined and the Chi-Square test was then administered. The results were as follows:-

TABLE 5.5:   MATERNAL EDUCATION AND METHOD OF SOLID WASTE DISPOSAL.

YEARS OF SCHOOLING	HYGIENIC METHOD OF SOLID WASTE DISPOSAL	UNHYGIENIC METHOD OF SOLID WASTE DISPOSAL	ROW TOTAL
0-4	11(40.7%)	16(59.3%)	27(100%)
5-7	34(49.3%)	35(50.7%)	69(100%)
8 & above	40(74.1%)	14(25.9%)	54(100%)
COLUMN TOTAL	85(56.7%)	65(43.3%)	150(100%)
$x \text{(cal.)}^2 = 10.9876$ d.f = 2 0.01 = 9.210			

Source: Survey Data

The x^2 for Table 5.5 indicates that there exists an association between years of schooling

and the choice of either hygienic method of solid waste disposal or unhygienic method of solid

waste disposal at 0.01 level of significance.   This implies that education does indeed play a

significant role in the sanitary conditions surrounding the mothers and their children. In percentages

of the total, it can be observed that with increase in years of education, the percentages in respect to

choice of hygienic methods rose significantly (i.e. 0-5, 5-7, and 8 and above by 40.7%, 49.3% to

74.1% respectively) while the percentages of the total who choose unhygienic methods of solid

waste disposal dropped significantly with increase in years of schooling (i.e. from 59.3% to 50.7%

to 25.9%).   This indeed does indicate that the two variables are associated.   Hence years of

schooling denotes level of intelligence which in turn leads one to care more about her sanitary

surrounding in respect to method of solid waste disposal.

On mortality, the research revealed the following:-

(i)   In E. Kanyada Location, it was noted that for those using unhygienic methods of solid waste disposal, 26 respondents (representing 65% of those using these methods) had reported an under-five mortality, while 18 respondents (representing 51.4% of the total) who use hygienic methods reported on under-five death. This demonstrates that those practicing unhygienic methods of solid waste disposal experience higher child mortality than those using hygienic methods.

(iii)   In Homa-Bay Town Location, it was noted that for those using unhygienic methods of solid waste disposal, 10 respondents (representing 41.7% of the total) reported child mortality, while 11 respondents (representing 22% of the total) who use hygienic methods of solid waste disposal reported child mortality. This observation concurs with that observed above, specifically that mothers who have adopted hygienic methods for solid waste disposal experience lower child mortality when compared to those who use unhygienic methods of solid waste disposal.

Statistically tested the results are as shown hereunder:-

TABLE 5.6:METHOD OF SOLID WASTE DISPOSAL AND ICM , ASEGO DIVISION

METHOD OF SOLID WASTE DISPOSAL	ICM		ROW TOTAL
	NO. OF RESPONDENTS WHO REPORTED DEATH	NO. OF RESPONDENTS WHO DID NOT REPORT DEATH	
HYGIENIC METHOD OF SOLID WASTE DISPOSAL	30(32.3%)	55(64.7%)	85(100%)
UNHYGIENIC METHODS OF SOLID WASTE DISPOSAL	36(55.4%)	29(44.6%)	65(100%)
COLUMN TOTAL	(66(44%)	84(56%)	150(100%)

$x(cal.)^2$=5.2659   d.f=1   0.05=3.841

Source: survey data

The x^2 for Table 5.6. indicates that there exists an association between method (hygienic or unhygienic) of solid waste disposal and death of under-5 at 0.05 level of significance.   This demonstrates that if one uses hygienic methods of solid waste disposal she would experience low rates of ICM.   This is derived from the observation that reported mortality is lower for those who use hygienic methods of disposing their waste.

Hence when one looks at the results for Table 4.4 and (i) and (ii) above, the hypothesis formulated is proved correct in respect of the sanitary aspect (solid waste disposal) considered.

5.1.3. MATERNAL EDUCATION VIS-A-VIS METHOD OF WASTE WATER DISPOSAL

As earlier mentioned that education inculcates good health behaviour (i.e maintenance of good sanitary condition), need therefore arises for the assessment of this variable (education) with another aspect of sanitation, this is methods of solid waste disposal. As done before, the various methods of waste water disposal (refer to figure 3) were again classified into two classes, namely those deemed to be hygienic methods of waste water disposal and those viewed as being unhygienic. As earlier outlined in Chapter 4, disposing of waste water in the latrine, in the garbage site, at its own designated site and far away from the homestead were listed as hygienic methods while just throwing it about and/or in the shamba were listed under unhygienic methods of waste water disposal.

Assessment of the two variables against each other yielded the following results:-

TABLE 5.7:MATERNAL EDUCATION AND WASTE WATER DISPOSAL, E.KANYADA LOCATION

YEARS OF SCHOOLING	UNHYGIENIC METHOD OF WASTE WATER DISPOSAL	HYGIENIC METHOD OF WASTE WATER DISPOSAL	ROW TOTAL
0-4	8(66.7%)	4(33.3%)	12(100%)
5-7	39(86.7%)	6(13.3%)	45(100%)
8 & above	13(72.2%)	5(27.8%)	18(100%)
COLUMN TOTAL	60(80%)	15(20%)	75(100%)

Source: Survey Data

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TABLE 5.8: MATERNAL EDUCATION AND WASTE WATER DISPOSAL, HOMA-BAY TOWN LOCATION

YEARS OF SCHOOLING	UNHYGIENIC METHOD OF WASTE WATER DISPOSAL	HYGIENIC METHOD OF WASTE WATER DISPOSAL	ROW TOTAL
0-4	13(86.7%)	2(13.3%)	15(100%)
5-7	19(79.2%)	5(20.8%)	24(100%)
8 & above	2363.9%)	13(36.1%)	36(100%)
COLUMN TOTAL	55(73.3%)	20(26.7%)	75(100%)

Source: Survey Data

TABLE 5.9: MATERNAL EDUCATION AND WASTE WATER DISPOSAL, ASEGO DIVISION

YEARS OF SCHOOLING	UNHYGIENIC METHOD OF WASTE WATER DISPOSAL	HYGIENIC METHOD OF WASTE WATER DISPOSAL	ROW TOTAL
0-4	21(77.8%)	6(22.2%)	27(100%)
5-7	58(84.1%)	11(15.9%)	69(100%)
8 & above	36(66.7%)	18(33.3%)	54(100%)
COLUMN TOTAL	115(76.7%)	35(23.3%)	150(100%)
$x(cal.)^2 = 5.144$ d.f = 2 0.05 = 5.991			

Source: Survey Data

Looking at Table 5.7, it will be observed that in E. Kanyada Location, respondents with 5-7 years of schooling led on those practicing unhygienic methods of waste water disposal (as they comprised 86.7% of the total), while those with 0-4 years of schooling trailed in this aspect. On

hygienic method of waste water disposal, those with 0-4 years of education were found to be more engaged in performing this positive action (33.3%), while those with 5-7 years of schooling trailed in this aspect (13.3 %). Those with 8 and above years of schooling took the second position in both instances.

Turning to Homa-Bay Town Location as portrayed in Table 5.8, it is observed that those with 0-4 years of education led on those practicing unhygienic methods of waste water disposal (86.7% were engaged in this negative action). Indeed in Homa-Bay Town Location, it is noted that with increase in years of schooling there followed a decrease in unhygienic practices. Thus an inverse relationship is observed.

The two results however, on their own gives no clear indication as to whether years of schooling has an effect on this particular aspect of sanitation. Need therefore arises for the two results to be combined and then tested statistically to show this. Table 5.9 provides the result of the merger of Tables 5.5 and 5.6. It is noted that the results are similar with that observed for E. Kanyada, whereas those with 5-7 years of schooling were found to lead on those practicing unhygienic methods of waste water disposal. The percentages on this stood at 84.1%, 77.8% and 66.7% for those with 5-7, 0-4 and 8 and above years of education respectively. On hygienic methods of waste water disposal, it is observed that those with 8 and more years of schooling led on those engaged in this positive practice, while those with 0-4 years of schooling came second, while those with 5-7 years of schooling trailed. This observation postulates that no association exists between maternal education and waste water management. A statistical test to determine this was therefore carried out.

The x^2 for Table 5.9 indicates that there indeed does not exist an association between educational level of the mothers and the considered sanitary aspect. When one compares Fig.3 with the above results, it is clear that most respondents do not give a thought on how they dispose of their waste water and further that education does not guide one on how he should act in this particular aspect. In light of this finding, the hypothesis formulated does not hold and hence Goldthorpe's (1990), Gish's (1970) and Meegana's (1980) observations that maternal educational level cannot be used as an indicator of intelligence and hence influencing maternal health behavior is supported by the above findings.

On reported child mortality, the data revealed that 52 (51.5%) respondents out of a total of 101 who just threw their waste water aside reported child death. 3 (21.4%) respondents out of 14 who disposed of their waste water in the shamba reported child mortality, while only 1 (8.3%) respondent out of 12 who had a drainage system reported child mortality. 4 (28.6%) out of 14 respondents who disposed of their waste water at the garbage site reported child mortality while all the 3 respondents who disposed their waste water away from the home reported child mortality. 2 (66.7%) out of 3 respondents who had a designated site for this purpose located away from the homestead reported child mortality. To provide a clearer outlook, the various methods were again classified into hygienic and unhygienic methods then compared with the reported child mortality. The results were as follows:-

(i) Of the 115 respondents who use unhygienic methods of waste water disposal, 55 respondents reported child mortality. This represents 47.8% of the total who use this method.

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(ii)Of the 37 respondents who use hygienic methods of waste water disposal, 11 respondents reported child mortality. This represents 31.4% of the total.

Statistically tested however, the results obtained indicate that no significant difference exists between the intervening variable and the dependent variable. Table 5.10 below elucidates this:

TABLE 5.10: METHOD OF WASTE WATER DISPOSAL AND ICM,ASEGO DIVISION

METHOD OF WASTE WATER DISPOSAL	ICM		ROW TOTAL
	NO. OF MOTHERS WHO REPORTED UNDER-5 DEATH	NO. MOTHERS WHO DID NOT REPORT DEATH	
UNHYGIENIC WASTE WATER DISPOSAL	55(47.8%)	60(52.2%)	115(100%)
HYGIENIC WASTE WATER DISPOSAL	11(31.4%)	24(68.6%)	35(100%)
COLUMN TOTAL	66(44%)	84(56%)	150(100%)
$x(cal.)^2$=2.9281 d.f=1 0.05=3.841			

Source: survey data

x^2 for Table 5.10 above indicates that the two variables are independent of each other. Methods of disposal of waste water are shown as having no association with reported death of under-5. The intervening variable here does not seem to have an impact on the dependent variable. We have observed earlier that the independent variable has also no association with the intervening variable. The above result is not surprising given that almost all the inhabitants have before been noted to practice poor methods of disposing their waste water. Other sanitary factors assert more influence on under-5 mortality than waste water disposal.

5.1.4. MATERNAL EDUCATION AND WATER SOURCE

Reiterating what has been said before, maternal education has been said to have an important influence on household sanitary condition. Type of water source is such one sanitary condition. It is for this reason that an assessment between the two variables was made. The results for the two Location were as follows:-

TABLE 5.11:MATERNAL EDUCATION AND WATER SOURCE, EAST KANYADA LOCATION

YEARS OF SCHOOLING	WATER SOURCE					ROW TOTAL
0-4	2(16.7%)	1(8.3%)	1 (8.3%)	8 (66.7%)	0 (0%)	12 (100%)
5-7	7 (15.6%)	2 (4.4%)	2 (4.4%)	29 (64.4%)	5 (11.1%)	45 (100%)
8 & above	5 (27.8%)	1 (5.6%)	2 (11.1%)	7 (38.9%)	3 (16.7%)	18 (100%)
COLUMN TOTAL	14 (18.7%)	4 (5.3%)	5 (6.7%)	44 (58.7%)	8 (10.7%)	75 (100%)

Source:survey Data

TABLE 5.12:MATERNAL EDUCATION AND WATER SOURCE, HOMA-BAY TOWN LOCATION

YEARS OF SCHOOLING	WATER SOURCE			ROW TOTAL
	Piped	River	Lake	
0-4	9(60%)	6(40%)	0(0%)	15(100%)
5-7	14(58.3%)	6(25%)	4(16.7)	24(100%)
8 & above	31(86.1%)	2(5.6%)	3(8.3%)	36(100%)
COLUMN TOTAL	54(72%)	14(18.7%)	7(9.3%)	75(100%)

Source:Survey Data

It is noted from Tables 5.11 and 5.12 that the majority of the respondents who have 0-4 years of schooling in E. Kanyada use ponds while the majority in H-Bay Town Location use the river as their source of water supply. For those with 5-7 years of schooling, most of the respondents in E. Kanyada use ponds while most in the town location use piped water. For those who have 8 years of schooling and above, majority of the cases in E. Kanyada use ponds while H-Bay Town Location the majority use piped water.

To provide a clearer picture on the source of water supply vis-a-vis education, it was again decided (as has been done in the previous cases) to categorize the various sources of water into two main categories, namely, into safe sources of water and unsafe sources of water. The aim here is to establish whether maternal education influences respondents' choice of safe or unsafe water supply in Asego Division. Provided below is the findings of the study:-

TABLE 5.13:MATERNAL EDUCATION AS INFLUENCING CHOICE OF SAFE OR UNSAFE WATER SOURCES, ASEGO DIVISION

YEARS OF SCHOOLING	NO. OF RESPONDENTS USING UNSAFE WATER SOURCES	NO. OF RESPONDENTS USING SAFE WATER SOURCES	ROW TOTAL
0-4	15(55.6%)	12(44.4%)	27(100%)
5-7	46(66.7%)	23(33.3%)	69(100%)
8 & above	17(31.5%)	37(68.5%)	54(100%)
COLUMN TOTAL	80(53.3%)	70(46.7%)	150(100%)
$x(cal.)^2 = 15.191713$ d.f = 2 0.001 = 9.210			

Source: Survey Data

The x^2 for Table 5.13 indicates that there indeed exists an association between level of education and respondents' choice of source of water. It can be observed that those with higher level of education (8 years and above) have better sanitary practice when it comes to choice of water source compared to those with 0-4 years of schooling. On unsafe sources of water, they (8 & above years of schooling) had the lowest percentages of their members using this source (at 31.5%) compared to 66.7% and 55.6% for those with 5-7 and 0-4 years of schooling respectively). Those with 8 and more years of schooling were found to chiefly use safe sources of water (at 68.5% of the total who use this source). With respect to this particular sanitary aspect, the hypothesis is proven right.

When safe and unsafe sources of water was assessed against reported child mortality, the results were as follows:-

(i) Of those using unsafe sources of water, 54 (69.2%) respondents reported child mortality while 24 (30.8%) respondents using the same source did not.

(ii)Of those using safe sources of water, 16 (22.2%) respondents reported child mortality while 56

(77.8%) respondents using the same source did not.

Statistically tested the results were as follows:

TABLE 5.14: SOURCES OF WATER AND ICM, ASEGO DIVISION

SOURCES OF WATER	ICM		ROW TOTAL
	NO. OF MOTHERS WHO REPORTED UNDER-5 DEATH	NO. MOTHERS WHO DID NOT REPORT DEATH	
UNSAFE SOURCES OF WATER	50(62.5%)	30(37.5%)	80(100%)
SAFE SOURCES OF WATER	16(22.9%)	54(77.1%)	70(100%)
COLUMN TOTAL	66(44%)	84(56.1%)	150(100%)
$x(cal.)^2$=28.8773 d.f=2 0.001=13.815			

Source: survey data

x^2 in the Table 5.14 indicates that there exists a very close association between source of water and

reported ICM rates.

The above results tell us that there is higher mortality for those using unsafe water sources

than for those using safe sources of water. When (i) and (ii) above are considered side by side with

the results of Table 5.13 and Table 5.14, it can be concluded confidently that higher maternal

educational level is associated with better choice of water source and low ICM and vice versa. It is

observed that those using safe sources of water reported lower mortality than those using unsafe

sources of water. The stated hypothesis is thus proven right in this particular case.

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It is now necessary to carry out a statistical assessment to determine whether or not level of education and reported ICM levels are directly associated/linked. Table 5.15 below provides the results of the assessment:

TABLE 5.15: MATERNAL EDUCATION AND ICM, ASEGO DIVISION

YEARS OF SCHOOLING	ICM		ROW TOTAL
	NO. OF MOTHERS WHO REPORTED UNDER-5 DEATH	NO. MOTHERS WHO DID NOT REPORT DEATH	
0 – 4	20(74.1%)	7(25.9%)	27(100%)
5 – 7	37(53.6%)	32(46.4%)	69(100%)
8 & above	9(16.7%)	45(83.3%)	54(100%)
COLUMN TOTAL	66(44%)	84(56%)	150(100%)
$x(cal.)^2$ =28.8773 d.f=2 0.001=13.815			

Source: survey data

x^2 for Table 5.15 indicates that there exists an association between the independent variable (Socio-Cultural Factor; maternal education) and the dependent variable (reported ICM). The formulated hypothesis is therefore confirmed as true by the above tests.

We have observed the results obtained when each sanitary variable (source of water, availability of toilet facility, disposal of solid waste and disposal of waste water) is assessed against maternal educational level. We have also observed the results obtained when sanitary condition is assessed against reported child mortality. At this point the focus will now shift to pin-pointing on how all these sanitary variables which have been influence by maternal education, when considered collectively, are associated with child mortality. This is a confirmation test to assess whether there exists significance difference among the selected educational levels. In order to test the hypothesis

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in this format, scores were awarded for standards of sanitary conditions and reported child mortality and mean scores for each educational level group was obtained. The mean score for each group was found to be as follows:-

TABLE 5.16 : MATERNAL EDUCATION AND MEAN SCORES OBTAINED

YEARS OF SCHOOLING	MEAN SCORE OBTAINED	STANDARD DEVIATION
0-4	34.4%	22.6
5-7	38.5%	26.3
8 & above	60.0%	21.6

Source: Survey Data

The Z-test was then employed to determine whether there exists a significant difference between the scores obtained by those who have 4 years of schooling or less with those who had between 5-7 years of schooling. The following formula was used:-

$$Z \text{(cal.)} = \frac{X - m}{\frac{s}{\sqrt{n}}}$$

Summary statistics

$m = 34.4$ Test

$x = 38.5$ $H_o\, m = 34.4$

$n = 69$ $H_1\, m = 38.5$

$s = 26.3$ $a = 0.05$

Z 0.05 = 1.64

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$$Z \text{ (cal.)} = \frac{38.5 - 34.4}{\dfrac{26.3}{\sqrt{69}}}$$

$$Z \text{ (cal.)} = 1.2974683$$

Region of acceptance of H_1

Region of rejection of H_1

1.297   1.64
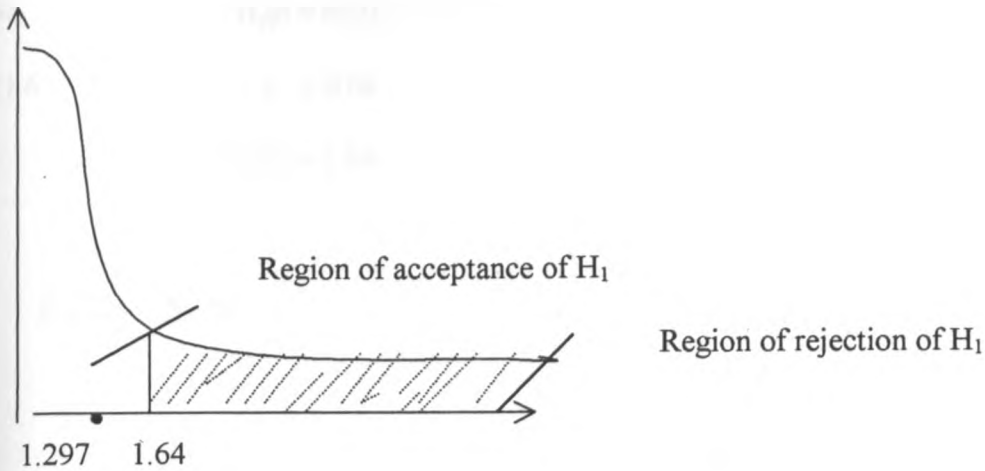
We therefore reject the null hypothesis and accept the alternative hypothesis which states that there is no significant difference between the scores of 35 and 38.5 at 0.05 level of significance. This implies that in the above instance, education is seen as not being associated with ones level of sanitary standards. This supports the views advocated by Goldthorpe (1990), Gish (1970), and Meegama (1980) in which they stated that maternal educational level cannot be used as an indicator of intelligence and hence cannot be tied to maternal health behaviour (i.e sanitary condition) and ICM rates.

The second test to be carried out was to assess whether there is a significant difference between the scores obtained by respondents who have 5-7 years of schooling and those obtained by respondents who have 8 and more years of schooling.

The above given formula was again used to test the hypothesis on whether years of schooling is associated with ones level of sanitary condition and ICM rates.

summary statistics

$m = 38.5$	Test	
$x = 60.0$	$H_o m = 38.5$	
$n = 54$	$H_1 m = 60.0$	
$s = 21.6$	$a = 0.05$	
	$Z\,0.05 = 1.64$	

$$Z\,(cal.) = \frac{X - m}{\frac{s}{\sqrt{n}}}$$

$$= \frac{60.0 - 38.5}{\frac{21.6}{\sqrt{54}}}$$

$$= 7.3129251$$

Region of acceptance of H_1

Region of ejection of H_1

1.64   7.3129
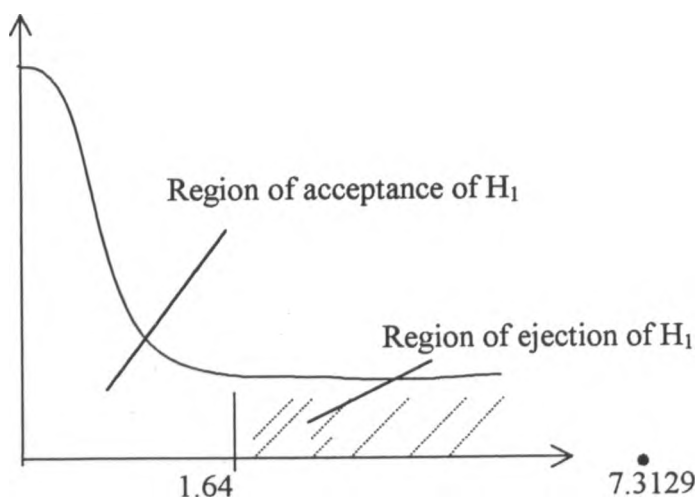
From the above we can observe that whereas no significant difference was observed between the scores obtained by respondents who had 0-4 years of schooling those who had 5-7 years of schooling, in this second case, a significant difference is observed between the scores obtained by those respondents who have 5-7 years of schooling and those who with 8 or more years of schooling. The test shows that those with a higher level of education (8 and above) have a higher level of sanitary standards and lower infant and child mortality rates than those with lower level of education (5-7 years of schooling). In this instance, the above finding supports those advocated by Vallin and Lopez (1991), Nag (1981), Benjamin (1965) among others to the effect that higher maternal education has a direct influence to ones standards of sanitary condition and ICM rates.

To further prove the above finding, a further test was carried out to assess whether the scores obtained by respondents who had 0-4 years of education was significantly different with those obtained by respondents who had 8 or more years of schooling. The formula provided below was again used:-

$$Z \text{ (cal.)} = \frac{X - m}{\frac{s}{\sqrt{n}}}$$

Summary statistics

m = 34.4   Test

x = 60.0 $H_o m = 34.4$

n = 54 $H_1 m = 60.0$

s = 21.6   a = 0.05

                    Z 0.05 = 1.64

$(cal.) = \dfrac{60.0 - 34.4}{\dfrac{21.6}{\sqrt{54}}}$

$Z (cal.) = 8.7074829$
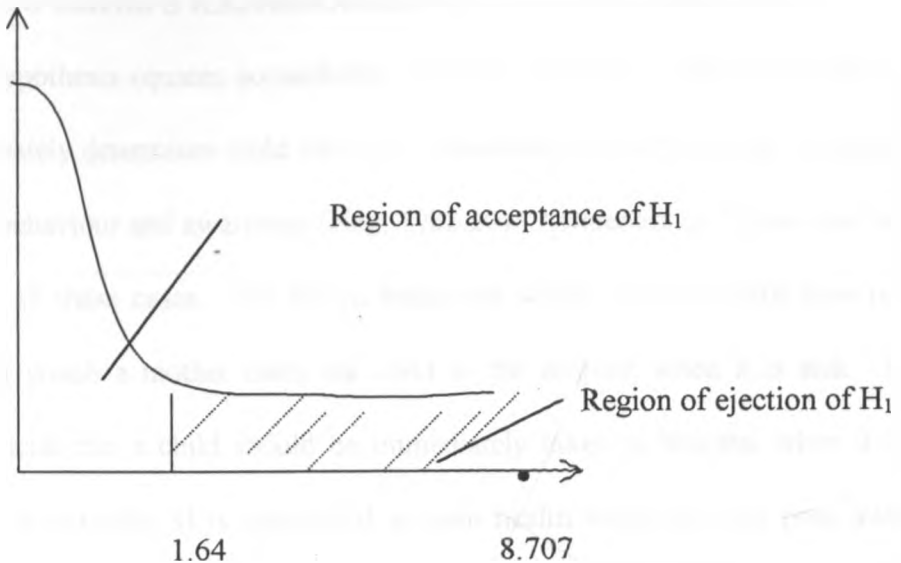
The test shows that there exists a significant difference between the two scores obtained by the two groups of respondents. Hence this proves that there exists higher level of sanitary standards and lower ICM rates for respondents with 8 or more years of schooling than those who have 0-4 years of education.

The hypothesis thus formulated (that Socio-Cultural Factors (maternal educational level) is associated with ICM rates) has been proved to be true by the three tests carried above. The tests however, point out that higher maternal education has to be for eight years and above for a significant difference to be observed.

5.2.0: HYPOTHESIS 2

(That Health Care and Medical Factors are associated with ICM rates)

Under Health Care Medical Factors accessibility to health care facility is the variable that will be considered. Health awareness and behaviour is the intervening factor as explained in section 2.2.0

5.2.1: RESPONSE TO CHILD'S ILLNESS ASSESSED AGAINST DISTANCE

The present hypothesis equates accessibility to health facilities to maternal awareness and behaviour which ultimately determines child survival. Closeness to a health facility is believed will enhance one's health behaviour and awareness (Nag, 1982:20). Awareness and behaviour are taken to be synonymous in all these cases. The health behaviour which is under focus now is that of assessing the stage at which a mother takes her child to the hospital when it is sick. It is, as mentioned earlier, crucial that a child should be immediately taken to hospital when it falls ill. Waiting till the child is critically ill is considered as poor health behaviour and poor awareness. Trying out local remedies and herbs first is also considered as poor health behaviour. The study yielded the following findings with regard to this:-

TABLE 5.17: USE OF HEALTH FACILITY AND DISTANCE FROM MEDICAL FACILITY, ASEGO DIVISION.

| DISTANCE TO HEALTH FACILITY | STAGE WHEN CHILD IS TAKEN TO HOSPITAL | | | ROW TOTAL |
	When sick	when critically sick	After local remedies and herbs have Failed	
0-4	42 (62.7%)	2 (3%)	23 (34.3%)	67 (100%)
5-9	22 (51.2%)	15 (34.9%)	6 (13.9%)	43 (100%)
10 & above	10 (25%)	15 (37.5%)	15 (37.5%)	40 (100%)
COLUMN TOTAL	74 (49.3%)	32 (21.3%)	44 (29.3%)	150 (100%)
$x(Cal.)^2 = 28.3711$ d.f. = 4 0.01 = 18.465				

Source: Survey Data

x^2 for table 5.17 indicates that there exists an association between distance to the health facility and stage at which a mother takes her child to the hospital for treatment. Hence this implies that the shorter the distance, the more likely the mother will take her child to the clinic at the early stages of illness. The further the distance, the less likely the mother is expected to take her child to the clinic immediately the child falls sick. Since most of the inhabitants of the Division live more than 4 km away from the nearest health facility, the majority of the population here will hence practice poor health behaviour. This could therefore account for the high rate of ICM experienced in this area as most children will die in the homestead while undergoing home treatment or be taken to the hospital when it is too late to save their lives.

The respondents' awareness on the importance of taking their children to the clinic immediately they fall sick can also be measured by the stage at which they visit the clinic when their

children fall sick. Since, as depicted from Table 5.17, 50.7% of the sampled total do take their children to the clinic only when they are critically ill or only when the local remedies from shops and herbs have failed, it is concluded that this number are not aware of the importance of taking their children to health facilities for a quick and effective response to their kid's illness. Consequently only 49.3% of the respondents are aware of this fact. When half a population have no health awareness on important health factors/practices, this usually has very negative implications to the health of the community. This can explain the high ICM rates experienced in this region.

An analysis was therefore made to assess whether maternal behaviour/awareness is associate with reported under-5 death. The Chi-square test was used to statistically test this. The results were as follows:

TABLE 5.18: ACTION TAKEN BY MOTHER TO CURE CHILD'S AILMENT AND ICM

ACTION TAKEN BY MOTHER TO CURE CHILD'S AILMENT	ICM		ROW TOTAL
	NO. OF RESPONDENTS WHO REPORTED UNDER-5 DEATH	NO. OF RESPONDENTS WHO REPORTED NO DEATH	
WHEN SICK	27(36.5%)	47(63.5%)	74(100%)
WHEN CRITICALLY SICK	18(56.3%)	14(43.7%)	32(100%)
AFTER LOCAL REMEDIES AND HERBS HAVE FAILED	21(47.7%)	23(52.3%)	44(100%)
COLUMN TOTAL	66(44%)	84(56%)	150(100%)
$x(cal.)^2$=3.893 d.f=2 0.05= 3.841			

Source: survey data

$_x{}^2$ for Table 5.18 indicates that there exists an association between maternal health behaviour (stage at which a child is taken to hospital) and reported under-5 death. This indicates that distance from a health centre determines maternal health action which ultimately determines child survival. We conclude therefore that the independent variable through the intervening variable does influence ICM rates. The hypothesis formulated is thus proven correct in this particular case.

5.2.2. PREGNANCY CARE ASSESSED AGAINST DISTANCE FROM HEALTH FACILITY

As mentioned before, distance to the nearest health centre and health awareness and behaviour are said to be related. It is with this in mind that an assessment was made between the two variables. Those who received only one type of natal care, be it neo-natal, ante-natal or post-natal were put together as having received only one type of pregnancy care is not any different from the other hence they all received the same degree of care. So too are those who received only two types of care were also treated the same as their degree of care is the same. The results obtained are reflected below:-

TABLE 5.19: PREGNANCY CARE AND DISTANCE FROM HEALTH FACILITY, ASEGO DIVISION.

DISTANCE TO HEALTH CENTRE IN KM	NO. OF RESPO-DENTS WHO RECEIVED ONLY ONE TYPE OF NATAL CARE	NO. OF RESP-ODENTS WHO RECEIVED ONLY TWO TYPES OF NATAL CARE	NO. OF RESPONDE-NTS WHO RECEIVED ALL THE CARE	ROW TOTAL
0-4	17(25.8%)	17(25.8%)	32(48.4%)	66(100%)
5-9	19(51.3%)	12(32.4%)	6(16.2%)	37(100%)
10&above	22(59.5%)	13(35.1%)	2(5.4%)	37(100%)
TOTAL	58(41.4%)	42(30%)	40(28.6%)	140(100%)
$x(cal.)^2 = 26.542$ d.f=4 0.001=18.465 n=140				

Source: Survey Data

x^2 for Table 5.19 indicates that distance and type of natal care received are highly associated. Looking at the distribution above, it can be observed that almost half of the respondents (48.4%) who live within four (4) kms from the health centre received all the natal care required (ante-, neo- and post-natal care).   For those who live 10 kms and over, only a mere 5.4% received ante-, neo- and post-natal care. Compared to 48.4% of those who live within 4 kms to the nearest health centre, 5.4% is quite a small number. It is noted that most of the respondents who live 10 kms and beyond received only one type of natal care. This confirms the above test that the closer one is to the health centre, the more likely she is of utilizing the services it offers. This is made certain by the fact that a larger percentage of the respondents who live close to the health centre received more care than those who lived further off.

Looking at Asego Division as a whole, one will quickly note that most of the respondents received only one type of care (41.4%), followed by those who received two types of care (30%) and then a smaller number of respondents received all the natal care required (28.6%). This does not augur well for the survival of the under-five in the region. Preferably the reverse should have been the case (i.e. a larger number of respondents receiving all the natal care required, followed by those receiving two types and trailing the order should have been those receiving only one type of care), in which case perhaps a lower rate of infant and child mortality could have been observed. But since a larger number of the inhabitants of Asego Division do not receive all types of pregnancy care required, this can only imply that this is a contributory factor to the high ICM rates observed in this region.

A statistically test (using the Chi-square) was administered to confirm whether there is an association between the intervening variable (maternal health behaviour/awareness) and the dependent variable (under-5 death). The test yielded the following results:

TABLE 5.20: NATAL CARE AND ICM, HOMA-BAY DIVISION

TYPE OF NATAL CARE RECEIVED	ICM		ROW TOTAL (N=140)
	NO. OF RESPONDENTS WHO REPORTED UNDER-5 DEATH	NO. OF RESPONDENTS WHO REPORTED NO DEATH	
ONLY ONE TYPE	28(48.3%)	30(51.7%)	58(100%)
ONLY TWO TYPES	18(42.9%)	24(57.1%)	42(100%)
ALL TYPES	15(37.5%)	25(62.5%)	40(100%)
COLUMN TOTAL	61(43.1%)	79(56.4%)	140(100%)
$x(cal.)^2$ =13.283 d.f=2 0.01=9.210			

Source: survey data

x^2 for Table 5.20 indicates that there exists an association between the intervening variable (maternal health practice; natal care) and the dependent variable (under-5 reported death, hence we accept the null hypothesis and reject the alternate (that healthcare factors (read access to medical facilities) are not associated with ICM).

The DHS report of 1993 states that maternal care during pregnancy and delivery in medical institutions is strongly associated with childhood mortality. It states that children born to mothers who obtained both ante-natal and delivery care from medically trained persons have lower CMR than those who only received ante-natal or delivery care. The report states that in urban areas 35% of the women see doctors, compared to 22% in rural areas. This differential is also observed in this study. A higher number of women in the urban location received at least two types of natal care (23 respondents) compared to nineteen (19) in the rural location. This concurs with the DHS report that a larger number of women in urban areas see doctors than those in rural areas. The report further informs that over half (56%) of births benefit from ante-natal care. The present study reveals that 139 births benefited from ante-natal care representing 92.7% of the sampled population. This finding thus suggests that there will be higher child mortality in this region as few mothers received all the type of natal care required.

5.2.3 PERIOD OF UNSUPPLEMENTED BREASTFEEDING AND DISTANCE FROM MEDICAL FACILITY

The question on why distance is important has already been exhausted. The need here is to see whether distance had an impact on the period the respondents exclusively breastfed their last borns. The Pearsonian Product Moment Coefficient of correlation was used to assess the relationship between these two variables. The formula provided below was used for the calculation for both locations.

$$r = \frac{n \sum xy - \sum x \sum y}{(n \times \sum x - (\sum x))(n \sum y - (\sum y))}$$

(a) Homa-Bay Town

$$r = \frac{69 \times 642 - 244 \times 180}{(69 \times 1154 - 244 \times 244)(69 \times 620 - 180 \times 180)}$$

$r = 0.026175992$

(b) E. Kanyada Location

$$r = \frac{73 \times 2999 - 262 \times 11658}{(72 \times 1171 - 262 \times 262)(73 \times 11658 - 842 \times 842)}$$

$$r = -0.0\,012$$

It can be observed that in both cases r demonstrated that no correlation existed between months of exclusive breastfeeding and distance from health centre. This is because r must be 0.5 and above for it to be said that an association exists. Since most of the respondents practice poor exclusive breastfeeding (refer to section 4.2.10), the lack of correlation can be understood. It is expected that those who are close to the health centres are expected to practise proper exclusive breastfeeding habits than those living far off (i.e. those in Homa-Bay Town Location vis-a-vis those in E. Kanyada Location) but this was not the case (they both had similar poor health practise in this aspect). The lack of correlation is therefore accepted. Other factors, such as cultural factors can be used to explain this trend and not distance

5.2.4. DISTANCE ASSESSED AGAINST DURATION OF BREASTFEEDING, ASEGO DIVISION.

To assess whether there was a correlation between distance and total months of breastfeeding, Pearsonian Product Moment Co-efficient of correlation was used. As distance from the health centre is said to influence health awareness and health behaviour, it was found necessary

to assess whether this was true in the case of breastfeeding. The formula below was used for this purpose:-

$$r = \frac{N \sum xy - \sum x \sum y}{(N \times \sum x - (\sum x))(N \times \sum y - (\sum y))}$$

$$r = \frac{49 \times 6995 - 299 \times 1128}{(49 \times 3273 - 299 \times 299)(49 \times 29452 - 29452 \times 29452)}$$

$$r = 0.018516883$$

r demonstrates that no correlation exists between distance and the duration of breastfeeding. This is because r has to be 0.5 and above for a co-orelation to be said to exist. This implies that distance between a respondent's home and the health clinic does not influence the duration that one chooses to breastfeed her child and awareness that prolonged duration is beneficial to the child. The two are independent of each other. In any case, all the respondents have been shown to demonstrate proper health behaviour as regards breastfeeding (section 4.2.8 refers). This awareness and health behaviour thus depends on something else and not distance. It is suggested that the populace's customs and habits have more to do with the observed prolonged breastfeeding than distance.

5.2.5.:RESPONSE TO CHILD'S ILLNESS ASSESSED AGAINST DISTANCE FROM HEALTH FACILITY IN ASEGO DIVISION

As mentioned earlier, distance between ones home and the health facility that she visits is believed to affect one's health behaviour and health awareness. It was therefore of interest to see whether the respondents' choice of dealing with her last born's illness was affected or influenced by distance from the health centre. Action taken was categorized into positive or negative action taken. Positive action taken includes taking the sick child to either a public or private health centre. Negative action entailed taking the sick child to a traditional healer, giving the sick child modern medicine at home, giving the sick child herbs at home and/or taking no action at all. Why these are considered poor health behaviour has already been earlier on explained. The outlook on this was as follows:-

TABLE 5.21:ACTION TAKEN ON CHILDS ILLNESS AND DISTANCE FROM HEALTH CENTRE, ASEGO DIVISION

DISTANCE FROM HEALTH CENTRE IN KM	NO. OF RESPONDENTS WHO TOOK POSITIVE ACTION	NO. OF RESPONDENTS WHO TOOK NEGATIVE ACTION	ROW TOTAL
0-4	35(66%)	18(34%)	53(100%)
5-9	16(44%)	20(56%)	36(100%)
10 & above	12(41.4%)	17(58.6%)	29(100%)
COLUMN TOTAL	63(53.4%)	55(46.6%)	118(100%)
$X(cal.)^2 = 6.239$ d.f = 2 $0.005 = 5.991$			

Source: Survey Data

The x^2 for Table 5.21 indicates that there is an association between distance and the kind of action taken (either positive or negative action as defined earlier-on) at 5 % level of significance. From Table 5.21 above, it is be observed that for those respondents who reside within 4 kms from the health centre, the majority of the respondents took positive steps towards containing their child's illness. 66% took this action compared to 34% who took negative approaches. But as the distance increases, the number of responses who took positive action decreases. An inverse relationship is therefore observed. Thus the closer the respondents are to the health centre, the better their response to their child's illness. Conversely, the further the respondents are from the health centre the more likely they are to prefer one of the negative approaches towards containing their child's illness. In this case therefore, distance from the health centre is shown to influence one's health behaviour, thus supporting the stated hypothesis.

5.2.6. MATERNAL AGE AT FIRST BIRTH AND DISTANCE FROM HEALTH CENTRE.

The belief that distance to health centre promotes good health behaviour and health awareness has been explained before. Of interest now is whether this variable (distance) had any association, if at all, with the issue presently under discussion. The finding in the Division under study was as follows:-

TABLE 5.22: MATERNAL AGE AT FIRST BIRTH AND DISTANCE FROM HEALTH CENTRE, ASEGO DIVISION

DISTANCE FROM HEALTH CENTRE IN KM	NO. OF RESPONDENTS WHO GAVE BIRTH WHILE BELOW 18 YEARS OF AGE	NO. OF RESPONDENTS WHO GAVE BIRTH WHILE 18 YEARS AND OVER	ROW TOTAL
0-4	35(52.2%)	32(47.8%)	67(100%)
5-9	25(58.1%)	18(41.9%)	43(100%)
10 & above	22(55%)	18(45%)	40(100%)
COLUMNS TOTAL	82(54.7%)	68(45.3%)	150(100%)
$x(cal.)^2 = 0.37$ d.f = 2 0.05 = 3.841			

Source: Survey data

The x^2 on Table 5.22 indicates that there is no association between distance from the health centre and respondents age at first birth. These opinions that living close or far away from the health centre does not influence individuals' sexual activities and the attendant birth. Other reasons could therefore account for this health behaviour. Section 4.2.13 provides the cultural reasons for the observed health behaviour.

A statistical analysis carried out to further affirm the above finding revealed the following:

TABLE 5.23: MATERNAL FIRST BIRTH AND ICM,ASEGO DIVISION

FIRST BIRTH	ICM		ROW TOTAL
	NO. OF RESPONDENTS WHO REPORTED UNDER-5 DEATH	NO. OF RESPONDENTS WHO REPORTED NO DEATH	
UNDER 18 YEARS	42(51.2%)	40(48.8%)	82(100%)
18 AND ABOVE	24(35.3%)	44(64.7%)	68(100%)
COLUMN TOTAL	66(44%)	84(56%)	150(100%)
$x(cal.)^2$=3.8264 d.f=1 0.05=3.841			

Source: survey data

x^2 for Table 5.23 indicates that the two variables are independent of each other. This supports the above opinion that living close to a health facility does not influence individuals sexual activities. Hence in this case the intervening variable is not associated with ICM levels, the same way that it is not associated with proximity to health facilities.

5.2.7. DISTANCE FROM NEAREST HEALTH CENTRE AND LAST BORN'S PLACE OF BIRTH.

Distance, as discussed before, is said to have an effect on respondents' health behaviour. It was therefore of interest to find out how the two variables compare in this instance. The results for Asego Division was as follows:-

TABLE 5.24   PLACE OF BIRTH AND DISTANCE FROM HEALTH FACILITY, ASEGO DIVISION

DISTANCE FROM HEALTH CENTRE IN KM	PLACE OF BIRTH Home	Hospital	ROW TOTAL
0-4	18(26.9%)	49(73.1%)	67(100%)
5-9	30(69.8%)	13(30.2%)	43(100%)
10 & above	32(30%)	8(70%)	40(100%)
COLUMN TOTAL	80(53.3%)	70(46.7%)	150(100%)
$x(cal.)^2 = 34.9568$ d.f = 2 0.001 = 13.815			

Source: Survey data

x^2 on Table 5.24 indicates that there exists a very close relationship between place of delivery and distance from medical centre. Looking at the percentages provided above, it can be noted that more respondents gave birth in hospitals in Homa-Bay Town Location where most of these health centres are situated and where they are close to them. Very few respondents residing in E. Kanyada delivered in hospital, as commuting to Homa-Bay Town Location for this purpose was quite trying to them. Thus, the closer one is to the health centres, the easier it is for her to go to these centres to deliver. Hence distance in this instance influences respondents' health behaviour.

Having said that, it is now important to assess whether the intervening variable (maternal health practice/behaviour: last born's place of birth) is associated with ICM rates. Below is the findings as relates to this:

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TABLE 5.25: PLACE OF BIRTH AND ICM, HOMA-BAY DIVISION

PLACE OF BIRTH	ICM		ROW TOTAL
	NO. OF RESPONDENTS WHO REPORTED UNDER-5 DEATH	NO. OF RESPONDENTS WHO REPORTED NO DEATH	
HOME	42(52.5%)	38(47.5%)	80(100%)
HOSPITAL	24(4.3%)	46(65.7%)	70(100%)
COLUMN TOTAL	66(44%)	84(56%)	150(100%)
$x(cal.)^2$ =5.0266 d.f=1 0.05=3.841			

x^2 for Table 5.25 indicates that at 0.05 level of significance, the two variable under discussion are associated. That is, respondents' health behaviour as relates to place of birth and reported under-5 mortality are associated. Bearing in mind the findings of Table 5.16 (that showed the distance from health facility and place of birth are associated), we can conclude confidently that distance from health facility influences maternal health behaviour/practice/awareness as relates to her preferred place of birth, which in turn is associated with an under-5 survival. The hypothesis in this instance has been proved right.

5.2.8. BIRTH CONTROL AND DISTANCE FROM MEDICAL FACILITY.

Since distance from health centre has been said to affect maternal health behaviour, an attempt was made to find out whether this variable (distance) influences respondents' conscious attempt to delay the next pregnancy. The findings are detailed below:-

TABLE 5.26   FAMILY PLANNING AND DISTANCE FROM MEDICAL FACILITY, ASEGO DIVISION

DISTANCE FROM MEDICAL/HEALTH CENTRE IN KM	NO. OF RESPONDENTS CURRENTLY USING BIRTH CONTROL METHODS	NO. OF RESPONDENTS CURRENTLY NOT USING BIRTH CONTROL METHODS	ROW TOTAL
0-4	19(31.1%)	42(68.9%)	61(100%)
5-9	5(10%)	45(90%)	50(100%)
10 & above	7(17.9%)	32(82.1%)	39(100%)
COLUMN TOTAL	31(20.7%)	119(79.3%)	150(100%)
$x(cal.)^2 = 7.7238$ d.f =2 0.05 = 5.991			

Source: Survey data

x^2 for table 5.26 indicates that at 0.05 level of significance, distance from medical/health centre and practise of birth control are associated. This implies that the closer one is to a health centre, the more likely she is to take up and use some form of birth control. This could probably be due to the fact that since these centres are easily accessible (distance wise) they visit these centres more frequently and while there, they get to know about the methods of birth control. They are therefore persuaded to adopt the use of these methods. In this case, distance is seen to be influencing health behaviour (birth control adoption), and hence this finding supports the hypothesis.

Since birth interval in Homa-Bay District was found not to be an ICM factor, no further test was deemed necessary to assess birth control and ICM.

It was however, of utmost important to assess whether or not distance from a health facility has a direct association with reported under-5 mortality. Table 5.27 below provides the results of the test carried out:

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TABLE 5.27: MATERNAL EDUCATION AND ICM, HOMA-BAAAY DIVISION

DISTANCE FROM MEDICAL/HEALTH CENTRE IN KM.	ICM		ROW TOTAL
	NO. OF RESPONDENTS WHO REPORTED UNDER-5 DEATH	NO. OF RESPONDENTS WHO REPORTED NO DEATH	
0 – 4	19(31.1%)	42(68.9%)	61(100%)
5 – 9	23(46%)	27(54%)	50(100%)
COLUMN TOTAL	66(44%)	84(56%)	150(100%)
$x(cal.)^2$ =9.0391 d.f=2 0.02=7.814			

Source: survey data

x^2 for Table 5.27 shows that indeed there exists an association between the independent variable (distance from a medical health facility) and the dependent variable (ICM rates). It can be observed from the Table that the further away one is from the health centre, the higher the reported mortality rates. We can therefore confidently conclude that distance determines mortality levels.

We have observed the results obtained when each aspect of medical behaviour is assessed against distance from the nearest health facility. At this time, the focus is to see the results obtained

when all these aspects are put together, added with reported child mortality, and then collectively (as one unit) assessed against distance.

In order to test the hypothesis in this manner, scores were awarded for degrees of health behaviour, level of health awareness and reported ICM and mean scores for each group was calculated. For those who lived within 4 kms from the health centre, their mean score was found to be 58.2% with a standard deviation of 12.8. For those who lived between 5 kms and 9 kms from the health centre, their mean score was 46.5% with a standard deviation of 14.4. For those who live 10 kms and more obtained a mean score of 44.8% with a standard deviation of 10.3.

A test (the Z-test) was carried out to find out whether there existed a significant difference between the scores attained by those who lived within 4 kms and those who live between 5 kms and 9 kms from a health centre. The statistics were 58.2%; n = 67;

s = 12.8 and 46.5%; n = 43; s = 14.4 respectively.

The following formula was used:-

$$Z(cal.) = \frac{x - m}{\dfrac{s}{\sqrt{n}}}$$

Summary statistics

m = 46.5

x = 58.2

n = 67

s = 12.8

Test

H_0 m = 46.5

H_1 m = 58.2

a = 0.05

Z0.05 = 1.64

$$Z(cal.) = \frac{58.2 - 46.5}{\frac{12.8}{\sqrt{67}}}$$

Z(cal.) = 7.5

Region of acceptance of H_1

Region of rejection of H_1

1.64   7.029
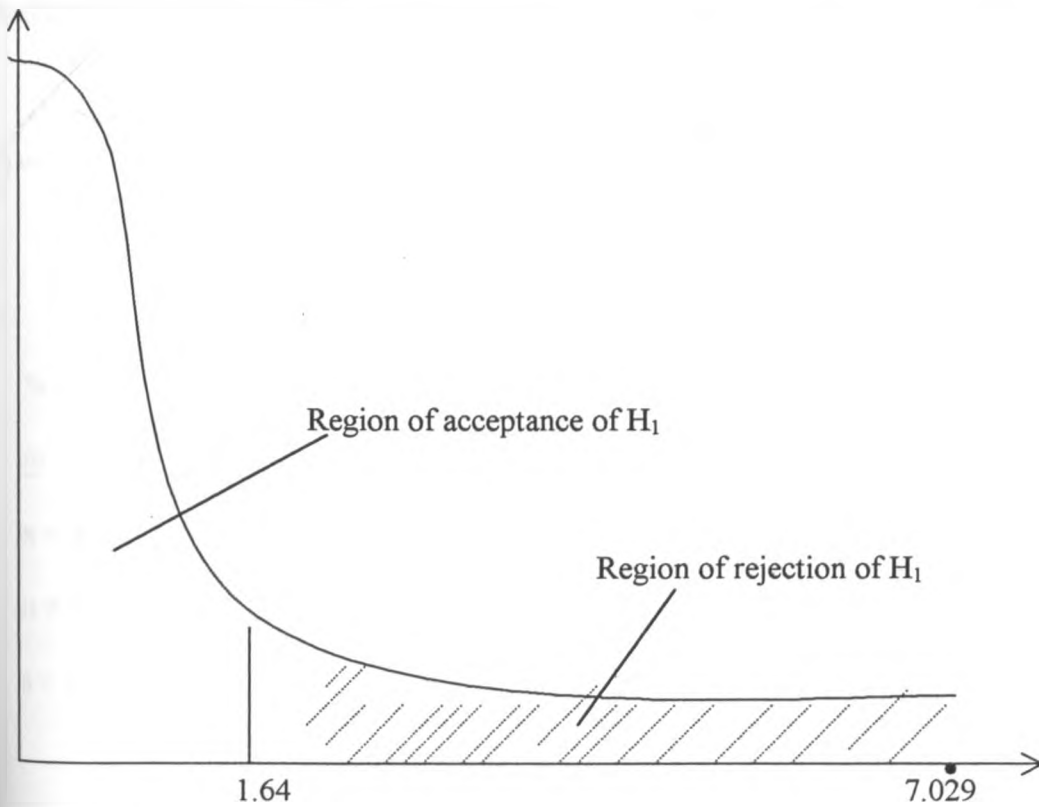
The above test reveals that there exists a significant difference between the two test scores obtained by the two groups. It demonstrates that distance does affect respondents' health behaviour and level of health awareness and ICM rates. Thus those who live within four (4) kms of a health centre acquire better health awareness and better health behaviour than those who live between 5 kms and 9 kms from the nearest health centre they frequent. The hypothesis hence formulated (i.e. that distance from health centre is highly associated with respondents health behaviour and health awareness and ICM rates) is thus proved to be true in this instance.

A second test was carried out to find out whether there existed a significant difference between the scores obtained by those who lived between 5-9 km (46.5%;n=43; s=14.4) and those who lived 10 kms and over (44.8%; n=40; s=10.3) from the nearest health centre which they visit. The formula provided below was again used:-
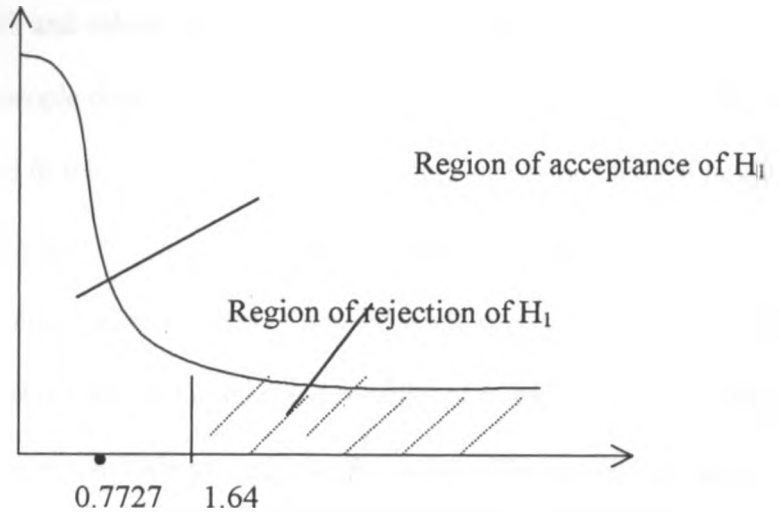
$$Z(cal.) = \frac{x - m}{\dfrac{s}{\sqrt{n}}}$$

Summary statistics

m = 44.8	Test
x = 46.5	H_0 m = 44.8
n = 43	H_1 m = 46.5
s = 14.4	a = 0.05
	Z 0.05 = 1.64

$$Z(cal.) = \cfrac{46.5 - 44.8}{\cfrac{14.4}{\sqrt{43}}}$$

$$Z(cal.) = 0.7727272$$

Region of acceptance of H_1

Region of rejection of H_1

0.7727   1.64

Unlike the previous case where distance from a health centre and health behaviour and awareness and child mortality were proved to be associated, the foregoing test reveals that beyond 5 kms, no significant difference exists. The test shows that though those who lived between 5-9 kms from a health facility scored higher than those who lived 10 kms and beyond from a health centre, when tested statistically, no significant difference between the two scores is observed. This shows that beyond 5 kms from a health facility, there exists no significant difference between or among

respondents. Only when one lives within 4 kms from a health centre is her behaviour and awareness affected/influenced by this variable. This indeed is a very important observation.

The theory selected (attitude - behaviour) compares well with the results obtained from the two hypotheses. Attitudes, like beliefs and values, are learned through contact with others and they determine the kind of behaviour that people display (Lindgen 1969:246). Looking at the hypotheses in this respect, contact here is received in school (during formal learning) and at the medical facility (when goes for treatment), and from these two places, one's attitude is shaped. In the first hypothesis, the independent variable (maternal education) is shaped while one is in school. During formal education, one comes to learn about the importance and benefits of hygiene and good health in general, and thus the school shapes ones attitude towards the foregoing. The longer one stays in school, the more positive attitude is ingrained in her in respect to these factors. Consequently, ones behaviour (in this case sanitary related behaviour) is shaped by the attitude learned. The hypothesis, when tested, showed that the longer one stays in school, the more of this positive attitude she adopts. And this positive attitude is translated into positive sanitary behaviour, practices and awareness.

As for the second hypothesis, attitudes are shaped in the medical facilities. Thus the closer one is to these facilities, the more often she will visit them and the more her attitude will be shaped towards better health behaviour and awareness. The theory applied therefore fits well the tested hypotheses.

CHAPTER SIX

DISCUSSION AND RECOMMENDATIONS

As mentioned earlier, most research carried out in the area of infant and child mortality in Nyanza Province have mostly concentrated on Kisumu and Siaya (refer to Ndede's work,19 ,AMREF's 1989 and Koyugi's 1982). Little (only AMREF's 1992 was found) has been done on Homa-Bay District. When Owino(1988:64)carried out a study on infant and child mortality differential in South Nyanza District, among his recommendations was that a systematic study should be carried out to determine length of birth interval, age of mother at birth, duration of breastfeeding and the effects of environmental factors on ICM. Note that he had only examined differential on child mortality in South Nyanza District and not the factors involved.

Bearing in mind the above and the Ministry of Health's (MoH, 1994:31)statement that actual reasons for ICM in Homa-Bay District are not known and as such Homa-Bay Hospital statistics are used as a proxy, it can be stated that the current study has indeed contributed a lot in bridging this gap. It has also added new knowledge on ICM factors in this District. The study has positively identified some of ICM factors in Homa-Bay District. It is also one of the few studies carried out in this area. The results obtained in this study will therefore go a long way in assisting researchers,

medical personnel and policy makers in their attempts to cut down on the District's high ICM rates. Let us therefore peruse through some of the important findings of this study:-

On Environmental Factors, we note that households' sanitary conditions were identified and examined. This was an area which the AMREF study of 1992 did not look into. Households' sources of water and means of solid, human and water waste disposal methods were examined. The study revealed that inhabitants of Asego Division live in deplorable environmental conditions. These were therefore positively identified as factors which have contributed to the high ICM rates observed in this District.

On Demographic Factors, maternal birth interval and ages at first birth were examined. The study found mean maternal age at first birth to be 17.5 years. 54.7% of the respondents had had their first birth while they were below the ages of 18. AMREF's (1992) finding had also observed that the mothers in Rusinga Island were very young, implying young maternal age at first birth. This study provided specific ages as concerns this. As for birth interval, Asego Division recorded mean birth interval of 28.4 months between the first and second birth and 31.8 months between the last and previous birth. W.H.O. recommended interval is 12 months between births. Therefore while maternal age at first birth was identified as an ICM factor, birth interval was not. Interestingly, it should be noted that adoption of birth control methods was very low in Homa-Bay District (a point noted by AMREF 1992). Hence pro-longed breastfeeding could account for this observed pattern. Although birth interval was not found to be an ICM factor AMREF had identified parity as a probable cause. This study therefore recommends that this factor be researched on.

On Medical and Healthcare Factors, the study revealed that majority of the residents in Asego Division have limited access (distance wise) to medical facilities. Only 44.7% of the sampled population have easy access to health services. The study found out that beyond 5 km from a health facility, residents' health behaviour is definitely affected negatively. This particular finding is therefore an eye-opener. Lack of accessible health facilities was therefore identified as an ICM factor. The inaccessibility of health facilities to the respondents was also found to influence their behavior in relation to immunization of their under-5, place of birth, birth control adoption, under-5 treatment among others. On the other hand, the most prevalent diseases were identified as high body temperature, coughs, diarrhoea and vomiting, malaria, measles, skin rashes among others. This study thus identified, positively, the most prevalent health problems in this area. M.O.H(1994) proxies identified malaria, respiratory infection, skin rashes and diarrhoeal diseases as the most prevalent health problems in this region. The results of this study therefore provide actual identified causes. AMREF(1992) had identified malaria, urinary tract infection and skin rashes as the most prevalent diseases in Rusinga Island. When more other researches are carried out, definite health problems, which will not be location specific, will be brought out.

On Socio-cultural Factors, duration of unsupplemented breastfeeding was identified as a probable cause for the high ICM rates observed in this region. The mean duration was found to be 3.9 months. This was found to be way below the W.H.O. period of 6 months. As for the duration of breastfeeding, the mean for this was found to be 23 months. As a possible ICM factor in Homa-Bay District, it is noted that this has never before been specifically research on and hence this study

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offers an important insight in this area. Reasons for cessation of breastfeeding were also identified, and top among these reasons were weaning, development of another pregnancy and the baby refusing to take the milk on its own volition. Further reading on breastfeeding practices can be obtained from Akwara's (1994) research study (which examined breastfeeding practices on infant and child mortality) on Amagoro's Division of Busia District. Maternal formal educational level was also found to have an influence on household sanitary conditions and ICM rates. This confirms Owino's (1988:52) results on this. While looking at differentials of infant and child mortality in South Nyanza, he had found out that ICM rates were highest among mothers with no education and lowest among those with secondary education. Other comparisons have been mentioned in the previous chapters and there is therefore no need to re-discuss them here.

When all the factors researched on are considered and ranked in order of seriousness the ranking is placed as follows:

(1) Sanitary conditions and education

(2) Medical and healthcare factors

(3) Socio-Cultural factors(breastfeeding)

(4) Demographic factors(birth interval)

Environmental factors (sanitary conditions) and education are together ranked top, for as seen in the whole of sections 4.1.0, 4.2.16 and sections 5.1.0 to 5.1.4, sanitary conditions is the origin of all diseases that kills the under - 5 , while lack of education promotes the existence of these conditions. Medical and health care factors follows for as observed in section 4.2.0 only 44.7 % of the inhabitants have easy access to medical facilities, which encourage proper health practices. The one availability of these facilities only pushes the death rate higher. Breastfeeding as observed in

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section 4.2.7 to 4.2.11 is ranked next as it was found not to be a significant problem in this region. Demographic factor (birth interval) is ranked last as it was found not to cause a problem at all (section 4.2.12).

This study also went into an area which has ,if at all, received very little attention: maternal awareness on ICM factors. Maternal awareness is a very crucial and important factor which translates directly into maternal health behaviour which ultimately determines child survival. The study looked at this and found out that maternal awareness on discussed mortality factors was quite low. Maternal education and access to health facilities was found to influence maternal awareness. At a glance, the study revealed that only 46% of the respondents were aware of the importance of having toilet facilities to the survival of the under-5. Only 52% and 23.3% were aware of the importance of safe solid waste and waste disposal respectively. 91.3% of the respondents were, aware of the crucial role that safe sources of water plays on child survival.

The above findings import pertinent policy implications. Top on the list is the need for policy planners in government to encourage the education of girls. For the reasons which are now obvious, this is the way forward in our fight against child death. Second is the need for the government to bring medical services closer to the people. The benefits which will be derived from this are also now clear. Intensive awareness campaign on proper sanitary upkeep should also be carried out among mothers.

In view of all the foregoing, this study wishes to make the following recommendations, which if taken up for action, will lead to the provision of more information on this crucial matter, and which will enhance child survival. These are :-

(i)On Demographic factors:-

-More research should now be undertaken to determine how sex and age of child acts as an ICM factor.

(ii)On Economic Factors:-

-Households' economic status and how it relates to child survival ought to be thoroughly analyzed. AMREF's study of 1994 had observed that most of the respondents husbands had no steady source of income and had hinted that this may be a causal factor for the noted high ICM rates in Rusinga Island. Household's economic status usually measures its capability to provide good diet and modern healthcare. The interaction of these factors needs therefore to be looked at.

(iii)On Medical and Healthcare Factors:-

-Accessibility of health facilities in terms of finance (i.e household's ability to pay for medical services and buy prescribed drugs) should now also be looked into. This will tie up pretty well with the kind of accessibility that was looked at here.

(iv)On Socio-Cultural Factors:-

- Apart from the factors studied in this research, there are also other socio-cultural factors which also need equal attention. Other variables such as food taboos, sexual practices, marriage

customs which affects child biological make-up and those which have to do with hereditary (c
diseases such as sickle cell anaemia e.t.c.), customs which influences child spacing ought to be als
researched on.

(v) On Geographical Factors:-

- How the above affects child survival should also be researched on. The effects that hars
climatic conditions, like that experienced in Asego Division (it being in a low altitude area, next t
the lake and hence is very hot with unreliable weather) should also be looked into. The region'
ability to provide itself with adequate food security and how this affects child survival needs to b
looked into.

Examination of the above factors will provide the much needed additional informatio
useful in the eradication of infant and child mortality. Once the above recommended areas ar
looked into, then combined with what has already been researched on (which includes the presen
findings), adequate and abundant data will be available for our use in fulfilling our part in meetin
the target set by the U.N with regard to the lowering of ICM rates by the turn of the century a
agreed at the Bamako Initiative.

It is hoped that the findings of this study has opened new avenues for research as well a
having provided answers to previously unanswered questions. Infant and Child mortality rates mus
be maintained at its most minimum, and hence the way to do this is to tackle the factors which brin;
about its existence. This study, it is believed, has knocked in some of the important nails in thi
coffin.

-END-

REFERENCES

Adongo, A.O. (1991), 'Social Mobilization for Child Survival and Development in Kisumu District' in Proceedings of the Kenya Paediatrict Association Annual Scientific Conference.

Akwan, Pricilla (1994), Impact of Breastfeeding Practices in Infant and Child Mortality in Amagaro Division of Busia, Kenya. (unplublished).

AMREF (1985), Famine & Under 5 Supplementary Feeding Programme, Kibwezi Division. AMREF, Nairobi.

AMREF (1989), Kisumu Plan of Operation in Child Survival and Development Programme. AMREF, Nairobi.

AMREF (1992), Women, Child Survival & Development: a case study: Rusinga Island, S. Nyanza; AMREF, Nairobi.

Backman & Secord (1966), Problems in social psychology; Mc Graw Hill Book Co., New York.

Benjamin, B(1965), Social & Economic Factors Affecting Mortality; Mouton & Co., the Hague.

Cameron, M & Hofvander, Y (1992), Manual on Infants and Young Children (2nd Edition); U.N., New York.

Casley, D. J. & Lucy D. A. (1992). The definition and use of the household as a unit of survey work' in Introduction to Social Research (ed. Valdo Pons); Dar es Salaam University Press, Dar es Salaam.

Casterline, J. B. et al (1992) 'Infant & Child Mortality in Rural Egypt' in Journal of Bio-Social Science Vol.24.

Chen, L. C. (1983), 'Child Survival: Levels, Trends & Determinants' in Determinants of Fertility in Developing Countries Vol.1; Academic Press Inc.

Correa, H (1975), (Population, Health, Nutrition & Development; D. C. Heath & Company, London.

Conference of African Ministries of Health; 3rd Ordinary Session (1989) Child Survival.

Protection & Development in Africa.

Da Vanzo, J & Habich, J. P. (1984), What accounts for the decline in infant mortality in Peninsular Malaysia; The Rand Corporation, California.

Demographic & Health Survey of Kenya (1993); International Inc., Maryland.

Economic Commission for Africa (E.C.A.) (1991), Guidelines on evaluating the interrelationship among infants & child mortality, socio-economic factors and fertility in Africa; E.C.A., Addis Ababa.

Ebanks, G. E. (1985) Infant & Child Mortality & Fertility; Trinidad & Tabago, Guyana & Jamaica; H. Charlseworth & Co. Ltd., Huddersfield.

Ewbank, D. C. & Gribble, J. N. (1993), Effects of Health Programmes on Child Mortailty in Sub-Saharan Africa, National Academy Press, Washington, D. C.

Goldthorpe, J. E. (1990) The Sociology of the 3rd World; Cambridge University Press Cambridge, Mc Graw Hill Book Co., New York

Gordfon G. N. (1971), Persuasion: The theory of 8 practice of manipulative communication, Hasitngs Hse Publishers New York.

Gish, O. (1970) 'Health Planning in Developing Countries' in People Planning & Development; Some reflections on social planning (ed. Apthorpe, R); Frank Cass & Company Ltd., London.

Government of Kenya (1989) Kenya Population Cenus, (Vol.I); Goverment Printers, Nairobi.

Harper, W. M. (1991 (Statistics (6th Edition); Longman Group, Singapore.

Harre, R & Secord, P. F. (1972) The explanation of social behavior); Western Printing Services Ltd., Bristol.

Jones, E. E. & Gerard, H. B. (1967) Foundations of Social Psychology; John Wiley & Sons, Inc., New York.

Kalbernatten et al (1980) Appropriate Technology for Water Supply and Sanitation; World

Bank, Washington D.C.

Kenya Medical Women's Association - K.M.W.A. (1990) <u>World Summit for Children - a Kenyan Perspective</u>: Initiatives Publishers, Nairobi.

Lindgren H. C. (1969) <u>Contemporary Research in Social Psychology</u>: John Wiley & Sons Inc. New York.

Livingston, I (1981) <u>Rural Development, Employment & Incomes in Kenya</u>. Report prepared for ILO Jobs & Skills Programme.

Mbago, M. C. Y. (1992), 'Presentation & analysis of numerical data' in <u>Introduction to Social Research (ed. Valdo Pons)</u>: Dar es Salaam University Press, Dar es Salaam.

Meck M., (1971) <u>Problems & Prospects of Social Services in Kenya</u>: Welforum Verlag GmbH, Munchen.

Meegana, S. A. (1980) <u>Social-Economic Determinants of Infant & Child Mortality in Sri-Lanka</u>; an analysis of Postwar experience; World Fertility Survey, London.

Mohan, R. P. & Martindale D. (1977) <u>Handbook of Contemporary Developments in World Sociology</u>: John Wiley & Sons Inc., New York.

Mooley, W. H. (1991) 'Will Primary Health Care Reduce Infant Child Mortality' in <u>Health Policy, Social Policy & Mortality Prospects</u> (ed. Vallin J. & Lopes A. D.; Internation Union for the Scientific Study of Population, New York.

Mueller, J. H. et al (1971) <u>Statistical reasoning in Sociology (2nd Edition)</u>: Houghton Mifflin Company, Boston.

Murphy, G(1937:), <u>Experimental social Psychology</u>: Morning side Heights, New York.

Nag, M. (1981) <u>Impact of Social Development & Economic Development Mortality: a comparative Study of Keral & W. Bengal</u>: Population, Council, New York.

Odile, F & Dakuyo, M (1985).<u>Child Survival in Sub-Saharan Africa</u>: Population Council, New York.

Peterson et al (1989) Why were infant and child mortality rates highest in the poorest states of Peninsular Malaysia between 1941 - 75; Rand Corporation, California.

Pitcain, L. (1963) Child Care; Cambridge University Press, Cambridge.

Potts, M. & Thapa, S. (1991) Child Survival: the role of family planning; Family Health International, New York.

U. N. (1985) Protecting the World Children: the task force of child survival. United Nations, N. York.

U. N. (1963) Mortality & Health Policy: Proceedings of the expert group on mortality and health policy. Rome: United Nations, New York.

U. N. (1974) Determinants & Consequences of Population Trends; United Nations, New York.

Urban Basic Services. Mombasa Municipal Council Child Survival & Development Plan of Action, 1989.

USAID (1988), 3rd Report to Congress on USAID Program on Child Survival; USAID, Washington D.C.

U. N. (1979) The Population Council Annual Report; United Nations, New York.

U. N. (1990) Rural Water Supply & Health; United Nations, New York.

USAID (1990) Child Survival: a 5th Report to Congress on the USAID Program; USAID, Washington D.C.

Rutstein, S. & Medica, V. (1978) 'Latin America Experience' in The effects of infant & child mortality in fertility (ed Preston. J. H.; Academic Press, New York.

Shaver, K.G. (1977), Principles of social psycology; winthrop publishers; Inc. Cambridge.

Sherif, M (1975): An outline of social psychology; Harpes & brothers ; New York.

Shyrock, H. S. et al (1976) The Methods and Materials of Demography: Academic Press Inc., San Diego.

Sorokin, P. (1964) Contemporary Sociological Theories: Harper & Row Publishers Inc., New York.

Thomlinson, R. (1965) Population Dynamics: Randon House Inc., California.

APPENDIX A

KENYA: CHILD MORTALITY; Q(5) VALUES - 1989
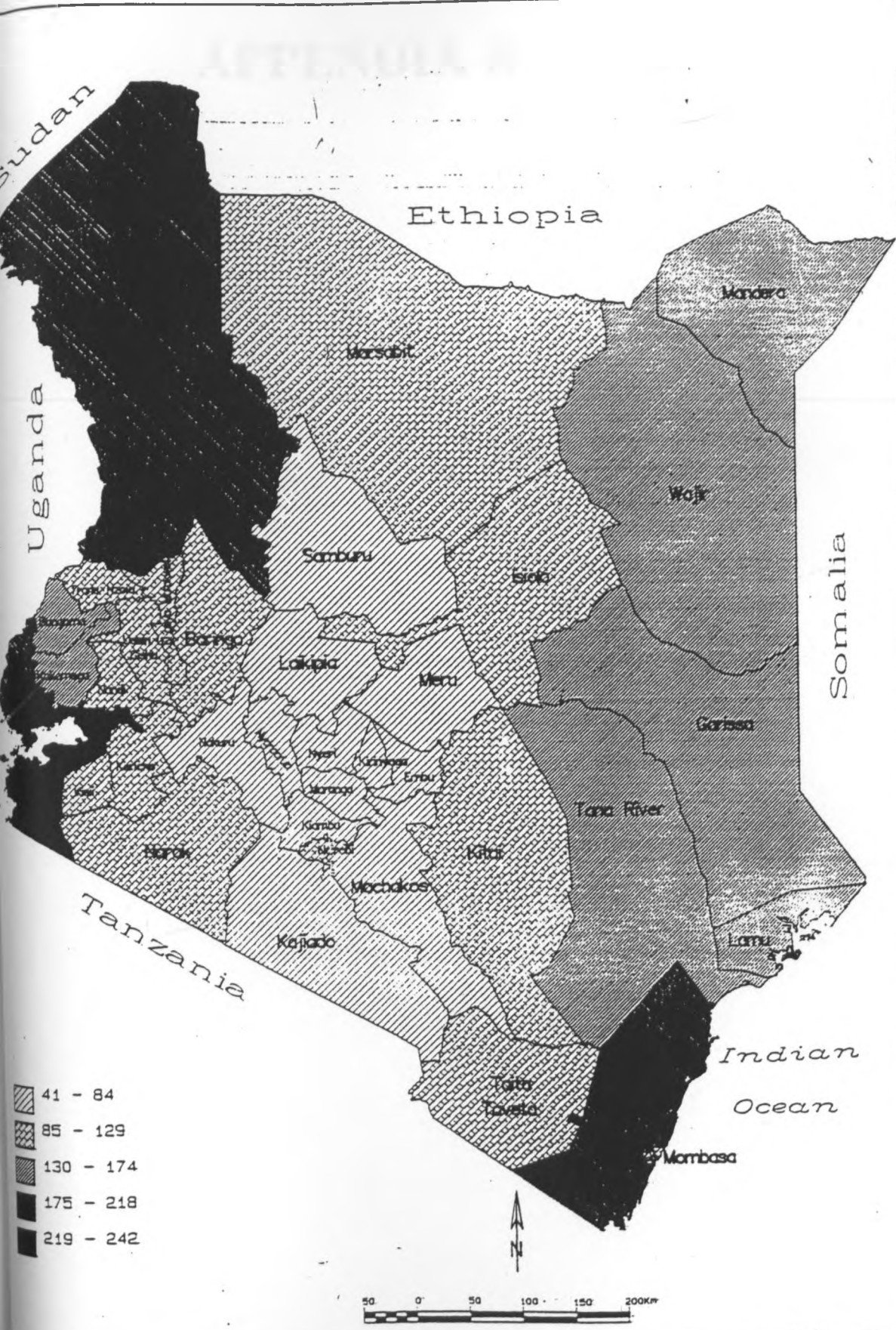
Legend:
- 41 – 84
- 85 – 129
- 130 – 174
- 175 – 218
- 219 – 242

Map Production: DRSRS/CBS

1989 Population Census

APPENDIX B

APPENDIX B

MAP 1: HOMA-BAY DISTRICT
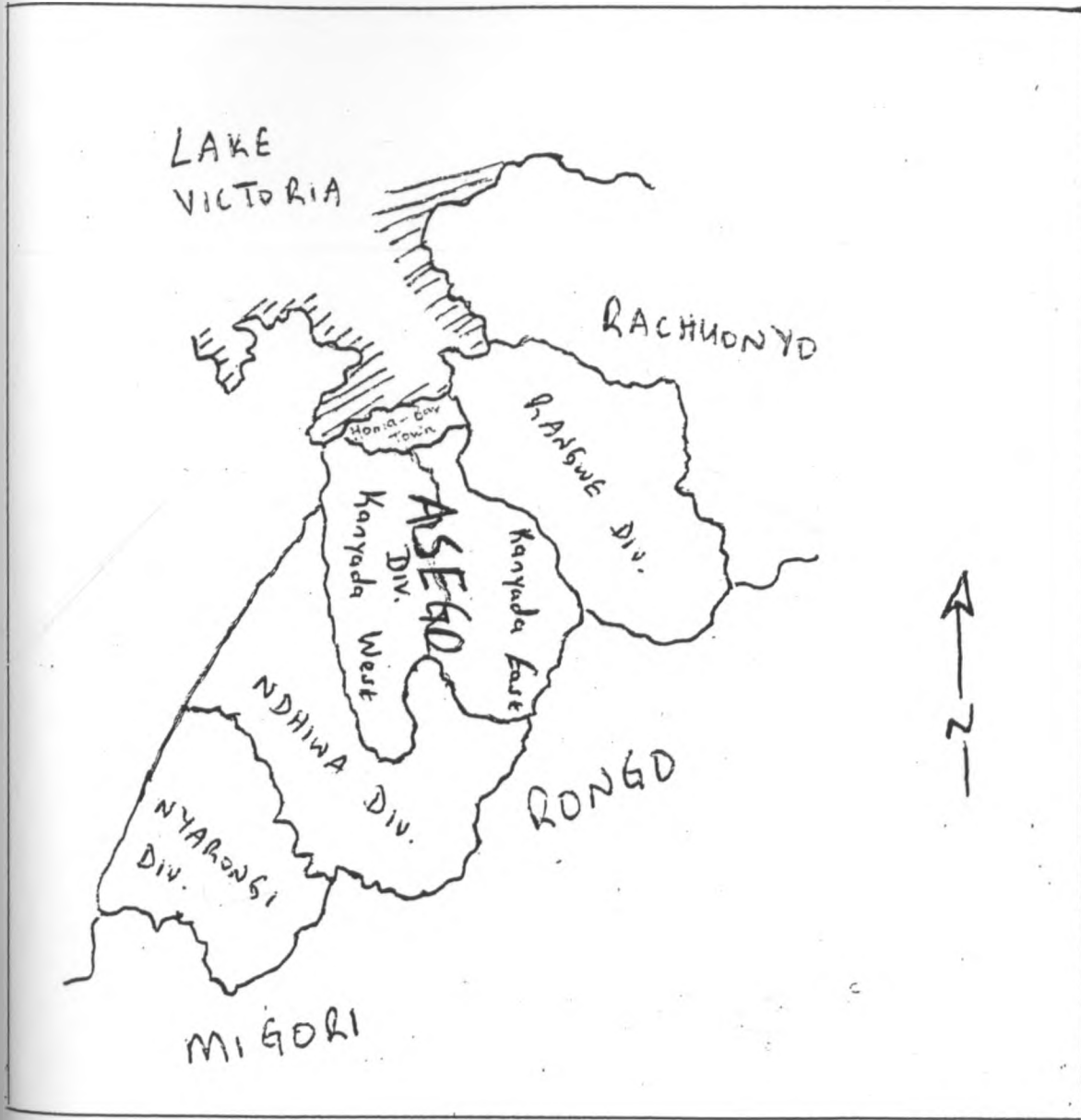

MAP 1.   SOURCE: MINISTRY OF HEALTH (1994: 83)

APPENDIX C

INTERVIEW SCHEDULE

Respondent's Information

Number of Household   -
Year of Birth/Age   -
Religious affiliation 1. Catholic
                       2. S.D.A.
                       3. Muslim
                       4. Protestant
                       5. Others (specify)

District of Residence -
Division   -
Location   -

1. **Marital Status**
    (i)   Married
    (ii)   Single
    (iii) Divorced
    (iv)   Separated
    (v)   Widowed

2. **If ever married, state age at first marriage**

3. **In what type of marriage are you in (if still married) or
    were you in** (i)   Monogamous
                   (ii) Polygamous

4. **What was the highest educational level that you completed?**

5. **Occupation of mother**
    (i)   Managerial/Professional
    (ii)   Skilled Worker
    (iii) Unskilled Worker
    (iv)   Unemployed
    (v)   Housewife
    (vi)
    (vii)

6. **Now the respondent will be asked a few questions**

    Pregnancy Mother's age   Type of   Midwife   Date of Birth
    Order   Birth   Present   Month/Year

    Place of Birth   Dead/Alive
    (home/hospital)

Reason for pregnancy gaps of more than 2 years (if any)

7. **Household mortality**

Name of dead infant/child	Sex	Date of Death	Age at Death Month/Year	Place of Death

Health Person
Present
(medical/local/none)   Cause of Death

8. Currently using any method (i.e. family planning) to delay pregnancy? 1. Yes
             2. No

9. If first gave birth before age 18, state reason(s) why
(i)   Got married before 18.
(ii)   Unplanned pregnancy
(iii)   Wanted to have a child quickly
(iv)   Others

10. **If first birth came after age 18, state reason(s) why**
    (i)   Got married after age 18
    (ii) Did not want to give birth early
    (iii) Others (specify)

11. **What type of toilet system do you have in your home?**
    (i)   Flush system
    (ii) Bucket
    (iii) Cess pit
    (iv) None

12. **If home has a toilet system, why decide to have it in the home?**
    (i)   To protect children against infection
    (ii)   Advised to have it
    (iii) Because neighbours have one
    (iv)   Others (specify)

13. **If home doesn't have a toilet system, state reason why**
    (i)   Bush serves adequately as a toilet system
    (ii)   Toilet system costly to set up
    (iii) Husband has not yet recommended for the same
    (iv)   Others (specify)

14. **How do you dispose off you solid waste?**
    (i)   Just throw it
    (ii)   Burn it
    (iii) Throw it in the shamba
    (iv)   Throw it at garbage site

15. **Why did you choose the method preferred in (14) above?**
    (i)   It is safe and healthy
    (ii) It is convenient
    (iii) Others (specify)

16. **How do you drain your water?**
    (i)   Just throw it
    (ii)   Pour it in the shamba
    (iii) Have a drainage system
    (iv)   Others (specify)

17. **Why did you choose the method preferred in (16) above?**
    (i)   It is safe and healthy
    (ii) It is convenient
    (iii) Others (specify)

18. **How do you dispose of animal waste?**
    (i)   Just leave it where it has dropped
    (ii) Throw it in shamba
    (iii) Throw it in toilet
    (iv) Burn it
    (v)   Throw it in garbage site
    (vi) Others (specify)

19. **Why did you choose the method preferred in (18) above?**
    (i)   It is safe and healthy
    (ii) It is convenient
    (iii) Others (specify)

20. **Why is your water source?**
    (i)   Piped
    (ii)   Well with pump
    (iii) Well without pump
    (iv)   River
    (v)   Ponds
    (vi)   Lake
    (vii) Others (specify)

21. **How far is the water, source**
    (i)   Home
    (ii)   1 Km
    (iii) 2 Km
    (iv)   3 Km
    (v)   Over 4 Km

22. **How do you rate the safety of your water source**
    (i)   Very safe
    (ii)   Safe
    (iii) Unsafe
    (iv)   Uncertain

23. **If unsafe, how do you attempt make it safe**
    (i) Boil it
    (ii) Sieve it
    (iii)Others (specify)

24. **What is the educational level of the head of the household**
    (if respondent is not the head)?

25. **What is occupation of the head of the household?**

26. **What is the family's (household) monthly income?**

27. **Is it enough to cater for your household's needs?**
    (i)   Yes
    (ii)   No

28. **How often do you take you children for visits at the health
    centre?**
    (i)   When sick
    (ii)   When critically sick
    (iii) After local remedies from shops and hers have failed
    (iv)   For regular check-ups ever when not ill

29. **How far is the nearest health centre?**

30. **How accessible is the health centre (distance wise)?**
    (i)   Inadequate means of transport
    (ii) Adequate
    (iii) Walking distance
    (iv) No means of transport

31. **How accessible is the health centre (financial wise)?**
    (i)   Very costly hence not accessible
    (ii) Manageable hence accessible

32. **Did you visit the health centre during your last pregnancy?**
    (i) Yes   (ii) No

33. **If no, state reason(s)**
    (i)   Health centre too far
    (ii) Health centre too costly
    (iii) Taken care of by local medicine man
    (iv) Did not see the necessity
    (v)   Others (specify)

34. **If yes, what care did you receive (tick those applicable)**
    (i)   ante-natal
    (ii) neo-natal
    (iii) Post-natal
    (iv) All the above three

35. **Is your last born child fully immunized?**
    (i) Yes   (ii) No

36. **Is the child health card available?**
    (i) Yes   (ii) No

37. **What immunization has he/she had?(tick those applicable)**

              BCG   POLIO   MEASLES

38. **If immunization schedule is incomplete, why so?**
    (i)   Child sick
    (ii)   Mother sick
    (iii) Lack of time
    (iv)   Clinic too far
    (v)   Impolite staff/sent away from health unit
    (vi)   Previous immunization produced bad effect
    (vii) Vaccine out of stock
    (viii) No need for child not sick
    (ix)   Opted for traditional_methods
    (x)   Others (specify)

39. **Has the child been sick in the last two weeks?**
    (i)   Yes   (ii) No

40. **If yes, what is the problem?**
    (i)   Coughs
    (ii)   Colds
    (iii)   Malaria
    (iv)   Diarrhoea and vomiting
    (v)   Pneumonia
    (vi)   Measles
    (vii)   Worms
    (viii) Skin rashes
    (ix)   Others (specify)

41. **What action did you take to cure sickness?**
    (i)   Took child to hospital
    (ii)   Took child to private doctor
    (iii)   Took child to traditional healer
    (iv)   Gave modern medicine at home
    (v)   Gave herbs at home
    (vi)   Others (specify)

42. **Who among the following is easily available to your family at emergencies?**
    (i)   Clinical officer
    (ii) Medicine-man/herbalist

43. **Where do you receive child health care information?**
    (i)   Health centre
    (ii)   Traditional birth attendant
    (iii)   Medicine-man/herbalist
    (i)   Media (radio, newspapers, T.v.)
    (v)   Peers
    (vi)   Others (specify)

44. **What kind of information do you receive?**

45. **How old is the last born child?**

46. **Are you still breastfeeding the last born?**
    (i) Yes (ii) No

47. **If has stopped breastfeeding, how old was the last born when you stopped breastfeeding (record in months only)**

48. **If still breastfeeding, at what age do you intend to stop completely?**

49. **Why did you stop breastfeeding the last child as the previous child?**
    (i)   Inconvenient
    (ii)   Had to work
    (iii)   Insufficient milk
    (iv)   Baby refused
    (v)   Child died
    (vi)   Child sick
    (vii)   Child's weaning age

(viii) Became pregnant
(ix)   Others (specify)

50. **How long did you exclusively breastfeed or intend to exclusively breastfeed the last born child (in months)?**

51. **How do you rate breast milk in relation to other milk substitutes?**
    (i)   Better for kids because has more vitamins
    (ii)   Milk substitutes just as good
    (iii) Milk substitutes better
    (vi)   Does not know