# EFFECT OF MIGRATION ON INFANT AND CHILD MORTALITY: EVIDENCE FROM 1993 KENYA DEMOGRAPHIC AND HEALTH SURVEY
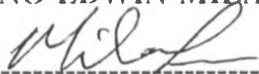
BY

## OTIENO EDWIN MILAFU

A THESIS SUBMITTED IN PARTIAL FULFILMENT FOR THE DEGREE OF MASTER OF ARTS (IN POPULATION STUDIES) IN THE UNIVERSITY OF NAIROBI

1998

# DECLARATION

I declare that this is my original work and that to the best of my knowledge, it has not been

produced in any university or educational institution.
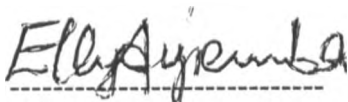
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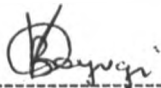

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# DEDICATION

This thesis is dedicated to my beloved parents, especially, my late father Mr.Elias Ongowo Milafu who passed away during the course of my studies. Through their support and understanding, I have been able to come this far.

# ACKNOWLEDGEMENT

# ABSTRACT

This study seeks to establish the effect of migration on infant and child mortality in Kenya. The data was drawn from Kenya Demographic and Health Survey, 1993. A total of 3,904 women with 5,727 children who were under-five years of age constituted the sample size.

Specific to this study is to find out whether migration to urban areas which are percieved to have better health-related facilities improves the chances of under-five child survival. Thus, more emphasis has been laid on urban migrants, the other migration typologies being used as a basis of comparison, especially rural non-migrants.

The children born in the last five years preceding the survey were the unit of analysis. The survival chances of under-five children was looked at with reference to the socio-economic, demographic characteristics and migration status of the mother.

Analysis was done on mortality differentials using Crude Underfive Mortality Rates. Bivariate and Multivariate Logistic regression models were used to determine the relationship, and determinants of child survival utilizing variables such as mother's marital status and age.

The results of underfive mortality differentials showed that those who migrate to urban areas, especially rural to urban migrants, have poorer underfive survival chances compared to the urban to urban migrants . This disparity was attributed to the poor socio-economic conditions of the rural to urban migrants. This is a reflection of poor conditions in their source regions.

The results also indicated poorer underfive survival for urban migrants, specifically for children of mothers with a rural childhood (survival odds were reduced by as much as 0.9743 times those with an urban childhood). This result is significant at 0.05 level of

significance. However survival odds were appreciably improved if the mother had : a higher level of education (secondary level and above, survival odd of 5.0391 times those with a lower or no education); a husband with a professional occupation (a higher survival odd of 1.3192); and, have a longer duration of stay of more than ten years in the urban area (higher survival odd of .6339).

This study recommends that there should be an improvement in the provision of social amenities especially those related to health provisions, education and clean water in the rural areas and slum settlements. There is need to improve female education and to expand the "Jua Kali" (informal sector) as this sector absorbs most of the rural to urban migrants.

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# CHAPTER ONE

# INTRODUCTION

## 1.1 INTRODUCTION

Survival status of migrant children has generated as much interest as fertility has among researches on population change. Findings in developing countries have stated the relationship between fertility and migration, with migrant's fertility being less than in the rural areas (Goldstein and Goldstein 1981; Lee and Farber 1984; NCPD 1994). This raises questions as to whether rural-to-urban migration can serve as a mechanism to reduce population growth.

It should, however, be realized that apart from the part played by fertility in population growth, the effects of rural- to- urban migration on infant and child mortality is also important. Evidence shows varying infant and child mortality differentials between rural and urban areas in many developing countries (NCPD 1994). There is also unequal distribution of survival related amenities between the urban and rural areas. This suggests that the change from rural to permanent urban residence may enhance the survival chances of migrant children.

It has been estimated that two out of three urban dwellers live in developing regions. By the year 2015 this will be more than three out of four, and by 2025 , nearly four out of five. Much of this growth will come in the world's poorest countries, and many new urban dwellers, particularly women and their children, will be among the poorest people in the world (UNFPA, 1996:1).

The current scenario is that urban poverty today is increasing at a much faster rate than rural poverty. Several factors, including structural adjustment programs, economic crises, and massive rural to urban migration without industrialisation, have contributed to an increasing number of urban poor since the 1980s (World Resources 1996-97).

With this kind of situation, it is ofinterest to find out whether the rural-to-urban migration could improve child survival, especially among the underprivileged members of the society moving from rural areas and settling in the slums.

## 1.2    PROBLEM STATEMENT

Migration from rural areas to urban areas which are better endowed with survival related amenities is likely to improve the survival status of a migrant child. Various studies have suggested that the vast majority of the migrants feel that relocation to the city has improved their situation, even if not as much as they might have hoped.For instance,in New Delhi,India, a survey of poor migrants from rural areas found that their incomes were 2.5 times greater than they had been in the village, primarily because they could find about twice as many days of work in the city ( World Resources, 1996-97:11).

However, most of the urban migrants join the ranks of the urban poor who could not find work or are forced into hazardous jobs. Most affected would be households headed by women, the elderly and children who belong to poor families (UNDP, 1992:16).

Migration from rural areas to urban areas or to other urban areas can affect child survival in place of destination. This study aims to investigate the relationship between child survival and migration. A rural source area could imply a poor socio-economic status for the family hence, a direct impact on consumption opportunities available for the child. Likewise, an urban source area in migration could imply an upwardly mobile move with better consumption opportunities available for the child.

## 1.3    OBJECTIVES OF THE STUDY

The study has the following objectives namely to;

(a)    Investigate the effects of socio-economic  factors of urban and non-urban women (migrants) on the survival status of their children.

(b)    Investigate the effect of fertility related factors of urban and non-urban women (migrants) on the survival status of their children.

(c)    Establish if the duration of residence has an effect on the rural-urban-migration-child survival relationship.

(d)    Establish if the relocation to an urban setting has a part to play in child survival.


## 1.4    JUSTIFICATION OF THE STUDY

There is unequal distribution of survival related amenities in Kenya, especially when we consider the rural areas as compared to urban areas.  Accessibility of health facilities and other  survival related needs is not the same between the poor and the rich due to the expence involved.   This should especially be considered in view of the fact that the implementation of the structural Adjustment Programmes affected the poor most, both in rural and urban areas (Adepoju, 1993).

By implication therefore, the survival status of migrant children have become worse as the bulk of the poor in urban areas live in slums.  In any case, Khasiani (1995) has stated that women who migrate from the rural areas only have a marginal improvement from being extremely poor to just poor.

Williams and Galley (1995) studied infant mortality rates for England and Wales for the late 19th century. They concluded that Europe in the 19th century was characterised by what they called 'urban penalty'.  Infant mortality rates in England and Wales were higher

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in urban areas than rural areas. The high infant mortality rates were associated with overcrowding and insanitary conditions in industrialised areas compared to rural areas, despite better facilities, personnel and higher average income in towns. Urban areas of Kenya could be approaching this situation, if they haven't already. Under bad conditions of housing and nutrition, the poor are more susceptible to infection as well as being more frequently attacked.

According to the United Nations (1985:1), studies of mortality differentials are useful in at least three ways:

(a)     such studies provide information for assessing inequalities among people with respect to longevity and health;

(b)     data on mortality differentials help to identify those underprivileged segments of the population who experience higher mortality levels. These groups are an appropriate target of policies and programmes for improving health conditions and survival chances;

(c)     studies of mortality differentials improve our understanding of determinants of mortality and their interrelationships, on the basis of which proper policy measures for reducing mortality are developed, selected and improved .

The above issues are the backbone of this study based on urban areas of Kenya using the 1993 KDHS (Kenya Demographic and Health Survey).

## 1.5 SCOPE AND LIMITATIONS

The study aims to use the 1993 KDHs data which is limited in scope as far as migration data is concerned. The survey does not have specific questions on migration and this is the major limitation.

For this reason, the study will apply several assumptions so that the information is got indirectly. The main problem is on stating who a migrant is and this has necessitated assuming that a non- migrant is one who reported to have **always** been staying in the urban area or respective place of residence. This therefore follows that anybody who reported to have been living in the urban or rural areas for a specified number of years is a migrant .

The above assumptions are derived from question No 103 in the 1993 KDHS i.e 'How long have you been living in (Name of Subloction, town or city). This question is therefore central in distinguishing migrants from non-migrants in this study.

The study also assumes that the place of birth for the children who are under five years old is the same as that of the respondent (the mother). However, to check on the possibility of the mother having moved, and her place of origin, the study will use question No. 104 i.e "Just before you moved here, did you live in Nairobi or Mombasa, in another city or in the countryside?"

It therefore follows that those who moved from Nairobi, Mombasa, and any other town will be classified as having an urban place of origin, while those who moved from the countryside will be classified as having a rural place of origin.

The study will assume that there are no multiple moves, or rather, these will be ignored. Further, to augment the first assumption, the childhood place of residence will also be considered. This will be assumed to have an effect especially as a pre migration factor. Thus, it will be assumed that the mother will acquire characteristics of her childhood place

of residence which may have an impact during her reproductive period.

An illustrative example on childhood place of residence can be given for those who have grown up in the rural areas where the female child is traditionally disadvantaged with societal expectations on family roles. For this purpose, the question to be used in the KDHS is question No.102 i.e "For most of the time until you were 12 years old, did you live in Nairobi, Mombasa, in another city or town in the countryside?"

The above assumptions are important and have to be kept in mind if the use of KDHS-1993 is to be meaningful.

# CHAPTER TWO

# LITERATURE REVIEW AND THEORETICAL FRAMEWORK

## 2.1 LITERATURE REVIEW

The effect of migration on child survival is a growing concern to many researchers today. Evidence indicates a large child mortality differential between rural and urban areas in many developing countries (Demographic and Health Surveys for Botswana, and Kenya - 1993; Hobcraft, McDonald, and Rutstein 1984 ). Compounding this problem is the unequal distribution between urban and rural areas of survival related amenities such as hospitals and clean drinking water. The implication therefore is that a change from rural to permanent urban residence may enhance the survival chances of the migrant children. This argument has been advanced by Oucho J.O.(1988) who states that people from poor regions in Kenya migrate for the sake of survival of their children, especially regions with poor child survival chances (Ominde,1988).

Rural to urban migration has become a very common phenomenon in most developing countries, Kenya included. In the past, women and children were considered as associate migrants rather than as individuals (Ominde ,1988). Individual migration is therefore a recent phenomenon in Kenya, particularly the migration of Kenyan women.

During the colonial time, migration was strictly restricted but this changed rapidly after independence and more so when women were allowed to take National identity cards which would allow them to secure employment like their male counterparts. The results of the 1969, 1979 and 1989 Kenya Population censuses reveal an increasing proportion of women among the migrants. In Nairobi for example, the sex ratio of the population declined from 187 in 1962 to 159 in 1969. By 1989 the sex ratio was 100 (Khasiani ,1995:23).

The implication here is that the urban areas of Kenya may increasingly be becoming home to a large number of women migrants and their children as more and more women migrate as individuals rather than associates. This is because the natural increase of the urban population in developing countries is at least as important as migration. The high rate of natural increase in these urban areas, however, does not tend to follow migration, because most migrants are of reproductive age ( World Resources 1996-97).

Recent child mortality studies in Kenya reveal that children in the rural areas of Kenya experience a 27% higher risk of dying before age five than urban children. However, the urban-rural differential exists almost exclusively during infancy (43% higher) and fades away during the 1-4 year age groups (5%). Whereas one in 15 children in rural areas die before their first birthday, the ratio for the urban areas is one in 22 children (NCPD 1994).

The situation is more or less the same as in other countries in Africa. For example, in Senegal for the period between 1976-1985, the Senegal Demographic and Health Survey calculated child mortality rates of 135 per 1,000 in urban areas and 250 per 1,000 in rural areas. The suggestion here is that child survival chances are greatly improved when that child is born and raised in the urban rather than rural areas of the country (Brockerhoff M. 1990:602). Brockerhoff concludes that for the case of Senegal, migration to Dakar-Pikine may be a key to child survival, given that in the early 1980's the Dakar region contained most of Senegal's hospitals, eight times more doctors than the region of the second largest city (Thiens) and 89% of the industrial enterprises in the country.

Findings by Conteh, David and Bauni using the Demographic Health Survey (1986-1987) for Liberia, show that children of mothers who had ever migrated had a small but significantly elevated risk of death compared to those whose mothers had never migrated (Conteh, David, Baumi, 1990:129).

However, Hill (1988), found out that this is not always the case. He argues that migrant status is negatively related to mortality levels. This is because migrants are often those who are moving from situations where they cannot make adequate living and are likely to be a destitute group. However, the opposite situation could also occur in different circumstances: if those migrating are upwardly mobile (more educated people moving to cities for better jobs) then we would expect this to be reflected in a lowering of mortality in the destination area (Hill, 1988).

Studies by Makotekhu and Kichamu using Kenya population censuses show that despite the fact that Nairobi, Mombasa and Nakuru are big towns in Kenya with significant medical and social amenities, their decline in mortality levels between 1969 and 1979 was not substantial. They attributed this to the continuous inmigration of people from high mortality areas. Studies by Nyamwange (1982) on infant and child mortality in Nairobi wards concluded that areas with high mortality have residents from high mortality areas. Thus, Makotekhu and Kichamu also concluded that Laikipia and Nyandarua are low mortality areas because the majority of people who have settled there originated from Nyeri, a low mortality area (Makotekhu and Kichamu 1986 : 21).

The implication is therefore that migration can either have a positive, negative or no relationship with mortality. Analysis of the 1986 Senegal Demographic and Health Survey reveals that mothers may be able to improve their children's survival chances by migrating from the countryside to the city. Children of urban migrants, however, continue to experience a much higher risk of mortality before the age of 5 than children of urban non-migrants, even after the mother has lived in the city for several years. This migrant mortality disadvantage persists when controlling for numerous socio-economic and fertility related factors typically associated with child mortality in developing countries, which also

serve as indicators of migrant selection and adoption (Brockerhoff M. 1990:60).

Some studies have suggested that relocation to the city substantially improves the situation of the migrants. A study in New Delhi, India, on poor migrants from rural areas, found that their incomes were 2.5 times greater than they had been in the village. This was because the migrants could find twice as many days of work in the city. However, other migrants who are unable to find jobs join the ranks of those who are poor with lack of basic needs like food and shelter (World Resources, 1996-97).

Goldscheider (1988:680), argues that since cities cannot provide jobs and housing for excess rural populations, continous migration to the city from the countryside, may be counterproductive, economically and socially. Kenya is no exception to this argument.

Williams and Galley ( 1995 ) talked of an 'urban penalty' in the 19th century Europe which had more infant deaths in urban areas than rural areas. They attributed this to overcrowding and unsanitary conditions in urban areas at the time. From the World Resources (1996-97:12), we have the following:

"Historically, poverty has been concentrated in rural areas. Yet as the bulk of world's population shift from rural areas to urban areas, poverty is becoming increasingly an urban phenomenon...Several factors, including structural adjustment programs, economic crises, and massive rural-urban-migration, have contributed to an increasing number of urban poor since the 1980's"

The conclusion from the above overview is that in migration as it affects infant and child mortality will depend on the socio-economic status of the migrant and the source regions. The status of female migrants is of special importance in realizing infant and child mortality changes. Khasiani (1995), views migration as one strategy used by women as individuals and as families to improve their access to resources and therefore, facilitate their

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integration in mainstream development. However, from her findings, she concludes that women improve their status from being extremely poor to just poor.

Studies have shown that fertility has an effect on child survival (Bicego and Ahmad:1996), hence a lower fertility could enhance child survival. A study in Latin America by Maria Cosio-Zavala shows that fertility decline can be experienced among the poor populations as a survival strategy (Phillipe.A. et al, 1998). This reflects increasing difficulties that parents have in bringing up, educating and caring for their children. However, the study concludes that the reduction in fertility is only possible if contraceptive information is available.

## Summary:

The literature review clearly shows some documented relationships between child survival and migration. This study is specifically going to focus on mortality differentials by migration streams i.e urban to urban, urban to rural, rural to rural and rural to urban. Most important will be the socio-economic characteristics of the migrants, demographic characteristics and migration status. Such a focus will give an insight into the relationship between child mortality and migration streams which is what is lacking from the literature review as the focus has largely been on one migration stream, that is, rural to urban migrants.

## 2.2    CONCEPTUAL FRAMEWORK

The conceptual framework to be adopted here is the one by Brockerhoff M. 1990: 602-604.

## CONCEPTUAL FRAMEWORK FOR THE RURAL - TO - URBAN MIGRATION - CHILD- MORTALITY RELATIONSHIP
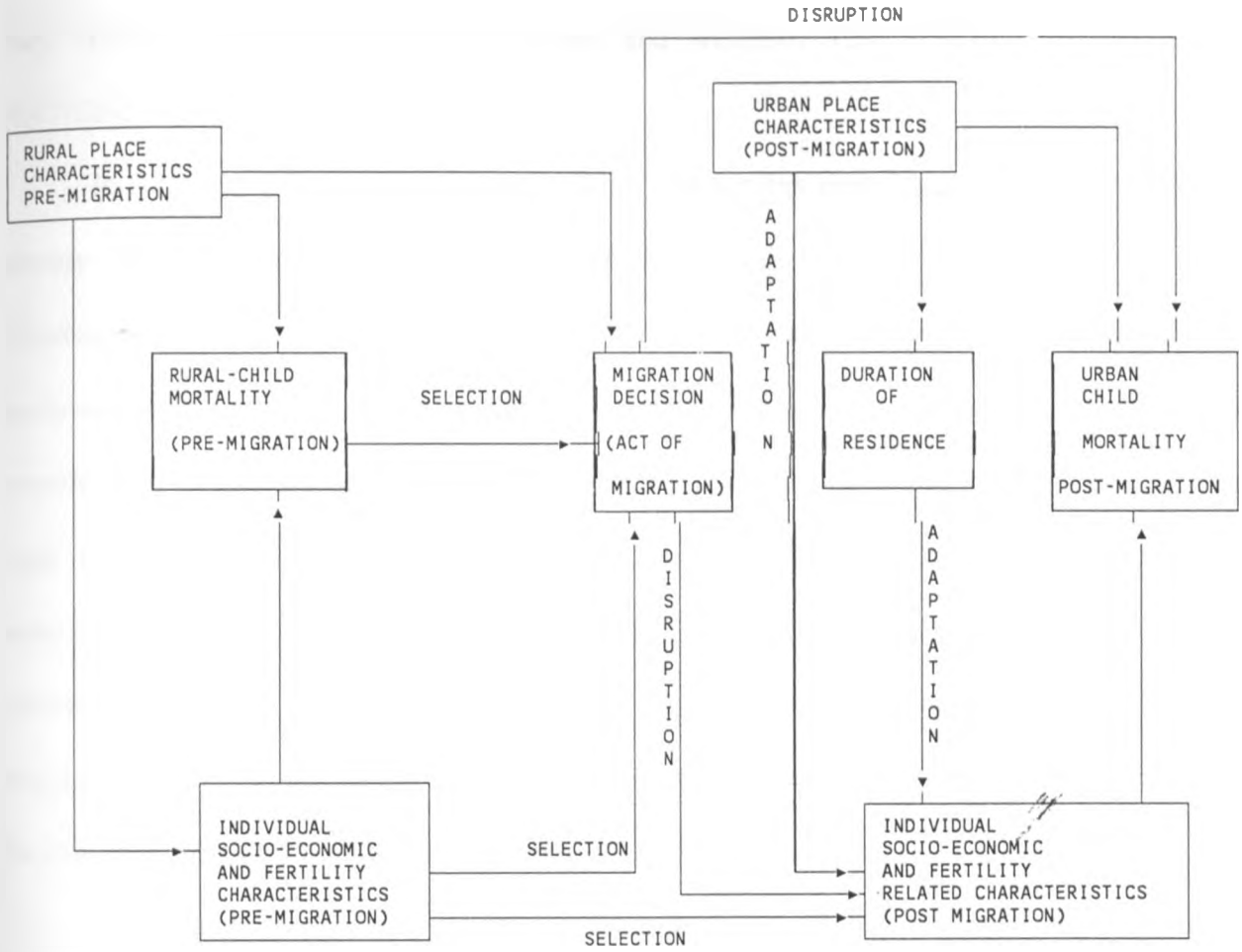


FIG 1:

Fig 1 depicts the migration- child- mortality relationship in terms of migrant selection, urban adaptation, life-style disruption and urban setting.

Regarding selection, several studies have shown that rural to urban migrants are often more educated, younger, less likely to be currently married than the population from which they originate, more occupationally skilled and wealthier (Brockerhoff 1990, UNITED NATIONS, 1993).

In some cases the level and timing of migrant fertility prior to settling in the city may already resemble that of urban natives of similar age and background characteristics (Goldstein 1978; Goldstein and Goldstein 1981, cf Brockerhoff 1990:602). In so far as these socio-economic and fertility-related maternal characteristics affect rural child mortality, as hypothesized in this model, child mortality may be lower among future migrants than among rural non-migrants in the years preceding migration. After migration to the city, the selection process may account for similar child mortality levels among migrants and urban natives if the groups resemble each other in terms of personal characteristics. Positive migrant selection implies that urban residence per se is not the sole or main factor accounting for low migrant child mortality (Brockerhoff 1990:602).

Khasiani A.S. 1995 states that migration of women from rural areas to urban areas is a strategy to escape low status and extreme poverty. Her findings indicate that rural facilities in Kenya are limited in terms of education, health, water, inaccessibility to productive resources for their livelihood or even appropriate technology. Furthermore, a rural woman can expect to have an average of 5.8 children, over two children more than an urban woman who has 3.4 on average. Child bearing begins early at around 15 years and

birth interval for the rural areas are less than two years (NCPD - 1994). This therefore implies that migrant selection would be a less contributing factor than urban adaptation in the migration-child survival relationship. Nyamwange (1982) made a study of the infant and child mortality in Nairobi wards and found that areas with high mortality have residents from high mortality areas. Makotekhu and Kichamu (1986) also concluded that Laikipia and Nyandarua are low mortality areas because the majority of people who have settled there originated from Nyeri, a low mortality area.

The concept of migrant adaptation implies that contact with the urban environment will eventually lead to a change in the attitudes, motivations, and life style of migrants ("acculturation") and partial or complete occupational and residential integration into a host society ("structural assimilation"). Both of these forms of adjustment are often facilitated by:

(a)     previous exposure to the urban environment and way of life (e.g, through childhood residence in a city);

(b)     the receptivity of the present urban population and urban institutions;

(c)     increased duration of residence in the city ; and

(d)     positive migrant selection in rural areas (Brockerhoff, 1990:602).

The types of adaption of greatest importance to child survival are those associated with maternal child-care behaviour, the quality of household facilities, and fertility. As far as maternal health care is concerned, NCPD-1994 shows that most mothers in the rural areas do not take their children to the clinics often because of ignorance and lack of facilities. Thus, traditional forms of child care has persisted in the countryside.

Those who migrate to the city are exposed to modern child raising practices as a result of interaction with more modern segments of the population as well as access to

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modern communication such as television and radio. Such changes could have a positive effect on child survival, through cleaner food preparation and storage, better diagnosis and treatment of illness, and improved hygiene practices. Disruption of traditional breast feeding practices in the city, however, may raise early childhood mortality, by earlier weaning to insufficient, inappropriate or contaminated foods. NCPD 1994 shows that almost all children born in the five years before the survey (97%) were breastfed for some period of time. In Kenya, the introduction of supplementary liquids and foods in addition to breastmilk occurs far too early in life; over half the population of children under the age of two months are given some supplemental feeding.

Access to potable water, flush toilets and refrigeration in the urban dwelling can reduce the incidence of diarrhoea and other water-born disease in childhood (Brockerhoff 1990: 604). These facilities are not however, available in most urban areas in Kenya. Waste disposal and provision of other services such as clean toilets, housing, clean water and infrastructure has rapidly deteriorated in most urban places in Kenya. A major city like Nairobi is no exception.

Regarding fertility adaptation, lengthening and repeated interaction with urban groups who have low fertility norms should lead to a desire for smaller families among migrants, which may in turn enhance child survival, particularly if it involves increasing birth intervals. This of course presumes differences in levels of timing of fertility between the rural origin and urban destination (Brockerhoff 1990:604). The 1994 NCPD shows that the total fertility rate for the urban area is lower by two children than for the rural i.e 5.8 as opposed to 3.4 for the urban areas. This suggests a considerable scope for adaptation to lower fertility among rural to urban migrants.

The migration process can directly affect child mortality in the city - that is, the

physical hardship of the move for young children or pregnant women - and can temporarily modify maternal traits and behaviours that have an impact on child mortality, for example, employment and child bearing. The disruptive effects hypothesized in the model can therefore be considered as part of the long term adaptation process.

Even in the absence of migrant selection and successful adjustment, migration may directly promote child survival if it involves relocating in a more favourable epidemiological environment or if certain health related benefits of an urban place extend to all residents. Such is the case with places which are close to Nairobi e.g Kiambu, Muranga and Nyeri. Rural place characteristics, such as climate and topography, may be particularly important in some areas. Frequent rainfall, persistent dampness, and periodic drought can expose children to a large variety of potent infectious diseases or long periods of malnourishment, which might be avoided in a more "controlled" urban setting (Brockerhoff 1990;604). Regional differentials in mortality in Kenya have been documented by Owino (1988), Anker et al (1987) and Makoteku et al (1989). One of the arguments is that mortality is lower on the high altitude areas e.g Central Province, than low altitude areas e.g Nyanza and Coast.

# OPERATIONAL FRAMEWORK

DISRUPTION

```
                                    ┌─────────────────────────┐
                                    │ DESTINATION PLACE       │
                                    │ CHARACTERISTICS         │
                                    │ (POST MIGRATION)        │
                                    │ .Health facilities      │
┌──────────────────────┐           │ .Source of income       │
│ ORIGIN PLACE         │           │ .Water                  │
│ CHARACTERISTICS      │           │ .Sanitation             │
│ (PRE-MIGRATION)      │           │ .Nutrition              │
│ .Level of development│           └─────────────────────────┘
│ .Health facilities   │
│ .Education/schools   │
│ .Climate/topography  │
└──────────────────────┘
```

| ORIGIN-PLACE | | MIGRATION DECISION(ACT OF MIGRATION) | A D A P | DURATION | DESTINATION |
|---|---|---|---|---|---|
| CHILD DEATH | SELECTION | .Without childr-en | T A | OF | PLACE CHILD |
| (PRE-MIGRATION) | | .With children | T | RESIDENCE | MORTALITY |
| MOTHER'S CHILDHOOD | | .Marital status | I O N | | (POST-MIGRA TION) |
| RESIDENCE Community charac | | | | | |

DISRUPTION

ADAPTATION

```
┌──────────────────────┐           ┌──────────────────────────┐
│ INDIVIDUAL           │           │ INDIVIDUAL               │
│ SOCIO-ECONOMIC       │ SELECTION │ SOCIO-ECONOMIC           │
│ AND FERTILITY        │           │ AND FERTILITY            │
│ CHARACTERISTICS      │           │ RELATED CHARACTERISTICS  │
│ (PRE-MIGRATION)      │           │ (POST MIGRATION)         │
│ .Education           │           │ .Parity/ birth order     │
│                      │           │                          │
│ .Income              │           │ .Age at birth            │
│ .Marital status      │           │ .Education attainment    │
│ .Parity     SELECTION│           │ .Place of previous reside│
│ .Children alive/     │           │  nce                     │
│  Dead.               │           │ .Children dead/ alive    │
│                      │           │ .House hold characteristics│
│                      │           │ .Duration of residence   │
└──────────────────────┘           └──────────────────────────┘
```

FIGURE 2:        CONCEPTUAL FRAMEWORK FOR RURAL-TO-URBAN MIGRATION-CHILD MORTALITY RELATIONSHIP. ADAPTED FROM
                 BROCKERHOFF M. 1990 - RURAL- URBAN MIGRATION AND CHILDSURVIVAL IN SENEGAL, PAGE 603.

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## 2.3    OPERATIONAL FRAMEWORK

The operational framework (fig:2) attempts to show the link between rural-to-urban migration and child mortality. Survival of the child in the rural areas depends on the rural characteristics, and individual socio-economic and fertility related characteristics. Rural characteristics such as the level of development in terms of health facilities and infrastructure; climate and topography; and the individual socio-economic and fertility related characteristics.

Most migrants tend to be well educated as compared to the source regions, younger, single, wealthier and with no children or few if any. These factors influence migration decision as migration as a process, is viewed to be selective. Differentials in mortality on the other hand, are affected by education, place of usual residence, age, birth order, income, development, environment, regional differentials, marital status (Hill A. and Hill K. 1988, Owino N.R. 1988, Anker R. et all 1987, Makoteku J.A. 1989, Kichamu et al 1986, Mutai 1987). The link between the characteristics of migrants and the urban environment, and factors affecting mortality differential cannot be overemphasized. Pre-migration characteristics will be measured using the mother's childhood place of resident and duration of stay.

Mosley and Chen (1984) give five major sets of proximate determinants, or intermediate variables, that directly influence the risk of morbidity and mortality. All the social and economic determinants operate through these variables to affect the child survival. These proximate determinants are:

-       Maternal factors: age; parity; birth interval.

-       Environmental contamination air; food/water/fingers; skin/soil/inmate objects; insect vectors.

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-   Nutrients (Vitamins and minerals).

-   Injury; accidental; intentional.

-   Personal illness control: Personal preventive measures; medical treatment.

We expect the proximate determinants to be affected differently in the rural areas as compared to the urban areas. However, in the operational framework, these determinants have not been considered in isolation. It should however be noted that a change from the rural to urban setting can have a profound effect on the survival of the child ,depending on the possibilities of adaptation to urban life and improved means of survival for the family.

Jain (1985), has distinguished the factors affecting infant mortality at three levels: village, household and individual. These are then arranged in ascending order according to their proximity to the dependent variable of interest - in this case the death of an infant/child. The individual level factors are taken to be closest to the dependent variable. Next comes the household - level factors, and the village-level factors are the most distant (fig 3).
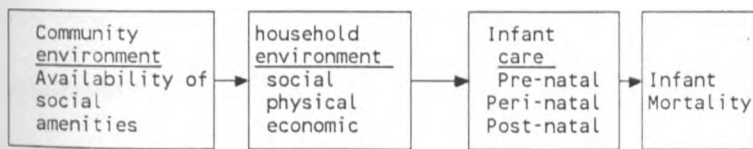


Fig 3: Jain, 1985:409; Schematic presentation of relationships between community, household and individual factors and infant mortality.

Jain, 1985, argues that excluding endogenous genetic factors at the individual level,it is assumed that the chances of infant survival depend upon the degree of care with which the infant

is brought up. A broadly visualized care starting from conception to the first birthday i.e during 21 months of life is important for an understanding of the determinants of infant mortality (p:409). The factors at the individual level will form one of the main basis of our study.

The second group of factors consist of physical, social, and economic environment of the household. The physical environment is reflected by the conditions of the home, toilet facilities, crowding, quality of drinking water, source of fuel and lighting.The social environment is reflected by factors such as mother's education, age, parity, and interval between pregnancies. Economic conditions are reflected by factor such as household income. These factors will be considered as has been conceptualised in the model (fig 2 and 3) .

The third group of factors concern physical, social, and economic environment of at the community or village level. These conditions are reflected by the availability of infrastructure facilities such as medical services, water, supply, schools, transport and communication. The use made of these facilities vary in different households within the same village or community. For this reason, the primary effect of these factors on infant mortality will be transmitted through changes in household level factors (p:410). The community level factors for rural areas will be reflected by the rural communities in our study. Thus, their underfive survival situation, especially for the rural nonmigrants, will be a reflection of conditions in the rural areas.

These community level factors affect the household and consequently the individuals. These will be brought out by looking at the different groups of women i.e rural nonmigrants and migrants , and urban nonmigrants and migrants. By using the source regions and childhood place of residence, the factors at the different levels could be accounted for through socio-economic and demographic factors as conceptualised in figure 2.

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Jain, 1985, further agues that the effect of community level factors in infant mortality will be transmitted through individual level factors if all households in a community are equally affected. For example if all community members were to drink conterminated water (or clean water) from the same source. Thus individual level factors are very important especially with increased income disparities being experienced today.

Mosley,1984, analyzed mortality trends and differentials in Kenya and concluded that child survival is primarily determined by the social and economic resources in the child's family.

## 2.4    OPERATIONAL HYPOTHESES:-

From the operational framework, we can hypothesize that:

(a)    rural to urban migration - child survival relationship is affected by individual socio-economic related variables whereby the risk of child death will be higher for those with poorer socio-economic characteristics;

(b)    rural to urban migration - child survival relationship is affected by individual fertility related variables such that high fertlity levels increases the risk of child death;

(c)    duration of residence has an effect on the rural-to-urban-child survival relationship so that those with a longer duration of residence have better child survival chances;

(d)    relocation of the child to an urban setting improves the chances of survival due to better survival related ammenities in urban areas.

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## 2.5    DEFINITION OF CONCEPTS

The concepts and variables are hereby defined according to how they will be used in the research:

### URBAN AREAS

There are different parameters which could be used in determining an urban area such as the number of people, services provided and productive activities.  In this research, an urban area will be Nairobi/Mombasa, other city/Town.  This is because these are the specifications used in the KDHS-1993.

### MIGRATION

Here again we have different criteria for identifying a migrant which varies from country to country.  In this research, a migrant will be considered to be one who has lived for several years in the respective place of residence (i.e urban or rural place of residence). This follows that anyone who had always lived in her respective place of residence is a non-migrant, whether in the rural or urban area (this forms one of the assumptions used in this research).

### DURATION OF RESIDENCE

This refers to the period spent in the urban areas as opposed to other areas.  This ignores the multiple moves, just like the definition of a migrant does the same.

# FERTILITY RELATED CHARACTERISTICS

This concerns variables in fertility such as parity, and birth spacing.

# CHILD SURVIVAL

This broadly involves the death of children who are below five years old. Hence, infant and child mortality has been included within the reference period i.e consideration of the survival status of children born between January 1988 and July 1993. This ignores the survival status of children outside this reference period e.g deaths in 1994 of those less than five years old.

# DISRUPTION

The relocation of the family from the rural area to the urban area will be considered as a disruption.

# ADAPTATION

The change in lifestyle such as better birth spacing, less breastfeeding, low parity and contraception will be considered as adaptive measures. This is because these are factors associated with an urban area.

# CHAPTER THREE

# DATA AND METHODOLOGY

## 3.1 STUDY VARIABLES

The dependent variable used is the survival status of the child at the time of the survey. Births in the last five years preceding the survey (NCPD-1994) are examined and the exposure to the risk (independent) variables of those still alive at the time of study compared to those who have died. This allows for a focus on the recently born children. The exposure factors are:

## MIGRANT STATUS: MIGRATION VARIABLES

This is for the mothers and will be considered in terms of:

    **(a)**           **Type of place of previous residence:**

    (i)            Rural*

    (ii)          Urban.

    **(b)**           **Childhood place of residence:**

    (i)            Urban*.

    (ii)          Rural.

    **(c)**           **Years lived in place of residence:**

    (i)            More than ten years*

    (ii)          Less than ten years.

# SOCIO-ECONOMIC VARIABLES (AS OF SURVEY DATE)

**(a)**   Current Place of residence (this was used asa control variable).

**(b)**   **Maternal marital status:**

(ii)   Married*

(ii)   Single.

**(c)**   **Maternal Work Status:**

(i)   Working outside the household for pay*

(ii)   Not working outside the household for pay.

**(d)**   **Husband's occupation:**

(i)   Never worked or other*

(ii)   Professional, technical, managerial, clerical.

**(e)**   **Maternal education**

(i)   Primary education*

(ii)   No education

(iii)   Secondary and higher.

**(f)**   **Household toilet facilities:**

(i)   Pit, cesspool, other, none*

(ii)   Flush toilet.

(g)     **Household source of drinking water:**

(i)     well, other

(ii)    Piped into household*.


## DEMOGRAPHIC VARIABLES

(a)     **Maternal age at birth**

(i)     < 20*

(ii)    20 - 34

(iii)   35 and older


(b)     **Previous birth interval**

(i)     less than 18 months*

(ii)    18-35 months

(iii)   36 months and above


(c)     **Following birth interval**

(i)     16 months and above*

(ii)    less than 16 months


(d)     **Birth order**

(i)     1

(ii)    2 - 6*

(iii)   7 or higher

* Reference category to be used in regression analysis.

The migrant residential background is important as a measure of selection and adaptation. Migrants who have previously lived in an urban area (urban to urban migrants) are likely to adapt more quickly to the urban environment than first-time urban residents. This is in terms of being able to locate the health facilities, sanitation and hygienic feeding all which enhance child survival.

Literacy has been associated with better chances for the survival of the child, so also is the case with marital status and maternal health.

Occupation and source of income can affect child survival in varying ways. A wage earning mother is likely to have competing goals which would affect her parity and consequently her birth spacing and child survival. Agricultural occupations have been associated with low income as opposed to professional occupations with better income and prospects.

Sanitation in terms of hygienic toilets (flush toilets) and clean drinking water can enhance child survival.

The effect of place of usual residence is assessed here in terms of whether the mother has been staying in urban areas, or countryside. This is done in this way because of the variations in infrastructure in different areas which can affect child survival, independent of maternal characteristics.

## 3.2    DATA SOURCE AND QUALITY

The study aims to use the Kenya Demographic and Health Survey as its data source (NCPD-1994). This is a survey, which was conducted in 1993 in selected urban areas and rural areas.

The survey did not have specific questions on migration but the intention is to get the information indirectly based on several assumptions. The KDHS-1993 survey was made as representative as possible although some districts were omitted such as Isiolo and Marsabit in Eastern province; Samburu and Turkana in Rift Valley. In this survey, 7,540 women and 2,336 men were interviewed.

In our study, our group of focus are the women of whom, 3,904 gave birth in the last five years with the total number of children being 5,727. These children and their mothers will form our study group for the whole country.

However, it is clear that this figure might not be sufficient for the whole country and hopefully the next KDHS survey will incorporate aspects of migration. The assumptions used might have excluded some people or, included some who are not supposed to be included in the group to be analyzed. It is however, hoped that the results will show a general picture of the situation at hand.

In executing this analysis, some assumptions have been made. These assumptions are:-

(i)     the female respondents who stated that they had a previous place of residence were considered as migrants;

(ii)    the female respondents who stated that they had always lived in their respective places of residence are non migrants.

Thus, the analysis was done by controlling for the variables V104 (years lived in place of residence) and V105 (type of place of previous residence). These variables were derived from two questions in the KDHS - 1993:

(i)     how long have you been living in (Name of sub-location, Town or city)?" (Q103);

(ii)    just before you moved here, did you live in Nairobi or Mombasa, in another city or

town in the countryside?" (Q104).

The unit of analysis are the children born in the last five years preceding the date of

survey. Mortality differentials discussed in this work are based on crude death rates of under

five mortality per a thousand live births.  Crude under five mortality have directly been

calculated by using the formula.


Children dead who are

Under five years old     x     1,000

Total children born  who

are under five.


## 3.3     METHODS OF DATA ANALYSIS

Two methods of data analysis are used in this study. The Crude Under Five Mortality

(CUFM) differentials, which will be calculated after standardisation of the data and the

second method will be Logistic regression analysis.The crude under five mortality rates will

be got by,

$$CUFM R = \frac{D_{un}}{B_{un}} \times 1,000 \dots\dots\dots\dots ( 1 )$$

Where,
        $D_{un}$  =  Children dead under five years
        $B_{un}$  = All children born who are under five years
        CUFMR  = crude under five mortality rate

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## 3.3.1 STANDARDIZATION AND DECOMPOSITION OF GROUP DIFFERENCES IN MORTALITY DATA

In this study, it will be necessary to control for confounding influences intrinsic to population data. The general problem is often called adjusting for compositional effects; a specific example would be controlling, or holding constant, age distribution when making comparisons of birth or death rates across national populations (UNFPA, 1993).

In most of the dependent variables of demography (e.g. child survival in our case) there is a marked variation by age, sex, race/ethnicity, educational attainment, or other compositional factors. Such factors play the same role as covariates in conventional statistical analysis; they represent factors that are related to the dependent variable, but are also correlated with the groups being compared. To be able to make valid group comparisons, it is necessary to control or hold constant the levels of the composition variables, whichever way these are measured.

Standardization method arose in response to the need to adjust mortality rates for group differences in age composition. The objective here is to control for group differences in composition (e.g. age distribution) so that comparison between groups (i.e. migrants and non migrants) could be made on mortality differentials. Thus, the procedure of adjustment of the crude rates to eliminate from them the effect of differences in population composition with respect to age and other variables is called standardization.

> "It is important to recognize that age-adjusted or age standardized rates have no direct meaning in themselves. They are meaningful only in comparison with other similarly computed rates. Since they are useful only for comparison, the commonest application of the procedure is to compute such rates for the areas or population groups whose mortality is to be compared and to calculate the relative differences of the resulting rates. The meaningful measure then is a ratio, index, or percent difference between rates similarly adjusted" (UNFPA 1993).

## (A) Selection of a Standard Population

It is important to always select a standard population that will not have a profound effect on the standard indices. Serious distortions can occur if the standard population is very different with the population under study, in our case, KDHS-1993.

The general rule is to select as a standard an age distribution that is similar to the age distributions of the various population under study. If the mortality of the populations is being compared, this may best be achieved by using as a standard the (unweighted) average of the two distributions.

When several populations of approximately equal size are to be compared, an appropriate standard may be obtained by adding together the individual populations and using the pooled result as the standard population. In case the populations are of unequal, size, the distribution of the largest population will be dominant if the population are simply added together. A solution to this problem in the choice of a standard population is to average the relative frequencies $p_i$ in each category (Kpedekpo, 1982:95).
p

Having considered the above conditions, 1989 KDHS (NCPD 1989) was chosen as the standard population. There are several methods of standardization, however the one to be employed here is direct standardization.

## (B) Direct Standardization

This is the simplest and most straight forward measure. For most comparisons, this is the preferred procedure and serves to provide the best basis for determining the relative difference between mortality in different groups. In this method, a 'standard' population is selected and employed in deriving all the adjusted rates in a set to be compared. According

to Kpedekpo, the question that we ask ourselves is "how many deaths would occur in a given population with which it is being compared, and what is the ratio of this number to the deaths in the standard population? (p. 26).

The formula for direct standardization is:

$$Mi = \frac{\Sigma MaPn}{P} \times 1.000 \quad \text{or}$$

$$\frac{\Sigma MaPa}{P} \times 1000 \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

where

$Ma = \underline{da} = $ age - specific death rate

in the given area.

$Pa$ = Standard population at each age or group.

$P$ or $\Sigma Pa$ = total standard population

The procedure to be followed is as follows.

(a)     select a standard population, in our case the 1989 KDHS.

(b)     the available age-specific rates in the population groups are multiplied by a set of standard population over the same age groups (MaPa).

(c)     sum up the products over all subgroups which gives the expected number of events ($\Sigma MaPa$). This is taken as the number of events that would have occurred in the population if it had experienced the age composition of the standard.

(d)     The expected events are then divided by the total population of the standard. This gives the standardized rate $\frac{(\Sigma MaPa)}{P}$

This rate so obtained is taken as an expression of the relative difference between the observed and standard populations that is not due to age or other compositional effects. An example of how the rates will be computed is shown in table 3.1.

**Table 3.1:** COMPUTATION OF DIRECT STANDARDIZATION IN MORTALITY FOR THOSE WITH CHILDREN UNDER FIVE YEARS OLD

| Age Group | Age Specific Death rates (Ma) | | Standard Pop. KDHS - 1989 (Pa) | Expected deaths | |
|---|---|---|---|---|---|
| | Urban | Rural | | Urban (MaPa) | Rural |
| 15-19 | 161 | 109 | 1481 | 238441 | 161429 |
| 20-24 | 61 | 75 | 1402 | 85522 | 105150 |
| 25-29 | 70 | 63 | 1357 | 94990 | 85491 |
| 30-34 | 76 | 81 | 1007 | 76532 | 81567 |
| 35-39 | 26 | 79 | 830 | 21580 | 65570 |
| 40-44 | 77 | 90 | 646 | 49742 | 58140 |
| 45-49 | 13 | 85 | 427 | 5551 | 36295 |
| All ages | 70 | 77 | 7150 | 572358 | 593642 |

Age standardized rate for urban

$$= \quad \frac{572358}{7150}$$

$$= \quad 80.05 \text{ per } 1,000$$

Age standardized rate for rural

$$= \quad \frac{593642}{7150}$$

$$= \quad 83.02 \text{ per } 1,000$$

This computation will be done for each of the subgroups under study.

### 3.3.2 LOGISTIC REGRESSION ANALYSIS

#### (a) The model

Logistic regression will be used to determine the probability of an event occurring (in our case, death) given certain conditions (i.e. the independent variables).

The main idea behind the choice of the logistic regression is to find the best fitting model which could describe the relationship between an outcome (the dependent or response variable) and a set of independent (predictor or explanatory) variables, often called covariates.

The logistic regression model is the same as that of any model - building technique such as linear or multiple regression. What distinguishes a logistic regression model from the linear regression model is that the outcome variable in logistic regression is binary or dichotomous. This is the main reason for its choice in this study since the outcome is either a death or being alive i.e. probabilities of survival.

There are, however, two other reasons which are normally given for the choice of the logistic regression model.

(i)    from a mathematical point of view, it is an extremely flexible and easily used function; and

(ii)    it lends itself to a biological meaningful interpretation (Hosmer and lemeshaw, 1989).

The basic idea behind a logit analysis is a probability regression model which expresses the dichotomous variable, Y, as a non - linear function of the explanatory variable Xi and can be interpreted as the probability that a child will survive or die given the variable in the model. The model is expressed as follows (Schelesselman, 1982);

$$P_x = 1/\{1 + Exp - (\beta_0 + \beta_1 X_1 + ..... \beta_p X_p)\} \quad ............................ (3)$$

This implies that the probability, Px, of the occurrence of the dependent variable depends on the independent variables $X_1, X_2....... Xp$. Therefore, the probability of an individual with characteristics $X_1, X_2 ......... Xp$ having a dead child is given by equation 3.

The logistic regression model is usually presented in terms of log odds or logits, $InP_x/q_x$ which transforms the model into the familiar form of the ordinary least squares model. From equation 3, we therefore, get;

$$InP_x/q_x = \beta_0 + \beta_1 X_1 + \ldots\ldots \beta_p X_p \ldots\ldots\ldots (4)$$

note that $q_x = 1 - P_x$

$\beta$ are the logistic regression coefficients

Expressed in terms of logits, a unit change in the variable $x_i$, changes the logit of risk $(InP_x/q_x)$ by the amount $B_i$. The logit model is a non-linear function of the variables $X_i\ldots\ldots\ldots X_p$ indicating that the 'effect' of $x_i$ does not depend on the values of the other variables. By introducing the transformed variables such as $X_1$, $X_2$ or $X_{13}^2$ in the equation one may allow for logistic interaction and non linearity.

In such a situation the method of choice is to use a number of <u>design variables</u> or dummy variables which had previously been described.

Generally, if a variable has k possible values, then K-I dummy variable will be needed. For example, suppose the $J^{th}$ independent variable, x; has ki, levels. Then $K_j$-1 dummy variables can be denoted as Dju (design variables) and the coefficients for the dummy variables can be denoted as

$\beta_{ju}$, $U = 1, 2 \ldots\ldots\ldots\ldots, K_{ju} - 1$. Thus, the logit for a model with P variables and the jth variable being discrete would be

$$g(x) = \beta_0 + \beta_1 X_1 + \Sigma\beta_{ju}D_{ju} + \beta_p X_p \ldots\ldots\ldots\ldots (4)$$

Where g(x) is the estimated logit.

The estimation of logistic parameters is accomplished through the use of maximum likelihood estimation technique. Maximum likelihood yield values for the unknown parameters which maximise the probability of obtaining the observed set of data.

Suppose that $d_i$ is a variable that indicates the occurrence $d_i = 1$ with probability $p_j$ or

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absence $d_i=0$ with probability $d_i$ on attribute. likelihood equations are given as:

$$\Sigma^n = 1 \ [Y_i - \pi(x_i)] = 0 \ \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \ (6)$$

and

$$\Sigma\underline{n} = 1 \ X_i[Y_i - \pi(x_i)] = 0 \ \dots \dots \dots \dots \dots \dots \dots \dots \ (7)$$

The likelihood ratio test can provide an alternative method of finding an approximate confidence interval for any particular parameters $B_i$ and can also be used to compute a joint confidence region for a set of parameters. In large samples a one degree of freedom chi-square test of significance based on $x^2 = B/SECBi)^2$ is equivalent to the corresponding likelihood ratio test.

(b) Interpreting of the coefficients

The SPSS computer programme will be used to run the logistic regression for both bivariate and multivariate logistic analysis.

Logit analysis is like a multivariate regression method for estimating relative risk. The logit coefficients are the natural logarithms of the relative odds by which determinants of mortality are different for the risk of dying. An odd is the ratio of frequency of being in one category to the frequency of not being in that category and is interpreted as the chance that an individual randomly selected will be observed to fall into the category of interest. The odds ratio here is marginal odds applying to the total frequencies while holding the effects of other variables constant.

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The logistic model can be expressed in terms of the odds of an event occurring. The odd of an event occurring are defined as the ratio of probability that it will occur to the probability that it will not. It is easier to think of odds, rather than log odds and the logistic regression equation can be written in terms of odds as

$$\frac{\text{Prob(event)}}{\text{Prob(no event)}} = e_0^{\;B + B1 + Xi \ldots\ldots BpXp} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

Then $e$ raised to the power $B_i$ is the factor by which the odds change when the $i^{th}$ independent variable increases by one unit. If Bi is positive this factor will be greater than one, which means that the odds are increased. If Bi is negative the factor will be less than 1, which means that the odds are decreased. When Bi is O the factor equals to 1, which leaves the odds unchanged.

The Bs are therefore, refereed to as the logistic regression coefficients. Apart from indicating a positive or a negative relationship, an example would give the way a further interpretation would be arrived at. If for example we have two variables with different Bs of .0640 and .1236 respectively. This does not necessarily mean that variable one (or x1) is more important than variable two (or x2) in explaining the dependent variable on the basis of the maginatude of the coefficients. the B of 0.0640 is just an indication that a one unit increase in xi is associated with an increase of .0640 in the logit of risk. Alternatively, we can say that the odds of the dependent variable are increased by an Exp(B) of 1.0661.

In the interpretation, reference will be made to the reference category variables which will be automatically omitted by the computer SPSS programm. Thus, each variable will be

explained in terms of categories and the categories of each variables will be treated as separate variables called dummy variables of that variable.

The specific form of the regression model which will be used is therefore:

$$\pi(x) = \frac{e_o{}^B + B_1 x}{1 + eB + B1x} \quad \dots \dots \dots \dots \dots \dots \dots \dots \dots (9)$$

where  $\pi(x)$ = Probability of event occurring
  e    = the base of the natural logarithm, approximately 2.78
  B    = Coefficients estimated
  x    = Independent variables.

A transformation of $\pi(x)$ that is often central to the study of logistic regression is the logit transformation.  This transformation is defined in terms of $\pi(x)$ as follows:

$$g(x) = \ln \left[ \frac{\pi(x)}{1-\pi(x)} \right]$$

$$= B_0 + B_1 x \quad \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (10)$$

The importance of this transformation is that g(x) has many of the desirable properties of a linear regression model.  The logit g(x) is linear in its parameters, may be continuous, and may range from - 00 to +00, depending on the range of x (Hosmer and Lemeshaw, (1989).

**(c) Limitations of Logistic regression.**

When too many variables are fitted in the model, it may produce numerically unstable estimates.  Over fitting is typically characterised by unrealistically large estimated coefficients and/or estimated standard errors.  This may be especially troublesome in problems where the number of variables is very large relative to the number of subjects and/or when the overall proportion responding (y = 1) is close to either 0 or 1 (Hosmar and Lemeshaw, 1989:83).  The

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study will try as much as possible to avoid this by first undertaking a bivariate and univariate analysis of the variables. The univariate analysis will constitute mortality differentials by crude mortality rates.

Compared to the linear regression model, the parameters have a limited interpretation and range of validity due to the restriction that $0 < Px < 1$. Although a linear function may provide a satisfactory approximation to Px over a restricted range of x, extrapolation would be suspect, since it is certain that the linear relation would be outside some range of values of x.

Since variables are often always correlated, so that a change in one is accompanied by a corresponding change in the others. Therefore, the change in the logit of risk estimate to result from a postulated change in any particular variable may be misleading. However it has a flexibility in the analysis of dichotomous variables and P-value would give the effectiveness of the model.

# CHAPTER 4

# DIFFERENTIALS IN UNDER FIVE MORTALITY

# BY MIGRATION STATUS

## 4.1. INTRODUCTION

Urban-rural health differences have not always favoured urban populations. A study in Holland in the late nineteenth century on infant and child mortality showed that the sample of rural communities had an advantage over some selected cities. Only the urban rich had a lower infant and child mortality rates than the rural poor. In fact, the rural poor had lower rates than the urban middle class. Data from England dating as far back as 1910-1912 indicates that mortality from several of the commonest diseases was lower among farm labourers than among better paid urban professionals and salaried workers (UNFPA,1996:10).

This chapter is based on mortality differentials by migrant status,socio-economic, demographic variables and duration of exposure to an urban setting.

Of importance in this analysis is therefore the survival status of children born in the last five years preceding the date of survey (KDHS-1993). The creation of a child's file and attaching the variables related to the mother's socio-economic demographic and migrant status was therefore inevitable.

The rates calculated are rather crude and do not conform to the rates in KDHS - 1993. This is because the cases used in this analysis are few and in any case, as opposed to the KDHS which used a ten-year period in calculating some of the rates, this analysis restricts itself to the five year period (1988-1993).

It is worth noting also that the assumption used in this study could be the basis of the differences between these results and those in the KDHs 1993 (NCPD 1994). For as stated earlier, the survey does not have direct information on migrants. However, the analysis gives an insight into mortality differentials by migration status and other study variables.

## 4.2 UNDER FIVE MORTALITY DIFFERENTIALS IN THE URBAN AREAS BY MIGRATION STATUS

It has often been argued that the urban areas have a more favourable condition for child survival as opposed to the rural areas (Conteh, David Baumi 1990:129). This argument is based on the fact that health services are more likely to be available in urban than in rural settings. They are likely to be of higher quality, and urban dwellers are more likely to take advantage of them. (UNFPA, 1996).

However, there is increasing evidence to suggest the opposite as "today, in both developed and developing countries the urban poor have the highest health risks, lower income and poor living conditions, are usually associated with poorer health status and increased mortality. At higher income levels the rural-urban balance of populations and the distribution of health services become more important than income alone." (UNFPA, 1996:11).

Table 4.1 summarises the Crude under five mortality differentials in the urban areas by migration status. It should be pointed out here that the rates have been standardised to remove the effect of age composition.

## TABLE 4.1: CRUDE UNDER FIVE MORTALITY RATES IN URBAN AREAS BY MIGRATION

| MIGRATION TYPOLOGY | TOTAL DEAD | TOTAL ALIVE | TOTAL BIRTHS | STANDARDISED CUFMR (per 1000 live births ) |
|---|---|---|---|---|
| NON MIGRANTS | 18 | 245 | 263 | 62 |
| URBAN TO URBAN | 14 | 135 | 149 | 53 |
| RURAL TO URBAN | 11 | 190 | 201 | 82 |
| URBAN TOTAL | 43 | 570 | 613 | 80 |

Source:         Calculated from study data.

It is evident from the table that the urban to urban migrants have a better under five child survival than their rural to urban migrants. The urban to urban migrants are expected to be composed of mature people who are skilled. On the other hand, the rural to urban migrants are often poor. Hill argued that migrants are often those who are moving from situations where they cannot make adequate living and they are likely to be a destitute group (Hill, 1988). Thus, the rural to urban migrants could be composed of the poor who end up settling in the slums which have a poor health condition.

However, the opposite situation could also occur in different circumstances: if those migrating are upwardly mobile (more educated people moving to cities for better jobs) then we would expect this to be reflected in a lowering of mortality in the destination area (Hill, 1988). This argument could be advanced for the urban to urban migrants. Studies by Makotekhu and Kichamu 1986; and Nyamwange 1982, have also linked high mortality areas with their source regions.

The urban non migrants are not any better as compared to the urban to urban migrants. They have a CUFMR of 62/1000 as compared to the 53/1000 for the urban to urban migrants. A study in Ghana and Indonesia also showed that the migrants had a better child survival than non migrants (UN 1985, 118).

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In conclusion we can argue that migration to urban areas, especially from rural areas, does not necessarily increase the chances of child survival. This can be summarized by a UNFPA (1996:11) report which states that,

"Recent development point to increased risks in urban areas: from pollution and other factors in environmental health; lower public expenditure in the health sector; the emergence of new diseases; the reappearance of more virulent or drug resistant strains of older scourges; the quicker spread of infectious diseases; and the interactions of viral and bacterial infections (including sexually transmitted diseases and HIV/AIDS)".

The urban areas are therefore increasingly becoming disadvantageous as compared to rural areas. In any case, the number of people who are poor is steadily increasing (Adepoju A. 1993). Thus, in urban areas of developing countries, more and more people are living under deplorable conditions in the slums, most of whom are rural to urban migrants. Goldscheider , 1988 also argues that since cities cannot provide jobs and housing for the excess rural population, continuous migration to the city from the countryside, may be counterproductive, economically and socially (page 680).

## 4.3 UNDER FIVE MORTALITY DIFFERENTIALS IN THE RURAL AREAS BY MIGRATION STATUS

Migration in rural areas is predominantly rural to rural. The urban to rural migration is limited as it mainly composes retirees. Adepoju (1993), argues that most African migrants are following a survival strategy and normally many are poor and uneducated. These are often rural-rural or circular migrants in search of opportunities in areas better endowed than their localities of origin. Table 4.2 gives a summary of the situation in the rural areas of Kenya.

**TABLE 4.2: CRUDE UNDER FIVE MORTALITY RATES IN RURAL AREAS BY MIGRATION STATUS**

| MIGRATION TYPOLOGY | TOTAL DEAD | TOTAL ALIVE | TOTAL BIRTHS | STANDARDISED CUFMR / 1000 |
|---|---|---|---|---|
| NON MIGRANTS | 286 | 3072 | 3358 | 102 |
| URBAN TO RURAL | 16 | 314 | 330 | 53 |
| RURAL TO RURAL | 90 | 1336 | 1426 | 78 |
| TOTAL | 392 | 4,722 | 5114 | 83 |

Source:     computed from study data

Table 4.2 shows that the most disadvantaged lot in the rural areas are the non migrants with a CUFMR of 102/1000. This could be an indication of other factors such as education, health facilities and income having an influence on under five survival. This has often been the basis of argument for the urban bias.

On the other hand, the urban to rural migrants enjoy the best child survival in the rural areas with a CUFMR of 53/1000. This contrasts with the findings by Bicego and Ahmad (1996). Their findings showed that the urban to rural migrants had a rate that equals or approximates that of the rural natives. Although it can be argued that the urban to rural migrants probably transferred their urban habits to the rural areas, their source regions e.g being a slum, is also questionable. Some studies have suggested that it is the socio-economic characteristics of the urban population, rather than life in the city itself, which explain the superior child survival experience of urban woman (UN, 1985). Could it then be sufficient to say that the urban to rural migrants in this case have superior socio-economic characteristics.

The rural to rural migrants have a relatively high CUFMR (78/1000). These are often poor people who are following a survival strategy in search of opportunities in areas

better endowed than their localities of origin (Adepoju, 1993). However, when we compare these results with table 1, we find that the rural-rural migrants were much better than rural-urban migrants. The urban to urban and urban to rural enjoy the same child survival status probably because they are composed of people with more or less the same socio-economic characteristics.

Thus, we can conclude that the urban areas do not necessarily favour child survival. In table 1, the urban areas have a CUFMR of 80/1000 while the overall in the rural areas is 83/1000 giving a very small difference. A study by Williams and Galley (1995), showed that mortality in late 19th century, Europe was categorized by an "urban penalty". Infant mortality rates in England and Wales were higher in urban areas than in rural areas. The pattern was due to different patterns of causes of death: high urban infant mortality has been shown to be closely associated with overcrowding and insanitary conditions in industrialised areas compared to rural areas, despite the higher level of medical facilities and personnel and higher average incomes in towns.

The burning question therefore, is whether urban areas of Kenya are steadily approaching this situation in the very near future, if they have not already.

## 4.4 MORTALITY DIFFERENTIALS BY OTHER STUDY VARIABLES AND MIGRATION STATUS

In this section, we are going to have an analysis of the mortality differentials (under five mortality) by other study variables. This is important as it would shed some light on the differentials discussed earlier. The differentials will be based on socio-economic variables, demographic variables and duration of stay.

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Mortality varies not only with area of residence (for example rural or urban), but also by age, sex, marital status, occupation and many other factors (Kpedekpo, 1982).

## 4.4.1. DIFFERENTIALS BY DURATION OF STAY

This is aimed at looking at the influence of assimilation to the place of destination, as measured by duration of stay in current place of residence.

Categorization of the respondents was done on the basis of whether:

(i)    the female respondents had stayed in their respective places of residence for

more than ten years, or;

(ii)    the female respondents had stayed in their respective places of residence for

less than ten years.

Table 4.3 shows the result of the analysis for duration of residence.

**TABLE 4.3: UNDER FIVE MORTALITY RATES BY DURATION OF STAY AND MIGRATION STATUS**

| DURATION OF STAY | U-U | R-U | U-OVERAL CUFMR | U-R | R-R | R-OVERAL | TOTAL | OVER CUFMR |
|---|---|---|---|---|---|---|---|---|
| <10 YRS | 51 | 111 | 78 | 53 | 58 | 57 | 1387 | 66 |
| >10 YRS | 53 | 50 | 58 | 40 | 72 | 67 | 718 | 61 |
| CUFMR | 55 | 95 | 72 | 49 | 63 | 61 | 2101 | 62 |

Source: computed from study data.

KEY:

U-U = CUFMR for Urban to urban migrants
R-U = CUFMR for rural to urban migrants
U-R = CUFMR for Urban to rural migrants
R-R = CUFMR for Rural to rural migrants
U-OVERAL = urban rate ( CUFMR )
R-OVERALL = rural mortality rate
OVERALL R = Mortality rates for the category
CUFMR = Crude Under Five Mortality Rate

From table 4.3, it is evident that a shorter duration of stay in the urban areas exhibit a very poor under five survival (78/1000) compared to a longer duration of stay 58/1000). This confirms that probably a longer duration of stay is important for the assimilation of the migrant in the urban area to take place. The rural to urban migrants confirms this assertion as those with a shorter duration of less than ten years have an under five mortality of 111/1000. Thus, with a longer duration of stay in the urban area, the possibilities of dying are halved (50/1000). In any case, the rural-urban migrants have the highest under five deaths (95/1000). The urban to urban have a very low CUFMR of which there are very little variations on duration of stay. This points out the fact that probably the urban to urban migrants are not an underprivileged lot like the rural to urban migrants.

In the rural areas, the migrants exhibit a better under five survival than those in the urban areas (61/1000 and 72/1000 respectively). Differentials in the migration streams in the rural areas shows that those with a duration of less than ten years have a better under five child survival (57/1000). As opposed to the CUFMR of urban migrants for the same category (78/1000), it shows that there are better survival chances for short term migration in the rural areas than urban areas.

In the case of urban to rural migrants, those who have a duration of stay of more than ten years have the best survival chances than those with less than ten years (40/1000 and 53/1000 respectively). This raises questions as to whether the urban to rural migrants are able to easily fit in their destination in the long run.

The case of the rural to rural migrants is a bit mixed up as those with a duration of less than ten years enjoy a better under five survival (58/1000) than those with more than ten years (72/1000). This could mean that a longer duration of stay for the rural to rural is of no benefit and their conditions seem to deteriorate. Probably this lot is composed of the

poorest who depend on chance to be able to survive.

Studies in Liberia and Ghana have ascertained that longer duration of stay appears to result in slightly lower levels of child mortality among mothers who have ever migrated (socio-economic differentials in mortality in developing countries - UN 1985). This conforms to the findings from the KDHS - 1993 analysis of duration of stay and is especially true for the rural to urban migrants as those with a longer duration of stay have double the chances of survival. Goldscheider (1988:679), has aptly summarized the situation in the following way:

"Migration may free individuals from some of the constraints and obligations of traditional rural social structure and from the ascriptive role of place and family of birth. This process may categorize long term, permanent movers more than seasonal and local migrants. However, even return migrants to rural areas do not easily fit back into the social, economic and political structures of their places of origin".

From the above analysis, we can therefore, conclude that the duration of stay, especially in urban areas, is a critical factor in child survival. A longer duration of stay means that the mother has been assimilated in the urban area or area of destination for that matter. After longer exposure to the modern sectors of the city, migrants tend to approximate the urban lifetime population. This is especially true for the urban to urban and urban to rural migrants (Table 3). However, we should not loose sight of the fact that the overall situation in the rural areas is much better than that in the urban areas.

According to the proceedings of the United Nations Expert Meeting on Feminization of Internal migration (UN - 1993:24) comparison of migrants with non-migrants at the place of destination should shed more light on the adaptation process than on the consequences of migration per se. Thus, it was argued, the appropriate comparison group to study as concerned consequences would be non-migrants at the place of origin.

In the analysis of the study data, it was found that the under five mortality for non migrants in urban areas and rural areas was 62 and 102 per a 1000 live births respectively (Table 1 and 2). This confirms the assertion that the rural to urban migrants are coming from areas of predominantly high under five mortality among its non migrants. This effect is transferred to the urban areas where they maintain the relatively high under five mortality. On the other hand, the urban non migrant have a lower under five mortality of 62 per 1000 which is also reflected on the migrants from urban areas. Thus, migrating from rural areas to urban areas does not necessarily improve the under five survival chances.

## 4.4.2. DIFFERENTIALS BY MOTHER'S CHILDHOOD PLACE OF RESIDENCE:

The importance of this variable is based on the fact that it give us an insight into the pre-migration factors. Those who have spent their childhood in the rural areas are likely to have acquired rural characteristics ways of life as opposed to those who have been in the urban. The physical, socio-economic and cultural environment of the mother's childhood influences her general health and well being. This contributes to the formation of beliefs, skills and behaviour which will be of importance during her child bearing years.

The KDHS - 1993 (NCPD-1994) required the respondent to state where they were staying before attaining the age of 12 years old. This is considered as the childhood period. Two categories have been used in this analysis:

(i)     those whose childhood place of residence was urban; and

(ii)    those whose childhood place of residence was rural.

Table 4.4 gives the results on the mother's childhood place of residence and migration status

# Table 4.4: UNDER FIVE CRUDE MORTALITY DIFFERENTIALS BY CHILDHOOD PLACE OF RESIDENCE AND MIGRATION STATUS

| Place of Residence | UN | UU | RU | UCUFMR | RN | UR | RR | RCUFMR | TOTAL BIRTHS | TCUFMAR |
|---|---|---|---|---|---|---|---|---|---|---|
| URBAN | 62 | 81 | 273 | 72 | - | 46 | 62 | 73 | 779 | 74 |
| RURAL | - | 93 | 59 | 81 | 102 | 52 | 77 | 103 | 4,876 | 94 |
| CCUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,655 | 84 |

Source: computed from study data.

KEY:
UN      = Urban Non-migrant underfive mortality rates
UU      = Urban to Urban migrant under five mortality rates
RU      = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN      = Rural Non-migrant under five mortality rates
UR      = Urban to Rural migrant under five mortality rates
RR      = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortaliy Rates
TCUFMR  = Total or overall CUFMR for categories

The results indicate that mother's rural childhood place of residence is a disadvantage as far as under five mortality is concerned (94/1000 compared to 74/1000 for urban childhood place of residence).

Disadvantage of rural childhood place of residence is even more pronounced in the rural areas with a CUFMR of over 100 per a thousand, same situation shown by the rural non migrants. Thus, for those in the rural areas, especially the urban to rural migrants, mother's urban childhood place of residence have been found to be positively related to under five mortality.

The situation in the urban areas is a bit intriguing. Although those with mother's urban childhood place of residence are still having an advantage over those whose place of childhood residence is rural, the rural to urban migrants shows a contradicting situation. Among the rural to urban migrants, those who reported their childhood place of residence to be urban had the highest under five crude mortality rate (273/1000) as compared to those whose childhood place of residence was rural (59/1000). The impression here is that for the

rural to urban migrants, those whose childhood place of residence was urban must have been an underpriviledge lot. Probably its the lot which lived under abject poverty in the slums during childhood before relocating themselves to rural areas and then migrating as adults later on to live under the same conditions as they did during childhood.

The results show that childhood place of residence is very important. Although the urban childhood place of residence has been shown to have an advantage in under five mortality, the migration streams, especially the rural to urban shows us otherwise. Thus, a respondent who had spent her childhood in the urban areas does not necessarily have to have had access to facilities such as schools, hospitals, modern housing etc. The one who had spent her childhood in the rural areas might emerge to have been more advantaged, in any case, the 273/1000 is almost five times that of the rural childhood.

Other researches have shown that in the early twentieth century, rural-born women in England and Wales experienced lower child mortality than urban - born, notably excluding London-born women (UN,1985). In this study, it was found that those born to native Londoners had low mortality than children born to the other current London residents, suggesting an advantage connected with birth place. Early application of health and sanitary measures in London may have accounted for the relatively low infant and child mortality associated with being born in London. The reverse might just as well be true for many urban areas of Kenya.

## 4.4.3. DIFFERENTIALS BY MATERNAL MARITAL STATUS

Maternal marital status is important because of the role of the husband as a main or additional provider of support, hence the woman's marital status is being focused on as a determinant of child mortality by migration status. Differentials in mortality by marital status

were done on the basis of whether:

(i)     the female respondent was married at the time of the survey; and

(ii)    the female respondent was single at the time of the survey (i.e never married, divorced, widowed).

We should not loose sight of the fact that the differentials mainly focus on the migration streams, though by maternal marital status. This analysis has taken into consideration both the migrants and non-migrants.

**TABLE 4.5: UNDER FIVE MORTALITY RATES BY MATERNAL MARITAL STATUS           AND MIGRATIONAL STATUS**

| MARITAL STATUS | UN | U-U | R-U | UCUFM R | RN | UR | RR | RCUFM R | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| MARRIED | 59 | 49 | 38 | 62 | 73 | 45 | 66 | 69 | 4603 | 68 |
| SINGLE | 100 | 79 | 138 | 102 | 121 | 70 | 31 | 107 | 1124 | 107 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,727 | 84 |

Source: Computed from study data.

KEY:

UN      = Urban Non-migrant underfive mortality rates
UU      = Urban to Urban migrant under five mortality rates
RU      = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN      = Rural Non-migrant under five mortality rates
UR      = Urban to Rural migrant under five mortality rates
RR      = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

Differentials by marital status in table 4.5 clearly indicate that children of those women who are married have a better survival status than those who are single mothers. Perhaps this could be due to the possibility of sharing the burden of bringing up a child as compared to those who bear the burden alone. The case for the single mothers is even far worse for the rural to urban migrants. This brings into question the demographic and socio-

economic composition of the rural to urban migrants. A study by Kichamu et al (1986) showed that the widowed, divorced and separated women had the highest child mortality. There was, however, mixed results for the never married as some had a high child mortality while for others it was low. World Health Organization (1978) found that, in all the societies studied, illegitimate births had higher rates of perinatal mortality. Mortality of children of divorced mothers was found to be higher than that of currently married women in Bangladesh (UN 1985).

The non migrant single women also exhibit a relatively high under five mortality in both urban and rural as par our analysis. This is an indication that the rural to urban migrants especially, are also disadvantaged from their source region if they are single. However, the survival chances are appreciably raised if they are married (38/1000) as compared to 138/1000). The urban to urban migrants have a substantially lowered under-five mortality as compared to the urban non migrants, i.e whether single or married. The implication here is that the urban to urban migrants have a better demographic and socio-economic composition than the rural to urban migrants.

In the rural areas, the urban to rural migrants have a lower under five mortality, especially those who are married. Could this then mean that this migration stream is probably composed of women whose husbands are working in the city and periodically remit their income for the upkeep of the family back at home in the rural areas.

The case of the rural to rural migrants is unique in the sense that those who are single have the best under five survival as compared to those who are married. This also brings into question the age composition of the rural to rural migrants. Thus, being single for a rural to rural woman migrant is a big advantage. However, the low under five mortality for the single mothers for the rural to rural migrants could be as a result of misreporting on

marital status because of the traditional stigma against single mothers.

All in all, rural to urban migration of women, whether single or married, do not or only slightly improve the chances of a child's survival, although such a chance will still be far below the overall urban chances of child survival. However, the importance of having a partner for the women cannot be over emphasised as this appreciably improve the chances of under five survival. Studies on Ghana, Kenya, Lesotho, Liberia, Sudan, Indonesia, Nepal, Republic of Korea, Sri Lanka, Thailand and Chile shows that currently married women, in general, have lower child mortality levels than widowed, divorced or separated women. The only exceptions were Jamaica, Peru and Sierra Leone ( UN, 1985).

### 4.4.4. DIFFERENTIALS BY MATERNAL WORK STATUS

Maternal work status is an exogenous determinant of infant and child mortality. Its effects has been found to vary and is rather contradictory. Dyson and Moore (1983) emphasised that women who earn money are better able to feed their children than those who operate as family dependants. Other authors however, have argued that the increased time burden that paid work usually entails, forces women to use surrogate child care help and that may consequently increase the risks of infection and accidents among their children (Bunster, 1983). Table 4.6 below is a summary of the findings from KDHS - 1993 (NCPD-1994).

## TABLE 4.6: UNDER FIVE CRUDE MORTALITY RATES BY MATERNAL WORK STATUS AND MIGRATION STATUS

| WORK STATUS | UN | U-U | R-U | UCUFMR | RN | UR | RR | RCUFMR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| WORKING | 155 | 44 | 96 | 102 | 113 | 19 | 74 | 95 | 1526 | 98 |
| NOT WORKING | 6 | 53 | 92 | 40 | 76 | 62 | 60 | 71 | 4162 | 68 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,688 | 84 |

Computed from study data

KEY:
UN      = Urban Non-migrant underfive mortality rates
UU      = Urban to Urban migrant under five mortality rates
RU      = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN      = Rural Non-migrant under five mortality rates
UR      = Urban to Rural migrant under five mortality rates
RR      = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

From the table, it is evident that women who are working are disadvantaged as they have relatively high under five mortality rates, urban natives being the worst affected (155/1000). The rural natives who are working also have a high under five mortality rate of 113/1000.

The migration streams show a mixed result as the urban to urban and urban to rural women who are working have a low under five mortality. As much as this could be an indication of an advantage for these particular migration streams, the low rates could also be attributed to few cases of women who are working in these migration streams.

Thus, generally, for a working mother the under five mortality is very high. There is a sharp contrast with those who are not working, especially among the urban non migrants who have a CUFMR of only 6/1000. As argued earlier, this could be because the mother is giving most of her attention to the child and does not have to depend on surrogate help.

It is still evident that for the rural to urban migrants, whether working or not, they still maintain the relatively high under five mortality. Chen ( 1983 ) has argued that discrimination against women, especially at work, seems to account for at least some of the negative effects of female employment on infant and child mortality. This, coupled with limited job opportunities (especially for the rural to urban migrants) that women's child care responsibilities create, tend to force women who work to do so under poor conditions for long hours, thereby lessening their ability to care for their children . Being that most of the rural to urban migrants in Kenya end up in the slums, coupled with their low education and lack of skill, they end up doing poorly paid jobs under deplorable conditions which affects their health and subsequently that of their children. The sprawling slums in the industrial area of Nairobi is a grim indication of this.

### 4.4.5. DIFFERENTIALS BY HUSBAND'S OCCUPATION

The major reason to expect the father's occupation to be associated with child mortality is that it serves as an indicator of household socio-economic circumstances, in particular, the consumption opportunities available to children.

The analysis and categorisation for this particular variable was done on the basis of whether:

(i)     the husband was not working or did manual work (unskilled); and,

(ii)    the husband worked as a professional, clerk, salesman etc. (i.e skilled worker).

# TABLE 4.7: CRUDE UNDER FIVE MORTALITY PER 1000 LIVE BIRTHS BY HUSBAND'S OCCUPATION AND MIGRATION STATUS

| HUSBAND'S OCCU | UN | U-U | R-U | UCUFMR | RN | UR | RR | RCUFMR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| NOT WORKING | 75 | 73 | 100 | 80 | 88 | 41 | 67 | 79 | 4477 | 79 |
| PROFF CLERK | 18 | 22 | 53 | 29 | 64 | 61 | 45 | 58 | 726 | 52 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,203 | 84 |

Source : Computed from study data.

KEY:

| | | |
|---|---|---|
| UN | = | Urban Non-migrant underfive mortality rates |
| UU | = | Urban to Urban migrant under five mortality rates |
| RU | = | Rural to Urban migrant under five mortality rates |
| UCUFMR | = | Urban Crude Under five Mortality Rates |
| RN | = | Rural Non-migrant under five mortality rates |
| UR | = | Urban to Rural migrant under five mortality rates |
| RR | = | Rural to Rural migrant under five mortality rates |
| RCUFMR | = | Rural Crude Under Five Mortality Rates |
| TCUFMR | = | Total or overall CUFMR for categories |

Clearly, women with partners who are working as professionals and clerks (white collar jobs) have a better under five mortality than their counterparts. This has appreciably improved the survival chances of the rural to urban migrants as those whose husbands are in the white collar jobs have doubled the chances of under five survival (53/1000) than those whose husbands are not working (100/1000). In all cases in the urban areas, a white collar job for the husband has improved the chances of under five child survival.

In the rural areas, this pattern is broken by the urban to rural migrants who exhibit an opposite effect with the white collar jobs exhibiting a higher mortality than those who are not working (61/1000) and 41/1000 respectively). This could be attributed to the very low number of such workers in the rural areas. However, a study on Indonesia, Lesotho and the Republic Korea also showed that agricultural workers had an advantage over the white collar workers (UN, 1985:129).

We can generally conclude that the husband's occupation improves child survival. This implies that even though the source region (e.g rural to urban)could be having a high mortality, the type of the husband's occupation could substantially reduce the risk. Bicego and Ahmad (1996) also found the same relationship between the fathers's occupation and under five mortality by using DHS data for a ten year period.

## 4.4.6. DIFFERENTIALS BY MATERNAL EDUCATION

The effect of maternal education on under five survival has been well documented by many researchers, though the behaviourial mechanisms that drive the education - child survival relationship are not completely understood. However, it is generally recognized that improved and/or increased use of preventive and curative health technologies by more educated mothers is part of the explanation (Bicego and Ahmad, 1996).

Caldwell (1979) has argued that maternal education allows for "a shift from emphasis on the family lineage, from filial obedience and from the obedience of women to men, to an emphasis on the husband wife relationship, on the conjugal family and on relative gender equality". Thus, women's education can be a key factor in mortality reduction (Cochrane et al. 1980).

Table 4.8 shows the under five mortality rates by migration status and maternal education.

# TABLE 4.8: UNDER FIVE CRUDE DEATH RATES PER 1000 BIRTHS BY MATERNAL EDUCATION AND MIGRATION STATUS

| MATERNAL EDUCATION | UN | U-U | R-U | UCUFMR | RN | UR | RR | RCUFMR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| NO EDUCATION | 100 | 87 | 200 | 100 | 91 | 58 | 77 | 82 | 1051 | 83 |
| PRIMARY | 77 | 72 | 176 | 97 | 82 | 45 | 66 | 79 | 3502 | 80 |
| SEC + | 13 | 42 | 34 | 31 | 66 | 10 | 43 | 56 | 1174 | 50 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,727 | 84 |

Source : Computed from study data.

KEY:
UN      = Urban Non-migrant underfive mortality rates
UU      = Urban to Urban migrant under five mortality rates
RU      = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN      = Rural Non-migrant under five mortality rates
UR      = Urban to Rural migrant under five mortality rates
RR      = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

In all cases examined, under five mortality improves with education, this is irrespective of whether the respondents are in the urban or rural areas. The most notable changes are seen among the rural to urban migrants as those with no education have an under five mortality of 200/1000 compared with 34/1000 for those with secondary and above. Thus, a rural to urban migrant with at least secondary education and above has a better child survival status. For this migration stream, it would be interesting to note that if the migrant has no education, the chances of the child dying is in fact more than two times compared to the non migrants in the rural areas who have no education. Those with primary education and are rural to urban migrants only have a slightly improved chance of survival (176/1000). These rates shade some light on the reasons why migrants, especially rural to urban, have a high under five mortality.

The urban non-migrants with no education are not any better though the survival chances are highly improved with secondary education and above. The urban to rural migrants on the other hand have appreciably low under five mortality rates, though the general relationship between education and child survival is still evident.

These findings are similar to those by Bicego and Ahmad (1996). Their findings were based on analysis of DHS data of childhood mortality and education .Health and sickness care has been shown to be related to maternal education and father's occupation in squatter settlement of Amman, Jordan (Tekce and Shorter, 1984, Cleland and Van Ginneken 1988) have argued that parental education has an independent effect on child survival, but can also be determinant of a household's assets and physical living conditions as well as of health services use. Farah and Preston (1982) found evidence in their study of child mortality in Sudan that maternal education may aid in overcoming a hostile environment, suggesting that it provides some personal resources to substitute for unsatisfactory environmental resource (Hill, 1990:125).

We cannot therefore over emphasize the role of education on under five survival, especially among the rural to urban migrants and the non migrants. This as stated earlier, gives an insight as to why some migration streams have a poor under five survival.

## 4.4.7 DIFFERENTIALS BY HOUSEHOLD TOILET FACILITY

The type of household toilet facility is a sanitary requirement as a parameter of hygiene. The characteristics of a dwelling place has been recognized to have an effect on infant and child mortality. These characteristics include the type of household toilet facility, water supply, power source and type of building materials used to construct the house.

Among those who have incorporated this factor in their analysis of mortality are Mosley and Chen (1984) and Jain A.K. (1985).

Table 4.9 shows the under five mortality (CUFMR/1000) by household toilet facility and migration status.

Table 4.9: UNDER FIVE MORTALITY (CUFMR/1000) BY HOUSEHOLD TOILET FACILITY AND MIGRATION STATUS

| TYPE OF TOILET | UN | UU | RU | UCUFMR | RN | UR | RR | RCUFMR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| FLUSH | 77 | 22 | 75 | 60 | 36 | 10 | 10 | 19 | 204 | 49 |
| OTHER | 68 | 65 | 107 | 75 | 85 | 52 | 64 | 77 | 5,490 | 77 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,694 | 84 |

Sorce : Computed from study data.

KEY:
UN      = Urban Non-migrant underfive mortality rates
UU      = Urban to Urban migrant under five mortality rates
RU      = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN      = Rural Non-migrant under five mortality rates
UR      = Urban to Rural migrant under five mortality rates
RR      = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

In all migration streams, there is a reduction in under five survival due to better toilet facilities. The owning of a flush toilet appreciably reduces the chances of dying, especially in the rural areas where we have very low under five mortality levels among those with a flush toilet.

There is a deviation from this expectation among the urban non-migrants as those with a flush toilet exhibit a higher mortality than those without.  This anomaly could have risen as a result of the relatively few cases of respondents who had no flush toilets among the

urban non-migrants.

Side by side with the household toilet facility is the household source of drinking water (table 4.10).

Table 4.10: UNDER FIVE MORTALITY (CUFMR/1000) BY HOUSEHOLD SOURCE OF DRINKING WATER AND MIGRATION STATUS

| SOURCE OF DRINKING WATER | UN | UU | RU | UCUFMR | RN | UR | RR | RCUFMR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| PIPED<br>OTHER | 64<br>80 | 54<br>56 | 76<br>143 | 71<br>72 | 50<br>88 | 45<br>60 | 44<br>66 | 50<br>79 | 800<br>4,891 | 58<br>76 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,691 | 84 |

Source : Computed from study data.

KEY:
UN      = Urban Non-migrant underfive mortality rates
UU      = Urban to Urban migrant under five mortality rates
RU      = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN      = Rural Non-migrant under five mortality rates
UR      = Urban to Rural migrant under five mortality rates
RR      = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

A look at the household source of drinking water also shows very high chances of under five survival for those with tap water in the household, especially among the rural to urban migrants.

Thus, the type of household toilet facility and the household source of drinking water is an indication of the type of dwelling of the respondents. Those who have piped water in the household and a flush toilet most likely live in better houses than those without. This is especially true in the urban areas where it has been argued, the rate of poverty is increasing. This is what (UNFPA,1996:5 ) had to say about urban poverty.

"For all the relative advantages of city life, widespread poverty casts a shadow over urban future... it cannot be denied that a vast number of people in urban areas cannot adequately provide for their basic needs in shelter, employment, water, sanitation health (including reproductive health) and education)...... a large proportion of the poorest are women... urban poverty has been increasing faster than rural poverty."

It is not therefore surprising that in the urban areas, those without piped water and a flush toilet have high under five mortality rates than those in the rural areas within the same category. More so the rural to urban migrants as compared to the rural non-migrants. The same findings were found by Benjamin (1965) who studied England and Wales.

## 4.4.8. DIFFERENTIALS BY MATERNAL AGE AT BIRTH

A mother's age at birth has important health and social implications. A higher age at marriage implies that the first births are often delayed to a later age which is generally less risky. On the other hand, a very young age at birth and older age at birth is associated with higher risks of child death in the first five years. The disadvantages at young ages at birth and child survival are attributed to social and economic disadvantages (Geronimus and Korenman, 1993). Table 4.11 gives the under five mortality rates by maternal age at birth and by migration status.

**Table 4.11:** UNDER FIVE MORTALITY (CUFMR/1000) BY MATERNAL AGE AT BIRTH AND MIGRATION STATUS

| MATERNAL AGE | UN | U-U | RU | UCDR | RN | UR | RR | RCUFMR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| < 20 | 143 | 15 | 250 | 161 | 118 | 10 | 105 | 109 | 325 | 114 |
| 20-34 | 70 | 42 | 50 | 39 | 82 | 47 | 53 | 72 | 4315 | 72 |
| 35 + | 10 | 50 | 98 | 68 | 83 | 73 | 87 | 83 | 1087 | 81 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,727 | 84 |

Source : Computed from study data.

KEY:
UN       = Urban Non-migrant underfive mortality rates
UU       = Urban to Urban migrant under five mortality rates
RU       = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN       = Rural Non-migrant under five mortality rates
UR       = Urban to Rural migrant under five mortality rates
RR       = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

The analysis for this variable was done based on three categories of age:

(i)      female respondents aged 20-34 years;

(ii)     female respondents aged less than 20 years; and

(iii)     female respondents of age 35 and above.

It is a evident that the respondents who are under 20 years are clearly disadvantaged as they have very high under five mortality. As for the urban to rural migrants, the low under five mortality of 10/1000 for the under twenty is because there were very few respondents in this category, hence the distortion. The same case applies to the urban to urban migrants. As for the urban non migrants who are 35 and above, the low under five mortality is due to the very few births who are under five years, possible and lack of

reporting a death that has occurred.

However, the general picture is that the under 20 years and 35+ have a poor under five mortality rates. The chances of a child surviving are appreciably raised if the age at birth for the mother is between 20 to 34 age category.

The rural to urban migrants who are under 20 years have the highest CUFMR of 250/1000, more than double that of the rural non migrants (118/1000). A further indication that those who migrate to urban areas from the rural areas and are under 20 years are a rather underprivileged lot.

The non migrants in the rural and urban areas who are under 20 years are not any better as they have rates which are far above average for the respective areas (118/1000 and 143/1000 respectively).

The 35 years and above category also have high under five mortality rates which implies a rise in mortality with older ages.

Hobcraft et al ( 1985) found that children born to women under the age of 20 years had very high mortality risks. Bicego and Ahmad (1996) also found the same results by analysis DHS results for different countries.

Closely connected with the maternal age at birth is the birth order of the child.

## 4.4.9. DIFFERENTIALS BY BIRTH ORDER (PARITY)

The chances of a child surviving have been shown to be associated with birth order of the child. Generally, first births and births of very high order carry greater than average mortality risk (Hill and Hill, 1988). Certainly, there is a biological basis for the poor survival experience of first births. It is argued that many first births take place before a woman has reached full physical and reproductive maturity. This leads to increased perinatal

risk and more difficult delivery.  Also, a first time mother may be poorly prepared to handle

new roles and responsibilities in her life (Bicego and Ahmad ,1996).

The analysis for the birth order was based on three categories:

(i)     birth order 1;

(ii)    birth order of between 2-6 ;and

(iii)    birth order of seven and above.

Table 4.12:    **UNDER FIVE MORTALITY RATES BY BIRTH ORDER AND MIGRATION STATUS**

| BIRTH ORDER | UN | U-U | RU | UCUFMR | RN | UR | RR | RCDR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 95 | 68 | 103 | 74 | 95 | 91 | 77 | 91 | 1128 | 88 |
| 2-6 | 55 | 47 | 71 | 44 | 82 | 36 | 57 | 70 | 3487 | 70 |
| 7+ | 63 | 0 | 100 | 71 | 86 | 45 | 87 | 84 | 1112 | 83 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 5,727 | 84 |

Source : Computed from study data.

KEY:
UN      = Urban Non-migrant underfive mortality rates
UU      = Urban to Urban migrant under five mortality rates
RU      = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN      = Rural Non-migrant under five mortality rates
UR      = Urban to Rural migrant under five mortality rates
RR      = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

The 2-6 birth order category is very broad, however, this has not affected the results

except probably among the urban to urban migrants who might not have been having a child

of birth order 7+, hence zero under five mortality.

The general expectation is however maintained as birth order 1 and 7+ have very

higher under five mortality rates.  The highest risk is however, among the rural to urban

migrants of birth order one (103/1000).  This is higher than any other rate even in the rural

areas. In the urban areas, the rural to urban migrants still maintain the highest rates in the 2-6 and 7+ category.

In the rural areas, although the advantage enjoyed by the 2-6 category still persists, the rural to rural migrants portrays a slight variation as those with birth order 7+ are far worse than birth order 1 (77/1000 and 87/1000 respectively). This would imply a deterioration of health for the mother among the rural to rural migrants or difficult living conditions. Though this might be the case, the rural to urban migrants still maintain the highest crude under five mortality rates while the urban to urban migrants maintain some of the lowest.

Bicego and Ahmad (1996:17) have argued that:

"while older, high parity women are at increased risk of complications during and after childbirth and for delivery of a genetically impaired child, it appears that in many countries the poor survival experience of high order births is also related to adverse social and economic factors that are both the cause and consequence of high fertility. The degree of risk elevation associated with grand multiparity varies with the level of access to and use of high quality antenatal and obstetrical services, which are dependent on the level of community development, the economic situation of the household and the educational level of the mother"

Being that the poverty levels are increasing at a faster rate in the urban areas than in the rural areas, the disadvantages of maternal age at birth and birth order are bound to be maintained.

### 4.4.10     DIFFERENTIALS BY PREVIOUS BIRTH INTERVAL

The length of preceding birth interval has clearly been shown to influence child mortality. This has been attributed to several reasons such as the replacement effect (Hobcraft, McDonald, and Rutstein , 1985) and maternal nutrition/depletion relationship .

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The analysis for this variable was done on the basis of three categorizations;

(i)     previous birth interval of 36 months and above ;

(ii)    previous birth interval of less than 18 months; and

(iii)   previous birth interval at between 18 to 35 months.

Table 13 gives a summary of the calculated crude under five mortality rates by birth interval and migration status.

**Table 4.13:    CRUDE UNDER FIVE MORTALITY RATES BY PREVIOUS BIRTH INTERVAL AND MIGRATION STATUS**

| BIRTH intervals | UN | U-U | RU | UCUFMR | RN | UR | RR | RCDR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| < 18 months | 74 | 80 | 114 | 91 | 138 | 143 | 99 | 127 | 502 | 114 |
| 18-35 months | 57 | 56 | 112 | 70 | 79 | 26 | 58 | 69 | 2,538 | 69 |
| 36 + months | 10 | 06 | 56 | 17 | 70 | 34 | 48 | 62 | 1,550 | 65 |
| CUFMR | 62 | 53 | 82 | 80 | 102 | 53 | 78 | 83 | 4,590 | 84 |

Source : Computed from study data.

KEY:
UN     = Urban Non-migrant underfive mortality rates
UU     = Urban to Urban migrant under five mortality rates
RU     = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN     = Rural Non-migrant under five mortality rates
UR     = Urban to Rural migrant under five mortality rates
RR     = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

In all the cases considered, the previous birth interval of less than 18 months is definitely a big disadvantage, especially in the case of the urban to rural migrants (143/1000). This could be connected to also the advanced age of most of the urban to rural migrants whom, as it has always been argued, composes mainly the retirees.

The rural to urban migrants are not any better as the under 18 months and 18-35 months birth interval are not any better as there is an all time high of over 100 under five

mortality rates. However, the chances of survival of the child is doubled if the previous birth interval is 36 months and above. Thus with a longer birth interval, more attention is given to the child and there is no much strain on issues such as breast feeding.

When we compare the rural natives and the rural to urban migrants, we find that the previous group in the under 18 months category are more disadvantaged (138/1000) than the latter (114/1000). This implies that even the source regions of the rural to urban migrants experience very high under five mortality for preceding birth intervals of less than 18 months.

The urban non migrants, and urban to urban migrants have the lowest mortality rates for a previous birth interval of 36 months and above (10/1000 and 6/1000 respectively). A further evidence on the advantages of longer birth intervals.

These results support the findings of other researchers such as Bicego and Ahmad (1996) who analyzed DHS-1993 data for different countries. They found that children born after short intervals (<24 months) are at increased risk of dying during the first five years, while children born after a long interval (48+ months) are at a lower risk relative to the 24-47 month interval. For all countries which they studied, short preceding birth intervals are associated with 58 percent higher risk of dying before the age of five while long birth intervals are associated with 28 percent lower risk of dying, compared with intervals 24-47 months in length.

Closely connected with previous birth interval is succeeding birth interval.


4.4.10.      DIFFERENTIALS BY SUCCEEDING BIRTH INTERVAL

Analysis of following birth interval was based on two categorization ;

(i)      following birth interval of 16 months and above ;and,

(ii)     following birth interval for 15 months and below.

Table 4.14:   CRUDE UNDER FIVE MORTALITY RATES WITH SUCCEEDING
BIRTH INTERVAL AND MIGRATION STATUS

| BIRTH INTERVALS | UN | U-U | RU | UCUFMR | RN | UR | RR | RCUFMR | TOTAL BIRTHS | TCUFMR |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 months + | 97 | 60 | 59 | 75 | 99 | 35 | 70 | 87 | 1,767 | 86 |
| < 15 months | 250 | 0 | 333 | 250 | 400 | 500 | 373 | 398 | 192 | 385 |
| CUFMR | 114 | 58 | 100 | 93 | 129 | 83 | 99 | 117 | 1,959 | 115 |

Source : Computed from study data.

KEY:
UN       = Urban Non-migrant underfive mortality rates
UU       = Urban to Urban migrant under five mortality rates
RU       = Rural to Urban migrant under five mortality rates
UCUFMR  = Urban Crude Under five Mortality Rates
RN       = Rural Non-migrant under five mortality rates
UR       = Urban to Rural migrant under five mortality rates
RR       = Rural to Rural migrant under five mortality rates
RCUFMR  = Rural Crude Under Five Mortality Rates
TCUFMR  = Total or overall CUFMR for categories

Analysis of following birth interval is important as it gives an indication of birth spacing, thus the arguments on preceding birth interval could apply here.  A close birth spacing of only a few months could mean that there is no sufficient breast feeding, mother's attention is divided and might lead to early weaning of the child.

The number of women who had a child after the index child were quite few as this analysis involves only 1,959 children as opposed to the overall number of children who are 5,727.

Analysis of this variable shows that women who had a following birth interval of less than 15 months had very high crude under five mortality rates, in some cases, half the children die before reaching their fifth birth day (urban to rural with a CUFMR of 500/1000).

The urban to urban migrants show a zero under five mortality in the less than 15 months category. This could be attributed to misreporting of the birth interval or there were no births reported in this category among this group of migrants.

The rural to urban migrants still reflect the very high under five death rates, similar to the rates in the rural areas.

Therefore, generally speaking, just as we had seen in the arguments on previous birth interval, a short succeeding birth interval has serious negative implications on child survival. Not even the non migrants are spared, whether urban or rural.

## 4.5 SUMMARY

The differentials on under five mortality have clearly indicated the rural to urban migration is a big disadvantage on under five survival. As discussed elsewhere, the urban poverty is on the rise, an indication that the conditions in urban areas are slowly becoming worse than in the rural areas. Thus, there is a need to address some specific sections of the city with the aim of alleviating such prevailing problems. As conceptualised in figures 1 and 2, socio- economic characteristics of the respondents are very important in determining child mortality.

Thus, the socio-economic characteristics will be determined by the household environment and the type of community the respondent comes from. It is therefore no wonder that those from rural areas have inferior socio-economic characteristics which is reflected in their inferior household environment and consequently on the chances of child survival.

# CHAPTER FIVE

# DETERMINANTS OF CHILD SURVIVAL STATUS OF UNDER FIVE CHILDREN

## 5.1 Introduction

Logistic regression has been used to determine the probability of child survival, given certain conditions. It has been used here because of its flexibility in analyzing dichotomous variables, in this case, the probability of dying or being alive.

The analysis has been done on two main basis:

(a)     Bivariate logistic regression

(b)     Multivariate logistic regression.


For both types of regression analysis, the same category of variables are used as specified in chapter three on methodology.

The models analyzed are:

(i)      All urban non migrants

(ii)     All urban migrants

(ii)     All rural migrants

(iv)    All rural non migrants.

As can be seen from the models, it is clear that not much emphasis has been placed on migration typologies ( rural to urban, rural to rural, urban to rural and urban to urban). Such sub-division gives very few cases unsuitable for regression analysis, in any case, a variable such as previous place of residence and duration of residence gives a suitable indication of the migration streams. However, there is a tendency of treating the urban migrants as having their place of origin being rural areas, in any case, they form the majority.

## 5.2 BIVARIATE LOGISTIC REGRESSION RESULTS

A bivariate analysis was done by taking each of the independent variables in turn and regressing with the dependent variable, B5 (whether the child is dead or alive). This was done for each of the models and the results have been shown in the subsequent tables in this chapter. No variables were dropped as all were fitted into the models.

### 5.2.1 ALL URBAN MIGRANTS

Among the urban migrants, the mother's childhood place of residence showed that those with a rural childhood had the odds of survival of their children being reduced by as much as 0.9743 times than those with an urban childhood. This obviously gives those with an urban childhood an edge over those with a rural childhood, though this relationship is not significant at an $\propto$ of 0.05. This supports the findings in chapter four which showed that those mothers with a rural childhood had a much higher underfive mortality (94/1000) as compared to 74/1000 for women with urban childhood place of residence.

Apart from the mother's childhood place of residence most of the other varibles also showed a negative relationship to child survival, namely; those without a flush toilet, no piped water, birth oder 7+, preceeding birth interval of less than 18 months, succeeding birth interval of less than 15 months, single mothers, duration of stay in urban areas of less than 10 years, women who's husband are not working, mothers without work, age at birth-under 20 years and 35+, a rural previous place of residence, and mothers with no education.

Thus, as table 5.1 shows, the reference categories for these variables indicate an improvement in child survival. Upper most is the mother's childhood place of residence which determines all the other variables since a rural place of residence is for example, associated with a poor socioeconomic status. These findings support those in chapter 4 on differentials in under five mortality.

# TABLE 5.1 BIVARIATE LOGISTIC REGRESSION PARAMETERS FOR URBAN MIGRANTS

| VARIABLE | B | SIG | EXP (B) | -2 log likelihood |
|---|---|---|---|---|
| childhood place of residence: rural | -.0261 | .9355 | .9743 | 328.414 |
|        Urban | Reference | | | |
| Type of facility: toilet flush | -2913 | .4481 | 0.3381 | 327.813 |
| other | Reference | | | |
| Source of drinking water: other | .0357 | .9082 | 1.0363 | 328.403 |
| water piped into house | Reference | | | |
| Birth order No | | | | |
| order    1 | -.1372 | .6703 | .8718 | 328.236 |
| order    7+ | .6006 | .4162 | 1.8233 | 327.630 |
| order    2 to 6 | Reference | | | |
| Preceding birth interval (months) | | | | |
|     36+ | -.2343 | .4759 | .7911 | 327.925 |
|     18-35 | -.0538 | .8719 | .9476 | 328.394 |
|     < 18 | Reference | | | |
| Succeeding birth interval (months) | | | | |
|     < 15 | 1.2774 | 0.472 | 3.5871 | 99.540 |
|     16+ | Reference | | | |
| Current marital status: | | | | |
|     Single | .6810 | .0401 | 1.9758 | 324.501 |
|     Married | Reference | | | |

Cont...

| | | | | |
|---|---|---|---|---|
| Years lived in place of residence:<br>less than 10 years<br>> 10 years | -. 1882<br>Reference | .5435 | .8285 | 328.052 |
| Partners (Husband's)<br>Occupation:<br>Not working<br>Professional clerk etc. | . 9501<br>Reference | .0494 | 2.5861 | 323.610 |
| Current type of employment (mother)<br>Not working outside household for pay;<br>working outside for pay | .0093<br>Reference | .9770 | 1.0094 | 328.419 |
| Age of mother<br>20 - 34 years<br>35+<br>< 20 | . 0314<br>. 9169<br>Reference | .9412<br>.2124 | 1.0319<br>2.5016 | 328.415<br>326.392 |
| Type of place of previous residence<br>Urban<br>Rural | - 8438<br>Reference | .0219 | .4301 | 323.780 |
| Highest education<br>level (maternal)<br>No education<br>Sec+<br>Primary | - . 3425<br>1.1572<br>Reference | .4260<br>.0024 | .7100<br>3.1811 | 327.826<br>317.405 |

Source: Computed from study data

The bivariate logistics results for the urban migrants shows that five variables are statically significant at $\propto$ = 0.05. These variables are current marital status, husband's work status, type of place of previous residence and maternal education. These variables have been shown to be most important among urban migrants.

Ikamari (1996) also found a relationship between mortality and succeeding birth interval. Bicego and Ahmad (1996) also arrived at the same results. Thus, for a migrant mother, succeeding birth interval will greatly determine the chances of child survival.

Current marital status is also important among the migrants as this has an advantage of shared responsibilities. Such a relation has also be found by Kichamu (1986); WHO

(1978) and UN (1985).

A socio-economic variable such as the husband's work status is a very important indicator of the migrants' living conditions. The women who's husbands are not working most likely live in deplorable conditions such as in the slums. Subsequently, this has an effect on underfive survival. Such relationships were also found by Bicego and Ahmad (1996); and UN (1985).

Maternal education is also a socio-economic indicator and the bivariate result shows a clear advantage among the educated migrants. This supports the findings by Caldwell (1979), Cochrane et. al (1980), Bicego and Ahmad (1996), Ikamari (1996) also found that child mortality rates declined with the level of maternal education.

Type of place of previous residence also showed a statistically significant relationship. Clearly, the rural to urban migrants or those whose previous place of residence was rural are disadvantaged as far of child survival is concerned. Thus, rural areas have always been associated with a higher child mortality (Caldwell et. al 1981 and Ikamari, 1996). Those from rural areas or regions of high mortality are therefore transferring these risks to urban areas as most likely they end up living in slums (Hill, 1988).

World Resources, 1996: X, summarises the situation as follows:

"In developing countries, urban areas often have huge populations living in poverty...Disparities among different income groups are often more extreme in cities of the developing world... The problems of the urban poor are similar to those of the rural poor - lack of access to clean water, sanitation, and adequate housing - compounded by overcrowding and exposure to industrial wastes and urban air pollution."

The bivariate logistic regressions results for the rural non migrants will be used as a basis of comparison with the urban migrants of whom most have their source region being rural

areas.

## 5.2.2  RURAL NON MIGRANTS

Among the rural non migrants, there are quite a number of variables which are statistically significant as shown in table 5.2.

Rural non migrant women with a childhood place of residence being rural had their odds of dying of their children being 1.5946 times the odds of mothers with an urban childhood place of residence. This result is statistically significant at $\propto$ = 0.05. Thus a clear disadvantage as was the case with urban migrants.

The source of drinking water was also found to be highly statistically significant among the rural non migrants. Those with other sources of drinking water other than being piped into household had the odds of dying of their children being 1.4717 times the odds of those with piped water. This is also mirrored among the urban migrants in the same category. In conjunction with drinking water is type of toilet facility of which in the rural areas the odds of a child dying is 2.3223 times those with a flush toilet. Thus a much higher odds of dying than for urban migrants, giving a credence to importance of clean drinking water and good sanitation.

Parity among the rural non-migrants shows that birth order 1 and 7+ are clearly disadvantaged compared to odds of the 2-6 birth order category. The relationship is highly statistically significant. Thus both urban migrants (though not statistically significant) and rural non migrants show a clear disadvantage for first order births and higher order births.

Preceding birth interval also shows a statistically significant relationship as 36+ and 18-35 months categories give a substantial reduction in child deaths compared to under 18

months. In fact, the odds of survival are much higher in these categories among the rural non migrants than urban migrants.

Succeeding birth interval among the rural non migrants shows that those with an interval of less than 15 months had the odds of dying of their children being 6.9498 times that of 16 months and above. In fact, twice the odds for the urban migrants. Thus short birth intervals are more catastrophic for the rural non migrants, however, urban migrants are not any better. The result for the rural areas is statistically significant at $\propto = 0.05$.

The odds of dying are slightly lower for rural non migrant children with single mothers as compared to urban migrants. For the rural non migrants who are single, the odds of dying of their children is 1.7362 times the odds of the married mothers. Those in the urban and single have their odds being 1.9758, slightly higher than rural non migrants. However, in both cases, we have a statistically significant relationship thus underlying the importance of a partner.

Among the rural non migrants whose husbands had no work, the odds of dying was 1.4493 times those whose husbands were working. The odds in the rural areas is half that of urban migrants (2.5861). This is an indication that for the urban migrants whose husbands are not working, they are far worse than their counterparts in the rural areas. Thus in the urban areas, the work status among the urban migrants is very important.

The maternal work status is also very important as among the rural non migrants, the odds of dying was 1.3807 times the odds for those who are working. This is a bit higher than for the mothers in the urban areas who probably get engaged in the informal sector to

earn a living and support their children. This relationship for the rural areas is statistically significant at $\propto = 0.05$.

The mother's age is also important among the rural non migrants. The odds of survival is 1.2711 among the 20-30 year age category as compared to the under 20 years category. Among the 35+ the odds of survival of their underfive children is also high at 1.2601 times the odds for the under 20 years category. These odds are much higher than those for urban migrants. This is a manifestation that the age of the mother is much more important in the rural areas than urban areas. However the 35+ for rural non migrants has half the odds of survival as compared to their counterparts among the urban migrants.

Among the rural non migrants, the odds of dying was 1.4620 for those with no education compared to those who at least have an education (primary). Among those with sec+ education, the odds of survival was 1.0485 times that of those with primary education. It is interesting to note that among the urban migrants, sec+ education triples the chances of child survival.

From the above overview of rural non migrants, it is evident that the disadvantages in the rural areas, are "carried forward" to the urban areas. Analysis of crude under five mortality rates also showed appreciably higher mortality rates in rural areas, which were also reflected among the rural to urban migrants. The bivariate analysis further indicates this scenario.

## Table 5.2 :BIVARIATE LOGISTIC REGRESSION PARAMETERS FOR RURAL NON-MIGRANTS

| VARIABLE | B | SIG | EXP(B) | - 2 LOG likelihood |
|---|---|---|---|---|
| Childhood place of rent:<br>Rural<br>Urban | .4666<br>reference | .0139 | 1.5946 | 1950.142 |
| Type of toilet facility<br>flush toilet<br>other | .8426<br>reference | .2412 | 2.3223 | 2891.387 |
| Source of drinking water<br>Other sources<br>piped into house | .3864<br>reference | .0478 | 1.4717 | 2888.881 |
| Birth order No<br>Order 1<br>Order 7 +<br>Order 2 to 6 | .2829<br>.4272<br>reference | .0061<br>.0115 | 1.3270<br>1.5330 | 2885.756<br>2809.851 |
| Preceding birth interval<br>36 +<br>18 - 35<br>< 18 | -.0976<br>-.1437<br>reference | .0506<br>.0702 | .1025<br>.3096 | 2252.940<br>2351.903 |
| Succeeding birth interval<br>< 15<br>16 + | 1.9387<br>reference | .0000 | 6.9498 | 1249.080 |
| Current marital status:<br>single<br>married | .4830<br>reference | .0060 | 1.7362 | 2887.420 |
| Partner's occup.<br>Not working<br>Proff. clerk etc. | .3711<br>Reference | .416 | 1.4493 | 2888.654 |
| Current type of employment<br>Not working<br>working | .3226<br>reference | .0035 | 1.3807 | 2884.944 |
| Age of mother<br>20 - 34 years<br>34 +<br>< 20 | .2399<br>.2469<br>reference | .324<br>.0042 | 1.2711<br>1.2601 | 2888.751<br>2883.642 |
| Highest education level (Maternal)<br>No education<br>Sec +<br>Primary | .3798<br>.0474<br>reference | .0363<br>.0474 | 1.4620<br>1.0485 | 2083.273<br>2087.932 |

Source : Computed from study data.

## 5.2.3. URBAN NON MIGRANTS

The bivariate logistic regression results for urban non migrants can also serve as a basis of comparison with urban migrants.

Among the urban non migrants, the variables which showed a significant statistical relationship were marital status, husband's occupations, age of mother and maternal education.

The odds of dying among the urban non migrants almost equalled that of urban migrants for the single mothers compared to those married. Among the urban non migrants, single mothers had the odds of dying of their children being 1.9718 times the odds for married women. Thus, the odds are only slightly lowered among the urban non migrant single mothers as compared to the urban migrants. Crude underfive mortality rates for married women was found to be almost half (59/1000) as compared to 100/1000 for single mothers among the urban non migrants. This therefore underlies the importance of a partner for both migrants and non migrants.

Husband's occupational status also showed a significant statistical relationship. Among the urban non migrants, those whose husbands were not working had the odds of dying of the children being 2.474 times the odds for women with working husbands. The odds here is just slightly lower than for the urban migrants who had 2.5861. This therefore gives the urban non migrants a slight edge over the urban migrants. In any case, the urban non migrants who had a husband who is working had a crude undefive mortality rate of only 18/1000 compared to 53/1000 for rural to urban migrants.

The age of the mother among the urban non migrants showed a statistical relationship within the 20-34 years age group, the odds of survival were increased by as much as 1.7877 times the odds of those with 20 years and below. This is slightly higher as compared to

urban migrants who are 20-34 years (1.0319). Thus an advantage among the urban non migrants. However, the 35+ shows a different scenario as the chances of child survival among the urban non migrants (1.0332) is much lower than that of urban migrants (2.5016) although this relationship is not statistically significant.

As for the highest level of education, the women with secondary and above level of education among the urban non migrants have a statistically significant relationship with child survival. Secondary and above had the odds of survival of their children being 3.2814 times those with primary education. The case for urban migrants is slightly lower (3.1811) thus giving the non migrants an edge over the migrants. In both groups of respondents those with no education had an appreciable reduction in their chances of survival of their underfive children.

The analysis for the non migrants can give an indication of the possibility of assimilation into people with better underfive mortality status as compared to the migrants. The rural to urban migrants especially have a poor underfive survival chances. Contact with people who have higher survival chances would change the habits of the migrants and thus improve the survival chances of their children. Most of the other variables among the non migrants also reflect a clear advantage over the migrants. A continued increase in urban poverty is however casting a heavy cloud on possibilities of assimilation.

Table 5.3: **BIVARIATE LOGISTIC REGRESSION PARAMETERS FOR URBAN NON MIGRANTS**

| VARIABLE | B | SIG | EXP | - 2 LOG likelihood |
|---|---|---|---|---|
| Type of toilet facility<br>flush toilet<br>other | .3066<br>reference | .4247 | 1.3588 | 326.7507 |
| Source of drinking water<br>Other sources<br>piped into house | .0640<br>reference | .8363 | 1.0661 | 327.095 |
| Birth order No<br>Order 1<br>Order 7 +<br>Order 2 to 6 | .1236<br>.5072<br>reference | .5604<br>.4703 | 1.1316<br>.8928 | 328.068<br>328.236 |
| Preceding birth interval<br>36 +<br>18 - 35<br>< 18 | -.0989<br>-.3236<br>reference | .5670<br>.4369 | .9366<br>.7412 | 225.810<br>327.923 |
| Succeeding birth interval<br>< 15<br>16 + | -.0185<br>reference | .9590 | .9817 | 328.418 |
| Current marital status:<br>single<br>married | .7830<br>reference | .0501 | 1.9718 | 325.411 |
| Husband's occup.<br>Not working<br>Proff. clerk etc. | .9062<br>Reference | .0641 | 2.4749 | 277.495 |
| Current type of employment (mother)<br>Not working outside household for pay:<br>Working outside for pay. | -.0459<br>reference | .8891 | .9552 | 322.734 |
| Age of mother<br>20 - 34 years<br>34 +<br>< 20 | .5809<br>.0424<br>reference | .0727<br>.9522 | 1.7877<br>1.0332 | 324.429<br>328.416 |
| Highest education level (Maternal)<br>No education<br>Sec +<br>Primary | -.3436<br>1.1662<br>reference | .4361<br>.0021 | .7301<br>3.2814 | 322.806<br>319.514 |

Source : Computed from study data.

## 5.2.4. RURAL MIGRANTS

Analysis for the rural migrants could also give an indication as to whether there are any adjusting and assimilation effects among them. The question is whether rural migrants also have a poor underfive survival as compared to the urban migrants.

Those with a childhood place of residence being rural had the odds of dying of their children being 1.0751 times the odds for those with an urban childhood. The advantage here cannot be overemphasised.

Same as in the case of urban migrants, survival chances are appreciably improved if a household has a flush toilet. This can also be said of those with piped water into the household. Source of drinking water showed a statistically significant relationship at an $\propto$ = 0.05.

Among the rural migrants, the odds of survival are appreciably reduced for birth orders 1 and 7+ as compared to birth order 2 to 6. This still underlies the risk of first order births and higher order births although the results are not statistically significant at $\propto$ = 0.05. However, the urban migrants exhibited a better situation for this variable.

Preceding birth interval also showed a highly statistically significant relationship. The survival odds were as much as 1.3895 for 36+ as compared to the under 18 months category. The 18-35 months category was also appreciably high. This mirrors more or less the same observation for urban migrants.

Succeeding birth interval of less than 15 months reduces the odds of survival by as much as 0.8162 times that of 16+. Interestingly, the urban non migrants have a much bigger reduction on survival chances with a succeeding birth interval of less than 15 months (3.5871). In the case of rural migrants, this relationship is statistically significant at $\propto$ = 0.05.

The marital status, years lived in place of residence, partners occupation and maternal occupation all showed a statistically significant relationship among the rural migrants though with lower survival odds as compared to urban migrants. Age of the mother was not statistically significant but the survival odds were much lower than in the case of urban migrants.

Those with their previous place of residence being urban had the odds of survival being 2.08447 times the odds of those who came from rural areas. This relationship is statistically significant and it indicates that an urban previous place of residence can appreciably reduce the chances of child deaths among the rural migrants. The same was said of the urban migrants.

As for maternal education, those with secondary and above had a statistically significant relationship with underfive mortality. Secondary and above education attainment improves the survival chances of a child, whether the mother is a rural or an urban migrant. As for those with no education, the odds of survival of their children was reduced by as much as 0.9894 times the odds of those with at least primary education. The same observation was evident among the urban migrants although with a much lower odds of dying.

The bivariate analysis therefore shows that those in the rural areas have a clear disadvantage on underfive mortality compared to those in the urban areas. In any case, the underfive mortality for rural areas was found to be much higher 83/1000 as compared to urban areas with 80/1000. The differential within the migration streams underscores the effect of migration. This is much more evident among the urban migrants of whom, most are rural to urban migrants. As has been argued before, most of these people end up living in the slums. The conditions under which these people live in has been described as follows:

"Throughout the cities of the developing world, anywhere from 30 to 60 per cent of a city's population lives in substandard housing. Unable to afford even the lowest cost housing, many of the poor build their own makeshifts shelters out of cardboard, plywood, or scraps of metal. Overcrowding increases the risks of airborne infections and accidents. Many poor neighbourhoods are often unserved by water and sanitation facilities and garbage collection...the lack of services increases the risk of intestinal infections and other communicable diseases. In Manila, mortality rates for infants are three times higher in the slums than in the rest of the city, rates of tuberculosis are nine times higher and three times as many children suffer from malnutrition." (World resources -1996:15).

This reflects the situation of most urban areas including urban areas of Kenya. Could this then account for the high mortality situation among children of the urban migrants?

Table 5.4: BIVARIATE LOGISTIC REGRESSION PARAMETERS FOR RURAL MIGRANTS

| VARIABLE | B | SIG | EXP | - 2 LOG likelihood |
|---|---|---|---|---|
| Childhood place of residence<br>Rural<br>Urban | .0724<br>reference | .7639 | 1.0751 | 919.061 |
| Type of toilet facility<br>flush toilet<br>other | .8400<br>reference | .2427 | 2.3164 | 2872.355 |
| Source of drinking water<br>Other sources<br>piped into house | .3841<br>reference | .0493 | 1.4682 | 2869.733 |
| Birth order No<br>Order 1<br>Order 7 +<br>Order 2 to 6 | -.0104<br>-.1547<br>reference | .8421<br>.2056 | .9897<br>.8567 | 2893.171<br>2891.645 |
| Preceding birth interval<br>36 +<br>18 - 35<br>< 18 | .3290<br>.1904<br>reference | .0085<br>.0672 | 1.3895<br>1.2097 | 2885.885<br>2889.830 |
| Succeeding birth interval<br>< 15<br>16 + | -.2031<br>reference | .0582 | .8162 | 2889.680 |
| Current marital status:<br>single<br>married | .4737<br>reference | .0000 | 1.6059 | 2877.512 |
| Years lived in place of residence<br>< 10 years<br>> 10 years | -.2844<br>reference | .0104 | .7525 | 2886.437 |
| Partners (Husbands's) occupation:<br>working<br>Not working | .36623<br>reference | .0454 | 1.4425 | 2613.746 |
| Current type of employment (mother)<br>Not working outside household for pay:<br>Working | .3485<br>reference | .0016 | 1.4170 | 2878.393 |
| Age of mother<br>20 - 34 years<br>34 +<br>< 20 | .0146<br>.1195<br>reference | .8046<br>.3374 | 1.9855<br>1.8874 | 2893.150<br>2892.301 |
| Type of place of previous resid:<br>Urban<br>Rural | .7346<br>reference | .0434 | 2.0847 | 2888.064 |
| Highest education level (Maternal)<br>No education<br>Sec +<br>Primary | -.0106<br>.3997<br>reference | .9350<br>.0079 | .9894<br>1.4913 | 2893.204<br>2885.518 |

SOURCE: Computed from study data.

## 5.3. MULTIVARIATE LOGISTIC REGRESSION ANALYSIS RESULTS
## 5.3.1 URBAN MIGRANTS

Having looked at each of the variables in turn in a bivariate relationship, one would be interested in observing their behaviour in a multivariate relationship. All the variables were entered into the analysis so that the effect of each could be determined, except of course those which were constants.

Table 5.5    MULTIVARIATE LOGISTIC REGRESSION URBAN MIGRANTS PARAMETERS

| VARIABLE | B | SIG | EXP(B) |
|---|---|---|---|
| Rural childhood | .2472 | .6386 | 1.2804 |
| Flush toilet | .2546 | .6807 | 1.2899 |
| Other sources of water | .3956 | .3932 | 1.4852 |
| Parity | 1.3121 | .2578 | 3.7140 |
| Succeeding birth inter. | .4236 | .4260 | 1.5274 |
| Marital status | .2378 | .6298 | 1.2685 |
| Duration of stay | -.4559 | .3660 | .6339 |
| Husband's occupation | .2770 | .0470 | 1.3192 |
| Type of maternal employment | .7893 | .0995 | 2.2019 |
| Age of mother (20-34) | .5661 | .4507 | 1.7614 |
| Age of mother (35+) | .8818 | .4649 | 2.4153 |
| Previous residence (rural) | -.1957 | .0478 | .8223 |
| Maternal education | | | |
| Non | -.7846 | .2735 | .4563 |
| Sec + | 1.6172 | .0077 | 5.0391 |

- 2LL = 172.437
Model Chi-square sig = .0000
Significant at 0.05.
Sorce : Computed from study data.

The multivariate regression results show that the most important variable in determining underfive survival are husband's occupation, previous place of residence and maternal education. All these variables are significant at $\propto$ = 0.05.

The husband's occupation is statistically significant at 0.0470. The implication here is that if the husband is working, especially in professional occupation, he is better able to

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provide for the family. Thus, most likely they will not live in slums with deplorable conditions and high risks of death.

Previous place of residence was also found to be statistically significant at 0.0478. This means that for urban migrants whose previous place of residence was rural the chances of their children dying before reaching their fifth birthday is very high. Rural areas being their source region, the situation left behind is not any better and such inferior characteristics to child survival are carried forward to the urban areas.

Maternal education has also been found to be very important especially among those with secondary and above level of education which was found to be statistically significant at 0.0077. thus, with a higher maternal level of education, the odds of dying are substantially reduced among the women who are urban migrants. The relationship between maternal education and underfive survival supports findings by other researchers such as Caldwell (1979), Bicego and Ahmed (1996).

Health and sickness care was also found to be related to maternal education and father's occupation in squatter settlement of Aman, Jordan (Tekce and Shorter, 1984, Cleland and Van Ginnekan 1987). These researchers also argued that parental education has an independent effect on child survival, but can also be determinant of a household's assets and physical living conditions as well as health services. The same findings were by Farah and Preston (1982), Hill (1990).

Thus, in this multivariate results, it is clearly evident that all the other variables do not have a statistically significant effect on underfive survival. The top most important factors among the urban migrants are basically three i.e. maternal educational, mother's previous place of residence and partner's occupations.

## 5.3.2. RURAL NON MIGRANTS

Once again, multivariate analysis for rural non migrants will be a basis of comparison. In any case, one of the factors which was found to have effect on underfive survival is the mother's previous place of residence, in this case a rural place of residence.

Table 5.6     MULTIVARIATE LOGISTIC REGRESSION RURAL NON MIGRANTS PARAMETERS

| VARIABLE | B | SIG | EXP(B) |
|---|---|---|---|
| Mother's childhood (rural) | .5052 | .0086 | 1.6574 |
| Flush toilet | .4273 | .6818 | 1.5332 |
| Drinking water (other) | .4747 | .0923 | 1.6075 |
| Parity (7 +) | -.1216 | .5407 | .8855 |
| Succeeding birth inter. | -.3011 | .0231 | .7400 |
| Marital status | .5588 | .0000 | 1.7485 |
| Partner's occupation | .1946 | .4088 | 1.2148 |
| maternal work status | .3806 | .0051 | 1.4632 |
| Age of mother | .2538 | .2724 | 1.2915 |
| Maternal education | .0976 | .5561 | 1.1025 |

- 2 log = 1902.91572.437
Model Chi-square sig = .002700
Significance level at 0.05
Source : Computed from study data.

Among the rural non migrants, the variables which are statistically significant are rural childhood, succeeding birth interval, marital status and maternal work status.

In the multivariate analysis for urban migrants, it was found that a rural previous place of residence had substantial effect on underfive mortality since the relationship was statistically significant. This conforms to the findings among the rural non migrants with a rural childhood at a significant level of 0.0086. Thus, a rural childhood has a 1.6574 times the odds of an urban childhood. It should be emphasised here that the childhood residence being referred to is the mother's. The disadvantage of a rural childhood need not be overemphasised, especially, if it is the source region. In any case, analysis of crude

underfive mortality also indicated high deaths among those with a rural childhood.

Succeeding birth interval of especially less than 15 months was also found to have an effect among the rural non migrants. The odds of dying are in fact .7400 times the odds for a longer succeeding birth interval. The result is statistically significant at 0.0231. This implies that children born with short birth interval in rural areas have very little chance of reaching their fifth birthday. This variable is however not significant among the urban migrants.

Among the rural non migrants, marital status has been found to be significant in underfive survival. This implies that those women who are single have higher odds of child deaths before reaching their fifth birthday. This underscores the importance of shared responsibility between a couple. This variable was not statistically significant among the urban migrants.

Interestingly, it is not the fathers occupation that seems to be important among the rural non migrants but the mother's. Maternal work status is highly significant at 0.0051. This means that the mothers who are working and are rural non-migrants, are better able to take care of their children. This finding is supported by other researchers who have argued that working mothers can provide better for their children (World Resources 1996-97). Among the urban migrants, however the father's occupation is the one that was important.

The other variables were found not to be statistically significant. In fact, variables such as preceding birth interval was dropped from the regression model as it was rejected during analysis of rural non migrants.

## 5.3.3. RURAL MIGRANTS

Rural migrants are predominantly in the rural to rural migration stream and a few urban to rural. It would be interesting to observe the survival chances of underfive children among the rural migrants.

**Table 5.7: MULTIVARIATE LOGISTIC REGRESSION RURAL MIGRANTS PARAMETERS**

| VARIABLE | B | SIG | EXP(B) |
|---|---|---|---|
| Rural childhood | -.4056 | .2553 | .2452 |
| Flush toilet | .4270 | .6898 | 1.5326 |
| Drinking water | -.1425 | .6328 | .8671 |
| Parity | -.2999 | .3280 | 7409 |
| Succeeding birth inter. | -.1478 | .4551 | .8626 |
| Marital status | -.3337 | .2863 | .7163 |
| Duration of stay | -.0700 | .7698 | .9324 |
| Partner's occupation | .3249 | .2962 | 1.3839 |
| Maternal work status | .1780 | .3954 | 1.1948 |
| Age of mother | .2784 | .5478 | 1.3210 |
| Previous resid (rural) | .7511 | .0078 | 2.1193 |
| Maternal education | .9486 | .0125 | 2.5820 |

Model chi-square sig = .0000
- 2 log likelihood = 930.619
Significance level = .05

Source : Computed from study data.

Among the rural migrants, there are only two variables which are statistically significant i.e previous place of residence being rural and maternal education.

This implies that rural to rural migration has an effect on underfive mortality. Those whose previous place of residence was rural had the odds of underfive deaths being 2.1193 times the odds for those with an urban previous place of residence. In fact, analysis of crude mortality rates showed that urban to rural migrants had 53/1000 as compared to 78/1000 for the rural to rural migrants. Thus, an urban exposure generally reduced the odds of underfive deaths substantially. The same is true for the case of urban migrants.

Maternal education was also significant at 0.0125. This means that those with higher levels of education among the rural migrants had better survival chances of their children.

The other variables were not statistically significant although there was a negative relationship to underfive odds survival variables such as mother's rural childhood, the source of drinking water, birth order, succeeding birth interval, marital status and duration of stay. This therefore means that survival chances of a child are substantially reduced if the mother had a rural childhood, had other sources of drinking water apart from piped water, had higher order births, had short succeeding birth intervals (<15 months) was single and had stayed in the destination area for less than ten years.

Among the urban migrants, such a situation is only evident for variables such as duration of stay, previous place of residence and maternal education. It therefore, implies that rural migrants are more disadvantaged than any other migrants, except for migrants with a better education and an urban previous place of residence.

## 5.3.4. URBAN NON MIGRANTS

The importance of urban non migrants in the multivariate analysis is that this groups serves as a control for urban migrants. The urban non migrants are assumed to have a better underfive survival chances. In any case, the crude underfive mortality was found to be 62/1000 for urban non migrants, compared to 82/1000 for rural to urban migrants.

**Table 5.8:**  **MULTIVARIATE LOGISTIC REGRESSION URBAN NON MIGRANTS PARAMETERS**

| VARIABLE | B | SIG | EXP(B) |
|---|---|---|---|
| Other toilet | -.0476 | .9513 | .9536 |
| Drinking water | -.7155 | .2863 | .4890 |
| Succeeding birth inter. | -.9340 | .4292 | .3930 |
| Maternal marital status | -.6714 | .2312 | .5110 |
| Partner's occupation | -.3249 | .5835 | .3840 |
| Maternal work status | 1.1825 | .2815 | 3.2624 |
| Mother's age | -.2814 | .6702 | .7547 |
| previous place of residence | .8105 | .3671 | 2.2490 |
| Maternal education | .4479 | .4918 | 1.5651 |

Log ll - 118.192
Significant level = 0.05
Model chi-square sig = .0000
Source : Computed from study data.

From these results, it is clearly evident that non of the variables was statistically significant among the urban non migrants. However, some variables showed a negative relationship with the odds of survival though not significant.

Thus, the non migrants who had no flush toilet, no piped water, higher order births, short succeeding birth intervals (<15) and were working, had the odds of survival of their children being substantially reduced. Those without a flush toilet and no piped water are probably living in the slums. These are sanitary requirements and the chances of infection are therefore heightened. Among this group of people, short succeeding birth intervals and higher order births only made the situation far worse. It is a paradox that even the women who are working have a substantial reduction in the odds of survival for the underfive. This could be because surrogate help for the baby is not always safe and the baby is weaned much earlier than is necessary. It should be remembered that the urban non migrants who are working had a very high underfive mortality of 155/1000. In fact, this was the highest among all the subgroups of migrants both in the rural and urban.

The multivariate analysis for urban migrants showed that there are three main variables that influenced underive survival - these variables as identified are partner's occupation, rural previous place of residence and maternal education. Being that it has been assumed that urban non migrants have an edge over urban migrants, it should be remembered that "30 to 60 percent of a city's population lives in substandard housing" (World resources, 1996:15). For this reason, urban migrants with a better job (the husband), higher maternal education and an urban previous place of residence, will be able to afford a better house and other superior factors related to child survival. It is no wonder that some urban non migrants are not any better considering the negative variables discussed. We can therefore assume that variables such as toilet facility and source of drinking water are an indication of condition of living and the status of the family.

## 5.4    SUMMARY

From this analysis, it is worth noting that the main or primary variables with an impact on underfive survival are maternal childhood place of residence and previous place of residence, especially among the migrants.

A rural childhood for the mother contributes to the formation of beliefs, skills and behaviour which will be important during her child bearing years. The bivariate analysis for the urban migrants for example, showed a substantial reduction in the odds of child survival. Rural childhood as a pre migration factor, can determine other factors such as maternal education, maternal work status among others, which will in turn have an impact on underfive survival.

The previous place of residence is in the same category as childhood place of residence. The same way as rural childhood is disadvantageous, rural previous place of

residence is also disadvantageous. Hill has argued that migrants are often those who are moving from situations where they cannot make adequate living and they are likely to be a destitute group (Hill, 1988). Studies by Makotekku and Kichamu (1986); and Nyamwange (1982), have also linked high mortality areas with their source regions. Thus, the previous place of residence is very important. Other factors such as partners occupation and maternal education are secondary. However, these could determine whether the migrants will join the already destitute group or not. It can conclusively be deduced that rural to urban migration does not necessarily improve the underfive survival, other factors such as education and occupation have to be put into consideration. We can wrap this chapter by saying:

"Until the 1970s and early 1980s, urban migration was viewed as a consistently positive force for improved health largely because it resulted in better access to health services. Comparisons of average urban health figures with average rural figures suggest that this is so, but such comparison conceal gross health inequalities within the urban population..In the developing worlds, mortality rates are significantly higher for children in squatter areas of cities than for children living in non squatter areas. For example, in Tondo, a large squatter settlement in Manila, Phillipines, infant mortality rates are nearly three times greater than those in non squatter sections of the city. In addition, the incidence of diarrhoea in Tondo (Adults and children) is two times higher and the incidence of tuberculosis is nine times higher than in wealthier sections of Manila". (World Resources 1996:35).

This scenario could just as well be the case for Kenyan urban areas.

The overall effectiveness of each of the models was assured by using the P-value of the Pearson chi-square statistic. In all the multivariate regression models, their p-values were less than 0.05 (in most cases, they were .0000). Thus, these models were effective and adequate in explaining the dependent variable. In the case of bivariate logistic regression, in most of the cases, in fact, almost all, their P-values more or less equalled their levels of significance used in the analysis. For both the multivariate logistic regression models and

bivariate analysis, the standard errors were found to be very low, in fact less than 1.0000 in most cases. A low value of S.E of estimate imply that the equation is a good estimate of the dependent variable, i.e the likelihood of dying or surviving. This analysis has been done as conceptualised in chapter two of this work.

# CHAPTER SIX

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 6.1    Summary and Conclusions

This study had set out to examine the effect of migration on infant and child mortality, especially migration to urban areas of Kenya. The migration child survival relationship was analyzed using logistic regression and simple crude mortality rates of underfive children. This relationship was viewed through the independent variables which were maternal childhood place of residence, type of toilet facility, source of drinking water, birth order (parity) preceding birth interval, succeeding birth interval, marital status, years lived in place of residence, partner's occupation, maternal work status, mother's age at birth, type of previous place of residence, and maternal education.

Being that the dependent variable was dichotomous i.e chances of dying or surviving, logistic regression analysis was found to be the most appropriate. This necessitated the creation of dummy variables after constructing a child file and attaching the mother's variables, the KDHS-1993 (NCPD-1994) being the source of information and data.

In the study, a look at mortality differentials within the different migration streams was found to be inevitable. This was important as it gave an indication of survival chances within the different migration topologies. To be able to calculate the crude underfive mortality rates for the mortality differentials, standardisation for age was very important so as to eliminate anomalies related to age.

The first objective was to investigate the effect of socio-economic factors of urban and non urban women (migrants) on the survival status of their children. The socio-economic factors considered were place of residence (control variable), maternal marital status,

maternal work status, husband's occupation, maternal education, household toilet facility and household source of drinking water.

Mortality differentials for maternal marital status showed that those who are single were disadvantaged, both in the case of urban non migrants and urban migrants. However, the rural to urban migrants had the highest underfive mortality among the single mothers (138/1000). In both the bivariate analysis and multivariate analysis, the likelihood odd of death were found to be substantially high among the single parents than those married. This finding is supported by Kichamu (1986); WHO - (1978) and Behm (1983) among others. Thus, whether a migrant or non migrant, marital status is very important, more so among the rural to urban migrants in the migration child survival relationship.

Maternal work status indicated a higher underfive mortality rate among the women who are working, in fact urban non migrants had the highest deaths at 155/1000. Among the rural to urban migrants, those mothers who are not working had a much lower crude underfive mortality rate of 92/1000 compared to those who are working with 96/1000. Bivariate analysis for both urban migrants and non migrants was found not to be significant. The multivariate analysis showed a negative relationship to child death among the urban non migrants who are not working. Thus, in the urban areas, the importance of the mothers care, especially among the non migrant women who are working cannot be overemphasized. Bunster (1983), argued that increased time burden that paid work usually entails, forces women to use surrogate child care help and that may consequently increase the risks of infection and accidents among their children. In any case, the poor conditions and long hours of work lessen their ability to take care of their children (Mueller - 1983).

On the other hand, husbands occupation substantially had an effect on underfive survival. The differentials on underfive mortality showed that women in urban areas with

partners who are not working had very high underfive mortality rates, especially the rural to urban migrants with 100/1000 deaths. Logistic regression results also supported these findings. In fact, husband's occupation was found to be statistically significant among the urban migrants in the multivariate analysis. Thus, being a migrant, if the husband is in a professional occupation, the odds of death can substantially be reduced. The father's occupation serves as an indicator of household socio-economic circumstances, in particular, the consumption opportunities available to children. Bicego and Ahmad (1996), also found a positive relationship with the father's occupation and child survival.

Maternal education is very important in uderfive survival. In fact, among the urban migrants, maternal education was highly significant in the multivariate analysis. Those migrant women with secondary and above level of education had very high odds of survival of their underfive children. Mortality differentials also indicated very high underfive deaths among the women with no education, especially the rural to urban women who had a rate of 200/1000, twice that of urban non migrants. Importance of female education cannot therefore be overemphasised. The same arguments were advanced by Caldwell (1979); Cochrane et al (1980); Bicego and Ahmad (1996); Hill (1990); Farah and Preston (1982).

Mosley and Chen (1984); and Jain (1985), underscored the importance of good sanitation in child survival. These, have been measured through the toilet facility and source of drinking water. Those without a flush toilet and piped water, especially among the migrants, had very high underfive deaths. This is an indication that most of the urban migrants live under poor conditions, most likely in the slums.

From this overview on socio-economic factors, we can accept our hypothesis that rural to urban migration - child survival relationship is affected by individual socio-economic related variables. This has been supported by findings from other researches.

The second objective was to investigate on the effect of fertility related factors of urban and non urban women (migrants) on the survival status of their children. The demographic variables considered for this objective were maternal age at birth, previous birth interval, following birth interval and birth order.

Maternal age as a demographic variable showed that mothers who are less than 20 years had very high underfive mortality rates especially the rural to urban migrants who had 250/1000 child deaths. This was double that of the non migrants. Age did not show a significant relationship to child death in the logistics regression. However, non migrants in bivariate analysis showed a negative relationship. The disadvantages at young ages at birth and child survival are attributed to social and economic disadvantages (Geronimus and Korenman, 1993).

Preceding birth interval of less than 18 months was found to adversely affect the chances of survival, especially among the rural to urban migrants with underfive crude death rate of 114/1000. The best preceding birth interval was found to be at least 36 months and above, for both migrants and non migrants. Bivariate logistic regression showed negative relationship to child survival among the urban non migrants, although not significant. The relationship on preceding birth interval has been attributed to reasons such as the replacement effect (Hobcraft, McDonald, and Rutstein, 1985) and maternal nutrition/depletion relationship (Bicego and Ahmed, 1996). Thus, a longer preceding birth interval for urban migrants is very important.

Just as preceding birth interval is important, succeeding birth interval is also important. Mortality differentials indicated that a succeeding birth interval of less than 15 months had an adverse effect on the survival chances of the child especially among the rural to urban migrants who had 333/1000 deaths. The bivariate analysis for urban migrants was

statistically significant and the odds of death of children with a succeeding birth interval of less than 15 months was substantially high. As for the non migrants, there was also a substantial reduction in the odds of survival. Thus, a longer succeeding birth interval is important, both for the migrants and non migrants, but especially for the case of migrants.

Generally, first births and births of very high order carry greater than average mortality risk (Hill and Hill 1988). A first time mother may be poorly prepared to handle new roles and responsibilities in her life (Bicego and Ahmad 1996). High order births and first order births exhibited very high crude underfive deaths, especially among the rural to urban migrants. Although the regression results were not statistically significant, the odds of dying were substantially high for first and high order births, especially for the migrants.

The above analysis therefore indicates that the rural to urban migration - child survival relationship is affected by individual fertility related variables. This was our second hypothesis.

The third objective was to establish the effect of duration of residence on the rural-urban migrations - child survival relationships. Analysis on this variable was mainly confined to the migrants both in the urban areas and rural areas. The reason for this was that the duration of residence would give an indication of assimilation. For both the migrants in the rural areas and those in the urban areas, duration of stay was found to have an impact on underfive survival. This effect was largely felt among the urban migrants, especially the rural to urban whose underfive crude mortality was 111/1000 for those with a duration of less than ten years in urban areas. In fact, this was twice the figure for urban to urban migrants. Interestingly, rural migrants had a much better underfive survival chance for a duration of stay of less than ten years than urban migrants.

The bivariate and multivariate analysis indicated a negative relationship to child survival although not statistically significant. A longer duration of stay i.e more than ten years, doubles the chances of surviving for most of the children, especially among the rural to urban migrants. Brockerhoff (1990), has argued that increased duration of residence in an urban areas is important in the adaption process for better survival behaviours. Studies in Liberia and Ghana found that longer duration of stay appears to result in slightly lower levels of child mortality among mothers who have ever migrated (UN-1985). A further support of this came from Goldscheider (1988).

Thus, the duration of residence has an effect on the rural to urban child survival relationship and this was our third hypothesis.

The fourth objective was to establish the effect of relocation to an urban setting on child survival. Having discussed most of the variables, it is evident that the rural to urban migrants are clearly disadvantaged as far as child survival is concerned. To confirm this, we can look at maternal childhood place of residence, and previous place of residence. The mothers with a rural childhood were in fact found to be having a very high underfive mortality among migrants in urban areas. In fact, the rural to urban migrants with a rural childhood had a crude underfive mortality of 273/1000, more than four times the rate of other migrants. A rural previous place of residence also showed the highest underfive mortality of 82/1000.

The multivariate logistic regression for urban migrants showed a negative relationship to child survival and this was statistically significant at 0.0478 for a rural previous place of residence. Thus a mere relocation to an urban area does not necessarily increase the survival chances. Makotekku and Kichamu (1986); and Nyamwange (1982), also linked high mortality regions with their source areas. Hill (1988), argued that migrants are people who

move from situations where they cannot make adequate living and most likely are a destitute group.

This therefore follows that our fourth hypothesis is not acceptable. Thus, relocation of the child to an urban setting does not necessarily improve the chances of survival.

In conclusion, we can say that because of the increased income disparities especially among the urban migrants, the inequalities in death will still persist. Upper most in the likelihood of child survival for a migrant is the husband's occupation, maternal education and type of previous place of residence.

## 6.2    RECOMMENDATIONS

The decision to migrate to an urban area is part of a complex household survival strategy, in which families minimize risk by placing members in different labour markets. Migrants are not only pulled to the urban areas by prospects of better jobs and higher incomes, they are also pushed out of rural areas by such factors as poverty, lack of land, declining agricultural work and natural disasters such as a famine. Various studies suggest that the vast majority of migrants feel that relocations to the city has improved their situation, even if not as much as they might have hoped (World resources 1996).

In this study, it was found that rural to urban migration does not necessarily improve the child survival chances, but superior socio-economic characteristics may alleviate the situation.

## 6.2.1 RECOMMENDATIONS FOR POLICY

1.    The study found that female education significantly influenced child mortality among the migrants.  As a result, we therefore recommend that:

   (a)    More resources should be channelled towards upgrading the education of girls so that they at least have a secondary level of education.  This not only makes the mother to be more informed, but also raises the age at marriage which is very important.  An educated mother can also be able to take part in decision making thus enhancing her empowerment.

   (b)    Civil public education programmes should be carried out to inform parents of the necessity to educate their girls.  In most communities, preference is still given to boys, especially, in situations where the family is poor and only a few of the children could go to school.

2.    It was also found that the partner's occupation had a significant effect on child mortality among the urban migrants.  Here, we recommended that the government should aid the informal sector to expand and absorb more people.  This is because most of the migrants are absorbed in the informal sector or "Jua Kali".

3. The study also found a significant relationship between a rural previous place of residence and child survival among the migrants. Since a rural previous place of residence is disadvantageous we recommend that the government should improve the situation in the rural areas. This improvement should encompass health, education and projects to improve their income levels. Noble plans such as the District Focus For Rural Development should be revisited with a clearer perspective and not as a conduit for channelling funds.

4. Since migration to urban areas will continue to increase, more and more people will continue to live in squatter settlements (slums). The best that the government can do is to alleviate the conditions of life in the slums.

   Thus the government should:

   (a) provide clean safe drinking water for all,

   (b) come up with alternative better housing,

   (c) improve the sanitary condition by providing a better waste disposal system and better infrastructure,

   (d) free education for the poor in the slums.

## 6.2.2 RECOMMENDATIONS FOR FURTHER RESEARCH

That the study was limited by lack of direct information on migration in KDHS-1993. The study therefore recommends that ;

(a)     future KDHS surveys should take note of the importance of migration in child survival. Questions on migration status should therefore feature much more often.

(b)     future surveys or research should also focus more attention on poverty levels between migrants and non migrants. This can shed some light on mortality differentials between respective groups of people both in urban and rural areas.

(c)     more research should also be done on the possibilities of migration as a survival strategy in infant and child mortality.

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