

Population and Health Dynamics in Nairobi's Informal Settlements

Report of the Nairobi Cross-sectional Slums Survey (NCSS) 2000

APRIL 2002



AFRICAN POPULATION AND HEALTH RESEARCH CENTER

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Executive Summary

This report documents demographic characteristics and health conditions of Nairobi City's slum residents based on a representative sample survey of urban informal settlement residents carried out from February to June 2000. The aims of the "Nairobi Cross-sectional Slums Survey (NCSS)" were to determine the magnitude of the general and health problems facing slum residents, and to compare the demographic and health profiles of slum residents to those of residents of other urban and rural areas as depicted in the 1998 Kenya Demographic and Health Survey (KDHS). The NCSS is probably the first comprehensive survey explicitly designed to provide demographic and health indicators for sub-Saharan city slum residents.

Background

Africa is currently undergoing an urban population explosion. Despite slow economic progress since the 1970s, African cities have experienced the fastest population growth rates in world history. As a result, African urban economies have been unable to meet local employment needs, while central governments and city councils have failed to provide adequate basic amenities like affordable housing, water, and sewage disposal. Consequently, a rapidly increasing majority of residents in Africa's large cities now live below the poverty line in overcrowded slums and shantytowns where health conditions and livelihood opportunities are poor. Among the critical problems facing the most vulnerable groups of slum dwellers, (in particular women and children), are exposure to HIV/AIDS and sexually transmitted infections (STIs) via poverty-driven commercial sex; domestic violence and child abuse; unwanted teenage pregnancy and unsafe abortion spurred by high levels of early sexual activity; and poor access to family planning and health services as a result of social, geographic isolation, low income, and illegal residence.

The City of Nairobi exemplifies rapid urbanization amidst deteriorating economic and health conditions that characterizes African cities. With an annual growth rate of seven percent over the last two decades, Nairobi remains one of the fastest growing cities in Africa. Much of its population lives in informal settlements. Although poverty has always been considered a predominantly rural phenomenon, recent data show that it is increasingly an acute urban problem as well. For instance, while the proportion of people living below the poverty line increased from 48 to 53 percent in rural Kenya between 1992 and 1997, it almost doubled from 26 to 50 percent in Nairobi over the same period. This pattern is probably a reflection of the increase in the proportion of Nairobi residents who live in slums.

To inform policy deliberations on ways to meet the health and livelihood needs of the urban poor, the Africa Population and Health Research Center (APHRC) has launched a longitudinal program of research and action that aims to clarify the nature of African urban health and poverty problems, and cost-effective solutions to address them. The NCSS is one of the preliminary studies for APHRC's urban research program.

Characteristics of Households and Respondents

Chapter 2 examines the characteristics of the sampled households and the respondents. The growth of slum populations is primarily a result of rural-urban migration by young people seeking jobs, as demonstrated by the relatively high proportion of men in the economically active age group (15-49) and the low proportion of women in the 15-49 age group (2 percent)

who were born in the slums. Considering the small size of typical slum houses, the fact that average household sizes do not vary much between slums and other areas points to greater congestion in slums. The data also suggest that slum residence is not as temporary as conventionally thought: current residents had stayed in the same household for an average of six years. Slum residents' economic plight is demonstrated by the fact that two-fifths of the women are unemployed, and of those working, less than half are gainfully employed (by non-relatives) while the other half are self employed or involved in family businesses. Although these unemployment rates are similar to those observed in rural areas, the slum residents live in a cash-dependent urban economy where lack of money could have more devastating consequences.

Although slum residents are generally better educated than their rural counterparts, they exhibit substantially lower levels of education than residents of Nairobi as a whole as well as those of other urban areas in Kenya. Slum residents also stand out in terms of lack of basic amenities such as electricity, drinking water, and proper sanitation. Unlike people residing in other parts of Kenya, slum residents primarily rely on vendors for water supply, which is more expensive than water that is pumped to the household. Slum residents cited lack of jobs, proper housing, and affordable water supplies as the most important general needs, in that order, while lack of toilets, proper drainage, and health services were the most commonly cited health problems. These needs, along with the reproductive health issues (unwanted pregnancy, abortion, HIV/AIDS and family planning services) mentioned by slum residents, point to potential areas of intervention for set out to improve their well being of the rapidly growing urban-poor population.

Fertility Levels and Trends

Chapter 3 discusses fertility levels and trends. Kenyan fertility has fallen dramatically over the past two decades. The data collected in the NCSS enable us to explore the extent to situate the experience of the urban poor within the general fertility decline observed in Kenya. Although slum residents have lower current fertility (4.0) than both their rural counterparts (5.2) and the national average (4.7), the fertility of the urban poor is considerably higher than that for Nairobi as a whole (2.6), and that of other urban areas (3.5). The same pattern is observed for children ever born and for length of birth intervals. One striking difference between the respondents in the NCSS and those in the other parts of Kenya is the high fertility of adolescents in the slums. Among adolescents aged 15-19 years, slum residents have considerably higher fertility than the other groups, including their rural counterparts. The finding that slums have higher pregnancy levels than rural areas, while the reverse is true for total fertility rates, strongly suggests that the level of pregnancy termination - voluntary or involuntary – is higher than in rural areas.

Fertility varies negatively with level of education, as expected, in the Nairobi slums. Likewise the ethnic differentials typically found in national level Kenyan data are also observed in the slums. Luos have the highest level of fertility (4.9) and the lowest age at first birth, while Kikuyus have the lowest fertility level (3.0) and the highest age at first birth. Muslim respondents have much higher fertility (5.3) than their Catholic (3.8) and Protestant (3.9) counterparts. Although not substantially different from the national average, age at first birth in the slums is lower than in Nairobi as a whole and in other urban areas. The results also show that the fertility transition ongoing in Kenya over the last two decades is evident even among slum residents.

Family Planning

The analysis in Chapter 4 shows that, in general, contraceptive knowledge, attitudes, and behavior of slum residents do not differ markedly from corresponding indicators for residents of rural areas, other urban areas, and Nairobi as a whole. Sources of contraceptive supplies for slum residents are similar to those for Nairobi and other urban residents. Thus, despite the high level of poverty of slum communities, users acquire most of their contraceptive supplies from the relatively expensive private health sector sources that are used by the relatively affluent non-slum population. The results suggest the need for a greater involvement of public health service providers (including community based distributors), in making contraceptive supplies available to slum dwellers. The relatively high proportion of women in the slums who think that their husbands do not approve of family planning further demonstrates the need to mobilize men in the promotion of contraceptive use in slum communities.

Other Proximate Determinants of Fertility

While marriage rates in the slums are similar to rates for rural Kenya and national estimates, slum women are more likely to be married than are women in Nairobi as a whole. Slum women are also more likely to experience marital disruption than women in other areas of Kenya. Women in slum areas of Nairobi enter into marriage earlier than women in rural Kenya and in Nairobi as a whole. They also initiate sex much earlier than women in other areas of Kenya; age at first intercourse has been declining in recent years. Non-married women in Nairobi slums are more likely to be sexually active than those in other parts of Kenya, but they are more likely to have regular than occasional partners. Overall, slum residents maintain higher levels of sexual activity compared to women in other parts of Kenya. They are less likely to abstain from sex but more likely to observe postpartum abstinence than women in other parts of Kenya. Postpartum insusceptibility due to breastfeeding and sexual abstinence restrains fertility more in rural areas than either Nairobi or Nairobi slums.

Fertility Preferences

Chapter 6 examines reproductive preferences such as: desire for more children; demand for family planning; ideal family size; and the wantedness of recent pregnancies. In general, the results suggest that reproductive preferences in the slums are comparable to the rest of the Kenyan population, and the differences that are observed are partially attributable to the young age structure in the slum population.

The desire for more children is relatively higher in the slums, where 58 percent of respondents stated wanting another child, versus 40% in Kenya as a whole. Consequently, the proportion of women who want no more children is lower in the slums than in Kenya as whole (36 versus 47 percent). This pattern is partly because slums have a greater proportion of younger women aged 15-34 (about 50 percent), than the national average (37 percent). Additionally, although there is a general tendency for the NCSS respondents to want another child than other Kenyan women, the slum residents are more likely to desire to cease childbearing beyond parity one than rural residents (though less likely than other urban and Nairobi residents).

The total demand for family planning in the slums (67 percent) is similar to that observed in other parts of Kenya. However, while the proportion of satisfied demand in the slums (65 percent) is similar to the national average, it is substantially lower than the one for Nairobi as a whole (82 percent). Therefore, there is greater potential to reduce fertility in the slums by

satisfying the relatively high level of unmet need for family planning. The levels of wanted fertility and the ideal family size in the slums are only slightly lower than the national levels. The ideal family size is relatively lower among the more educated, the never married and the Kikuyu women compared to that of women who are less educated, ever married or from the Luo ethnic community.

Infant and Childhood Mortality

Little is known about survival risks of slum residents relative to risks that prevail in rural or other urban communities in Kenya. Chapter 7 provides direct calculations of the risk of dying during the first five years of life. The results show that children in the slums have lower survival chances compared to their counterparts in other communities. The under-five mortality rate is over 151 per 1000 births in Nairobi slums, while the corresponding figure for Kenya as a whole (112/1000) and rural Kenya (113/1000) are about 25 percent lower. The under-five mortality rate for Nairobi as a whole stands at 61 per 1000 births, suggesting that the mortality rate for the non-slum areas of Nairobi is considerably lower. The APHRC's urban health research program seeks to address the extreme inequity in health between slum and non-slum areas through health and livelihood interventions.

National infant and childhood mortality have worsened over the past two decades, after significant improvements during the first half of the 1980s. Evidence from the NCSS and KDHS demonstrate that since the early 1990s, increases in mortality rates have been considerably steeper in the slums of Nairobi than in rural areas, while rates in urban Kenya, including Nairobi City as a whole, have declined modestly.

Maternal and Child Health

Chapter 8 examines maternal and child health using information on births occurring in the three years prior to the survey. The issues addressed include antenatal care, delivery care and characteristics, child vaccination, and the prevalence and treatment of common infectious diseases (fever, cough and diarrhea) in young children. The results show that, in general, the coverage of antenatal care in the slums is comparable to that of the rest of Kenya. The proportion of births or pregnancies receiving antenatal care from medical personnel, the median number of antenatal care visits during pregnancy, and the median timing of the first visit in the slums are similar to national levels. Interestingly, the proportion of neonates who are protected from tetanus is higher in slum communities than in Nairobi as a whole, other urban, and rural Kenyan communities. Despite the generally good antenatal care coverage in Nairobi slums, there is need for special attention to uneducated women who are least likely to receive antenatal care. Even when they do receive some care, antenatal visits are often far too few and begin late in pregnancy.

Slum residents are more likely to receive professional delivery care than rural communities, but are less likely than residents of Nairobi as a whole or other urban communities in Kenya. About half of deliveries in the slums take place in a health facility, compared to just over a third in rural areas, and about three-quarters in Nairobi as a whole. Although assistance during delivery follows a similar pattern, with health facility deliveries being associated with medical assistance, traditional birth attendant deliveries are particularly prevalent in the slums, where one quarter of births are assisted by traditional birth attendants, compared to only six percent of births in Nairobi as a whole. Delivery care in the slums is especially poor for higher order births, older mothers, and mothers with low educational attainment. The proportion of births delivered

through Caesarean section in the slums is lower than in Nairobi as a whole or other urban areas, consistent with the patterns of health facility deliveries.

Slum residents appear to be most disadvantaged in terms of child health, reporting significantly lower child immunization (except for tetanus coverage levels) and higher incidence of infectious diseases. While at least 80 percent of children aged between 12 and 23 months in the other communities in Kenya received the third polio vaccine, only half of children in the same age range in the slums did so. As a result, less than half of children in the slums were fully vaccinated, compared to between two-thirds and three-quarters of children in rural areas, other urban areas, or Nairobi as a whole. The prevalence of fever and diarrhea are also substantially higher among slum children than children elsewhere. An alarming proportion (about two-thirds) of children in the Nairobi slums had a fever in the two weeks prior to the survey, compared to 40 percent or less in all other areas. Similarly, almost one in three children in the slums had diarrhea in the two-week period, compared to less than one in five in other areas. These patterns show a clear need for interventions to improve the health and well being of children in slum settlements. The high level of morbidity in the slums may be a manifestation of the poor environment (sanitation, water and general hygiene) in which the children live.

Interestingly, a close association exists between the maternal and child health indicators among urban descendants of specific ethnic communities and their rural counterparts. The poor health outcomes observed among the Luo ethnic group, and the more favorable outcomes for the Kikuyu group in urban slum communities may be linked to the poor outcomes and the more favorable outcomes that have been observed in Nyanza and Central provinces respectively, regions where these ethnic groups predominate. This suggests that the poor health outcomes consistently observed in Nyanza province, for instance, may be more a product of cultural practices than of the availability and accessibility of health services.

HIV/AIDS and Other Sexually Transmitted Infections

The economic, health, and social consequences of HIV/AIDS in Kenya, which are already enormous and disturbing, are likely to worsen in future. The prevalence of HIV/AIDS in Kenya has increased rapidly from four percent in 1990 to 14 percent in 1998. There is an urgent need to develop appropriate policies and well-targeted programs to slow the transmission of HIV/AIDS and other STIs. Developing such policies and interventions requires an understanding of people's sexual behavior, their knowledge of STIs, ways to prevent STIs, and people's perceptions of the risk of contracting the diseases.

Chapter 9 reveals that HIV/AIDS is the most widely known STI in slum communities. Even though it would appear that the widespread publicity about HIV/AIDS has led to widespread awareness, high incidence of other STIs attest to the need for reproductive health campaigns to encompass other types of STIs. Radio and person-to-person exchanges (friends, relatives, and health workers) were the most commonly mentioned sources of information on STIs in the slums, while television and the printed media play a relatively greater role in Nairobi as a whole. The findings further demonstrate that reproductive health information and educational strategies should be youth-friendly, as women aged 15-19 years in the slums of Nairobi exhibit the lowest levels of knowledge of STIs.

Slum residents are generally well informed about ways to prevent the spread of HIV. The most commonly cited ways of preventing HIV/AIDS/STIs are having one sexual partner, using condoms consistently and abstaining from sexual relations. However, the NCSS also indicates

that a substantial percentage of uneducated women and never-married women who reside in slums are not as well informed about ways of avoiding HIV infection. Some young women believed that there are no ways of avoiding HIV infection. Furthermore, a sizeable proportion of women believe that healthy looking persons cannot be infected with the HIV virus. The results show that well targeted and detailed information campaigns to help reduce the transmission of HIV/AIDS are clearly needed.

The majority of women interviewed in the NCSS consider themselves to be at no risk or at minimal risk of contracting HIV/AIDS. The main reason given was that they had one sexual partner who they believe was also monogamous. Women who considered their risk of getting HIV/AIDS to be moderate or great felt so because of either their own risky behavior or that of their sexual partners. The chance of having multiple sexual partners was relatively high among the unmarried women in the slums of Nairobi. Unmarried women living in the slums were twice as likely to have multiple sexual partners as their married counterparts. Although the majority of the women interviewed in the NCSS know about condoms, a sizeable proportion (44 percent) does not know where to get them.

There are some indications of positive behavioral change from the NCSS analysis in response to the HIV/AIDS crisis. Over 80 percent of the respondents reported that they have adjusted their sexual behavior to protect themselves from contracting the disease. The safe sexual practices reported included: staying with one sexual partner or asking the spouse to be faithful, delaying initiation of sex and abstaining from sex. Others reported starting to use condoms or reducing the number of sexual partners. Others have sought testing for HIV. Although a large proportion of those who have not yet tested for HIV would like to have a test, many people reported a lack of knowledge of where to go for the test and that there were limited testing facilities.

Social and Health Profile of Adolescents

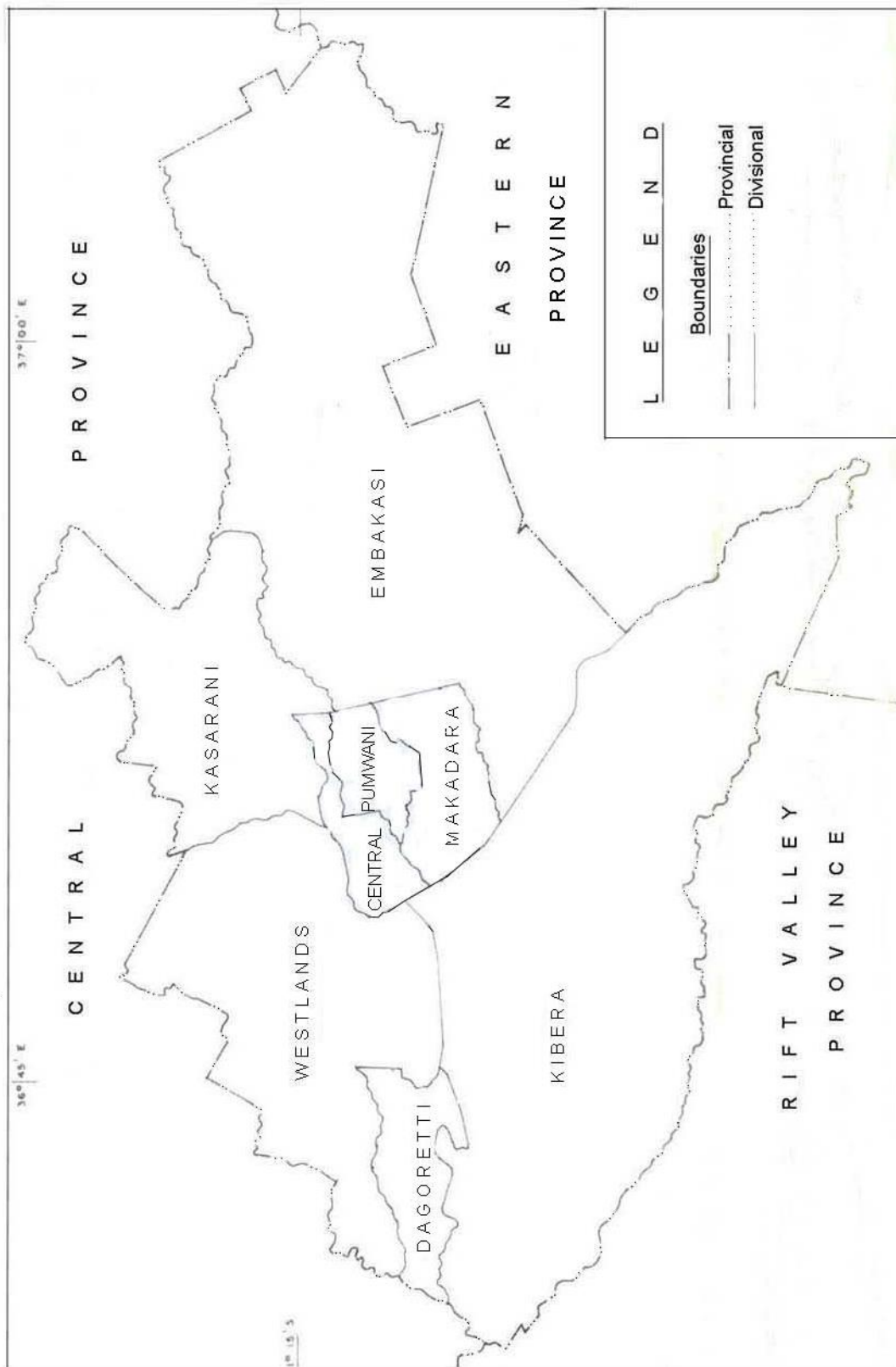
Earlier qualitative assessments of the general and reproductive health needs in the slums of Nairobi indicated that adolescents are a particularly vulnerable group with respect to poor health outcomes. The low school enrollments and high levels of unemployment and under-employment that characterize these slums are likely to place adolescents in jeopardy, heighten their risk-taking behaviors, and worsen reproductive health outcomes. Chapter 10 examines adolescent socio-economic and reproductive health factors in the Nairobi slums, including educational experiences, livelihood and social conditions, and a wide range of reproductive health issues.

School enrolment rates for adolescents in Nairobi slums are considerably lower than in other parts of Kenya, including rural areas. Only one in five of slums residents aged 12-24 years were attending school at the time of the survey. The most commonly reported reason for dropping out of school was lack of school fees, reported by two-thirds of the female and three-quarters of the male adolescents. Nevertheless, educational attainment levels were higher in the slums compared to rural Kenya or Kenya as a whole, perhaps due to the migration of many primary and secondary school graduates from rural areas who end up in the slums. Although almost three-quarters of the adolescents reported that both of their parents were alive, less than one in five were living with both parents.

In general, sexual activity begins earlier in the slums of Nairobi, as compared to Kenya as a whole. The majority of adolescents (74 percent) were sexually experienced, but contraceptive use, including condom use, was generally low (though comparable to that among the rest of the Kenyan adolescents). The results suggest that early childbearing and the incidence of unplanned

pregnancies may be more frequent in slum communities than in the rest of Kenya. Vulnerability to poor reproductive health outcomes among adolescents in the slums is further aggravated by widespread misconceptions of how HIV/AIDS and other STIs are transmitted. Most adolescents believed that a woman who is HIV-positive will always give birth to a child who is HIV-positive, while less than half (40 percent) wrongly believed that HIV/AIDS can be transmitted through mosquito, flea or bedbug bites. Furthermore, a significant proportion of the adolescents (at least 20 percent) did not know that using condoms can prevent the transmission of HIV/AIDS, or believed that they could always tell if a person is HIV-positive or has STIs. These misconceptions are likely to deter effective behavior change that would curb the spread of HIV/AIDS and other STIs, and show the critical need for appropriate reproductive health information and educational programs for adolescents in the slums.

Map of Nairobi showing Administrative Divisions



CHAPTER 1

INTRODUCTION

Samson Wasao

Africa is currently undergoing an urban population explosion. Despite slow economic progress since the 1970s, African cities have experienced the fastest population growth rates in world history, at over five percent a year, and a large proportion of all future population growth in Africa is expected to occur in urban areas (UNCHS, 1996). As a result of rapid urban growth under economic constraints, the majority of residents in Africa's large cities—and an increasing proportion of Africans overall—now live in overcrowded slums and shantytowns where health conditions and livelihood opportunities are poor (Todaro, 1989; Lamba, 1994; UNCHS, 1996).

Available evidence suggests that age-old urban health problems, such as acute respiratory and gastro-intestinal infections resulting from the impact of high population density and mobility on disease transmission, are being exacerbated by the reproductive health consequences of urban poverty in Africa. Among the critical problems facing the most vulnerable groups of slum dwellers, in particular women and children, are exposure to HIV and STIs via poverty-driven commercial sex; domestic violence and child abuse; unwanted teenage pregnancy and unsafe abortion spurred by high levels of early sexual activity; and poor access to family planning and health services as a result of social marginality, geographic isolation, low income, and illegal residence (Brockerhoff and Brennan, 1998).

In response to these problems, the Africa Population and Health Research Center (APHRC) has launched a program of investigation, research, and experimental trial that aims to clarify the nature of urban health and poverty problems, and identify feasible solutions that can be pursued in urban informal settlement communities. A multi-year experimental study is envisioned that will test the impact of experimental interventions on urban community health and livelihoods. The present report documents findings from a random probability sample survey of 3,572 women (3256 aged 15-49 years, and 316 aged 12-14) and 1,683 men (aged 12-24 years) resident the slums of Nairobi city. The aims of Nairobi Cross-sectional Slums Survey (NCSS) are to describe the demographic characteristics and health conditions of residents of Nairobi informal settlements and compare with conditions that prevail elsewhere in Kenya.

1.1 Background

Kenya's situation is similar to situations elsewhere in Africa. Its urban population almost doubled between 1980 and 1998, increasing from 16 to 31 percent (World Bank, 1999). Although the city of Nairobi's contribution to the total urban population in Kenya has decreased from 32 to 23 percent between 1980 and 1999, it is still one of the fastest growing cities in Africa. Another key feature of the city is that a large proportion of its population, estimated to be between 50 and 70 percent, live in informal settlements where environmental and health conditions, are very poor (Matrix Development Consultants, 1993; World Bank 1999). Further, only 45 percent of the city's residents had access to potable water and only 63 percent had access to regular waste collection in 1993 (World Bank 1999).

The word Nairobi is derived from the Maasai word "Nyrobi", which means "a place of cool/cold waters." Before the start of British colonial administration, Nairobi was a major trading center

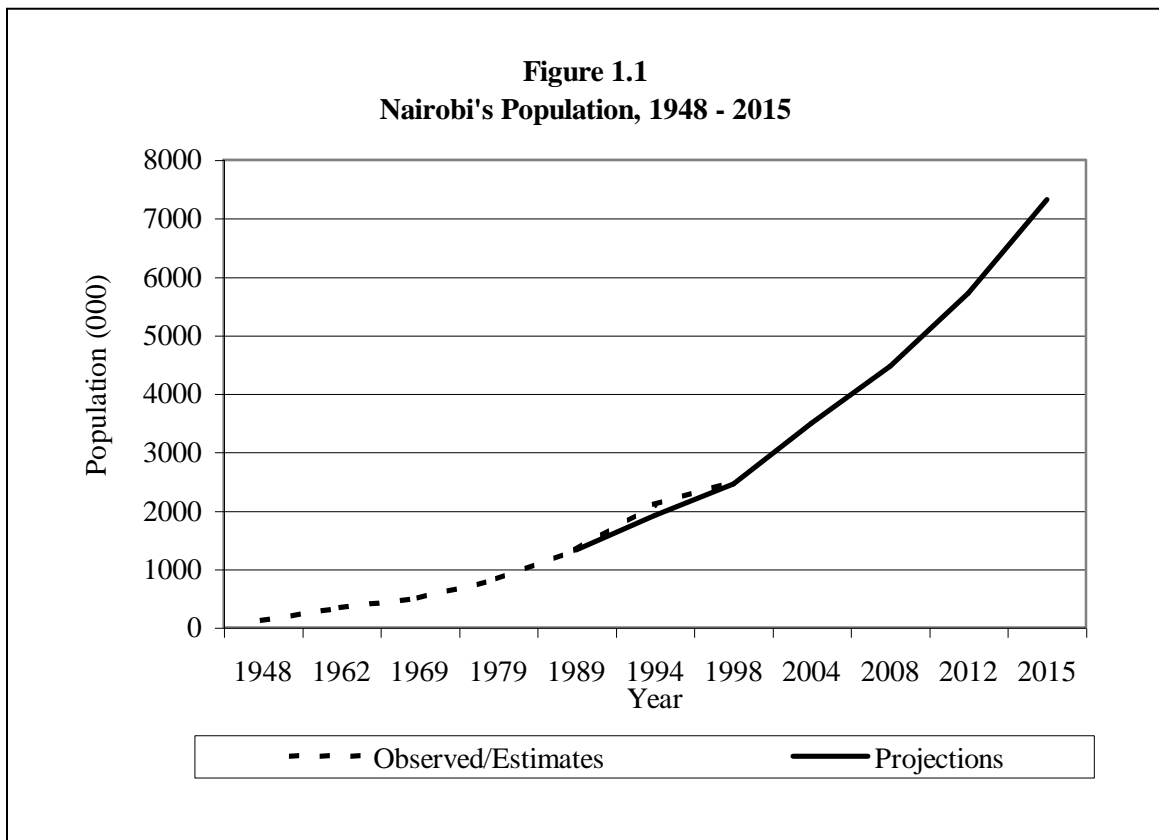
for the Kikuyu people and their neighbors (the Maasai, the Ndorobo and the Kamba), with whom they traded in grains, tobacco, copper ornaments, livestock, animal skins, and other merchandise (Ochieng' and Maxon, 1992). Nairobi had been established as a stopover for trading caravans from the coast en-route to Uganda that brought in imported beads, bangles and cloth items. The construction of the Mombasa-Uganda railway gave it further prominence when the railway reached Nairobi. In 1899 the railways authorities established their administrative and railways headquarters in Nairobi. Henceforth they made more extensive developments in Nairobi than at any other point on the railway line (Hake, 1977; Obudho and Obudho, 1992). In 1905, the British colonial government moved its headquarters from Mombasa on the coast to Nairobi after the completion of the railway line. Thus began the steady growth of Nairobi to what it is today. In 1920 Nairobi's size was 25 square km, in 1927 it had grown to 90 square km and currently the area of Nairobi is 684 square km (UN, 1995).

Nairobi officially became a city in 1950 and was granted provincial status in 1963. Nairobi City is divided into 8 divisions (Dagoretti, Embakasi, Kasarani, Central, Westlands, Kibera, Makadara and Pumwani) (see map on p. vi). The divisions, in turn, are divided into 46 locations, which are also divided into sub-locations. There is a Provincial Commissioner, a District Commissioner, and District Officers in charge of each of the administrative tiers, while Chiefs are in charge of the locations. Assistant chiefs are in charge of sub-locations and they work with village elders appointed by the community. All the other administrative positions from the Assistant Chief upwards are political (and salaried) appointments from the Office of the President, which is in charge of all levels of administration in the country. Chiefs and Assistant Chiefs wield enormous power at the location level, vested upon them by the Chief's Authority Act, which gives them authority to maintain the peace and resolve all conflicts among their subjects. Informal settlements are found in all the divisions of Nairobi in varying sizes and densities. Some of them are situated side by side with some of Nairobi's most affluent residential areas.

Nairobi is located 480 kilometers (300 miles) inland northwest of the Indian Ocean town of Mombasa. Nairobi's elevation is between 5,500 and 6,000 feet (about 1,500-2,000 meters) above sea level. The weather is moderately cool most of the year. The Athi Plains are in the South East of the city and the Kikuyu Plateau in the North West. The lower regions are fairly flat while the upper regions consist of ridges and valley landscapes with steep slopes (Lamba, 1994).

1.2 Population Growth and Settlement Patterns

Out of Nairobi's total land area, seventeen percent is covered by the Nairobi National Park, and people inhabit the rest of the area. As figure 1.1 shows, the population of Nairobi has been increasing consistently, rising from below 120,000 when the first census was conducted in 1948 to the 1999 size of about 2.1 million people (Central Bureau of Statistics 2001). The projections indicate that the city will continue to grow at the same fast pace in the near future. In fact, Nairobi's growth rate of about seven percent per annum is one of the fastest city growth rates in Africa. Most of the growth of the city of Nairobi is a result of rural-urban migration rather than from immigration or natural increase.



During colonial rule, there was strict control of in-migration to Nairobi and residential areas were segregated along racial lines. The upper parts of the city were exclusively reserved for Europeans while lower parts were left for Africans and other races. That is why most of the slum settlements are situated in the low-lying areas of the city. Additionally, post-colonial policies have neglected development needs of urban informal settlements.

Population densities vary widely within Kenya, from over 230 persons per square km in (agriculturally) high potential areas to as low as 3 persons per square kilometer in the arid areas (Republic of Kenya, 1997). In the city of Nairobi, densities also vary substantially by type of settlement. Based on the 1999 census, the population density for Nairobi was 3,079 people per square km (Central Bureau of Statistics 2001), while the wealthier parts of the city are much less dense, inhabited by about 300 persons per square km. Informal settlements cover only about five percent of the total residential land area of the city, but they are inhabited by at least half of the city's population. Some of these informal settlements started during the colonial times while others were formed in the post-colonial era. Provision of housing has not kept pace with the rapidly increasing demand; especially for the poorer segments of the city population for whom there is officially no public housing.

Slums reflect the legacy of neglect from colonial times, when a deliberate policy of constrained provision of housing for Africans was instituted (Leys, 1975). The colonial government believed that a substantial population of the city including Africans, Arabs, and Indians represented "surplus" labor that exceeded the needs of the town and its economy (Hake, 1977). Even after independence, and continuing into the first post-colonial regime the burgeoning migrant urban population was officially viewed as a nuisance and a health hazard to city residents. The new government advocated rural resettlement, which was tantamount to designating many urban wage workers as undesirable vagrants, as Leys (1975) has observed:

“By the end of 1971, large numbers of former slum-dwellers were living in makeshift tents which were to be dismantled every morning before the police patrols arrived.” (Leys, 1975:180)

Slum residents were either harassed or merely tolerated by official policy and treated as interlopers with no right to public amenities. Thus, as time progressed, the authorities adopted a “wait-and-see” approach to the plight of informal settlers, neither expelling them by force nor doing anything to improve the areas (since that would serve as an invitation for the poor settlers to stay in the city). Slums were left to mushroom without any deliberate official involvement. Some official attempts have been made to end the policy of neglect by providing improved housing through donor-financed projects, but the scale of investment in these schemes has been so small that their impact on the lives of the urban poor has been negligible. The low levels of income among slum residents also preclude them from enjoying the benefits of such projects since any improvements in housing conditions are accompanied by sharp increases in the rental cost of the improved houses. Indeed, the improved and planned facilities end up serving the needs of middle-income residents of the city, who are more capable of paying higher rent than informal settlement residents.

1.3 Urbanization and Poverty in Kenya

The overall concern of the Government of Kenya with regard to population is to implement appropriate policies, strategies and programs that will consistently match the country’s population growth with the available national resources over time in order to improve the well-being and quality of life of the individual, the family and the nation as a whole (Republic of Kenya, 2000). Rapid population growth has led to diminishing land-population ratio and high growth rates of urban centers, with the spontaneous growth of slums, unemployment and underemployment and other socially undesirable outcomes such as street children, drug abuse, and prostitution (Republic of Kenya, 1994). Rapid urban growth has overstretched existing urban infrastructure such as hospitals, schools, road-network, housing, and other amenities. The pressure of population on urban social services and the imbalance between rural and urban development are two of the main concerns to the Government of Kenya. These pressures, combined with the increasing inability of the government to provide basic social services due to the economic hardships of the past decade (among other factors), have led the government to view rapid population growth as the bane of economic development.

A clear consequence of rapid urbanization amidst economic deceleration in Kenya is the privation of urban residents. The Welfare Monitoring Survey (WMS) data presented in Table 1.1 show that while absolute poverty increased from about 48 percent to 53 percent in rural areas of Kenya between 1992 and 1997, poverty in urban areas increased by a much bigger margin from about 29 percent in 1992 and 1994 to about 50 percent in 1997 (Central Bureau of Statistics, 2000). Thus, although poverty has always been considered a predominantly rural phenomenon, it is increasingly becoming a crucial urban problem as well.

Table 1.1 Trends in the percentage of people in absolute poverty (living below the poverty line) in Kenya, 1992-1997

Province	Proportion in Absolute Poverty*			Population Size	
	1992	1994	1997	1989**	1999***
Central	35.9	31.9	31.4	3,111,255	3,724,159
Coast	43.5	55.6	62.1	1,825,761	2,487,264
Eastern	42.2	57.8	58.6	3,768,689	4,631,779
Nyanza	47.4	42.2	63.1	3,507,160	4,392,196
Rift Valley	51.5	42.9	50.1	4,917,551	6,987,036
Western	54.8	53.8	58.8	2,622,397	3,358,776
Major Towns					
Nairobi	26.5	25.9	50.2	1,324,570	2,143,254
Mombasa	39.2	33.1	38.3	461,753	665,018
Kisumu	-	47.8	63.7	214,699	322,734
Nakuru	-	30.1	40.6	245,023	231,262
Other towns	-	28.7	43.5	1,617,474	6,634,723
Rural	47.9	46.8	52.9	17,585,255	18,689,616
Urban	29.3	28.9	49.2	3,863,519	9,996,991
National	44.8	40.3	52.3	21,448,774	28,686,607

Sources:

* Republic of Kenya, Economic Survey, 2000. Pages 188-213

** Republic of Kenya, 1999 Population and Housing Census, vol. I: Population Distribution by Administrative Areas and Urban Centres, pp.xxxiii-xxxiv, 3-1.

*** Republic of Kenya, Kenya Population and Housing Census 1989: Analytical Report, vol III, pp.2 & 38. and Republic of Kenya, Kenya Population and Housing Census 1989: Analytical Report, vol. VI, p.39.

Overall, poverty in both rural and urban areas decreased slightly between 1992 and 1994, but increased considerably between 1994 and 1997. The trends in poverty across the predominantly rural five provinces (all except Coast) mostly match with the moderate increases observed in the rural category, with the exception of Nyanza (where poverty increased drastically (from 47 to 63 percent), poverty in cities and major towns (with the exception of Mombasa) increased by huge margins. Nairobi city registered the biggest increase in overall poverty, which almost doubled from 26 percent to 50 percent between 1992 and 1997. This worsening welfare of Kenyans in general, and urban Kenyans in particular, has affected health, education, social welfare, and employment.

1.4 Objectives of the NCSS

Prior to conducting the NCSS, the APHRC carried out a qualitative study in four slum communities of Nairobi in 1999: Kibera, Majengo, Embakasi and Kahawa North. The purpose of this qualitative study was to determine the livelihood and health needs and problems of slum residents, as well as to identify possible solutions that the residents viewed for tackling these problems. Since reproductive health problems were known to be serious in the study population, the qualitative research was also designed to examine patterns of sexual networking among the residents. The NCSS survey, carried out from February to June 2000, sought to complement and corroborate the findings of the qualitative study by establishing the magnitude of the problems cited by slum residents during the qualitative study. The NCSS was designed to facilitate

comparisons between urban slum conditions and national socio-demographic data available from the 1998 Kenya Demographic and Health Survey (KDHS). The data allow comparative analyses of social, health and reproductive health problems between respondents residing in the slums of Nairobi, Nairobi as a whole, as well as residents in other urban areas and rural Kenya.

Little was known about demographic dynamics in African slum populations, and no direct evidence was previously available to support policy deliberations on ways to meet the health and livelihood needs of the urban poor. National surveys such as the KDHS, for instance, do not provide representative or sufficiently large samples of slum households to adequately assess the relative magnitude of health and socioeconomic problems. As a result, no generalizable findings have existed on fertility, family planning, mortality and morbidity, immunization, sexual behavior, and other important issues for the urban poor in any city in sub-Saharan Africa. The NCSS is the first large-scale survey in sub-Saharan Africa that is explicitly designed to provide demographic and health indicators for a representative sample of city slum residents, and thus to provide a trustworthy basis for designing and implementing effective intervention policies.

1.5 The NCSS Sample

Based on census enumeration areas used in the 1999 Kenya National Census, a weighted cross-sectional sample was designed that is representative of households in all slum clusters of Nairobi. A two-stage stratified sample design was used. Sample points or enumeration areas (EAs) were selected at the first stage of sampling while households were selected from sampled EAs at the second stage. To generate a sampling frame, the NCSS used all the household listings for Nairobi province from the 1999 census. This listing contains the name of the division, location, sub-location, enumeration area as well as structure number, structure owner, number of dwelling units and use of structure (dwelling, business, dwelling/business). Processing of listing forms and identification of slum EAs were conducted in close collaboration with Central Bureau of Statistics (CBS) staff from both the headquarters and the different locations throughout Nairobi.

Before processing the data to generate a sampling frame, two important activities were undertaken. First, two of the EAs were selected and CBS maps were used to identify structures that were indicated and the name of the structure owner, and to assess the number of dwelling units in the structure. The objective of this exercise was to determine if field teams would be able to find selected structures and dwelling units using the CBS enumeration lists. The second activity sought to validate the completeness of the sampling frame. In this second activity, a random sample of one percent of the slum EAs were selected and a fresh listing of structures and dwelling units in each was conducted. A comparison of these structures and dwelling units with the original listing provided by the CBS showed a difference of only 0.7 percent.

Once the sampling frame was validated for completeness, a database of structures was generated from the listing forms and then expanded using the numbers of dwelling units in a given structure to create a sampling frame based on dwelling units. The frame consisted of 31 locations, with at least one slum enumeration area (EA), 48 sub-locations, 1,364 EAs, 29,895 structures, and 250,620 dwelling units.

The first stage of the sampling procedure yielded 98 EAs, while the second stage produced 5463 households. Since dwelling units were neither numbered nor was information collected on household headship during the listing exercise, a method was devised for identifying selected dwelling units within structures. After identifying the right structure (using the map, the name of

the owner, the number of dwelling units, and any other physical landmarks noted on the map), fieldworkers identified the selected dwelling unit by first identifying all dwelling units and then counting from the left until they reach the selected number. A dwelling unit generally refers to one or more rooms occupied by the same household within one structure. Although this often corresponds to a room, a household may reside in more than one room. Interviewers were instructed to identify households occupying more than one room and then to count these as one dwelling unit before numbering and identifying the selected dwelling unit.

In each selected dwelling unit, a household questionnaire schedule was completed to identify household members and visitors who would be eligible for individual interviews. All female household members and visitors who slept in the house the previous night and are aged 12 to 49 years were eligible for individual female interviews while all male members and visitors aged 12 to 24 years old were eligible for male interviews. A full census of all sampled households was also carried out. In total, the NCSS administered interviews to 4564 households, 3256 women of reproductive age (15-49), and 1683 adolescent boys (Table 1.2). The 1,934 adolescent girls (whose results are compared with those for boys) comprise 316 aged 12-14 and 1,1618 aged 15-24. Details of the sample design are given in Appendix A.

Table 1.2: Response rates for the household and individual interviews, NCSS 2000

CATEGORY	Sampled	Eligible	Completed	Response Rate (%)
Households	5,395	4,856	4,564	94.0*
Women (15-49)	3,356	3,356	3,256	97.0
Adolescents Girls (12-24)	2,195	2,195	1,934	88.1
Adolescents Boys (12-24)	1,843	1,843	1,683	91.3

* The household response rate is computed as the number of completed household interviews divided by the number of eligible households. For the NCSS, 90% of the sampled households (4856) were eligible (i.e. sampled households minus households that were vacant, destroyed, and where all members were absent).

1.6 The Survey Instruments

The NCSS instruments were modified from KDHS instruments. Core sections of the 1998 KDHS were replicated without revision, but the service delivery exposure questions were modified so that questions were more relevant to the urban context. The similarity with the DHS questionnaires permitted direct comparison to national, urban, rural, and Nairobi-city results derived from the 1998 KDHS. The fact that the NCSS was carried out less than two years following the DHS ensured that findings were timely enough for useful comparison.

Three instruments were used in this survey: The first one was the household schedule, which enabled us to conduct a full household census from which all eligible respondents were identified. This instrument solicited information on background characteristics of households. The second instrument was for individual women age 15-49, and it had modules on their background and mobility, reproduction, contraception, pregnancy, ante-natal and post-natal care, child immunization and health, marriage, fertility preferences, husband's background and

the woman's work and livelihood activities. Information on AIDS and other sexually transmitted infections was also sought, as was information on general and health matters.

The third instrument was the adolescent questionnaire for young women and men age 12-24. The adolescent questionnaire was designed to investigate health, livelihood, and social issues pertaining to adolescents in the slum communities. The three instruments are attached in Appendix.

1.7 Training and Fieldwork

A total of 49 interviewers (37 women and 12 men), 3 office editors and 4 data-entry clerks were trained for two weeks, from February 17 through March 3, 2000. On the last day of training, the instruments were pre-tested and revised before finalizing them for fieldwork. Fieldwork started on March 5, 2000 and ended on June 4, 2000. Fieldworkers were sent to the field in six teams - each with at least one male interviewer, three or four female interviewers, one supervisor, and a field editor. Three trainees were retained as office editors to edit all questionnaires coming from the field before the questionnaires were sent for data entry.

CHAPTER 2

CHARACTERISTICS OF HOUSEHOLDS AND RESPONDENTS

This chapter compares socio-demographic characteristics of NCSS households and respondents with the corresponding characteristics recorded in the 1998 KDHS. These comparisons highlight ways in which slum populations in Nairobi differ from the whole of Nairobi and national urban and rural populations.

2.1 Age-Sex Composition

Figure 2.1 presents age composition by sex for the slum population and similar pyramids for Nairobi as a whole and the whole country derived from the 1999 Kenya census data. The population pyramid for the slum population is very similar to the one for Nairobi as whole, and markedly different from the structure for the national population. The proportion of young people aged 0-14 years is considerably higher in the national population (47 percent) than in the slum population (32 percent) and the Nairobi population (31 percent). Another key feature of the city-based populations is the distinctly big proportion of men in the economically active age range. Close to 40 percent of the slum and Nairobi populations are men aged 15-49, while only a quarter of the national population comprises men in this age range. The percentages of the total population that is female in the 15-49 age group are not that different across the three categories (26, 29 and 26 percent in the slums, Nairobi as a whole, and the whole country, respectively). The dominance of men in the slum and Nairobi populations is a reflection of the higher tendency for young men to migrate from rural to urban areas in search of work.

2.2 Household Characteristics

Table 2.1 shows household distribution by gender of household head, and number of usual members in the household. While the national population comprised about half males and half females, the slum population has a lower percentage of females (44 percent), which is close to that for Nairobi as a whole. While females head about one-third of households at the national level and in rural areas, this proportion is much lower in the slums (only 16 percent). The mean size of households in the slums is smaller than in the rural areas and other urban areas. The distribution of households with an average of one to two persons per sleeping room is comparable between slum households (62 percent) and households in Nairobi as a whole or other urban areas, but is slightly higher than the corresponding percentage for rural areas (57 percent). The average number of people per sleeping room is higher in rural areas (2.8) than in the slums (2.4). The fact that slums have smaller household size but the same number of people per sleeping room as the other areas suggests that slums dwellings have fewer rooms. Additionally, the average number of people per sleeping room does not take into account differences in physical room sizes between the other areas and slums, where an average room of ten-by-ten feet is commonly used as a sleeping room, sitting room, bathing room, as well as kitchen.

Relative to the whole of Nairobi, NCSS slum households have a higher proportion of resident children under age 15 who are not the biological offspring of the head of household (15percent) compared to Nairobi as a whole (6 percent), implying a higher fosterage rate for slum households. The corresponding percentages are 15 percent for the national level and 18 percent for rural areas.

Figure 2.1
Population pyramids for Nairobi slums (NCSS 2000), Nairobi City (1999 Census) and Kenya (1999 Census)

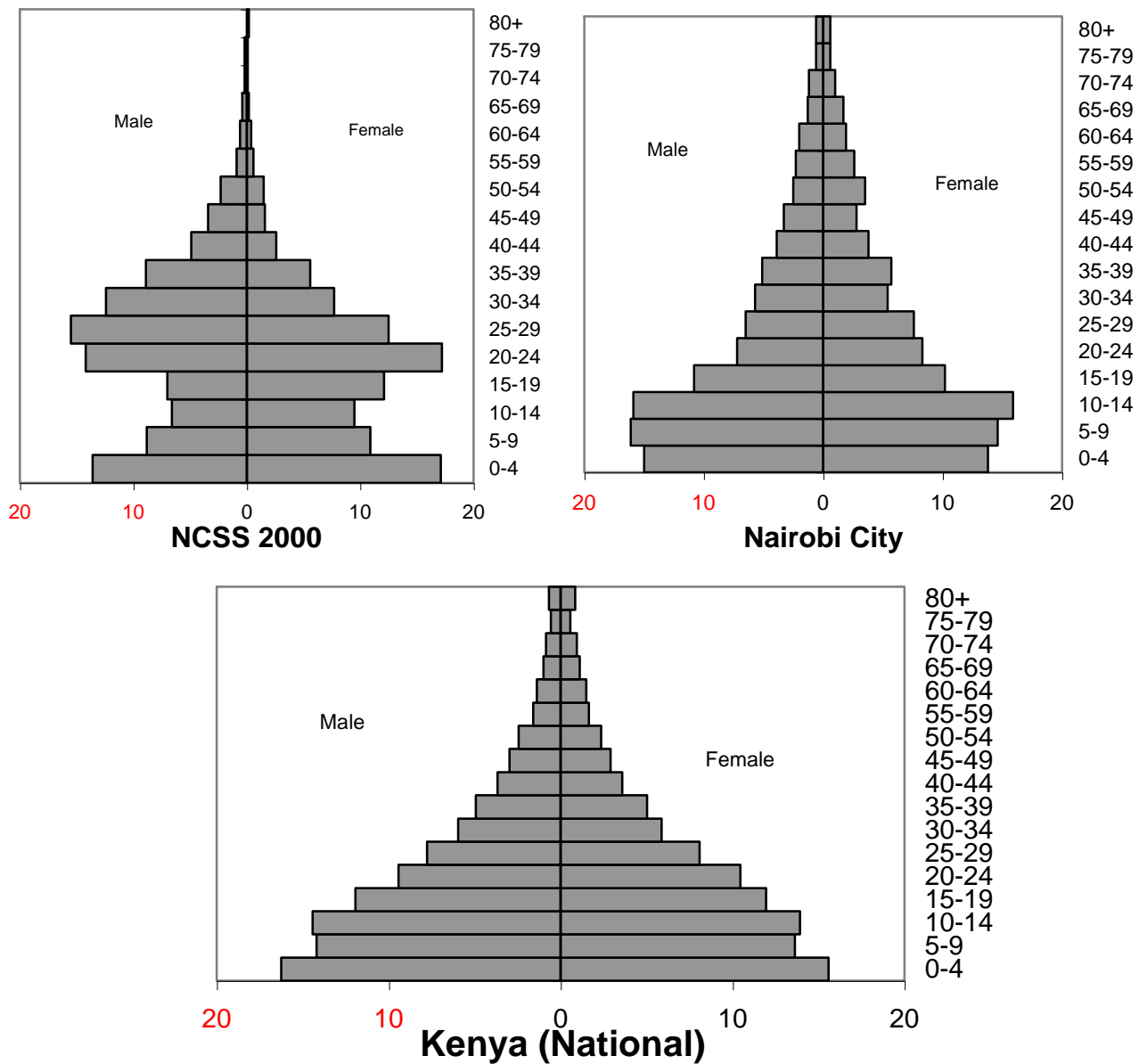


Table 2.1: Percent distribution of households by selected demographic characteristics, NCSS 2000 and KDHS 1998

Characteristics of household	KDHS				NCSS
	National	Rural	Other Urban	Nairobi	
Sex of household head					
Male	68.3	65.6	74.1	80.4	83.1
Female	31.7	34.4	25.9	19.6	16.2
Sex of household members					
Male	49.1	48.5	51.5	54.1	56.0
Female	50.9	51.5	48.5	45.9	44.0
Mean No. of people per household	4.5	4.7	3.6	3.2	2.9
Mean No. of rooms per household	1.9	1.9	1.9	1.9	1.2
Number of usual members					
1	15.8	12.5	25.9	26.9	32.3
2	12.7	11.2	15.5	20.4	23.1
3	13.5	13.3	14.4	13.6	15.7
4	14.7	14.9	14.2	14.5	11.5
5	13.5	14.1	11.3	12.2	8.2
6 +	29.7	34.0	18.5	12.1	9.1
Mean size	4.3	4.6	3.5	3.1	2.8
Persons per sleeping room					
1-2	58.4	56.9	62.8	63.7	61.6
3-4	27.0	27.4	25.4	26.1	27.2
5-6	9.5	9.8	8.2	9.2	8.7
7+	4.3	5.2	2.1	0.8	1.9
Missing/DK	0.8	0.7	1.5	0.2	0.7
Mean	2.7	2.8	2.4	2.4	2.4
Percent of children Under 15 not of hh head ^a	15.3	17.6	-	5.7	14.9
Total	100.0	100.0	100.0	100.0	100.0
Number of Cases	37,688	31,897	4,200	1,588	13,238

2.3 Background Characteristics of Female Respondents

Table 2.2 compares several distributions of women aged 15-49 living in the slums of Nairobi with those living in other parts of Kenya. For each population sub-group, at least three out of four women were aged 15-34. Slum women (29 percent) are as likely as rural women, but considerably less likely than Nairobi as a whole and other urban residents to have never married. Slum women (12 percent) are more likely than women from all the other areas to have experienced marital dissolution. The majority of women were Protestants or other Christians followed by Catholics and Muslims. The dominant ethnic groups, which constitute 88 percent of the total population, are Kikuyu, Luhya, Luo, and Kamba in that order. Compared to their relative proportion in Nairobi as a whole, the Luo and the Luhya are over-represented in the slums while the Kikuyu are under-represented.

Table 2:2 Comparison of KDHS and NCSS respondents' background characteristics

Background characteristics	KDHS 1998				NCSS 2000
	National	Rural	Other Urban	Nairobi	
Age					
15-19	23.5	23.9	21.5	23.4	20.8
20-24	19.6	18.1	25.3	23.6	28.9
25-29	17.4	16.6	20.2	19.6	20.8
30-34	12.5	12.4	12.8	12.9	12.7
35-39	12.6	13.1	11.3	10.0	9.4
40-44	8.1	9.0	4.3	5.7	4.5
45-49	6.3	6.8	4.5	4.8	2.3
Marital status					
Never married	30.1	28.5	32.9	33.7	28.6
Married/Living together	61.3	63.2	56.8	53.0	59.3
Formerly married	8.6	8.3	10.3	8.4	12.1
Religion					
Catholic	27.7	28.0	26.3	27.5	30.7
Protestant/other Christians	64.5	66.6	53.3	63.3	63.6
Muslims	5.1	2.8	17.2	6.2	5.0
No religion	1.8	2.2	0.7	0.7	0.6
Other religion	0.8	0.3	2.5	1.9	0.2
Missing	0.1	0.1	0.1	0.5	0.0
Ethnic group					
Kalenjin	12.6	15.4	4.8	1.0	0.9
Kamba	12.8	12.7	8.6	19.1	16.3
Kikuyu	17.9	15.7	17.1	36.8	25.1
Kisii	10.9	12.0	10.1	3.1	2.9
Luhya	14.5	14.3	15.8	14.6	24.7
Luo	13.6	12.9	17.9	13.8	22.3
Maasai	1.4	1.9	-	-	0.1
Meru/Embu	7.2	8.0	5.1	3.8	2.7
Mijikenda/Swahili	5.0	4.5	11.0	-	0.4
Somali	0.2	-	1.2	0.5	1.5
Tsita taveta	1.0	1.1	1.2	0.2	0.5
Other	2.8	1.4	7.2	7.2	2.7
Total	100.0	100.0	100.0	100.0	100.0

2.3.1 Respondents' Educational Attainment

Table 2.3 presents the percentage distribution of women 15-49 by age, length of stay in the current location, and slum division for different levels of educational attainment. The percentage that has not completed primary education is high for ages 15-19 (partly because some were still in school), it drops for the next age group (20-24), and then increases monotonically with age. The percentage completing primary school is 54 percent at the youngest age, and decreases with age. The data also show that most of the recent immigrants have completed primary education or gone to secondary school, while a substantial percentage of those born in the slums (37 percent) did not complete primary school.

Kasarani and Pumwani had a higher percentage of women with no education (8 and 7 percent, respectively) while the smallest proportion (3 percent) was found in Westlands. Similarly, 32 percent of women in Central division had not completed primary school, but while 16 percent fall in this category in Dagoretti. A majority of women in each of the divisions of Nairobi had at least completed primary education. Makadara and Central Divisions had the lowest proportions, with only about two-thirds having completed primary or higher levels of education, compared to

Background characteristics	Highest education level				Total
	No education	Primary incomplete	Primary complete	Secondary plus	
Age					
15-19	2.0	21.3	54.3	22.5	654
20-24	2.1	10.3	47.4	40.3	926
25-29	2.8	12.5	40.5	44.1	671
30-34	5.4	18.2	42.1	34.3	411
35-39	12.2	22.8	30.0	35.0	303
40-44	21.8	26.9	21.2	30.1	156
45-49	26.8	39.0	22.0	12.2	82
Length of stay					
< 2 years	4.0	20.7	44.8	30.4	2,014
2-4 years	5.2	24.1	39.1	31.6	174
5-7 years	9.3	21.5	33.6	35.6	289
8+ years	6.6	22.0	37.0	34.4	944
since birth	0.0	37.4	30.8	31.9	91
Division^b					
Central	6.4	32.4	43.1	18.1	343
Makadara	4.2	27.1	33.9	34.7	118
Kasarani	7.8	26.8	43.0	22.5	654
Embakasi	3.0	15.7	43.6	37.6	598
Pumwani	7.3	17.3	46.4	29.1	110
Westlands	2.5	16.1	35.5	45.8	515
Dagoretti	4.7	15.5	39.7	40.1	466
Kibera	5.8	24.9	41.9	27.5	712
Total	5.1	21.7	41.2	32.0	3,516

^b Aggregating by all slums within the specified urban division.

more than 80 percent of the women in Westlands and Embakasi Divisions.

Table 2.4 shows the distribution of women of reproductive age by highest level of education attained. Nearly half of all women at the national level have no education or incomplete primary education (48 percent). Educational attainment is markedly higher in Nairobi slums than in rural areas. About 73 percent of all slum respondents have completed primary school or gone to secondary school, compared to only about 46 percent for rural residents, and 68 percent for residents of other urban areas. Residents of Nairobi as a whole have the highest level of educational attainment, with 86 percent having completed at least primary school.

Table 2.4. Educational attainment among KDHS and NCSS respondents of reproductive age, NCSS 2000 and KDHS 1998

Educational level	KDHS				NCSS
	National	Rural	Other Urban	Nairobi	
Highest educational level					
No education	11.5	13.4	8.6	1.2	5.1
Primary incomplete	36.7	41.0	23.6	21.0	21.7
Primary complete	22.5	22.5	22.1	23.4	41.2
Secondary+	29.2	23.1	45.7	54.4	32.0
Total	100.0	100.0	100.0	100.0	100.0

2.3.2 Respondents' Background Characteristics by Division

Table 2.5 examines background characteristics of the respondents by division, revealing marked variation in ethnic composition and marital status across the eight divisions. For instance, the Luo make up about half of slum residents in Central and Kasarani Divisions, but less than 10 percent of slum residents in Makadara, Dagoretti, Pumwani, Westlands and Embakasi Divisions.

Table 2.5 Background characteristics of NCSS respondents by Division, NCSS 2000

Background characteristics	Division							
	Central	Makadara	Kasarani	Embakasi	Pumwani	Westlands	Dagoretti	Kibera
Age group								
15-19	23.1	14.9	26.8	17.6	20.4	17.6	18.1	22.3
20-24	23.7	28.1	25.6	37.7	34.7	29.4	27.0	27.0
25-29	18.7	28.1	18.1	23.6	15.3	21.1	23.6	19.4
30-34	14.6	16.7	12.3	10.1	10.2	14.1	14.2	12.1
35-39	12.0	7.0	11.1	6.8	11.2	10.1	8.0	9.6
40-44	4.1	5.3	4.2	3.5	5.1	4.6	6.9	5.5
45-49	3.8	0.0	1.9	0.7	3.1	3.1	2.3	4.2
Religion								
Catholic	36.4	41.2	34.3	30.6	28.6	23.2	27.7	30.9
Protestant	61.1	55.3	56.5	65.4	41.8	75.0	69.6	62.0
Muslims	1.6	3.5	7.8	3.5	29.6	0.2	2.5	7.0
No religion	1.0	0.0	1.4	0.5	0.0	1.6	0.2	0.2
Ethnicity								
Kamba	13.6	32.5	5.0	35.8	22.4	7.9	5.0	20.3
Kikuyu	16.1	37.7	25.6	25.0	39.8	42.2	29.1	9.7
Luhya	13.0	8.9	9.0	15.0	13.4	33.3	46.7	35.8
Luo	53.2	3.5	50.1	8.9	6.1	7.5	5.5	22.7
Other	4.1	17.5	10.3	15.4	18.4	9.1	13.7	11.5
Marital status								
Never married	20.9	23.7	28.0	27.9	27.6	38.7	29.5	26.5
Currently married	63.3	63.2	61.2	62.7	49.0	49.7	58.8	61.1
Formerly married	15.8	13.2	10.8	9.4	23.5	11.6	11.7	12.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of cases	316	114	575	573	98	483	437	660

With respect to marital status, Pumwani and Westlands Divisions have relatively lower proportions of women of reproductive age who are married (about half) compared to other divisions (about two-thirds). These variations are bound to affect divisional differences in various population and health indicators presented in this report.

2.4 Household Amenities and Durable Goods

Table 2.6 presents household amenities for the NCSS sample as well as for the KDHS study. The data show that slum residents distinctively lack basic amenities such as electricity, drinking water, and proper sanitation. While a higher percentage of slum residents (18 percent) have electricity in their houses than rural residents (4 percent), slum residents fair considerably worse than residents of other urban areas and Nairobi (as a whole), where at least 60 percent of the residents have electricity. Only about 24 percent of all slum households have access to piped water (public water taps or water piped into residence), versus 92 percent in Nairobi as a whole. As a consequence, most slum residents (75 percent) purchase water on a regular basis for domestic use. This result substantiates findings from qualitative data collected in the slums indicating that high fees paid to water vendors in the slums represent a major fiscal burden on the urban poor (Wasao and Bauni 2001).

Table 2.6 Percent distribution of household by amenities, NCSS 2000 and KDHS 1998

Household characteristic	KDHS				NCSS
	Kenya	Rural	Other urban	Nairobi	
Electricity	14.5	4.3	61.5	60.1	17.8
Source of drinking water					
Buying	-	-	-	-	74.8
Piped into residence	23.2	12.3	43.6	77.6	21.7
Public taps	11.0	6.3	34.5	14.5	2.7
Other	65.8	81.4	22.0	7.9	0.8
Sanitation facility					
Flush toilet	11.8	2.1	33.3	56.0	7.3
Traditional pit latrine	65.9	73.3	51.7	29.7	78.7
Ventilated pit latrine	6.9	5.7	8.9	13.2	5.4
Trench toilet/other	0.3	0.1	1.8	-	9.5
Total with some facility	84.6	81.1	93.9	98.9	91.4
Other/Trench toilets	0.3	0.1	1.8	-	9.5
No facility/bush/	14.8	18.6	3.9	0.8	6.5
Main floor material					
Mud, sand, dung	63.4	76.9	22.4	16.7	30.6
Wood planks/wood/vinyl/tiles/	2.7	1.6	4.2	9.0	0.3
Cement	33.6	21.2	73.2	74.3	69.0
Other	0.0	0.0	-	-	0.1
Total	100.0	100.0	100.0	100.0	100.0
No. of cases	8,380	6,733	1,156	856	4,564

Among the most distinct features of slum settlements are poor sanitation, drainage, and garbage disposal, which suggest greater problems with waste disposal than in rural settings. However, 91 percent of the slum households use some sanitation facility, a proportion that is higher than that for Kenya as a whole (85 percent) and for rural areas (81 percent). Flush toilets are most common in Nairobi (56 percent), yet least common in slum households (7 percent). The high proportion of slum residents who report access to pit latrines conceals the fact that most toilets in the slums are filthy and unusable because they are shared by a large number of households. Most slum houses have cement floors (69 percent), a higher percentage than is observed in the country as a whole (34 percent) or in rural areas (21 percent), but slightly lower than the whole of Nairobi and other urban areas.

Table 2.7 shows percent distribution of KDHS and NCSS sample households possessing selected durable consumer goods. Information on household possession of durable goods was collected to provide a proxy indicator for household socioeconomic status. For all regions, the radio is the most commonly found durable item in the households, although fewer slum residents own radios compared to other urban areas and Nairobi as a whole. The bicycle is the second most commonly owned household durable item in rural areas and in Kenya as a whole, while the television is second in urban households, including the slums. About one third of all rural and slum households had none of the durable consumer goods listed. In contrast, only 19 percent of the households of Nairobi had none of the items.

<u>Table 2.7. Percent distribution of household durable goods, NCSS 2000 and KDHS 1998</u>					
Durable Goods	KDHS				NCSS
	Kenya	Rural	Other urban	Nairobi	
Radio	63.1	58.4	77.5	79.2	66.1
Television	13.0	6.7	29.8	38.1	14.5
Telephone	2.7	0.7	7.6	11.2	1.5
Refrigerator	3.8	0.8	10.7	11.0	1.5
Bicycle	23.9	26.6	18.6	16.7	6.7
Motorcycle	0.9	0.6	1.5	2.2	0.1
Private car	4.8	2.5	9.8	15.3	1.1
None of the above	32.5	36.4	19.9	19.3	31.0
Number of households	8,380	6,392	1,156	856	4,564

2.5 Duration of Stay in Slum Households

Table 2.8 shows mean years lived in the same household/dwelling unit and the proportion of household members who have lived in the same household since birth by background characteristics of the NCSS respondents. The low overall percentage of residents who had lived in the slums where they were enumerated since their birth (only two percent) shows that the slum population is highly unstable and that migration is the primary source of population growth in these settlements. As expected, younger people are more likely to have been born in the same community where they were interviewed compared to older people. The Kikuyus are more likely to have been born in the same community compared to the other ethnic groups.

Although few people have lived in the current slum location since their birth, there is considerable attachment to specific household/dwelling units as households live in the same

household/dwelling unit for an average of 6 years (median of 4 years). The Kikuyu tend to live in the same households/dwelling units longer than other ethnic groups.

Table 2.8. Duration of stay in current household by background characteristics, NCSS 2000

Background characteristics	% lived in household since birth	Mean No. of years	Median No. of years	No. of cases
Age				
15-19	4.3	5.1	3.0	675
20-24	1.7	5.3	3.0	942
25-29	0.3	5.7	4.0	675
30-34	0.7	6.3	5.0	414
35-39	0.0	7.2	6.0	307
40-44	0.6	7.9	6.0	156
45-49	1.2	9.4	9.0	83
Marital Status				
Never married	5.1	5.4	4.0	930
Currently married	0.2	6.0	4.0	1,930
Formerly married	0.5	6.3	4.0	392
Ethnic group				
Kamba	0.4	5.0	3.0	530
Kikuyu	4.5	6.8	5.0	816
Luhya	0.3	5.4	4.0	803
Luo	0.4	6.0	4.0	727
Other	2.1	5.5	4.0	376
Religion				
Catholic	1.6	6.0	4.0	997
Protestants/other Christians	1.2	5.6	4.0	2,069
Muslims	6.2	7.2	5.5	161
Other	8.3	7.7	5.5	24
Division				
Central	1.6	5.4	4.0	316
Makadara	0.0	6.1	4.0	114
Kasarani	2.8	6.9	5.0	574
Embakasi	0.4	4.9	3.0	573
Pumwani	6.1	7.3	5.5	98
Westlands	1.9	6.2	4.0	482
Dagoretti	1.8	5.4	4.0	435
Kibera	0.9	5.5	4.0	660
Total	1.6	5.8	4.0	3,252

Muslims and people belonging to “other” religions stayed longer in the households than Catholics and Protestants. Pumwani and Kasarani divisions had the highest proportions of respondents who indicated they had stayed in their houses since birth and the longest mean duration of stay in the houses.

2.6 Employment and Form of Earning

Table 2.9 shows the percent distribution of women in the slums by employment status, type of employment and whether or not they earn cash for the work. Overall, 41 percent of the women were not employed at the time of the survey. The percentage of slum women who are not working is the same as the 41 percent and 42 percent for Nairobi and urban areas, but slightly lower than for rural areas (47 percent) (NCPD 1999). Most of those currently working earned cash from either self-employment or employment by a non-relative.

Unemployment levels generally decline with age: only 16 percent of women aged 45-49 were not working at the time of the survey, compared to 66 percent and 46 percent of younger women aged 15-19 and 20-24 years, respectively. The distribution of employment status by education level or duration of stay in the slum does not show a clear pattern. The rate of unemployment was higher among those who completed primary education than those with no education or incomplete primary education.

Table 2.9 Type of employment and form of earning by respondents' background characteristics, NCSS 2000

Background characteristics		Currently working							No. of cases
		Self employed		Employed by a non relative		Employed by a relative		Total	
		Earns cash	Does not earn cash	Earns cash	Does not earn cash	Earns cash	Does not earn cash		
Not currently working									
Ages									
15-19	66.0	19.6	0.4	61.7	2.9	10.8	4.6	100.0	676
20-24	45.9	36.8	1.2	53.9	1.5	5.0	1.7	100.0	942
25-29	33.8	44.2	0.4	48.9	2.2	3.7	0.6	100.0	678
30-34	22.7	54.6	0.9	39.9	0.6	3.7	0.3	100.0	414
35-39	21.8	51.9	0.8	43.2	0.4	2.5	1.2	100.0	307
40-44	25.6	48.8	1.7	48.8	0.0	0.8	0.0	100.0	156
45-49	15.7	58.6	1.4	37.1	2.9	0.0	0.0	100.0	83
Education									
None	38.7	53.8	0.9	41.5	1.9	1.9	0.0	100.0	168
Primary incomplete	38.9	45.2	1.5	47.3	1.7	3.5	0.9	100.0	547
Primary complete	44.6	46.1	1.1	43.6	2.0	5.2	2.0	100.0	1,403
Secondary+	36.6	36.4	0.3	57.1	0.8	4.4	1.1	100.0	1,138
Length of stay									
< 2 years	42.5	36.0	1.4	54.2	1.8	5.0	1.6	100.0	1,850
2-4 years	38.1	47.9	0.2	46.0	1.9	3.2	0.9	100.0	735
5-7 years	33.6	52.5	0.6	41.9	0.6	3.9	0.6	100.0	268
8+ years	38.0	57.7	0.0	37.4	0.0	4.1	0.9	100.0	347
Since birth	63.5	35.0	0.0	50.0	0.0	10.0	5.0	100.0	52
Division									
Central	32.0	48.4	0.9	39.5	2.2	5.4	3.6	100.0	316
Makadara	37.7	50.7	2.7	36.0	1.3	5.3	4.0	100.0	114
Kasarani	48.4	60.5	1.6	32.0	0.0	4.9	1.0	100.0	575
Embakasi	42.2	36.4	0.6	53.9	4.7	2.9	1.5	100.0	573
Pumwani	32.7	42.3	2.8	43.7	1.4	8.5	1.4	100.0	98
Westlands	35.4	38.1	0.9	57.9	0.3	2.5	0.3	100.0	483
Dagoretti	38.7	33.0	0.0	61.6	1.1	3.6	0.7	100.0	437
Kibera	43.2	40.2	0.3	51.7	0.8	6.0	1.1	100.0	660
Total	40.6	42.7	0.9	49.2	1.5	4.4	1.4	100.0	3,256

2.7 Respondents' Important Needs

2.7.1 General Needs/Concerns of Slum Residents

Table 2.10 presents respondents' ranking of general needs in their communities by their background characteristics. Overall, jobs were ranked as the most important general need by respondents (24 percent), followed by better housing (18 percent), toilets (17 percent) and water (15 percent). By administrative Divisions, jobs were ranked as the most important by at least one-quarter of respondents in Dagoretti, Pumwani, Embakasi and Westlands, while housing was ranked as most important by at least one-fifth of those in Central, Pumwani, Kibera and Westlands. Ranking of needs that directly impinge on health (water, health and toilets) varied considerably by slum. Lack of water was cited by more people in Embakasi Division (25 percent), while it was cited by very few (6 percent) Central. Lack of toilets was mentioned by more respondents in Central (36 percent) and Makadara (34 percent) than the other areas. It is interesting to note that those who had stayed in the same household/dwelling unit since birth rarely reported water or toilets as the most important general need, probably because they have gotten used to the situation.

Table 2.10 Percent distribution of respondents by their most important general needs/concerns and background characteristics, NCSS 2000

Background characteristics	Most important General needs/Problems										Total
	Housing	Unemployment	Lack of access to education	Lack of Water	Lack of Health Services	Lack of Toilets	Lack of Food	Poor Roads	Other	Don't know	
Age											
15-24	15.9	23.3	7.2	17.0	4.3	17.8	4.3	0.6	6.9	2.7	100.0
25-34	21.6	24.9	8.4	14.7	3.2	15.3	2.3	0.7	8.4	0.6	100.0
35-49	19.5	23.3	7.9	10.8	4.6	17.4	7.5	1.3	5.9	1.8	100.0
Marital status											
Never married	15.8	24.6	8.7	15.3	3.8	15.9	4.6	0.6	7.7	3.0	100.0
Currently married	19.8	22.7	7.0	15.7	4.2	17.3	3.4	0.9	7.6	1.5	100.0
Formerly married	17.9	27.6	8.9	12.8	3.6	17.4	6.6	0.3	3.8	1.3	100.0
Length of stay											
Since birth	23.1	38.5	11.5	3.9	3.9	7.7	3.9	1.9	1.9	3.9	100.0
<2 years	18.1	18.1	6.1	21.9	3.9	17.7	3.3	0.8	4.9	4.7	100.0
2-4 years	17.4	26.7	7.1	15.0	4.5	14.3	3.9	0.8	7.4	1.2	100.0
5+ years	19.2	22.9	8.7	13.5	3.7	18.4	4.7	0.6	8.0	1.4	100.0
Divisions											
Central	29.8	19.0	4.8	5.7	1.3	36.4	2.5	0.0	0.6	0.0	100.0
Makadara	15.8	20.2	7.0	12.3	6.1	34.2	0.9	0.0	1.8	1.8	100.0
Kasarani	17.8	20.6	11.9	8.5	5.2	17.8	7.3	0.4	5.8	4.9	100.0
Embakasi	13.5	27.1	7.3	25.4	4.4	13.3	1.4	1.4	4.4	1.9	100.0
Pumwani	22.5	28.6	2.0	13.3	3.1	26.5	1.0	0.0	2.0	1.0	100.0
Westlands	21.2	28.6	10.4	15.8	4.4	5.4	2.5	0.6	8.7	2.5	100.0
Dagoretti	10.3	35.6	10.6	18.4	4.6	5.1	3.4	1.6	9.2	1.4	100.0
Kibera	20.9	14.9	3.0	15.0	3.0	21.7	7.3	0.6	13.4	0.2	100.0
Total	18.4	23.8	7.7	15.2	4.0	16.9	4.2	0.7	7.2	1.9	100.0

2.7.2 Major Health Needs and Problems

Table 2.11 shows the most important health needs and problems faced by the slum residents. Lack of toilets is the most commonly cited health problem (32 percent) followed by poor drainage and water supplies (20 percent for each), and lack of health services (13 percent). There are no striking differences by age and marital status in defining the most important health

problems in the slums. While lack of toilets is the leading health concern in all divisions (except Embakasi and Kibera – where drainage is the biggest concern), it is, by far, a much more widely recognized problem in Central division where 52 percent of the residents cited the problem. Lack of water is most commonly cited in Dagoretti, followed by Westlands and Embakasi. Residents of Pumwani, which is a renowned haven for prostitution in the city of Nairobi, were more concerned about HIV/AIDS (11 percent) than residents of the other divisions.

2.7.3 Highest Ranked Reproductive Health Needs and Problems

The percentage distributions of respondents by their most important reproductive health (RH) needs and problems are presented in Table 2.12. The three most commonly cited major RH problems by respondents were unwanted pregnancies, abortion and HIV/AIDS, in descending order of importance (18, 17, and 15 percent, respectively). Needs associated with lack of proper family planning services (unwanted pregnancies, abortion and family planning) account for 45 percent of all RH needs identified, while about 24 percent of all women cited sexually transmitted infections as the most critical RH problem.

Background characteristics	Most important Health needs or problems							Total
	Toilet	Drainage	Health services	Water	HIV/AIDS	Other	Don't know	
Age								
15-24	31.8	20.8	11.5	20.2	3.1	6.8	5.9	100.0
25-34	31.9	20.1	15.0	20.0	2.8	7.8	2.4	100.0
35-49	31.0	18.9	16.9	18.9	3.1	8.1	3.1	100.0
Marital status								
Never married	31.9	20.4	11.8	19.9	3.0	6.3	6.7	100.0
Currently married	31.6	21.0	13.6	19.5	3.0	7.9	3.4	100.0
Formerly married	31.6	16.3	17.1	22.2	3.3	6.6	2.8	100.0
Length of stay								
Since birth	34.6	19.2	17.3	19.2	3.9	3.9	1.9	100.0
<2 years	31.2	22.9	10.3	18.9	1.8	6.7	8.1	100.0
2-4 years	31.8	19.4	14.4	20.7	2.8	7.7	3.3	100.0
5+ years	31.5	20.2	13.8	19.8	3.6	7.4	3.8	100.0
Division								
Central	51.6	17.1	12.0	13.9	2.2	3.2	0.0	100.0
Makadara	38.6	22.8	19.3	11.4	2.6	0.0	5.3	100.0
Kasarani	33.5	16.7	17.3	13.1	2.3	5.4	11.9	100.0
Embakasi	22.9	25.9	18.5	24.3	1.1	4.7	2.6	100.0
Pumwani	28.6	18.4	19.4	17.4	11.2	3.1	2.0	100.0
Westlands	27.6	14.1	14.9	26.1	3.9	6.4	6.9	100.0
Dagoretti	33.3	11.0	11.7	30.3	5.7	5.7	2.3	100.0
Kibera	29.6	30.4	5.0	15.5	2.1	16.8	0.6	100.0
Total	31.7	19.9	13.4	19.9	3.0	7.8	4.2	100.0

The two most critical RH problems for adolescent women aged 15-24 were unwanted pregnancies and abortion, while HIV/AIDS was the biggest problem mentioned among the oldest age group ages 35-49. A bigger proportion of those who were never married were concerned about unwanted pregnancy, while more of the formerly married were concerned about HIV/AIDS. The extent of the problems varies by division: HIV/AIDS is reported as a concern/problem by more respondents in Pumwani and Westlands, STIs in Embakasi,

unplanned pregnancies in Dagoretti, abortion and family planning in Central, and antenatal care in Kibera.

Table 2.12. Percent distribution of respondents by their most important reproductive health needs/problems and by background characteristics, NCSS 2000

Background characteristics	Most important Reproductive health needs/problems								Total
	HIV/ AIDS	STIs	Unwanted pregnancy	Abortion	Family planning	Antenatal care	Others	Don't know	
Age									
15-24	11.6	8.5	19.5	16.7	10.6	8.4	0.4	24.4	100.0
25-34	17.9	9.2	17.2	17.7	11.5	9.8	0.5	16.3	100.0
35-49	20.8	7.5	15.1	14.9	9.2	13.1	0.6	18.9	100.0
Marital status									
Never married	13.1	7.0	22.1	16.3	10.0	5.5	0.6	25.4	100.0
Currently married	15.9	9.1	16.3	16.6	10.8	11.8	0.3	19.3	100.0
Formerly married	17.4	9.7	16.3	18.1	11.5	8.9	0.8	17.4	100.0
Length of stay									
Since birth	19.2	9.6	19.2	17.3	15.4	9.6	0.0	9.6	100.0
<2 years	12.8	6.9	14.2	13.8	6.3	9.1	0.6	36.3	100.0
2-4 years	15.1	10.6	18.2	17.9	10.8	8.2	0.1	19.0	100.0
5+ years	16.1	7.5	19.0	16.7	11.8	10.9	0.7	17.5	100.0
Division									
Central	11.7	5.1	17.7	24.7	18.4	11.4	0.3	10.8	100.0
Makadara	14.0	12.3	17.5	14.9	10.5	6.1	0.0	24.6	100.0
Kasarani	14.3	6.8	19.0	10.8	12.0	7.1	0.2	29.8	100.0
Embakasi	3.7	18.4	10.5	19.8	9.8	10.1	0.4	27.5	100.0
Pumwani	22.5	7.1	19.4	18.4	8.2	9.2	0.0	15.3	100.0
Westlands	22.0	3.9	25.1	12.7	11.2	7.3	0.8	17.0	100.0
Dagoretti	17.7	7.4	24.1	20.0	7.6	7.1	0.0	16.1	100.0
Kibera	20.5	7.1	14.3	16.2	8.5	14.6	0.9	17.9	100.0
Total	15.3	8.6	18.0	16.7	10.7	9.6	0.4	20.8	100.0

2.8 Summary

The data presented in this chapter highlight key characteristics of slum residents and how they differ from residents of Nairobi as a whole, and other parts of Kenya. The growth of slum populations is primarily a result of rural-urban migration by people seeking to find jobs, demonstrated by the relatively high proportion of men and women in the economically active age group between ages 15 and 49, and the low proportion of women who were actually born in the slums (only 2 percent). Because average household sizes and the number of people per sleeping room do not vary much between slums and other areas the small size of typical slum houses leads to greater overcrowding in slums.

Although slum residents are generally better educated than their rural counterparts, they exhibit substantially lower levels of education than residents of Nairobi as a whole, as well as other urban areas. Slum residents also distinctively lack basic amenities such as electricity, drinking water and proper sanitation. The high proportion of slum residents who report access to pit latrines conceals the fact that most toilets in the slums are filthy and unusable because they are shared by a large number of households. It is no wonder, therefore, that residents cite lack of toilets as the leading health problem. Another important difference between slums and non-slum areas is the reliance of slum residents on water supply from vendors, which is more expensive

than water that is piped to the household. The data also suggest that slum residence is not as temporary as one would expect since current residents have stayed in the slums for an average of six years.

The list of most critical general, health, and reproductive health needs identifies potential areas of intervention for programs seeking to improve the well being of slum residents. Lack of jobs, proper housing and affordable water supplies were cited as the most important general needs, in that order, while lack of toilets, proper drainage and health services were the most commonly cited health problems. These needs, and the most critical reproductive health problems (unwanted pregnancy, abortion, HIV/AIDS and family planning services) demonstrate the need to come up with innovative, cost-effective mechanisms for improving access to health services for the rapidly growing urban-poor population, given their high level of economic deprivation. The results suggest the need for a multi-sectoral approach in dealing with health problems facing the urban poor. Indeed, the high level of deprivation (lack of jobs) and poor environment (poor housing, sanitation, and drainage) may limit the impact of improved health services on health outcomes.

CHAPTER 3 FERTILITY LEVELS

F. Nii-Amoo Dodoo

Kenyan fertility has fallen dramatically over the last two decades. The decline has been so rapid that Kenya is widely recognized as being at the forefront of the African fertility transition. The data collected in the NCSS enable us to explore the extent to which the urban poor in Nairobi have shared in the general fertility decline observed in Kenya. This chapter examines fertility levels, trends, and differentials obtained from women aged 15-49 in Nairobi's slums.

3.1 Current Fertility

The most widely used measure of current fertility is the total fertility rate (TFR), which is the average number of children that women would have by the end of their childbearing years if current age-specific fertility rates (ASFRs) were to remain unchanged until all women under observation had reached age 49, the age at which women are assumed to complete childbearing. Table 3.1 presents TFRs, along with the ASFRs on which they are based, for the eight slum divisions of the NCSS sample. The TFR for all NCSS respondents combined is 4.0 for the three years preceding the survey (mid-1997 to mid-2000). There is some variation in TFR across the settlements, ranging from a low in Westlands and Embakasi Divisions (3.2 and 3.3, respectively), to a high in Central and Kasarani (4.8 and 4.9, respectively).

Table 3.1 Current fertility, NCSS 2000

Age specific and cumulative fertility rates and crude birth rates, 1997-2000.

	DIVISION								All
	Central	Makadara	Kasarani	Embakasi	Pumwani	Westlands	Dagoretti	Kibera	
Age group									
15-19	189	199	154	117	146	71	106	148	134
20-24	223	172	260	178	136	155	202	239	204
25-29	199	248	190	184	223	137	157	194	180
30-34	154	169	164	110	107	153	109	115	136
35-39	85	0.0	105	54	38	69	56	104	78
40-44	60	0.0	100	24	75	18	36	23	40
45-49	43	-	0.0	0.0	0.0	44	79	0.0	23
TFR (15-49)	4.8	3.9	4.9	3.3	3.6	3.2	3.7	4.1	4.0
GRR	178.0	177	182	145	136	118	139	166	155
CBR	41.7	43.7	43.8	39.2	32.0	36.1	38.5	42.7	40.3

Note: Total fertility rates (TFR) are expressed per woman. General fertility rate (GRR) is the total number of births divided by the number of women aged 15-49, expressed per 1,000 women. Crude birth rate (CBR) is expressed per 1,000 people.

Table 3.1 also shows that the overall age-pattern of fertility peaks at ages 20-24. However, the data show that age regimes differ somewhat by slum. In the Central, Kasarani, Westlands, and Kibera divisions, the peak years of childbearing are ages 20-24, whereas the peak years of childbearing are ages 25-29 in Makadara, Embakasi, Pumwani, and Dagoretti. Moreover, the rate

of reproduction differs by slum division at the young ages. Fertility in the 15-19 year age category ranges from a low of 71 in Westlands, to more than double that rate in all slum divisions, except Dagoretti and Embakasi.

Table 3.2 presents current fertility rates in the NCSS sample and for the 1998 KDHS sample for Rural Kenya, Nairobi, Other Urban areas, and Kenya as a whole. Although the TFR of 4.0 for slum residents is lower than the national level of 4.7 obtained from the KDHS, the fertility of the urban poor is considerably higher than estimates based on KDHS data for Nairobi (2.6) and other urban areas (3.5). The most striking difference in age regimes presented in Table 3.2 is the higher fertility of 15-19 year olds in the NCSS, compared even to their rural counterparts.

<u>Table 3.2 Comparative fertility</u>					
Age specific fertility rates (per 1,000) and total fertility rates, KDHS 1998 and NCSS 2000					
	KDHS				NCSS
	National	Rural	Other urban	Nairobi	
Age group					
15-19	111	119	104	71	134
20-24	248	271	216	150	204
25-29	218	237	172	156	180
30-34	188	208	126	99	136
35-39	109	122	50	45	78
40-44	51	59	11	-	40
45-49	16	17	16	-	23
TFR women aged 15-49	4.7	5.2	3.5	2.6	4.0
GRR	166	179	141	104	155
CBR	34.6	34.7	26.9	26.9	40.3
Note: Rates refer to the three-year period preceding the survey					

Differences in fertility by background characteristics are presented in Table 3.3. The data reveal the expected negative relationship between fertility and level of education. Women who did not attend or complete primary school have a total fertility rate of 4.7 children, while those with secondary or higher schooling have 3.3 children. Married or cohabiting couples have much higher fertility, with a TFR of 5.3, compared to the never married (0.9) and the formerly married (4.0). There is substantial variation in TFR across ethnic groups, ranging from a high of 4.9 among Luo respondents to 3.0 among Kikuyu respondents in the sample. Muslim respondents have much higher fertility (5.3) than their two Christian counterpart groups (3.8 and 3.9).

At the time of the NCSS, eight percent of interviewed women reported being pregnant, a level higher than is found among any of the represented sub-populations in the KDHS (Table 3.3). The percent pregnant evidences what roughly approximates an inverted “U-shaped” relationship with education, reaching a peak of 10 percent among women who completed primary school, and a low of four percent among those with no schooling. Not surprisingly, a much higher percentage of married or cohabiting women are pregnant (12 percent), compared to the never married (3 percent) and formerly married (3 percent). Kamba women have the lowest pregnancy level (6 percent), while their Luo counterparts have the highest (11 percent). Across religion, Muslim (8 percent), Catholic (8 percent), and Other Christian (9 percent) respondents have relatively similar levels of pregnancy, while respondents who report Other or No Religion, although with a small

sample size, have a much higher incidence of pregnancy (21 percent). There is an interesting variation in pregnancy across Slum Division. Besides the low levels in Makadara (3 percent) and Pumwani (3 percent), the other divisions have high levels of pregnancy, from seven percent in Embakasi to nine percent in Dagoretti.

In combination with the higher level of pregnancy, the lower TFR in the NCSS strongly suggests that the level of pregnancy termination—voluntary or involuntary—is higher than in rural areas.

Table 3.3: Fertility by background characteristics

Total fertility rate for the three years preceding the survey, percentage currently pregnant and the mean number of children ever born to women age 40-49, by selected background characteristics, KDHS 1998 and NCSS 2000

Background characteristics	Total fertility rate	Percent currently pregnant	Mean number of children ever born to women age 40-49
Education			
No education	4.7	4.2	5.4
Primary incomplete	4.7	7.7	5.7
Primary complete	3.9	9.6	5.0
Secondary+	3.3	7.6	4.0
Marital status			
Never married	0.9	3.0	1.5
Married/Living together	5.3	11.9	5.9
Widowed/Divorced/separated	4.0	2.8	4.2
Ethnic group			
Kamba	3.3	5.9	4.7
Kikuyu	3.0	6.6	4.8
Luhya	4.3	9.2	5.4
Luo	4.9	10.6	5.4
Other	4.5	8.7	5.0
Religion			
Catholic	3.8	7.6	4.9
Protestant/other Christians	3.9	8.5	5.1
Muslims	5.3	7.5	5.0
Other	3.7	20.8	9.0
Division*			
Central	4.8	8.5	6.2
Makadara	3.9	2.6	3.5
Kasarani	4.9	9.2	6.5
Embakasi	3.3	7.3	5.2
Pumwani	3.6	3.1	4.4
Westlands	3.2	8.1	4.0
Dagoretti	3.7	9.4	5.0
Kibera	4.1	9.2	4.7
NCSS Total	4.0	8.3	5.1
National*	4.7	7.4	6.6
Rural*	5.2	8.0	7.0
Other urban*	3.5	6.0	5.0
Nairobi*	2.6	5.0	4.1

Division: Means all those slums that are found within each division

* Based on the 1998 KDHS data

3.2 Fertility Trends

Since time-series data are not available for past levels of current fertility (would be), we derive an indication of fertility trend by comparing the current fertility (TFR) to a rough measure of completed fertility, the mean number of children ever born (CEB) by women aged 40-49. The suggestion, from this comparison, of a mean fertility of 5.1 children among 40-49 year olds to the TFR of 4.0 is that fertility has undergone some decline in the recent past, of about 1.1 children per woman. Based on this calculation, the magnitude of this decline is smaller than that noted in the KDHS for Kenya as a whole (1.9), for Nairobi (1.5), and for other urban areas (1.5) (NCPD 1999). Perhaps not as plausible is the alternative interpretation that there might have been a shift in fertility to childbearing at older ages.

Further insight into trends over the last few years can be gained by examining fertility rates by duration of marriage, for the consecutive five-year periods leading up to the NCSS. This approach is based on the fact that retrospective recall of fertility can be used to create synthetic cohort comparisons. If fertility is constant, cumulative fertility at any exact age will be the same for cohorts and periods. Moreover, irrespective of the duration of exposure to marriage and period prior to the survey, fertility would be the same. However, if fertility has been declining in recent periods relative to cohort levels at the same age in the distant past, the pattern of decline will be manifest in lower period rates relative to corresponding rates observed for women exposed to the same duration of marriage. To assess whether NCSS data provide evidence of fertility decline, fertility rates have been calculated by years since first marriage at corresponding years preceding the survey.

Results presented in Table 3.4 show that despite a slight indication of higher fertility among the most recently married in the five-year period immediately preceding the survey (and 5-9 years prior to the survey among those married 5-9 years before the survey), the evidence is of a monotonic decline in fertility over the last 20 years.

Table 3.4. Fertility by marital duration

Fertility rates (per 1000 women) for ever-married women by number of years since first marriage, for 5-year periods preceding the survey, NCSS 2000

Years since first marriage	Number of years preceding the survey			
	0-4	5-9	10-14	15-19
0-4	316	294	341	350
5-9	203	251	238	250
10-14	146	172	208	248
15-19	114	131	153	224
20-24	59	126	112	0
25-29	37	28	375	-

3.3 Children Ever Born

The percent distribution of all women (and currently married women) by number of children ever born (CEB), and mean number of living children are presented in Table 3.5. The mean number of children ever born in the sample is 2.0, slightly higher than the 1.7 in Nairobi sample of the KDHS, but lower than the 2.9 in the KDHS as a whole.

Table 3.5 Children ever born and living

Percent distribution of all women and of currently married women by number of children ever born and mean number of children ever born (CEB) and mean number of living children, according to five year age group, NCSS 2000 and KDHS 1998

	Number of children ever born												No. of women	Mean No. of CEB	Mean No. of living children
	0	1	2	3	4	5	6	7	8	9	10+	Total			
ALL WOMEN															
Age group															
15-19	76.5	19.2	3.3	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0	100.0	671	0.3	0.3
20-24	36.0	37.7	17.4	7.1	1.7	0.2	0.0	0.0	0.0	0.0	0.0	100.0	945	1.0	0.9
25-29	9.9	26.6	31.6	16.9	8.4	3.8	2.5	0.3	0.0	0.0	0.0	100.0	680	2.1	1.9
30-34	4.1	11.4	21.4	24.3	18.7	10.7	6.1	1.2	1.5	0.5	0.2	100.0	412	3.2	2.8
35-39	4.9	8.1	11.3	15.5	19.7	13.6	13.3	7.1	3.6	1.6	1.3	100.0	309	4.1	3.6
40-44	7.6	6.4	8.3	5.7	16.6	15.3	14.0	10.2	6.4	3.8	5.7	100.0	157	4.9	4.2
45-49	7.2	6.0	7.2	8.4	13.3	12.0	8.4	9.6	8.4	9.6	9.6	100.0	83	5.4	4.6
Total, NCSS	29.8	23.1	16.7	10.8	7.6	4.6	3.4	1.6	1.0	0.6	0.7	100.0	3,257	2.0	1.7
National*	27.7	14.0	13.1	10.2	8.8	6.7	6.3	4.6	3.4	2.6	2.8	100.0	7,881	2.9	2.6
Rural*	25.9	12.6	11.9	9.7	8.9	7.3	7.4	5.4	4.1	3.2	3.5	100.0	6,051	3.2	2.8
O-urban*	30.0	16.5	17.0	11.5	8.8	5.1	2.6	2.2	1.2	1.0	1.0	100.0	1,060	2.1	1.9
Nairobi*	38.2	17.2	16.9	11.7	8.1	3.8	2.1	1.2	0.7	-		100.0	770	1.7	1.6
CURRENTLY MARRIED WOMEN															
Age group															
15-19	43.9	43.3	9.6	2.1	0.5	0.5	0.0	0.0	0.0	0.0	0.0	100.0	187	0.7	0.6
20-24	20.7	41.7	24.4	10.6	2.4	0.3	0.0	0.0	0.0	0.0	0.0	100.0	595	1.3	1.2
25-29	5.0	22.9	34.0	20.0	9.9	4.7	3.1	0.4	0.0	0.0	0.0	100.0	515	2.4	2.1
30-34	2.4	7.9	20.6	26.5	19.6	12.0	6.9	1.4	2.1	0.3	0.3	100.0	291	3.4	3.0
35-39	3.4	7.4	11.3	11.8	19.6	14.7	14.2	8.8	4.4	2.5	2.0	100.0	204	4.4	3.9
40-44	2.1	3.1	7.3	5.2	18.8	17.7	13.5	11.5	7.3	6.3	7.3	100.0	96	5.6	4.7
45-49	2.3	2.3	4.7	7.0	9.3	16.3	4.7	11.6	9.3	18.6	14.0	100.0	43	6.6	5.7
Total, NCSS	12.8	25.3	22.3	14.4	9.6	6.0	4.1	2.1	1.3	1.0	0.9	100.0	1,931	2.5	2.2
National*	6.1	13.4	17.1	14.1	12.4	9.2	8.9	6.4	4.7	3.6	4.0	100.0	4,834	4.0	3.5
Rural*	4.8	11.6	15.2	13.4	12.5	10.1	10.3	7.3	5.6	4.4	4.8	100.0	3,824	4.3	3.8
O-urban*	9.7	19.8	23.6	17.1	11.4	6.5	4.1	3.4	1.3	1.4	1.7	100.0	602	2.9	2.7
Nairobi*	13.5	20.3	25.7	17.1	12.6	5.0	3.2	1.8	0.9	-	-	100.0	408	2.4	2.2

* Based on 1998 KDHS data

Mean CEB is higher at every age among currently married women (lower panel) than it is among women in general (upper panel). The lower panel of Table 3.5 shows that among currently married women, mean CEB ranges from 0.7 for 15-19 year olds, to 6.6 among the oldest age group. Percentage-wise, the age pattern of the gap between married women and all women imitates a “U-shaped” pattern – that is, the gap is largest for the youngest and oldest age groups. At the younger ages, the disparity is large because a sizeable proportion of women have never been married, whereas at the older ages, widowhood and divorce are contributory factors.

3.4 Birth Intervals

Examining the length of birth intervals in the NCSS provides a means to understand birth-spacing behavior in the sample. Table 3.6 presents the percent distribution of births across selected characteristics in the five years immediately preceding the survey. Nearly one in four births occurs after an interval of less than 24 months (the cutoff period for determining when an interval is too short for child health reasons), indicating a degree of “rapid” childbearing very similar to the national and Nairobi levels documented in the 1998 KDHS.

Table 3.6. Birth Interval

Percent distribution of births in the five years preceding the survey by number of months since previous birth and median length of birth interval, according to selected demographic and socio-economic characteristics, NCSS 2000 and KDHS 1998.

Background Characteristics	Number of months since previous birth					Total	Number of births	Median number of months since previous birth
	7-17	18-23	24-35	36-47	48+			
Age of mother								
15-19	36.1	33.3	19.4	8.3	2.8	100.0	36	20.5
20-29	9.2	16.5	34.4	17.9	22.1	100.0	838	31.7
30-39	8.0	9.6	24.1	18.0	40.3	100.0	477	40.5
40+	5.1	8.5	22.0	10.2	54.2	100.0	59	-
Birth order								
2-3	8.4	15.5	30.5	16.4	29.1	100.0	882	33.8
4-6	9.7	12.3	27.4	20.6	30.0	100.0	423	36.2
7+	15.2	11.4	36.2	12.4	24.8	100.0	105	31.4
Sex of prior birth								
Male	10.8	14.0	29.6	17.2	28.3	100.0	685	33.8
Female	7.9	14.5	30.3	17.5	29.8	100.0	725	34.8
Survival of prior birth								
Dead	22.9	19.3	27.1	16.7	14.1	100.0	192	28.2
Living	7.1	13.5	30.5	17.5	31.4	100.0	1,218	35.4
Education								
No education	10.8	16.1	32.3	15.1	25.8	100.0	93	31.8
Pri. incomplete	10.9	12.7	27.5	17.4	31.5	100.0	276	35.3
Pri. complete	8.7	17.2	31.4	18.1	24.7	100.0	647	32.5
Secondary+	8.9	10.2	28.9	16.8	35.3	100.0	394	37.3
NCSS Total	9.3	14.3	30.0	17.4	29.1	100.0	1,410	34.1
National*	8.7	14.4	34.5	18.3	24.2	100.0	4,161	32.9
Rural*	8.2	14.6	35.7	18.8	22.8	100.0	3,522	32.7
O- urban*	11.5	11.9	30.5	15.8	30.3	100.0	431	33.7
Nairobi*	10.6	15.9	23.9	15.0	34.5	100.0	208	35.9
NS-Nairobi*	21.1	5.3	10.5	21.1	42.1	100.0	35	40.5

Note: first order births are excluded

* Based on the 1998 KDHS

The median birth interval length among the NCSS urban poor sample is 34.1 months, compared to the KDHS national estimate of 32.9 months. The median birth interval length rises with age from about 20.5 months at ages 15-19, to 40.5 months at ages 35-39. At lower birth orders (births two and three) the median birth interval (33.8) is close to that for the overall sample, while at birth orders four to six, the median length is 2.4 months longer. At the highest birth orders (seven and higher) the median interval length is 2.4 months shorter. The average birth interval following a male birth (33.8) is one month shorter than that following a female birth (34.8). As would be expected, a much shorter interval (28.2) follows the death of the preceding birth, compared to that following a surviving birth (35.4).

Finally, although Table 3.6 suggests no clear pattern in birth interval differentials across levels of education, a positive association between schooling and interval length exists between the highest and lowest levels of education. The median interval length is 31.8 months among respondents with no schooling and it is 37.3 months among those with secondary or more education.

3.5 Age at First Birth

As with fertility transitions in general, the ongoing transition in Kenya should provide evidence of an increasing age at first birth over time. Examining age at first birth across women of different ages should provide a clear indication of the trend in this phenomenon. Table 3.7 documents a monotonic increase in age at first birth over time. Whereas women aged 45-49 at the time of the survey had their first birth at 18.8 years on average, those aged 25-29 did so at 20.5 years. Indeed, it appears that the average for 20-24 year olds will be higher still as (by definition) even the 36 percent who are yet to give birth are already over age 20.

Table 3.7. Age at first birth

Percent distribution of women 15-49 by age at first birth, according to current age, NCSS 2000

Current age	Women with no births	Age at first birth							Number of women	Median age at first birth
		<15	15-17	18-19	20-21	22-24	25+	Total		
15-19	76.5	2.8	16.1	4.6	0.0	0.0	0.0	100.0	671	-
20-24	36.0	2.0	18.4	25.4	12.7	5.5	0.0	100.0	945	20.5
25-29	9.9	4.3	20.4	19.6	18.5	21.3	6.0	100.0	680	20.5
30-34	4.1	6.8	22.3	25.0	18.0	13.1	10.7	100.0	412	19.7
35-39	4.9	4.9	24.9	25.2	18.8	12.9	8.4	100.0	309	19.5
40-44	7.6	8.9	28.0	23.6	11.5	11.5	8.9	100.0	157	18.9
45-49	7.2	10.8	27.7	26.5	13.3	8.4	6.0	100.0	83	18.8

Table 3.8 permits investigation of the variation in age at first birth by selected background characteristics. Age at first birth rises steadily with level of educational attainment, from 18.4 years among those with no schooling to 21.5 years for respondents with secondary or more schooling. The trend in median age at first birth by marital status reflects the patterns observed by age in Table 3.7. Relative to currently married or cohabiting women who have a median age at first birth of 19.9 years, formerly married women (who are generally older) have the lowest age at first birth (18.8 years). Their never married counterparts (who are the youngest of the women in the three marriage categories) have the highest median age at first birth (23.5).

Age at first birth differentials are narrow across ethnic groups with the lowest median age for Luo women (19.1 years), and the highest median for Kikuyu women (20.1 years). The combined group of other ethnicities—other than the four identified in Table 3.8—has the highest median age at first birth (21.1 years). Median age at first birth (19.9 years) shows no variation across the major religious groups. Finally, a comparison of the eight Slum Divisions indicates that childbearing begins earliest (at 18.9 years) in the Central Slum Division, and latest (at 20.9 years) in Dagoretti division.

Table 3.8. Median age at first birth by background characteristics

Median age at first birth among women 25-49, by current age and selected background characteristics, NCSS 2000 and KDHS 1998.

Background characteristics	Current age					Women aged 25-49
	25-29	30-34	35-39	40-44	45-49	
Education						
No education	19.3	18.3	18.9	16.8	18.9	18.4
Primary incomplete	18.6	17.4	18.7	18.5	18.0	18.4
Primary complete	20.0	19.3	19.3	18.8	17.7	19.5
Secondary+	22.0	21.6	20.7	20.9	24.5	21.5
Marital status						
Never married	23.9	22.3	22.3	23.8	24.0	23.5
Married/Living together	20.4	19.7	19.6	18.8	19.2	19.9
Widowed/Divorced/Separated	19.1	19.0	18.7	19.0	18.3	18.8
Ethnic group						
Kamba	20.3	19.1	18.9	19.2	18.0	19.6
Kikuyu	21.2	19.6	20.1	19.2	18.4	20.1
Luhya	20.6	20.6	19.6	18.7	17.3	20.0
Luo	19.4	19.0	18.8	18.9	21.0	19.1
Other	22.1	20.7	20.5	18.8	21.0	21.1
Religion						
Catholic	20.4	20.0	19.2	18.9	19.6	19.9
Protestant/other Christians	20.5	19.5	19.7	19.1	18.1	19.9
Muslims	20.5	20.3	20.0	18.5	21.0	19.9
Other	22.3	19.0	-	-	-	19.5
Division						
Central	19.1	19.8	18.8	18.5	17.5	18.9
Makadara	21.0	19.7	21.2	19.0	-	20.1
Kasarani	19.8	18.9	19.8	18.9	18.8	19.4
Embakasi	20.0	19.0	19.6	18.3	18.0	19.6
Pumwani	20.7	23.3	18.5	17.3	24.5	20.4
Westlands	21.9	20.5	20.3	20.0	19.2	20.7
Dagoretti	21.7	21.4	20.3	18.8	20.0	20.9
Kibera	20.5	19.2	18.7	20.3	18.5	19.6
NCSS Total	20.5	19.7	19.5	18.9	18.8	19.9
National*	19.6	19.5	19.3	18.9	19.9	19.4
Rural*	19.2	19.1	19.3	18.7	19.6	19.1
Other urban*	20.1	20.5	19.8	19.7	19.7	20.1
Nairobi*	22.3	22.0	20.0	20.5	22.0	21.9

* - Based on the 1998 KDHS data.

Although the NCSS was carried out two years after the KDHS, a comparison of the age distributions of median age at first birth for the two samples is instructive. Such a comparison

suggests that age at first birth was lower for 45-49 year old women in the NCSS (18.8 years) compared to the national level figure for the same age group of Kenyan women overall (19.4). Yet, more recently among 25-29 year olds the NCSS documents a higher median age at first birth (20.5 years) than the national sample (19.6 years). In comparison to the urban population in the KDHS, however, the NCSS sample has a lower age at first birth across the period encompassed by Table 3.8, despite their increasing age at first birth over time.

3.6 Summary

The data presented in Chapter 3 show that although slum residents have lower current fertility (4.0) than both their rural counterparts (5.2) and the national average (4.7), the fertility of the urban poor is considerably higher than that for Nairobi as a whole (2.6), and for other urban areas (3.5). The same pattern is observed for children ever born and for length of birth intervals. The difference in current fertility is even more pronounced for the 15-19 age group, in that slum residents have considerably higher fertility than the other groups, and even their rural counterparts. Adolescent women in slums are exposed to higher levels of risks that derive from being pregnant at young ages than are residents of the other areas. Indeed, the finding that slums have higher pregnancy level than rural areas, while the reverse is true for total fertility rates, strongly suggests that the level of pregnancy termination--voluntary or involuntary--is higher than in rural areas.

The expected differences in fertility by level of education are observed in the slums, as are the ethnic differentials typically found in national level Kenyan data. Luos have the highest level of fertility (4.9) and the lowest age at first birth, while Kikuyus have the lowest fertility level (3.0) and the highest age at first birth. Muslim respondents have much higher fertility (5.3) than their two Christian counterparts (3.8 and 3.9). Although not substantially different from the national average, age at first birth in the slums is lower than in the whole of Nairobi and in other urban areas. The results also show that the fertility transition ongoing in Kenya over the last two decades is evident even among slum residents: age at first birth has increased steadily across cohorts in the slums, and completed fertility for women aged 40-49 is lower than the current total fertility rate.

CHAPTER 4

FERTILITY REGULATION

Eliya M. Zulu

This chapter examines various issues pertaining to knowledge, attitudes, and use of modern and traditional methods of family planning among women of reproductive age, 15-49. The chapter also examines sources of supply for modern methods, the relationship between spousal communication on attitudes and use of family planning, and factors that impede use of family planning among non-users. Results from the 1998 KDHS are used to establish how slum residents compare on these issues with women who live in Nairobi City as a whole, other urban areas and rural parts of Kenya.

4.1 Knowledge of Family Planning

Qualitative research done in the slums of Nairobi has shown that slum settlements have limited access to health services in general, particularly reproductive health services (Wasao and Bauni 2001). The deficiency of reproductive health services is reflected in relatively low levels of knowledge of various methods of family planning, poor knowledge of service sources, and inaccessibility of services. In order to determine the extent of knowledge of family planning, the NCSS asked respondents to specify methods of family planning (defined as ways or methods that a couple can use to delay or avoid a pregnancy) they know or have heard of. The survey only recorded volunteered knowledge of methods, without probing for knowledge of specific methods not mentioned spontaneously.

Table 4.1 presents the percentage of all women, married women, sexually active unmarried women and unmarried women who have never had sex who reported knowledge of various methods of family planning. The data show that spontaneous knowledge of one or more family planning methods is nearly universal among sexually active women (98 percent). Not surprisingly, women who are not exposed to the risk of pregnancy (no sexual experience) exhibit lower levels of knowledge of family planning (76 percent).

For both categories of sexually active women, the oral pill is the most known method, followed closely by injectables, condoms, and the IUD. For women without sexual experience the pill is also the method reported the most, but followed by the condom. Knowledge of sterilization is relatively low: about 18 and 5 percent of sexually active women know about female sterilization and male sterilization, respectively.

Spontaneously mentioned knowledge of traditional methods is substantially lower than that for modern methods. About 24 percent of married women and 28 percent of sexually active single women reported knowledge of at least one traditional method. Periodic abstinence is, by far, the most widely known traditional method by all the categories of women.

An unanticipated finding from Table 4.1 is the low level of condom knowledge among sexually active unmarried women (62 percent) and currently married women (60 percent). Given the reproductive health crisis that prevails in urban Kenya, and the publicity that has been directed to generating condom knowledge and use, this less than universal spontaneous knowledge of the condom among sexually active women suggests that the intense marketing of condoms has not been highly successful. The low level of spontaneous knowledge of condoms as a family

planning method may also be due to the fact that many people may regard the condom as a tool for STI prevention rather than for family planning.

The overall levels of knowledge of family planning reported in the NCSS are close to the levels derived from the 1998 KDHS, where about 97 percent of all women reported knowledge of at least one contraceptive method. The comparable levels for rural, other urban and Nairobi (including slum settlements) were 96, 98, and 99 percent, respectively. Sexually active unmarried women living in slums exhibit slightly higher levels of knowledge of family planning than their rural counterparts. However, sexually inactive slum women (76 percent) are considerably less knowledgeable of family planning than all the other categories. The low overall knowledge of family planning, and particularly of condoms among women who have not initiated sexual relations in the slums, is particularly worrying. Almost all the women in this category are under age 25 and about three quarters are under age 20. Given the high prevalence of HIV/AIDS in these younger age groups (Government of Kenya, 1999), there is great need for programs to raise awareness and promote knowledge of family planning and disease prevention, among them.

Table 4.1 Knowledge of contraceptive methods

Percentage of all women, currently married women, and sexually active and inactive unmarried women aged 15-49 years who spontaneously know specific contraceptive methods, NCSS 2000 and KDHS 1998

Method	All Women	Currently Married Women	Sexually Active	
			Unmarried Women	Sexually Inactive Unmarried Women
Any method	95.6	98.2	97.9	76.0
Any modern method	95.2	97.9	97.7	74.7
Pill	92.2	95.8	94.4	68.3
IUD	45.8	50.9	47.0	16.8
Injectables	80.5	88.7	81.0	37.6
Norplant	25.3	28.3	26.4	7.5
Diaphragm/Foam/Jelly	4.4	4.6	5.0	2.4
Condom	56.8	56.6	61.8	45.3
Female sterilization	16.8	18.2	17.5	7.7
Male sterilization	4.1	3.9	5.0	3.5
Any traditional method	24.5	24.2	28.4	16.5
Periodic abstinence	22.4	21.8	27.0	14.7
Withdrawal	1.5	1.5	1.7	1.1
Other	2.8	3.4	2.3	0.8
Number of cases	3,256	1,931	950	375
National*	96.8	98.3	99.3	88.7
Other Urban*	97.9	99.1	97.6	96.0
Rural*	96.3	98.3	93.3	91.7
Nairobi*	98.6	99.6	97.8	96.9

*Based on KDHS 1998

Knowledge of Family Planning by Background Characteristics

Table 4.2 shows that nearly universal spontaneous knowledge of at least one family planning method prevails among married women irrespective of background characteristic. Knowledge varies between about 94 to 99 percent across age and education categories, and between 92 and

99 percent across religious groups, between 96 and 100 percent across both ethnicity and division categories. Women who belong to religions other than Islam and Christianity have the lowest knowledge (92 percent) of any method, but have one of the highest levels of knowledge (31 percent) of traditional methods. Thus, while minor differentials can be noted, the results show that general knowledge of family planning is uniformly high across the board, and that differences in utilization of contraception among married women may not have much to do with differences in knowledge.

Table 4.2 Knowledge of contraceptive methods by selected background characteristics, among currently married women, 15-49 years

Percentage of currently married women reporting knowledge of method according to selected background characteristics, NCSS 2000

CHARACTERISTIC	Any method	Any modern method	Pill	Injectables	Condom	Any traditional method	Cases
Age group							
15-19	94.2	93.7	89.2	78.9	50.3	15.7	191
20-24	98.3	98.2	96.6	89.3	56.3	23.6	594
25-29	99.0	98.8	96.9	92.4	61.0	27.5	513
30-34	98.6	98.0	96.6	90.7	58.6	25.9	293
35-39	99.0	98.5	95.1	86.7	51.2	20.4	201
40-44	99.0	99.0	97.9	87.4	51.6	27.1	96
45-49	97.7	97.7	93.0	83.7	53.5	30.2	43
Education							
No education	93.6	92.7	92.6	80.4	41.1	22.0	109
Primary incomplete	98.2	98.2	95.5	88.7	47.4	18.5	453
Primary complete	98.1	97.6	96.0	89.1	54.5	21.7	677
Secondary +	99.1	98.9	96.1	89.9	66.0	31.3	648
Religion							
Catholic	97.1	96.9	94.9	86.3	54.6	26.6	553
Protestant/Other Christians	98.9	98.7	96.4	90.3	57.8	23.3	1,275
Muslim	96.7	94.4	93.3	83.2	49.4	21.1	90
No religion/Other	92.3	92.3	92.3	92.3	53.8	30.8	13
Ethnicity							
Kamba	100.0	99.7	97.1	86.2	56.3	24.0	312
Kikuyu	99.3	99.3	97.7	91.2	58.8	25.3	400
Luhya	98.2	98.0	95.4	91.4	59.2	23.7	510
Luo	96.5	96.1	93.4	86.6	50.4	23.1	486
Other	97.8	96.1	96.4	87.3	59.6	26.0	223
Division							
Central	96.0	95.5	93.0	87.4	56.8	24.0	200
Makadara	100.0	100.0	98.6	81.7	66.2	26.4	72
Kasarani	97.2	96.3	93.4	89.7	42.5	21.6	352
Embakasi	99.7	99.4	98.6	91.0	73.0	31.8	359
Pumwani	100.0	100.0	100.0	91.7	50.0	18.8	48
Westlands	99.2	99.2	98.1	91.5	69.9	25.8	240
Dagoretti	98.4	98.0	96.0	88.9	58.9	25.3	257
Kibera	97.8	97.8	95.5	86.1	43.4	18.4	403
Total	98.2	97.9	95.8	88.8	56.5	24.2	1,931

Knowledge of pills and injectables (the two most commonly used methods in the study population) does not vary much across the population sub-groups examined in Table 4.2. For condoms, however, the variations are considerable. Knowledge increases with age from 50 percent among the youngest group to 61 percent among women aged 25-29 and declines steadily for the older groups. The biggest variations in knowledge of condoms appear across education categories, where about 41 percent of women with no education and 66 percent of those with secondary or higher education reported knowledge of condoms (as a contraceptive). Muslims (49 percent), Luos (50 percent), and residents of Kibera and Kasarani (43 percent) divisions report the lowest levels of knowledge within their respective categories.

The data also show marked variations in knowledge of traditional methods. Knowledge of traditional methods of contraception increases steadily with age and level of education. Just as with condoms, Muslims, Luos, and residents of Kibera report the lowest levels of knowledge of traditional methods within their respective categories.

4.2 Use of Family Planning Methods and Source of Supplies

4.2.1 Ever Use of Family Planning

Respondents were asked if they had ever used any method of family planning in their lifetime, and if so, to specify which method(s) they had used. Table 4.3 presents the percentage of women who have ever used various methods of family planning, by age. About 59 percent of all women and 67 percent of currently married women had ever used a method. Somewhat surprisingly, ever use of contraception among sexually active unmarried women is about the same as ever use among married women (about two-thirds of each group). Of the married women, 60 percent had ever used modern methods, while 13 percent had ever used traditional methods. The pattern of ever use for sexually active single women is similar to the pattern for married women; about 58 percent have used a modern method compared to only 17 percent who have ever used a traditional method.

The most common modern methods ever used by currently married women are pills (38 percent), injectables (34 percent), condoms (8 percent), and IUDs (6 percent). Ever use of contraception increases with age from a low of about 32 percent for women aged 15-19, to a peak of about 78 percent in the age group 30-34, at which point contraception declines with increasing age to 65 percent in the 45-49 group. The decline in contraceptive use at older ages may reflect a generational gap in use of contraception as well as self-perceived infecundity. Single women are more likely to report use of the coitus dependent condoms (18 percent) and traditional methods (17 percent) than their married counterparts (8 and 13 percent, respectively). The relatively low level of use of condoms, even among unmarried sexually active women, shows that condoms are not readily accepted as a means of family planning in this population.

Comparison of the NCSS and KDHS data show that levels of ever use of any method and modern methods of family planning among married slum women are higher than for rural areas, but substantially lower than for Nairobi as a whole and other urban areas. However, slum residents exhibit higher levels of ever use of traditional methods than residents of other urban areas, rural areas, and Nairobi as a whole. It is also noteworthy that while Nairobi residents exhibit the highest level of ever use of condoms overall (21 percent), slum residents exhibit the lowest level (8 percent).

Table 4.3 Ever use of Contraception

Percentage distribution of all women, of currently married women and of sexually active unmarried women who have ever used a contraceptive method by method and age, NCSS 2000 and KDHS 1998

Age Group	Modern Methods										Traditional Methods					
	Any method	Any modern method	Pill	IUD	Injectables	Implant	Dia-phragm Foam/Jelly	Condom	Female sterili-sation	Male sterili-sation	Any traditional method	Periodic abstinence	Withd-rawal	Other	Never used	Number of cases
All women																
15-19	22.2	16.4	6.7	0.4	6.1	0.3	0.2	6.7	0.0	0.0	7.5	7.1	0.0	0.4	77.8	676
20-24	57.4	48.2	26.7	1.2	22.7	1.1	0.0	11.5	0.1	0.0	14.9	14.0	0.5	0.6	42.6	942
25-29	74.8	68.0	44.4	5.0	40.0	1.6	0.2	11.5	0.3	0.0	13.7	13.4	0.6	0.4	25.2	678
30-34	78.5	73.2	53.6	9.4	45.7	1.4	0.2	12.6	1.2	0.0	15.0	13.5	0.5	1.2	21.5	414
35-39	77.2	73.6	49.8	15.6	44.6	2.0	0.7	7.5	8.5	0.7	12.0	9.8	0.3	2.3	22.8	307
40-44	70.5	65.4	39.7	15.4	35.3	2.6	1.3	6.4	16.7	0.0	13.5	10.3	0.0	3.2	29.5	156
45-49	60.2	50.6	22.9	16.9	22.9	0.0	2.4	10.8	6.0	0.0	13.2	13.2	0.0	0.0	39.8	83
Total	59.0	52.2	32.3	5.3	28.4	1.2	0.3	10.0	2.0	0.1	12.7	11.8	0.4	0.9	41.0	3572
Currently married women																
15-19	31.9	26.2	14.1	0.5	13.1	0.5	0.0	6.3	0.0	0.0	7.9	7.3	0.0	0.5	68.1	191
20-24	60.8	51.7	30.1	1.2	26.9	1.4	0.0	7.7	0.2	0.0	13.8	12.8	0.7	0.8	39.2	594
25-29	75.6	68.6	46.0	6.0	41.1	1.8	0.2	9.2	0.0	0.0	14.4	14.2	0.8	0.2	24.4	513
30-34	77.5	71.3	51.9	8.2	46.4	1.0	0.0	9.9	1.7	0.0	13.0	11.6	0.3	1.4	22.5	293
35-39	77.1	72.6	49.8	19.4	41.8	2.0	0.5	6.0	9.5	0.5	11.0	9.0	0.5	1.5	22.9	201
40-44	74.0	69.0	39.6	14.6	34.4	3.1	2.1	6.3	22.9	0.0	11.5	7.3	0.0	4.2	26.0	96
45-49	65.1	51.2	20.9	18.6	25.6	0.0	2.3	9.3	4.7	0.0	16.3	16.3	0.0	0.0	34.9	43
Total	66.9	59.7	38.4	6.4	34.2	1.5	0.3	8.1	2.5	0.1	12.9	11.9	0.5	0.9	33.1	1931
Sexually active unmarried women																
12-14	6.7	6.7	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	93.3	15
15-19	41.8	29.3	8.7	1.0	7.7	0.5	0.5	15.9	0.0	0.0	16.4	16.4	0.0	0.0	58.2	208
20-24	69.4	56.6	27.9	1.6	20.5	0.8	0.0	24.0	0.0	0.0	22.5	21.7	0.4	0.4	30.6	258
25-29	73.9	67.7	40.4	1.9	37.3	1.2	0.0	19.3	1.2	0.0	11.8	11.2	0.0	1.2	26.1	161
30-34	82.4	79.0	58.8	12.6	44.5	2.5	0.8	19.3	0.0	0.0	20.2	18.5	0.8	0.8	17.6	119
35-39	78.1	76.2	50.5	8.6	50.5	1.9	1.0	10.5	6.7	0.9	14.3	11.4	0.0	3.8	21.9	105
40-44	65.0	60.0	40.0	16.7	36.7	1.7	0.0	6.7	6.7	0.0	16.7	15.0	0.0	1.7	35.0	60
45-49	56.4	51.3	25.6	15.4	20.5	0.0	2.6	12.8	7.7	0.0	10.3	10.3	0.0	0.0	43.6	39
Total	65.9	57.5	32.8	5.2	27.9	1.2	0.4	17.8	1.7	0.1	17.3	16.3	0.2	1.0	34.1	965
Currently married women																
National*	64.1	53.4	32.7	8.3	24.9	1.1	0.8	9.7	6.2	0.0	21.9	19.3	4.1	2.3	35.9	4834
Other Urban*	72.7	65.2	43.1	12.5	27.3	2.3	1.1	12.8	6.2	0.0	21.1	18.1	4.0	1.8	27.3	602
Rural*	60.6	49.1	28.8	6.7	24.9	0.6	0.7	8.0	6.3	0.0	21.4	18.6	3.6	2.4	39.4	3824
Nairobi*	73.8	76.1	54.1	18.0	20.7	3.2	1.4	20.7	5.4	0.0	30.2	27.5	8.6	1.8	16.2	408

4.2.2 Current Use of Family Planning

The most important single indicator of fertility control in a population is the contraceptive prevalence rate (CPR), which is conventionally calculated as the percentage of currently married women who are using any method of family planning. Table 4.4 presents the percentage of all women, currently married women, and sexually active unmarried women who are currently using family planning.

The contraceptive prevalence rate for married women in the slums is 46 percent, of which 39 and 7 percent is comprised of modern and traditional method use, respectively. Thus, a majority of all contraceptive use in the slums comprises modern methods of family planning. Contraceptive use increases with age, peaking among 35-39 aged women at 58 percent. The 1998 KDHS data show that the mean age at last birth in Kenya is 37.8 years (NCPD 1999), and that most women stop bearing children without resorting to long-term methods or surgical contraception.

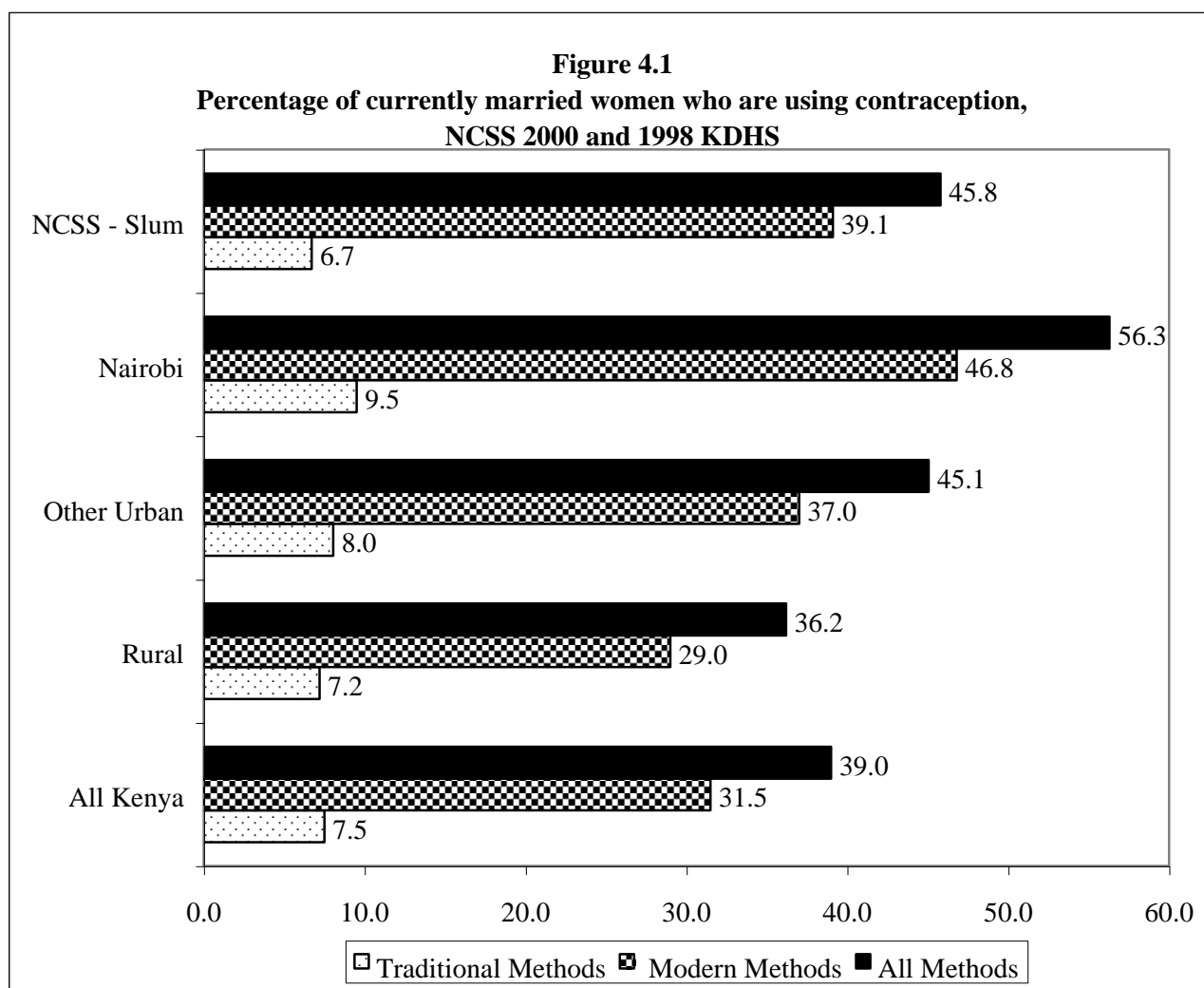
While the pill is the leading ever-used method, injectables are the most popular current method reported by currently married women (20 percent), followed by the pill (12 percent) and periodic abstinence (6 percent). Injectables are the most preferred method across all age groups except the 40-44 group, where female sterilization is the most popular method. Overall, current use of contraception among sexually active unmarried women (41 percent) is slightly lower than the level of use among married women (46 percent).

Figure 4.1 presents a comparison of the percentage of married women using traditional, modern and any methods of family planning in slums with the 1998 KDHS data for national, rural, other urban areas and Nairobi. Use of any method of contraception in the slums (46 percent) is higher than the national and rural averages (39 percent and 36 percent, respectively). However, women who live in Nairobi (56 percent) exhibit a higher CPR than the slum residents. Since the Nairobi sample includes slum dwellers, the difference between the contraceptive prevalence rate for non-slum parts of Nairobi and slums would be even greater. The overall level of contraceptive use in slums is about the same as that in other urban areas in Kenya. Use of traditional methods (seven percent) is lower in the slums than in the other areas, the highest level (10 percent) being in Nairobi.

Table 4.4. Current use of contraception

Percentage distribution of all women, of currently married women, and of sexually active unmarried women who are currently using a contraceptive method, by method and age, NCSS 2000

Age Group	Modern Methods										Traditional Methods					
	Any method	Any modern method	Pill	IUD	Injectables	Implant	Diaphragm Foam/ Jelly	Condom	Female sterilisation	Male sterilisation	Any traditional method	Periodic abstinence	Withdrawal	Other	Not currently using	Number of cases
All women (15-49)																
15-19	14.2	9.1	2.9	0.5	4.1	0.1	0.0	1.5	0.0	0.0	5.1	4.8	0.0	0.3	85.8	663
20-24	39.4	30.8	11.2	0.4	15.2	0.6	0.1	3.3	0.0	0.0	8.6	8.3	0.2	0.1	60.6	896
25-29	49.9	43.9	15.7	1.9	23.5	0.8	0.0	1.7	0.3	0.0	6.0	5.4	0.3	0.3	50.1	643
30-34	54.1	47.5	13.7	2.5	26.9	1.3	0.0	1.8	1.3	0.0	6.6	6.1	0.0	0.5	45.9	392
35-39	53.8	47.5	13.0	5.0	18.1	2.0	0.0	0.7	8.7	0.0	6.3	4.7	0.0	1.6	46.2	299
40-44	37.7	32.5	1.3	3.2	9.1	1.3	0.0	0.7	16.9	0.0	5.2	3.9	0.0	1.3	62.3	154
45-49	22.9	18.1	1.2	2.4	8.5	0.0	0.0	0.0	6.0	0.0	4.8	4.8	0.0	0.0	77.1	83
Total	38.9	32.3	10.1	1.6	15.8	0.8	0.0	2.0	2.0	0.0	6.6	6.0	0.1	0.5	61.1	3,132
Currently married women																
15-19	22.0	17.0	7.1	0.6	9.3	0.0	0.0	0.0	0.0	0.0	5.0	4.4	0.0	0.6	78.1	183
20-24	42.6	34.8	13.3	0.4	19.1	0.7	0.0	1.3	0.0	0.0	7.8	7.2	0.4	0.2	57.5	555
25-29	50.0	44.2	17.0	2.3	23.5	0.6	0.0	0.8	0.0	0.0	5.8	5.2	0.4	0.2	50.0	482
30-34	54.3	47.8	14.1	2.5	27.2	0.7	0.0	1.5	1.8	0.0	6.5	5.8	0.0	0.7	45.7	276
35-39	58.3	51.1	13.4	6.2	19.1	2.1	0.0	0.5	9.8	0.0	7.2	5.7	0.0	1.5	41.8	194
40-44	44.7	38.3	1.1	2.1	10.6	1.1	0.0	0.0	23.4	0.0	6.4	5.3	0.0	1.1	55.3	94
45-49	30.2	20.9	2.3	2.3	11.6	0.0	0.0	0.0	4.7	0.0	9.3	9.3	0.0	0.0	69.8	43
Total	45.8	39.1	12.9	2.0	19.9	0.8	0.0	0.9	2.6	0.0	6.7	6.0	0.2	0.5	54.3	1,828
Sexually active unmarried women																
12-14	6.7	6.7	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0	93.3	15
15-19	25.6	13.8	3.0	1.0	4.9	0.0	0.0	4.9	0.0	0.0	11.8	11.8	0.0	0.0	74.4	203
20-24	46.7	33.2	10.4	0.8	12.0	0.4	0.4	9.2	0.0	0.0	13.5	13.5	0.0	0.0	53.4	251
25-29	51.0	44.0	12.1	0.6	24.2	1.3	0.0	4.5	1.3	0.0	7.0	6.4	0.0	0.6	49.0	157
30-34	54.3	47.4	12.9	2.6	26.7	2.6	0.0	2.6	0.0	0.0	6.9	6.9	0.0	0.0	45.7	116
35-39	46.1	41.3	12.5	2.9	16.3	1.9	0.0	1.0	6.7	0.0	4.8	2.9	0.0	1.9	53.9	104
40-44	26.8	23.4	1.7	5.0	6.7	1.6	0.0	1.7	6.7	0.0	3.4	1.7	0.0	1.7	73.3	60
45-49	15.4	15.4	0.0	2.6	5.1	0.0	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	84.6	39
Total	41.0	32.0	8.6	1.6	14.2	1.0	0.1	4.8	1.7	0.0	9.0	8.6	0.0	0.4	59.9	945



Current Use of Contraception by Background Characteristics

Table 4.5 shows differentials in current use of contraception among women by various background characteristics. As one would expect, married women who have no children are less likely to use contraception than women who have living children. Overall, contraceptive use increases steadily with the level of education. Married women with secondary or higher education (51 percent) are substantially more likely to use modern contraception than women with no formal education (17 percent). Use of traditional methods is highest (11 percent) among women with no education, followed by those who completed primary school (7 percent). Religious affiliation has some impact on contraceptive use; married Protestant women exhibit the highest level of contraceptive use (47 percent), closely followed by Catholics (44 percent). The levels of contraceptive use among Moslems (35 percent) and women belonging to other religions (27 percent) are considerably lower than levels observed for Christians. Muslims and Catholics are more likely to use traditional methods than Protestants, although the differences are modest. Contraceptive use increases dramatically with number of children; about 12 percent of childless married women use contraception, compared to 50 percent of women with 1-2 surviving children, and 56 percent of women with 3-4 surviving children.

The differences in contraceptive use among women of different ethnic groups show that Kikuyus have the highest CPR (64 percent), followed by Luhyas and Kambas (about 45 percent). The

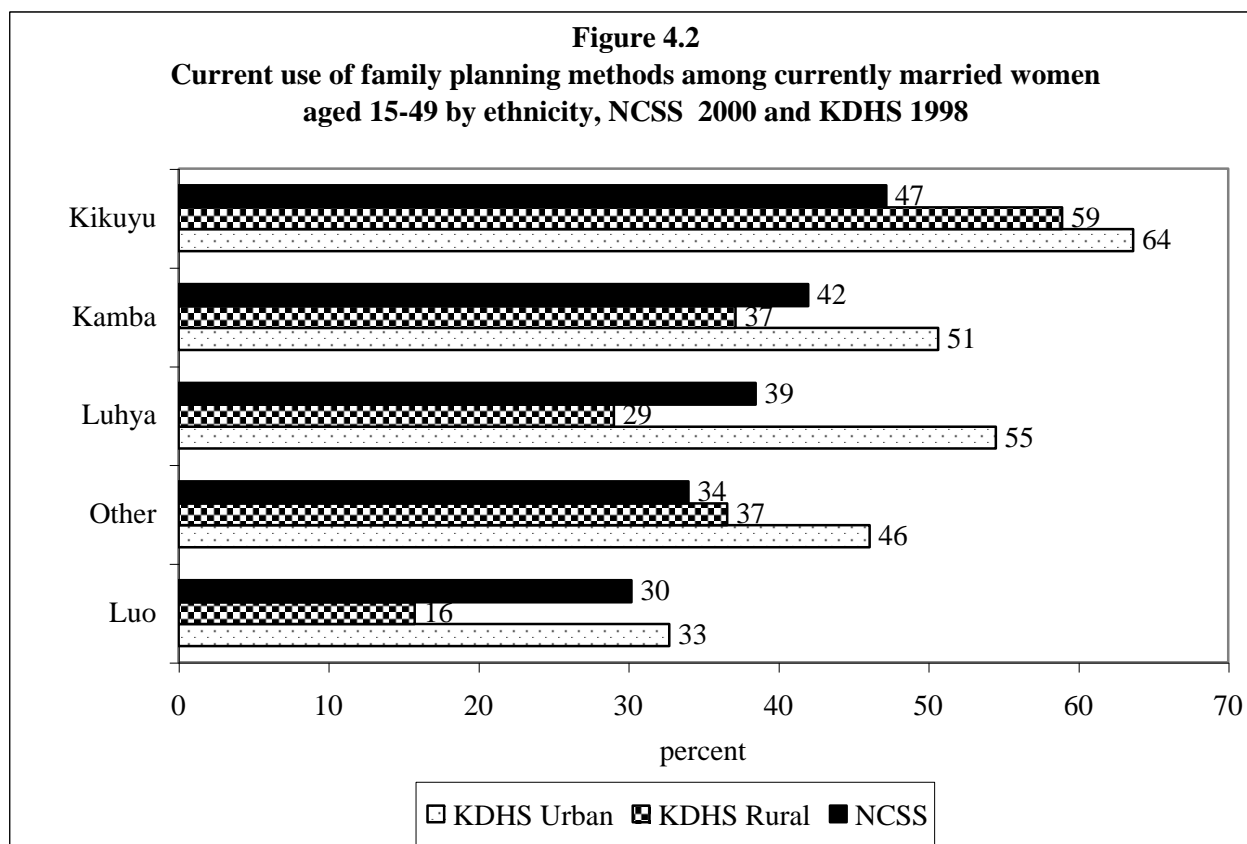
contraceptive prevalence rate (CPR) among Luos (32 percent) is the lowest of all ethnic groups. It is of interest to know whether the reproductive outcomes of slum residents resemble outcomes of their rural-based ethnic groups. Figure 4.2 compares CPRs for the country's major ethnic groups resident in urban areas, rural areas, and slums. The data show that the ethnic pattern in contraceptive use in slums closely resembles the national pattern, where Kikuyus and Luos exhibit the highest and lowest CPRs, respectively. Across all ethnic categories, slum women exhibit lower levels of contraceptive use than the average for urban areas in the 1998 KDHS. Among Luos, Luhyas and Kambas, slum residents exhibit higher levels of contraceptive use than their rural counterparts, while the opposite pattern prevails among Kikuyus and other ethnic groups. Thus, women who live in informal settlements follow patterns of contraceptive behavior that resembles that of their rural-based ethnic counterparts, suggesting that urban reproductive behavior cannot be studied in isolation from the cultural origins of the urban dwellers.

Differentials in contraceptive use among unmarried women are generally similar to those among married women; more educated women, Christian women, and those with more children exhibit higher levels of contraceptive use than other women in their respective categories. However, while Kikuyus (47 percent) exhibit the highest level of contraceptive use among married women, Kambas (51 percent) have the highest level among unmarried women. As was the case with ever use and current use among married women, unmarried Luos exhibit the lowest level of use among the four major ethnic groups.

Table 4.5 Current use of contraception by selected background characteristics

Percentage distribution of all women, currently married women, and of sexually active unmarried women aged 15-49 years by type of contraceptive method currently used, according to selected background characteristics, NCSS 2000

CHARACTERISTIC	All women					Currently married women					Sexually active unmarried women				
	Any Method	Any modern method	Any traditional method	Not using	No. of cases	Any Method	Any modern method	Any traditional method	Not using	No. of cases	Any Method	Any modern method	Any traditional method	Not using	No. of cases
Education															
No education	26.2	17.7	8.5	73.8	164	28.6	17.1	11.4	71.5	105	24.5	20.8	3.8	75.4	53
Primary incomplete	31.0	25.5	5.5	69.0	760	36.0	30.5	5.5	64.0	436	37.5	28.9	8.7	62.4	208
Primary complete	39.8	32.5	7.3	60.2	1,056	44.7	37.4	7.4	55.2	637	46.2	33.9	9.3	56.8	310
Secondary +	44.8	38.4	6.4	61.1	1,095	56.7	50.7	5.9	43.4	609	42.7	32.8	9.9	57.3	342
Religion															
Catholic	38.9	30.4	8.5	59.9	964	44.3	36.1	8.2	55.7	526	43.2	31.6	11.7	56.7	326
Protestants	40.1	34.3	5.8	73.9	1,988	47.3	41.5	5.8	52.7	1,201	41.0	32.8	8.2	59.0	558
Muslim	26.1	20.4	5.7	57.9	157	34.8	24.7	10.1	65.2	89	26.3	26.3	0.0	73.7	38
Other	22.7	22.7	0.0	77.3	22	27.3	27.3	0.0	72.7	11	25.0	25.0	0.0	75.0	8
Ethnicity															
Kamba	42.0	32.6	9.5	57.9	516	45.2	35.2	10.0	54.8	301	51.3	39.2	12.0	48.8	158
Kikuyu	47.2	41.7	5.6	52.7	790	64.3	59.7	4.5	35.8	375	44.4	35.5	8.9	55.6	293
Luhya	38.5	32.9	5.6	61.5	763	44.7	38.4	6.3	55.3	477	38.2	32.1	6.1	61.8	212
Luo	30.2	23.3	6.9	69.8	695	32.4	26.1	6.3	67.6	460	34.9	24.0	10.9	65.1	175
Other	34.0	27.7	6.2	66.1	368	44.9	37.4	7.5	55.1	214	31.5	23.9	7.6	68.5	92
Division															
Central	36.5	27.6	8.9	63.5	304	37.6	27.5	10.0	62.5	189	43.0	34.4	8.6	57.0	93
Makadara	37.2	28.3	8.9	62.8	113	42.2	33.8	8.4	57.8	71	41.4	27.6	13.8	58.6	29
Kasarani	31.2	25.0	6.3	68.7	557	35.6	30.0	5.6	64.4	337	33.8	24.0	9.7	66.3	154
Embakasi	43.6	34.7	8.9	56.4	548	49.3	39.8	9.5	50.7	337	48.3	37.1	11.3	51.6	151
Pumwani	32.3	28.1	4.2	67.7	96	40.4	36.2	4.3	59.5	47	34.3	28.6	5.7	65.7	35
Westlands	45.5	40.3	5.1	54.6	466	61.5	56.2	5.3	38.5	226	44.2	37.0	7.3	55.7	165
Dagoretti	42.1	36.6	5.6	57.8	413	55.0	51.3	3.8	44.9	238	35.8	24.2	11.7	64.1	120
Kibera	37.2	31.7	5.5	62.8	635	41.6	35.6	6.0	58.4	382	42.1	35.5	6.6	57.9	183
No. of living children															
0	15.1	7.9	7.2	84.9	1,011	11.5	6.5	5.0	88.5	278	33.2	17.0	16.2	66.8	358
1-2	48.3	42.0	6.3	51.7	1,291	50.0	42.9	7.2	49.9	919	43.8	39.8	4.0	56.2	372
3-4	57.1	51.2	5.9	42.9	324	56.0	50.4	5.7	43.9	248	60.5	54.0	6.6	39.4	76
5+	51.0	44.3	6.7	49.0	506	53.4	46.1	7.3	46.6	382	43.6	38.7	4.8	56.5	124
Total	38.9	32.3	6.6	61.1	3,132	45.7	39.0	6.7	54.3	1,827	41.1	32.0	9.0	58.9	930



4.2.3 Source of Contraceptive Supplies for Current Users

Because of the importance that slum residents attach to the inaccessibility of reproductive health services (Wasao and Bauni 2001), the NCSS examined contraceptive supply sources for slum residents, as well as how these sources compare with those for the other segments of the Kenyan population. This information can be used to define the extent of inequity in services in order to improve policies designed to develop contraceptive supply accessibility in urban slum communities. Table 4.6 gives a summary of sources for modern contraceptives for all women who were using such methods at the time of the survey.

The data show that slightly over half (52 percent) of all users of modern family planning obtains contraceptives from public health services and that most of these are provided through the Nairobi City Council clinics. NGOs, private and missionary health services provide about 42 percent of the services, while mobile and community based distributors provide only about one percent of the services.

As one would expect, sources of contraceptive services vary by method. The distribution of sources for pills closely resembles the distribution for all methods combined. For injectables and IUDs, slightly more than half of all users acquired their methods from public health sources, while the remaining mostly obtained services from private health centers. Condoms are the only

category where the major source is other private (non institutional) services (59 percent); mostly shops. About 53 percent of all women who were sterilized obtained the service at government health centers, while 47 percent did the operation at private centers. The private medical sector also provides the primary source of implants (70 percent), with the rest coming from government hospitals. The Family Planning Association of Kenya (FPAK) clinics contribute a substantial proportion of services for surgical methods (18 percent of IUDs and 26 percent of implants).

Table 4.6 Source of contraceptive supplies								
Percentage distribution of current users of modern method of contraceptives aged 15-49 years by most recent source of supply, according to specific methods, NCSS 2000								
Source of Supply	Any modern methods	Type of method						No. of cases
		Pill	IUD	Injectables	Implant	Condom	Female sterilization	
Public Sector	52.3	52.7	54.8	57.6	30.4	13.1	53.2	527
Government hospital	12.0	7.3	29.4	8.9	30.4	3.3	46.9	121
Government health center	10.8	13.3	3.9	12.4	0.0	1.6	4.7	109
Government dispensary	2.7	3.2	3.9	3.0	0.0	0.0	0.0	27
City council clinic	26.8	28.9	17.6	33.3	0.0	8.2	1.6	270
Medical Private Sector	41.8	41.9	45.2	42.3	69.5	16.3	46.9	420
Mission, church hospital/clinic	5.3	4.1	2.0	5.7	4.3	3.3	12.5	53
FPAK health clinic	2.3	0.3	17.7	0.8	26.1	1.6	3.1	23
Other NGO service	4.1	3.8	5.9	3.8	13.0	1.6	4.7	41
Private hospital or clinic	24.7	21.3	19.6	29.8	26.1	4.9	25.0	249
Pharmacy	3.9	10.8	0.0	0.4	0.0	4.9	0.0	39
Private doctor	1.5	1.6	0.0	1.8	0.0	0.0	1.6	15
Mobile clinic	0.2	0.0	0.0	0.0	0.0	3.3	0.0	2
CBD worker	1.0	2.9	0.0	0.0	0.0	1.6	0.0	10
Other Private	4.1	1.3	0.0	0.0	0.0	59.0	0.0	41
Shop	3.2	0.3	0.0	0.0	0.0	50.8	0.0	32
Friends/relatives	0.9	1.0	0.0	0.0	0.0	8.2	0.0	9
Other	0.8	1.3	0.0	0.0	0.0	6.6	0.0	8
Total	100	100	100	100	100	100	100	
Number of cases	1,008	315	51	493	23	61	64	1,008

Table 4.7 presents the comparative distributions of sources of contraceptive services from the 1998 KDHS. These data show that urban areas rely on the private sector for contraceptive services more than rural areas. Rural women were the least likely to obtain health services from the private sector (29 percent), and about one-third of Kenyan women overall reported the same. Forty-two percent of women in the slums relied on the private sector, which is slightly lower than the share in Nairobi (47 percent) and other urban areas (46 percent). Slum residents live in a setting where the relatively expensive private health sector plays a pivotal role in contraceptive

services, suggesting a need to examine affordability of these services by this rapidly growing poverty-stricken component of Nairobi City's population.

Table 4.7 Source of supply of modern methods

Percentage distribution of current users of modern contraceptives aged 15-49 years by most recent source of supply, NCSS 2000 and KDHS 1998

Source of Supply	NCSS	KDHS			
		National	Rural	Other Urban	Nairobi
Public Sector	52.3	57.8	60.9	49.3	44.8
Government hospital	12.0	29.0	29.2	32.6	20.3
Government health center	10.8	16.3	17.3	11.1	16.8
Government dispensary	2.7	12.5	14.4	5.7	7.7
City council clinic	26.8	0.0	0.0	0.0	0.0
Medical Private Sector	41.7	33.2	29.3	45.5	46.9
Private hospital/clinic	5.2	13.5	11.5	18.8	21.7
Mission, church hospital/clinic	2.3	8.4	9.9	3.2	4.9
FPAK health center/clinic	4.1	4.9	3.8	9.5	5.6
Other NGO clinics	24.7	1.3	0.6	5.0	0.7
Pharmacy	3.9	2.5	1.2	5.0	10.5
Private doctor	1.5	2.6	2.3	3.9	3.5
Mobile clinic	0.2	0.4	0.4	0.0	0.7
CBD worker	1.0	4.2	5.2	1.1	0.0
Other Private	4.0	4.1	3.8	3.9	7.0
Shop	3.2	2.4	2.1	3.2	3.5
Friends/relatives	0.8	1.7	1.7	0.7	3.5
Other	0.8	0.3	0.3	0.3	0.7
Number of cases	1,007	2,223	1,357	282	143

4.2.4 Current use of Periodic Abstinence and Knowledge of the Fertile

As noted above, about 15 percent of all contraceptive users in the slums use traditional methods. The two traditional methods reported in the NCSS (periodic abstinence and withdrawal) involve avoidance of sex or withdrawal during the part of the menstrual cycle believed to offer the highest risk of conception. Consequently, users and potential users of these methods need to have correct information of the fertile period for them to use the methods correctly. NCSS respondents were asked to indicate whether there is a specific part of the menstrual cycle when a woman is more likely to get pregnant, and if so, to specify the period.

Table 4.8 presents the percentage distribution of all women and those who were using periodic abstinence, by their responses to this question. The data show that ignorance about the component of the menstrual cycle that offers the highest risk of conception is widespread. Only one-third of all respondents correctly identified the middle of the menstrual cycle as the time when a woman is most likely to get pregnant. Of the women who practice periodic abstinence, only half could correctly identify the appropriate time to abstain from sexual relations. Thus, lack of correct knowledge of the fertile period among users detracts from the contraceptive use effectiveness of periodic abstinence. Nonetheless, comparison of the NCSS and the KDHS data show that slum women are more knowledgeable of the fertile-period concept than rural and Nairobi residents.

Table 4.9 presents the percentage of women who specified the middle of the menstrual cycle as the period offering the highest probability of conception, by selected background characteristics. The overall correct knowledge of the fertile period is almost the same between married and unmarried women (29 percent and 28 percent respectively), and it is lowest among the youngest women for both groups. The level of knowledge increases and peaks at age 25-29, then tapers at older ages. Since most people learn about the reproductive system and how it works from schools, it is no wonder that women with secondary education exhibit considerably higher levels of correct knowledge of the fertile period than their less educated counterparts.

Married Catholics have higher levels of correct knowledge of the fertile period than Protestants and Muslims. However, the difference between Catholics (37 percent) and Protestants (32 percent) is relatively small, given that the Catholic Church appears to actively promote natural methods as an alternative to modern methods. Nevertheless, knowledge of the fertile period among unmarried women does not vary among the three major religious groups. Luos show the lowest correct knowledge of the fertile period among the major ethnic groups represented in the slums of Nairobi. Geographically, it is Pumwani and Central divisions that exhibit the lowest levels of correct knowledge of the fertile period.

Table 4.8 Knowledge of the fertile period and use of periodic abstinence

Percentage distribution of all women and women who have ever used or are currently using periodic abstinence aged 15-49 years by knowledge of the fertile period during the ovulatory cycle, NCSS 2000 and KDHS 1998

Knowledge of fertile period				KDHS 1998							
				NATIONAL		RURAL		NAIROBI		OTHER URBAN	
	All Women	Current users	Ever users	All Women	Current users	All Women	Current users	All Women	Current users	All Women	Current users
Ovulation time											
During period	1.0	0.5	0.5	2.0	3.2	2.1	3.7	1.7	3.6	1.2	0.0
Right after period ends	20.2	25.9	26.0	18.3	22.1	18.7	23.2	14.0	17.9	17.5	17.8
Middle of the cycle	32.2	52.9	53.7	22.9	35.3	21.4	31.5	24.9	46.4	31.3	53.3
Just before period begins	8.2	7.9	7.0	6.4	7.6	6.7	7.1	5.6	10.7	4.5	8.9
Other	0.4	0.0	0.3	26.2	19.1	26.6	20.1	29.8	21.4	22.9	11.1
Do not know time	38.1	12.7	12.5	24.2	12.7	24.5	14.4	24.0	0.0	22.6	8.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	3254	189	384	7846	371	6393	298	413	28	1040	45

Table 4.9 Knowledge of the fertile period by selected background characteristics

Percentage of married and single women aged 15-49 years who correctly identified the middle of the menstrual cycle as the fertile period by background characteristics, NCSS 2000

Background Characteristics	Married Women	Single Women	All Women
Age			
15-19	16.2	19.6	18.7
20-24	32.3	36.8	34.0
25-29	37.2	46.9	39.5
30-34	35.2	43.0	37.5
35-39	35.5	34.0	35.0
40-44	26.3	32.8	28.9
45-49	28.6	28.2	28.4
Education			
No education	13.0	20.7	15.7
Primary Incomplete	21.3	18.6	20.2
Primary Complete	28.0	23.5	26.3
Secondary Plus	47.0	48.4	47.6
Religion			
Catholic	36.5	31.7	34.4
Protestant	31.8	31.7	31.7
Muslim	16.7	31.4	23.1
Other	38.5	36.4	37.5
Ethnicity			
Kamba	34.4	34.3	34.4
Kikuyu	39.9	33.6	36.7
Luhya	35.4	32.5	34.3
Luo	23.6	22.5	23.3
Other	29.0	35.6	31.6
Division			
Central	16.2	19.4	17.3
Makadara	36.1	34.2	35.4
Kasarani	22.7	18.6	21.1
Embakasi	34.8	29.9	33.0
Pumwani	16.7	16.3	16.5
Westland	48.7	42.0	45.4
Dagoretti	44.3	39.0	42.1
Kibera	31.0	37.6	33.5
Total	32.4	31.7	32.2

4.3 Attitudes About Family Planning among Non-Users

4.3.1 Approval of Family Planning Among Non-Users

To ascertain levels of disapproval of contraceptive use, NCSS respondents who were not using family planning at the time of the survey were asked whether they approve or disapprove of couples using a method to avoid getting pregnant, and whether they know or think that their husbands approve or disapprove use of family planning. The results (presented in Table 4.10), demonstrate marked variations in the proportion of women who say they approve use of contraception, and of those who say their spouses approve of contraceptive use. Among all non-contracepting married women, 87 percent reported that they approve of contraceptive use, while only 59 percent reported that their husbands approve.

The overall levels of approval for women and their spouses (seen in columns 7 and 8 in Table 4.10) decrease between ages 20 and 39, and increase again thereafter, with the oldest women (aged 40-49) reporting the highest levels of approval for their husbands (over 60 percent). Approval of contraceptive use for women and their spouses increases steadily with education; approval for husbands of women with no education (35 percent) is nearly half of the level of approval for husbands of women with secondary or higher education (64 percent). Muslims exhibit the lowest levels of approval for women (54 percent) and men (36 percent) among the four religious groups, and so do Luos among the four major ethnic groups. Geographically, the lowest levels of approval are observed among residents of Makadara (for women) and Kasarani (for husbands).

Considering that joint approval of contraceptive use is likely to promote usage, it is important to examine approval status at the couple level. These results (columns 2 to 5) demonstrate striking differences in levels of approval that would enable identification of key sub-groups of the population who have extremely high levels of disapproval. The fact that only 58 percent of all non-contracepting married women reported joint husband-wife approval of contraceptive use should be a major concern. That women are more likely to perceive their husbands to be a serious obstacle to contraceptive use in these settings is evident from the fact that when the husband and wife disagree on contraceptive use, it is considerably more likely that the husband disapproves use while the wife approves (29 percent) than the converse (only one percent). It is also worth noting that a significant percentage of all women (17 percent) reported joint husband-wife disapproval of contraceptive use. Women with no education (46 percent) and Muslim women (44 percent) exhibit the highest levels of joint husband-wife disapproval, as well as the lowest joint husband-wife approval of contraceptive use (34 percent) relative to any other population sub-group examined in Table 4.10. It is also worth noting that Luos have the highest percentage of cases where the wife approves but the husband disapproves of contraceptive use (39 percent).

Approval of contraceptive use is higher among married women (87 percent) than among sexually active unmarried women (77 percent). However, the pattern of differences across various population categories is similar, but the differences across age, education, and religion sub-categories are narrower among unmarried women than among their married counterparts.

There is not much variability in the overall levels of approval for women between slum and non-slum dwellers. For men, however, slum residents exhibit higher levels of approval than rural men, but lower levels than those residents in the whole of Nairobi. Slum dwellers also exhibit a higher rate of joint husband-wife disapproval (17 percent) than residents of the others areas.

Table 4.10 Approval of contraceptive use among non-users

Percentage of currently married women and unmarried women aged 15-49 who approve of contraceptive use according to selected background characteristics, NCSS 2000 and KDHS 1998

Background Characteristics	Married Women					Total Approval		Single Sexually Active Women
	Wife Approves and Husband approves	Wife Approves and Husband disapproves	Wife Disapproves and Husband Approves	Wife Disapproves and Husband Disapproves	No. of cases	Wives	Husbands	
Age								
15-19	52.4	31.3	1.4	15.0	147	83.7	53.7	69.8
20-24	54.5	31.7	0.8	12.9	356	86.2	55.3	81.3
25-29	54.1	27.8	0.7	17.4	270	81.9	54.8	91.5
30-34	46.4	32.1	1.4	20.0	140	78.6	47.9	94.8
35-39	45.1	24.2	2.2	28.6	91	69.2	47.3	75.0
40-44	59.3	20.4	1.9	18.5	54	79.6	61.1	81.8
45-49	56.7	13.3	3.3	26.7	30	70.0	60.0	78.8
Education								
No education	33.3	19.2	1.3	46.2	78	52.6	34.6	68.9
Primary incomplete	44.5	34.5	3.0	18.0	200	79.0	47.5	71.2
Primary complete	52.5	31.2	1.0	15.3	509	83.7	53.4	74.3
Secondary plus	63.1	24.3	0.3	12.3	301	87.4	63.5	85.2
Religion								
Catholic	55.8	27.8	1.6	14.8	317	83.6	57.4	79.0
Protestant	52.6	30.3	1.0	16.1	702	82.9	53.6	77.5
Muslim	33.9	20.3	1.7	44.1	59	54.2	35.6	71.7
Other	60.0	30.0	0.0	10.0	10	90.0	60.0	66.7
Ethnicity								
Kamba	59.4	20.6	2.3	17.7	175	80.0	61.7	79.2
Kikuyu	69.0	17.1	0.6	13.3	158	86.1	69.6	79.3
Luhya	55.3	32.4	0.0	12.3	293	87.7	55.3	84.6
Luo	40.1	38.6	1.8	19.6	337	78.6	41.8	68.6
Other	49.6	22.4	1.6	26.4	125	72.0	51.2	71.3
Division								
Central	39.8	34.4	3.9	21.9	128	74.2	43.8	78.9
Makadara	54.8	19.1	0.0	26.2	42	73.8	54.8	73.3
Kasarani	39.0	32.9	1.7	26.4	231	71.9	40.7	61.7
Embakasi	60.2	24.6	0.0	15.2	191	84.8	60.2	80.4
Pumwani	51.7	24.1	3.5	20.7	29	75.9	55.2	67.6
Westland	65.0	19.0	1.0	15.0	100	84.0	66.0	82.7
Dagoretti	60.5	31.5	0.0	8.1	124	91.9	60.5	86.4
Kibera	56.8	31.3	0.8	11.1	243	88.1	57.6	80.5
NCSS Total	57.6	29.0	1.2	17.2	1088	86.6	58.8	77.4
National*	51.2	31.8	1.9	15.2	3048	82.9	53.0	77.9
Other Urban*	56.6	27.1	1.8	14.5	166	83.7	58.4	80.7
Rural*	51.5	33.2	1.6	13.7	2591	84.7	53.1	77.6
Nairobi*	60.8	24.7	4.1	10.3	97	85.6	65.0	77.9

NOTE: Cases where the respondent was unsure about her or the spouse's approval have been combined with those who disapprove because there were very few cases in the "unsure" category. So, the category labeled "disapproves" should be read as: "disapproves/unsure".

* - Based on KDHS 1998

4.3.2 Intention to Use Contraception in the Future Among Non-Users

Women who were not using family planning were asked whether they intended to use contraception in the future. Table 4.11 shows the percentage distribution of women who responded affirmatively to this question, by number of living children. The majority of non-users plan to use family planning in future (73 percent of married women and 68 percent of unmarried women). Out of those who indicated intention to use contraception, most (46 percent of married women and 37 percent of single women) intend to use contraception in the next 12 months. Timing of use varies by the number of living children the woman has. Women who do not have any children are more likely to want to use later, while women with one or more children are more likely to want to use within the next twelve months. A considerable proportion of the non-users were not sure whether they would use family planning in future (23 percent of married women and 28 percent of single women).

Intention to Use Contraception in the Future by Background Characteristics

Table 4.12 presents the percentage of non-users who expressed intention to use contraception in future, irrespective of when precisely they wanted to do so, by background characteristics. Intention to use contraception in future peaks between ages 20-29, and declines steadily thereafter, as need for contraception declines with declining fecundity.

As would be expected, education is positively associated with intention to use contraception in future. Only 32 percent of women with no education intend to use contraception in future, while close to 80 percent of those with secondary or higher education expressed similar intentions. As with all other measures of contraceptive use and attitude examined in this chapter, Muslim women are less likely to intend to use contraception in future than women in the other religious groups. Women in other ethnic groups exhibit the lowest level of intentions to use contraception in future, followed by Luos, who have consistently demonstrated the poorest measures of knowledge, use and approval of family planning among the four major ethnic groups represented in the slums of Nairobi. Luhyas exhibit the highest levels of intentions to use contraception in future, a trend that is likely to narrow the gap in levels of current use of contraception between them and the two leading ethnic groups (Kikuyus and Kambas). Geographically, Pumwani and Kasarani exhibit the lowest levels of intentions to use contraception in future.

Married women are slightly more likely to intend to use contraception in future than unmarried women (74 percent and 69 percent, respectively). These differentials in levels of intentions to use contraception across various population sub-groups are generally similar to patterns seen in the fertility analysis presented in Chapter 3. Married non-users of family planning in slums are more likely to intend to use family planning than residents of rural and other urban areas, but about as likely as Nairobi overall. For sexually active unmarried women who were not using contraception at the time of the survey, slum residents (69 percent) are more likely to intend to use contraception in future than all the residential groups covered by the KDHS (less than 64 percent). For all women who were not using contraception, about 72 and 62 percent of slum and rural residents were intending to use contraception in future. These patterns suggest substantial demand for family planning, which well organized programs can fulfill.

Table 4.11 Intention to use contraception among non-users

Percent of currently married women, sexually active unmarried women and all women aged 15-49 years who are not using a contraceptive method but who intend to use in the future by number of living children, NCSS 2000

Future use of contraception	Currently married women						Sexually active unmarried women						All Women					
	Number of living children						Number of living children						Number of living children					
	0	1	2	3	4+	Total	0	1	2	3	4+	Total	0	1	2	3	4+	Total
Intend to use in next 12 months	34.0	46.7	51.5	56.2	46.3	45.6	34.5	41.7	43.3	33.4	33.8	37.3	24.3	44.9	49.8	51.7	43.0	36.9
Intend to use later	44.1	30.2	20.8	18.2	10.9	26.9	40.6	28.2	20.0	10.0	0.0	28.3	47.5	29.5	20.6	16.6	8.0	32.3
Unsure as to timing	1.1	1.7	2.2	1.7	1.6	1.7	2.4	5.1	0.0	3.3	0.0	2.7	2.5	3.0	1.7	2.0	1.1	2.3
Do not intend to use	4.2	2.8	2.2	0.8	4.2	3.0	3.6	3.9	1.7	3.3	4.2	3.5	7.7	3.2	2.1	1.3	4.2	5.0
Do not know	16.6	18.6	23.4	23.1	37.0	22.9	18.9	21.1	35.0	50.0	62.0	28.3	18.0	19.5	25.8	28.5	43.7	23.6
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Number of women	265	285	231	121	192	1094	249	156	60	30	71	566	887	441	291	151	263	2033

Table 4.12 Intention to use contraception in future among non-users

Percentage of married and single women aged 15-49 who are intending to use contraception in future, by background characteristics, NCSS 2000 and KDHS 1998

Background Characteristics	Married Women	Single Women	All Women
Age			
15-19	84.4	72.9	75.9
20-24	85.1	84.0	84.7
25-29	79.3	86.6	81.0
30-34	67.9	71.9	69.0
35-39	47.8	21.4	37.7
40-44	38.9	18.6	29.9
45-49	13.3	6.1	9.5
Education			
No education	33.3	28.9	31.7
Primary Incomplete	66.8	59.4	63.4
Primary Complete	78.8	69.7	75.0
Secondary Plus	81.1	77.7	79.3
Religion			
Catholic	72.9	72.4	72.6
Protestant	77.0	67.8	73.0
Muslim	42.4	61.7	52.1
Other	80.0	55.6	68.4
Ethnicity			
Kamba	72.6	70.8	71.8
Kikuyu	74.1	66.4	69.2
Luhya	80.3	75.7	78.4
Luo	73.4	64.5	70.4
Other	62.4	65.6	64.0
Division			
Central	74.8	74.7	74.8
Makadara	78.6	60.0	70.8
Kasarani	63.0	55.1	59.7
Embakasi	72.3	69.9	71.3
Pumwani	72.4	40.5	54.6
Westland	74.0	74.9	74.5
Dagoretti	83.1	75.6	79.2
Kibera	79.9	74.6	77.7
Children Surviving			
None	79.0	72.5	74.5
1-2	76.8	72.4	75.5
3-4	69.7	42.9	63.2
5+	57.6	29.7	51.0
NCSS Total	74.0	68.7	71.6
National*	63.5	60.1	61.9
Other Urban*	58.7	59.7	59.2
Rural*	63.5	59.7	61.8
Nairobi*	73.2	63.5	67.4

*Based on KDHS 1998 data

4.3.3 Preferred Method of Family Planning in Future

Women who expressed intention to use family planning in the future were asked to specify what methods they would like to use (Table 4.13). The data show that most potential users of family planning in the slums prefer modern to traditional methods. Injectables are the most preferred methods of family planning, followed by pills. About 52 percent of married women who would like to use contraception in the next twelve months would like to use injectables, and 46 percent of those who would like to use after 12 months would like to use injectables. Thus, injectables will likely remain the most popular method in the slums, as is the case in the whole of Kenya where they are the most popular method for current users as well as potential users in future ((NCPD 1999). A matter for policy concern is the low proportion of sexually active non-users who are intending to use condoms (10 percent). Again, this demonstrates that the highly publicized use of barrier methods to provide protection against unwanted/unplanned pregnancies and STI infections is far from being successful.

There is also a substantial proportion of potential users who are not sure about the type of method that they would like to use; 12 percent of women who would like to use within the next 12 months are not sure about the method, and 20 percent of those who intend to use after 12 months are unsure about the method. The pattern for method choice is similar for sexually active unmarried women.

The proportion of married slum women intending to use modern family planning in the next 12 months (85 percent) is about the same as for women living in the other residential categories, but much higher than for women living in Nairobi as a whole (71 percent). The same pattern prevails for married women opting to use contraception after 12 months and for sexually active unmarried women, except that a higher proportion of women living in other urban areas opt to use modern methods than the slum residents.

Table 4.13 Preferred method of contraception for future use

Percentage of non-contracepting currently married and sexually active unmarried women who intend to use contraception in future by method preferred and timing of anticipated use, NCSS 2000 and KDHS 1998

Preferred method of contraception	Currently married women			Sexually active unmarried women		
	Timing of intended use			Timing of intended use		
	In next 12 months	After 12 months	Unsure of timing	In next 12 months	After 12 months	Unsure of timing
Any modern method	84.9	76.2	62.5	80.1	72.5	80.0
Pill	22.1	16.7	12.5	18.5	21.3	20.0
IUD	2.0	2.0	0.0	3.3	2.5	6.7
Injectables	52.4	46.3	43.8	41.2	35.6	40.0
Norplant	2.4	3.4	0.0	4.3	5.6	0.0
Diaphragm/Foam/Jelly	0.0	0.0	0.0	0.0	0.6	0.0
Condom	2.2	2.4	0.0	10.4	4.4	0.0
Female sterilization	3.8	5.1	6.2	2.4	2.5	13.3
Male sterilization	0.0	0.3	0.0	0.0	0.0	0.0
Any traditional method	3.6	3.4	18.7	5.7	5.0	6.7
Periodic abstinence	3.0	1.7	12.5	4.3	3.1	6.7
Withdrawal	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.6	1.7	6.2	1.4	1.9	0.0
Unsure of method	11.5	20.4	18.8	14.2	22.5	13.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
No. of cases	498	294	16	211	160	15
National*						
Any modern method	81.7	75.7	75.4	81.0	70.0	70.0
Any traditional method	6.1	6.4	1.0	6.4	4.8	0.8
Unsure of method	12.2	18.0	23.5	12.7	25.3	29.2
Rural*						
Any modern method	82.2	76.8	75.9	81.5	70.2	78.3
Any traditional method	6.1	7.3	1.3	6.7	5.8	1.0
Unsure of method	11.7	16.0	22.8	11.9	24.0	20.7
Other urban*						
Any modern method	84.9	84.8	73.4	84.5	80.9	64.7
Any traditional method	7.3	7.1	0.0	6.1	4.1	0.0
Unsure of method	7.9	8.2	26.6	9.4	15.0	35.3
Nairobi*						
Any modern method	70.9	56.3	0.0	70.7	53.4	0.0
Any traditional method	3.6	0.0	0.0	3.3	0.0	0.0
Unsure of method	25.5	43.8	0.0	26.1	46.4	100

*Based on KDHS 1998

Table 4.14 Main reason for non-use of contraception

Percent of currently married women, sexually active unmarried women and all women who are not currently using a method by main reason for not using, NCSS 2000

Reason for not using contraception	Currently married women				Sexually active non-married women				All women			
	15-24	25-34	35-49	Total	15-24	25-34	35-49	Total	15-24	25-34	35-49	Total
Marital status related reasons	0.0	0.0	0.0	0.0	16.2	10.9	4.5	12.2	10.6	3.3	2.3	7.4
Not married	0.0	0.0	0.0	0.0	16.2	10.2	4.5	12.0	10.3	3.0	2.3	7.1
Intend to marry	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Not intent to marry	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.2	0.2	0.2	0.0	0.2
Fertility related reasons	64.2	60.5	65.8	63.1	45.3	65.8	70.9	56.1	58.7	61.6	67.8	60.8
Not having sex	1.4	1.2	2.9	1.6	19.9	29.2	29.1	24.3	24.7	8.6	14.6	18.7
Infrequent sex	0.6	2.2	3.5	1.6	16.2	14.6	4.5	13.0	4.5	5.2	3.9	4.6
Menopausal/Hysterectomy	0.0	0.2	9.3	1.6	0.0	0.0	9.7	2.3	0.0	0.2	9.4	1.5
Subfecund/Infecund	1.8	9.4	26.2	8.5	0.0	5.8	22.4	6.7	0.8	8.4	24.3	6.4
Postpartum Breastfeeding	10.8	15.7	5.8	11.9	2.4	2.2	0.7	1.9	5.3	12.2	3.6	6.9
Wants (more) children	31.1	18.8	13.4	23.7	1.3	8.8	3.7	3.7	14.0	16.1	9.1	13.9
Pregnancy	18.5	13.0	4.7	14.2	5.4	5.1	0.8	4.2	9.4	10.9	2.9	8.9
Opposition to use	14.6	13.7	12.2	13.9	7.7	5.1	8.2	7.2	10.6	11.4	10.4	10.8
Respondent opposed	5.5	5.8	4.1	5.4	4.7	2.9	6.0	4.6	4.9	5.0	4.9	4.9
Husband opposed	6.7	4.1	1.7	4.9	0.3	0.7	0.0	0.3	3.1	3.2	1.0	2.8
Others opposed	0.4	0.7	0.6	0.6	1.7	0.7	0.0	1.1	0.8	0.7	0.3	0.7
Religious prohibition	2.0	3.1	5.8	3.0	1.0	0.7	2.2	1.2	1.8	2.5	4.2	2.4
Lack of knowledge	3.5	1.2	1.2	2.3	6.0	1.4	0.0	3.6	5.8	1.3	0.6	3.7
Knows no method	2.6	0.7	0.6	1.6	3.0	0.7	0.0	1.8	4.2	0.7	0.3	2.7
Knows no source	1.0	0.5	0.6	0.7	3.0	0.7	0.0	1.8	1.6	0.5	0.3	1.1
Method related reasons	14.9	20.4	18.0	17.4	21.1	16.1	16.5	18.7	12.4	19.2	17.2	15.0
Health concerns	3.0	4.1	5.2	3.7	4.0	2.9	4.5	3.9	2.4	3.8	4.9	3.1
Fear of side effects	10.8	13.0	8.1	11.2	12.2	11.7	9.0	11.3	8.3	12.5	8.4	9.5
Lack of access /Too far	0.4	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.2	0.5	0.3	0.3
Cost too much	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Inconvenience to use	0.2	0.7	1.2	0.5	1.3	0.0	0.8	0.9	0.4	0.5	1.0	0.5
Interferes with body's normal processes	0.6	1.5	2.9	1.3	2.7	0.7	2.2	2.1	0.9	1.2	2.6	1.3
Method failure	0.0	0.2	0.0	0.1	0.7	0.7	0.0	0.5	0.2	0.4	0.0	0.2
Other	1.6	3.9	2.9	2.7	3.4	0.7	0.0	1.9	1.5	3.0	1.6	2.0
Do not know	1.0	0.2	0.0	0.5	0.3	0.0	0.0	0.2	0.5	0.2	0.0	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of Cases	508	415	172	1,095	296	137	134	567	1,168	558	308	2,034

4.3.4 Reasons for Non-Use of Contraception

Non-contracepting women who were not intending to use family planning in the future were asked why they did not intend to use a method. Table 4.14 shows that most women who did not intend to practice family planning had made this decision for fertility related reasons (63 percent of married and 56 percent of unmarried women) such as non-exposure to sexual relations or a desire to have more children. These are expected reasons for not using contraception. The second most important set of reasons is method-related (mentioned by 17 percent of married and 19 percent of unmarried women). The fear of side effects and health concerns were the most commonly mentioned method-related obstacle to contraceptive use.

Opposition to use by either the respondent or the spouse accounts for a relatively significant proportion of non-use of contraception. Fourteen percent of married women and seven percent of their unmarried counterparts indicated that they are not using for this reason. Five percent of the married women are opposed to use themselves, while another five percent reported that they are not using because of their husbands' opposition. The remaining three percent cited religious prohibition as the reason they are not using. The fact that about 30 percent of all non-users are not using due to method-related reasons, opposition to use, and lack of knowledge demonstrates ample scope for programs to enhance contraceptive use through intensification of information, education and communication campaigns that improve the quality of services and expanded method-choice which would allow women who are not suited form certain methods to switch to more suitable methods. Analysis of reasons for non-use of contraception and contraceptive discontinuation (using KDHS data) has shown that method-related reasons (particularly concern about side effects) is the most important factor for contraceptive discontinuation while still in need of family planning in Kenya (Magadi et al. 2001).

4.4 Exposure to Family Planning Messages from Clinics and CBDs

NCSS respondents were asked if they had visited a health clinic over the past year, and if so, to indicate whether they obtained information about family planning during one of the visits. The respondents were also asked whether there is a community based distributor (CBD) of family planning in their community, and if so, to indicate whether they have been visited by the distributor over the past year. Table 4.15 shows the extent to which health facilities and CBDs provide information on family planning to the study population.

One-third of the respondents had not visited a clinic in the previous year. Additionally, visiting clinics does not necessarily imply that the person will obtain information about family planning. Only one-third of women who visited a clinic in the past year received information about family planning from the clinic. Thus, only 23 percent of all women visited a clinic and received information about family planning. The percentage of women who visited and obtained family planning information from a clinic increases by age, but declines for the oldest age group. Education is positively associated with visiting the clinic and obtaining family planning information from that source, but there are minor differences in clinic attendance by religion. The proportion of respondents who got information about family planning from clinics ranges from 19 percent in Kasarani to 26 percent in Kibera. This difference is probably a reflection of the nature of clinics close to these areas - Kibera is close to public services such as Kenyatta National Hospital.

CBDs play a minimal role in providing family planning information in slum settlements. While 11 percent of all respondents reported awareness of a CBD agent in their community, only about

4 percent received information about family planning from a CBD over the previous year. The proportion of women contacted by CBDs is highest in Makadara (nine percent) and lowest in Pumwani (only one percent).

Comparison of the NCSS and KDHS data show that although slum women are more likely to visit a clinic than the comparison groups, they are not necessarily more likely to get family planning information from the clinics. For instance, while more than half of slum dwellers and rural residents visited a clinic at least once in the past year (67 percent and 51 percent respectively), only about one-quarter received family planning information from that source (23 percent and 27 percent, respectively) (NCPD 1999). Rural women were considerably more likely to have received family planning information and services from a CBD than slum residents and other urban areas (nine percent, four percent, and seven percent, respectively). These data suggest substantial potential for improvement in facility-based and community-based provision of family planning services in the slums of Nairobi.

Table 4.15 Source of family planning information

Percent of women who acquired family planning information from health facilities and community-based distribution (CBD) agents, NCSS 2000 and KDHS 1998

Respondent characteristics	Family planning information at clinic					Family planning information from CBD agent				
	Not visited	Visited and given FP info	Visited but no FP info	Total	No. of cases	No CBD agent	CBD there but not visited	Visited and given FP info	Total	No. of cases
Age group										
12-14	60.1	0.6	39.2	100.0	316	97.8	1.3	0.9	100.0	315
15-19	50.5	8.9	40.6	100.0	675	94.5	3.6	1.9	100.0	675
20-24	28.9	25.5	45.7	100.0	942	90.6	6.1	3.3	100.0	939
25-29	26.0	32.4	41.6	100.0	678	88.1	7.6	4.3	100.0	675
30-34	26.4	31.2	42.4	100.0	413	85.7	9.2	5.1	100.0	413
35-39	33.6	23.4	43.0	100.0	307	80.8	12.7	6.5	100.0	307
40-44	38.5	14.7	46.8	100.0	156	81.9	12.9	5.2	100.0	155
45-49	30.1	9.6	60.2	100.0	83	82.9	12.2	4.9	100.0	82
Marital Status										
Never married	49.8	9.3	40.9	100.0	932	93.1	4.8	2.1	100.0	929
Currently married	25.7	29.5	44.8	100.0	1,930	87.8	7.7	4.5	100.0	1,926
Formerly married	32.1	24.5	43.4	100.0	392	83.4	11.5	5.2	100.0	391
Education										
No education	43.4	14.9	41.7	100.0	168	86.9	9.5	3.6	100.0	168
Primary incomplete	37.9	19.8	42.4	100.0	767	89.3	7.0	3.7	100.0	766
Primary complete	31.0	26.4	42.6	100.0	1,121	87.8	7.5	4.7	100.0	1,118
Secondary+	31.5	22.7	45.9	100.0	1,138	90.0	6.9	3.1	100.0	1,134
Religion										
Catholic	33.4	21.8	44.8	100.0	997	89.1	6.1	4.7	100.0	993
Protestant/Other Christians	33.0	24.0	43.0	100.0	2,071	89.3	7.3	3.4	100.0	2,067
Muslim	37.3	20.5	42.4	100.0	161	79.5	16.8	3.7	100.0	161
Other	33.3	20.8	45.8	100.0	24	87.5	0.0	12.5	100.0	24
Ethnicity										
Kamba	33.2	22.6	44.2	100.0	530	89.0	6.6	4.4	100.0	529
Kikuyu	33.1	20.9	46.0	100.0	817	88.0	8.0	4.0	100.0	816
Luhya	34.2	26.0	39.7	100.0	803	88.3	7.7	4.0	100.0	802
Luo	32.0	23.4	44.6	100.0	726	88.9	7.1	4.0	100.0	723
Other	35.2	21.7	43.1	100.0	378	90.7	6.9	2.4	100.0	376
Division										
Central	37.7	23.0	39.2	100.0	316	88.5	7.0	4.5	100.0	314
Makadara	27.2	25.4	47.4	100.0	114	84.2	7.0	8.9	100.0	114
Kasarani	31.4	19.0	49.6	100.0	574	89.2	6.6	4.2	100.0	574
Embakasi	38.6	25.8	35.6	100.0	573	94.2	2.1	3.7	100.0	571
Pumwani	39.8	24.5	35.7	100.0	98	86.6	12.4	1.0	100.0	97
Westlands	31.7	22.6	45.6	100.0	482	93.1	5.2	1.7	100.0	482
Dagoretti	36.6	19.7	43.7	100.0	437	89.2	6.2	4.6	100.0	435
Kibera	27.7	26.4	45.9	100.0	660	81.3	14.4	4.3	100.0	659
NCSS Total	33.4	23.1	43.5	100.0	3,254	88.8	7.4	3.9	100.0	3,246
National*	49.7	17.9	32.4	100.0	7,866	78.6	0.2	21.2	100.0	7,880
Rural*	50.5	16.2	33.7	100.0	6,406	75.4	0.2	24.2	100.0	6,414
Nairobi*	49.2	26.7	24.1	100.0	419	93.8	0.0	6.2	100.0	419
Other Urban*	46.0	20.7	33.3	100.0	1,041	85.8	0.1	14.1	100.0	1,047

* Based on KDHS 1998 data

4.5 Spousal Discussion of Family Planning

Results of virtually all DHS surveys, including those conducted in Kenya, have demonstrated a positive association between discussions of family planning between husbands and wives and the likelihood of contraceptive use (e.g. Lasee and Becker 1997; Bankole and Singh 1998; Dodoo, Ezeh and Owuor 2001; APPRC, 1998). The NCSS asked its respondents to indicate how often they had talked to their husbands and partners about family planning in the past year.

The results (Table 4.16) show that overall, 23 percent of the respondents reported that they had never talked to their husbands about family planning, while about 45 percent reported that they had talked to their husbands once or twice and 32 percent had talked more often. Spousal discussion of family planning decreases with age. The highest proportion of women who had discussed family planning with their spouses is among women aged 20-24 (83 percent) and the lowest is among those aged 45-49 (49 percent). Education also matters in husband-wife discussion of family planning. About 55 percent of women with no formal education had never discussed family planning with their husbands, while only 16 percent of those with at least secondary education had discussed it with their husbands. Islam is associated with lower levels of spousal communication about family planning relative to the other religious groups. There are also ethnic variations in spousal communication about family planning; Luos exhibit the lowest level of spousal communication (71 percent), while Kikuyus have the highest level (83 percent). Central and Kasarani Divisions have the lowest levels of spousal communication about family planning, while Embakasi has the highest.

Comparisons with KDHS data show that there is slightly more spousal discussion of family planning in the slums than in rural and other urban areas. Seventy-seven percent of slum residents report discussing family planning with their husbands. However, slum couples are substantially less likely to discuss use of family planning compared with the residents of the whole of Nairobi, of whom 83 percent report discussing these issues with their husbands. These patterns are consistent with the residential differentials in use of contraceptive use depicted in Figure 4.1.

Table 4.16 Discussion of family planning with husband

Percent distribution of currently married women aged 15-49 years by frequency of discussing family planning with the husband according to their background characteristics, NCSS 2000 and KDHS 1998

Background characteristics	Number of times discussed family planning with the husband				Number of women
	Never	Once or twice	More often	Total	
Age group					
15-19	31.9	46.6	21.5	100.0	191
20-24	16.8	50.7	32.5	100.0	594
25-29	21.4	44.8	33.7	100.0	513
30-34	20.8	43.4	35.8	100.0	293
35-39	30.9	34.8	34.3	100.0	201
40-44	38.5	40.6	20.8	100.0	96
45-49	51.2	27.9	20.9	100.0	43
Education					
No education	55.0	30.3	14.7	100.0	109
Lower primary	29.1	41.6	29.3	100.0	440
Higher primary	22.0	48.7	29.3	100.0	690
Secondary+	16.5	45.2	38.3	100.0	648
Religion				100.0	
Catholic	22.6	48.6	28.8	100.0	553
Protestant/Other Christians	22.8	44.2	33.0	100.0	1,275
Muslim	38.9	34.4	26.7	100.0	90
Other	23.1	30.8	46.1	100.0	13
Ethnicity					
Kamba	19.6	45.5	34.9	100.0	312
Kikuyu	17.0	48.2	34.8	100.0	400
Luhya	24.7	41.8	33.5	100.0	510
Luo	29.4	45.9	24.7	100.0	486
Other	24.7	43.5	31.8	100.0	223
Division					
Central	36.0	34.5	29.5	100.0	200
Makadara	20.8	37.5	41.7	100.0	72
Kasarani	34.7	48.6	16.8	100.0	352
Embakasi	11.7	65.7	22.6	100.0	359
Pumwani	18.8	41.7	39.5	100.0	48
Westlands	16.7	40.7	42.5	100.0	240
Dagoretti	17.9	39.7	42.4	100.0	257
Kibera	26.6	36.0	37.5	100.0	403
NCSS Total	23.4	45.0	31.6	100.0	1,931
National*	28.1	38.7	33.3	100.0	4,838
Rural*	29.6	38.4	32.0	100.0	4,005
Other urban*	26.0	35.3	38.7	100.0	612
Nairobi*	16.7	45.7	37.6	100.0	221

*Based on KDHS 1998

4.6 Summary

This chapter has examined levels of knowledge of family planning, use of family planning, and attitudes to family planning among women aged 15-49 years. In general, family planning indicators for slums do not differ markedly from the corresponding indicators for Kenya as a whole, for rural areas, other urban areas and for Nairobi as a whole. The findings show that the slums are generally in line with the rest of the country in contraceptive knowledge, attitudes and behavior. The substantial differentials in various measures of contraceptive use and attitudes observed in this analysis have also been noted for the national as well as the rural populations in the country. For instance, uneducated women, Muslim women, and women belonging to the Luo ethnic group are less inclined to use contraception than educated women, Christian women, or women belonging to other ethnic groups.

Sources of contraceptive supplies for slum, the whole of Nairobi, and other urban residents are similar. Thus, despite the pervasive poverty of slum communities, users acquire most of their contraceptive supplies from the same expensive private health sector sources that are used by the relatively affluent non-slum population. Considering that slum residents are acutely impoverished, high demand for use of contraception is prevalent, and the burden of lack of reproductive control is likely to be high, these results suggest the need for a greater involvement of public health services, including community based distributors, in making contraceptive supplies available to slum dwellers. The high proportion of women in the slums who report that their husbands do not approve of family planning further demonstrates the extent of hurdles that slum women have to overcome to use contraception. There is a clear need to mobilize the participation of men in the practice of family planning to reduce constraints on family planning use in slum communities.

The relatively low knowledge of family planning methods among slum adolescents, especially those not yet sexually active, relative to sexually inexperienced adolescents living in the other residential categories, suggests a higher likelihood for non-use of contraception during the first sex encounter for slum residents. Thus, more intense educational campaigns need to be targeted at this particularly vulnerable population

CHAPTER 5

OTHER PROXIMATE DETERMINANTS OF FERTILITY

Alex C. Ezeh

Research on fertility determinants has demonstrated that fertility levels in most populations can be explained by five key variables, or “proximate determinants,” which define the risk of becoming pregnant and pregnancy outcomes: contraception, marriage, postpartum (infecundability, abortion, and primary sterility)¹. Chapter 4 focused on contraception, while this chapter focuses on the other determinants, with particular attention to the more prominent fertility determinants: marriage and postpartum infecundability. Although pre-marital childbearing has been increasing in many societies, age at marriage still signifies the onset of reproductive activity for most women. The durations of postpartum amenorrhea (the period from the birth of a child to the resumption of ovulation) and postpartum abstinence influence the interval between births. Taken together, these factors affect the number of children a woman will have by the end of her childbearing experience and the overall level of fertility that will prevail in a population.

5.1 Marriage and Sexual Activity

5.1.1 Current Marital Status

Table 5.1 shows the distribution of women by marital status. The majority of the women are currently married (59 percent), 12 percent are formerly married², and less than one-third are never married. Between 15 and 44 years, the proportion of women who have never been married declines with age, while the proportion formerly married (both widowed and divorced/separated) increases with age. For never-married women, the proportion decreased from 70 percent among those aged 15-19 to 3 percent among those aged 40-44. The proportion, however, increased slightly to 7 percent among the oldest age group (45-49). The proportion currently married peaks in the age group 25-29. The gradual decline in the proportion currently married after age 29 is related to the substantial increase in the proportion formerly married after this age.

Formal education is associated with increased chances of having never been married but reduced chances of experiencing marital disruption in the slums. Only 8 percent of those with no formal education have never been married, while at least one-quarter of women with some formal education have never been married. In addition, while 27 percent of women with no formal education are formerly married, this proportion declines substantially as educational attainment increases, falling to only 8 percent among women with secondary or higher levels of education.

There is little variation in marital patterns by religion. However, strong ethnic differences are evident. Over one-third of Kikuyu women are in the never-married category (36 percent), a substantially higher percentage of never married than is evident among other ethnic groups.

¹ The concept of “proximate determinants” was first proposed in a classical paper by Davis and Blake, 1956. The analysis of the subset of five proximate determinants is based on empirical evidence from survey research that nearly all variation in human fertility in contemporary populations can be explained by variation in exposure to marriage, the practice of contraception, postpartum infecundability, abortion, and primary sterility (Bongaarts and Porter, 1983).

² Although the prevalence of marriage in the slums is similar to the national prevalence for Kenya, it is low compared to the prevalence for most countries in Eastern and Southern Africa where 66 – 75% of the women are currently married.

Kikuyu women are also more likely to experience marital disruption through divorce or separation. Luo women, on the other hand, are least likely to be divorced/separated (4 percent) and more likely to be currently married (67 percent). More than 8 percent of women in all the other ethnic groups are divorced/separated, with Kikuyu women leading at 13 percent.

Across Divisions of Nairobi, there exist wide variations in women's marital status. The proportion never married varies from 21 percent in Central Division to 39 percent in Westlands, while the proportion formerly married ranges from 9 percent in Embakasi to 23 percent in Pumwani – with divorced/separated women accounting for more than three quarters of all marital disruptions. Pumwani Division includes Majengo slum, popularly believed to be a haven of commercial sex workers.

Table 5.1: Current marital status					
Percent distribution of women by current marital status and by background characteristics, NCSS 2000					
Background characteristics	Current marital status				Number of cases
	Never married	Currently married	Widowed	Divorced/ Separated	
Age					
15-19	70.1	28.3	0.1	1.5	676
20-24	32.4	63.1	0.6	3.9	942
25-29	14.1	75.7	1.8	8.4	678
30-34	7.9	70.8	4.6	16.7	414
35-39	4.1	65.5	9.5	20.9	307
40-44	3.2	61.5	10.3	25.0	156
45-49	7.2	51.8	16.9	24.1	83
Education					
No education	7.7	64.9	8.9	18.5	168
Primary incomplete	24.5	57.2	4.8	13.5	547
Primary complete	27.5	61.4	2.5	8.6	1,403
Secondary +	35.1	56.9	1.8	6.2	1,138
Religion					
Catholic	31.6	55.4	3.3	9.7	999
Protestant	27.1	61.6	2.6	8.7	2,071
Muslim	28.6	55.9	6.2	9.3	161
Other	29.2	54.2	4.1	12.5	24
Ethnicity					
Kamba	29.3	58.9	1.8	10.0	530
Kikuyu	35.6	48.9	2.2	13.3	818
Luhya	23.7	63.5	3.5	9.3	803
Luo	25.0	66.9	4.3	3.8	727
Other	30.2	59.0	2.6	8.2	378
Division					
Central	20.9	63.3	6.3	9.5	316
Makadara	23.7	63.2	2.6	10.5	114
Kasarani	28.0	61.2	2.8	8.0	575
Embakasi	27.9	62.7	1.9	7.5	573
Pumwani	27.6	49.0	5.0	18.4	98
Westlands	38.7	49.7	1.7	9.9	483
Dagoretti	29.5	58.8	2.5	9.2	437
Kibera	26.5	61.1	3.5	8.9	660
Total	28.6	59.3	3.0	9.1	3,256

Table 5.2 compares the distribution of marital status for women in the Nairobi Cross-sectional Slum Survey with those of different samples of women in the 1998 KDHS. The proportion of women who are divorced/separated is higher in the slums than anywhere else in Kenya, especially compared to rural areas, suggesting a relatively high level of marital instability in the slums. The proportion that has never been married in the slums, while similar to national and rural figures, is substantially lower than estimates for the whole of Nairobi. However, marriage may be less important proximate determinant of fertility among sub-populations where sexual relationships are less likely to be based on exposure to marriage³.

Table 5.2: Comparison of current marital status, NCSS 2000 and KDHS 1998

Percent distribution of women by current Marital Status

Sample	Current marital status				Number of cases
	Never married	Currently married	Widowed	Divorced/Separated	
Nairobi Slums (NCSS)	28.6	59.3	3.0	9.1	3256
National (Kenya)*	30.1	61.3	3.7	4.9	7881
Rural Kenya*	28.5	63.2	4.1	4.2	6415
Other Urban areas*	32.9	56.8	2.1	8.2	1047
Nairobi*	38.7	53.0	2.1	6.2	419

*Based on 1998 KDHS data

5.1.2 Age at First Marriage

Marriage defines the onset of socially acceptable childbearing in most African societies. Age of entry into first union, therefore, defines the beginning of a woman's reproductive life. Early initiation of first marriage means longer exposure to the risk of pregnancy. Table 5.3 shows the proportion of women who got married for the first time by selected ages and by their current age. Data on age at first marriage was obtained for all women who have ever been married. The proportion of women marrying for the first time by age 16 has declined overtime from 23 percent among women aged 40-49 to only 12 percent among those aged 25-39. The median age at first marriage has also increased over time by more than two years, from 18.4 years among women aged 40-49 to 20.5 years among those aged 25-39. This shift is evidence of increasing age at first marriage in the country.

³ As Table 2.2 shows, the age distribution of women in non-slum parts of Nairobi is quite similar to those of other areas of Kenya. However, Table 2.4 shows that women in Nairobi as a whole are substantially more educated than those in other areas of Kenya and educated women are more likely to have never been married.

Table 5.3. Age at first marriage

Percentage of women aged 15-49 years who were married for the first time by exact ages and median age at first marriage, according to current age, NCSS 2000.

Current age	Percent who were married for the first time by exact age								Never married	Number of women	Median age at first marriage
	14	16	18	20	22	24	26	28			
15-19	0.9	-	-	-	-	-	-	-	70.5	671	-
20-24	1.3	6.6	20.5	42.9	-	-	-	-	32.5	945	-
25-29	2.6	9.6	23.2	40.6	58.2	71.9	80.7	85.0	14.1	680	21.1
30-34	4.4	14.1	30.1	47.6	63.1	74.5	81.8	87.1	8.0	412	20.3
35-39	4.2	15.5	37.2	57.0	69.6	79.0	85.4	90.6	4.2	309	19.1
40-44	7.6	23.6	44.6	63.1	80.9	87.9	89.2	91.7	3.2	157	18.7
45-49	10.8	22.9	48.2	65.1	75.9	80.7	86.7	88.0	7.2	83	18.1
Women 15-24	1.1	7.2	21.5	-	-	-	-	-	48.3	1,616	-
Women 25-39	3.5	12.2	28.3	46.3	62.2	74.2	82.1	86.9	10.1	1,401	20.5
Women 40-49	8.8	23.3	45.8	63.8	79.2	85.4	88.3	90.4	4.6	240	18.4

Table 5.4 presents the median age at first marriage by current age and by background characteristics. Across all age groups, women with secondary or higher levels of education marry about five years later than women with no formal education. The pattern is similar at both younger and older age groups, but among middle-aged women (35-39) the most educated group marry about three years later than the rest of the women. Age at first marriage is invariant by ethnicity, except for the Luo who marry two to three years earlier than women from other ethnic groups.

Across age groups, all the ethnic groups experienced a three to four year increase in median age at first marriage between the oldest and youngest age groups except among the Luo where median age at first marriage had not changed much over the past 20 years.

Muslims marry one and half years earlier than Christians, and their age at marriage remains relatively constant at 19 years among those under age 40, but is slightly lower for women aged 40-44 and 45-49 (16.5 and 15.5, respectively). Among Muslims, age at first marriage has increased in the distant past from a very young age, but remains low compared to other religious groups. Formerly married women were first married one and half years earlier than currently married women. No difference exists in median age at first marriage by current marital status among older women (aged 45-49); however, there is a two-year gap among women aged 25-29, among whom the median age at first marriage for those currently married women is 20.6 and 18.3 those formerly married. Since most marital disruption among younger women is mostly due to divorce and separation than widowhood (see Table 5.1), lower age at first marriage for formerly married women suggests that early entry into union may be associated with increased marital disruption. Across division, the median age at first marriage ranges from 18.5 years in Central to 21.8 years in Makadara. Most divisions, however, have a median age at first marriage of about 21 years.

Table 5.4: Median age at first marriage

Median age at first marriage among women aged 25-49 years, by current age and selected background characteristics, NCSS 2000.

Background characteristics	Current age					All ages	Number of women
	25-29	30-34	35-39	40-44	45-49		
Education							
No education	17.5	17.7	18.5	15.8	17.6	17.4	168
Primary incomplete	19.1	18.3	17.8	18.0	17.9	18.3	548
Primary complete	20.0	19.7	18.6	18.0	18.0	19.5	1,403
Secondary +	22.6	21.9	21.6	20.8	23.5	22.0	1,269
Ethnicity							
Kamba	21.7	21.2	19.8	19.5	19.0	21.1	528
Kikuyu	22.1	21.2	20.3	19.8	18.8	21.0	819
Luhya	20.9	21.1	19.2	18.1	16.9	20.3	803
Luo	18.8	18.3	17.9	17.4	18.0	18.2	727
Other	21.6	19.9	18.9	19.2	18.5	20.5	380
Religion							
Catholic	21.3	21.1	18.4	17.9	18.8	20.1	1,000
Protestants	21.2	20.2	19.7	19.1	18.1	20.3	2,071
Muslims	19.0	19.1	19.0	16.5	15.5	18.6	161
Other	23.5	25.0	-	-	-	23.5	24
Marital status							
Currently married	20.6	20.0	19.0	18.7	17.9	19.9	1,931
Formerly married	18.3	19.0	18.7	18.0	17.9	18.4	393
Division							
Central	19.1	19.5	17.7	17.8	17.3	18.5	317
Makadara	22.2	24.0	20.5	19.0	-	21.8	114
Kasarani	19.8	18.8	19.4	17.5	17.8	19.0	575
Embakasi	21.9	19.7	20.0	20.1	19.0	21.0	573
Pumwani	20.5	22.0	20.5	15.8	19.5	19.5	98
Westlands	22.4	21.1	19.5	20.3	18.3	21.1	483
Dagoretti	21.4	22.6	20.3	19.3	21.0	21.3	437
Kibera	21.3	20.4	18.4	19.0	18.0	20.1	660
Total	21.1	20.3	19.1	18.7	18.1	20.2	3,257

Table 5.5 compares age at first marriage among women in Nairobi slums to those observed for different areas of Kenya in the 1998 KDHS. Women in Nairobi slums marry 1.4 years later than rural women and 1.7 years earlier than the average Nairobi woman. Compared to women in the whole of Nairobi, those who live in slums marry about two years earlier (median age at first marriage is 20.2 among women in the slums and 21.9 years among those in Nairobi). The median age at first marriage is similar among slum women and women in other urban areas of Kenya. As indicated earlier, the relatively higher median age at first marriage for women living in the whole of Nairobi is explained mainly by their relatively high educational status. These group differences are similar across the different age groups.

Table 5.5. Comparison of median age at first marriage, NCSS 2000 and KDHS 1998

Sample	Current age					All ages	Number of women
	25-29	30-34	35-39	40-44	45-49		
Nairobi slums (NCSS)	21.1	20.3	19.1	18.7	18.0	20.2	3,257
National (Kenya)*	20.2	19.2	18.7	18.2	18.4	19.5	7,881
Rural Kenya*	19.7	18.7	18.5	17.9	17.9	18.8	6,415
Other Urban*	20.8	21.8	18.9	18.5	19.6	20.3	1,047
Nairobi*	22.8	21.8	20.0	22.5	21.7	21.9	419

*Based on 1998 KDHS data

5.2 Sexual Activity

5.2.1 Age at First Sexual Intercourse

Although age at first marriage represents the onset of exposure to the risk of pregnancy for some women, for others, sexual activity often precedes marriage and therefore more correctly reflects the onset of exposure to the risk of pregnancy.

Table 5.6 shows the proportion of women who initiated sexual activity by selected ages and by their current age. The data show that the median age at first sexual encounter has increased slowly from 16 years for women aged 45-49 to 17 years for those aged 20-24. The proportion of women who have initiated sexual activity by age 16 has also declined over time, from about half of those now aged 45-49 to about one-third of those aged 20-24. For women who initiated sex by age 20, the proportion increases with increasing age, but it does not vary by age among women who initiated sex after age 20. The proportion who have never had sexual relations declines by age from 41 percent among 15-19 year-olds to 10 percent among the 20-24 year olds, and less than one percent among those aged 25 years or older.

Table 5.6. Age at first intercourse

Percent of women who had first sexual intercourse by exact ages, and median age at first intercourse, according to current age, NCSS 2000.

Current age	Percent who had first intercourse at exact age								Never had sex	Number of women	Median
	14	16	18	20	22	24	26	28			
15-19	10.9	-	-	-	-	-	-	-	41.3	671	-
20-24	6.6	32.9	58.9	81.5	-	-	-	-	9.6	945	17.3
25-29	10.9	33.2	59.3	80.9	91.3	95.3	96.9	97.5	0.6	680	17.1
30-34	13.6	42.7	66.7	84.5	93.2	94.4	97.1	97.3	0.5	412	16.6
35-39	14.2	46.3	71.5	86.1	93.5	96.1	96.8	97.1	0.3	309	16.3
40-44	12.7	47.8	69.4	87.3	92.4	93.6	94.9	94.9	0.0	157	16.2
45-49	21.7	49.4	72.3	86.7	94.0	95.2	96.4	96.4	1.2	83	16.1
Women 15-24	8.4	35.0	57.4	-	-	-	-	-	22.8	1,616	-
Women 25-39	12.4	38.9	64.2	83.2	92.4	95.2	96.9	97.4	0.5	1,401	16.8
Women 40-49	15.8	48.3	70.4	87.1	92.9	94.2	95.4	95.4	0.4	240	16.2

Tables 5.3 and 5.6 suggest that, while the age of first marriage has increased, the age of first intercourse has not changed as much over time. Marriage may therefore be an increasingly irrelevant indicator of coital exposure.

Table 5.7 shows the median age at first sexual encounter by current age and background characteristics. Education is highly correlated with delayed initiation of sexual activity. Among women with secondary or higher levels of education, the median age at first sex is 18.3 years compared to only 15.5 years for those with no formal education or incomplete primary education.

Table 5.7: Median age at first intercourse

Median age at first sexual intercourse among women age 20-49 years by current age and selected background characteristics, NCSS 2000.

Background characteristics	Current age						Women 15-24 years	Women 25-49 years
	20-24	25-29	30-34	35-39	40-44	45-49		
Education								
No education	16.8	15.5	15.6	15.6	15.4	15.4	15.6	15.5
Lower primary	15.8	15.5	14.9	15.6	15.6	15.8	15.5	15.5
Upper primary	16.7	16.6	16.3	15.8	16.6	15.5	16.5	16.4
Secondary +	18.5	18.3	18.3	17.8	18.2	20.4	18.3	18.2
Marital status								
Never Married	19.0	18.4	18.9	18.5	18.8	18.0	18.9	18.6
Married	16.5	17.0	16.5	16.6	16.0	15.9	16.6	16.7
Formerly married	16.2	16.5	16.4	15.7	16.3	15.8	16.1	16.1
Ethnic group								
Kamba	18.1	17.0	16.4	15.9	16.8	16.0	17.2	16.6
Kikuyu	17.5	17.9	17.0	17.3	17.1	17.0	17.4	17.4
Luhya	17.3	17.1	17.2	16.0	15.9	15.2	16.9	16.7
Luo	15.9	16.2	15.6	15.7	15.6	16.3	15.9	15.8
Other	18.1	17.3	17.1	17.1	17.5	16.0	17.6	17.2
Religion								
Catholic	17.0	17.0	16.8	16.1	16.2	16.0	16.8	16.7
Other Christians	17.4	17.2	16.5	16.3	16.3	16.3	16.9	16.7
Muslims	18.1	16.8	16.6	17.7	15.7	15.5	17.2	16.8
Other	18.2	18.5	15.0	-	-	-	17.0	16.5
Division								
Central	16.0	15.9	15.6	15.4	15.5	14.5	15.7	15.6
Makadara	17.5	16.6	16.5	17.3	17.0	-	17.1	16.8
Kasarani	16.8	16.4	15.9	16.3	16.0	15.3	16.4	16.2
Embakasi	17.5	17.3	16.8	16.6	15.9	17.0	17.1	16.9
Pumwani	16.6	16.8	20.0	15.9	15.5	15.8	16.5	16.4
Westlands	18.5	18.0	17.4	17.3	17.7	17.5	18.0	17.6
Dagoretti	17.7	17.6	17.8	16.7	17.0	19.0	17.6	17.5
Kibera	16.7	17.2	16.1	16.2	16.5	16.3	16.6	16.6
NCSS Total	17.3	17.1	16.6	16.3	16.2	16.1	16.9	16.7
National*	17.3	16.8	16.7	16.3	16.2	16.1	17.3	16.5
Rural Kenya*	17.2	16.7	16.5	16.2	16.0	16.0	17.2	16.5
Other urban*	17.3	16.8	16.6	16.3	16.1	16.1	17.3	16.5
Nairobi*	17.9	17.3	17.4	16.3	17.3	16.0	17.9	17.1

*Based on 1998 KDHS data

Although this educational difference is the same for both the older cohort (25-49) and younger cohort (15-24), the gap in median age at initiation of sexual activity by education has declined over the years. Among women aged 45-49, women with secondary or higher education initiated sex five years later than those with no formal education, but the gap is less than two years among women aged 20-24.

Never-married women initiate sexual activity about two to three years later than currently or formerly married women across all age groups. The median age at first sexual encounter for never married women has not changed much over the years, varying around 18 to 19 years across all age groups. For both currently and formerly married women, there has also been no change in the median age at first sexual encounter.

Luos engage in sexual relations about 1.6 years earlier than other ethnic groups, but the age of onset of sexual relations is otherwise constant, irrespective of ethnicity. While the median age at first sex increases by two years between the oldest age group (45-49) and the younger group (20-24) among other ethnic groups, no changes have been observed between the Luo and the Kikuyu. Moslem women aged 20-24 years initiate sexual relations about one year later than Christians, but the median age at initiation of sexual relations did not vary much by religion for women aged 25 years and older. There is little variation in median age at first sex by division, with Central maintaining the lowest and Westlands the highest age at initiation of sexual activity.

Among women aged 15-24, those living in slums initiate sexual activity earlier than those in other parts of Kenya. Median age at first sex among those aged 25-49 is similar in the slums to the rest of Kenya, but still a year earlier than in Nairobi as a whole.

5.2.2 Sexual Relationships of Non-Married Women

Table 5.8 shows that among women who are not currently in a union in the slums of Nairobi, more than one-fifth are sexually active (22 percent of never married women and 35 percent of formerly married women). Among sexually active never married women, however, majority do not have any sexual partners in the previous four weeks (59 percent), while one-third report having regular sexual partners. The proportion of sexually active never-married women with regular sexual partners increases with education while the proportion with no sexual partners has the opposite relationship with education.

More than half of sexually active never married women aged 25-34 or who have one or more living child have a regular sexual partner. Only six percent of sexually active never married women report having occasional sexual partners, and this percentage does not vary appreciably by background characteristics. While about one-quarter of the never-married Christians were sexually, only seven percent of their Moslem counterparts reported being sexually active. Slightly more than half of sexually active never married Catholics and Protestants (55 and 59 percent, respectively) reported not having any sexual partner compared to a majority of Moslems (83 percent). Proportions with regular sexual partners are also twice as high among Christians as among Moslems. There is very little variation in the sexual behavior of non-married women by ethnicity, except that the Kamba are slightly more likely to be sexually active and the Kikuyu show lower propensity to pre-marital sexual activity. Similar sexual patterns are also observed among formerly married women.

The proportion of sexually active never married and formerly married women in Nairobi slums are 22 and 35 percent, respectively. These are much higher than those observed for other areas of Kenya, especially for rural Kenya. Never-married and formerly married women in the slums, however, are more likely to report having regular sexual partners (rather than occasional sexual partners) compared to women in other parts of Kenya.

Table 5.8. Sexual relations of non-married women

Percent distribution of non-married women by sexual activity in the four weeks preceding the survey and partner type among those sexually active according to selected background characteristics, NCSS 2000.

Background characteristics	Sexually active	Partner type (Never married women)				Sexually active	Partner type (Formerly married women)			
		None	Regular	Occasional	Number of cases		None	Regular	Occasional	Number of cases
Age										
15-24	13.7	62.5	31.5	6.0	779	18.2	46.3	44.4	9.3	54
25-34	26.7	37.2	55.0	7.8	129	32.6	38.9	51.0	10.2	157
35+	31.3	54.2	33.3	12.5	24	50.7	51.1	41.2	7.7	182
Education										
No educ/pri incomplete	15.4	66.7	24.5	8.8	147	30.4	45.2	44.5	10.3	146
Primary complete	18.5	60.1	33.7	6.2	386	32.0	42.3	47.4	10.3	156
Secondary +	20.5	54.6	39.6	5.8	399	40.4	51.7	44.0	4.4	91
No. of living children										
None	18.6	65.4	29.5	5.1	709	34.3	42.9	45.7	11.4	35
1 – 2	31.1	37.6	51.6	10.8	213	36.4	42.8	48.2	9.0	166
3+	80.0	40.0	50.0	10.0	10	25.6	48.4	43.2	8.3	192
Religion										
Catholic	25.2	54.9	38.2	6.9	317	38.5	38.5	48.5	13.1	130
Protestant	21.9	58.7	34.7	6.6	562	34.2	47.0	46.2	6.8	234
Muslim	6.5	82.6	17.4	0.0	46	20.0	68.0	24.0	8.0	25
Others	14.3	85.7	0.0	14.3	7	50.0	50.0	50.0	0.0	4
Ethnicity										
Kamba	30.3	51.0	40.7	8.4	155	35.5	45.2	43.6	11.3	62
Kikuyu	19.2	63.6	30.9	5.5	291	32.8	50.0	37.5	12.5	128
Luhya	23.0	58.1	36.7	5.2	191	44.7	38.8	57.3	3.9	103
Luo	25.1	50.3	40.4	9.3	183	31.0	32.8	58.6	8.6	58
Other	12.4	72.6	23.9	3.5	113	21.4	66.7	26.2	7.1	42
Division										
Central	28.4	52.2	31.3	16.4	67	34.0	38.0	48.0	14.0	50
Makadara	18.5	66.7	25.9	7.4	27	40.0	46.7	33.3	20.0	15
Kasarani	16.8	61.5	32.9	5.6	161	24.2	46.8	45.2	8.1	62
Embakasi	29.4	57.5	30.6	11.9	160	38.9	46.3	44.4	9.3	54
Pumwani	11.1	77.8	14.8	7.4	27	26.1	52.2	34.8	13.0	23
Westlands	21.9	58.3	36.4	5.4	187	39.3	46.4	41.1	12.5	56
Dagoretti	20.2	60.5	35.7	3.9	129	31.4	54.9	39.2	5.9	51
Kibera	22.3	55.4	43.3	1.1	175	41.5	40.2	57.3	2.4	82
NCSS Total	22.2	58.8	34.7	6.4	933	34.9	45.6	45.6	8.9	393
National*	12.9	66.0	21.0	12.7	2375	19.3	59.6	22.0	18.0	659
Rural*	10.7	69.2	18.4	12.1	1890	16.1	61.7	19.0	19.1	516
Other urban*	21.5	56.0	26.6	17.0	323	27.3	53.3	31.7	13.7	108
Nairobi*	15.4	59.3	29.6	11.1	162	31.4	54.3	28.6	17.1	35

*Based on 1998 KDHS data

5.2.3 Recent sexual activity

In the absence of contraceptive use, frequency of sexual intercourse represents an important fertility determinant. In African populations in particular, customs governing abstinence from sexual relations for extended periods can reduce pregnancy risks. However, several studies have shown that urban exposure is often associated with the erosion of these customs and an increase in coital frequency. Coital behavior is thus an important factor in the study of urban fertility. In the NCSS, women of reproductive age were asked to specify the last time they had sexual intercourse.

Table 5.9 shows the distribution of women by their recent sexual activity and background characteristics. About 12 percent of the women living in Nairobi slums have never had sexual relations while about two-thirds had had sex within the four-week period preceding the survey (62 percent). Coital behavior varies by background characteristics. Not surprisingly, women reporting that they are currently sexually active are also most likely to be users of modern methods, and to a lesser extent, traditional methods. Although some studies have suggested that the use of some modern methods increase women's sexual desires (Fapohunda and Rutenberg, 1999), the pattern observed here could simply indicate that method choice may depend in part on a person's sexual pattern. Women who have sex only sporadically may either not use a method or choose to use a traditional method, such as periodic abstinence.

A small percentage of women are abstaining for postpartum and non-postpartum reasons (16 and 10 percent, respectively). The proportion abstaining for less than two years for postpartum reasons increases with age from 8 percent among women under age 25 to 22 percent among those aged 45-49. This finding suggests that young women are far less likely to comply with traditional norms of prolonged abstinence following childbirth than older women. However, younger women are slightly more likely to report abstaining for two years or longer for postpartum reasons than older women. Overall, however, while about 21 percent of the women aged 40 and older are currently abstaining for postpartum reasons, less than 15 percent of those aged 15-24 are currently doing so. Sexual abstinence for non-postpartum reasons also increases with age, but there appears to be a threshold after which the age effect is observed. Below age 35, less than 10 percent of the women reported abstaining for non-postpartum reasons. This proportion increases with age after age 35, reaching 27 percent among those aged 45-49.

Both short-term (less than two years) and long-term (two years or more) postpartum abstinence decline with increasing levels of education. The proportion of women abstaining for postpartum reasons declines from 21 percent among women with no formal education to less than 15 percent among those with secondary or higher levels of education. Highly educated women are also less likely to abstain for non-postpartum reasons.

Short-term postpartum abstinence does not vary much by current contraceptive method used, but non-users and users of permanent and long-term methods appear more likely to abstain for shorter durations than users of short-term methods. While 10 to 13 percent of non-users, users of IUD, rhythm, sterilized women, and users of other methods are currently abstaining for less than two years, smaller shares of users of the pill and injection are abstaining for less than two years (about seven percent). The results indicate substantial use of contraception among postpartum women in the slums. Long-term postpartum abstinence is highest among non-users, suggesting that postpartum abstinence may play a significant role in fertility regulation. Non-users and users of traditional methods are also more likely to be abstaining for non-postpartum reasons

Table 5.9. Recent sexual activity

Percent distribution of women by sexual activity in the four weeks preceding the survey, and those not sexually active, the length of time they have been abstaining, according to selected background characteristics and contraceptive method currently used, NCSS 2000

Background characteristics	Not Sexually active in the last 4 weeks							No. of women
	Sexually active in the last 4 weeks	Post partum abstinence		Non post partum abstinence			Never had sex	
		0-1 year	2+ years	0-1 year	2+ years	Missing		
Age								
15-19	35.0	8.0	6.1	8.6	0.9	0.0	41.3	671
20-24	65.9	7.7	7.3	8.0	1.1	0.3	9.6	945
25-29	74.9	8.7	7.5	7.1	1.2	0.1	0.6	680
30-34	76.2	9.2	5.8	6.1	2.2	0.0	0.5	412
35-39	65.0	15.9	3.9	11.3	3.2	0.3	0.3	309
40-44	62.4	18.5	2.5	7.0	9.6	0.0	0.0	157
45-49	50.6	21.7	0.0	13.3	13.3	0.0	1.2	83
Education								
No education	58.9	14.3	6.5	10.7	5.4	0.6	3.6	168
Primary incomplete	59.3	11.3	6.9	8.0	1.5	0.2	12.8	548
Primary complete	63.1	9.6	6.1	8.6	1.5	0.1	11.1	1,403
Secondary +	62.7	8.8	5.8	7.2	2.7	0.2	12.7	1,138
Contraceptive method								
No method	50.1	10.6	8.6	9.1	3.0	0.2	18.4	2,038
Pill	86.1	6.6	2.2	4.7	0.3	0.0	0.0	316
IUD	80.4	11.8	0.0	7.8	0.0	0.0	0.0	51
Injection	83.8	7.7	1.8	5.9	0.6	0.2	0.0	495
Sterilization	78.1	12.5	1.6	3.1	4.7	0.0	0.0	64
Periodic Abstinence	75.7	9.5	3.2	11.1	0.5	0.0	0.0	189
Other	76.9	11.5	1.9	7.7	0.0	0.0	1.9	104
Duration since first union (years)								
Never married	22.1	13.8	6.3	14.1	3.3	0.0	40.3	933
0-4	84.8	4.5	6.8	3.7	0.0	0.2	0.0	920
5-9	80.1	6.4	7.4	4.8	1.0	0.4	0.0	503
10-14	75.5	8.2	6.5	8.2	1.7	0.0	0.0	355
15-19	71.1	14.2	5.1	7.9	1.2	0.4	0.0	253
20-24	64.9	15.8	3.5	8.2	7.6	0.0	0.0	171
25-29	67.0	17.0	0.0	8.0	8.0	0.0	0.0	88
30+	44.1	32.4	0.0	11.8	11.8	0.0	0.0	34
Marital status								
Single	22.1	13.8	6.3	14.1	3.3	0.0	40.3	933
Married	86.9	3.8	5.5	3.3	0.2	0.3	0.0	1,931
Formerly married	34.9	30.0	8.9	17.6	8.7	0.0	0.0	393
Religion								
Catholic	61.1	9.4	6.7	9.5	1.8	0.2	11.3	1,000
Other Christian	63.6	9.9	5.4	7.8	2.1	0.1	11.1	2,071
Muslim	49.1	12.4	12.4	3.1	4.3	0.0	18.6	161
Other	62.5	4.2	12.5	8.3	0.0	0.0	12.5	24
No. of children								
None	40.4	10.0	0.2	10.9	2.3	0.1	36.1	1,042
1	69.4	9.7	11.8	6.6	2.4	0.1	0.0	762
2	74.9	8.4	8.1	7.1	1.3	0.2	0.0	594
3	75.6	7.1	8.3	6.5	2.1	0.3	0.0	336
4+	71.4	12.8	6.4	7.3	2.1	0.0	0.0	234
Missing	69.1	16.5	7.2	5.8	1.4	0.0	0.0	139
Total	62.1	9.8	6.2	8.1	2.1	0.2	11.5	3,257

confirming earlier observation that decisions to use contraception and choice of method may be influenced by a woman's sexual behavior.

While short-term postpartum abstinence increases with marital duration, long-term postpartum sexual abstinence declines with increasing marital duration. Less than five percent of women who have been married for less than five years are currently abstaining for less than two years while about a third of those who have been married for 30 or more years do so. Overall, non-postpartum sexual abstinence also increases with marital duration. These patterns are consistent with the substantial reduction in proportion sexually active by marital duration. Fully 85 percent of all women who have been married for less than five years reported being sexually active compared to only 44 percent of those who have been married for 30 or more years.

Both postpartum and non-postpartum sexual abstinence are lowest among currently married women while formerly married women are more likely than never married women to be abstaining. Moslems are more likely to be abstaining for postpartum reasons (25 percent) than women of other religious beliefs. Catholics, however, are slightly more likely than other women to be abstaining for non-postpartum reasons. Long-term postpartum abstinence declines with parity. The same pattern is observed for short-term postpartum abstinence, except for the highest parities, where short-term postpartum abstinence is highest. There is no variation in non-postpartum abstinence by current parity.

Results from the NCSS data show much higher levels of postpartum abstinence among slum women (16 percent) compared to the national average of seven percent for Kenyan women over all and four percent for all women in Nairobi (Table 5.9b). However, non-postpartum abstinence is substantially lower in the slums (10 percent) compared to national average of 25 percent and Nairobi average of 26 percent. It is not clear why there are these differences, but the proportion that have never had sex is four percentage points lower in the slums compared to national and Nairobi averages. Also, the proportion sexually active is ten percentage points higher in the slums compared to National and Nairobi averages. These figures indicate higher levels of sexual activity among slum women.

Table 5.9b Recent sexual activity, NCSS 2000 and KDHS 1998

Percent distribution of women by sexual activity in the four weeks preceding the survey, and those not sexually active, the length of time they have been abstaining, according to selected background characteristics and contraceptive method currently used

	Not Sexually active in the last 4 weeks							
	Sexually active in the last 4 weeks	Post partum abstinence		Non post partum abstinence		Missing	Never had sex	No. of women
		0-1 year	2+ years	0-1 year	2+ years			
Total (NCSS)	62.1	9.8	6.2	8.1	2.1	0.2	11.5	3,257
National	51.6	6.3	0.8	19.8	4.7	1.1	15.8	7,881
Rural Kenya	50.5	7.0	0.8	20.1	4.5	1.0	16.1	6,051
Other Urban Areas	56.2	4.5	1.1	19.2	3.9	1.5	13.6	1,060
Nairobi	53.5	3.3	0.2	18.9	7.4	1.0	15.8	770

5.3 Postpartum Amenorrhea, Abstinence, and Insusceptibility

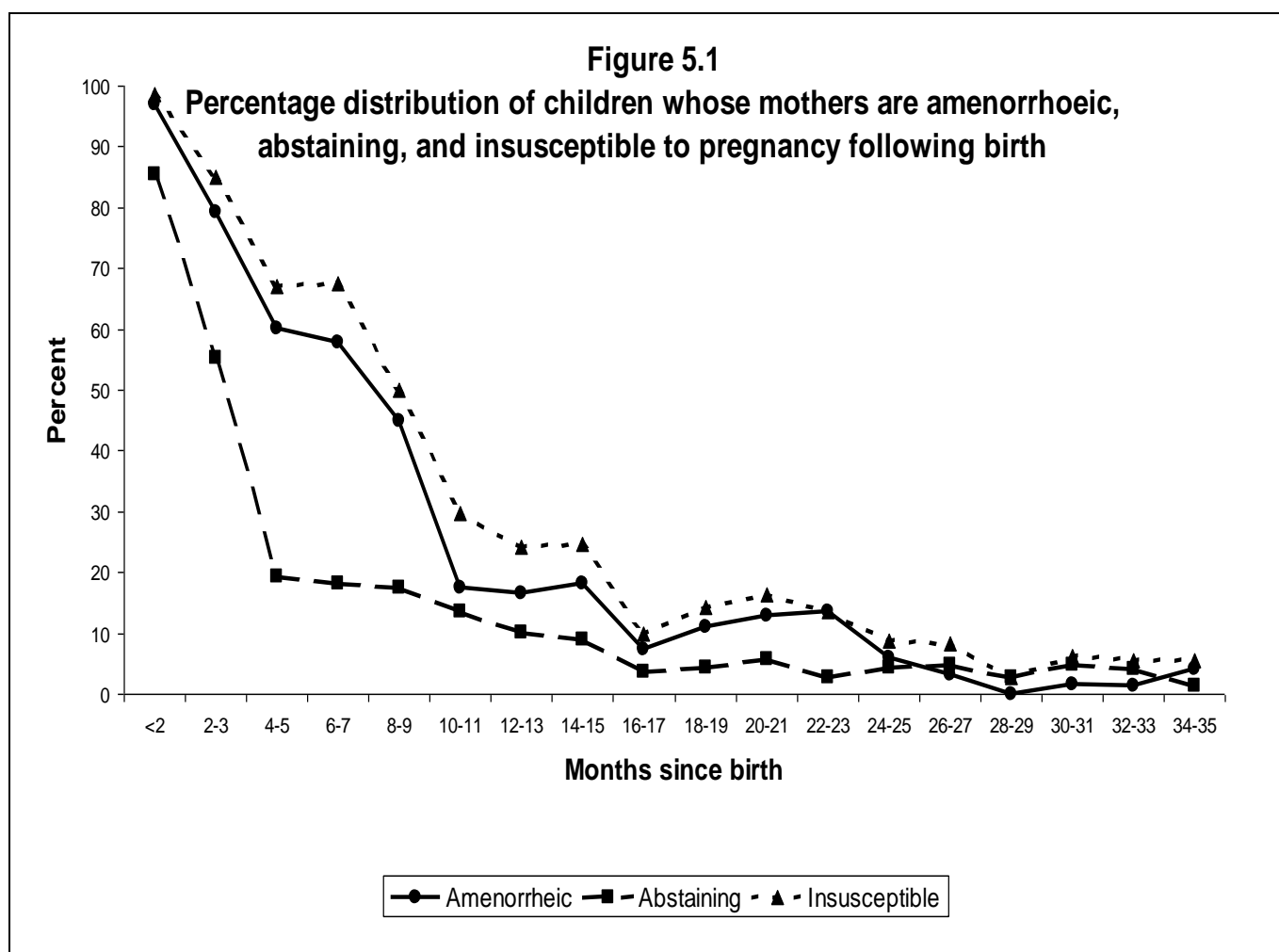
Although postpartum amenorrhea is formally defined as the period between childbirth and the return of ovulation, it is generally approximated with the resumption of menstruation following childbirth. The length of this period is affected by the duration and intensity of breastfeeding, and risks of conception are generally low during this period. All women who gave birth during the three-year period preceding the survey were asked about the duration of their amenorrhea and sexual abstinence since the birth of their last child. The results are shown in Table 5.10. Women are considered not at risk of pregnancy (insusceptible) if they are amenorrheic or are still abstaining from sex following childbirth.

The median duration of amenorrhea (seven months) is more than double the median duration of postpartum sexual abstinence (three months). Amenorrhea accounts for more than three-quarters of the length of postpartum insusceptibility in Nairobi slums. At less than two months postpartum, almost all women are protected from the risk of pregnancy and the contribution of amenorrhea is only slightly higher than that of abstinence. However, as Figure 5.1 shows, from two months postpartum, the contribution of abstinence to the length of postpartum insusceptibility starts a sustained fall behind the contribution of amenorrhea up to nine months postpartum as more women resume sexual relations. From ten months postpartum, the contribution of amenorrhea and abstinence to the insusceptible period are again similar. The proportion of insusceptible women decreases from 99 percent at less than two months postpartum to less than three percent at 28-29 months postpartum but increases to six percent thereafter due to some slight increase in the proportion still abstaining at 30-35 months postpartum.

Table 5.10. Postpartum amenorrhea, abstinence and insusceptibility

Percentage of births in the three years preceding the survey for which mothers are postpartum amenorrheic, abstaining and insusceptible, by number of months since birth, and median durations, NCSS 2000.

Months since birth	Amenorrhea	Abstaining	Insusceptible	Number of births
<2	97.1	85.5	98.6	69
2-3	79.3	55.2	85.1	87
4-5	60.2	19.3	67.0	88
6-7	57.8	18.1	67.5	83
8-9	45.0	17.5	50.0	80
10-11	17.6	13.5	29.7	74
12-13	16.5	10.1	24.1	79
14-15	18.2	9.1	24.7	77
16-17	7.4	3.7	9.9	81
18-19	11.1	4.4	14.4	90
20-21	12.8	5.8	16.3	86
22-23	13.7	2.7	13.7	73
24-25	5.9	4.4	8.8	68
26-27	3.3	4.9	8.2	61
28-29	0.0	2.8	2.8	71
30-31	1.6	4.8	6.3	63
32-33	1.4	4.2	5.6	71
34-35	4.1	1.4	5.5	73
Total	26.3	15.1	31.1	1,374
Median	7.2	2.6	8.5	-
Mean	9.3	5.7	11.0	-



5.3.1 Median Duration of Postpartum Insusceptibility by Background Characteristics

Table 5.11 shows the median duration of postpartum amenorrhea, abstinence, and insusceptibility by background characteristics. The median duration of postpartum amenorrhea has an inverted U-shaped relationship with age, the while median duration of postpartum abstinence increases with age. Middle-aged women 25-34 are more likely to be amenorrhoeic than younger and older women, and they also have slightly higher median duration of insusceptibility.

The relationship of postpartum insusceptibility indicators to education suggests that educated women are more likely to effectively balance amenorrhea and abstinence to achieve maximum protection from the risk of pregnancy than uneducated or less educated women. The length of the insusceptible period is calculated by taking the longer duration of either amenorrhea or abstinence for each individual woman. When amenorrhea and abstinence are used independently, the length of the insusceptible period is closer to the sum of both indicators. If all women who are abstaining are also amenorrheic (that is, both are used jointly), the length of the insusceptible period will be closer to the duration of the longer indicator. For women with no formal education, the median duration of the insusceptible period is the same as the median duration of amenorrhea, while for women with secondary or higher education, the median duration of insusceptibility is closer to the sum of the median duration of amenorrhea and abstinence.

Table 5.11 Median duration of postpartum insusceptibility by background characteristics,				
Median number of months of postpartum insusceptibility by background characteristics, NCSS 2000 and KDHS 1998				
Background characteristics	Median duration of postpartum:			Number of births
	Amenorrhea	Abstaining	Insusceptible	
Age				
15-24	6.4	2.3	8.4	683
25-34	8.7	2.9	8.9	567
35+	6.8	3.4	6.8	124
Education				
No education	9.4	4.5	9.4	59
Primary incomplete	6.2	3.9	9.0	231
Primary complete	7.5	2.2	8.4	664
Secondary +	6.7	2.6	8.2	420
Marital status				
Never married	5.0	16.2	17.0	107
Currently married	7.3	2.3	7.6	1,160
Formerly married	6.5	8.5	10.5	107
Ethnicity				
Kamba	6.5	2.9	7.2	204
Kikuyu	5.8	2.9	8.7	257
Luhya	7.8	2.2	8.7	356
Luo	8.2	2.4	8.8	387
Other	6.0	4.0	8.7	170
NCSS Total	7.2	2.6	8.5	1,374
National*	8.9	3.1	11.1	3,414
Rural Kenya*	10.2	3.3	12.5	2,788
Other Urban*	5.5	2.1	7.3	413
Nairobi*	4.7	2.4	5.4	213
*Based on 1998 KDHS data				

Currently married women are less likely to abstain for postpartum reasons than formerly or never married women, but they have longer median durations of amenorrhea. This result is not surprising because never married and formerly married women may not live with a regular sexual partner and are therefore less likely to initiate sex soon after childbirth. The shorter duration of amenorrhea among never married women compared to currently and formerly

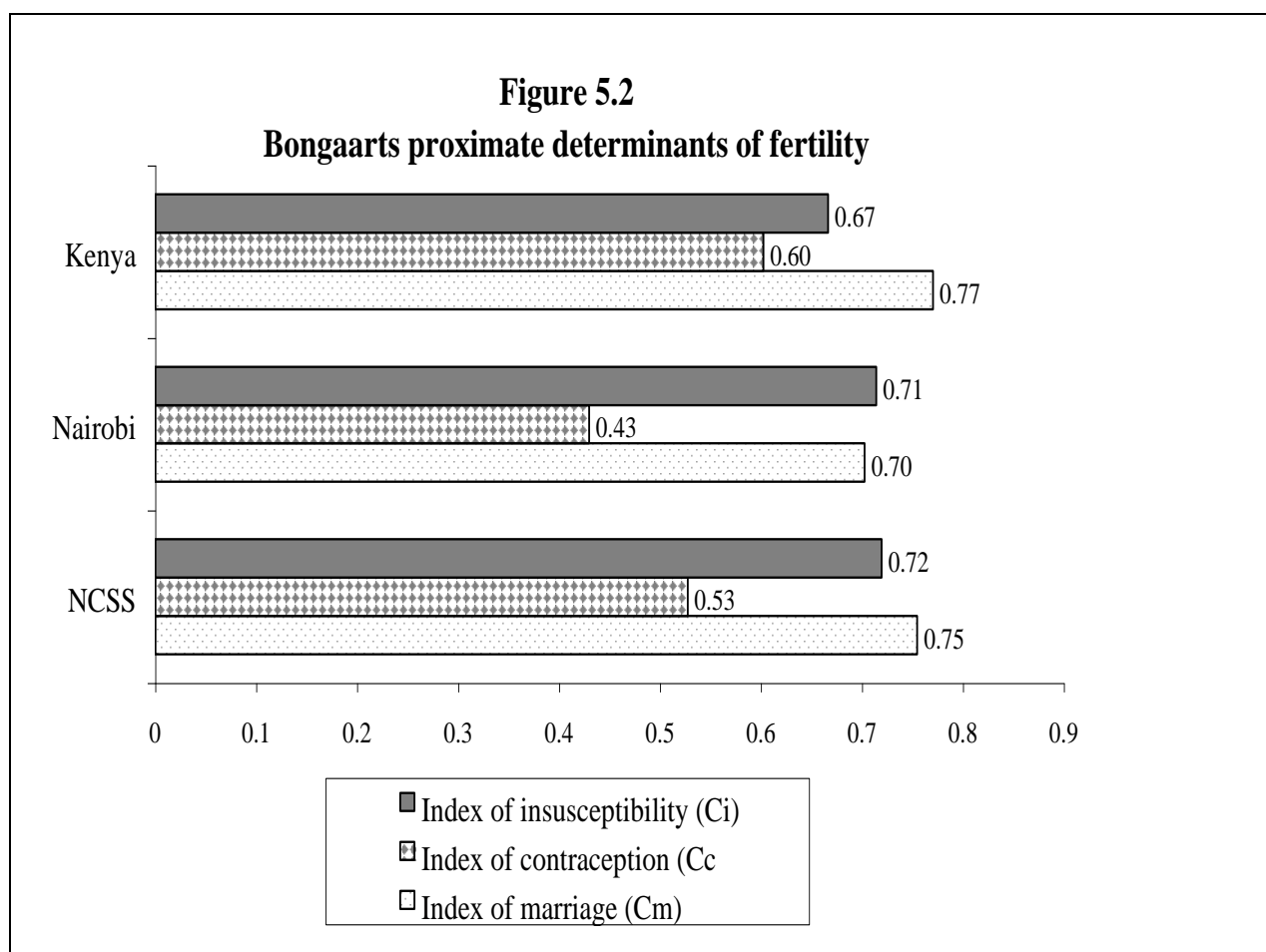
married women may be due to shortened duration of breastfeeding among never married women because of schooling work. Median duration of the insusceptible period increased from eight months among currently married women to 11 and 17 months among formerly and never married women, respectively. The Luo and Luhya have the longest median duration of amenorrhea (eight months) while the Kikuyu have the shortest duration (six months). Duration of postpartum abstinence does not vary much by ethnicity. The median duration of insusceptible period is about nine months across all ethnic groups except the Kamba where duration of seven months is observed.

The median durations of amenorrhea, postpartum abstinence and insusceptibility are lower in the slums compared to national and rural averages for Kenya. However, the durations for the slums are higher compared to durations for other urban areas and Nairobi as a whole.

5.4 Fertility inhibiting impact of the proximate determinants

Figure 5.2 summarizes the contribution of marriage, contraception, and insusceptibility to the observed fertility regime in the slums, Nairobi, and Kenya as a whole using Bongaarts and Porter's (1983) proximate determinants framework. Abortion was excluded because of lack of adequate data to measure its effect on fertility. The TFR implied by this framework corresponds closely to direct estimates except for Nairobi where the framework yields a TFR that is 0.7 children higher. The lower the index, the more influential the proximate determinant is in reducing the total fecundity rate, which is the level of fertility that would occur in the absence of all the proximate determinants. The index of contraceptive use (Cc) is the most powerful fertility-inhibiting proximate determinant in the three areas. However, the effect of contraceptive use was strongest in the whole of Nairobi (0.43) followed by Nairobi slums while it had the least effect (0.60) on national fertility levels. Use of contraception reduces observed fertility by 4.3 births in Nairobi, 3.9 births in Nairobi slums and 3.2 births in the whole of Kenya. The effect of marriage (Cm) was also greatest in Nairobi compared to the whole of Kenya and Nairobi slums, which confirms earlier observations of lower prevalence of marriage in Nairobi compared to other areas of Kenya.

Postpartum insusceptibility had the greatest effect in inhibiting fertility in the other parts of Kenya compared to the whole of Nairobi and Nairobi slums. This shows that Kenyan women have longer durations of abstinence and breastfeeding compared to those living in Nairobi or in the slum settlements of Nairobi.



5.5 Summary

This chapter has presented results on proximate determinants of fertility among Nairobi slums residents with special focus on marriage, sexual activity, and postpartum infecundability. The results indicate that while marriage rates in the slums are similar to rates for rural Kenya and National estimates, slum women are more likely to be currently married compared to Nairobi women in general. Slum women are also more likely to experience marital disruption than women in other areas of Kenya.

Women in slum areas of Nairobi enter into marriage later than women in rural Kenya and in Kenya as a whole, but they marry earlier than those in the whole of Nairobi. They also initiate sex much earlier than women in other areas of Kenya, especially for younger women under age 25, and compared to Nairobi women. Although non-married women in Nairobi slums are more likely to be sexually active than those in other parts of Kenya, they are more likely to have regular than occasional partners. Overall, slum residents maintain higher levels of sexual activity compared to women in other parts of Kenya. They are less likely to abstain from sex but more likely to observe postpartum abstinence than women in other parts of Kenya.

CHAPTER 6

FERTILITY PREFERENCES

F. Nii-Amoo Dodoo

Reproductive preferences are solicited in demographic surveys to assess the demand for children, the demand for contraception, and the unmet need for family planning services. Preferences also provide insights into the prospects for reproductive change in a society. Reproductive preferences are formulated from questions on the desire to have another child, the timing of such desires, intentions about future contraceptive practice, and reports of ideal family size.

6.1 Desire for more Children

The fertility preferences of married women are presented in Table 6.1. While 57 percent of married women want another child, most of these women (38 percent) would like to wait at least two years to have the child, rather than have it sooner (19 percent). These figures correspond to a higher level of desire for additional children than is reflected for all Kenyan women in the 1998 KDHS, where only 40 percent of married women wanted another child. The relatively pronatalist preferences of women in Nairobi's slums are also reflected in the finding that only about one-third of those who are married want no more children (36 percent), compared to nearly half of the married women in Kenya overall (47 percent). Research in many settings has consistently demonstrated that the inclination to cease childbearing increases with the number of living children. Not surprisingly, the reverse is true in the examination of those who want more children—which falls with rising parity.

Table 6.1. Fertility preference by number of living children

Percent distribution of currently married women by age and desire for more children, NCSS 2000 and KDHS 1998.

Desire for children	Number of living children ¹							Total	KDHS 1998
	0	1	2	3	4	5	6+		
Have another child soon ²	83.2	21.8	11.1	6.9	2.8	4.7	2.4	19.3	13.8
Have another child later ³	11.8	70.2	45.7	26.8	9.4	8.4	2.4	37.9	25.1
Have another, undecided when	1.0	0.8	1.4	1.1	1.1	0.9	2.4	1.1	1.1
Undecided	0.5	1.1	4.0	4.7	3.9	0.0	1.6	2.5	4.2
Want no more children	0.5	5.3	36.6	58.3	75.6	72.0	76.1	35.5	47.1
Sterilized	0.0	0.0	0.4	1.8	6.1	13.1	12.7	2.5	6.2
Declared infecund	3.0	0.6	1.0	0.4	1.1	0.9	2.4	1.1	2.4
Missing	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	203	532	506	276	181	107	126	1,931	4,847

¹ Includes current pregnancy

² Want next birth within two years

³ Want to delay next birth for two or more years

Table 6.2 reports fertility preferences by age of respondent and, as is the case with parity, shows that the inclination to cease childbearing increases with age. Consequently, wanting another child, whether soon or later, is inversely related to age.

Table 6.2. Fertility preference by age of woman

Percent distribution of currently married women by desire for more children, according to five year age of woman, NCSS 2000.

Desire for children	Age of woman							Total
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Have another child soon ¹	29.9	23.7	16.9	15.8	16.7	8.3	2.3	19.3
Have another child later ²	59.9	55.7	41.9	21.3	4.4	0.0	2.3	37.9
Have another, undecided when	1.1	1.5	1.0	0.3	2.5	0.0	0.0	1.1
Undecided	1.6	1.2	3.7	4.8	2.0	2.1	0.0	2.5
Want no more children	7.5	17.5	35.9	54.4	63.6	63.6	76.7	35.5
Sterilized	0.0	0.0	0.0	1.7	9.3	22.9	4.7	2.5
Declared infecund	0.0	0.2	0.6	1.7	1.5	3.1	14.0	1.1
Missing	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	187	595	515	291	204	96	43	1,931

¹ Want next birth within two years

² Want to delay next birth for two or more year

Table 6.3 presents the desire to limit childbearing by parity and background characteristics. The proportion of uneducated women with one child who want no more children appears higher than among educated mothers. There is otherwise no clear relationship between level of schooling and the preference to cease childbearing. Considerable similarity exists in the level of childbearing cessation preference across the three stated religious groups—Catholics, Other Christians, and Muslims. Some variation exists in the desire to limit childbearing across ethnic groups. At one extreme, almost half of the interviewed Kikuyu women want no more children (49 percent), whereas less than one-third of Luhya and Other women want no more children (32 percent and 31 percent, respectively). There is also discernable variation in the proportion of women who want no more children across Slum Division, with residents of Makadara slum being the least likely to desire ceasing childbearing (29 percent) and those in Westlands slum being the most likely to desire cessation (42 percent).

Overall, women in Nairobi's slums are less likely to want no more children than other Nairobi women other. However, compared to Kenyan women overall, women in Nairobi's slums report a higher propensity to cease childbearing beyond parity one.

Table 6.3 Desire to limit childbearing by background characteristics

Percent of currently married women who want no more children, by number of living children and selected background characteristics, NCSS 2000 and KDHS 1998.

Background characteristics	Number of living children ¹							Total
	0	1	2	3	4	5	6+	
WOMEN								
Education								
No education	0.0	20.0	40.0	50.0	75.0	60.0	81.8	50.5
Primary incomplete	0.0	6.1	32.8	65.8	75.0	80.0	92.5	44.4
Primary complete	0.0	5.3	37.3	50.0	82.9	90.5	85.0	34.1
Secondary+	1.7	3.9	37.8	72.4	85.7	100.0	95.8	37.8
Religion								
Catholic	0.0	3.5	44.9	55.7	81.4	87.9	91.7	35.6
Protestant\Other Christians	0.8	5.9	35.0	63.8	83.5	87.9	89.1	39.3
Muslims	0.0	11.1	20.0	44.4	60.0	50.0	88.9	35.6
Other	0.0	0.0	50.0	50.0	100.0	-	0.0	30.0
Ethnic group								
Kamba	0.0	3.3	40.0	59.5	91.7	100.0	94.4	36.5
Kikuyu	0.0	9.9	54.1	74.1	93.3	88.9	86.2	49.1
Luhya	0.0	5.1	27.9	48.5	81.1	90.9	95.8	32.4
Luo	1.8	4.1	31.9	66.7	74.0	75.9	87.0	38.8
Other	0.0	1.6	35.4	47.4	68.0	66.7	77.8	30.8
Division								
Central	0.0	8.5	30.6	57.7	68.8	78.6	88.0	39.0
Makadara	0.0	0.0	36.8	42.9	80.0	100.0	100.0	29.2
Kasarani	3.0	5.0	34.1	63.3	75.0	69.0	83.3	41.2
Embakasi	0.0	5.6	54.3	55.0	83.3	100.0	85.7	35.9
Pumwani	0.0	23.1	38.9	0.0	60.0	100.0	100.0	33.3
Westlands	0.0	2.7	46.8	62.8	88.0	100.0	90.0	42.1
Dagoretti	0.0	7.5	32.5	57.5	94.1	86.7	100.0	37.0
Kibera	0.0	2.8	26.6	68.9	86.5	90.5	92.0	36.7
NCSS Total	0.5	5.3	36.7	59.4	80.6	82.8	87.3	36.4
National*	1.7	8.1	33.9	51.8	72.2	78.6	88.8	53.4
Rural*	1.8	5.9	28.1	47.6	69.3	76.8	89.0	54.4
Other urban*	2.9	9.2	44.4	65.8	82.2	87.7	86.8	48.9
Nairobi*	0.0	18.8	50.0	67.5	91.7	100.0	81.8	49.8
Non slum Nairobi*	0.0	30.0	68.4	85.7	100.0	100.0	83.3	67.6

Note: Women who have been sterilized are considered to want no more children

¹ Includes current pregnancy

* - Based on the 1998 KDHS data

6.2 Demand for Family Planning Services

Table 6.4 examines the expressed need for family planning and distinguishes respondents who are currently using contraception from those with an unmet need for family planning. Current use of contraception in essence reflects the level of met need, whereas the concept of unmet need for family planning relates to respondents who, despite the need for family planning, are not using contraception. For both met and unmet need, we distinguish between those with spacing and limiting needs - that is, among those who want to wait at least two years to have children and those who want no more children. The sum of met and unmet components constitutes the total demand for family planning.

Table 6.4 Need for family planning services

Percentage of currently married women with unmet need for family planning, current use of family planning, and the total demand for family planning services, by selected background characteristics, NCSS 2000 and KDHS 1998.

	Unmet need for family planning ¹			Current use ²			Total demand for family planning			Percent of satisfied demand	Number of women
	For spacing	For limiting	Total	For spacing	For limiting	Total	For spacing	For limiting	Total		
Education											
No education	17.4	8.3	25.7	4.6	22.9	27.5	22.0	31.2	53.2	51.7	109
Primary incomplete	17.3	11.2	28.4	13.4	22.0	35.5	30.7	33.2	63.9	55.5	313
Primary complete	17.2	6.6	23.8	23.5	17.1	40.5	40.7	23.7	64.3	63.0	861
Secondary+	13.0	6.8	19.8	30.4	22.8	53.2	43.4	29.6	73.0	72.9	648
Religion											
Catholic	16.3	7.4	23.7	23.9	18.3	42.1	40.1	25.7	65.8	64.0	553
Other Christians	15.3	7.1	22.4	23.1	21.5	44.5	38.4	28.6	67.0	66.5	1,275
Muslims	17.8	13.3	31.1	20.0	14.4	34.4	37.8	27.8	65.6	52.5	90
No religion	30.0	10.0	40.0	10.0	10.0	20.0	40.0	20.0	60.0	33.3	10
Other	33.3	0.0	33.3	33.3	0.0	33.3	66.7	0.0	66.7	50.0	3
Ethnic group											
Kamba	11.9	7.1	19.0	22.8	20.8	43.6	34.6	28.0	62.5	69.7	312
Kikuyu	9.0	4.7	13.7	28.3	31.9	60.1	37.2	36.7	73.8	81.4	401
Luhya	17.9	6.1	24.0	25.0	16.7	41.6	42.7	22.7	65.5	63.5	510
Luo	22.0	12.1	34.1	15.0	15.6	30.6	37.0	27.7	64.7	47.3	487
Other	15.1	6.3	21.7	28.1	15.8	43.9	43.4	21.2	65.6	66.9	221
Division											
Central	19.0	8.5	27.5	18.0	17.5	35.5	37.0	26.0	63.0	56.3	200
Makadara	19.4	8.3	27.8	25.0	16.7	41.7	44.4	25.0	69.4	60.0	72
Kasarani	17.3	13.9	31.3	17.6	16.5	34.1	34.9	30.4	65.3	52.2	352
Embakasi	13.4	5.6	18.9	25.9	20.3	46.2	39.3	25.9	65.2	70.9	359
Pumwani	10.4	12.5	22.9	27.1	12.5	39.6	37.5	25.0	62.5	63.3	48
Westlands	6.3	5.4	11.7	29.2	28.8	57.9	35.4	34.2	69.6	83.2	240
Dagoretti	14.4	4.3	18.7	28.0	23.0	51.0	42.4	27.2	69.6	73.2	257
Kibera	21.6	5.7	27.3	20.3	19.1	39.5	41.9	24.8	66.7	59.1	403
NCSS Total											
(Currently married)	15.8	7.5	23.3	23.1	20.1	43.2	38.9	27.6	66.5	65.0	1,931
NCSS Total											
(Not currently married)	3.1	1.3	4.4	16.5	12.4	29.0	19.6	13.7	33.3	86.9	1,326
(Currently married)											
National*	14.0	9.9	23.9	13.4	25.6	39.0	28.9	35.9	64.8	63.2	4,834
Rural*	15.0	10.6	25.6	11.6	24.5	36.2	28.2	35.7	63.9	59.9	3,824
Other urban*	11.0	9.3	20.3	19.5	25.5	45.0	31.6	35.2	66.8	69.5	602
Nairobi*	8.6	4.1	12.6	21.2	35.1	68.9	31.5	39.2	70.7	82.2	408

Note: ¹ *Unmet need for spacing* refers to pregnant women whose pregnancy was mistimed, amenorrhoeic women whose last birth was mistimed, and women who are neither pregnant nor amenorrhoeic and who are not using any method of family planning and say they want to wait two or more years for their next birth. *Unmet need for limiting* refers to pregnant women whose pregnancy was unwanted, amenorrhoeic women whose last child was unwanted, and women who are neither pregnant nor amenorrhoeic and who are not using any method of family planning and who want no more children. Also excluded are menopausal women.

² *Using for spacing* refers to women who are using some method of family planning and who say they want to wait two or more years for their next child. *Using for limiting* refers to women who are using some methods of family planning and who say they want to wait two or more years for their next child. Using for limiting refers to women who are using and who want no more children. Note that the specific methods used are taken into account

*Based on 1998 KDHS data

The extent of unmet need among women in the slums is almost similar to that found among Kenyan women (about one-quarter of each group). More of the unmet need is attributable to need for spacing (16 percent) than to need for limiting (8 percent). Unmet need is quite low

among unmarried women (4 percent total). Unmet need is greater among women in the slums than among women overall in Nairobi (11 percent).

Although there is no apparent relationship between unmet need and educational attainment, need is somewhat higher among married respondents with primary or lower schooling than among those who have acquired at least some secondary education. Unmet need is also slightly lower among Christians than it is among non-Christians in the sample. This gap is more noticeable for limiting than for spacing. Kikuyu respondents reflect the lowest levels of unmet need (14 percent), while Luos have the highest (34 percent).

A goal of the NCSS was to assess whether residents of urban slums portray higher levels of unmet need than other Kenyan women. Fully 43 percent of married NCSS respondents have met their need for family planning (i.e. currently using contraception), and this is quite evenly split between spacing and limiting. This is slightly higher than the met need among Kenyan women as a whole (39 percent), but considerably lower than the level of met need among women in Nairobi overall (69 percent). It also appears that, although slum women have a higher met need for spacing compared to women in the KDHS, the reverse is true for limiting. Taken together with their lower unmet need for limiting, slum women have a lower demand for family planning for limiting purposes (28 percent) than do any of the groups in the KDHS.

The total demand for family planning services among women in the slums (67 percent) is similar to the demand among Kenyan women overall (65 percent). Also, women in the slums report slightly lower levels of satisfied demand (63 percent) compared to the Nairobi sample overall (82 percent). Therefore, there is greater potential to raise the level of contraceptive use, thereby reduce fertility, in the slums by satisfying unmet need.

6.3 Ideal Family Size

Women in the NCSS were asked questions about ideal family size. Table 6.5 shows that women in the NCSS sample have a smaller ideal family size (3.2 children) compared to women in the Kenya as a whole (3.8 children) or rural women (4.0). Ideal family size among the slum respondents was similar to other urban areas (3.3), but slightly higher than the whole of Nairobi (2.9). Parity-specific reports of ideal family size follow this same pattern up to parity five. Ideal number of children in the slums is comparable to other urban areas, but higher than in Nairobi as a whole. Beyond parity five, the Nairobi slums have relatively lower mean ideal number of children compared to all other communities in Kenya.

The ideal family size trend across parity is also reflected in Table 6.5. At each parity the distribution of respondents across ideal number of children constitutes an inverted “U” shape. Between parities zero and three, the median respondent has an ideal size of three children. Beyond parity three, the median has an ideal size of four children. It is only a small fraction of women in the NCSS (one percent) who gave non-numeric responses to the question about ideal family size. In comparison, the corresponding fraction among all Kenyan women is five percent.

Table 6.5. Ideal and actual number of children

Percent distribution of all women by ideal number of children for all women and for currently married women, according to number of living children. NCSS 2000 and 1998 KDHS

Ideal number of children	Number of living children ¹							Total	KDHS 1998
	0	1	2	3	4	5	6+		
0	1.2	1.5	0.8	1.1	0.4	0.7	0.6	1.1	0.3
1	4.5	6.3	3.2	3.9	1.2	0.7	1.3	4.1	2.4
2	37.6	36.7	33.3	18.0	24.1	12.6	9.0	30.9	20.1
3	26.9	33.1	24.9	35.4	10.4	18.9	7.7	26.5	17.5
4	21.1	18.9	30.2	29.2	44.4	34.2	43.5	26.6	33.8
5	4.5	2.3	4.1	3.4	9.1	15.4	5.8	4.6	8.7
6+	2.9	1.1	3.3	8.7	10.0	16.8	30.8	5.6	12.4
Non-numeric	1.3	0.1	0.2	0.3	0.4	0.7	1.3	0.6	4.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of cases	921	810	630	356	241	143	156	3,257	7,881
Mean ideal number-all women	2.9	2.7	3.1	3.5	3.8	4.2	4.7	3.2	3.8
National *	3.3	3.3	3.4	3.9	4.2	4.5	5.1	3.8	7,464
Rural*	3.5	3.5	3.6	4.0	4.3	4.6	5.1	4.0	6,050
Other urban*	2.9	3.0	3.1	3.5	3.9	4.3	5.3	3.3	1,009
Nairobi*	2.7	2.6	2.8	3.4	3.2	3.6	4.8	2.9	405

Note: The means exclude women who gave non-numeric responses.

¹Includes current pregnancy

* Based on 1998 KDHS data

Table 6.6 indicates that the mean ideal number of children increases with age, surpassing four children after age 40. Not surprisingly, ideal family size decreases sharply with education, falling from 4.6 children among respondents with no education to 2.8 children among those with at least some secondary schooling. Currently married respondents have larger ideal family size (3.4 children) compared to the formerly married (3.2 children) and the never married (2.7 children). Although based on a considerably smaller sample, Muslim respondents appear to have a larger ideal family size (3.9 children) than their Christian counterparts (3.1 children). Across ethnicity, ideal number of children ranges from 2.8 among the Kikuyu to 3.5 among the Luo. Finally, residents of Embakasi slum have the lowest ideal family size (2.8 children) of the slum divisions, while Kasarani slum residents have the highest (3.6 children).

Table 6.6 Mean ideal number of children by background characteristics

Mean ideal number of children for all women ages 15-49 by age and selected background characteristics, NCSS 2000.

Background characteristics	Age							Total
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Education								
No education	4.0	4.2	4.5	4.4	4.5	4.5	5.5	4.6
Primary incomplete	3.2	3.1	3.4	3.4	3.8	4.5	4.9	3.5
Primary complete	3.0	3.0	3.2	3.5	3.6	4.1	4.0	3.2
Secondary+	2.6	2.6	2.9	3.0	3.0	3.5	3.4	2.8
Marital status								
Never married	2.9	2.6	2.6	2.5	2.3	2.8	2.5	2.7
Married	3.2	3.0	3.3	3.6	3.7	4.4	4.8	3.4
Formerly married	2.5	2.7	2.7	2.9	3.3	3.9	4.8	3.2
Religion								
Catholic	3.0	2.9	3.1	3.4	3.5	4.2	4.5	3.1
Protestant\Other Christians	3.0	2.8	3.1	3.4	3.5	4.1	4.5	3.1
Muslims	3.4	4.1	4.2	3.1	4.0	4.4	6.2	3.9
Other	2.0	3.0	2.6	2.0	2.0	-	8.0	2.7
Ethnic group								
Kamba	3.0	2.6	2.8	2.9	3.2	4.0	4.6	2.9
Kikuyu	2.6	2.5	2.6	3.0	3.4	3.7	4.5	2.8
Luhya	3.0	3.1	3.2	3.4	3.7	4.3	4.2	3.3
Luo	3.3	3.2	3.6	4.1	3.6	4.7	4.4	3.5
Other	3.0	3.1	3.5	3.4	3.8	3.9	6.2	3.3
Division								
Central	3.0	3.3	3.4	3.8	3.5	4.8	6.2	3.5
Makadara	3.1	2.6	3.3	3.1	2.9	5.7	-	3.1
Kasarani	3.3	3.3	3.6	4.1	4.1	4.4	5.6	3.6
Embakasi	2.7	2.5	2.9	2.9	3.6	4.0	3.8	2.8
Pumwani	2.6	2.9	3.3	2.6	3.4	4.2	5.7	3.0
Westlands	2.7	2.7	2.7	3.1	3.1	3.5	4.1	2.9
Dagoretti	2.8	2.8	3.1	3.0	3.4	4.1	5.0	3.1
Kibera	3.3	3.1	3.0	3.6	3.4	3.8	3.8	3.3
Total	3.0	2.9	3.1	3.4	3.5	4.1	4.7	3.2

6.4 Wanted and Unwanted Fertility

A useful method for summarizing the fertility implications of fertility preferences involves the determination of the extent to which children born to respondents were wanted or unwanted. This concept of wantedness (versus unwantedness) imputes the notion of timing such that even with a wanted pregnancy, one can assess whether or not it was mistimed. This makes the concept more amenable to assessing the effectiveness of programs aimed at preventing unwanted pregnancies.

The measurement of unwanted fertility here is based on answers to direct questions about pregnancies reported to have occurred in the three years preceding the survey. For each recent live birth women were asked, "At the time you became pregnant with [NAME], did you want to become pregnant then, did you want to wait until later or did you want no (more) children at all?" The term unwanted fertility is used to refer to a birth in which the respondent reported not wanting any more children or wanting to delay any additional births. Table 6.7 presents the distribution of births in the three years preceding the survey (and including the current

pregnancy) by whether, at the time of conception, the birth (or pregnancy) was wanted then, later, or was altogether unwanted. It is important to note that the determination of wantedness (then or later) or unwantedness is indexed at the time of conception, not later (i.e., not at the time of the survey), though the accuracy of such retrospective reports is open to question.

Table 6.7 Fertility planning status

Percent distribution of births (and current pregnancies) in the three years preceding the survey by fertility status, according to birth order and mothers' age at birth, NCSS 2000 and KDHS 1998.

Birth order and mother's age at birth	Planning status at conception			Missing	Number of births ¹
	Wanted then	Wanted later	Not wanted		
Birth order					
1	57.2	39.8	2.8	0.2	538
2	58.7	37.9	3.4	0.0	385
3	52.0	41.9	5.7	0.0	229
4+	39.0	31.5	28.6	0.0	336
Age at birth					
<20	45.1	50.7	3.9	0.3	335
20-24	54.5	42.8	2.7	0.0	565
25-29	59.7	30.3	9.7	0.0	340
30-34	54.9	21.6	22.2	0.0	162
35-39	43.1	10.8	44.6	0.0	65
40-44	18.8	25.0	56.3	0.0	16
45-49	25.0	25.0	50.0	0.0	4
NCSS Total	52.7	37.8	9.2	0.1	1,488
National*	51.4	37.2	11.1	0.3	4,049
Rural*	50.3	37.6	11.9	0.2	3,312
Other urban*	53.7	38.9	7.1	0.3	480
Nairobi*	62.1	29.3	7.1	1.4	257

¹Includes current pregnancy

*Based on 1998 KDHS data

The levels of wantedness among women in the slums are similar to those for women in Kenya overall (about 53 percent of all births were wanted at the time of conception). Another 38 percent of those births or pregnancies were to women who, at the time of conception, wanted children albeit not at that time (in other words, these births were *mistimed*). Only nine percent of all births were unwanted. Overall, results are quite similar to Kenyan women overall; however, there was a lower level of mistimed fertility in Nairobi, where 62 percent of the births were wanted at the time they were conceived, and 29 percent were wanted later. The level of unwantedness in Nairobi stood at seven percent.

Wantedness, both then and later, falls considerably after parity three. Likewise, the percent of births not wanted rises from below six percent for each of the first three parities to 29 percent for the higher parities. At the same time, unwantedness rises dramatically to over 40 percent after age 34. All of this translates into a total wanted fertility rate of 3.0 children per woman, compared to the national total wanted fertility rate of 3.5 children per woman, and the actual total fertility rate for women in Nairobi's slums of 4.0 children per woman (see Table 3.8).

6.5 Summary

This chapter has examined reproductive preferences based on questions relating to the desire for more children, the demand for family planning, ideal family size, and the wantedness of recent pregnancies. The derivative suggestion from these indicators is that reproductive preferences in the slums are not markedly different from the rest of the country, especially with respect to wanted fertility and ideal family size. Both the levels of wanted fertility and of ideal family size in the slums are comparable to the national levels, although slightly lower among slum residents.

The desire for more children is relatively higher in the slums than in Kenya as a whole, with 58 percent wanting another child compared to 40 percent for the country as a whole. Conversely, the proportion of women who want no more children is lower in the slums than in Kenya (36% versus 47 percent). It is important to note that although there is a tendency for the NCSS respondents to report wanting more children (compared to Kenyan women in general), earlier analysis (see Table 6.1) by parity reveals that the slum residents generally also have a higher inclination to cease childbearing beyond parity one.

With respect to the demand for family planning, the level of unmet need in the slums is comparable to the national level, although it is still higher than the level for Nairobi as a whole. On the other hand, the met need for family planning is higher than the national level, but considerably lower than in Nairobi. Worth highlighting is the finding that, although the total demand for family planning in the slums is similar to the national level (about 67 percent), the percent of satisfied demand is significantly lower in the slums (65 percent versus 82 percent). Nevertheless, the level of unintended fertility (mistimed and unwanted) in the slums is comparable to Kenya as a whole. Because unintended fertility levels take into account only those pregnancies that resulted in live births, one possible explanation for this finding is that there is a relatively high level of pregnancy wastage in the slums.

The distribution of reproductive preferences in the Nairobi slums by basic socio-demographic parameters generally conforms to expectations. The inclination to cease childbearing rises with age and parity, while ideal family size rises with age. As expected, ideal family size is relatively lower among the more educated, the never married, and also among the Kikuyu. In comparison, ideal fertility is higher among Luos, as it is for less educated and ever married women.

CHAPTER 7

INFANT AND CHILDHOOD MORTALITY

Pierre Ngom

Residents of informal settlements must confront a daunting array of threats to good health. Sanitation systems are undeveloped, leading to contaminated water supplies. Food is costly and nutritional deprivation is common. Ambulatory health care is beyond the means of many households. The major sources of infectious diseases in rural areas are believed to be at least as prevalent, and possibly more so, among slum residents. Children residing in slums are generally assumed to be at even greater risk of adversity, morbidity, and mortality than children in other places. These assumptions are compelling, but they remain untested with empirical data. Most particularly, little is known about survival risks of slum residents relative to risks that prevail in rural or other urban communities. This chapter addresses this information gap by providing direct calculations of the risk of dying during the first five years of life. Infant and child mortality rates presented in the following analyses are based on birth histories collected in the NCSS. For all children born to women between the ages of 15 and 49 who were interviewed during the NCSS, birth history data were gathered, including information on date of birth, gender, survival status, and date of death if applicable.

Birth history data are based on the responses of women living at the time of the survey. Consequently, the mortality of orphaned children is not reflected in the mortality estimates obtained from such data. This may result in a downward bias in the estimated infant and child mortality rates if survival chances are lower among orphaned children than among children whose mothers were alive as of the time of the NCSS survey.

The ability to use birth history data to examine trends in infant and childhood mortality is affected by the fact that the longer the retrospective period considered before the survey, the less represented are births from women 15-49 years interviewed during the survey. For instance mortality indicators for the 10-14 year period preceding the survey are based on births to only women aged below 40 years because none of the women aged 40-49 years at the time of birth of child will be eligible for inclusion in the survey targeting women of reproductive age (aged 15-49 years). Because there is evidence of mortality differential by the age of the mother, it is likely that trends in mortality obtained from birth history data reflect in part differences in infant and childhood mortality by age of the mother.

In addition to this selectivity issue, recall of births and deaths affects the quality of birth history data, especially when a death occurs shortly after birth. Further, mothers who do not know their children's date of death may systematically displace the event further or closer to the survey date, thereby influencing reported mortality levels and trends. For instance, if respondents tend to place deaths further from the date of the survey, then mortality levels may be underestimated for the period immediately preceding the survey and may be overestimated for less recent periods. Such distortions may result in a misleading downward trend in infant and childhood mortality. Generally, the above sources of errors do not lead to substantial biases in the level of mortality of infants and children obtained from birth history data. More importantly for present purposes, comparisons between the KDHS and NCSS should not be affected because the surveys used the same methodology.

7.1 Current Levels of Mortality

Table 7.1 presents recent infant and child mortality levels in Kenya. NCSS data provide information on mortality levels for the slums of Nairobi, while the 1998 KDHS portrays corresponding estimates for Kenya as whole, rural areas of Kenya, urban areas of Kenya (excluding Nairobi), and Nairobi city.

Table 7.1 Infant and childhood mortality rates

Mortality in infancy and childhood by residential area, five years preceding the NCSS 2000 and KDHS 1998.

Survey Area	Neonatal Mortality NNMR	Post-neonatal mortality PNMR	Infant mortality 1q0	Child mortality 4q1	Under-five mortality 5q0
NCSS					
Nairobi slums	30.4	60.9	91.3	65.2	150.6
National*	28.4	45.3	73.7	40.8	111.5
Rural*	30.3	45.7	75.9	40.1	113.0
Other Urban*	16.9	39.8	56.6	28.9	83.9
Nairobi*	21.8	16.9	38.7	23.8	61.5

*Based on 1998 KDHS data

As Table 7.1 shows, mortality risks in infancy and childhood are extremely high in the slums of Nairobi where infant mortality (the probability of dying before the first birthday, or 1q0, is 91/1000 for the five-year period preceding the survey. For this same period, the under-five probability of dying, or 5q0, is 151 per 1000 births and the mortality rate for children who survive to one year of age is 65 per 1000 births in the 1-5 year age group. These mortality indicators for the slums of Nairobi are higher than those observed in Kenya as whole, rural Kenya, urban Kenya, and Nairobi City, except for neonatal mortality rates, which are similar to those observed in Kenya as a whole and in rural Kenya, although much higher than those for urban Kenya and Nairobi city.

The key factors influencing neonatal mortality vary little from one setting to another. About 85 percent of neonatal deaths in most regions of the world are due to congenital syphilis, neonatal tetanus, conditions arising during the neonatal period, and congenital anomalies (Murray and Lopez, 1996). Commonly, when neonatal mortality is high, as in Nairobi slums and in rural Kenya, the bulk of neonatal deaths are due to unhealthy delivery conditions and premature delivery (Pison et al., 1997). These causes of neonatal deaths are most prevalent in areas with poor access to reproductive health services, especially pre- and post-natal care, and medical assistance at delivery. Poor pre-natal care worsens the outcome of intra-uterine growth retardation (IUGR), which is often associated with a high frequency of premature delivery (Mosley and Gray, 1993).

Children born in the slums confront a high mortality rate after their first month of life whereas those from Nairobi City and urban Kenya generally exhibit lower mortality rates starting from the neonatal period (Table 7.1). These differentials are corroborated by higher percentages of births taking place at home in Nairobi slums (48 percent) and rural Kenya (64 percent), than in

Nairobi city (24 percent) and other urban areas (36 percent). Also, 6 percent of babies born in the three years preceding the survey in rural Kenya and Nairobi slums were below 2.5 kg, while the corresponding figure for Nairobi City and other urban areas of Kenya was 3 percent (Magadi, 2000).

Mortality risks in the post-neonatal period through the fifth birthday are in the 60-65/1000 ranges for Nairobi slums, and in the 40-45/1000 ranges for rural Kenya and Kenya as a whole. As shown in Table 7.1, the levels observed for Nairobi City and other urban areas of Kenya are much lower (below 40/1000). Post-neonatal mortality levels are usually influenced by the interplay between environmental factors, infectious diseases, and nutritional status (Chindambaram et al., 1987). Consequently, although the KDHS and the NCSS did not collect information on these variables, it is likely that the slums of Nairobi are much worse off compared to other parts of Kenya.

7.2 Mortality Trends

Trends in infant and childhood mortality in the slums of Nairobi are diagrammed in Figure 7.1 and presented in Table 7.2. Trends suggest that the chances of survival of children below the age of five years have worsened over the past twenty years. Only neonatal mortality rates have remained stable (at around 30/1000). The current mortality risk, (pertaining to the five year period preceding the survey) is higher than in any previously observed five-year period. The post-neonatal mortality rate peaked at 61/1000 during the five-year period preceding the survey, after fluctuating between 34/1000 and 54/1000 in previous periods. Similarly, infant mortality rates fluctuated between 63/1000 and 85/1000 in the period 5-19 years before the survey before peaking at the current level of 91/1000.

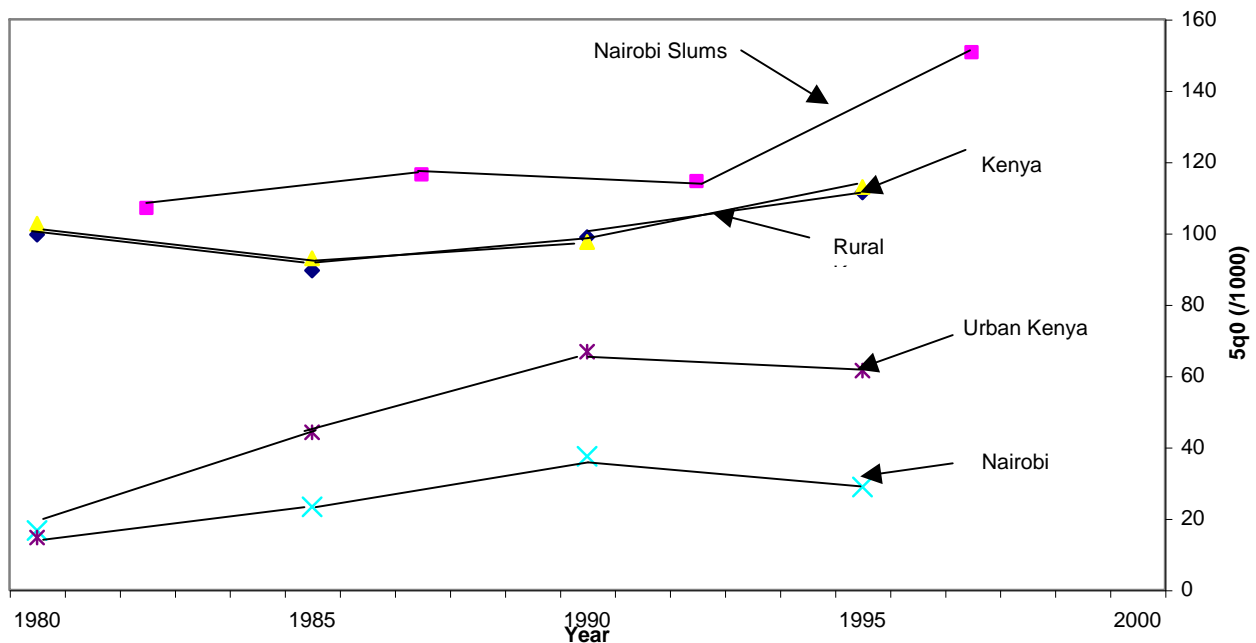
The relative stability of under-five mortality levels (105-116/1000) during the 5-19 year period preceding the survey results from opposing trends in infant and childhood mortality rates. During this period, infant mortality increased from 65/1000 to 85/1000, then fell to 63/1000 as childhood mortality decreased from 42/1000 to 34/1000, then increased to 55/1000.

Table 7.2 Trends in mortality in infancy and childhood in Nairobi slums, NCSS 2000.

Years Preceding survey	Neonatal mortality (NNMR)	Post neonatal mortality (PNMR)	Infant mortality (IMR)	Child mortality (_{4q1})	Under-five mortality (_{5q0})
0-4	30.4	60.9	91.3	65.2	150.6
5-9	28.1	35.2	63.3	54.6	114.4
10-14	30.7	54.5	85.2	34.0	116.3
15-19	30.9	34.1	65.0	42.5	104.8

In Figure 7.1, the above trends are compared to those for Kenya as a whole, rural Kenya, urban Kenya, and Nairobi city. Nationally, there has been a reversal from the decline in under-five mortality observed between 10 and 19 years ago, to an actual increase from 9 years ago to the present; rural Kenya has also demonstrated this trend. In Nairobi and urban Kenya, however, there have been steady increases in under-five mortality over the last 20 years, except for the period 5-10 years ago during which a modest decline was observed.

Figure 7.1
Trends in under-five mortality: 1980-2000,
NCSS 2000 and 1998 KDHS



Demographic research has consistently shown that infant and child mortality rates declined from the time of independence to the first half of the 1980s in Kenya as a whole and in rural Kenya. Available research also indicates that from the mid-1980s to the 1990s, although mortality risks for children under the age of five remained constant in both rural and urban settings, rates have increased in recent years throughout Kenya (NCPD and IRD/Macro, 1989; NCPD et al., 1999). NCSS data suggest that in recent years the reversal in mortality trends has been steepest in the slums of Nairobi (Figure 7.1). In part, these undesirable trends may reflect the health impact of the AIDS epidemic, already evident in projections of mortality trends carried out from the 1989 Kenya national census (CBS, 1989). Because the AIDS pandemic is taking a greater toll among the poorest families (Magadi, 1992), slum dwellers are likely to be the hardest hit. The provision of adequate health services in Nairobi slums should not be considered sufficient to reduce mortality risk among the urban poor, rather it should be implemented along with programs addressing both poverty and AIDS prevention.

7.3 Mortality Differentials

7.3.1 Socio-Economic Differentials

In all slum divisions, the under-five mortality rate for the 10-year period preceding the survey is above 100/1000 (Table 7.3). Under-five mortality rates are as high as 254/1000 and 195/1000 in Embakasi and Westlands respectively. The lowest under-five mortality rates occur in the Central Division (123/1000) and Kasarani Division (124/1000). These differentials persist for childhood mortality- the highest risks are observed in Embakasi (108/100) and Westlands (103/1000), and

the lowest in Central (59/1000) and Kasarani (51/1000). Kibera among the high mortality slums Embakasi and Kasarani where the infant mortality rate is above 100/1000. Additionally, Pumwani, with an infant mortality rate of 73/1000, is included in the low mortality group that includes Central and Makadara divisions.

The distribution of mortality risks over the months of infancy and childhood vary little from one slum division to another. Typically, neonatal mortality is always lower than post-neonatal mortality, and infant mortality risks are higher than childhood mortality. This age pattern of mortality is observed in all slum divisions except in Embakasi where neonatal mortality (111/1000) is more than twice as high as post-neonatal mortality (52/1000) (Table 7.3). For this reason, the infant mortality crisis in Embakasi (where the probability of dying in the first year of life is 164/1000) is in fact a neonatal mortality crisis. Babies born in Embakasi are three to seven times more likely to die within their first month of life than those in other slum divisions.

The pattern that emerges for the effect of mother's education on under-five mortality is quite surprising (Table 7.3). Based on mothers' reports of their educational status, the lowest infant and under-five mortality rates are observed among children born to mothers with no education or incomplete primary education, while the highest mortality risks occur when mothers have achieved at least a primary level of education. The probability of dying during the first five years of life is 91/1000 for children born to uneducated mothers and 79/1000 for those whose mothers did not complete primary school. Surprisingly, the probability for under-five mortality is above 100/1000 for children born to mothers who have completed primary schooling or higher. The same pattern is observed for mortality risks in the first year of life. For children born to mothers with no education or incomplete primary schooling, the risk of dying within the first year of life is below 60/1000, while it is in the 62-72/1000 ranges for children born to mothers with at least complete primary schooling.

The observed relationship between educational attainment and infant mortality may be confounded by variables that correlate with education. It is also possible that the observed positive effect of educational attainment on mortality— which is clearly counterintuitive— arises from breast-feeding duration differentials. Mothers with some education may go to work outside the home and leave their infants in the care of others. Sanitation is bad so that food and water contamination leads to higher risks, and children may lose the immune protection conferred by breastfeeding. This hypothesis is supported by the educational differentials observed for mortality during childhood (1 to 5 years of age), a period during which child health is more sensitive to infectious diseases and the environment. As Table 7.3 shows, the lowest childhood mortality risks (4q1) are observed among children born to mothers with no education (36/1000), while the corresponding figure ranges from 42/1000 to 50/1000 when the mother has some education. The effect of mother's education on neonatal mortality is also as expected, with mortality risks decreasing as education increases, probably because of increased access to reproductive health services.

The association between the average number of people per room and infant and childhood mortality indicators suggests that the risk of dying in infancy and childhood is lower for the smallest and largest households, those with only one or two people per room and those with seven or more people per room. Mortality risks peak when the average household size is in the range of three to six. The relationship observed here is difficult to interpret. It is possible that less crowded households are typically made up of adults without children, or with relatively few children to compete for resources. This hypothesis may lead to the low mortality risks observed

for these categories. The estimate of child mortality for the households with seven or more people per room is probably unreliable due to inadequate number of cases.

<u>Table 7.3 Infant and child mortality (10 years before the NCSS 2000) by mother's background characteristics, NCSS 2000</u>					
Background characteristics	Neonatal mortality (NNMR)	Post-neonatal mortality (PNNR)	Infant mortality (IMR)	Child mortality (4q1)	Under-five mortality (5q0)
Place of residence					
Central	24.5	43.5	68.0	59.1	123.1
Makadara	34.1	52.2	86.3	61.6	142.7
Kasarani	19.2	58.2	77.4	51.0	124.5
Embakasi	111.1	52.5	163.6	108.2	254.1
Pumwani	16.3	56.3	72.6	66.9	134.6
Westlands	23.1	79.9	103.0	102.9	195.4
Dagoretti	0.0	35.0	35.0	67.6	100.3*
Kibera	35.1	71.1	106.2	89.8	186.5
Highest educational level					
No education	32.9	24.6	57.6	35.7	91.3
Primary incomplete	0.0	30.3	30.3	50.3	79.1
Primary complete	22.7	39.7	62.4	41.7	101.4
Secondary +	22.3	50.5	72.7	44.0	113.5
Don't know/missing	45.6	41.6	87.1	70.8	151.8
Number of people per room					
0-2	7.2	78.7	86.0	60.1	140.9
3-4	56.5	78.3	134.8	96.8	218.6
5-6	30.6	51.1	81.8	62.0	138.6
7+	16.4	24.3	40.7	38.1	77.2
Medical maternity care					
No antenatal/or delivery care	71.4	85.9	157.3	-	-
Either antenatal or delivery care	20.2	80.0	100.2	-	-
Both antenatal and delivery care	23.6	36.9	60.5	-	-
Ethnic group					
Kamba	37.2	17.0	54.2	36.6	88.9
Kikuyu	18.6	33.2	51.8	19.5	70.3
Luhya	29.4	49.5	79.0	69.5	143.0
Luo	36.5	82.9	119.3	108.7	215.0
Other	19.1	27.3	46.4	24.9	70.2
Total	29.3	49.0	78.4	60.5	134.2

Information on antenatal care and assistance at delivery was collected only for children born in the three years preceding the study. Consequently, only indicators for mortality risks in infancy are presented in Table 7.3. Antenatal care and assistance at delivery exhibit a strong negative correlation with infant mortality. For children born to mothers who did not have antenatal care and who did not benefit from medical assistance at delivery, the probability of dying during the first year of life is 157/1000. When the mother received either antenatal care or medical assistance at delivery, this probability is reduced to 100/1000 and it falls further to 60/1000 when the mother received both antenatal care and medical assistance at delivery. These results demonstrate that adequate pregnancy care services in the slums of Nairobi are crucial.

Separate analyses of the neonatal and post-neonatal periods reveal that either antenatal care or adequate medical assistance at delivery substantially decreases the neonatal mortality rate. When the mother received neither antenatal care nor medical assistance, the neonatal mortality rate is 71/1000. For children born to mothers who received either of these services the neonatal mortality rate is 20/1000, but receiving both services results in only slight improvements, to 23/1000.

In the post-neonatal period, by contrast, a significant reduction in the risk of dying is achieved only when mothers receive both services. The post-neonatal mortality rate is 86/1000 when the mother received neither antenatal care nor professional assistance at delivery. It decreases only to 80/1000 if the mother received either of these services, but falls substantially to 37/1000 in the case that she received both services.

The highest infant and child mortality rates are observed among the Luo and Luhya ethnic groups, while such rates are at their lowest among the Kikuyu and Kamba ethnic groups. This is consistent with regional differentials in infant and childhood mortality emerging from available DHS data (NCPD et al., 1999); death rates in infancy and early childhood are usually worse in Nyanza (home to the Luo) and Western (home of the Luhya) and the lowest in Central region (home to the Kikuyu) and Eastern (home to the Kamba). It is apparent therefore that ethnic differentials in mortality observed in the slums of Nairobi reflect in part differences in mortality observed in the origin communities of slum dwellers.

7.3.2 Bio-Demographic Differentials

Sex differentials in mortality are not significantly large below the age of one year, probably because of natural protection provided by breastfeeding. However, male excess mortality, as compared to female, is evident in early childhood. The probability of dying between the ages of 1 and 5 years is 66 per thousand for boys and 55 per thousand for girls. The difference between male and female under-five mortality, 142 and 126 per thousand respectively, is mainly due to differentials during the post-infancy period. Although the data do not allow one to ascertain it, it is likely that behavioral and environmental factors play an important role in these gender differentials in childhood mortality.

The relationship between mother's age at birth of a child and infant and childhood mortality risks is J-shaped, except in the neonatal period. Mortality risks are high for children born to women less than 20 years of age, then decline, and then increase with mother's age. Children born to very young or old mothers are at higher risk of dying than those born to mothers in the intermediate age groups, and this finding is common across all data collected by the Demographic and Health Surveys (Govindasamy et al., 1993). High mortality risks for children born to young mothers is often linked to a lack of physical maturation and related complications during pregnancy and delivery, psychological immaturity, or poor attendance to prenatal care services (Aitken and Walls, 1986, Gerominus, 1987). Older women face a high prevalence of congenital abnormalities such as Down's syndrome, which may explain the increased risk associated with their pregnancies (Hansen, 1986).

Neonatal and infant mortality rates increase with maternal age. It is expected that a J-shaped relationship between birth order and mortality would prevail for the relationship between maternal age and infant and childhood mortality if low-birth orders were associated with elevated mortality risk. In fact, no clear relationships between birth order and infant and childhood mortality risks emerge when one looks at post-neonatal, childhood or under-five mortality. However, as shown in Table 7.4, there are clear mortality gaps between first births and those of seventh parity or above. Below one year of age, the largest mortality gap between the lowest and highest birth orders is observed for the post-neonatal period. Post-neonatal mortality is three times higher for children of seventh birth order or above (107/1000), than for children of first birth order (32/1000). In the neonatal and childhood periods, this gap narrows to a two-to-one ratio.

Table 7.4. Infant and child mortality (10 years before the NCSS survey) by mother and child's biodemographic characteristics, NCSS 2000

Demographic characteristics	Neonatal mortality (NNMR)	Post-neonatal mortality (PNMR)	Infant mortality (IMR)	Child mortality ($_{4q1}$)	Under-five mortality ($_{5q0}$)
Sex of child					
Male	30.6	50.0	80.6	66.3	141.6
Female	28.1	48.0	76.1	54.7	126.7
Mother's age at birth					
Less than 20	26.9	50.0	76.9	80.2	150.9
20-29	30.1	42.7	72.8	58.3	126.8
30-39	38.8	69.1	107.9	52.0	154.3
40-49	0.0	147.3	147.3	157.5	281.7
Birth order					
1	19.8	32.3	52.2	50.1	99.6
2-3	31.7	56.5	88.2	74.7	156.3
4-6	40.1	53.7	93.8	52.5	141.4
7+	47.8	107.5	155.3	118.6	255.5
Previous birth interval					
< 2 years	49.0	78.2	127.1	95.3	210.3
2-3 years	27.1	48.4	75.5	72.5	142.6
4 years or more	32.5	63.0	95.5	45.8	136.9
Size at birth					
Small or very small	49.9	67.9	117.8	-	-
Average or larger	18.5	54.6	73.1	-	-

Early infant and child survival is closely associated with the average length of birth intervals. This relationship was clearly demonstrated by Cantrelle and Leridon (1971) using demographic surveillance data from rural Senegal. More recently, retrospective surveys such as the World Fertility Surveys and the Demographic and Health Surveys have shown consistently that children who are born after a short interval experience higher mortality risks than those born after a two- or three-year interval (Rutstein, 1983, Boerma and Bicego, 1992).

The NCSS data confirm the above relationship. However, whereas for under-five mortality, mortality risks decrease as birth interval increases this trend is not evident in neonatal and post-neonatal mortality data. In the slums of Nairobi, short birth intervals –(intervals less than two years) are associated with increased mortality risks in infancy and childhood (Table 7.4). The probability of dying in the first year of life is 127/1000 for children born within two years of the birth of the previous child, but falls to 75/1000 for children born after an interval of two to three

years, then rises to 95/1000 when the birth interval is four years or more. This J-shaped form of the relationship between the interval since the previous birth and mortality risk is maintained in the post-neonatal period.

To examine the possible effect of birth weight on infant and childhood mortality, the NCSS collected information on respondents' perception of the size of their newborn. The information concerned only respondents' last birth if it was within the past three years. Consequently, only indicators for mortality in infancy are available. Results presented in Table 7.4 suggest clearly that newborn babies that are perceived to be of small or very small size experience higher mortality risks compared with those who were reported as of average or large size. Overall, the risk of dying within the first year of life was 40 percent higher among infants with less than average birth weight when compared with children considered of average or large size at birth. High mortality risk among low-birth weight infants is often explained by the high prevalence of chronic obstructive pulmonary disease that occurs in this category (Elo and Preston, 1992; Barker et al., 1991). Supplemental nutrition programs – preferably targeting women in their third trimester of pregnancy – may serve to mitigate these adverse effects of low birth weight.

7.4 Summary

There is growing international concern about the health consequences of inequitable access to primary health care. While it is widely assumed that the health of mothers and children in slum communities are affected by these inequities, specific information demonstrating the survival consequences of urban poverty have not previously been widely available. The NCSS provides unique and comprehensive direct estimates of infant and child mortality levels and trends among the Nairobi poor. Previous attempts to conduct such analyses have relied primarily on indirect methods; Muganzi (1992: 64) using Brass' estimates of probabilities of dying in early childhood, concluded that "children born in [the slums] of Kibera, Pumwani and Ruaraka are subject to higher probability of dying in their early years than those born in [wealthier neighborhood such as] Pangani, Harambee, Lavington and Kilimani."

Data from the NCSS are consistent with such previous studies, but show directly that equity effects are very large. According to NCSS data, the under-five mortality rate is over 151/1000 in Nairobi slums, while DHS data suggest that the corresponding figure for Kenya as a whole and rural Kenya is twenty five percent lower. While under-five mortality rates for the slums of Nairobi vary between 254/1000 in Embakasi and 123/1000 in Central Division, the corresponding figure for Nairobi City stands at 61/1000, suggesting that the mortality rate for the non-slum areas of Nairobi is significantly lower. These differentials strongly indicate that inequities in health in Nairobi must be addressed through well-planned health and livelihood interventions.

Nationally, infant and childhood mortality has worsened over the past twenty years, after slight improvements during the first half of the 1980s. This reversal in mortality trends may be due to the adverse effect of the AIDS epidemic. The NCSS and the KDHS data demonstrate convincingly that, since the early 1990s, increases in mortality rates have been steepest in the slums of Nairobi, while rates in urban Kenya, including Nairobi City, have declined modestly. The extent to which poverty and inadequate access to health services account for the comparative disadvantage of slum dwellers cannot be determined from the data presented in this chapter. However, it is reasonable to speculate that decreasing purchasing power, poor health care and an escalating AIDS pandemic might well explain the rapid increase in mortality risks in recent years.

CHAPTER 8

MATERNAL AND CHILD HEALTH

Monica A. Magadi

Achieving “Health for all” has been a key objective of international and national health agencies over the past three decades; and yet, “Health for All” remains a remote prospect for many Kenyans. Known, affordable, and effective technologies for preventing morbidity remain inaccessible in many parts of the country. High maternal and child mortality have been a particular source of concern in reviews of the health circumstances of Kenya: First, maternal mortality is high, even though most maternal deaths are preventable with adequate antenatal care and referral services. Second, child deaths also often result from preventable causes such as infectious diseases and malnutrition, which in turn are consequences of inadequate access to food, shelter, health care, safe water, sanitation and education. Much of the observed mortality could be prevented with improved immunization programs, basic ambulatory care, and community organization and outreach healthcare programs.

The immediate causes of maternal deaths include hemorrhage, sepsis, ruptured uterus and anemia (Graham and Murray, 1997), and frequently result from factors such as unsafe abortions, nutritional deficiency disorders, poor health or nutritional status, and inadequate care before, during, or after delivery. In particular, sepsis, hemorrhage, and ruptured uterus are often a result of poor care during and after delivery. Although low socio-economic status has been linked to poor pregnancy outcomes for the mother, it is likely that the influence is through lack of appropriate maternal health care and poor nutritional status (Magadi, 1999). These same factors (i.e. nutritional deficiencies and poor quality of care during delivery) have been linked to high rates of infant deaths during or slightly after birth. Findings from the qualitative study conducted in the slums by the APHRC in 1999 (Wasao and Bauni 2001) suggest that there is poor access to maternal health services and high prevalence of adverse pregnancy outcomes among the slum residents.

The major causes of child deaths in Kenya, as in other African countries, include malaria, acute respiratory infections, diarrheal disease, and several vaccine-preventable diseases such as measles, polio, tuberculosis, and neonatal tetanus (UNICEF, 1992). An examination of causes of under-five deaths (based on verbal autopsies) in different locations in Kenya identified pneumonia as a key factor in a rural community (Milza, et al., 1986), while diarrhea and measles have been identified as the predominant causes of under-five mortality in Kibera (NCB/CSD, 1992), which is the largest slum in Nairobi. Measles deaths are often localized to areas with low immunization coverage and high population density, while diarrhea results mainly from unsafe water, poor personal hygiene, and unsanitary waste disposal. These conditions are typical of slum communities, making children in these areas highly susceptible to these diseases. The analysis of childhood mortality presented in Chapter 7 of this report shows that mortality outcomes are worse for slum children than for children in any other part of Kenya.

This chapter examines maternal and child health using information on births occurring in the three years prior to the survey. The issues addressed include antenatal care, delivery care and characteristics, child vaccination, and the prevalence and treatment of common infectious diseases (fever, cough and diarrhea) in young children. Analyses of maternal health care and delivery characteristics concern the last birth, while information on child immunization and the

prevalence of common diseases among children was obtained for all children born in the three years preceding the survey.

8.1 Antenatal Care

Poor antenatal care is a source of risk for adverse pregnancy outcomes for both the mother and the baby, including maternal mortality, perinatal mortality, premature delivery, low birth weight, pre-eclampsia and anemia, in many settings of the developing world (Llewellyn-Jones, 1974, Coria-Soto et al, 1996; Hollander, 1997; Magadi et al, 2001). Apart from mere attendance to antenatal care, the quality of care received (in terms of the timing and frequency of visits as well as the content of the care) plays a key role for outcomes. Antenatal care is central to identifying and managing maternal complications, as well as to providing essential services such as tetanus immunization, iron and/or vitamin supplements, and nutrition education.

8.1.1 Antenatal Care Provider

The first important question about the quality of antenatal care concerns its source, specifically, the extent to which it is provided by professionals. Table 8.1 presents the distribution of antenatal care providers for births in the three-year period prior to the survey, by selected background characteristics.

In the Nairobi slums, almost all births benefit from some form of antenatal care from medical personnel such as a doctor, nurse, or midwife (96 percent). The distribution of type of antenatal care provider in the Nairobi slums does not vary much according to the selected respondent background characteristics. However, births to women with no education or to women who are widowed, divorced, or separated have a greater chance of receiving no antenatal care than women who are never or currently married and women with at least some primary education.

Overall, nurses or trained midwives together are the predominant antenatal care providers, accounting for about 69 percent of all cases, while doctors provide antenatal care in about 28 percent of all cases. It is important to note that respondents may not have been able to distinguish nurses from midwives or doctors, since the general public often mistakes male midwives or nurses for doctors. Traditional birth attendants rarely provide antenatal care in this urban setting. The pattern of antenatal care in the slums is consistent with antenatal care in the rest of Kenya, except that the slums seem to have the lowest proportion of traditional birth attendant care, and the highest share of nurse/midwife care compared to the other communities in Kenya.

Table 8.1. Antenatal care

Percent distribution of births in the three years preceding the survey by source of antenatal care during pregnancy, according to selected background characteristics, NCSS 2000.

Background characteristics	Antenatal care provider ¹					Number of births
	Doctor	Nurse/ trained midwife	Traditional birth attendant	No one	Missing	
Mothers' age at birth						
<20	26.9	68.8	0.0	4.3	0.0	279
20-24	25.2	71.0	0.2	3.1	0.4	452
25-34	30.3	66.3	0.5	2.9	0.0	419
35+	24.6	68.1	1.4	5.8	0.0	69
Birth order						
1	28.6	67.3	0.2	3.7	0.2	434
2-3	25.9	70.9	0.4	2.6	0.2	501
4-5	27.3	70.5	0.0	2.2	0.0	183
6+	28.7	61.4	1.0	8.9	0.0	101
Education level						
No education	24.1	63.0	0.0	13.0	0.0	54
Primary Incomplete	27.7	67.8	0.0	4.5	0.0	202
Primary complete	23.4	73.0	0.3	3.1	0.2	578
Secondary+	33.5	63.6	0.5	2.1	0.3	385
Marital status						
Never married	26.4	66.0	0.0	7.5	0.0	106
Married/Living together	27.4	69.8	0.4	2.2	0.2	1,017
Widowed/Divorced/separated	27.1	60.4	0.0	12.5	0.0	96
Division						
Central	28.5	66.2	0.8	4.6	0.0	130
Makadara	46.0	48.0	2.0	4.0	0.0	50
Kasarani	37.5	57.8	0.0	4.4	0.4	251
Embakasi	9.0	88.1	0.0	2.9	0.0	210
Pumwani	21.2	72.7	3.0	3.0	0.0	33
Westlands	39.6	55.4	0.0	5.0	0.0	139
Dagoretti	30.9	64.4	0.7	4.0	0.0	149
Kibera	20.2	78.2	0.0	1.2	0.4	257
Ethnic group						
Kamba	19.8	76.9	0.0	3.3	0.0	182
Kikuyu	30.0	65.4	0.4	4.2	0.0	240
Luhya	26.1	69.7	0.3	3.5	0.3	314
Luo	27.6	70.0	0.3	1.8	0.3	333
Other	34.0	59.3	0.7	6.0	0.0	150
Total - Nairobi Slums	27.3	68.7	0.3	3.4	0.2	1,219
Nairobi*	32.8	61.3	2.5	1.7	1.7	219
Other urban Kenya*	40.1	55.3	1.4	2.9	0.3	417
Rural Kenya*	25.6	65.6	2.4	6.2	0.1	2,828
National*	27.8	64.1	2.3	5.5	0.2	3,464

* - Based on the 1998 KDHS data.

8.1.2 Frequency and Timing of Antenatal Care

The frequency and timing of antenatal care visits are vital to the timely identification and mitigation of potential pregnancy complications. It is important that antenatal care visits begin early in pregnancy and continue at regular intervals. Some complications, if not identified and treated early in the pregnancy, might be detrimental to the health of the mother and her baby.

Monthly antenatal care visits are generally recommended during the first seven months, fortnightly visits during the eighth month, and weekly visits from that point until delivery. If the first visit is made during the third month, this schedule translates into a total of 12 to 13 visits during pregnancy (NCPD, CBS and MI, 1999). Table 8.2a shows the distribution of the number of antenatal care visits during pregnancy while Table 8.2b presents the timing of the first visit, according to selected background characteristics

There is no clear pattern relating the frequency of antenatal care visits to demographic characteristics such as maternal age, parity, and marital status. While maternal age of 20-24 years and first order births appear to be associated with a higher frequency of antenatal care visits, single mothers are associated with lower frequency of visits.

As might be expected, maternal educational attainment, especially beyond the primary level, correlates with improved antenatal care. Only nine percent of expecting mothers with no formal education attended seven or more antenatal care visits during pregnancy, compared to 22 percent of women with at least secondary level education. Conversely, only seven percent of women with at least secondary education attended fewer than three antenatal care visits during pregnancy, compared to 19 percent of uneducated mothers.

Nevertheless, the highest proportion of births that received at least seven antenatal care visits during pregnancy was observed in Pumwani division, while the highest proportion of births receiving only one or two visits was in Embakasi. In terms of ethnicity, the Luo are associated with fewer antenatal care visits, and the Kikuyu with more frequent visits, in comparison with other ethnic groups.

Fewer than half of births in the slums received more than four antenatal care visits during pregnancy. The median number of antenatal care visits in slums –(3.9) is far lower than the number recommended (of 12-13 visits during the pregnancy (NCPD 1999)) but comparable to the national median of 3.7 visits. On average, the frequency of antenatal care visits in the slums of Nairobi is comparable to that in other communities in Kenya, though it is notably worse than that in Nairobi as a whole (4.2).

The likelihood of first trimester antenatal care visits falls steadily with increasing maternal age and parity. It is possible that greater anxiety about pregnancy among nulliparous teenage mothers would be more common than among women who have experienced pregnancy and delivery, and lend them to seek antenatal care early in pregnancy; whereas older mothers (who are 35 years and above) or women of parities four and five are the most likely to initiate antenatal care during the third trimester of pregnancy.

Observations concerning marital status seem inconsistent with the distribution with respect to age. Single mothers are likely to be young and young maternal age is associated with early antenatal care, yet single mothers are observed to have the lowest tendency to start antenatal care early in pregnancy (during the first trimester), and the highest tendency to start late (during the last trimester), compared to women in any married category. A plausible hypothesis for explaining this observation is that births to single women are more likely to be unplanned, and antenatal care is therefore more likely to start late due to mothers' ambivalent attitudes towards such pregnancies (see, for example, Weller et al., 1987; Magadi et al, 2000). A separate analysis (not shown here) confirmed that unplanned pregnancies are associated with late start of antenatal care in the Nairobi slums.

Table 8.2a: Number of antenatal care visits during pregnancy

Percent distribution of live births in the last 3 years by number of antenatal care visits, according to selected background characteristics, NCSS 2000 and KDHS 1998.

Background characteristics	Number of visits					Don't know/missing	Number of Cases
	None	1-2	3-4	5-6	7+		
Mothers' age at birth							
<20	4.3	11.5	39.2	25.5	18.7	0.8	279
20-24	3.1	10.8	37.8	26.1	21.0	1.2	452
25-34	2.9	9.8	43.6	26.4	16.9	0.5	419
35+	6.0	13.4	34.3	26.9	19.4	0.0	69
Birth order							
1	3.7	9.2	34.3	29.3	23.0	0.5	434
2-3	2.6	10.8	41.9	26.2	17.4	1.2	501
4-5	2.2	13.1	44.8	21.9	17.5	0.6	183
6+	9.0	13.0	45.0	20.0	12.0	1.0	101
Education							
No education	13.0	18.5	38.9	20.4	9.3	0.0	54
Primary incomplete	4.5	14.9	43.1	20.3	15.4	2.0	202
Primary complete	3.1	11.4	43.4	22.5	19.2	0.4	578
Secondary+	2.1	6.5	33.1	35.4	21.9	1.0	385
Marital status							
Never married	7.6	17.0	39.6	22.6	11.3	1.9	106
Married/Living together	2.2	10.2	40.6	26.6	19.7	0.8	1,017
Widowed/Divorced/separated	12.5	9.4	33.3	25.0	19.8	0.0	96
Division							
Central	4.7	11.6	37.2	23.3	22.5	0.8	130
Makadara	4.0	8.0	46.0	20.0	22.0	0.0	50
Kasarani	4.4	11.6	54.2	20.7	8.4	0.8	251
Embakasi	2.9	15.2	38.1	22.4	20.0	1.4	210
Pumwani	3.0	6.1	24.2	22.3	30.3	9.1	33
Westlands	5.0	2.2	29.5	36.0	27.3	0.0	139
Dagoretti	4.0	6.7	28.9	39.6	20.1	0.7	149
Kibera	1.2	14.0	41.6	23.7	19.5	0.0	257
Ethnicity							
Kamba	3.3	8.2	42.3	26.4	18.7	1.1	182
Kikuyu	4.2	9.5	32.4	29.9	23.2	0.8	240
Luhya	3.5	9.9	38.3	28.1	19.5	0.6	314
Luo	1.8	13.9	47.6	21.4	14.5	0.9	333
Other	6.0	10.7	35.3	26.0	21.3	0.7	150
Nairobi slums (median=3.9)	3.5	10.8	39.9	26.1	18.9	0.8	1,219
Nairobi* (4.2)	1.7	4.2	37.8	23.5	28.6	4.2	119
Other urban *(3.9)	2.9	9.0	40.2	29.4	16.8	1.8	410
Rural Kenya* (4.0)	6.2	11.5	43.6	24.1	12.4	2.2	3,002
National *(3.7)	5.5	10.7	42.8	24.7	14.0	2.3	3,531

*Based on 1998 KDHS data.

() median number of visits during pregnancy.

Higher educational attainment is associated earlier antenatal care. While about one-third of mothers with no formal education began attending antenatal care during the last trimester, less than one-fifth of those with at least secondary education started antenatal care this late. When the data are organized by division, it appears that antenatal care tends to start latest in Makadara division. From analyses by ethnicity, the proportion of first trimester visits is highest among the

Table 8.2b. Timing of first antenatal care

Percent distribution of live births in the last 3 years by number of months pregnant at time of first visit, according to selected background characteristics, NCSS 2000 and 1998 KDHS.

Background characteristics	Number of Months pregnant at time of first visit				Don't know /missing	Number of Cases
	No antenatal visit	Months				
		1-3	4-6	7-9		
Mothers' age at birth						
<20	4.3	13.7	66.2	15.1	0.7	279
20-24	3.1	10.2	67.3	18.1	1.3	452
25-34	2.9	8.6	65.0	23.1	0.4	419
35+	6.0	7.5	55.2	31.3	0.0	69
Birth order						
1	3.7	13.1	68.4	14.3	0.5	434
2-3	2.6	10.6	64.7	21.0	1.1	501
4-5	2.2	6.6	64.5	26.2	0.5	183
6+	9.0	3.0	60.0	27.0	1.0	101
Education						
No education	13.0	3.7	50.0	33.3	0.0	54
Primary incomplete	4.5	11.9	57.9	23.8	1.9	202
Primary complete	3.1	9.3	67.1	20.1	0.4	578
Secondary+	2.1	11.7	69.5	15.6	1.1	385
Marital status						
Never married	7.6	5.7	64.2	20.8	1.9	106
Married/Living together	2.2	10.3	66.6	20.1	0.8	1,017
Widowed/Divorced/separated	12.5	14.6	56.3	16.7	0.0	96
Division						
Central	4.7	10.9	68.2	15.5	0.8	130
Makadara	4.0	4.0	64.0	28.0	0.0	50
Kasarani	4.4	9.2	63.8	21.9	0.8	251
Embakasi	2.9	8.6	66.2	21.0	1.4	210
Pumwani	3.0	12.1	60.6	15.2	9.1	33
Westlands	5.0	11.5	66.9	16.6	0.0	139
Dagoretti	4.0	10.1	64.4	20.8	0.7	149
Kibera	1.2	12.8	66.5	19.5	0.0	257
Ethnicity						
Kamba	3.3	8.8	67.0	19.8	1.1	182
Kikuyu	4.2	7.5	64.7	22.8	0.8	240
Luhya	3.5	13.4	63.9	18.5	0.6	314
Luo	1.8	9.6	67.5	20.2	0.9	333
Other	6.0	11.3	64.7	17.3	0.7	150
Nairobi slums (median=5.9)	3.5	10.3	65.6	19.9	0.8	1,219
Nairobi* (5.3)	1.7	20.2	63.0	13.5	1.7	119
Other urban *(5.4)	2.9	16.2	66.8	13.9	0.3	409
Rural Kenya* (5.8)	6.2	12.6	64.0	16.3	0.5	3,001
National *(5.7)	5.5	13.6	64.6	15.8	0.6	3,529

*Based on 1998 KDHS data.

() Median months pregnant at time of first visit.

Luhya, while the proportion of late starts to antenatal care (during the last trimester) is highest among the Kikuyu.

For the majority of deliveries in the Nairobi slums antenatal care begins during the second trimester (66 percent), but for another significant proportion it does not begin until the last trimester (20 percent). This pattern is consistent with national statistics, though women in the

slums tend to initiate antenatal care later. The median gestation period in the slums at first antenatal care visit (5.9 months) is comparable to the national average of 5.7 months.

8.1.3 Tetanus Toxoid Vaccination

Protection against neonatal tetanus - one of the main causes of infant mortality - by means of tetanus vaccination, is an important component of antenatal care. Two doses of the toxoid are usually administered during pregnancy, but fewer doses may be required, depending on the number received during previous pregnancies. A total of five doses are considered adequate for lifetime protection (NCPD, CBS & MI, 1999). Table 8.3 presents, according to selected background characteristics, the number of doses of tetanus toxoid received during the last five years by women who had delivered a baby in the three years preceding the survey.

The percentage of births protected by at least one dose of tetanus toxoid vaccination is quite similar to the percentage of pregnancies that received antenatal care from a medical provider, suggesting that this preventive measure may be a basic component of antenatal care by the antenatal care providers' services. In keeping with this conjecture, births to women with no education, and to widow, divorced or separated women have relatively high chances of having received no tetanus injection. However, among older women (aged 35 years or more), higher order births, and women in Pumwani and Kasarani divisions, the proportion of births that did not receive any dose of the tetanus vaccination exceeded the proportion that did not receive antenatal care by a notable margin. Higher order births or births to older women may have been protected by previous vaccinations. However, the observed pattern by division suggests that some births in the specified areas are not protected from neonatal tetanus, despite the fact that the mothers received antenatal care. This finding draws the quality of antenatal care services in these areas into question, and calls for further investigation.

Almost all women (95 percent) in the slums who gave birth in the three years preceding the survey had received at least one tetanus injection in the five years preceding the survey. Tetanus vaccination coverage in the slums thus compares quite favorably with that of the rest of Kenya.

Table 8.3 Tetanus toxoid vaccination

Percent distribution of births in the three years preceding the survey by number of toxoid injection mothers received during pregnancy, according to selected background characteristics, NCSS 2000 and KDHS 1998.

Background characteristics	Number of tetanus toxoid injections			Don't know /missing	Number of births
	No injection	One dose	Two doses or more		
Mothers' age at birth					
<20	7.9	34.8	57.3	0.0	279
20-24	2.9	30.5	66.6	0.0	452
25-34	4.5	35.6	59.7	0.2	419
35+	11.6	40.6	47.8	0.0	69
Birth order					
1	7.1	34.8	58.1	0.0	434
2-3	3.0	30.9	66.1	0.0	501
4-5	2.7	39.3	57.4	0.6	183
6+	10.9	33.7	55.4	0.0	101
Education					
No education	13.0	42.6	44.4	0.0	54
Primary incomplete	6.4	39.6	54.0	0.0	202
Primary complete	4.8	34.3	60.7	0.2	578
Secondary+	3.6	28.8	67.5	0.0	385
Marital status					
Never married	9.4	40.6	50.0	0.0	106
Married/Living together	4.0	32.9	62.9	0.1	1,017
Widowed/Divorced/separated	11.5	35.4	53.1	0.0	96
Division					
Central	6.2	44.6	49.2	0.0	130
Makadara	4.0	30.0	64.0	2.0	50
Kasarani	7.6	40.2	52.2	0.0	251
Embakasi	3.8	33.8	62.4	0.0	210
Pumwani	12.1	30.3	57.6	0.0	33
Westlands	5.8	31.7	62.6	0.0	139
Dagoretti	4.7	32.2	63.1	0.0	149
Kibera	2.3	25.3	72.4	0.0	257
Ethnicity					
Kamba	6.6	26.9	65.9	0.5	182
Kikuyu	5.0	33.3	61.7	0.0	240
Luhya	4.5	34.1	61.5	0.0	314
Luo	4.2	36.3	69.5	0.0	333
Other	6.7	36.7	56.7	0.0	150
NCSS Total	5.1	33.8	61.0	0.1	1,219
Nairobi*	8.4	36.1	52.1	3.4	219
Other urban *	6.3	37.6	55.4	0.7	417
Rural Kenya*	9.9	39.5	50.0	0.6	2,828
National *	9.4	39.1	50.8	0.7	3,464

* Based on the 1998 KDHS data.

8.2 Delivery Care

Appropriate care during delivery is vital to the health of the mother and the newborn, especially given that complications, though not prevalent, may arise suddenly and often unpredictably. It is estimated that 40 percent of pregnancies worldwide involve complications, and 15 percent evolve into life-threatening emergencies (Graham and Murray, 1997). Chances of a positive outcome are greatly improved if complications occur in the presence of a qualified attendant and in a medical facility with the necessary equipment and supplies.

An array of factors contributes to concern about the delivery phase of maternal health care in Kenya. First, in spite of almost universal utilization of professional antenatal care, less than half of all deliveries in Kenya take place in a health facility (NCPD, CBS & MI, 1999). Second, the KDHS data show that significant improvements in antenatal care attendance have not been matched with improvements in delivery care attendance. The difference in utilization of antenatal and delivery services is most likely a consequence of the accessibility of services in combination with a range of cultural issues, which influence acceptability of specific services. In slum communities, of service affordability is perhaps of greatest relevance. The introduction in 1989 of cost sharing for specific health services (excluding promotive and preventive services such as antenatal care) is a clear deterrent for poor women seeking delivery care. The percent distribution of health facility deliveries by selected background characteristics is given in Table 8.4.

Overall, 52 percent of all the births were delivered in a health facility, but this figure varied considerably by division. The highest percentage of health facility deliveries was reported in Westlands (73 percent), while the lowest percentage was reported in the Embakasi division (41 percent). The Kikuyu have the highest percentage of health facility deliveries (70 percent), while the Kamba's percentage is lowest (41 percent). As might be expected, women with secondary level education or higher have a percentage of health facility deliveries than women with less education. It is interesting to note that women with incomplete primary education are significantly less likely to deliver in a health facility, compared to those with no education.

An examination of demographic characteristics in the context of delivery location shows that births to women aged 35 years and above and higher order births are least likely to occur in a health facility. The negative correlation with birth order is particularly robust and consistent: about 60 percent of first order births are delivered in a health facility, while only 37 percent of births of order six and above are similarly delivered.

The proportion of slum births that take place in a health facility is higher than that in rural areas or Kenya as a whole, but is considerably lower than that for Nairobi or other urban areas in Kenya. While only about half of the deliveries in the slums take place in a health facility, about three-quarters of all deliveries in Nairobi as a whole occur in a health facility.

Table 8.4 Place of delivery

Percent distribution of births in the three years preceding the survey occurring in a health facility, according to selected background characteristics, NCSS 2000 and KDHS 1998.

Background characteristics	Percent of births occurring at a health facility	Number of births
Mothers' age at birth		
<20	55.2	279
20-24	49.3	452
25-34	54.4	419
35+	46.4	69
Birth order		
1	59.4	434
2-3	52.5	501
4-5	43.2	183
6+	36.6	101
Education		
No education	40.7	54
Primary incomplete	36.1	202
Primary complete	47.2	578
Secondary and above	69.9	385
Marital status		
Never married	60.4	106
Married/Living together	51.6	1,017
Widowed/Divorced/separated	50.0	96
Division		
Central	46.2	130
Makadara	50.0	50
Kasarani	51.0	251
Embakasi	41.0	210
Pumwani	54.5	33
Westlands	72.7	139
Dagoretti	67.1	149
Kibera	46.3	257
Ethnic		
Kamba	40.7	182
Kikuyu	69.6	240
Luhya	48.4	314
Luo	44.4	333
Other	64.0	150
NCSS Total	52.3	1,219
Nairobi*	75.6	219
Other urban *	64.4	417
Rural Kenya*	36.2	2,828
National *	42.1	3,464

* Based on the 1998 KDHS data

Births that are delivered in a health facility are likely to be attended to by a doctor, nurse or midwife, while those delivered at home are likely to be attended to by a traditional birth attendant, a relative or an unskilled person. The distribution of delivery attendant according to selected background characteristics of the mother is presented in Table 8.5. The proportion of deliveries that received no assistance rises steadily with increasing maternal age. Unassisted deliveries accounted for only two percent of births to women less than 20 years old, but accounted for 10 percent of births to women 35 years and older. Given the high correlation

between maternal age and birth order, it is not surprising that medical assistance during delivery also declined with increasing birth order. Higher order births were more likely to be assisted by a relative, or other unskilled person, or to be unassisted. One in five births of order six or higher received no assistance during delivery.

Table 8.5. Assistance during delivery

Percent distribution of births in the three years preceding the survey by type of assistance during delivery, according to selected background characteristics, NCSS 2000 and 1998 KDHS.

Background characteristics	Delivery attendant					Don't know/missing	Number of births
	Doctor	Nurse/Trained midwife	Traditional birth attendant	Relative/other	No one		
Mother's age							
<20	20.1	38.0	24.7	15.1	1.8	0.4	279
20-24	19.0	32.7	28.5	14.4	4.2	1.1	452
25-34	21.0	34.4	20.8	15.0	7.6	1.2	419
35+	20.3	29.0	23.2	15.9	10.1	1.4	69
Birth order							
1	24.4	38.5	23.0	13.1	0.7	0.2	434
2-3	20.4	33.3	26.8	12.8	5.2	1.6	501
4-5	11.5	34.4	23.5	23.0	7.1	0.5	183
6+	4.9	20.8	23.7	17.8	20.8	2.0	101
Division							
Central	16.2	32.3	23.8	16.9	10.0	0.8	130
Makadara	16.0	38.0	26.0	16.0	4.0	0.0	50
Kasarani	13.5	37.5	27.9	13.1	7.2	0.8	251
Embakasi	10.5	34.8	31.9	18.1	3.3	1.4	210
Pumwani	30.3	42.4	15.2	12.1	0.0	0.0	33
Westlands	32.3	41.0	5.7	16.5	2.9	1.4	139
Dagoretti	33.6	33.6	14.8	11.4	5.4	1.3	149
Kibera	21.0	26.8	33.0	14.0	4.3	0.8	257
Education							
No education	18.5	22.2	27.8	24.1	5.6	1.9	54
Primary incomplete.	14.4	23.8	28.7	24.3	8.4	0.5	202
Primary complete.	16.3	32.9	29.6	14.7	5.4	1.2	578
Secondary+	28.8	43.6	14.8	8.8	3.1	0.8	385
Antenatal visits							
None	2.4	7.1	26.1	42.9	19.0	2.4	42
1-3 visits	15.4	26.4	33.9	17.1	6.1	1.1	363
4 or more visits	23.2	39.2	20.2	12.6	4.0	0.9	803
Don't/missing	9.1	36.4	45.5	0.0	9.1	0.0	11
Ethnic group							
Kamba	13.7	29.7	34.6	15.9	4.4	1.6	182
Kikuyu	29.2	42.9	14.6	11.7	1.7	0.0	240
Luhya	19.7	29.9	24.9	18.5	5.4	1.6	314
Luo	12.9	33.3	29.7	14.7	8.7	0.6	333
Other	29.3	37.3	17.4	11.3	3.3	1.3	150
NCSS Total	20.0	34.3	24.7	14.8	5.2	1.0	1,219
Nairobi*	31.9	44.5	5.9	11.8	4.2	1.7	219
Other urban *	19.2	48.7	13.9	13.8	4.2	0.3	417
Rural Kenya*	9.8	28.6	23.5	26.4	11.5	0.2	2,828
National *	12.3	32.0	21.2	23.9	10.2	0.4	3,464

*Based on the 1998 KDHS data

Source of delivery assistance varies considerably by division, although these results (as with the other distributions by region in this chapter) must be interpreted with caution, given the small number of cases recorded in some of the divisions. For instance, according to the data, no delivery in Pumwani division was unassisted. Easy access to the Pumwani maternity hospital, the largest maternity hospital in the country, might explain this observation, as might the small number of cases considered. The percentage of deliveries assisted by a traditional birth attendant (TBA) varies from 6 percent in the Westlands division to 33 percent in Kibera division.

While higher educational attainment is associated with increased use of professional delivery assistance, those with primary level education (especially incomplete primary education) sometimes reported less professional assistance than those with no formal education.

Medical personnel assisted only 10 percent of those who did not receive any antenatal care during delivery, compared to 62 percent of those who had made at least four antenatal visits during pregnancy.

The highest percentage of medically assisted births occurred among the Kikuyu; consequently their percentage of births attended by unskilled persons is lowest. Among ethnic groups, delivery assistance by a relative is most common among the Luhya, while the Luo have the highest percentage of unassisted deliveries.

Overall, 54 percent of births were assisted by medical personnel (doctor, nurse or midwife), 25 percent by a traditional birth attendant (or, TBA), 15 percent by a relative or other unskilled person, and 5 percent had no assistance. The percentage of medically assisted deliveries was higher in the slums than in rural areas or Kenya as a whole, but was substantially lower than in Nairobi or other urban areas. TBA assistance was particularly frequent in the slums; compared to other urban settings –TBAs assist only 6 percent of births in Nairobi as a whole, yet deliver one in four slum births.

8.3 Delivery Characteristics

Details of births, such as Caesarean section deliveries and birth weight or birth size, can provide useful indicators of maternal and child health. Low birth weight is a strong predictor of infant mortality, especially during the first few weeks of life. Low birth weight often results from premature delivery, intrauterine growth retardation, or both. Caesarean sections represent difficult deliveries that may result in a maternal and perinatal morbidity, or mortality if appropriate care is not provided. They are normally viewed as an unfavorable delivery characteristic because they increase the risk of maternal death (often due to sepsis, anesthetic accident or technical problems during surgery). On the other hand, a very low rate of Caesarean section deliveries may indicate a lack of essential obstetric care since it is estimated that at least 5 percent of deliveries require a Caesarean section to avert morbidity or even death to the mother and the newborn (UNICEF/ WHO/ UNFPA, 1997). Table 8.6 gives the distributions of Caesarean section deliveries, birth weight, and birth size according to selected background characteristics.

Table 8.6. Delivery characteristics: Caesarean section, premature births, birth weight and size

Among births in the three years preceding the survey, the percentage distribution of Caesarean section deliveries, birth weight, and baby's size at birth, according to selected background characteristics, NCSS 2000 and KDHS 1998.

Background characteristics	Delivery by C-section	Less than 2.5kg	Birth weight 2.5kg or more	No birth weight	Size of child at birth Smaller than average	Average or larger	Number of births
Mother's age							
<20	6.5	4.3	49.8	45.9	22.2	77.8	279
20-24	4.4	1.8	49.3	48.9	16.2	83.8	452
25-34	7.6	3.1	51.6	45.3	14.3	85.7	419
35+	13.0	2.9	49.3	47.8	21.7	78.3	69
Birth order							
1	8.8	3.2	56.2	40.6	18.7	81.3	434
2-3	5.2	2.8	51.1	46.1	15.8	84.2	501
4-5	4.4	3.3	41.5	55.2	20.2	79.8	183
6+	6.9	1.0	35.6	63.4	12.9	87.1	101
Division							
Central	9.2	2.3	41.5	56.2	12.3	87.7	130
Makadara	4.0	2.0	56.0	42.0	16.0	84.0	50
Kasarani	5.2	2.0	45.4	52.6	21.1	78.9	251
Embakasi	5.2	2.4	40.0	57.6	19.5	80.5	210
Pumwani	6.1	6.1	60.6	33.3	27.3	72.7	33
Westlands	12.9	3.6	70.5	25.9	9.4	90.6	139
Dagoretti	8.1	3.4	71.8	24.8	13.4	86.6	149
Kibera	3.5	3.5	41.6	54.9	19.5	80.5	257
Education							
No education	3.7	1.9	40.7	57.4	22.2	77.8	54
Primary incomplete	5.4	3.0	31.7	65.3	21.8	78.2	202
Primary complete	5.0	2.4	45.3	52.2	18.2	81.8	578
Secondary+	9.6	3.6	68.6	27.8	12.7	78.3	385
Antenatal visits							
None	0.0	4.8	19.0	76.2	26.2	73.8	42
1-3 visits	4.1	3.0	38.3	58.7	23.7	76.3	363
4 or more visits	8.0	2.7	57.5	39.7	13.9	86.1	803
Don't know/missing	0.0	0.0	27.3	72.7	9.1	90.9	11
Ethnic group							
Kamba	5.5	1.1	40.7	58.2	23.6	76.4	182
Kikuyu	10.4	3.3	70.8	25.8	17.5	82.5	240
Luhya	6.1	2.2	46.5	51.3	15.9	84.1	314
Luo	3.9	3.0	39.6	57.4	16.2	83.8	333
Other	8.0	5.3	60.0	34.7	14.0	86.0	150
NCSS Total	6.5	2.9	50.2	46.9	17.2	82.8	1,219
Nairobi*	12.6	5.9	73.1	21.0	15.2	83.2	219
Other urban *	9.4	6.7	59.4	33.9	15.5	84.1	417
Rural Kenya*	6.0	3.2	36.2	60.7	15.9	83.3	2,828
National *	6.8	3.8	41.3	54.9	15.8	83.4	3,464

* Based on 1998 KDHS data

The highest proportion of Cesarean section deliveries occur among women 35 years or older and among first order births. These groups are likely to have a relatively higher risk of pregnancy and childbirth complications. The higher proportion of Cesarean section deliveries observed among women with higher educational attainment (at least secondary level education) and women who received more regular antenatal care (four or more visits), however, most likely reflect better

maternal health care services received by these groups of women. Overall, the proportion of births delivered by Cesarean section in the slums (seven percent), is lower than that in Nairobi (13 percent) or other urban areas (nine percent), but comparable to the rates in rural areas or Kenya as a whole.

Higher education and more frequent antenatal care do, however, consistently correlate with a reduced percentage of babies of smaller than average reported size. This percentage was highest among mothers younger than 20 years of age or older than 35 years (22 percent for each group), among births of order four and five (20 percent), among births to women in Pumwani Division (27 percent), and among the Kamba (24 percent). The lowest percentage of smaller than average babies was reported among 25-34 year old mothers (14 percent), births of order six or higher (13 percent), and births in Westlands division (nine percent). In general, the percentage of births reported to be smaller than average in the slums (17 percent) is only slightly higher than the percentage reported in other settings in Kenya (15 to 16 percent). Note that birth weight information was not available for a substantial proportion of the births, especially those of order six and above, women with incomplete primary education and those who received no antenatal care.

8.4 Child Vaccination

The key strategy for controlling vaccine-preventable diseases among children in Kenya is carried out through the Kenya Expanded Program on Immunization (KEPI). The program aims to reduce morbidity and mortality caused by measles, polio, tuberculosis, tetanus, diphtheria, and pertussis. According to WHO guidelines, children should be fully immunized before they are 12 months old. The complete immunization schedule consists of one dose of BCG (to protect against tuberculosis), usually administered either at birth or at the first clinic visit; three doses of polio and DPT (to protect against diphtheria, tetanus and pertussis) administered at approximately six, ten and fourteen weeks of age; and one dose of measles, administered soon after nine months of age. Information on child vaccination was obtained from child health cards, or, in the case that no child card was available, mothers' verbal report. Table 8.7 is organized by source of information and gives the distribution of children aged 12-23 months who received specific vaccines, and the percentage vaccinated by twelve months of age.

Vaccination cards were seen for 56 percent of children, while information for the remaining 44 percent of the cases was based on mothers' reports. For the vaccines usually administered during the first few visits (normally within six weeks after birth), namely BCG, DPT1, and polio1, coverage was almost universal (96-98 percent). However, coverage for the third Polio dose is surprisingly low. Only half of the children received the third polio dose, while more than three-quarters of the children received each of the other vaccines, even the measles vaccine which is usually given after the third polio dose. The facts that coverage for DPT3 (usually given concurrently with polio3) is reasonably high (86 percent) and that, according to vaccination cards, percentages are slightly higher for polio, suggests that the observed low polio coverage is most likely a result of omissions in mothers' reports.

Slightly fewer than half of children aged 12-23 months (48 percent) were fully vaccinated, and it is evident that some of the children received the vaccinations later than recommended, as only 44 percent of the children were fully immunized by 12 months of age.

Table 8.7: Vaccination by source of information

Percent of children 12-23 months who had received specific vaccines at any time before the survey, by source of information about the vaccination, and the percentage vaccinated by 12 months of age, NCSS 2000

	BGG	DPT			Polio			Measles	All ¹	None	Number of children
		DPT1	DPT2	DPT3	Polio1	Polio2	Polio3				
Vaccinated at any time before the survey											
Vaccination card	56.1	55.5	54.5	52.7	56.1	55.5	54.5	48.6	47.7	0.0	247
Mothers' report	41.4	40.7	38.4	32.7	41.6	20.9	0.0	34.1	0.0	2.0	193
Either source	97.5	96.1	93.0	85.5	97.7	76.4	54.5	82.7	47.7	2.0	440
Vaccinated by 12 months of age ²	95.9	94.6	91.8	84.3	96.5	75.1	53.4	77.4	44.2	3.2	440

¹Children who are fully vaccinated (i.e. those who have received BCG, measles and three doses of DPT and polio (excluding polio 0).

²For children whose information was based on the mothers' report, the proportion of vaccinations given during the first year of life was assumed to be the same as for children with a written record of vaccination.

Table 8.8 shows the percentage of children aged 12-23 months who received specific vaccinations classified by background characteristics. Coverage varies little by sex of child or parity. The percentage of children who received the third polio, DPT3, or full vaccination does, however, vary markedly by division. In addition, low coverage appears to correlate with a lack of maternal education. Given the small number of cases, these fluctuations may not be indicative of the actual variations. Overall, vaccination coverage in the slums for BCG, the three doses of DPT, and the first polio dose was comparable to that in the other settings in Kenya. However, coverage for the measles vaccination was lower in the slums than in Nairobi and other urban areas though it was slightly higher than in rural areas or Kenya as a whole. In comparison with all other settings, coverage for the second and third polio vaccines was particularly low in the slums. Consequently, full immunization coverage in the slums compared unfavorably with that of the rest of Kenya, although coverage for antigens that are likely to have the greatest impact on childhood survival (BCG, DPT, and measles) are comparable across slum, the whole of Nairobi, and rural populations.

Table 8.8. Vaccination by background characteristics

Percent of children 12-23 months who had received specific vaccines at any time before the survey, (according to the vaccination card or the mothers' report) and the percentage with a vaccination card, according to selected background characteristics, NCSS 2000 and KDHS 1998.

Background characteristics	Percent of children who received:										Number of children
	BGG	DPT			Polio			Measles	All ¹	None	
Child's sex											
Male	97.2	96.2	93.0	83.6	98.1	74.6	51.6	82.6	47.4	1.9	213
Female	97.8	96.0	93.0	87.2	97.4	78.0	57.3	82.8	48.0	2.2	227
Birth order											
1	95.7	94.5	90.2	81.6	96.3	74.2	50.9	82.2	45.4	3.7	163
2-3	99.5	97.8	94.5	88.5	99.5	77.6	59.6	84.7	51.4	0.5	183
4-5	96.8	96.8	95.2	87.3	96.8	76.2	50.8	79.4	46.0	1.6	63
6+	96.8	93.5	93.5	83.9	96.8	80.6	51.6	80.6	41.9	3.2	31
Division											
Central	97.9	95.8	89.6	68.8	100.0	72.9	45.8	75.0	41.7	0.0	48
Makadara	100.0	100.0	92.3	92.3	100.0	76.9	46.2	92.3	46.2	0.0	13
Kasarani	91.7	88.5	86.5	81.3	91.7	69.8	51.0	69.8	42.7	8.3	96
Embakasi	98.6	97.3	94.5	89.0	98.6	83.6	54.8	84.9	45.2	1.4	73
Pumwani	100.0	84.6	76.9	69.2	100.0	61.5	46.2	84.6	38.5	0.0	13
Westlands	100.0	100.0	98.1	94.2	100.0	78.8	67.3	94.2	65.4	0.0	52
Dagoretti	100.0	100.0	98.1	94.3	98.1	75.5	60.4	92.5	54.7	0.0	53
Kibera	98.9	100.0	96.7	87.0	100.0	80.4	54.3	84.8	45.7	0.0	92
Education											
No education	88.9	88.9	77.8	72.2	88.9	66.7	50.0	72.2	38.9	11.1	18
Primary incomplete.	95.4	96.9	93.8	81.5	96.9	80.0	43.1	73.8	35.4	3.1	65
Primary complete.	97.7	96.4	92.8	88.2	97.7	80.5	59.7	81.4	52.0	1.8	221
Secondary+	99.3	96.3	94.9	84.6	99.3	69.1	52.2	90.4	47.8	0.7	136
Ethnicity											
Kamba	98.1	96.3	92.6	88.9	100.0	81.5	48.1	81.5	40.7	0.0	54
Kikuyu	100.0	98.8	98.8	94.6	100.0	68.6	60.5	94.2	58.1	0.0	86
Luhya	99.2	99.2	94.9	88.1	98.3	82.2	54.2	82.2	47.5	0.8	118
Luo	96.7	93.5	89.4	79.7	96.7	79.7	57.7	74.0	48.0	3.3	123
Other	91.5	91.5	88.1	76.3	93.2	64.4	45.8	86.4	39.0	6.8	59
NCSS Total	97.5	96.1	93.0	85.5	97.7	76.4	54.5	82.7	47.7	2.0	440
Nairobi*	97.7	95.5	90.9	75.0	97.7	97.7	88.6	93.2	72.7	2.3	81
Other urban*	98.2	98.2	90.3	81.4	98.5	94.8	85.9	92.5	69.1	1.1	129
Rural Kenya*	95.3	95.4	89.9	79.2	95.0	90.2	79.9	76.1	64.2	2.9	888
National *	95.9	95.8	90.0	79.2	95.4	90.4	80.8	79.2	65.4	2.7	1,097

¹Children who are fully vaccinated (i.e. those who have received BCG, measles and doses of DPT and polio (excluding polio 0))

* Based on 1998 KDHS data

8.5 Prevalence and Treatment of Cough, Fever and Diarrhea

Cough, fever, and diarrhea are among the most common symptoms associated with fatal episodes of infectious diseases among Kenyan children. A serious cough may indicate an acute respiratory infection (ARI), while malaria and common childhood infections are usually accompanied by fever. Mothers of children born in the three years preceding the survey were asked if their child had suffered from a cough, fever, or diarrhea in the two weeks prior to the

survey. Table 8.9 presents the prevalence and treatment of cough in terms of selected background characteristics

A fairly large proportion of the children (46 percent) were ill with a cough in the two weeks before the survey.⁴ There is a significant variation by age in the prevalence of cough among infants less than one year old. During the two-week period, only 29 percent of those less than six months old had a cough, but 55 percent of older infants (ages 6 to 11 months old) had a cough. A reasonably large proportion (74 percent) of these 6-11 month olds were taken to a health facility or care provider.

Table 8.9. Prevalence and treatment of cough

Percentage of children under three years who were ill with a cough during the two weeks preceding the survey and percentage taken for treatment, by selected background characteristics, NCSS 2000.

Background characteristics	Percentage of children with a cough	Percentage of children taken to health facility or provider ¹	Number of children
Child's age			
<6 months	28.6	64.2	234
6-11 months	54.7	74.0	225
12-23 months	49.5	58.3	440
24-35 months	46.5	58.5	353
Child's sex			
Male	42.8	59.5	612
Female	48.4	64.8	640
Birth order			
1	40.1	64.4	449
2-3	46.4	64.9	515
4-5	53.0	55.7	183
6+	53.3	57.1	105
Division			
Central	51.5	61.8	132
Makadara	36.4	70.0	55
Kasarani	47.1	62.5	255
Embakasi	40.7	47.8	221
Pumwani	36.1	92.3	36
Westlands	50.7	49.3	144
Dagoretti	42.5	74.2	146
Kibera	47.9	70.6	263
Education			
No education	55.8	62.1	52
Primary incomplete.	47.9	61.3	194
Primary complete.	47.5	64.0	608
Secondary+	40.5	60.2	398
Ethnicity			
Kamba	42.4	59.3	191
Kikuyu	41.9	71.3	241
Luhya	44.8	68.5	319
Luo	50.4	55.0	335
Other	47.0	59.0	166
Total	45.7	62.4	1,252

¹Includes health center, hospital, clinic and private doctor

⁴ These data for the slums are not comparable to 1998 KDHS data for other settings because the KDHS collected information on coughs that were accompanied by rapid breathing.

The prevalence of cough was higher among girls than among boys, and this proportion increased steadily with increasing birth order, from 40 percent for first births to 53 percent for births of order six or higher. Compared to lower order births, higher order births (of birth order four or higher) were also less likely to receive medical care for their cough. Children in Pumwani division were least likely to be ill with a cough but most likely to receive medical attention for it. On the other hand, children whose mothers had attained secondary education or more had the lowest prevalence of cough, but were least likely to receive medical care. Luo women reported the highest percentage of children with a cough, and were least likely to seek medical attention for these cases.

The distribution of fever in the slums by selected background characteristics is shown in Table 8.10. The prevalence of fever among children in the Nairobi slums is quite high in comparison to the prevalence of fever among children in other areas of Kenya. In the two weeks prior to the survey, 64 percent of children under three years of age were ill with fever in Nairobi slums. This percentage is substantially higher than those observed in all other settings in Kenya.

Fever is most prevalent among the 6-11 month olds (75 percent), and least prevalent among children between two and three years old (59 percent). It is interesting to note that first order births have the lowest prevalence of fever (62 percent), and births of order four and five have the highest prevalence (70 percent). Maternal education appears to have a protective effect against child illness. While 57 percent of children whose mothers had attained at least secondary level education suffered from febrile illness in the two weeks prior to the survey, this figure was 75 percent when the mothers had no formal education. The prevalence of fever is highest in the Kibera division (69 percent) and lowest in the Westlands division (56 percent). This percentage was highest among the Luo and Luhya ethnic groups (69 percent).

Less than half of children ill with fever were taken to a health facility or care provider (43 percent). This percentage is significantly lower than that for Nairobi as a whole (69 percent) or for other settings in Kenya (56-73 percent). Younger infants (less than 6 months old) and births of order six or higher were the least likely to benefit from professional care. Only 27 percent of children with fever in the Embakasi division were taken to a care provider or facility, while this figure was as high as 53 percent for the Pumwani and Kibera divisions.

Diarrhea is especially common in Nairobi slums in comparison with the rest of Kenya. Poor sanitation in the large and densely populated low-income areas may explain this difference. Slum areas generally have poor access to safe drinking water and to appropriate means of waste disposal. Indeed a survey of basic facilities in Kenya revealed that more than half of Nairobi's slum population lacks access to toilet facilities (CBS/GOK, 1990). The survey showed that while 92 percent of urban residents in planned high-density areas in Kenya have access to safe drinking water, only 53 percent of slum dwellers did. Data from three major slums in Nairobi (Kibera, Mathare and Kawangware) indicate that most slum dwellers' houses do not have water supply. Instead water is purchased from informal traders (more than 80 percent in Kibera and Mathare) or drawn from communal water points (AMREF, 1991). Chapter 2 also shows that three-quarters of slum households in the NCSS obtain their water from vendors.

Table 8.10: Prevalence and treatment of fever

Percentage of children under three years who were ill with fever during the two weeks preceding the survey, by selected background characteristics, NCSS 2000 and KDHS 1998.

Background characteristics	Percentage of children with fever	Number of children	Percentage of children with fever taken to a health facility or provider ¹	Number of children with fever
Child's age				
<6 months	60.7	234	32.5	154
6-11 months	74.7	225	58.2	192
12-23 months	65.0	440	43.2	357
24-35 months	58.9	353	39.7	251
Child's sex				
Male	62.6	612	41.2	453
Female	65.8	640	44.5	501
Birth order				
1	62.1	449	40.3	328
2-3	63.5	515	44.3	388
4-5	69.9	183	47.5	152
6+	66.7	105	39.0	86
Division				
Central	65.9	132	47.7	107
Makadara	61.8	55	41.8	38
Kasarani	67.1	255	42.7	198
Embakasi	58.8	221	27.1	155
Pumwani	61.1	36	52.8	25
Westlands	56.3	144	35.4	106
Dagoretti	66.4	146	50.7	114
Kibera	69.2	263	52.5	211
Education				
No education	75.0	52	40.4	43
Primary incomplete	70.1	194	43.4	158
Primary complete	66.4	608	44.7	482
Secondary+	56.5	398	38.7	271
Ethnicity				
Kamba	62.8	191	41.4	144
Kikuyu	56.4	241	39.8	168
Luhya	68.7	319	49.2	249
Luo	68.7	335	41.2	275
Other	59.6	166	40.4	118
NCSS Total	64.2	1,252	42.9	954
Nairobi*	38.8	213	68.9	83
Other urban *	43.3	387	72.6	168
Rural Kenya*	42.4	2,606	55.9	1,106
National *	42.3	3,205	59.1	1,356

¹Includes health center, hospitals, clinic, and private doctor

*Based on 1998 KDHS data

Table 8.11 presents the prevalence of diarrhea among children during the two-weeks prior to the survey according to selected background characteristics. Overall, 32 percent of the children under three years of age in the slums had diarrhea in this period. This rate is more than double that of Nairobi as a whole (13 percent), and is considerably higher than the rates for other urban areas, rural areas, and Kenya as a whole. Further, about 4 percent of children in the slums had diarrhea with blood, which signifies serious systemic infection.

Diarrhea was most prevalent among 12-23 month old children (42 percent), as well as among older infants between 6 and 11 months old (40 percent), and least prevalent among infants less than 6 months old (17 percent). This is not surprising since most children are exclusively breastfed at this age. Diarrhea with blood was also most prevalent among the 12-23 month olds (6 percent) and least prevalent among younger infants (2 percent). Male children appeared to have a higher prevalence of all diarrhea classifications than their female counterparts, and higher order births were more prone to diarrhea than lower order births.

Table 8.11. Prevalence of diarrhea

Percent of children under three years of age with watery diarrhea and diarrhea with blood during the two weeks preceding the survey, by selected background characteristics, NCSS 2000.

Background characteristics	Diarrhea in the proceeding two weeks		Number of children
	All diarrhea	Diarrhea with blood	
Child's age			
<6 months	17.1	1.7	234
6-11 months	40.4	2.2	225
12-23 months	42.3	5.5	440
24-35 months	23.5	3.1	353
Child's sex			
Male	33.3	4.6	612
Female	30.6	2.5	640
Birth order			
1	31.2	2.9	449
2-3	31.1	3.7	515
4-5	33.3	4.9	183
6+	37.1	2.9	105
Division			
Central	36.4	4.5	132
Makadara	18.2	7.3	55
Kasarani	32.5	3.1	255
Embakasi	26.7	2.7	221
Pumwani	33.3	5.6	36
Westlands	28.5	3.5	144
Dagoretti	28.1	2.7	146
Kibera	40.3	3.4	263
Education			
No education	32.7	5.8	52
Primary incomplete.	38.7	5.2	194
Primary complete	35.2	4.3	608
Secondary+	23.6	1.3	398
Ethnicity			
Kamba	31.4	4.2	191
Kikuyu	20.7	1.2	241
Luhya	37.3	3.4	319
Luo	41.5	5.7	335
Other	19.3	1.8	166
NCSS Total	31.9	3.5	1,252
Nairobi*	12.9	3.4	213
Other urban *	19.4	1.7	387
Rural Kenya*	17.1	3.1	2,606
National *	17.1	3.0	3,205

* Based on 1998 KDHS

The variation in the prevalence of diarrhea by division suggests that there might be geographical differences in the prevalence of the causal factors to this problem. As might be expected, education is strongly associated with prevalence of diarrhea. Only 24 percent of children whose mothers had attained at least secondary level education had diarrhea, and only one percent of such children had diarrhea with blood. Meanwhile, among mothers with incomplete primary education, 39 percent of children had diarrhea and five percent had diarrhea with blood. Again, diarrhea was most prevalent among Luo children.

As to treatment, more than half of the children with diarrhea in the two weeks prior to the survey were taken to a health facility or a care provider (58 percent), and most children received oral rehydration therapy (ORT) which consisted of a solution prepared from oral rehydration salt (ORS) packets or recommended home fluid (RHF), or an increased fluid intake (80 percent). About 11 percent of the children received an injection, and only 4 percent received no treatment.

Table 8.12 presents diarrhea treatment according to background characteristics. Treatment of diarrhea appeared to vary considerably by background characteristic. The proportion of children with diarrhea who were taken to a health facility or provider or who received ORS solution was highest among the 12-23 month olds. However, younger infants (less than 6 months old) were the most likely to receive recommended home fluids (80 percent). It is interesting to note that although female children were more likely to receive an ORT when they had diarrhea, male children suffered from diarrhea more often. This pattern suggests that there is some difference in the treatment of boys and girls in these communities. The proportion of children taken to a health facility or care provider was highest among fourth and fifth order births. Care for diarrhea varied considerably by division. Only 39 percent of children with diarrhea in Westlands division were taken to a health facility or a care provider, compared to 68 percent of children in Kibera. In all divisions, ORT or injections were employed to treat nearly every case of diarrhea. Only in Westlands and Embakasi did more than 5 percent of children with diarrhea receive no treatment.

Lack of maternal education appears to deter adequate diarrhea care. While the majority of children whose mothers had some formal education were taken to a health facility or a care provider (at least 55 percent), only 24 percent of children whose mothers were uneducated received treatment. It is interesting to note that the reported proportion of children with diarrhea taken to a health facility was highest when their mothers had achieved only an incomplete primary education. Although the number of cases is relatively small, it is important to note that a substantial proportion of children whose mothers were uneducated received no ORT (35 percent), compared to 13 percent of those whose mothers had attained at least secondary level education.

Table 8.12: Treatment of diarrhea

Treatment of diarrhea among children under three years who had diarrhea in the two weeks preceding the survey, the percentage taken for treatment to a health facility or provider, the percentage who received oral rehydration therapy (either solution prepared from ORS packets, recommended home fluid (RHF), or increased fluids), the percentage who received no ORT and the percentage given other treatments, according to selected background characteristics, NCSS 2000.

Background Characteristic	Percentage taken to a health facility or provider	ORS packet	RHF at home	Either ORS or RHF	Increased fluids	Did not receive ORT	Injection	Home remedy/ other	No treatment	Number of children
Child's age										
<6 months	55.0	35.0	67.5	80.0	37.5	12.5	7.5	95.0	2.5	40
6-11 months	51.6	35.2	56.0	70.3	37.4	23.1	11.0	97.8	1.1	91
12-23 months	62.9	49.5	52.7	75.8	33.3	19.9	14.0	94.1	3.2	186
24-35 months	54.2	38.6	49.4	69.9	34.9	24.1	3.6	89.2	7.2	83
Child's sex										
Male	56.9	39.2	50.0	69.6	37.3	23.5	10.8	93.1	3.4	204
Female	58.7	45.9	58.7	78.1	32.7	17.9	10.2	94.9	3.6	196
Birth order										
1	58.6	45.7	59.3	77.1	30.7	20.0	10.7	95.7	2.1	140
2-3	55.6	40.0	49.4	70.0	34.4	21.9	10.0	91.3	5.0	160
4-5	63.9	41.0	55.7	73.8	41.0	19.7	8.2	98.4	1.6	61
6+	53.8	43.6	53.8	76.9	43.6	20.5	15.4	92.3	5.1	39
Slum Division										
Central	54.2	39.6	54.2	70.8	39.6	25.0	20.8	100.0	0.0	48
Makadara	70.0	60.0	80.0	100.0	50.0	0.0	10.0	100.0	0.0	10
Kasarani	48.2	43.4	55.4	68.7	33.7	26.5	13.3	94.0	4.8	83
Embakasi	61.0	45.8	54.2	78.0	30.5	18.6	3.4	89.8	6.8	59
Pumwani	66.7	16.7	83.3	83.3	41.7	8.3	0.0	100.0	0.0	12
Westlands	39.0	31.7	43.9	63.4	61.0	19.5	0.0	87.8	7.3	41
Dagoretti	63.4	48.8	39.0	70.7	29.3	19.5	12.2	92.7	2.4	41
Kibera	67.9	44.3	57.5	78.3	26.4	19.8	12.3	95.3	1.9	106
Education										
No education	23.5	17.6	41.2	58.8	23.5	35.3	0.0	94.1	5.9	17
Primary incomp	66.7	45.3	60.0	76.0	33.3	22.7	9.3	93.3	4.0	75
Primary comp.	58.4	40.2	55.6	72.4	33.6	22.4	11.7	94.9	3.7	214
Secondary+	55.3	50.0	48.9	77.7	41.5	12.8	10.6	92.6	2.1	94
Ethnicity										
Kamba	63.3	31.7	58.3	75.0	33.3	18.3	11.7	93.3	3.3	60
Kikuyu	50.0	48.0	50.0	76.0	48.0	20.0	4.0	90.0	6.0	50
Luhya	60.5	39.5	51.3	71.4	35.3	20.2	8.4	93.3	2.5	119
Luo	57.6	47.5	54.7	73.4	30.9	22.3	14.4	97.1	2.2	139
other	50.0	43.8	62.5	78.1	34.4	21.9	9.4	90.6	9.4	32
Total	57.8	42.5	54.3	73.8	35.0	20.8	10.5	94.0	3.5	400

There was little variation in reported diarrhea care by ethnicity. Although it is usually recommended that children who are ill with diarrhea be adequately fed and that their fluid intake be increased, Table 8.13 shows that this was not the usual practice for children in the Nairobi slums. For children ill with diarrhea, the amount of solid foods given was reduced in 39 percent of the cases while fluid intake was reduced in 17 percent of the cases. Fluid intake was increased only in 35 percent of the cases.

Table 8.13. Feeding practices during diarrhea

Percentage distribution of children under three years who had diarrhea in the past two weeks by amount of fluids and solid foods given compared with normal practice, NCSS 2000.

Feeding practice	Total
Amount of fluids given	
Same	47.5
Increased	35.0
Decreased	17.0
Don't know/missing	0.5
Amount of solid foods given	
Same	55.3
Increased	5.5
Decreased	38.5
Don't know/missing	0.7
Total percent	100.0
Number of cases	400

8.6 Summary

In general, the coverage of antenatal care in the slums is comparable to that in the rest of Kenya. The proportion of births/pregnancies receiving antenatal care from medical personnel, the median number of antenatal care visits during pregnancy, and the median timing of the first visit in the slums is also comparable to national levels. With respect to at least one aspect of antenatal care, infants born in informal settlement communities fare better than infants born elsewhere in Kenya: The proportion of neonates who are protected from tetanus is higher in slum communities than in Nairobi as a whole, other urban, and rural Kenyan communities. Although the quality of antenatal care in Nairobi slums seems fair, there is need for special attention to uneducated women. Deliveries in this group are least likely to receive antenatal care. Even when they do receive some care, antenatal visits are often far too few and begin late in pregnancy. Consequently, special information, education, and communication messages emphasizing the importance of appropriate antenatal care should target this group.

In terms of professional delivery care, the Nairobi slums seem better off than rural communities or Kenya as a whole, but worse off than Nairobi as a whole or other urban communities in Kenya. About half of deliveries in the slums take place in a health facility, compared to just over one-third in rural areas and about three-quarters in Nairobi as a whole. Assistance during delivery follows a similar pattern, since medical personnel usually administer deliveries in health facilities. Nonetheless, traditional birth attendant deliveries are most prevalent in the Nairobi slums; one-quarter of births in the slums are assisted by traditional birth attendants, compared to only 6 percent of births in Nairobi as a whole. This finding suggests that traditional birth attendants in Nairobi may function almost exclusively in the slums, where delivery care is particularly poor for higher order births, older mothers, and mothers with low educational attainment. The proportion of births delivered through Caesarean section in the Nairobi slums is lower than in Nairobi as a whole or other urban areas. The proportion of children with low birth weight or reported to be smaller than average at birth is higher in slums than other areas.

Nairobi slum residents more frequently employ professional delivery care in comparison with rural residents, and this difference is likely a factor of accessibility. The issue of such access to

health services is a critical problem in many rural parts of Kenya, where long distances to hospitals and poor road conditions are real obstacles to reaching health facilities and often a disincentive to those seeking care. Economic hardships faced by slum residents may make existing maternity care services unaffordable, which may account for their greater reliance on traditional birth attendants for delivery assistance compared to women in other parts of Kenya.

Slum residents in Nairobi are very disadvantaged in terms of child health indicators. While at least 80 percent of children in the other areas received the third polio vaccine, only half of children in the slums between the ages of 12 and 23 months did so. As a result, less than half of children in the slums were fully vaccinated, compared to between two-thirds and three-quarters of children in rural areas, other urban areas, or Nairobi as a whole. The prevalence of fever and diarrhea are substantially higher among slum children than children elsewhere—an alarming proportion of children in the Nairobi slums had a fever in the two weeks prior to the survey (about two-thirds), compared to 40 percent or less in all other areas. Similarly, almost one in three children in the slums had diarrhea in this two-week period, compared to less than one in five in other areas.

Unsanitary conditions, poor drainage systems, a lack of safe drinking water, overcrowding, and poor access to health services all contribute to poor child health. As evidenced by the low proportions of full immunization coverage and the high prevalence of common childhood illnesses, these are critical issues for slum children.

There is a close association between maternal and child health among urban descendants of specific ethnic communities, and among their rural counterparts. For example, the poor health outcomes observed among the Luo ethnic group and the more favorable outcomes for the Kikuyu group in urban communities may be linked to the poor outcomes and the more favorable outcomes that have been observed in Nyanza and Central provinces respectively, regions where these ethnic groups predominate. This correlation suggests that the poor health outcomes (e.g., high infant and child mortality) consistently observed in Nyanza province, for instance, may be more a product of cultural practices, rather than the availability and accessibility of health services.

CHAPTER 9

HIV/AIDS AND OTHER SEXUALLY TRANSMITTED INFECTIONS

Evasius K. Bauni

Kenya is in the midst of a mounting HIV/AIDS crisis. The HIV prevalence rate, as measured by the proportion of adults between ages 15-49 who are infected with HIV, increased from four percent in 1990 to 14 percent in 1998. Urban prevalence, estimated to be between 17 and 18 percent, is known to be far higher than prevalence in rural areas (NASCOP, 1999).

The social, health, and developmental ramifications of HIV/AIDS in Kenya are enormous. HIV has devastated families and entire communities. Its effects are complex and compounded. Not only is HIV prevalence higher among the economically active age groups, it places excessive burden on household resources through the extensive care required of other members of the household, medical costs, and burial costs. HIV/AIDS has contributed to the recent increase in mortality. The infant mortality rate in Kenya increased from 68/1000 in 1989-92 to 74/1000 in 1993-1998, and child mortality increased from 34/1000 to 41/1000 during the same period. The number of AIDS orphans (defined as children under 15 years of age who have lost their mother to AIDS) was estimated to be about 860,000 in 1998 (NASCOP, 1999:24).

Of the various ways of transmitting HIV/AIDS, heterosexual contact and mother-to-child transmission are the most common in Kenya. Between 30 to 40 percent of babies born to HIV-infected mothers get infected with the virus either during pregnancy, at birth or through breastfeeding (NASCOP, 1999:9). While those uninfected will not die, their mothers are likely to do so, contributing to the growing number of orphans. This chapter presents data on the perceptions of risk of HIV infection, ways of preventing infection and slum residents' sexual behavior.

9.1 Awareness of Sexually Transmitted Infections

Knowledge about sexually transmitted infections is an important indicator for planning of awareness campaigns aimed at STI prevention and management. In the NCSS, female respondents were asked whether they have heard about infections that can be transmitted through sexual relations, and, if so, to mention the ones they have heard of. The infections most often mentioned spontaneously are shown in Table 9.1. Knowledge of at least one STI is universal in the slum population. AIDS was the most widely reported known STI (93 percent), followed by gonorrhea (72 percent) and syphilis (64 percent). The least reported STI was genital warts (2 percent).

Table 9.1 also shows the distribution of spontaneous knowledge of STIs by background characteristics. Although knowledge of HIV/AIDS does not vary much by background characteristics, women with no formal education are the least knowledgeable (86 percent). Knowledge of syphilis and gonorrhea has the same pattern with respect to background characteristics. Both increase with education and have an inverted-U relationship with age, peaking among women aged 25-29. Members of the Luo ethnic community are the least knowledgeable about syphilis and gonorrhea while the Kikuyu are the most knowledgeable, compared to other ethnic groups in Kenya.

Table 9.1 Knowledge of specific sexually transmitted diseases

Percentage distribution of NCSS respondents by knowledge of specific sexually transmitted diseases and background characteristics, NCSS 2000

Variable/Category	Syphilis	Gonorrhea	AIDS	Genital Warts	Other	Don't Know	Number of Cases
Age							
15-19	48.4	58	92.8	0.9	8.3	0.2	671
20-24	67.8	74.3	94.6	1.5	9.8	0	945
25-29	77.2	80.6	93.5	1.6	10.3	0	680
30-39	63	73.5	92.2	2.1	11.6	0.2	721
40-49	57.9	66.2	92.9	1.7	13	0.3	240
Marital Status							
Never married	65.1	70.2	94.2	1.5	9.3	0	932
Currently married	62.8	71.7	93.4	1.5	10.8	0.2	1,931
Formerly married	67.4	73.8	91.4	2	12.7	0	393
Division							
Central	44.2	57.7	95	1.3	16.1	0	317
Makadara	72.8	80.7	92.1	1.8	7.9	0	114
Kasarani	54.3	63	92.3	1.7	11.7	0.4	575
Embakasi	71.9	81.2	94.8	1.6	7.2	0	573
Pumwani	53.1	68.4	93.9	2	15.3	0	98
Westlands	74.3	77.8	92.8	3.1	10.8	0.2	483
Dagoretti	77.3	79.4	93.8	1.6	7.8	0	437
Kibera	63.9	70.9	93.6	1.4	11.8	0	660
Ethnicity							
Kamba	65.1	77.7	95.1	0.8	9.8	0	530
Kikuyu	75.4	80.3	93.2	2.9	7.7	0.1	818
Luhya	65.3	69.2	94.3	1.3	12.2	0.1	803
Luo	49.1	60	91.3	1	12.9	0.1	727
Others	63.8	70.6	93.4	1.3	10.3	0	378
Highest educational level							
No education	39.9	48.8	86.3	1.8	8.3	0.6	168
Primary incomplete	45.6	56.6	90.9	1.3	13.7	0	548
Primary complete	56.9	66.7	93.7	0.9	10.4	0.1	1,403
Secondary +	85.1	87.9	95.3	2.5	9.8	0.1	1,138
Total	64	71.5	93.4	1.5	10.6	0.1	3,257

9.2 Sources of Information

Understanding where people get their information about HIV/AIDS/STIs is central to the design of effective campaigns and highlights appropriate channels to reach target populations. The main sources of information about HIV/AIDS/STIs in the slums by background characteristics are shown in Table 9.2.

Table 9.2 Source of AIDS knowledge

Percent distribution of NCSS respondents by source of AIDS knowledge and by selected background characteristics, NCSS 2000.

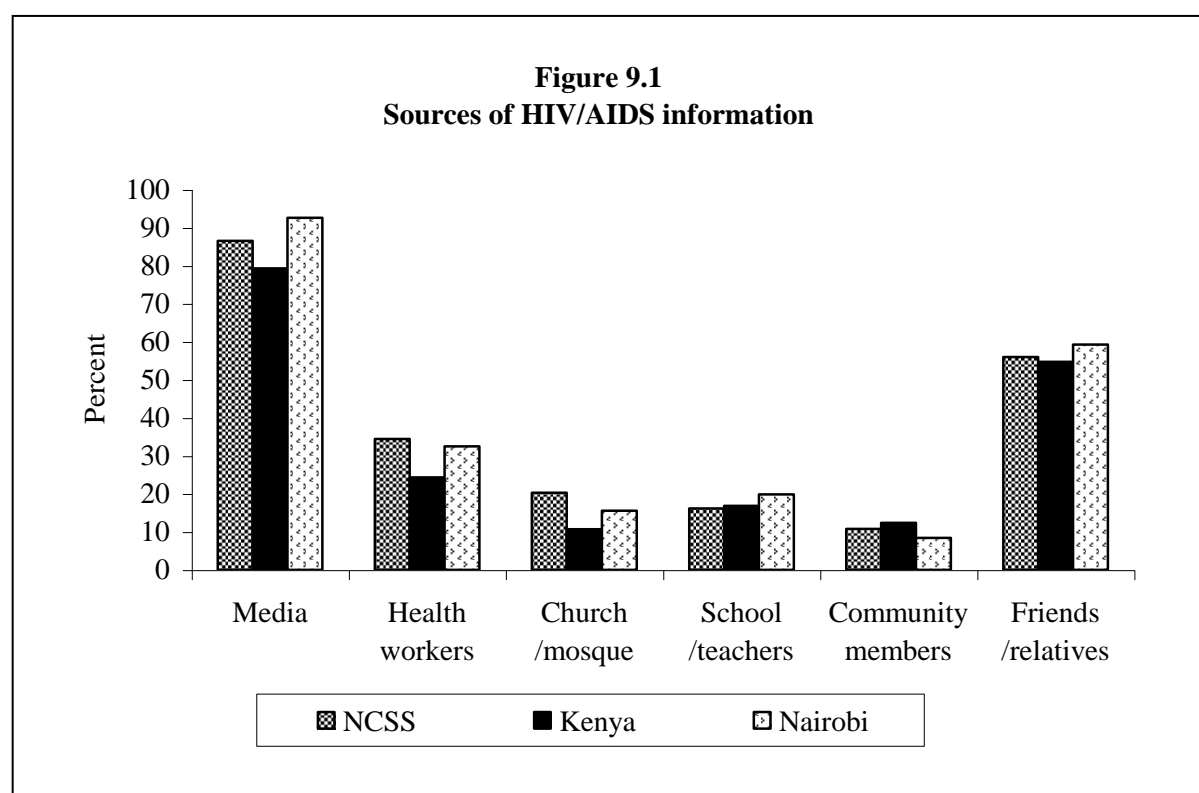
	Radio	TV	News- papers	Pamph- lets	Health Worker	Church Mosque	School	Community Meetings	Friends Relatives	Work Place	Drama	Other Sources	No. of Cases
Age													
15-19	71.2	26.7	18.2	11.6	19.4	18.9	36.8	7.3	58.4	1.6	2.8	3.9	671
20-24	81.8	27.6	25.2	13.8	33.3	20.5	18.9	7.5	56.2	4.4	2.5	3.2	945
25-29	85.4	28.1	27.8	13.7	41.5	19.6	10.3	13.4	48.2	6.2	2.2	3.8	680
30-39	82.8	26.1	19.1	10	41.3	21.4	3.1	14.4	58.3	5.3	0.7	4.4	721
40-49	87.9	17.9	13.8	9.6	38.3	21.3	2.5	14.2	60.8	4.6	0.8	5	240
Marita; Status													
Currently in union	83.1	25.7	20.7	12.1	38.6	20.4	8.8	11.4	55.8	4	1.5	3.7	1,931
Formerly in union	82.2	17.8	15.8	7.9	42	18.3	4.3	14	60.6	7.1	1.3	4.1	393
Never Married	76.4	31.6	27.7	14	22.2	20.7	36.2	7.8	53.7	4.2	3.4	4.1	933
Marital duration (years)													
Never married	76.4	31.6	27.7	14	22.2	20.7	36.2	7.8	53.7	4.2	3.4	4.1	933
0-4	81.2	25.7	23.2	13.6	36.3	17.9	13.3	9.3	57	4.3	1.4	3.3	920
5-9	82.8	24.8	23	12.7	42	22.2	7.9	12.3	52.7	3	2.8	3.4	505
10-14	86.1	25.9	17.9	9.7	42.3	20.7	3.4	15.1	54	7.1	0.9	4	352
15+	83.9	21	12.8	7.7	39.3	21.2	2.2	13.7	61.4	4.6	0.5	4.9	547
Division													
Central	77.3	19.9	14.8	17	41.6	13.2	14.2	12	54.9	2.5	0.9	4.1	317
Makadara	74.6	21.1	25.4	12.3	32.5	27.2	21.1	14	52.6	4.4	0.9	2.6	114
Kasarani	71.1	25.6	19.3	12.2	32.2	20.9	17.2	15.1	57.7	2.8	4	5.6	575
Embakasi	87.6	18.2	21.5	12.9	30.7	28.3	18.3	12.6	66	12.6	1.6	2.1	573
Pumwani	77.6	31.6	23.5	7.1	42.9	11.2	13.3	19.4	52	3.1	0	0	98
Westlands	87.8	45.1	34.8	13.3	31.9	21.3	18.4	7	60.9	5	2.3	4.3	483
Dagoretti	88.1	32	25.2	15.1	27	13.7	10.1	3.9	44.4	1.8	2.3	0.9	437
Kibera	77.9	20.5	16.5	7.1	41.4	19.7	15.9	10	50.6	1.2	1.2	6.2	660
Duration of stay in Household													
< 2 years	79.5	23.8	20.1	11.7	32.1	20.2	18	9.1	56.9	4.6	1.8	3.4	1,906
2-4 years	85	29.1	26.8	12.9	35.4	21.9	12.9	12.4	55.6	4.4	1.6	3.7	680
5-7 years	77.6	29.9	26.9	13.4	43.3	20.9	12.3	11.9	47	4.9	2.2	6.7	268
8+ years	85.6	32	19	12.4	38.9	17	11.8	16.1	56.5	3.5	2.6	4.6	347
Since birth	73.1	38.5	28.8	11.5	21.2	15.4	36.5	5.8	59.6	1.9	5.8	5.8	52
Education level													
No education	73.8	13.1	4.2	4.2	25	20.2	0.6	11.3	70.2	1.2	1.2	3.6	168
Primary incomplete	78.6	13.9	9.7	9.9	28.1	15.3	7.1	9.7	63.5	2.2	0.9	2.2	548
Primary complete	80.3	21.8	16.3	10.4	36.5	18.6	16	10.7	58.5	3.4	1.7	4.1	1,403
Secondary +	84.3	40.2	37.9	16.6	35.9	24.6	22.8	11.2	46.6	7.2	3	4.5	1,138
Total	81.1	26.5	22.1	12.2	34.3	20.2	16.1	10.7	55.8	4.4	2	3.9	3,257

The top six sources of information in descending order were, radio (81 percent), friends/relatives (56 percent), health workers (34 percent), television (27 percent), newspapers (22 percent), and church/mosque (20 percent).

More educated women are more likely to obtain their information from formal sources (radio, TV, newspaper, pamphlets, schools and health workers), but less likely to use informal channels such as friends and relatives. Younger women (15-19) rely more on TV, friends and relatives, and schools for their information on HIV/AIDS, while middle-aged women (20-39) rely on a more varied source of information. The oldest age group (40-49) is most likely to rely on radio, friends and relatives, and health workers. Single women are more likely to get HIV/AIDS information from school, TV, and newspaper s compared to the currently or formerly married women, but they are less likely to rely on health workers and community meetings for information.

In a study of teen-agers aged 13-19 from the youth counseling centers in Nairobi and Mombasa, Maina (1995) also reported the prominence of radio as a source of information about HIV/AIDS/STIs. However, observations from the slums of Nairobi suggested that younger females aged 15-19 were less reachable by radio compared to older women. Women who had never been married, who were uneducated, and those living either in Makadara or Kasarani divisions of Nairobi were also more difficult to access with information on HIV/AIDS through the radio than their other counterparts.

Sources of information are similar across the slums of Nairobi, Nairobi city as a whole and the rest of Kenya; however, there are some differences in the relative importance of health workers in the slums of Nairobi and of television, newspapers and pamphlets in the rest of Nairobi (Figure 9.1).



9.3 Preventing HIV Transmission

Since most of the HIV infections among adult populations in Kenya and other parts of Africa result from heterosexual relations, behavior change relating to sexual relations offer great promise for protection against HIV/AIDS infection. Abstaining from sexual relations, faithfulness to one sexual partner, and consistent use of condoms have been identified as possible means of reducing the risk of infection. To determine the level of women's knowledge about HIV/AIDS prevention, respondents were asked about ways in which a person could avoid getting HIV/AIDS. The results are shown in Table 9.3.

The most commonly cited ways of avoiding HIV infection were use of condoms (56 percent) and being faithful to one's partner (54 percent). About one-third of the respondents mentioned abstinence and avoiding multiple sex partners. Currently married women, women living in Embakasi and Westlands divisions of Nairobi, and women with a secondary or higher education were most likely to mention being faithful to one's partner. Condom use was mentioned more frequently by women aged between 15 and 39, unmarried women, women living in Dagoretti division of Nairobi, and women with complete primary or higher education.

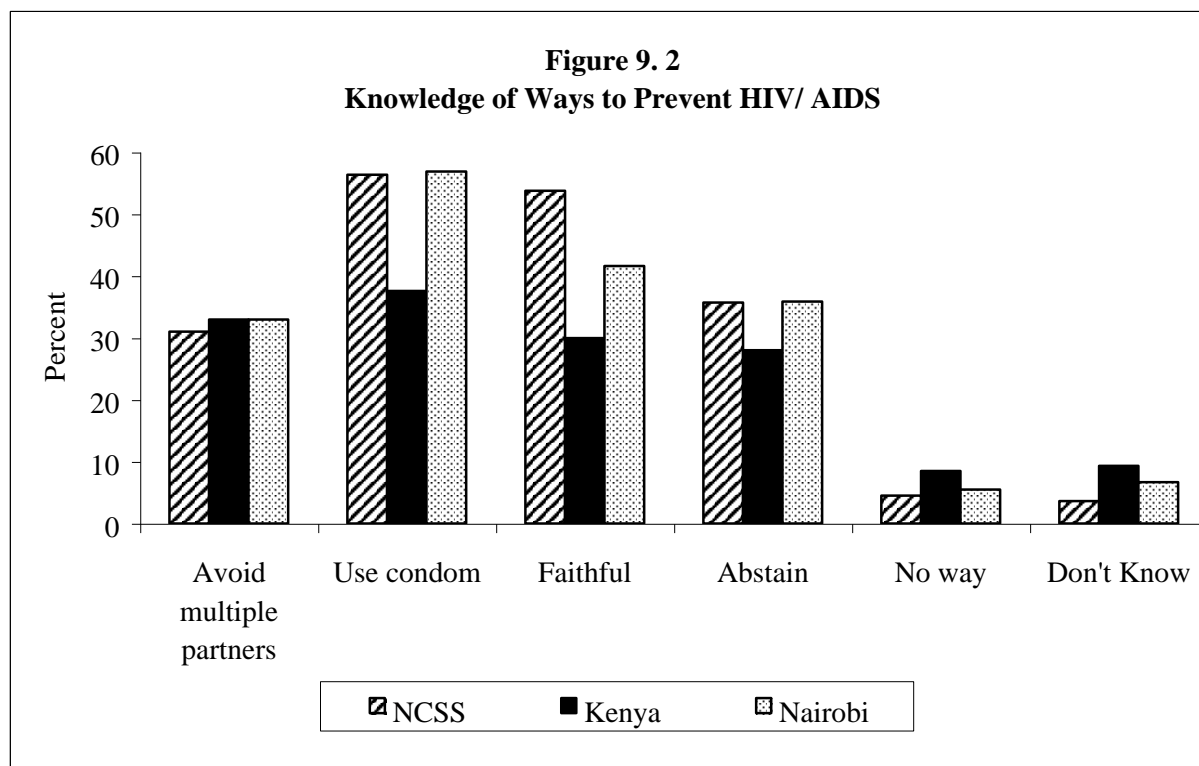
A small proportion of women responded that there was no way to avoid HIV/AIDS (5 percent). This response was most common among older women aged 45-49 years (8 percent) and adolescents aged 15-19 (6 percent), women living in Kasarani and Pumwani divisions (10-11 percent) and women with incomplete primary or no education (7 percent). Mbizvo et al (1997) observed similar opinions among Zimbabwean women, 15 percent of whom believed that AIDS could not be prevented. Another small percentage of women were ignorant of any method that can be used to prevent HIV infection (4 percent). This lack of knowledge was more pronounced among women with no education (12 percent), women who had never been married (5 percent), women between 15 and 19 years of age (6 percent), and women living in Kasarani division (8 percent).

Figure 9.2 compares knowledge of ways to prevent HIV/AIDS between women living in the slums of Nairobi with the KDHS estimates for Nairobi Province and Kenya as a whole. The percentage distribution of four dominant methods is displayed, namely: use of condom, avoiding multiple sexual partners, being faithful to one sexual partner and abstaining from sex. The results suggest broad knowledge of ways to prevent HIV/AIDS in the slums (as in Nairobi as a whole) compared to the rest of Kenya. Nevertheless, it is important to recognize that lack of knowledge has been identified by various other studies. In a study of prostitutes in Nairobi, 92 percent said that they lacked information about AIDS (Ngugi et al., 1992); a problem also highlighted by sexually active men and women in Nakuru District (Bauni and Jarabi, 2000). These results highlight the need for programs to focus on what needs to be done to change sexual behavior since awareness of HIV/AIDS and what one needs to do to avoid contracting it is very high.

Table 9.3 Knowledge of ways to avoid AIDS and misinformation

Percent distribution of women by knowledge of ways to avoid AIDS and misinformation, according to selected background characteristics, NCSS 2000

Characteristics	No way to avoid	Abstain from sex	Use condom	Avoid multiple partners	Be faithful to partner	Avoid sex with prostitutes	Avoid blood transfusion	Avoid injection	Other	Don't know	Total
Age 5-year groups											
15-19	6.4	42.4	55.1	25.6	42.0	4.1	5.1	9.3	8.1	6.1	674
20-24	3.6	33.5	58.0	32.4	52.5	5.2	8.5	11.5	7.8	2.6	939
25-29	3.7	32.0	57.8	32.0	61.2	5.0	10.1	11.8	5.5	2.2	675
30-34	4.6	36.5	56.7	32.6	57.7	6.6	8.7	9.2	8.7	3.4	414
35-39	4.9	36.7	59.0	33.5	60.1	5.8	6.5	9.7	2.9	4.3	306
40-44	1.9	37.0	46.6	28.8	55.5	5.5	6.2	10.3	4.8	4.5	156
45-49	8.4	31.1	41.9	37.8	51.4	6.8	6.8	6.8	9.5	2.4	83
Current marital status											
Never married	4.6	51.0	56.7	24.0	44.1	4.4	8.6	11.3	9.1	4.8	930
Currently married	4.6	27.9	54.6	34.1	59.3	5.9	7.7	10.2	6.0	3.0	1,925
Formerly married	3.8	38.7	64.0	32.4	49.5	4.1	7.1	10.2	6.3	3.3	392
Division											
Central	4.1	28.8	57.2	41.8	30.1	2.7	5.8	5.8	4.1	2.9	314
Makadara	3.5	36.9	55.2	31.4	46.6	4.8	6.7	14.6	5.7	3.5	113
Kasarani	10.8	32.6	55.9	30.7	53.6	4.5	6.5	12.1	5.8	8.4	573
Embakasi	1.8	42.6	46.8	30.9	72.4	7.3	13.9	16.3	6.2	2.6	573
Pumwani	10.3	17.7	50.6	48.2	51.8	4.7	12.9	9.4	5.9	2.1	97
Westlands	2.1	47.3	58.8	33.8	61.2	4.1	9.5	12.6	7.6	2.5	483
Dagoretti	0.2	40.9	66.1	20.7	51.2	3.3	4.2	5.6	4.4	1.2	436
Kibera	5.5	25.1	57.1	28.9	46.2	7.7	5.2	7.6	11.5	3.2	659
Highest educational level											
No education	7.3	29.8	51.5	33.3	50.4	5.3	1.5	6.9	6.8	12.2	164
Primary incomplete	7.2	32.1	53.6	32.2	47.0	5.5	5.0	8.8	5.7	5.1	782
Primary complete	4.8	31.5	57.4	32.5	52.9	3.8	6.1	8.9	5.7	3.9	1,163
Secondary +	1.9	42.7	57.6	28.6	59.2	6.4	12.0	13.6	8.9	1.0	1,138
Total	4.5	35.7	56.4	31.0	53.8	5.2	7.8	10.5	6.9	3.6	3,247



9.4 Perception of Risk of Getting AIDS

It is often hypothesized that risk perception represents a critical step in changing actual risk-taking behavior. Since broad knowledge of AIDS is almost universal, assessing the depth of knowledge is critical to understanding the extent to which individuals have perceptions of HIV that will provide a basis for behavioral change. This section investigates the depth of AIDS knowledge and perceptions of the risk of contracting the disease. Analyses are based on questions to women about AIDS-related issues and self-evaluation of the risk of getting AIDS. Respondents were asked if it was possible for an apparently healthy looking person to have the HIV virus and whether AIDS could be transmitted from mother to child. For self-evaluation, they were asked whether or not their chances of getting AIDS were nonexistent, small, moderate, or great. Responses to these questions are shown in Table 9.4.

The majority of the women responded correctly that an apparently healthy looking person could have the HIV virus (90 percent). A small percentage maintained that a healthy looking person could not have the HIV virus (8 percent). These women were likely to be younger (15-19 years - 14 percent), or older (45-49 years - 10 percent), unmarried women, or in their first four years of marriage (nine percent). About eight percent of women in the slums of Nairobi had incorrect perceptions about HIV/AIDS and patients' appearances, compared with seven percent in Nairobi and 15 percent in Kenya as a whole. Concerted and targeted efforts remain necessary throughout Kenya to provide correct information, but most especially in rural areas where 17 percent of women of reproductive age believe that a healthy-looking person cannot have the AIDS virus. Qualitative data collected from the slums of Nairobi by the APHRC show that that people normally choose sexual partners on the basis of looking healthy (Wasao and Bauni 2001).

The majority of women thought they were either at no risk or that their risk was small (25 percent and 50 percent, respectively). The respective proportions were 32 and 34 percent in Kenya, and 27 and 33 percent in Nairobi. Women usually consider themselves at low risk of getting AIDS when they have only one sexual partner, ignoring the fact that their risk is likely to be high if the partner has other sexual partners. Such a belief presents a major impediment to changing sexual behavior and constitutes a challenge to

strategies on HIV/AIDS education and prevention. Tyndall et al. (1994) reported somewhat similar misperceptions among men with genital ulcers in Nairobi. On the other hand, a relatively small proportion considered their risk moderate or great (about 21 and 4 percent, respectively). For Kenya, these figures were 24 and 10 percent and for Nairobi they were 25 and 15 percent, respectively (KDHS, 1998).

Table 9.4 Quality of AIDS Knowledge

Percent distribution of women by their perception on one's AIDS status, vertical transmission according to background characteristics, NCSS 2000 and KDHS 1998.

	Can a healthy looking person have the HIV virus that causes AIDS			AIDS can be Transmitted from mother to child	Personal chance of getting AIDS				Total Cases
	Yes	No	Don't know		Yes	No risk at all	Small	Moderate	
Age 5-year groups									
15-19	83.2	13.5	3.3	86.2	39.3	50.5	8.9	1.3	674
20-24	91.3	6.8	1.9	93.3	25.4	50.1	20.3	4.3	939
25-29	92.6	4.6	2.8	94.5	20.4	51	23.3	5.3	675
30-34	92.7	4.6	2.7	92.5	15.5	51.1	28.6	4.8	414
35-39	89.9	7.2	2.9	92.5	17.0	49	27.1	6.9	306
40-44	88.4	5.8	5.8	94.2	19.4	44.5	29.0	7.1	156
45-49	86.8	9.6	3.6	89.0	36.1	39.8	22.9	1.2	83
Marital duration (grouped)									
Never married	88.2	8.8	3.0	88.8	34.8	51.4	10.5	3.3	930
0-4	88.7	9.2	2.1	93.5	25.9	51.3	19.8	3.0	860
5-9	93.2	4.0	2.8	94.1	18.7	49.1	27.5	4.7	530
10-14	92.2	5.9	1.9	92.2	16.1	51.1	27.7	5.1	372
15+	88.8	7.2	4.0	91.9	20.2	44.9	28.2	6.7	554
Division									
Central	83.8	13.7	2.5	93.0	19.5	43.6	27.7	9.2	314
Makadara	92.9	4.4	2.7	98.2	25.7	46.0	22.1	6.2	113
Kasarani	85.3	10.8	3.9	85.6	25.0	47.5	21.9	5.6	573
Embakasi	92.0	4.5	3.5	93.7	29.0	47.6	20.3	3.1	573
Pumwani	90.8	6.1	3.1	87.8	27.6	49.0	17.3	6.1	97
Westlands	94.2	4.1	1.7	90.3	18.0	64.2	14.7	3.1	483
Dagoretti	90.4	7.1	2.5	93.1	27.1	47.6	22.3	3.0	436
Kibera	89.8	7.8	2.4	94.8	28.3	48.6	20.4	2.7	659
Length of stay in the slum									
< 2 years	85.9	12.2	1.9	89.6	26.5	50.4	18.2	4.9	490
2-4 years	88.6	7.9	3.5	92.3	24.0	50.9	21.0	4.1	1,214
5-7 years	92.1	6.0	1.9	92.4	25.5	49.1	21.4	4.0	570
8+ years	91.2	5.8	3.0	91.9	25.2	48.6	21.9	4.3	917
Since birth	96.2	1.9	1.9	92.3	36.5	50.0	9.6	3.9	52
Highest educational level									
No education	82.3	8.5	9.2	83.4	29.5	38.0	27.0	5.5	164
Primary incomplete	83.4	13.3	3.3	88.0	27.6	47.6	20.2	4.6	782
Primary complete	89.0	7.8	3.2	92.3	24.5	50.2	21.0	4.3	1,163
Secondary +	95.7	3.2	1.1	95.2	23.6	52.7	19.9	3.8	1,138
NCSS Total	89.7	7.5	2.8	91.8	25.2	49.9	20.7	4.2	3,247
National*	79.1	14.6	6.4	--	32.2	34.2	24.0	9.6	7,806
Rural*	75.9	16.7	7.4	-	32.7	34.5	24.4	8.3	6,355
Other Urban*	88.2	8.2	3.6	-	32.8	33.6	20.6	12.9	1,034
Nairobi*	91.2	6.5	2.4	-	27.3	32.6	24.9	15.1	417

*Based on 1998 KDHS data

+ No comparable

9.5 Multiple Sexual Partners and STIs

The extent to which men and women have multiple sexual partners represents a key risk factor in the epidemiology of HIV/AIDS and STIs. Women were asked about the number of sexual partners they had in the 12 months preceding the survey. The results are shown in Table 9.5. Nearly all of married women had one sexual partner (97 percent) during the reference period. Among the unmarried women, 46 percent had no sexual partner, 38 percent had one sexual partner, and 11 percent had two or more partners. The low percentage of reported multiple sexual partners is not unique to Kenyan women. In South Africa, 3 percent of women reported having had two or more sexual partners in the 12-month period prior to the study (Galloway 1999). The unmarried women who had two or three sexual partners in the year preceding the study were more likely to be recent arrivals (less than five years stay) in the slums or uneducated.

Figure 9.3 shows the proportion of women in Nairobi slums who had multiple sexual partners, as compared with those in Nairobi and Kenya. Married women in Nairobi were as likely to have multiple sexual partners as those living in the slums or in Kenya. However, for unmarried women, the likelihood of having multiple sexual partners was highest in the slums of Nairobi. Unmarried slum dwellers were more than twice as likely to have multiple sexual partners than their counterparts living elsewhere in Nairobi or in Kenya.

Exposure to multiple sexual partners not only increases the risk of contracting HIV virus but also other viral or microbial STIs. When women were asked whether they had suffered from an STI in the past twelve months, only a few admitted that they had (two percent). This low level could be due to an inability to diagnose STIs correctly, concealment owing to the social stigma associated with STIs, or the rate of STI actually being lower than one might expect.

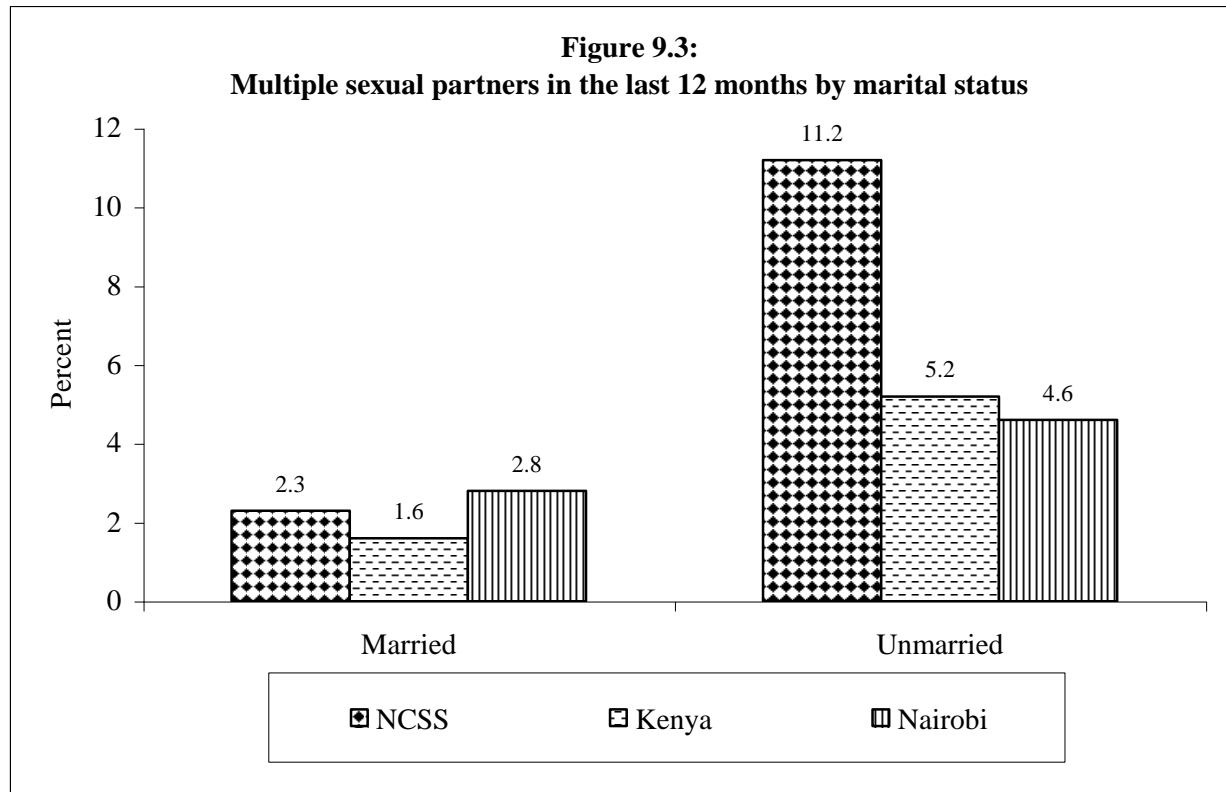


Table 9.5 Number of sexual partners in the last 12 months

Percent distribution of currently married and unmarried women by number of persons with whom they had sexual intercourse in the last 12 months according to background characteristics, NCSS 2000

Background characteristics	Currently married (Partners including spouse)							Partners for the unmarried						
	0	1	2-3	4+	Missing	Total	No. of cases	0	1	2-3	4+	Missing	Total	No. of cases
Age 5-year groups														
15-19.....	0.0	95.7	2.7	1.1	0.5	100	187	64.5	27.1	5.8	0.6	2.1	100	484
20-24.....	0.7	96.6	2.2	0.2	0.3	100	595	41.1	40.9	12.3	1.1	4.6	100	350
25-29.....	0.0	98.3	1.4	0.2	0.2	100	515	22.4	55.8	12.7	2.4	6.7	100	165
30-39.....	1.2	96.4	1.8	0.4	0.2	100	495	28.8	48.7	15.5	0.0	7.1	100	226
40-49.....	5.0	92.1	1.4	0.7	0.7	100	139	53.5	31.7	8.9	1.0	5.0	100	101
Division														
Central.....	3.0	94.5	2.5	0.0	0.0	100	200	32.5	48.7	13.7	0.0	5.1	100	117
Makadara.....	0.0	94.4	5.6	0.0	0.0	100	72	57.1	35.7	4.8	2.4	0.0	100	42
Kasarani.....	0.3	96.3	2.8	0.0	0.6	100	352	43.0	37.7	11.2	1.3	6.7	100	223
Embakasi.....	0.3	96.7	2.5	0.6	0.0	100	359	46.3	37.9	8.9	1.9	5.1	100	214
Pumwani.....	4.2	91.7	2.1	0.0	2.1	100	48.0	56.0	24	12.0	0.0	8.0	100	50
Westlands.....	0.4	97.5	0.8	0.4	0.8	100	240	49.0	41.2	6.6	0.8	2.5	100	243
Dagoretti.....	1.6	95.7	1.2	1.2	0.4	100	257	50.0	32.8	15.0	0.0	2.2	100	180
Kibera.....	0.5	98.8	0.5	0.2	0.0	100	403	45.9	38.9	9.7	0.8	4.7	100	257
Marital duration (grouped)														
Never married.....	-	-	-	-	-	-	0	53.3	34.8	7.7	1.0	3.2	100	933
0-4.....	0.3	96.8	2.1	0.5	0.3	100	869	15.7	56.9	19.6	0.0	7.8	100	51
5-9.....	0.2	98.1	1.4	0.0	0.2	100	422	21.7	50.6	18.1	1.2	8.4	100	83
10-14.....	1.5	95.9	2.2	0.4	0.0	100	271	24.7	46.9	19.8	1.2	7.4	100	81
15+.....	2.4	94.9	1.6	0.5	0.5	100	369	38.8	41.6	12.9	0.6	6.2	100	178
Length of stay in the slum														
< 2 years.....	0.8	95.7	2.6	0.5	0.5	100	1,090	46.1	38	11	0.9	4.0	100	816
2-4 years.....	0.7	98.2	1.1	0.0	0.0	100	457	41.7	42.2	10.8	0.9	4.5	100	223
5-7 years.....	1.7	97.8	0	0.0	0.6	100	181	48.3	42.5	4.6	0.0	4.6	100	87
8+ years.....	1.0	96.5	1.5	1.0	0.0	100	199	47.3	36.5	9.5	2.0	4.7	100	148
Since birth.....	0.0	0.0	0.0	0.0	0.0	0	3	59.2	26.5	6.1	0.0	8.2	100	49
Highest educational level														
No education	1.8	97.2	0.0	0.0	0.9	100	109	47.5	32.2	16.9	0.0	3.4	100	59
Primary incomplete.	1.0	94.9	3.5	0.3	0.3	100	313	47.2	37.9	9.4	2.1	3.4	100	235
Primary complete..	0.9	96.6	1.6	0.6	0.2	100	861	42.6	38.9	12.5	0.4	5.5	100	542
Secondary +.....	0.6	97.2	1.7	0.2	0.3	100	648	49.4	38.6	7.3	1.0	3.7	100	490
Total.....	0.0	97.5	1.9	0.4	0.2	100	1,931	46.2	38.3	0.3	0.9	4.4	90.1	1,326

9.6 Knowledge, Source and Use of Condom

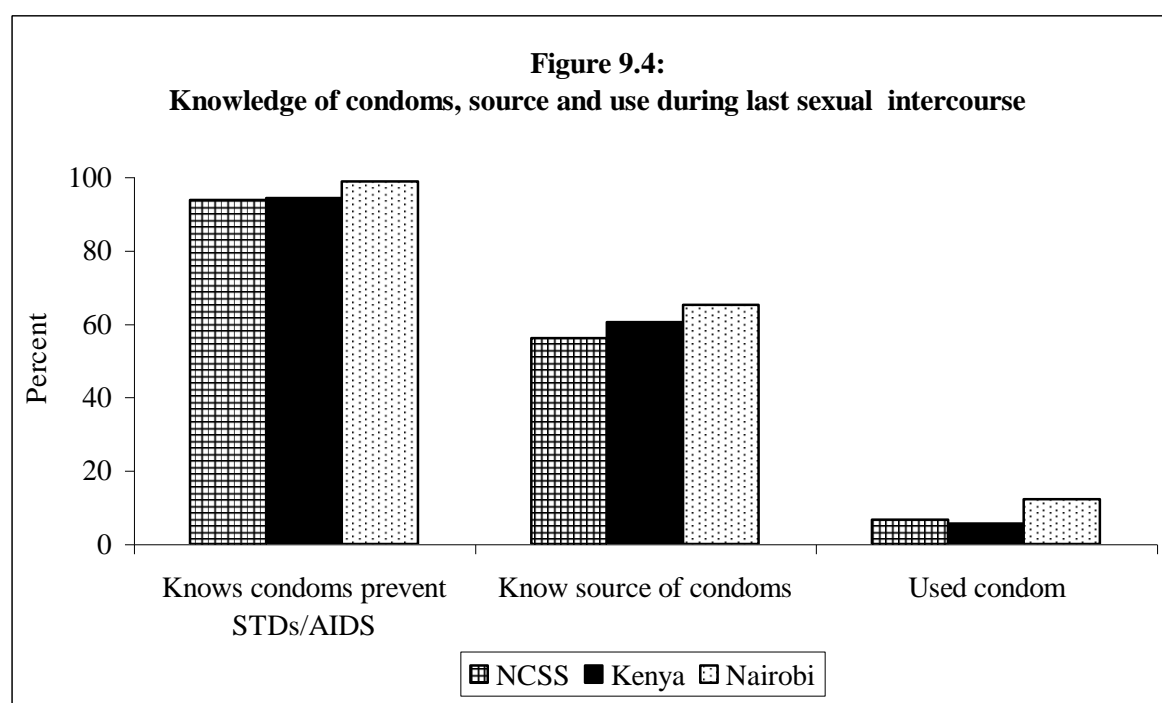
When used properly and consistently, condoms almost entirely prevent STIs (including HIV/AIDS) as well as unwanted pregnancy. Table 9.6 shows that although about 94 percent of all respondents knew that condoms prevent STIs, only 56 percent knew where to obtain them. The overwhelming majority of women had not used them during their last sexual intercourse (93 percent). Only seven percent of the women used condoms, and most of them were unmarried. The use of condoms is thought to betray the trust valued in marriages. Similar sentiments were reported in Zimbabwe where a significant proportion of women felt that condom use with a regular partner or spouse generated suspicions about adultery (Trigg et al., 1997).

Table 9.6 Knowledge of and use of condoms

Percent distribution of respondents by knowledge of sources of condoms and condom use during the last sexual intercourse according to selected background characteristics, NCSS 2000

Characteristics	knows condoms prevent STIs	Source of condoms				last intercourse used condom		Total
		don't know source	public source	private source	Other sources	Yes	No	
Age								
15-19	87.1	54.4	12.5	13	20.1	7.8	92.2	676
20-24	95.9	41.8	20.6	17.7	20.0	7.5	92.5	942
25-29	95.4	38.9	25.6	18.6	16.8	5.7	94.4	678
30-34	96.1	41.0	24.5	20.0	14.6	7.5	92.5	414
35-39	95.8	45.1	22.2	16.8	16.0	5.9	94.1	307
40-44	92.9	47.4	26.9	11.5	14.1	5.2	94.8	156
45-49	90.4	59.8	23.2	7.3	9.8	3.7	96.3	83
Marital status								
Never married	90.4	35.6	18.0	19.2	27.3	17.0	83.0	932
Currently married	95.1	46.9	22.4	15.9	14.8	2.2	97.8	1931
Formerly married	94.6	41.2	24.4	17.8	16.5	14.5	85.5	393
Division								
Central	92.4	56.8	12.6	19.7	10.9	6.1	93.9	317
Makadara	85.1	34.7	22.8	23.8	18.8	7.9	92.1	114
Kasarani	88.5	64.7	13.4	10.1	11.8	5.1	94.9	575
Embakasi	95.5	32.8	21.3	19.3	26.6	5.5	94.5	573
Pumwani	88.8	41.7	26.2	8.3	23.8	15.5	84.5	98
Westlands	94.2	36.3	30.6	14.5	18.6	10.1	89.9	483
Dagoretti	97.5	36.1	17.0	33.0	13.9	6.9	93.1	437
Kibera	96.7	41.5	30.3	10.2	18.0	5.6	94.4	659
Educational level								
No education	80.8	73.5	11.1	5.7	9.9	4.3	95.7	168
Primary incomplete	89.8	55.6	19.7	10.5	14.1	6.5	93.5	783
Primary complete	95.4	44.0	21.0	17.1	18.0	5.5	94.5	1,167
Secondary +	96.5	31.1	25.8	22.7	20.4	8.6	91.4	1,138
Total	93.7	43.9	21.8	16.8	17.5	6.7	93.3	3,256

Ignorance as to where to obtain condoms is an obvious constraint to their use. In Figure 9.4, knowledge of condoms, knowledge of a source for condoms, and use of condoms during last sexual intercourse are compared between the slums of Nairobi, Kenya, and Nairobi overall. Although knowledge of condoms is widespread, women in the slums are slightly less informed. This gap widened a bit for knowledge of sources of condoms. While 65 percent of Nairobi women surveyed know at least one source where they can acquire condoms, about 56 percent of the slum women do so.



9.7 Behavior Change

The growing threat of deadly diseases such as HIV/AIDS can lead sexually active men and women to adopt safer sexual practices for their own protection. Respondents were asked whether they had changed their behavior to prevent themselves from getting AIDS, and if so, what they had done. The results are shown in Table 9.7. The majority of women had indeed changed their sexual behavior in a variety of ways, including: staying with one partner (57 percent), asking their spouse to be faithful (20 percent), remaining virgins (10 percent), reducing the number of their sexual partners (seven percent), stopping sexual relations (five percent), and using condoms (four percent).

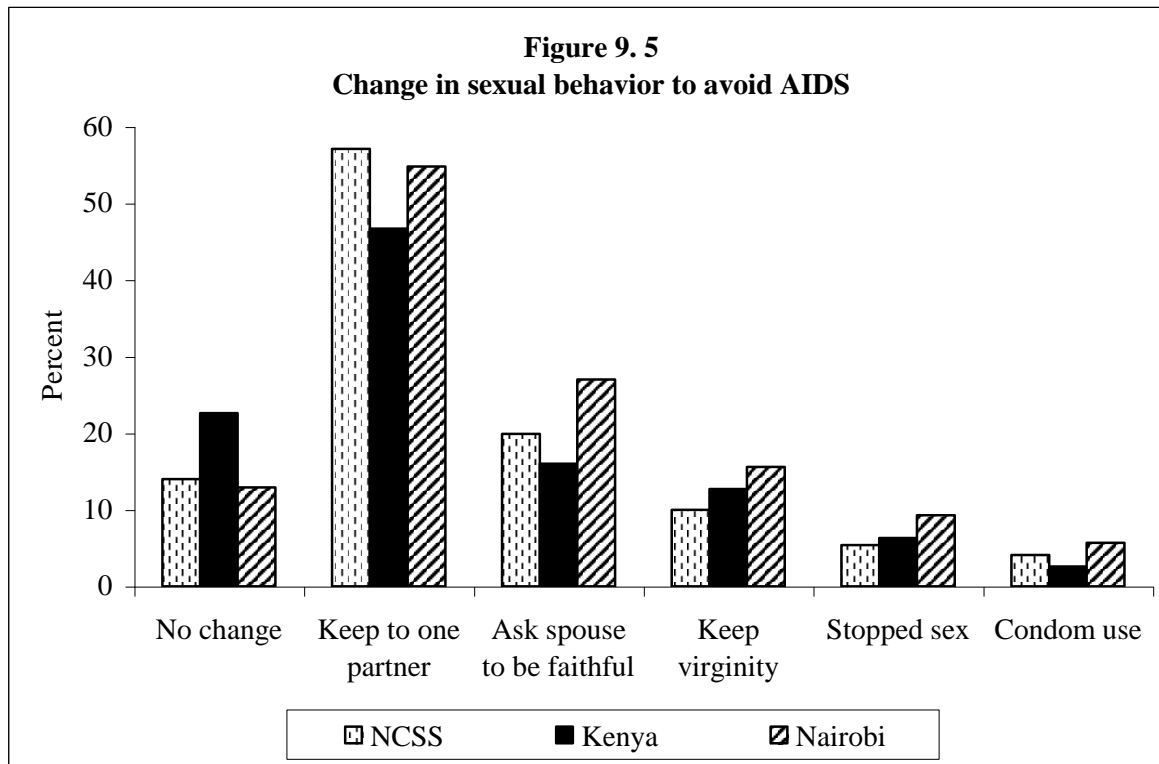
Young and unmarried women who have not started sexual relations are more likely to remain virgins. For example, in an attempt to avoid AIDS, a large proportion of younger (15-19) women or never married planned to keep their virginity (35 percent of both groups). On the other hand, there were those who opted to stop sexual relations altogether. These were women formerly in union (20 percent), and older (45-49) women (23 percent). Restricting sex to one partner or asking partner to be faithful are key behavioral changes among currently married women, especially those who married recently.

Table 9.7 Change in sexual behavior to avoid AIDS

Percentage distribution of women by type of change in behavior in order to avoid AIDS by respondents' background characteristics, NCSS 2000

	Kept virginity	Stopped all sex	started using condoms	restricted sex to one partner	reduced number of partners	Ask spouse to be faithful	No behavior change	Total
Age 5-year groups								
15-19	35	6.1	2.7	39.0	4.6	8.8	13.0	674
20-24	8.2	3.2	5.3	62.3	8.0	20.9	11.8	940
25-29	0.7	4.2	3.9	65.0	7.7	26.4	14.9	675
30-34	0.7	4.4	4.6	63.4	7.3	24.5	17.7	414
35-39	0.7	6.2	4.6	60.5	10.8	23.2	14.7	306
40-44	0.0	13.6	3.9	51.0	8.4	18.7	19.5	155
45-49	1.2	22.9	1.2	50.6	7.2	13.2	10.8	83
Current marital status								
Never married	34.6	10.6	7	33.2	7.4	4.6	12.1	930
Currently married	0.1	0.1	1.8	70.0	5.4	29.7	15.7	1,926
Formerly married	0.5	19.7	8.7	50.6	17.7	7.7	10.5	391
Marital duration (grouped)								
Never married	34.6	10.6	7.0	33.2	7.4	4.6	12.1	930
0-4	-	0.6	2.3	75.1	6.4	28.3	11.7	861
5-9	-	2.3	2.5	63.4	7.2	25.7	18.2	530
10-14	-	2.7	3.5	64.4	8.4	25.8	16.2	372
15+	-	9.2	4.2	58.6	8.7	23.0	15.4	553
Length of stay in the slum								
< 2 years	15.1	5.5	3.5	55.7	7.8	15.9	11.5	490
2-4 years	8.8	4.5	4.4	59.0	7.8	22.5	13.2	1,213
5-7 years	8.8	5.8	3.5	58.8	7.2	17.9	15.1	571
8+ years	8.3	6.1	4.4	56.1	7.8	20.6	15.6	917
Since birth	32.7	9.6	7.7	30.8	7.7	7.7	17.3	52
Division								
Central	6.4	4.5	2.9	69.4	11.2	10.2	4.5	314
Makadara	9.0	8.1	3.6	58.9	9.0	25.0	11.2	113
Kasarani	9.3	5.1	3.0	47.8	7.4	22.8	24.5	573
Embakasi	8.6	4.2	5.9	52.1	8.6	27.1	13.8	572
Pumwani	13.3	5.1	5.1	63.3	10.2	18.4	5.1	98
Westlands	13.3	4.1	6.8	58.8	5.4	17.8	14.6	483
Dagoretti	12	7.6	3.2	55.2	4.6	30.8	5.3	436
Kibera	9.6	6.4	2.7	62.3	7.5	9.4	16.9	658
Education								
No education	3.7	9.9	2.5	48.5	8.6	17.3	21.0	163
Primary incomplete	12.4	5.0	3.8	57.5	7.8	16.0	13.1	783
Primary complete	7.8	5.1	3.6	59.5	8.3	20.1	13.7	1,163
Secondary +	11.5	5.5	5.1	55.7	6.2	22.7	14.0	1,138
Total	10	5.4	4.1	57.1	7.4	19.9	14.0	3247

Figure 9.5 compares the various ways women in Nairobi slums, in Kenya and in Nairobi as a whole have modified their behavior in response to the epidemic. Behavior modification is most evident among women from Nairobi (including the slums) and least evident among women in Kenya as a whole. This suggests that HIV/STI community education and outreach, although needed throughout Kenya, is most urgently required in the rural areas.



Knowledge of one's HIV status may also trigger positive sexual behavior change. However, such knowledge may promote antisocial behaviors and be traumatizing to the individual. Many sexually active people are afraid to know their HIV status because of the perceived negative reactions of members of their immediate social environments. Women in the survey were asked whether they had been tested for HIV, and those not tested or not sure were asked whether they would like to be tested and whether they knew where to go for the test. Twenty-seven percent of the women had been tested, and of those not tested, 64 percent want to be tested (Table 9.8). About half of the women who have not been tested know where to go for the test (53 percent), and their most common choices or knowledge of testing facilities were public health facilities (60 percent) and private health facilities (36 percent). This pattern is comparable to that of Kenya as a whole, though fewer had been tested (only 14 percent). However, 63 percent of those not tested reported that they would like to be tested. The most common place to go for the test was a public health facility (63 percent) followed by a private health facility (36 percent), according to the 1998 KDHS (NCPD, 1999).

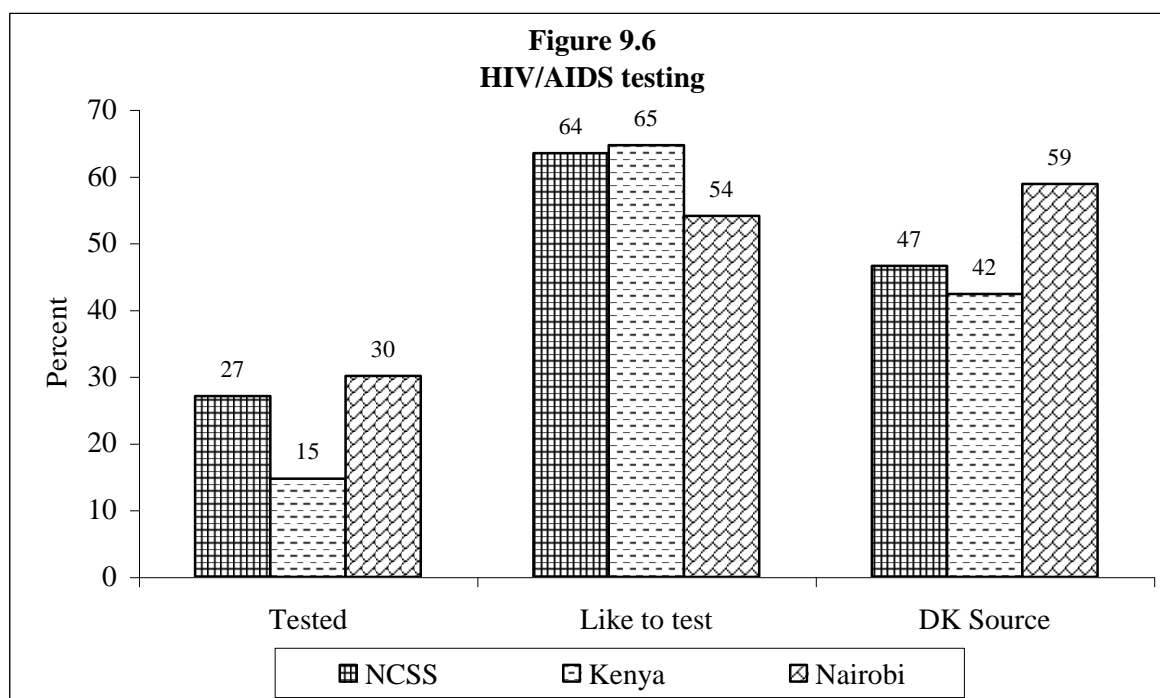
Table 9.8 HIV/AIDS testing

Percent distribution of women by HIV/AIDS test status, desire for being tested, and knowledge of where to take the test according to selected background characteristics, NCSS 2000 and KDHS 1998.

Characteristics	Have been tested	Desire to be tested	Knows a testing center	Type of testing center known			Total
				Public	Private	other	
Age							
15-19	16.6	63.2	41.8	65.4	30.8	3.8	676
20-24	29.3	68.5	56.7	59.6	37.0	3.5	942
25-29	33.7	65.0	58.4	58.8	37.1	4.1	678
30-34	30.7	63.1	59.6	55.9	39.7	4.4	414
35-39	28.5	55.1	51.8	54.9	39.5	5.6	307
40-44	22.6	56.7	59.2	61.0	36.2	2.9	156
45-49	18.1	50.0	52.9	62.8	31.4	5.9	83
Marital status							
Never Married	17.6	60.2	47.7	55.1	41.5	3.4	932
Currently Married	31.4	65.8	56.0	62.3	33.5	4.3	1,931
Formerly married	28.2	62.1	56.4	54.9	41.4	3.8	393
Length of stay in Household							
< 2 years	21.8	53.7	51.4	63.1	34.6	2.3	490
2-4 years	29.3	66.6	52.2	60.0	36.5	3.5	1,214
5-7 years	26.7	64.8	54.4	58.2	36.5	5.3	571
8+ years	27.5	62.1	55.7	59.1	36.3	4.7	917
Since birth	21.2	61.8	48.8	42.0	54.8	3.2	52
Educational level							
No education	16.0	51.8	35.8	48.0	45.3	6.6	168
Primary incomplete	21.0	66.1	45.7	66.4	29.7	3.8	783
Primary complete	25.7	66.3	49.9	59.7	36.6	3.7	1,167
Secondary +	34.2	60.4	66.8	57.0	39.0	4.1	1,138
NCSS Total	27.1	63.5	53.4	59.6	36.4	4.0	3256
National*	14.7	64.7	57.6	88.0	31.5	1.7	7,629
Rural*	11.5	67.4	57.2	88.3	26.8	1.3	6,199
Other urban*	21.5	54.9	71.4	88.7	34.4	2.7	1,012
Nairobi	30.1	54.1	41.0	83.2	70.1	4.9	418

*Based on 1998 KDHS data

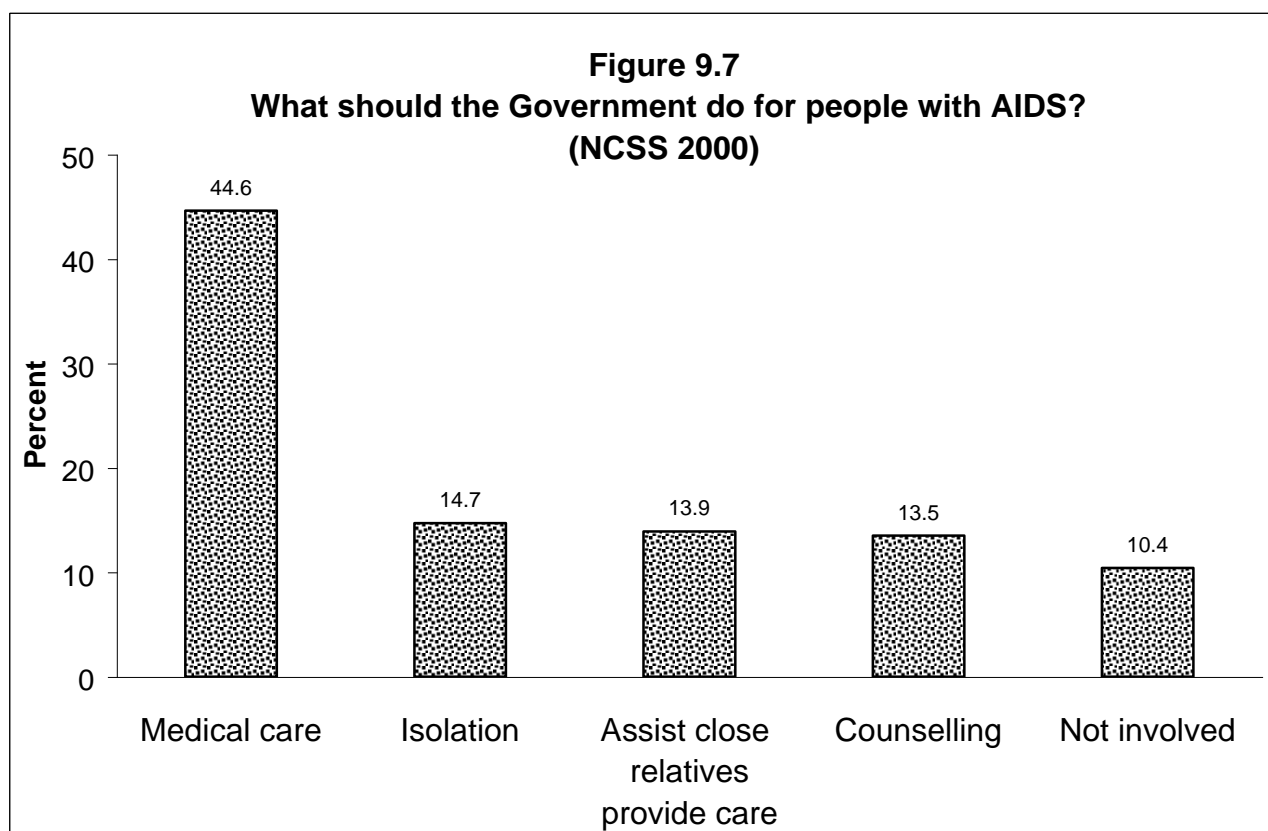
Figure 9.6 compares the proportion of women in the slums who had been tested for HIV, those willing to be tested, and whether they knew of testing locations, with the proportions in Nairobi and Kenya as a whole. It is clear that a substantial proportion of Kenyans who have not been tested for HIV/AIDS desire to be tested, but do not know where to obtain the test. Deterrents to being tested included lack of knowledge of the existence of health facilities and their inaccessibility.



9.8 What the Government and Individuals should Do

HIV/AIDS interventions must be target-specific if they are to be effective. People not infected with HIV/AIDS must be protected, those infected with HIV/AIDS but not suffering from full-blown AIDS must be counseled, and those with full-blown AIDS must be counseled, treated for opportunistic diseases and generally supported. Those not infected must employ preventative measures while those who are HIV+ must protect their sexual partners and prolong the time before they reach full-blown AIDS. Those with full-blown AIDS must be loved and cared for. These interventions call for concerted efforts from the government, communities, and individuals. Figure 9.7 presents respondents' perceptions about the government's and their responsibilities in dealing with HIV/AIDS.

A large proportion of women said that the government should provide medical care for people with AIDS (45 percent) while others proposed assistance in helping close relatives provide care (14 percent). Others suggested isolation of people with AIDS (15 percent) and provision of counseling services (14 percent). The overwhelming majority said they would care for their sick relatives (86 percent).



9.9 Summary

The prevalence of HIV in Kenya has increased rapidly from four percent in 1990 to 14 percent in 1998. The economic, health, and social consequences of HIV/AIDS, which are already enormous and disturbing, will grow in the future. There is an urgent need to develop appropriate policies and well-targeted programs to slow the transmission of HIV/AIDS/STIs. The development of such policies and interventions requires a good understanding of people's sexual behavior, their knowledge of STIs, ways to prevent STIs, and their perceptions of the risk of getting STIs, including HIV/AIDS.

This chapter shows that HIV/AIDS is the most widely known STI in Nairobi slum communities. Other types of sexually transmitted infections are less widely known. Clearly, the widespread publicity about HIV/AIDS has produced results. However, given that the risk of HIV infection increases when the individual is infected with a STI, these results attest to the need for reproductive health campaigns to emphasize knowledge and control of other types of STIs. About three percent of the women do not know about any STI, and this lack of knowledge is concentrated among the uneducated.

Radio and person-to-person exchanges (friends, relatives, and health workers) are important sources of information in slums, while television and the printed media play a relatively greater role elsewhere in Nairobi. This suggests that addressing the need to reduce the knowledge gap between slum and non-slum communities may be appropriately pursued by radio campaigns and community health outreach program. Findings demonstrate that strategies should be designed to be youth-friendly, as young women aged 15-19 years in the slums of Nairobi are not well reached by current reproductive health information efforts.

On the whole, respondents are well informed about ways to prevent the spread of HIV. The most commonly cited ways of preventing HIV/AIDS/STIs are having one sexual partner, using condoms consistently and abstaining from sexual relations. However, these findings also indicate that some sub-groups of women who reside in slums are not well informed about ways of avoiding HIV infection. Not surprisingly, those least informed are uneducated women. Some women in the slum communities believe that there are no ways of avoiding HIV infection, attesting to the need for well-targeted and thorough information campaigns about means by which the transmission of HIV/AIDS can be reduced.

While most women know that apparently healthy looking people can carry the HIV virus, a sizeable proportion of women said that healthy looking persons could not be infected with the HIV virus. This misperception is concentrated among teenagers and specific slum communities of Nairobi, indicating a need for better health information campaigns on the symptoms and lack of symptoms that can accompany HIV infection.

Most women who were surveyed consider themselves at no risk or at minimal risk of catching HIV/AIDS because they have one sexual partner. If, nevertheless, either of the trusted sexual partner has other sexual partners, that widens the scope of sexual networking and increases the risk of contracting HIV. In campaigns to reduce the spread of HIV, this risk must be discussed openly and preventive measures devised.

There are women who considered their risk of getting HIV/AIDS to be moderate or great because of their own risky behavior or that of their sexual partners. Findings suggest that enhanced knowledge about HIV/AIDS is strongly associated with risk perceptions. Whether a greater sense of risk actually translates into sexual behavioral change remains unknown. However, it is possible that risk perception fosters the adoption of safer sexual practices.

A majority of the married women reported that they had one sexual partner, and women reporting multiple sexual partners were rare. In the slums of Nairobi, women with multiple partners are most likely to be recent arrivals or uneducated. The chance of having multiple sexual partners is relatively high among the unmarried women in the slums of Nairobi. Unmarried women living in the slums are more than twice as likely to have multiple sexual partners as their married counterparts. This suggests that educational efforts on the risk of HIV and STIs should be targeted to young unmarried people.

While a majority of the women surveyed know about condoms, a sizeable proportion does not know where to get them. Few women, mainly those who are not married, use condoms. Married couples and people in regular sexual partnership do not use condoms because condoms are perceived to betray trust.

There are indications of an emerging acceptability of safe sexual practices. A majority of the women favor staying with one sexual partner or urging the spouse to be faithful. Many young women who had not started sexual relations keep their virginity while some who had started sexual relations, especially formerly married women, abstain from sexual intercourse. Others start to use condoms or respond by reducing the number of sexual partners. About a third of the women have sought testing for the HIV virus. A large proportion of those who have not been tested for the HIV virus would like to have a test. Constraints to testing for the HIV virus are lack of knowledge of where to go for the test and limited testing facilities.

CHAPTER 10

ADOLESCENTS IN NAIROBI INFORMAL SETTLEMENTS

Monica Magadi and Alex Ezech

From earlier analyses of qualitative assessments of general and reproductive health needs in the slums of Nairobi, it was evident that most of the poor health outcomes associated with slum residence are accentuated in the adolescent population. It was hypothesized that low school enrollments and the high levels of unemployment and under-employment that characterize these slums, heighten adolescents' risk-taking behaviors and increase poor reproductive health outcomes among them. The Nairobi Cross-sectional Slums Survey (NCSS) therefore incorporated an adolescent module targeted at 12-24 year olds with specialized questions for males and females. This chapter focuses on comparing the risk factors and outcomes for adolescent males and females.

10.1 Background Characteristics of Adolescent Respondents

Interviews were completed successfully in the Nairobi slums with 1683 male and 1934 female adolescents aged 12-24 years. Table 10.1 presents the background characteristics of the adolescent sample.

About half of the males and a little over one-third of the females in the sample were more than 20 years old and 13-16 percent were below 15 years of age. The majority of the adolescents had never been married but females were more than twice as likely as males to be currently married (41 percent and 16 percent, respectively). Almost all the adolescents in the sample had received at least some primary education, and a little over one-third of the males and one-quarter of the females had attended secondary or higher. Only 21 percent of the males and 20 percent of the females were attending school at the time of the survey.

The ethnic compositions of the adolescent male and female samples were quite similar: the Luo, the Kikuyu, the Luhya, and the Kamba groups together accounted for almost 90 percent of the adolescents interviewed. Sixty-one percent of the males and females sampled were Protestant, one-third were Catholic, and the remaining 5 percent were Muslim. A relatively high proportion of respondents (about 20 percent) were from Kibera, Embakasi and Kasarani divisions, while less than 5 percent were from Makadara or Pumwani divisions. A large majority of the adolescents (at least 80 percent) had lived in their current location for less than 5 years.

Table 10.1 Respondents' background characteristics

Percent distribution of respondents by background characteristics, NCSS 2000

Background Characteristic	Males (percent)	Females (percent)
Age group		
12-14	13.4	16.3
15-17	14.1	20.5
18-20	23.0	27.1
21-24	49.5	36.1
Marital Status		
Single	82.3	56.6
Married	15.5	40.6
Divorced/separated/widowed	2.2	2.8
Education level		
None	0.8	2.4
Primary incomplete	32.5	35.9
Primary complete	32.3	33.9
Secondary+	34.4	27.8
Currently attending school		
Yes	21.1	20.1
No	78.9	79.9
Ethnic group		
Kamba	17.0	14.7
Kikuyu	22.2	24.0
Luhya	20.6	22.5
Luo	27.8	26.5
Other	12.4	12.3
Religion		
Catholic	32.8	32.9
Protestant /other Christian	60.9	60.9
Muslim	4.9	5.5
Other (other, no religion, missing)	1.4	0.7
Division		
Central	12.1	9.6
Makadara	3.5	2.8
Kasarani	19.2	20.0
Embakasi	20.9	18.4
Pumwani	4.4	3.4
Westlands	9.3	13.9
Dagoretti	9.6	12.0
Kibera	21.0	19.9
Length of Stay in current location		
Since birth	3.9	3.9
<2 years	46.1	53.6
2 - 4 years	34.6	30.5
5 - 7 years	7.0	5.3
8+ years	7.7	6.5
Others	0.7	0.2
Total	100	100
Number of Cases	1,683	1,934

10.2 Educational Experiences of Adolescent Males and Females

10.2.1 Educational Attainment - Comparison with DHS

As Table 10.1 shows, nearly all adolescent males and females in the slums have had some schooling. However, the majority of children in the slums appear to drop out of school much sooner than children in other areas of Kenya, as shown by Table 10.2. The table presents enrollment rates and level of educational attainment for adolescents aged 15-24, based on the individual data files from both surveys.

Table 10.2 Schooling status and educational attainment

Percent distribution of adolescents by schooling status and educational attainment , NCSS 2000 and KDHS 1998

Status	NCSS		Nairobi*		Rural Kenya*		Kenya (national)*	
	Male	Female	Male	Female	Male	Female	Male	Female
Attending school								
15-17	40.2	22.2	88.9	32.5	74.0	72.9	74.4	68.1
18-20	9.8	5.4	15.4	20.0	31.5	23.7	29.4	22.0
21-24	3.1	2.9	7.7	7.9	10.6	3.3	9.3	3.7
Education attainment								
None	0.7	2.0	0.0	0.5	1.8	4.0	1.9	4.2
Primary incomplete.	22.6	25.8	10.9	23.9	50.2	50.2	45.7	45.0
Primary complete	37.1	39.4	16.4	25.4	20.3	20.3	21.3	22.5
Sec.+	39.6	32.8	72.7	50.3	27.7	27.7	31.1	28.3
No. of cases	1,457	1,618	55	197	1,209	2,719	1,427	3,394

* Based on 1998 KDHS data.

At each age, enrollment rates are much lower in the slums than in other parts of Kenya. The gap is most pronounced for the 15-17 year age group, which corresponds to adolescents attending secondary school. Only 40 percent of the 15-17 year old adolescent males in the slums were attending school, while 74 percent of male adolescents aged 15-17 in Kenya and 89 percent of those in Nairobi were attending school. The gap is even wider for adolescent females. Only 22 percent of 15-17 year old females in the slums were enrolled in school compared to 68 percent nationally and 73 percent in rural areas. Overall Nairobi's relatively low female enrollment (33 percent) is closer to the figure for the slums.

Enrollment rates were much higher for younger adolescents (aged 12-14 years) compared to older adolescents (aged 15-24 years) throughout Kenya, but especially in the slums. Data from the household schedule of the two surveys show that 85 to 90 percent of females and between 89 and 96 percent of the males between 12 and 14 years of age were enrolled in school. The proportions in the slums were slightly lower than those for rest of the Kenyan population.

These enrollment data provide a different perspective on slum education than comes from attainment data. Attainment data suggest that adolescent residents of informal settlements are more educated than their rural counterparts. Only one-quarter of all rural adolescent males and females have attained secondary or higher levels of education, compared to 40 and 33 percent of

slum adolescent males and females. This disparity may be explained by the selectivity effects of migration: youth with some schooling may be more inclined to migrate to cities to seek employment than uneducated youth who remain at home in the rural areas to pursue traditional livelihood activities. However, the likelihood of being enrolled in school while living in the slums is lower than for those in all other parts of the country.

10.2.2 School Dropout/Non-Attendance

Only one in five adolescents aged 12-24 were enrolled in school at the time of the survey. Those who were not enrolled were asked why they stopped attending. Table 10.3 shows the reasons for dropping out of school for adolescent males and females.

Table 10.3: Reported reasons for dropping out of school, NCSS 2000

Reason	Males (percent)	Females (percent)	Total (percent)
Could not pay school fees	70.8	66.7	68.6
Completed / had enough	15.7	12.5	14.0
Pregnancy / Marriage	0.1	6.2	3.4
Did not like school	4.6	4.8	4.7
Other reasons	8.8	9.8	9.3
Number of Cases	1,316	1,501	2,817

An overwhelming majority reported that they dropped out of school because they (or their parents/guardians) could not pay school fees (71 percent of males and 67 percent of females). Only a small proportion reported that they had left school because they had acquired enough education (14 percent of all adolescents). Various factors may explain the residual reasons for ending schooling. Evidence from the qualitative research in Nairobi's slums suggests that most schools in the slums are informal primary schools. Often, there is no existing mechanism linking these informal schools to secondary schools, and as a consequence their students are unable to attain secondary education upon completion of primary.

Marriage and pregnancy were the factors most likely to differentially influence adolescent males' and females' rates of dropping out of school. While six percent of the adolescent females reported marriage or pregnancy as the main reason for dropping out of school, virtually no adolescent male did so.

10.2.3 Financial Support for Education

Adolescents who were enrolled in school at the time of the survey were asked to list major contributors toward their educational expenses. The results are presented in Table 10.4.

About two-thirds and slightly more than half of the adolescents indicated that their fathers and mothers, respectively, contribute to their educational expenses. In general, male adolescents were more likely to report their fathers as major contributors to their educational expenses, while females were more likely to report their mothers as major contributors. Roughly five percent of adolescent males and females reported that siblings, other relatives, and NGOs were major contributors to their school-related expenses. Siblings showed a slight preference towards males'

education while other relatives and NGOs showed a slight preference for supporting females' education.

Table 10.4 Source of main support for school expenses, NCSS 2000

Person contributing	Males (percent)	Females (percent)	Total
Father	71.6	62.9	67.1
Mother	51.4	57.6	54.6
Sibling (brother/ sister)	6.3	5.3	5.7
Other relatives	4.6	7.1	5.9
NGO/Religious group/other	3.7	6.0	4.9
No one /self	0.3	0.5	0.4
Number of cases	352	380	732

10.3 Livelihood and Social Conditions

Assessments of the livelihood and social conditions of adolescents in Nairobi slums include orphanhood, living arrangements, employment, and risky behaviors and practices other than sexual behavior.

10.3.1 Orphanhood

Though reliable data evaluating the magnitude of the impact of HIV/AIDS in specific populations in Kenya is lacking, there are some indications that the epidemic has had greatest impact among slum populations. A qualitative study conducted prior to the survey found that extreme poverty conditions support risky sexual behaviors among slum residents, making them highly vulnerable to HIV/AIDS infection. These conditions are likely to increase the proportion of orphans in the slum communities. Table 10.5 gives the distributions of adolescents' parents' survival status according to selected background characteristics.

The majority of the adolescents reported that both of their parents are still alive (73 percent), and this proportion declined by age. The percentage was higher for those who were in school (83 percent) compared to those who were not (70 percent), reflecting (in part) the improved chances of being in school for adolescents whose parents were alive. This differential may also reflect the younger age of enrolled students. Also as a consequence of age differentials, about three-quarters of adolescents who had never been married still had both parents compared to only 58 percent of formerly married adolescents?

Irrespective of age, the Luos have a very different pattern of parental survivorship compared to the other ethnic groups. While about three-quarters of adolescents from the other ethnic groups reported that both of their parents were still alive, only two-thirds of the Luo adolescents did so. Conversely, only two percent of the Kikuyu as compared to eight percent of the Luo adolescents reported that both of their parents were dead. As indicated in Chapter 7, Nyanza province of Kenya, predominantly occupied by the Luo ethnic group, leads for a number of mortality indicators, while Central province, occupied by the Kikuyu, has the best health indicators.

Table 10.5 Survival status of parents

Percent distribution of adolescents by survival status of parents and by age, sex, school attendance, marital status and ethnicity, NCSS 2000.

	Both parents dead	Mother dead	Father dead	Both parents alive	Don't know	Total percent	No. of Cases
Age group							
12-14	3.3	3.9	10.2	79.1	3.5	100.0	541
15-17	4.1	6.2	15.0	71.9	2.8	100.0	633
18-20	4.7	4.7	16.6	72.1	1.9	100.0	910
21-24	4.9	4.7	18.6	70.6	1.2	100.0	1,530
Sex							
Male	3.7	4.4	15.4	74.4	2.1	100.0	1,682
Female	5.2	5.2	16.9	70.8	1.9	100.0	1,932
Currently attending school							
Yes	1.5	4.0	8.6	82.9	3.0	100.0	732
No	5.2	5.1	18.1	70.0	1.6	100.0	2,819
Marital Status							
Single	3.6	4.0	14.2	75.7	2.5	100.0	2,477
Married	6.6	6.3	20.3	66.2	0.6	100.0	1,046
Formerly married	3.3	12.1	23.1	58.2	3.3	100.0	91
Ethnic group							
Kamba	3.1	3.2	17.9	73.7	2.1	100.0	570
Kikuyu	2.4	3.5	13.1	75.6	5.4	100.0	838
Luhya	3.3	4.5	16.4	74.9	0.9	100.0	782
Luo	8.1	6.7	18.0	67.0	0.2	100.0	979
Other	4.3	6.1	15.5	72.8	1.3	100.0	445
Division							
Central	4.6	4.4	19.0	69.9	2.1	100.0	389
Makadara	3.6	3.6	21.4	70.5	0.9	100.0	112
Kasarani	4.9	5.5	14.7	72.2	2.7	100.0	709
Embakasi	4.8	3.0	16.5	73.7	2.0	100.0	707
Pumwani	5.7	7.8	17.7	62.4	6.4	100.0	141
Westlands	1.4	3.8	12.5	81.6	0.7	100.0	424
Dagoretti	4.8	3.6	14.5	76.1	1.0	100.0	393
Kibera	5.1	7.2	17.7	68.1	1.9	100.0	739
Total	4.5	4.8	16.2	72.5	2.0	100.0	3,614

The strong ethnic differences that are apparent in slum communities may be due to a combination of both structural and cultural factors. The data in this study indicate that a vast majority of adolescents are recent immigrants (see Table 10.1), having moved to the slum only within the last four years; thus, their orphanhood experiences may be a result of their areas of origin rather than a result of different experiences in the slums. Nyanza Province (the origin of most Luo migrants) is more disadvantaged economically and in the availability of health services than Central Province (the origin of most Kikuyu migrants). For instance, the 1998 KDHS data show that while 85 percent of all children in Central Province were fully immunized, only 47 percent of the children in Nyanza province received all vaccinations (NCPD 1999). The welfare monitoring survey also shows that while 31 percent of people in Central province were living in absolute poverty in 1997, the corresponding poverty level for Nyanza was 63 percent (Republic of Kenya, 2000). Additionally, cultural practices that are likely to increase the risk of HIV/AIDS

transmission, such as polygyny, lack of male circumcision and widow inheritance, are more widely practiced among the Luo community.

Across the major ethnic groups, fathers are three to six times more likely than mothers to be reported dead. This disparity in survivorship is probably due to the bread-winning role that fathers play in the majority of households in Kenya; in the event that the father dies, the family may be forced to move to the slums from other parts of Nairobi due to financial constraints. This pattern may also be due in part to excess male mortality and older age of fathers compared to mothers.

10.3.2 Living Arrangements

Table 10.6 shows that of the adolescents who reported that both their parents were alive, less than one in five lived with both of their parents -the majority of the adolescents, in fact, lived with neither parent (67 percent). Nearly all married adolescents lived with neither parent. The association between school attendance and living arrangements is striking. While about half of adolescents enrolled in school lived with both parents, less than ten percent of those out of school did so. Male adolescents were as likely to live with only their father, as they were to live with only their mother, while female adolescents were more than twice as likely to live with only their mother. These patterns varied substantially by age and ethnicity. At younger ages (12-17 years old), males were more likely to live with only their mothers but after age 17, they were more likely to live with only their fathers. Kikuyu adolescents, especially females, were considerably more likely to live with only their mothers than to live with only their fathers. The Kikuyu and the Luo were more likely to live with both parents than either the Kamba or Luhya. While 22 to 28 percent of Kikuyu and Luo adolescents lived with both parents, only five to seven percent of Kamba adolescents did so. Adolescents in Kasarani division were most likely to live with both parents, while those in Makadara were least likely, compared with other slum divisions.

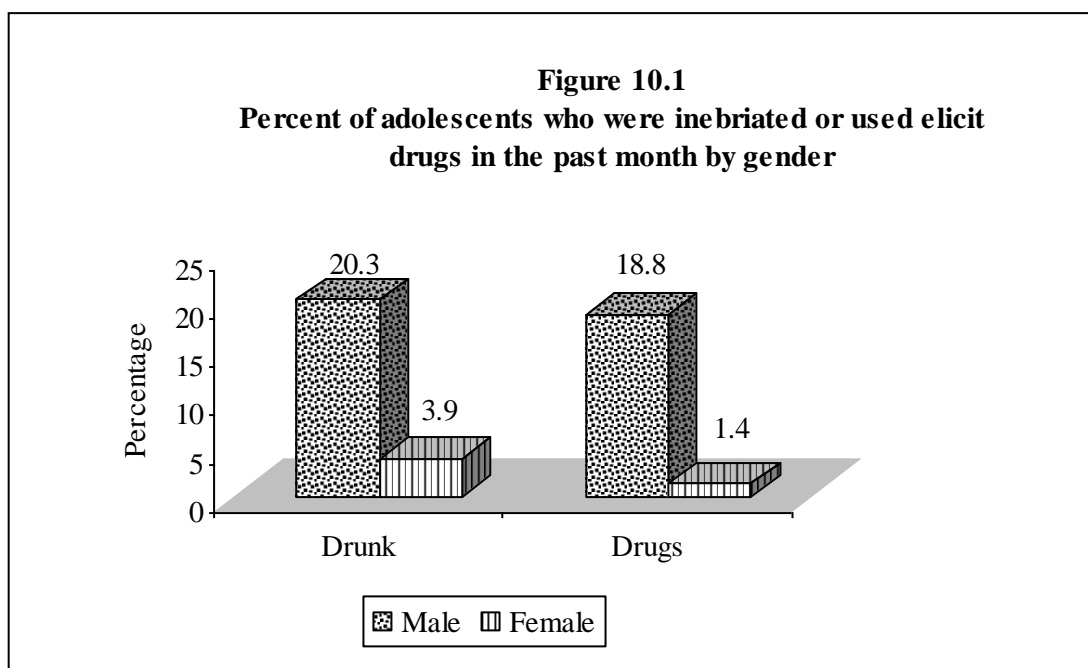
Table 10.6 Adolescents' living arrangements

Percent distribution of adolescents by living arrangements and by age, school attendance, marital status and ethnicity, classified by sex, NCSS 2000

Characteristic	Living with both parents		Living with father only		Living with mother only		Living with neither parents	
	Male	Female	Male	Female	Male	Female	Male	Female
Age group								
12-14	57.5	54.0	11.6	8.5	15.5	21.0	15.4	16.5
15-17	31.4	26.1	8.1	5.0	19.8	11.3	40.7	57.6
18-20	15.4	10.6	7.0	4.9	4.5	6.5	73.1	78.0
21-24	4.7	3.4	5.7	1.3	2.1	3.8	87.4	91.5
Marital Status								
Single	21.6	30.8	8.2	6.9	8.4	14.3	61.8	48.0
Married	1.6	0.6	1.1	0.4	0.5	0.4	96.8	98.6
Formerly married	14.3	12.5	9.5	0.0	0.0	15.6	76.2	71.9
Attending school								
Yes	51.0	54.0	12.6	8.6	15.0	21.7	21.4	15.7
No	8.5	8.9	5.5	2.9	4.4	5.5	81.6	82.7
Ethnic group								
Kamba	5.1	6.9	7.9	3.4	5.1	3.9	81.9	85.8
Kikuyu	26.2	21.7	5.7	2.5	14.3	18.8	53.8	57.0
Luhya	15.6	13.9	8.9	6.6	5.9	6.6	69.6	72.9
Luo	22.0	27.6	7.0	4.9	4.6	5.2	66.4	62.3
Other	20.7	23.0	6.3	3.6	3.8	7.9	69.2	65.5
Division								
Central	13.5	20.4	7.3	4.6	7.4	8.3	71.8	66.7
Makadara	12.2	7.9	0.0	5.3	4.9	10.5	82.9	76.3
Kasarani	32.1	32.0	6.6	6.3	4.1	13.0	57.2	48.7
Embakasi	12.7	15.4	5.8	1.5	5.0	3.9	76.5	79.2
Pumwani	10.2	18.0	14.3	2.5	8.2	20.5	67.3	59.0
Westlands	12.8	15.4	9.0	6.5	13.5	12.2	64.7	65.9
Dagoretti	19.5	17.0	4.1	2.3	10.6	8.5	65.8	72.2
Kibera	19.7	15.9	9.6	4.6	6.7	7.2	64.0	72.3
Total	18.5	19.2	7.2	4.3	7.0	9.2	67.3	67.3
No. of cases	1,251	1,368	1,251	1,368	1,251	1,368	1,251	1,368

10.3.3 Deviant Behavior

The adolescent module contained questions on risky or deviant behavior such as street begging, drunkenness, and drug use. Street begging experiences are seriously under-reported due to a combination of two factors: First, most street children are homeless and are therefore missed in household-based sample surveys. Second, street children whose parents live in the slums may only return home occasionally, and are therefore unlikely to be present when survey visits are made. Consequently, data on drunkenness and drug use alone are presented; even these estimates may be biased downward if street children are at higher risk than those sampled. Figure 10.1 illustrates the gender disparities in these deviant behaviors.



Overall, about one in five adolescent males were drunk at least once in the past month compared to only four percent of adolescent females. Also, while 19 percent of adolescent males have experimented with drugs, less than 2 percent of the females reported having ever done so. The data by background characteristics for drunkenness in the past month and ever use of drugs are shown in Table 10.7.

Alcohol and drug use both increase with age for both males and females, and the age pattern shows a clear threshold for initiation into these risky behaviors. If drunkenness in the past month is a good proxy for dependence on alcohol, then interventions that seek to reduce the high levels of alcoholism in the slums must target adolescent males and females before they reach age 15. Below age 15, virtually no adolescents reported being drunk in the past month. By age 15-17, however, 6 percent of males and one percent of females entered this category. At least 20 percent of male adolescents and 5 percent of female adolescents aged 18 years or older may be dependent on alcohol, and this pattern of risky behavior is carried through adult life. The pattern for drug use was more troubling. By age 12-14, 4 percent of adolescent males had already experimented with drugs. For the 15-17 year age group, this percentage more than tripled, suggesting that interventions aimed at reducing drug abuse should target children under age 12 and must target adolescents before they reach age 15.

In keeping with the pattern for age, adolescents who were enrolled in school or single were less likely to have ever used drugs or to have been inebriated in the past month. The results suggest that marital disruption is associated with increased risky behavior, especially among female adolescents, for whom the risk of getting drunk or using drugs is about five times higher than for currently married women.

Not knowing the survival status of one or both parents appears to be a strong risk factor for drug use. Among males who reported not knowing the survival status of their father and/or mother, one-third had tried drugs, and for females the highest risk of drug use was also among those who did not know whether their parents were alive or dead. Drug use was also higher if one parent was dead, compared to when both were alive. The better chances of not having been involved in risky behavior for adolescents (especially females) who have lost both parents relative to having

lost one may be an indication that single parents in the slums are having a hard time modeling positive life styles for their children. Furthermore, and of extreme relevance from a policy standpoint, while programs targeting orphans exist, virtually none assist children with only one surviving parent.

Kamba and Kikuyu adolescents were more likely to engage in these risky behaviors compared to Luhya and Luo adolescents. These ethnic differences held for both males and females. While 23 to 25 percent of Kikuyu and Kamba adolescent males were either drunk in the past month or had experimented with drugs, only 15 to 20 percent of Luhya and Luo adolescent males fit either category. For adolescent females, six to seven percent of Kamba and Kikuyu reported being drunk in the past month, compared to only three percent of their Luhya or Luo counterparts.

Table 10.7 Adolescents who were inebriated or had ever used illicit drugs

Percent of adolescents who were inebriated in the past month or who had ever used illicit drugs by background characteristics, NCSS 2000

Background Characteristics	Drunk		Drugs	
	Male	Female	Male	Female
Age Group				
12-14	0.4	0.3	3.5	0.3
15-17	6.3	1.5	14.3	1.5
18-20	20.1	5.1	21.1	1.9
21-24	29.7	6.0	23.2	1.4
Marital Status				
Single	18.2	0.3	17.8	1.5
Married	29.9	3.7	21.1	1.0
Divorced/separated/widowed	29.7	18.5	40.5	5.6
Attending School				
No	24.8	4.8	22.3	1.7
Yes	3.7	0.7	5.4	0.5
Survival status of Parents				
Both Dead	12.9	0.0	21.0	0.0
Mother Dead	21.6	5.9	21.6	2.0
Father Dead	21.3	5.8	19.8	1.8
Both Alive	27.8	3.7	18.0	1.3
Don't know	20.1	2.8	33.3	2.8
Ethnic Group				
Kamba	22.7	6.7	24.1	1.8
Kikuyu	25.1	5.8	22.7	0.9
Luhya	19.9	2.5	15.9	0.1
Luo	18.0	2.5	15.0	0.4
Other	13.9	2.5	18.2	2.5
Division				
Central	17.6	6.4	13.2	3.2
Makadara	24.1	1.8	12.1	1.9
Kasarani	18.3	2.5	26.0	0.5
Embakasi	21.9	4.5	20.5	1.7
Pumwani	27.0	3.0	8.1	1.5
Westlands	30.6	4.9	13.4	0.4
Dagoretti	22.8	3.0	16.7	0.4
Kibera	14.1	3.9	20.6	2.3
Total	20.3	3.9	18.8	1.4
No. of cases	1683	1934	1683	1934

The starting age for drug or alcohol use did not vary much by gender as shown in Table 10.8. The results confirm that the majority of adolescents initiated these activities by ages 15-20. This supports the earlier recommendation that programs aimed at preventing these deviant behaviors should target adolescents before they attain age 15, and preferably before even attaining age 12.

Table 10.8: Starting age for alcohol and drug use, NCSS 2000

Age	Alcohol use		Drug use	
	Males	Females	Males	Females
<12	6.0	5.7	2.9	11.1
12-14	10.7	10.4	14.6	14.8
15-17	35.8	33.8	40.5	22.2
18-20	39.3	40.5	34.2	40.7
21-24	8.2	9.6	11.1	7.9
No. of Cases	882	385	27	316

10.4 Sexual Behavior Among Adolescents

Adolescents who become sexually active early are often less likely to use contraception and less able to negotiate safe sex with their partners, who are often much older. These risks expose them to social, health and reproductive health problems including contraction of STIs and HIV/AIDS, risk of unwanted pregnancies, unsafe abortions, and school dropout. Most of these consequences affect adolescent females considerably more than adolescent males.

10.4.1 Initiation of Sexual Activity Among Adolescents and their Peers

Because data concerning the sexual experiences of adolescent males and females are often believed to be either exaggerated (for males) or under-reported (for females), the questionnaire first asked adolescent males and females if their best friend of the same sex as themselves had ever had sex. It was expected that adolescents would be less motivated to either exaggerate or under-report the sexual activity of their friends. Comparing responses to this question to responses to questions regarding their own sexual activity may provide some indication of the levels of sexual activity among adolescents in the sample as well as of the reliability of responses to questions concerning sexual activity among adolescents. Table 10.9 presents data for reported

Table 10.9: Adolescents and their best friends who have ever had sex

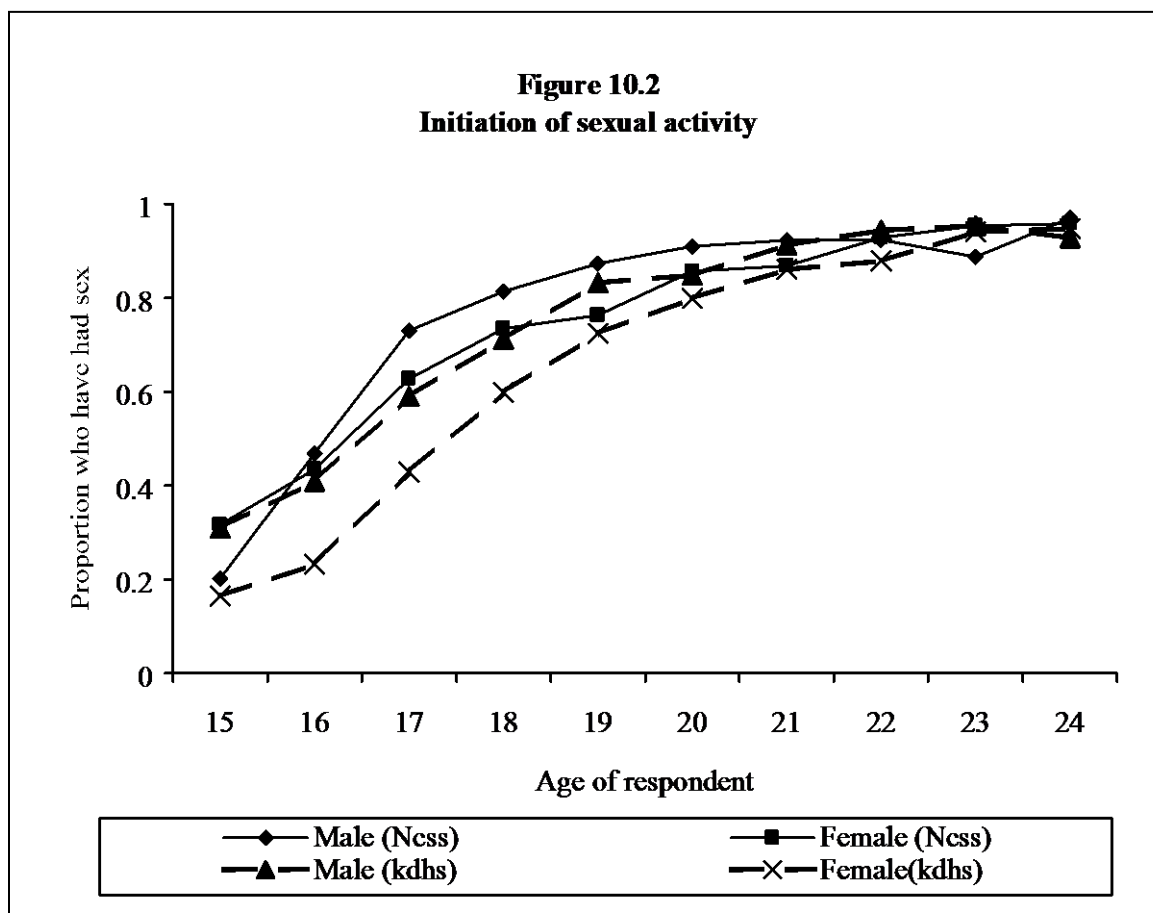
Percent distribution of respondents, and respondents' best friends, who ever had sex by age, NCSS 2000.

Age of respondent	Males		Females	
	Self	Best friend	Self	Best friend
12-14	6.2	42.9	5.1	38.6
15-17	47.3	75.9	47.8	65.7
18-20	87.3	94.0	80.0	83.9
21-24	92.8	97.6	92.1	90.4
Total	73.5	86.4	65.5	75.1

sexual activity of self and best friend.

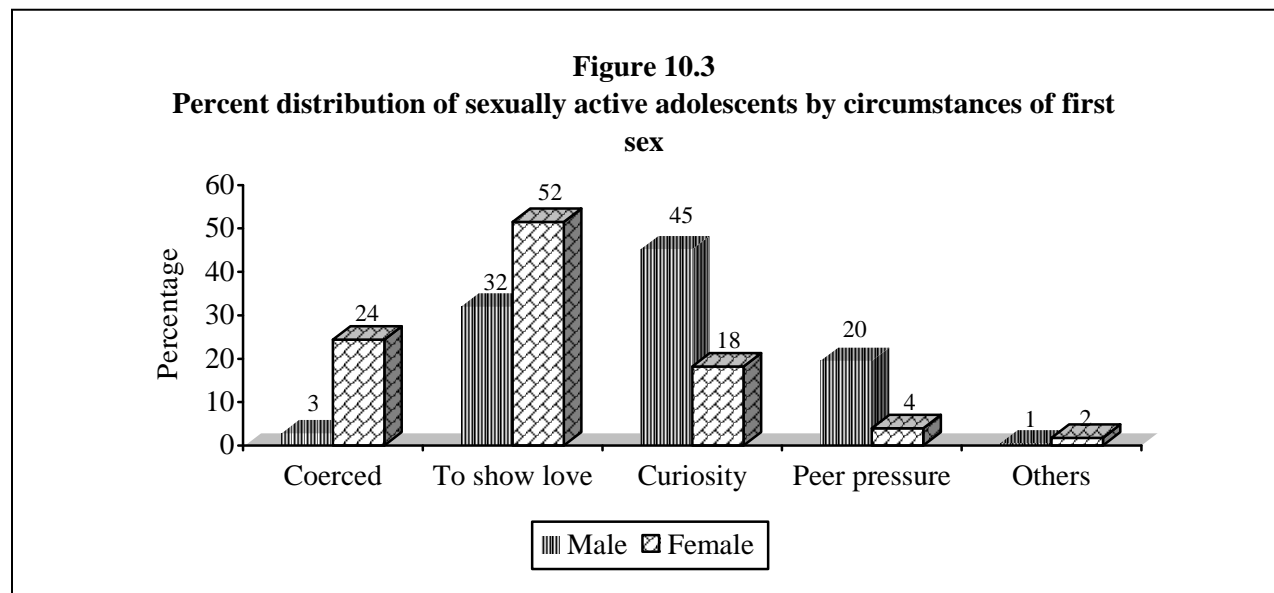
These results suggest that adolescent males' and females' sexual experiences may be under-reported. The aggregate proportions for self were much lower than for best friend, and varied remarkably by age. The greatest disparity was at the lower ages (less than 15), when both males and females were more likely to report that their best friend had had sex than that they had done so. The data suggest possible under-reporting of own sexual activity, especially before age 15, and to some extent at ages 15-17. The disparities consistently declined with age, and this pattern did not differ substantially between adolescent males and females. Furthermore, the data did not demonstrate any over-reporting of sexual activity among adolescent males. A more detailed examination of sexual activity by individual years of age is compared with national statistics in Figure 10.2.

In general, sexual activity began earlier for males than females. Figure 10.2 confirms that sexual activity starts earlier in the slums compared to Kenya as a whole, especially for females. For example, while about 40 percent of 16-year-old females in the slums had had sex, only 20 percent of their counterparts in Kenya as a whole reported having done so. Likewise, more than 70 percent of 17-year-olds in the slums had had sex, compared to less than 60 percent of their counterparts in Kenya as a whole. Based on current status data, the median age at first sexual experience in the slums is 16.1 for males and 16.3 years for females, compared to 16.5 and 17.4 in Kenya as a whole. Thus, the difference in median age at first sex between the slums and Kenya as a whole is about one year for adolescent females and about half a year for adolescent males.

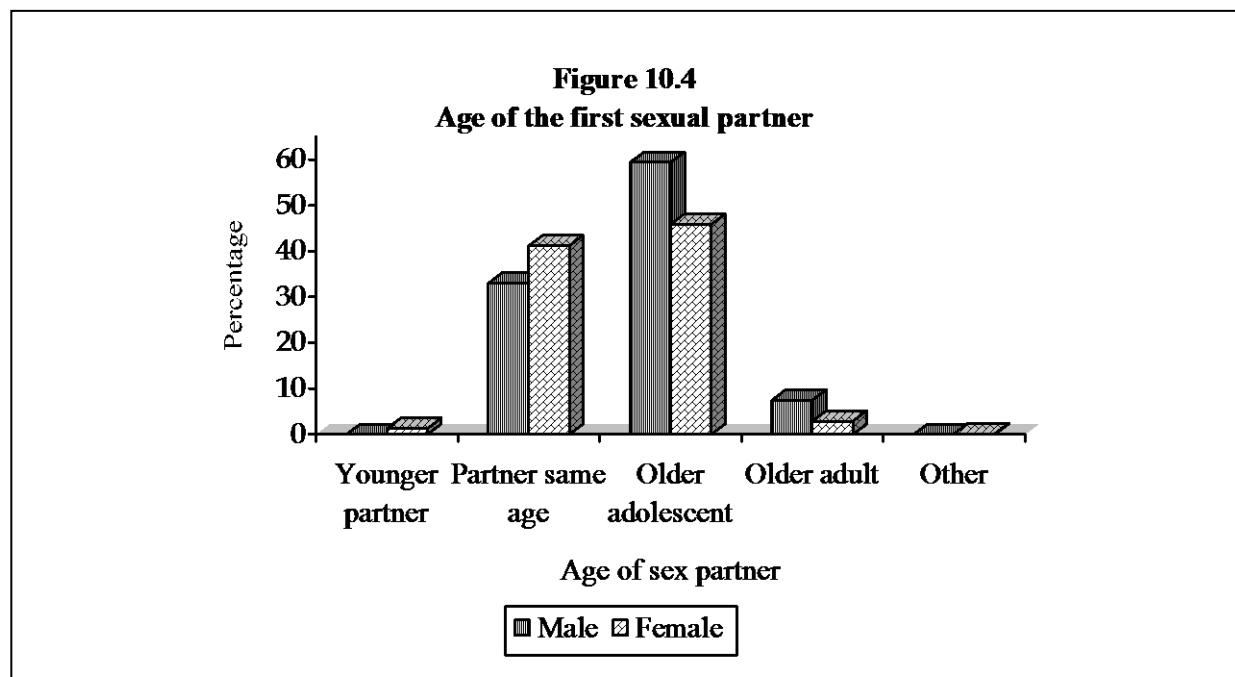


10.4.2 Circumstances of First Sex

Adolescents who had ever had sex were asked about the circumstances of their first sexual encounter. The results are presented in Figure 10.3.



More than half of the female and one-third of the male adolescents said that the primary motivation for their first sexual encounter was to demonstrate their love for their partner. However, adolescent females' first sexual encounter was almost 10 times as likely to have been coerced as that of adolescent males. Adolescent males, however, were more than four times as likely as adolescent females to say that their first sexual encounter was the consequence of peer pressure. Curiosity also played a more important role in sexual initiation among males than females. Adolescents were asked about their first sexual partners – specifically, whether they were their peers, or people older than them. The results are presented in Figure 10.4.



The first sexual partners for most adolescent males or females were either older adolescents or peers. Male adolescents reported that their first sexual partners were older adolescent or older adults more often than female adolescents did.

10.4.3 Multiple Sex Partners

To provide insight into risky sexual behavior, adolescent males and females were asked the number of sexual partners they had in the preceding 12 months. The results are presented in Figure 10.5, and compared to national data from the 1998 KDHS.

The majority of those who had ever had sex (60 percent of males and 83 percent of females) reported only one sexual partner in the 12 months prior to the survey. However, adolescent males were about four times as likely as adolescent females to have had two or more partners. Adolescent females in the slums were more likely to have multiple sex partners than their counterparts in Kenya as a whole. This trend is reversed among males, for reasons that are not evident.

10.5 Sexually Transmitted Infections, Including HIV/AIDS

10.5.1 Awareness of Sexually Transmitted Infections (STIs)

A major consequence of risky adolescent sexual behavior is high levels of STIs and unwanted pregnancies. The NCSS collected information on knowledge of and experience with STIs and who adolescents confided in with their sexual concerns. Table 10.10 shows that knowledge of STIs was quite common among slum adolescents, and knowledge of HIV/AIDS was almost universal for adolescent females, except those in the 12-14 age bracket and those with no education. Males were more likely to report knowledge of syphilis and gonorrhea than females.

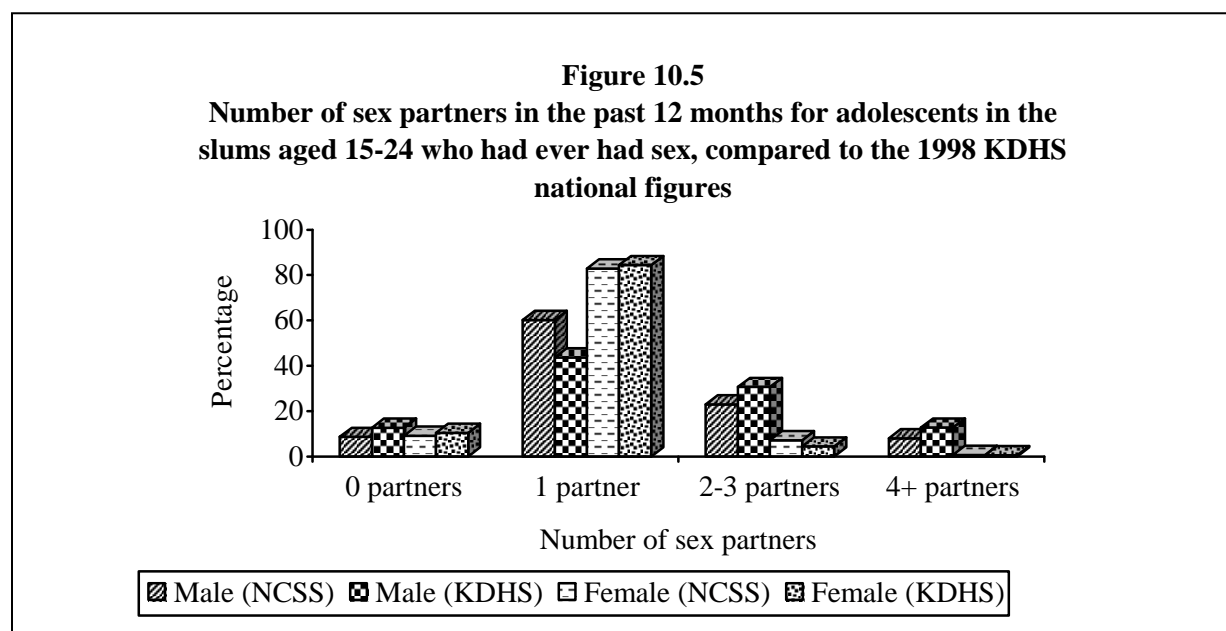


Table 10.10 Knowledge of sexually transmitted diseases by background characteristics, NCSS 2000

Characteristic	Males				Females			
	Syphilis	Gonorrhea	HIV/ AIDS	Other	Syphilis	Gonorrhea	HIV/ AIDS	Other
Age group								
12-14	9.7	19.0	70.8	0.0	18.4	28.2	77.9	4.7
15-17	40.5	67.1	86.1	2.1	44.7	53.3	91.7	6.8
18-20	71.6	90.2	86.0	2.8	59.0	67.4	94.7	12.6
21-24	81.9	94.1	83.0	4.4	69.0	75.6	94.6	10.3
Marital Status								
Single	60.6	76.2	82.3	3.1	48.7	55.7	89.6	8.7
Currently married	80.8	93.1	84.3	3.8	58.5	68.1	93.4	10.2
Formerly married	73.0	97.3	75.7	0.0	61.1	68.5	94.4	9.3
Education level								
None	0.0	21.4	57.1	0.0	23.4	25.5	74.5	2.1
Primary incomplete	30.5	53.0	78.2	0.7	29.7	39.3	85.3	8.8
Primary complete	69.1	89.0	83.8	2.0	54.0	65.7	94.5	9.8
Secondary +	92.4	96.5	85.8	6.5	84.7	86.6	96.5	10.1
Ethnicity								
Kamba	72.0	89.9	83.2	3.8	58.8	71.5	93.7	8.1
Kikuyu	65.0	75.4	79.9	2.4	59.8	67.1	91.8	7.1
Luhya	62.0	79.0	82.4	2.9	55.6	61.4	92.4	10.3
Luo	60.0	76.0	86.5	4.3	39.6	49.7	88.3	10.9
Other	63.6	79.9	77.0	1.4	57.4	60.8	91.6	9.7
Division								
Central	72.0	81.7	93.6	6.9	38.9	49.2	93.0	10.3
Makadara	70.7	82.8	86.2	3.4	64.8	75.9	92.6	5.6
Kasarani	54.5	66.2	84.2	1.6	43.7	51.2	91.2	11.1
Embakasi	66.7	82.9	68.1	1.4	61.5	70.5	92.4	5.9
Pumwani	82.4	87.8	86.5	17.6	38.8	53.7	91.0	17.9
Westlands	67.5	77.1	77.7	6.4	64.6	72.0	92.2	10.4
Dagoretti	63.0	79.0	77.2	0.0	65.1	69.4	92.2	7.8
Kibera	59.3	85.0	91.8	1.1	47.0	54.6	88.1	9.4
Total	64.0	79.3	82.4	3.1	53.0	61.1	91.3	9.3
No. of cases	1683				1934			

For both males and females, the level of knowledge of STIs was positively correlated with age. However, knowledge of HIV/AIDS was virtually universal even among young adolescents. Factors explaining lower reporting of knowledge of HIV/AIDS among older adolescent males compared to females are unknown, but this gender differential may indicate denial of the disease or some confusion about it, especially among older adolescent males.

Knowledge of STIs and HIV/AIDS also increased with educational attainment. Knowledge of gonorrhea, syphilis and to some extent HIV/AIDS was slightly lower among the Luo adolescent females compared to the other ethnic groups, but this pattern does not seem to hold for the males. HIV/AIDS knowledge among female adolescents did not seem to vary much by division, but males in Embakasi reported relatively lower knowledge of HIV/AIDS, compared to their counterparts in the other divisions.

Respondents who had ever had sex were asked if they had ever had an STI. The results show that four percent of adolescent males had, compared to only one percent of adolescent females. The low rates undoubtedly reflect response biases. Hence, the tabulations are not presented here because of the tendency of respondents to under-report episodes of STIs.

10.5.2 Communication on Reproductive Health Issues

Meeting adolescent reproductive health needs will require channels of communication that adolescents use and trust. Information about who adolescents would talk to if they had any sexual concerns or contracted an STI are presented in Table 10.11.

Table 10.11 Persons adolescents would talk to regarding sexual concerns or STIs, NCSS 2000.

Person to talk to	Sexual Concerns		STI	
	Males	Females	Males	Females
Father	21.9	2.2	19.2	3.9
Mother	17.7	31.3	17.0	31.3
Brother/Sister	29.4	20.5	22.5	13.4
Other relative	22.8	18.5	13.4	11.0
Religious leader/teacher/counselor	7.6	6.4	3.9	3.0
Medical person	9.3	9.4	66.2	52.7
Friend	63.6	43.7	46.7	27.9
No one	2.7	5.4	1.3	2.4
Others	4.1	11.4	3.7	14.1
No. of cases	1,683	1,934	1,683	1,934

Note: percentages do not add up to 100 percent due to multiple responses.

Although these categories are not mutually exclusive, the percentage of adolescents who identified specific categories of persons suggests how important interpersonal sources of communication can be as resources for adolescent reproductive health programs. Overall, friends represented the most likely confidant for adolescents with any sexual concerns, but medical personnel topped the list for concerns regarding STIs. Male adolescents were more likely to confide in their friends about sexual or STI concerns than females. Adolescent females rarely mentioned their fathers, but about one-third would talk to their mothers about sexual concerns or STIs. On the other hand, adolescent males were almost as likely to talk with their mothers as with their fathers regarding these issues. This difference underscores the central role of mothers in meeting the social, health, and reproductive health needs of their adolescent children. Very few adolescents would choose not to talk to anyone about these concerns while a significant proportion would talk to a sibling or other relative.

10.5.3 Sources of Information on AIDS

While interpersonal channels of communication are important to adolescents, Table 10.12 shows that mass media, such as the radio, play a more important role as a source of information for adolescents. More than half of the males reported print media as a major source of information while less than a third of the females did so. The males were also more likely to have obtained AIDS information from community meetings and drama performances than the females. However, adolescent females were more likely to obtain information from health workers than males. Schools and teachers, churches/mosques and TV/video shows/films served adolescent males and females more or less equally. Majority of adolescents also receive information on AIDS from friend, relatives and colleagues.

Table 10.12 Sources of information on AIDS, NCSS 2000

Source	Males percent	Females percent
Radio	85.1	75.9
TV, video shows, films	28.0	26.2
Print media (Newspapers, magazines, Pamphlets, posters)	54.5	29.1
Health workers	15.4	24.3
Church/ mosque	17.7	18.4
Schools/ teachers	29.4	31.3
Community meetings /drama performance	15.8	9.4
Friends, relatives, workplace	61.4	57.5
Other sources	3.5	3.2
No. of cases	1671	1919

Note: percentages do not add up to 100 percent due to multiple responses.

10.5.4 Perceptions of AIDS (Transmission, Prevention, Personal Risk)

Adolescents were asked what a person could do to avoid contracting AIDS, and spontaneous responses were noted. As Table 10.13 shows, almost 40 percent of adolescents reported abstinence as a means to avoid HIV/AIDS. Avoiding multiple sexual partners was mentioned by more than half of the respondents. Condom use was the most commonly mentioned means of avoiding AIDS among males (60 percent), and was also mentioned by a substantial proportion of females (47 percent). Very few people gave alternate responses such as avoiding kissing, blood transfusion, or injections.

Table 10.13 AIDS prevention (What can a person do to avoid getting AIDS?), NCSS 2000

What to do	Males percent	Females percent
Abstain from sex	39.4	36.3
Use condoms	60.2	46.8
Avoid high risk groups (prostitutes, homosexuals)	5.0	4.4
Avoid multiple partners/ be faithful to one partner	58.8	55.9
Avoid blood transfusions, injections, kissing	4.0	13.3
Other actions	2.8	6.0
Don't know	0.2	0.0
No. of cases	1671	1919

Adolescent perceptions about HIV/AIDS and other STIs are given in Table 10.14. When adolescent respondents were asked about common misperceptions about HIV and its transmission, fully two-thirds correctly identified statements as being true or false. However, there were some exceptions to this generally correct knowledge of AIDS-related issues. First, 90 and 86 percent of male and female adolescents respectively believed that a woman who is HIV+ would always give birth to a HIV+ child. Second, about 40 percent of both male and female adolescents believed that AIDS can be transmitted through mosquito, flea, or bedbug bites.

These inaccurate perceptions of AIDS transmission tend to create fatalistic beliefs regarding the chances of getting the virus, and thereby discourage action that may be taken to avoid infection.

Table 10.14 Adolescent perceptions on HIV/AIDS and other STIs, NCSS 2000						
Perception	Males			Females		
	True	False	Don't Know	True	False	Don't Know
AIDS can be cured	1.5	97.7	0.8	2.1	96.1	1.8
Using a condom can prevent one from getting AIDS	78.4	17.7	3.9	74.2	15.0	10.8
One can always tell when a person has a sexually transmitted infection	29.4	66.6	4.0	25.8	68.3	5.9
You can tell if a person is HIV+.	30.7	68.9	0.4	20.9	75.3	3.8
If signs of STI disappear, it means the person no longer has the disease	19.5	74.4	6.1	18.0	71.5	10.5
A health looking person can be infected with the HIV virus	93.1	6.1	0.8	84.4	12.9	2.7
A woman who has HIV will always give birth to a HIV+ child	89.7	8.1	2.2	86.3	8.2	5.5
AIDS can be transmitted through:						
Shaking hands	2.7	96.4	0.9	6.0	91.4	2.6
Hugging	8.3	90.5	1.2	7.8	89.1	3.1
Sharing clothes	11.6	86.0	2.4	12.6	83.3	4.1
Sharing utensils	22.6	73.9	3.5	19.0	75.5	5.5
Mosquito, flea, or bedbug bites	40.7	53.3	6.0	42.1	48.5	9.4
No. of cases	1671			1932		

Adolescent perceptions of personal risk of getting HIV/AIDS are presented in Table 10.15 according to selected background characteristics. More than half of adolescent males and nearly half of adolescent females believed they had a small risk of getting AIDS. A little over one-third believed they had no risk at all while about 12 percent of males and 16 percent of females perceived their risk to be moderate or great. For both males and females, the proportion reporting no risk at all declined with age, while the proportion reporting small or moderate to high risk increased with age.

Table 10.15: Perceptions of the risk of getting AIDS by background characteristics, NCSS 2000						
Characteristic	Males			Females		
	No risk	Small risk	Moderate/ Great risk	No risk	Small risk	Moderate/ Great risk
Age group						
12-14	85.2	11.7	3.1	71.8	25.9	2.3
15-17	55.6	39.3	5.1	43.6	49.0	7.4
18-20	26.2	61.8	12.0	31.2	51.6	17.2
21-24	20.1	63.8	16.1	24.1	50.0	25.9
Marital Status						
Single	38.2	50.4	11.4	47.0	43.4	9.6
Married	23.0	65.9	11.1	25.4	50.5	24.1
Formerly married	10.8	56.8	32.4	27.8	46.3	25.9
Education level						
None	83.3	16.7	0.0	58.5	26.8	14.6
Primary incomplete	55.0	37.3	7.7	49.8	39.0	11.2
Primary complete	24.2	62.3	13.5	29.7	51.7	18.6
Secondary +	25.9	59.7	14.4	30.2	50.8	19.0
Number of sex partners in the past 12 months						
Never had sex	82.9	15.2	1.9	64.3	33.7	2.0
0	46.0	47.8	6.2	25.8	62.1	12.1
1	18.6	74.6	6.8	25.0	53.0	22.0
2-3	15.0	56.5	28.5	8.7	43.5	47.8
4+	8.9	41.6	49.5	22.2	22.2	55.6
Ethnicity						
Kamba	30.9	56.5	12.6	32.9	45.6	21.5
Kikuyu	38.6	49.4	12.0	42.5	45.4	12.1
Luhya	33.1	54.4	12.5	31.5	51.2	17.3
Luo	31.7	56.7	11.6	40.0	42.5	17.5
Other	46.4	43.5	10.1	40.3	48.9	10.8
Division						
Central	22.6	73.5	3.9	39.3	39.3	21.2
Makadara	32.8	39.7	27.5	26.4	47.2	26.4
Kasarani	43.4	42.5	14.1	40.3	44.7	15.0
Embakasi	44.1	40.1	15.8	36.4	44.1	19.5
Pumwani	26.4	52.8	20.8	41.8	46.3	11.9
Westlands	37.7	52.6	9.7	31.7	60.5	7.8
Dagoretti	25.0	53.7	21.3	36.7	48.9	14.4
Kibera	32.0	65.2	2.8	41.0	42.0	17.0
Total	35.2	53.0	11.8	37.6	46.4	16.0
No. of cases		1617			1917	

The same correlation was also observed with respect to increasing education and, to some extent, increasing numbers of sexual partners in the 12-month period preceding the survey. Formerly

married adolescent men are about three times as likely to perceive their risk of HIV infections as moderate to great as never or currently married males. For adolescent women, there are no differences in risk perception between currently and formerly married women, but both groups are more likely to perceive their risks as moderate or great compared to single adolescent females. More than one in five Kamba women – more than in any other ethnic group - reported that they were at moderate or high risk of getting AIDS. Adolescent males and females in Makadara division reported a high or moderate risk of HIV more often than those in other division.

10.5.5 Behavior Change to Avoid Getting HIV/AIDS

All adolescents who reported knowledge of HIV/AIDS were asked if they had done anything to avoid contracting the disease. About three-quarters reported that they had remained virgins, had stopped all sexual activity, or had restricted sexual activity to one partner. About one-quarter of the males and only four percent of the females reported condom use as their strategy to avoid getting the disease. Only five percent of the males and 14 percent of the females said they had not changed their behavior in response to the AIDS epidemic. Table 10.16 shows behavior changes according to selected background characteristics.

Both condom use and limiting the number of sexual partners increased with age, while no behavioral change tended to decrease with age. More educated adolescents and those with multiple sexual partners were more likely to report condom use as their strategy to avoid infection, as were male adolescents in Kibera compared to their counterparts in other divisions. The proportion of adolescents reporting no change varied considerably by division. Almost one-quarter of the adolescent females in Kasarani division reported no behavior change, compared to less than four percent in Central or Dagoretti divisions.

Table 10.16: Behavior change to avoid getting AIDS by background characteristics, NCSS 2000

Characteristic	Males				Females			
	Condom use	One partner	Other	No change	Condom use	One partner	Other	No change
Age group								
12-14	0.4	2.7	86.5	11.6	0.7	3.3	77.0	21.3
15-17	13.7	21.4	67.1	8.5	3.6	32.2	62.2	11.9
18-20	29.6	47.3	43.4	4.4	2.7	52.5	44.5	13.7
21-24	33.4	57.4	40.8	3.0	5.7	63.9	40.4	11.2
Marital Status								
Single	25.6	35.6	55.2	5.9	4.6	22.4	65.2	14.8
Married	19.2	81.2	29.9	1.9	2.0	73.7	34.6	12.6
Formerly married	59.5	35.1	51.3	5.4	7.4	68.5	33.3	5.6
Education level								
None	0.0	8.3	91.7	0.0	2.4	21.9	46.3	31.7
Primary incomplete	14.6	23.2	66.2	7.2	2.9	31.3	58.2	16.3
Primary complete	29.8	51.8	42.0	4.6	3.0	54.9	44.6	11.9
Secondary+	31.9	53.3	44.8	4.2	5.4	51.0	52.7	11.0
No. of sex partners in past 12 months								
Never had sex	0.0	0.2	80.5	13.0	0.0	0.2	83.2	18.7
None	10.6	13.3	21.2	3.5	4.3	38.8	55.2	10.3
1	27.0	84.3	59.9	2.0	4.3	74.5	31.6	10.9
2-3	53.3	19.2	66.3	3.5	19.6	29.3	55.4	14.1
4+	54.5	7.9	88.0	5.0	22.2	33.3	44.4	11.1
Ethnicity								
Kamba	31.2	52.3	45.3	4.2	4.2	51.8	46.8	10.9
Kikuyu	23.4	40.5	58.7	4.3	4.8	36.7	57.4	16.8
Luhya	26.2	38.4	51.2	4.7	4.2	50.0	49.8	10.0
Luo	26.6	46.7	45.8	5.1	2.2	45.7	51.6	14.4
Other	16.9	31.9	58.0	9.7	3.0	39.7	50.9	15.9
Division								
Central	26.0	73.0	27.9	0.0	2.2	53.6	48.6	3.3
Makadara	15.5	51.7	56.9	8.6	1.9	50.9	54.7	7.5
Kasarani	24.4	35.3	62.2	0.7	2.1	36.2	52.5	24.1
Embakasi	22.1	38.4	67.0	5.2	7.1	43.8	53.3	13.0
Pumwani	20.8	52.8	45.8	2.8	1.5	49.3	56.7	8.9
Westlands	21.4	50.0	51.9	4.5	4.5	43.3	53.7	14.2
Dagoretti	13.1	33.1	51.9	11.3	3.5	43.5	60.9	3.5
Kibera	39.0	33.9	38.4	4.5	2.9	49.6	43.0	16.2
Total	25.4	42.7	51.2	5.3	3.7	44.7	51.8	13.7
No, of cases		1671				1919		

10.5.6 Condom Use During the Last Sexual Encounter

The risk of STI and HIV infection, even in the context of multiple sexual partnerships, is reduced with consistent condom use. Table 10.17 examines patterns of condom use during last sexual intercourse. Overall condom use in the slums, for both male and female adolescents, was comparable to that in Kenya as a whole. However, for specific sub-groups (for example those aged 18-20, those who are married, the Luhya ethnic group), adolescents in slums were less likely to have used condoms during their most recent sexual intercourse than in the country as a whole.

Table 10.17: Use of condoms in the most recent sexual intercourse

Percent using condoms in the most recent sexual intercourse by background characteristics, NCSS 2000 and 1998 KDHS

Characteristic	Males		Females	
	Slums	Kenya*	Slums	Kenya*
Age group				
12-14	6.7	NA	25.0	NA
15-17	34.8	29.3	10.1	9.6
18-20	31.1	42.1	6.7	8.7
21-24	31.1	37.1	7.8	5.5
Marital Status				
Single	37.3	40.3	17.2	13.2
Married	10.0	15.9	2.0	3.2
Divorced/separated/widowed	35.3	24.1	18.5	0.0
Education level				
None	0.0	26.7	3.7	0.0
Primary incomplete	26.7	29.0	8.3	5.5
Primary complete	30.4	37.7	5.1	7.3
Secondary+	34.9	46.2	11.1	10.9
Religion				
Catholic	31.3	37.1	8.2	7.1
Protestant /other Christian	32.0	37.0	7.7	7.7
Muslim	28.6	38.5	3.9	3.4
Other	11.8	39.0	10.0	2.8
Ethnicity				
Kamba	33.7	23.0	6.1	4.6
Kikuyu	33.2	44.2	12.0	7.7
Luhya	27.5	40.0	6.6	9.2
Luo	31.7	30.7	7.7	5.0
Other	30.8	39.4	5.0	7.5
Total	31.4	37.3	7.8	7.2
No. of cases	1226	1004	1251	2155

* Based on 1998 KDHS data;

NA – Not Available

10.6 Contraceptive KAP among adolescents

10.6.1 Knowledge of contraceptive methods

Knowledge of contraceptive methods among adolescents, as shown in Table 10.18, was higher in the slums than in the country as a whole. The pill was the most widely spontaneously reported method among women (about two-thirds in Kenya as a whole and almost 90 percent in the slums) while condoms were more widely mentioned by men. Knowledge of traditional methods was also higher among adolescents in the slums than in Kenya as a whole.

Table 10.18 Spontaneous knowledge of specific contraceptive methods

Percent of adolescents aged 15-24 who reported knowledge of specific contraceptive methods spontaneously, NCSS 2000 and 1998 KDHS

Contraceptive method	Females		Males	
	Slums	Kenya*	Slums	Kenya*
Any modern method	91.7	73.6	95.5	75.1
Pill	88.1	66.9	74.8	45.5
IUD	32.0	22.6	7.1	8.8
Injection	72.2	49.8	35.8	19.3
Diaphragm/Foam/Jelly	3.1	4.4	3.8	2.7
Condom	54.7	36.2	88.4	66.2
Female sterilization	10.6	11.6	13.3	12.3
Male sterilization	3.5	4.3	9.6	9.0
Implant	16.9	9.5	2.8	2.1
Any traditional method	22.4	15.0	28.1	16.1
Periodic abstinence	20.5	10.4	27.3	13.0
Withdrawal	1.2	1.6	2.4	2.5
Other	2.1	4.8	0.5	2.8
Any method	92.3	74.5	95.9	76.2
No. of cases	1618	3394	1457	1427

*Based on 1998 KDHS data

Note: percentages do not add up to 100 percent due to multiple responses.

10.6.2 Contraceptive Use

Contraceptive use was higher for adolescents in Nairobi slums than in Kenya as a whole. About 62 percent of the male and 42 percent of the female adolescents in the slums had used contraceptives, compared to only 51 percent and 30 percent of males and females in Kenya as a whole. Modern methods constitute a major component of contraceptive use by adolescents. Ever use of any method, as well as use of modern methods, increased substantially with age and education for adolescents of both genders, as is evident in Table 10.19. Catholics in the slums were more likely to use modern contraceptives than those in other religious groups, which is surprising given the Catholic Church's position on modern contraceptives. However, this pattern does not seem to hold for Kenya as a whole.

Table 10.19: Percent of adolescents aged 15-24 who had ever used contraceptive methods, by background characteristics, NCSS 2000 and 1998 KDHS.

Characteristic	Any method				Modern methods			
	Males		Females		Males		Females	
	Slums	Kenya*	Slums	Kenya*	Slums	Kenya*	Slums	Kenya*
Age group								
12-14	1.3	NA	0.6	NA	1.3	NA	0.6	NA
15-17	26.6	21.9	16.4	7.3	23.2	17.0	11.1	3.9
18-20	61.0	60.3	37.4	28.2	54.8	50.0	29.4	19.9
21-24	72.0	75.2	61.6	52.4	60.6	63.2	52.6	39.6
Marital Status								
Single	58.0	48.7	29.4	16.8	50.8	40.9	21.8	10.8
Currently married	75.1	70.9	53.8	51.9	60.5	49.1	45.5	39.5
Ever married	83.3	84.4	74.1	0.0	69.4	75.0	70.4	0.0
Education level								
None	10.0	25.9	33.3	17.7	10.0	22.2	27.3	14.2
Primary incomplete	45.3	35.4	33.6	22.6	41.0	30.3	26.9	17.2
Primary complete	65.6	63.2	44.9	38.7	56.2	37.1	36.4	20.1
Secondary+	68.3	67.8	47.8	37.6	57.5	57.0	39.9	28.0
Ethnicity								
Kamba	69.6	50.9	42.5	37.2	57.1	34.6	32.1	19.6
Kikuyu	53.2	55.6	47.5	40.9	47.8	49.5	41.4	32.9
Luhya	64.2	32.5	47.1	30.9	51.9	28.7	40.9	22.2
Luo	65.6	47.9	37.8	29.6	60.0	38.8	27.5	19.8
Other	51.4	56.8	35.6	25.4	42.2	47.2	30.2	19.4
Religion								
Catholic	66.8	51.9	46.2	31.7	57.0	42.1	36.4	22.8
Protestant	62.1	51.1	42.4	30.9	53.8	42.4	35.2	21.9
Muslim	28.6	42.5	25.9	23.5	25.4	37.0	22.2	22.4
Other	33.3	56.7	30.8	15.3	14.3	47.0	30.8	10.2
Total	61.7	51.2	42.7	30.2	53.0	42.3	34.9	15.4
No. of cases	1,457	1,427	1,618	3,394	1,457	1,427	1,618	3,394

*Based on the 1998 KDHS data

NA – Not Available

Similar patterns were also observed for the current use of any method and modern methods, as shown in Table 10.20. Overall, the level of contraceptive use among adolescents in the slums at the time of the survey was consistently higher than the national average. This level increased with age and education for both adolescent males and females. Adolescents who had never been married were least likely to be current users, and the level of use was much higher among Christians than non-Christians. Among females in the slums and in Kenya as a whole, the Kikuyu had notably higher contraceptive prevalence than other ethnic groups.

Table 10.20 Current use of contraceptive methods

Percent of adolescents aged 15-24 currently using contraceptive methods, by background characteristics, NCSS 2000 and 1998 KDHS.

Characteristic	Any method				Modern methods			
	Males		Females		Males		Females	
	Slums	Kenya*	Slums	Kenya*	Slums	Kenya*	Slums	Kenya*
Age group								
12-14	0.4	NA	0.3	NA	0.4	NA	0.3	NA
15-17	19.4	14.6	9.8	3.1	15.6	10.4	5.8	1.0
18-20	39.8	44.8	23.8	14.1	34.4	32.5	16.6	9.6
21-24	48.8	54.8	40.5	27.5	38.4	37.3	32.4	20.7
Marital Status								
Not married	41.4	36.0	18.7	8.7	34.7	25.8	11.3	5.0
Currently married	41.8	46.4	35.2	26.8	28.0	25.5	28.5	20.7
Formerly married	50.0	53.1	46.3	0.0	41.7	37.5	44.4	0.0
Education level								
None	0.0	18.5	18.2	9.2	0.0	18.5	12.1	6.4
Primary incomplete	28.3	21.1	20.6	10.9	24.0	13.4	15.8	7.0
Primary complete	43.3	31.3	31.2	14.5	36.8	22.0	23.2	10.1
Secondary+	48.5	54.0	29.4	19.4	36.7	38.1	23.2	14.3
Religion								
Catholic	47.9	36.7	29.7	16.6	36.8	23.7	20.9	11.9
Protestant	40.5	37.9	27.7	15.3	33.7	27.0	21.6	10.5
Muslim	20.6	24.7	17.3	14.7	19.1	19.2	13.6	13.1
Other	14.3	42.2	0.0	6.1	4.8	33.7	0.0	3.1
Ethnicity								
Kamba	53.7	42.8	29.9	16.5	40.4	18.9	20.1	8.6
Kikuyu	36.0	44.0	33.7	26.3	30.3	34.7	28.1	21.1
Luhya	39.4	27.3	28.3	12.9	32.3	23.0	22.7	8.9
Luo	44.4	28.2	22.7	13.4	36.4	20.7	14.4	8.1
Other	31.2	39.2	21.8	13.0	25.4	27.5	16.8	9.5
Total	41.7	37.1	27.6	15.4	33.6	26.1	20.8	10.8
No. of cases	1,457	1,427	1,618	3,394	1,457	1,427	1,618	3,394

* Based on the 1998 KDHS data

NA – Not Available

10.6.3 Attitudes Towards Contraceptives

Table 10.21 shows that adolescent males and females were more likely to approve of the use of family planning by married couples than by unmarried youth. More than three-quarters of adolescent males and females approved of the use of family planning by married couples, while less than half of adolescent females and less than two-thirds of adolescent males reported support for unmarried adolescents. However, approval of condom use by unmarried youth was widespread -endorsed by 80 percent of males and 70 percent of females.

Overall, approval of the use of family planning increased with age. Ninety-one percent of adolescent females aged 21-24 approved its use by married couples, compared to only 51 percent of those aged 12-14. Adolescents who had ever been married were also more likely to approve of use by both married couples and unmarried youth. Further, education appeared to increase approval for family planning for married couples and unmarried youth. Adolescents who belonged to the Christian faith were more likely to approve of family planning for either married

couples or unmarried youths than non-Christians. Similar patterns hold for approval of condom use by unmarried youth.

Table 10.21 Approval of family planning

Percent of adolescents who approve of family planning by background characteristics, NCSS 2000

Characteristic	Approve FP for married couples		Approve FP for unmarried youth		Approve condom use for unmarried youth	
	Males	Females	Males	Females	Males	Females
Age group						
12-14	50.0	50.6	23.5	20.6	46.0	38.6
15-17	64.6	72.2	54.0	42.9	76.8	65.7
18-20	82.2	83.0	76.5	52.1	86.8	76.7
21-24	82.5	90.8	74.6	62.5	87.3	82.0
Marital Status						
Single	73.5	69.4	63.3	41.2	78.4	59.3
Currently married	84.7	89.8	72.0	58.8	87.7	84.0
Formerly married	86.5	92.6	89.2	57.4	91.9	87.0
Education level						
None	7.1	55.3	14.3	31.9	35.7	48.9
Primary incomplete	64.2	67.4	48.4	38.9	68.4	59.9
Primary complete	80.0	83.8	73.0	52.6	87.0	76.2
Secondary +	83.7	87.7	75.1	58.5	86.0	78.0
Religion						
Catholic	77.5	79.7	68.8	52.0	82.9	71.8
Protestant	77.6	79.2	66.0	48.2	81.4	70.5
Muslim	42.2	62.3	37.3	37.7	49.4	51.9
Other	52.2	71.4	47.8	42.9	65.2	92.9
Ethnicity						
Kamba	85.3	81.7	74.5	52.8	82.5	78.5
Kikuyu	74.9	79.1	64.7	45.2	79.7	68.2
Luhya	74.9	86.7	65.1	61.1	83.3	78.9
Luo	76.0	70.6	66.8	41.3	83.7	63.7
Other	63.2	74.3	50.2	44.7	64.6	61.6
Division						
Central	78.9	81.1	68.1	35.7	81.9	68.7
Makadara	70.7	72.2	63.8	44.4	81.0	68.5
Kasarani	72.1	63.6	61.6	37.5	77.7	52.7
Embakasi	78.3	80.1	51.9	60.4	74.4	79.2
Pumwani	77.0	67.2	66.2	40.3	74.3	68.7
Westlands	79.6	82.8	66.9	45.5	84.7	65.3
Dagoretti	71.0	84.9	64.2	54.7	74.7	70.7
Kibera	74.6	86.0	79.9	56.6	88.7	83.4
Total	75.5	78.3	65.2	48.8	80.1	70.1
No. of cases	1683	1934	1683	1934	1683	1934

10.7 Adolescent Fertility, Unwanted Pregnancies and Pregnancy Outcomes

10.7.1 Adolescent Childbearing

Adolescents in the slums were more likely to have given birth than those in Nairobi or Kenya as a whole. About half of the adolescents in the slums between the ages of 15-24 had zero parity, compared to 70 percent of adolescents in Nairobi, and about 60 percent of adolescents in Kenya as a whole. The proportion of adolescents in the slums who had had at least two births (17 percent) is higher than that proportion in Nairobi (12 percent), but slightly lower than that in Kenya as a whole (19 percent). The distribution of adolescents who had begun to bear children is presented, according to selected background characteristics, in Table 10.22.

Table 10.22 Percent of female adolescents aged 15-24 by parity, NCSS 2000 and 1998 KDHS

Parity	Slums	Births Nairobi*	Kenya*
0	52.7	69.5	58.7
1	30.0	18.3	22.3
2	11.6	7.6	12.0
3+	5.7	4.6	7.0
Mean Number	0.7	0.5	0.7
Cases	1618	197	3394

* Based on 1998 KDHS data

Table 10.23 further confirms that childbearing begins earlier in the slums than elsewhere in the country. More than half of the adolescents aged 15-24 in the slums had begun bearing children (53 percent), compared to only one-third of their counterparts in Nairobi and 45 percent of adolescents in Kenya as a whole. These disparities are greatest at younger ages. For example, 19 percent of 15 to 17 year old adolescents in the Nairobi slums had begun childbearing, compared to less than ten percent of their counterparts in Nairobi and Kenya (three percent and nine percent, respectively).

Twenty percent of single adolescents in the slums had begun childbearing, compared to only 12 percent in Nairobi and 16 percent in Kenya, suggesting that premarital childbearing is more prevalent in the slums than in the rest of the Kenyan communities. Higher than primary-level education is associated with a lower chance of having begun to bear children, while the Luo ethnic group is associated with a higher chance of having done so. These patterns hold in the slums, in Nairobi and in Kenya as a whole.

10.7.2 Experience of unwanted pregnancies

Previous studies had suggested that premarital childbearing in Kenya is largely unplanned (Magadi, 1999). Given the high prevalence of early and premarital childbearing in the slums, unplanned pregnancies are likely to be a critical problem. Table 10.23 presents the proportions of recent births (last births within the past three years of the survey) that were unintended, comparing the slums to Nairobi and Kenya as a whole according to selected background characteristics.

Overall, the proportion of recent births in the slums that were unintended (51 percent) was slightly higher than that in Nairobi (48 percent) or in Kenya as a whole (49 percent). Births to unmarried or younger adolescents are more likely to have been unintentional. Incomplete primary education is associated with higher chances of unintended births. The Luo and the Luhya in the slums reported relatively higher proportions of unintended births than other ethnic groups. The Luhyas also reported the highest proportion of unintended births in Kenya as a whole. The patterns for Nairobi are not consistent with these findings, possibly due to the small number of cases.

<u>Table 10.23. Percent of female adolescents aged 15-24 who have begun childbearing (ever given birth or pregnant with first child) by background characteristics, NCSS 2000 and 1998 KDHS</u>			
Characteristic	Nairobi Slum	Nairobi*	Kenya*
Age group			
15-17	19.4	2.5	9.3
18-20	51.5	23.8	43.5
21-24	72.9	58.4	77.3
Marital Status			
Single	19.9	11.8	16.3
Currently married	82.9	79.0	89.5
Formerly married	92.6	0.0	0.0
Education level			
None	72.7	0.0	65.3
Primary incomplete	52.5	31.9	43.2
Primary 5-9	58.4	44.0	55.4
Secondary +	45.4	28.3	35.7
Religion			
Catholic	53.6	47.1	44.0
Protestant	52.1	29.0	44.1
Muslim	55.6	28.6	50.8
Other	69.2	12.5	55.1
Ethnic group			
Kamba	51.9	35.5	42.2
Kikuyu	44.0	34.7	44.4
Luhya	55.9	25.0	44.8
Luo	61.0	54.6	56.7
Other	49.5	12.1	42.4
Total	52.9	33.0	44.8
No. of cases	1,618	197	3,394
*Based on 1998 KDHS data			

Table 10.24 Unintended births in the past 3 years

Percent of unintended births in the past 3 years by mother's background characteristics, NCSS 2000

Characteristic	Nairobi slums	Nairobi*	Kenya*
Age group			
15-17	69.2	0.0	72.1
18-20	54.4	50.0	51.0
21-24	47.1	46.2	46.0
Marital Status			
Single	88.3	72.7	77.5
Currently married	43.8	39.4	40.9
Formerly married	57.9	0.0	55.2
Education level			
None	47.4	0.0	42.7
Primary incomplete	52.4	70.0	50.9
Primary complete	51.6	41.2	46.9
Secondary +	50.3	41.3	46.8
Religion			
Catholic	53.3	53.3	51.5
Protestant	49.5	44.4	49.0
Muslim	55.6	50.0	43.6
Other	71.4	0.0	42.9
Ethnic group			
Kamba	40.4	57.1	50.4
Kikuyu	47.0	43.8	41.1
Luhya	55.8	33.3	59.3
Luo	56.1	50.0	49.8
Other	50.7	100.0	47.8
Total	51.4	47.7	49.1
No. of cases	625	44	1,214

*Based on 1998 KDHS

Abortion is a common way of handling unplanned pregnancies in many societies. Earlier qualitative research in the slums had identified unwanted pregnancies and the associated problems of abortions and infanticides as critical in Nairobi slums. The survey included information on the outcome of last pregnancies, with particular reference to abortion. However, abortion was highly under-reported, possibly because abortion is illegal in Kenya and is only permitted to save the life of the mother. Most abortions are therefore clandestine, and are carried out under very unsafe conditions. Attempted (but unsuccessful) abortions were reported in 11 percent of the cases while less than one percent reported successful abortion or a miscarriage. For those who admitted having ever had an abortion, the most common reasons given were that the pregnancy was unwanted (40 percent); to continue school (33 percent), or that the mother would not be able to support the child (22 percent).

10.8 Summary

This chapter has examined adolescent socio-economic and reproductive health factors in the Nairobi slums, including educational experiences, livelihood and social conditions, and a wide range of reproductive health issues.

Examinations of educational experiences demonstrate considerably lower enrollment rates for adolescents in Nairobi slums compared to other parts of Kenya, including rural areas. Overall, only one in five of the adolescents in the slums aged 12-24 years were attending school at the time of the survey. The main reason for dropping out of school was lack of school fees, as reported by two-thirds of the females and almost three-quarters of the males. Educational attainment levels, however, were higher in the slums compared to rural Kenya or Kenya as a whole. This differential may be attributed to the migration of many primary and secondary school graduates from rural areas to Nairobi who end up in the slums.

The livelihoods and social conditions of adolescents in the slums were not favorable. Although almost three-quarters of the adolescents reported that both of their parents were alive, less than one in five of those whose parents were both alive were living with both parents. This situation has important implications in Kenyan society where adolescents are expected to receive most information about sex from their parents.

Sexual activity begins earlier in the slums than in Kenya as a whole, especially among female adolescents. The majority of adolescents were sexually experienced (74-86 percent of males and 66-75 percent of females), but contraceptive use, including condom use, was generally low (though comparable to that among the rest of the Kenyan population). Consequently, early childbearing and the incidence of unplanned pregnancies may be more frequent in slum communities than in the rest of Kenya.

Vulnerability to poor reproductive health outcomes among adolescents in the slums is further aggravated by widespread misconceptions of how HIV/AIDS and other STIs are transmitted. Most adolescents (86-90 percent) believed that a woman who is HIV+ will always give birth to a HIV+ child, while about 40 percent believed that AIDS can be transmitted through mosquito, flea or bedbug bites. Furthermore, a significant proportion of the adolescents (at least 20 percent) did not know that using condoms can prevent the transmission of AIDS, or believed that they could always tell if a person is HIV positive or has STIs. These misconceptions deter effective behavior change that might, if successful, curb the spread of HIV/AIDS and other STIs. These results point to the critical need for appropriate reproductive health information, education and communication programs for adolescents, especially those living in the slums. For such programs to be effective, they must be sensitive to the socio-economic circumstances of adolescents in slum settings.

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APPENDIX A SAMPLING DESIGN

Sample Size Calculation

The Nairobi Cross-sectional Slums Survey (NCSS) sample, designed to allow comparison of key indicators in the slums to national, rural, and Nairobi figures reported in the 1998 KDHS, is representative of all households residing in clusters identified in collaboration with the Kenyan Central Bureau of Statistics (CBS) as informal settlements. The sample size determination relied on the relative size of each slum location in the 1989 population census. A total of 18 administrative locations in Nairobi City were identified to contain slum communities in the 1989 Kenyan Census. The implementation of the sample, however, relied on a sampling frame developed using the household listing of the 1999 Kenya Census. By 1999, there were 49⁵ administrative locations in Nairobi and 31 of these locations contained at least one cluster designated as an informal settlement.

The sample size for NCSS was calculated to provide sufficient power to detect a given difference in the most rare event of interest between the slums and the national and rural areas (using the 1998 Kenya DHS), based on the formula:

$$n = \frac{\left(z_{1-\alpha/2} \sqrt{(1+r)\bar{p}(1-\bar{p})} + z_{1-\beta} \sqrt{rp_1(1-p_1) + p_2(1-p_2)} \right)^2}{r(p_1 - p_2)^2}$$

Where:

n is the required sample size in the first (smaller) population;

r is the ratio of the size of the second population to the size of the first;

p_1 is the value of the proportion of interest in the first population;

p_2 is the value of the proportion of interest in the second population;

$$\bar{p} = \frac{p_1 + rp_2}{1 + r};$$

$z_{1-\alpha/2}$ is the critical value for the standard normal distribution corresponding to a Type I error rate of α for a two-tailed test; and

$z_{1-\beta}$ is the critical value for the standard normal distribution corresponding to a Type II error rate of β (or a power of $1 - \beta$).

The cross-sectional sample is designed to permit estimation of key indicators of health for the slum areas as a whole, as well as comparison of these indicators to the national, rural, other urban areas (excluding Nairobi), and Nairobi figures reported in the 1998 Kenya DHS. The following indicators were considered:

Neonatal mortality rate;

Infant mortality rate;

Under-5 mortality rate;

Percent of children under 3 years who had an episode of diarrhea in the two weeks preceding the survey;

Percent of children aged 12-23 months who have been vaccinated against measles; and

Percent of children aged 12-23 months who were fully immunized.

⁵ Four of these locations did not have a Chief yet but were already proposed (and accepted) as new locations by the Government.

Use of the neonatal mortality indicator led to a sample size that was too large. Instead, calculations were based on detecting a difference of 10% in the measles vaccination coverage between the slums and rural areas. This sample size is therefore also large enough to detect a 10% difference between the slums and Kenya as a whole for measles vaccination, 20% differences between the slums and national and rural figures for full immunization coverage, 25% differences in incidence of diarrhea, and 20% differences in infant and under-5 mortality rate.

The calculations take advantage of the large sample size of the KDHS, which allows selection of fewer households while still maintaining sufficient power for a comparison with the KDHS results. The figures used in the calculations are as follows:

$p_1 = 0.761$. This is the measles immunization coverage in rural areas reported in the KDHS.

$p_2 = 0.685$. This bases calculations on detecting a 10% lower rate of coverage in the slums than the rural areas.

$\alpha = 0.05$ (two-tailed tests of significance).

$\beta = 0.20$ (or power = 0.80).

$r = 0.417$. Given the other parameters above, this value of r takes maximum advantage of the (weighted) number of children ages 12-23 months used in the KDHS to estimate rural measles immunization coverage.

These figures yield $n = 370$ children aged 12-23 months required for the sample. Since these children constitute about 2.64% of the population (KDHS), this means $370 / 0.0264 = 14,015$ people would be required, or $14,015 / 3.3 = 4,247$ households. Assuming an 88% household response rate (the rate achieved in urban areas by the KDHS), this would suggest the need for an initial sample of $14,015 / 0.88 = 15,926$ people, or 4,826 households. Although the mean household size for urban areas in the 1998 KDHS was 3.3, we expected this number to be smaller in the slums given that a typical household in a slum occupies a one-room dwelling unit. In addition, we also adjusted for the fact that some dwelling units in the slums are non-residential (e.g., kiosks and business units). Assuming 3 people per household and 2 percent of the dwelling units being used for businesses (a figure inferred from the 1999 sampling frame), the resulting sample size became 16,251 people or 5,418 households $((14,015/0.88)/0.98)$. Since the 1989 Census figures for these locations included both slum and non-slum clusters, we used the 1999 Census listing restricted to only slum clusters in drawing the sample.

To obtain our sample of 5,418 households using the 1999 Census listing for Nairobi, we first processed the listing of all structures in Nairobi City (also designated as a province) into a database of structures that contained basic information such as Name of structure owner, structure number, number of dwelling units, EA Name, sub-location, location, and division. We then dropped all structures with zero dwelling units, number of dwelling units missing, and duplicate entries. We also dropped structures in non-slum EAs and then expanded the database to become a database of dwelling units using the number of dwelling units in each structure.

The NCSS utilized a two-stage, stratified sampling design. At stage one, sampling points or enumeration areas (EAs) were selected; while at the second stage, households were selected within EAs. At the second stage sampling, 30 percent of households in each sampled EA were randomly selected from each sampled EA and the 30 percent sampling fraction was chosen to reduce intra-cluster correlation. To determine the sampling fraction for the first stage selection,

we computed the average number of households per EA ($250620/1364 = 184$) and the number of EAs needed to achieve the target sample of 5418 households ($5418/(184/0.3) = 98$). This yielded a sampling fraction of 7.18 percent for the first stage sampling ($98/1364$). This sampling fraction was then applied to a database of EAs within each location. The resulting samples per slum location are shown in Table A.1.

Selection of Sampled Households

As indicated earlier, at the second stage sampling 30 percent of dwelling units were randomly selected from each sampled EA. The selected dwelling units generally correspond to rooms within a structure. Since these were not necessarily households, we developed a set of strategies for identifying households living in rooms that correspond to the randomly selected dwelling units. Once in the field, the interviewers were first to ensure that they were in the correct structure containing the selected dwelling units by checking the maps, and verifying the structure owner and the number of dwelling units in the structure. When these pieces of information matched the information in the listing form, the interviewer identified the selected dwelling unit by counting all doors that led to a sleeping room, starting from the leftmost door, while facing the main entrance of the structure, until she/he reached the n^{th} room, where n represents the randomly selected dwelling unit within a structure. Residents in that room were then interviewed.

When the information on the ground did not match the listing information, the interviewer contacted the supervisor who then worked with a village elder to resolve any discrepancies. In general, when the number of dwelling units in the structure exceeded the number indicated on the listing form, the interviewer/supervisor checked whether new dwelling units (rooms) were added to the structure since the Census listing exercise, whether any of the dwelling units belonged to a different structure or owner, whether some rooms were subsequently sub-divided or converted from non-dwelling to dwelling units, and whether some rooms were vacant at the time of the listing. In these cases, any such rooms leading to the excess were excluded and the remaining rooms were numbered. If the number of dwelling units in the structure was less than indicated in the listing form, interviewers/ supervisors checked whether any of the rooms were destroyed since the listing exercise, whether two or more rooms had been combined to form one room, or whether dwelling units changed to different use (such as to a storage, kitchen, or business unit, etc). Any such rooms were then included in the numbering and if the selected dwelling unit fell into one of these, an appropriate code was entered (such as dwelling destroyed, room not a dwelling unit). All households currently residing in rooms that corresponded to the selected dwelling unit were then canvassed by the survey irrespective of whether they lived in the unit at the time of the CBS listing exercise. Within the sampled households, all women aged 15-49 and adolescent men aged 12-24 were targeted for individual interviews.

Table A.1. Distribution of Enumeration Areas and the resulting sample size calculations for NCSS by division and location.

Slum Location by Division	No. of All EAs	1999 Census Listing Figures			Expected Sample	Resulting Sample		
		EAs	Structures	Dwelling Units		EAs	Structures	Dwelling Units
Central	334	73	1,692	15,959	5.2	5	143	548
Huruma	67	0	0	0	0	0	0	0
Kariokor	58	0	0	0	0	0	0	0
Mathare	120	73	1,692	15,959	5.2	5	143	548
Ngara	53	0	0	0	0	0	0	0
Starehe	36	0	0	0	0	0	0	0
Dagoretti	391	261	2,476	40,430	18.7	18	124	685
Kawangware	218	199	1,630	30,387	14.3	14	78	532
Kenyatta Golf C.	50	1	35	126	0	0	0	0
Mutuini	1	1	1	6	0	0	0	0
Riruta	122	60	810	9,911	4.3	4	46	153
Waithaka	*	*	*	*	*	*	*	*
Uthiru	*	*	*	*	*	*	*	*
Embakasi	513	246	6,763	45,087	17.7	17	394	1,140
Dandora	289	18	296	2,361	1.3	1	20	35
Embakasi	30	0	0	0	0	0	0	0
Kariobangi South	39	0	0	0	0	0	0	0
Kayole	106	0	0	0	0	0	0	0
Mukuru Kwa Nje	138	122	3,349	26,877	8.8	9	242	776
Njiru	46	18	1,245	5,490	1.3	1	49	118
Ruai	29	13	505	1,156	0.9	1	17	23
Umoja	82	75	1,370	9,203	5.4	5	66	188
Kasarani	778	234	6,289	36,949	16.8	17	422	1,024
Githurai	125	0	0	0	0	0	0	0
Kahawa	43	23	1,116	3,526	1.7	2	106	166
Kariobangi	169	47	709	7,344	3.4	3	36	133
Kasarani	108	2	129	263	0	0	0	0
Korogocho	131	116	2,690	17,586	8.3	8	164	469
Roysambu	28	10	320	1,419	0.7	1	16	35
Ruaraka	174	36	1,325	6,811	2.6	3	100	221
Kibera	484	257	5,047	56,865	18.5	19	232	947
Karen	14	0	0	0	0	0	0	0
Kibera	117	110	1,711	21,655	7.9	8	91	362
Laini Saba	85	71	1,621	17,947	5.1	5	76	286
Langata	33	0	0	0	0	0	0	0
Mugumoini	69	12	16	1,976	0.9	1	1	54
Nairobi West	92	1	1	820	0	0	0	0
Sera Ngombe	74	63	1,698	14,467	4.5	5	64	245
Makadara	344	67	3405	18,568	4.8	5	147	309
Makadara	92	0	0	0	0	0	0	0
Makongeni	35	0	0	0	0	0	0	0
Maringo	57	0	0	0	0	0	0	0
Mukuru Nyayo	72	34	773	5,033	2.4	3	40	100
Viwandani	88	33	2,632	13,535	2.4	2	197	209
Pumwani	341	53	1,492	9,665	3.8	4	75	179
Bahati	82	8	141	1,658	0.6	1	14	49
Eastleigh N	95	2	44	264	0	0	0	0
Eastleigh S	79	14	684	1,957	1.0	1	44	54
Kamukunji	47	0	0	0	0	0	0	0
Pumwani	38	29	623	5,786	2.1	2	17	76
Westlands	520	173	2,728	27,075	12.4	13	164	631
Highridge	72	19	462	2,074	1.4	1	25	30
Kangemi	127	118	1,525	20,664	8.5	9	105	508
Kilimani	113	0	0	0	0	0	0	0
Kitisuru	93	36	741	4,337	2.6	3	34	93
Lavington	69	0	0	0	0	0	0	0
Parklands	46	0	0	0	0	0	0	0
Total	3,951	1,364	29,895	250,620	97.9	98	1,701	5,463

* These locations were formerly in Kiambu district but were recently made part of Nairobi. New slum settlements have since emerged in some locations such as Makadara and Kayole.

Response Rates

Table A.2 presents response rates achieved in the NCSS by respondent categories, and shows that the response rates for all three instruments (household, women, and men's questionnaires) for the NCSS were higher than for the KDHS for Nairobi.

Table A.2: Response rates for the household and individual interviews

CATEGORY	FREQUENCY		RESPONSE RATE (%)	
	NCSS	KDHS98 (Nairobi)	NCSS	KDHS98 (Nairobi)
Households				
Sampled	5,395	2,002	-	-
Completed	4564	1,647	94.0 ³	88.3
Women¹				
Eligible	3,356	1,576	-	-
Interviewed	3,256	1,466	97.0	91.9
Men²				
Eligible	1,807	855	-	-
Interviewed	1,674	656	92.6	85.8

¹ Age of women interviewed in NCSS ranged between 15 and 49 years, while age of women interviewed in KDHS98 ranged between 15 and 49 years.

² Age of men interviewed in NCSS ranged between 12 and 24 years, while age of men interviewed in KDHS98 ranged between 15 and 54 years

³ The household response rate is computed as the number of completed household interviews divided by the number of eligible households. For the NCSS, 90% of the sampled households (4856) were eligible (i.e. sampled households minus households that were vacant, destroyed, and where all members were absent).

APPENDIX B DATA QUALITY TABLES

Table B.1 Household Age Distribution									
Single-Year Age Distribution of the De Facto Household Population by Sex (Weighted), Kenya 1998									
Age	Males Number	Percent	Females Number	Percent	Age	Males Number	Percent	Females Number	Percent
0	233	3.4	253	4.5	36	135	2.0	70	1.2
1	193	2.8	203	3.6	37	94	1.4	52	0.9
2	180	2.6	180	3.2	38	114	1.6	62	1.1
3	178	2.6	161	2.8	39	63	0.9	44	0.8
4	155	2.2	171	3.0	40	150	2.2	59	1.0
5	160	2.3	145	2.6	41	35	0.5	38	0.7
6	102	1.5	116	2.1	42	75	1.1	26	0.5
7	121	1.8	109	1.9	43	40	0.6	13	0.2
8	115	1.7	126	2.2	44	40	0.6	13	0.2
9	108	1.6	121	2.1	45	108	1.6	20	0.4
10	136	2.0	142	2.5	46	35	0.5	22	0.4
11	85	1.2	85	1.5	47	29	0.4	18	0.3
12	81	1.2	105	1.9	48	40	0.6	22	0.4
13	80	1.2	112	2.0	49	24	0.3	9	0.2
14	72	1.0	94	1.7	50	67	1.0	14	0.2
15	88	1.3	115	2.0	51	17	0.2	13	0.2
16	69	1.0	119	2.1	52	36	0.5	30	0.5
17	83	1.2	120	2.1	53	18	0.3	13	0.2
18	117	1.7	180	3.2	54	19	0.3	13	0.2
19	127	1.8	151	2.7	55	24	0.3	8	0.1
20	182	2.6	246	4.4	56	12	0.2	8	0.1
21	159	2.3	197	3.5	57	7	0.1	5	0.1
22	218	3.2	208	3.7	58	16	0.2	8	0.1
23	185	2.7	165	2.9	59	6	0.1	3	0.1
24	240	3.5	156	2.8	60	21	0.3	12	0.2
25	176	2.5	204	3.6	61	3	0.0	0	0.0
26	234	3.4	121	2.1	62	7	0.1	4	0.1
27	241	3.5	142	2.5	63	4	0.1	2	0.0
28	225	3.3	137	2.4	64	7	0.1	3	0.1
29	196	2.8	103	1.8	65	10	0.1	3	0.1
30	325	4.7	172	3.0	66	2	0.0	1	0.0
31	120	1.7	52	0.9	67	6	0.1	1	0.0
32	195	2.8	87	1.5	68	7	0.1	3	0.1
33	91	1.3	61	1.1	69	3	0.0	1	0.0
34	128	1.9	65	1.2	70+	24	0.3	26	0.5
35	212	3.1	87	1.5	DK/missing	3	0.0	0	0.0
Total						6,911	100	5,650	100

<u>Table B.2 Age distribution of eligible and interviewed women</u>					
Percent distribution of household population of women age 12-54 and of interviewed women aged 15-49, and percentage of eligible women who were interviewed by five year age groups, NCSS, 2000					
Age	Household population Number	Percent	Interviewed women Number	Percent	Percentage of eligible women interviewed
12-14	538	NA	NA	NA	NA
15-19	685	20.4	682	20.9	99.6
20-24	972	29.0	952	29.1	97.9
25-29	707	21.1	688	21.0	97.3
30-34	437	13.0	421	12.9	96.3
35-39	315	9.4	303	9.3	96.2
40-44	149	4.4	136	4.2	91.3
45-49	91	2.7	87	2.7	95.6
50-54	83	NA	NA	NA	NA
15-49	3,356	NA	3,269	NA	97.4

<u>Table B.3 Completeness of Reporting</u>			
Percentage of Observations Missing Information for Selected Demographic and Health Questions, NCSS 2000			
Subject	Reference group	Percentage missing information	Number of cases
Birth Date	Births in the last 15 years		
Month only		0.88	5,006
Month and year		0.02	5,006
Age at death	Deaths to births in last 15 years	0.17	600
Age/date at first union ¹	Ever-married women	0.04	2,325
Respondent's education	All women	0.03	3,572
Child's size at birth	Births in the last 59 months	2.85	666
Diarrhea in the last 2 weeks	Living children aged 1-59 months	3.27	1,252
¹ Both year and age missing			

Table B.4 Births by calendar years

Distribution of births by Western calendar years for living (L), dead (D), and all (T) children, according to reporting completeness, sex ratio at birth, and ratio of births by calendar year, NCSS 2000

Year	Number of births			Percentage with complete birth date ¹			Sex ratio at birth ²			Calendar ratio ³			Male			Female		
	L	D	T	L	D	T	L	D	T	L	D	T	L	D	T	L	D	T
00	162	9	171	100.0	100.0	100.0	82.0	50.0	80.0	NA	NA	NA	73	3	76	89	6	95
99	455	32	487	99.8	96.9	99.6	99.6	166.7	102.9	158.0	97.0	151.7	227	20	247	228	12	240
98	414	57	471	99.8	98.2	99.6	94.4	119.2	97.1	102.9	121.3	104.8	201	31	232	213	26	239
97	350	62	412	99.7	100.0	99.8	116.0	148.0	120.3	88.5	108.8	91.0	188	37	225	162	25	187
96	377	57	434	99.5	98.2	99.3	83.9	90.0	84.7	107.3	99.1	106.1	172	27	199	205	30	235
95	353	53	406	100.0	100.0	100.0	95.0	60.6	89.7	102.3	108.2	103.0	172	20	192	181	33	214
94	313	41	354	99.7	97.6	99.4	100.6	173.3	107.0	104.0	75.9	99.7	157	26	183	156	15	171
93	249	55	304	98.8	96.4	98.4	90.1	120.0	94.9	81.6	127.9	87.4	118	30	148	131	25	156
92	297	45	342	99.0	93.3	98.2	120.0	275.0	132.7	123.5	107.1	121.1	162	33	195	135	12	147
91	232	29	261	98.7	96.6	98.5	91.7	81.3	90.5	NA	NA	NA	111	13	124	121	16	137
96-00	1,758	217	1,975	99.7	98.6	99.6	96.0	119.2	98.3	NA	NA	NA	861	118	979	897	99	996
91-95	1,444	223	1,667	99.3	96.9	99.0	99.4	120.8	102.1	NA	NA	NA	720	122	842	724	101	825
86-90	1,115	147	1,262	99.1	93.9	98.5	93.9	145.0	98.7	NA	NA	NA	540	87	627	575	60	635
81-85	694	88	782	98.1	96.6	98.0	96.0	120.0	98.5	NA	NA	NA	340	48	388	354	40	394
<80	590	109	699	97.1	95.4	96.9	108.5	91.2	105.6	NA	NA	NA	307	52	359	283	57	340
All	5,601	784	6,385	99.0	96.6	98.7	97.7	119.6	100.2	NA	NA	NA	2,768	427	3,195	2,833	357	3,190

NA = Not applicable

¹ Both year and month given

² $(B_m/B_f) \times 100$, where B_m and B_f are the numbers of male and female births respectively

³ $[2B_x/(B_{x-1}+B_{x+1})] \times 100$, where B_x is the number of births in calendar year x

Table B.5 Reporting of age at death in days

Distribution of reported deaths under one month of age by age at death in days and the percentage of neonatal deaths reported to occur at ages 0-6 days, for five-year periods preceding the survey

Age at death (in days)	Number of years preceding the survey				Total 0-19
	0-4	5-9	10-14	15-19	
0	29	23	11	10	73
1	10	9	2	1	22
2	5	2	3	0	10
3	4	4	3	0	11
4	1	0	2	0	3
5	0	1	0	1	2
6	2	1	0	1	4
7	4	1	7	2	14
8	1	2	0	0	3
9	0	0	1	0	1
10	1	1	0	1	3
12	0	1	1	1	3
14	5	3	1	0	9
15	0	1	0	0	1
18	0	1	0	0	1
20	0	1	0	0	1
21	3	1	0	1	5
23	1	0	0	0	1
26	0	1	0	0	1
28	0	0	1	0	1
30	2	1	1	1	5
31+	0	1	1	0	2
Total 0-30 ¹	68	54	33	19	174
% Early Neonatal ²	75.0	74.1	63.6	68.4	71.8

¹ Includes cases for which age at death (in exact days) is not known
² (0-6 days/0-30 days)*100

Table B.6 Reporting of age at death in months

Distribution of reported deaths under one month of age by age at death in months and the percentage of infant deaths reported to occur at ages one month, for five-year periods preceding the survey

Age at death (in months)	Number of years preceding the survey				Total 0-19
	0-4	5-9	10-14	15-19	
< 1 ¹	68	54	33	19	174
1	4	3	2	1	10
2	6	8	6	6	26
3	15	12	8	3	38
4	16	4	6	1	27
5	15	1	5	2	23
6	10	9	4	1	24
7	3	12	2	1	18
8	12	9	5	4	30
9	11	8	3	4	26
10	3	3	1	2	9
11	10	5	2	1	18
12	8	13	6	5	32
13	2	3	3	1	9
14	8	4	1	2	15
15	3	1	0	1	5
16	4	2	0	0	6
17	5	2	0	0	7
18	11	9	5	2	27
19	1	0	0	0	1
20	3	3	1	1	8
21	0	3	2	0	5
22	3	2	0	0	5
23	2	1	0	0	3
24+	0	2	1	0	3
Total 0-11 ²	173	128	77	45	423
Percent Neonatal ³	39.3	42.2	42.9	42.2	41.1

¹ Includes deaths under 1 month reported in days

² Includes cases for which age at death (in exact months) is not known

³ (under 1 month/under 1 year)*100

Table B.7: Sample Implementation: Women											
Household and Eligible Women Response Rate	Nairobi Cross-sectional Slums Survey									KDHS 1998	
	Division									National	Nairobi
	Central	Makadara	Kasarani	Embakasi	Pumwani	Westlands	Dagoretti	Kibera	Total		
Selected Households											
Completed	84.8	75.7	76.3	77.7	91.2	90.6	88.1	96.4	84.6	88.5	79.7
Household present but no competent respondent at home	5.3	12.1	0.8	1.9	0.6	0.6	1.7	0.8	2.2	1.7	5.7
Refused	0.4	0.7	0.2	0.7	0.6	0.5	1.8	0.0	0.6	1.0	4.2
Dwelling not found	2.2	3.0	2.4	3.3	2.2	0.6	2.6	0.0	2.0	0.3	0.6
Household absent	0.2	2.0	1.7	1.5	1.1	1.3	0.8	0.3	1.1	2.8	3.2
Dwelling vacant	5.3	4.9	7.1	13.4	3.3	5.2	4.7	2.1	6.6	4.4	5.5
Dwelling destroyed	2.0	0.7	8.90	1.4	0.0	0.6	0.5	0.2	2.3	1.2	0.8
Other	0.0	1.0	2.4	0.0	1.1	0.5	0.0	0.1	0.6	0.1	0.2
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	552	305	980	1,135	181	631	664	947	5,395	9,465	616
Household response rate*	91.6	82.8	95.7	92.8	96.5	98.1	93.6	99.1	94.0	96.8	88.3
Eligible women											
Completed	95.9	84.4	96.6	97.8	92.5	97.2	96.7	97.7	96.5	95.7	91.9
Not at home	3.5	7.1	1.5	1.3	2.5	1.7	2.5	1.4	2.0	2.2	5.0
Refused	0.0	5.0	0.9	0.5	0.0	0.2	0.6	0.4	0.6	0.8	1.8
Partly completed	0.0	0.0	0.0	0.2	0.8	0.0	0.0	0.3	0.1	0.1	0.0
Incapacitated	0.5	0.7	0.7	0.3	2.5	0.6	0.0	0.0	0.4	0.9	0.4
Other	0.0	2.8	0.3	0.0	1.7	0.4	0.2	0.3	0.4	0.3	0.9
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	368	141	684	626	120	539	488	737	3,703	8,233	456
Eligible women response rate	95.9	84.4	96.6	97.8	92.5	97.2	96.7	97.7	96.5	95.7	91.9
Overall response rate	87.9	69.9	92.4	90.8	89.3	95.4	90.5	96.8	91.3	92.6	81.1

*The household response rate is computed as the number of completed household interviews divided by the number of eligible households. For the NCSS, 90% of the sampled households (4856) were eligible (i.e. sampled households minus households that were vacant, destroyed, and where all members were absent).

Table B8: Sample Implementation: Men											
Eligible Men Response Rate	Nairobi Cross-sectional Slums Survey									KDHS	
	Division									Region	
	Central	Makadara	Kasarani	Embakasi	Pumwani	Westlands	Dagoretti	Kibera	Total	National	Nairobi
Selected Households											
Completed	84.8	75.7	76.3	77.7	91.2	90.6	88.1	96.4	84.6	88.3	76.3
Household present but no competent respondent at home	5.3	12.1	0.8	1.9	0.6	0.6	1.7	0.8	2.2	1.7	7.8
Refused	0.4	0.7	0.2	0.7	0.6	0.5	1.8	0.0	0.6	1.0	4.2
Dwelling not found	2.2	3.0	2.4	3.3	2.2	0.6	2.6	0.0	2.0	0.3	0.6
Household absent	0.2	2.0	1.7	1.5	1.1	1.3	0.8	0.3	1.1	2.8	4.9
Dwelling vacant	5.3	4.9	7.1	13.4	3.3	5.2	4.7	2.1	6.6	4.4	4.9
Dwelling destroyed	2.0	0.7	8.90	1.4	0.0	0.6	0.5	0.2	2.3	1.2	1.0
Other	0.0	1.0	2.4	0.0	1.1	0.5	0.0	0.1	0.6	0.1	0.3
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	552	305	980	1,135	181	631	664	947	5,395	9,465	308
Household response rate	91.6	82.8	95.7	92.8	96.5	98.1	93.6	99.1	94.6	96.8	85.8
Eligible Men											
Completed	95.8	68.5	92.9	92.0	97.5	91.5	92.7	96.7	92.7	88.6	62.5
Not at home	3.7	28.1	5.4	5.4	1.3	4.5	2.8	1.4	5.0	7.9	28.3
Postponed	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Refused	0.5	2.3	0.6	0.5	0.0	0.6	1.1	0.3	0.6	1.7	7.8
Partly completed	0.0	1.1	0.0	0.0	0.0	0.0	0.6	0.3	0.2	0.1	0.4
Incapacitated	0.0	0.0	0.6	0.3	0.0	1.1	0.0	0.0	0.3	0.9	0.0
Other	0.0	0.0	0.6	1.8	1.3	2.3	2.8	1.4	1.3	0.7	1.1
Total Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	215	89	350	386	80	176	179	368	1,843	3,845	269
Eligible men response rate	95.8	68.5	92.9	92.0	97.5	91.5	92.7	96.7	92.7	85.6	62.5

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APPENDIX D SURVEY INSTRUMENTS
Household Schedule
Woman's Questionnaire
Adolescent Questionnaire