

Maasai couples do not discuss family planning matters. Whatever fertility regulation is achieved is a result of societal structures to which women are subservient. Should these structures change, fertility is bound to change as well. In the next chapter I turn specifically to incipient and anticipated socio-economic changes in Maasai society and the fertility scenarios that may ensue.

## **8. SOCIO-ECONOMIC CHANGES AND MAASAI FERTILITY FUTURES**

The Maasai observance of their traditional lifestyle still is quite strong. Their customs which affect fertility are largely intact. Early marriages for women and/or early exposure of women to sex expose them to various hazards including sexually transmitted diseases. Youthful motherhood may result into such complications as anaemia, cephalopelvic disproportion and preeclampsia. These complications affect fertility, lead to low birth weights, abortion, maternal deaths and influence high infant and child mortality.

Partly because of resistance to socio-economic changes and partly because of the nomadic pastoral lifestyle, the Maasai have an extremely high illiteracy level. Illiteracy in women may lead to low levels of personal hygiene and lack of appreciation of a balanced diet both of which may contribute to depress fertility. Kenyan data have shown that women with at least primary education experience slightly higher completed fertility than illiterate ones.

### **8.1 Economic Changes**

Certain economic changes are taking place in Narok which, initially, may lead to higher fertility. The major economic change is the sedentarization of the Maasai. For many decades now, the Maasai have lost the best watered parts of their range initially through European settlement and later by immigration of other ethnic groups (chapter 5). This loss of dry-season grazing resources has led to the restriction of people and livestock into a smaller territory. Although this has meant the perpetuation of nomadic pastoralism (because traditional crop cultivation is impossible without irrigation), there is increasing evidence of the adoption of

mixed farming. Further, the current campaign to subdivide group ranches into individual freehold will abet the adoption of mixed farming. The change into mixed farming appears to have been brought about by recurrent droughts (which kill livestock), intermarriages and the influence of the cultivator immigrants (Kenya, 1988: 14; chapter 5).

The change from pastoralism into mixed farming is expected to affect fertility in a number of indirect ways. The traditional diet of meat, milk and blood will be modified to include *ugali* (maize meal), potatoes, vegetables and even tea. Even where these crops cannot be grown on account of harsh environmental conditions, sedentarization itself will insure trade connectivity with the wetter areas and make these foods available at the market place. The availability of a variety of foods will contribute to balanced diets and better nutrition for the Maasai. This will add to enhanced fertility. Also, greater sedentarization will act to stabilize sexual relationships and increase coital frequency as dry season movement for men will be curtailed.

There is evidence that certain economic changes are already taking place among the Maasai. Traditionally, Maasai men herded livestock; children took shoats and calves to pastures; and women put up house structures and dealt with all household matters including rearing children. At the present time men and women are moving away from these traditional roles. There are more men taking up paid employment in certain urban areas especially as security guards. Some men have also taken to charcoal burning for cash. Maasai women are beginning to take to livestock grazing, cultivation and making and selling curios (see Kenya, 1988: 100-101).

These production changes are expected to stabilize Maasai economy. They will also act to modify Maasai economic structures which traditionally stifled fertility. People will get to alternative production systems outside livestock, for example wage earning activities. Young men will have alternative means of gaining economic power without reference to the elders. Ultimately this will reduce the age at marriage for men.

## 8.2 Social Changes

With the incipient modification of the Maasai production system and given changing sex labour roles, several social changes are expected to take place. More Maasai boys and girls are taking to formal education. For men, this is threatening the practice of warrior hood. It appears already that the period of warrior hood has drastically been cut from 7-10 years to only 6 months (see Kituyi, 1990). In time the significance of *eunoto* and *ol ngesherr* ceremonies will fade away (chapter 5). And so will the male elder gerontocracy which governs that society. This will lead to early marriages for young, fecund men. Basic education for women will also add to improve fertility.

Another factor contributing to social change is the Christianization of the Maasai. Christianity is expected to increase among the Maasai. Traditionally, the Christian faith is opposed to polygyny. Were the latter to be discouraged, monogamy will predominate with associated large family sizes. Also, Christianity will discourage premarital and extra-marital sex, the latter especially among members of the same age-set. This will in turn remove the health dangers related to premature sex and teen age motherhood.

Both education and Christianity also teach about nutritious diets and environmental sanitation, factors which are significant in fertility and infant and child survival. However, health care programmes being mounted in Narok will insure better health for mothers and greater survival for infants and children. MCHFP programmes including immunization and growth monitoring will contribute towards the effort. As a consequence, sterilizing and abortive diseases will be minimized thus opening the lead on fertility. The infant and child mortality rate of 400 per 1000 live births reported in the colonial time has now been considerably reduced to 144 per 1000 (compared to 87 for Kenya and 127 for the Rift Valley Province).

In brief, once the male elder Maasai gerontocracy has been broken by the various socio-economic dynamics, there will be several structural adjustments in society - changes in marital patterns, decline in polygyny and decline in warrior hood. These changes are slowly being wrought on Maasai society as a result of more settled life, greater access to education for both men and women, and the expansion of Christianity. These forces of change will remove the current

impediments to fertility. The immediate impact will be higher fertility and population growth rate for the Maasai.

## 9. SUMMARY AND PROSPECT

Instead of pedantic summarizing of the preceding work, I here propose to highlight only the important points on population change in Narok. Such highlights will include contemporary Maasai population status, major proximate determinants of fertility, and future trends in fertility and population change.

- (1) The Maasai experience generally lower completed fertility than other Kenyan communities especially cultivators. This appears to be the case even for the cultivator immigrants living in Narok district itself.
- (2) Although mode of production may contribute to fertility differentials between pastoralists and cultivators, the primary factor regulating fertility is the cultural patterning of Maasai society. The male elder gerontocratic authority whereby age at first marriage for men is delayed, is the most significant factor in the comparatively lower fertility of the Maasai. Young men serve in warrior residence and in the meantime, old sub-fecund men marry young brides.
- (3) Other factors causing infertility and subfertility include the prevalence of abortive and sterilizing diseases. Although these are intimately related to poor levels of hygiene and environmental sanitation, another contributory factor is the relatively early exposure of girls to sex and high sexual mobility among married spouses. A combination of these factors depresses fertility, causes pelvic inflammatory disease in women, low birth weights and consequent threats to maternal and child survival.
- (4) Maasai home living conditions are poor; consequently they are excellent habitats for infections and transmissible diseases which increase infant and child mortality. The low survival rates reduce family sizes.
- (5) There are certain fertility - enhancing trends in proximate determinants which may lead to a decline in pathological infertility, and subfertility. These trends

include the shortening of the warrior period of residence leading to early age at marriage for fecund males, basic education for Maasai women, and decline in polygamy with greater Christianization. Also, the sedentarization of the Maasai will almost certainly insure higher coital frequency and hence higher probability for conception. It is expected too that the postpartum taboo will weaken leading to early conceptions and short birth intervals

- (6) As the fertility-enhancing trends take root among the Maasai, an initial period of rapid population growth may be expected because of non-adoption of modern contraception.
- (7) This high fertility among the Maasai will make Narok suffer from population pressure. Such pressure is likely to affect the resources in an adverse manner as people struggle to experiment with mixed farming in an ecologically fragile environment. Crop failure can be expected and consequently famine.

#### Notes

1. This section relies heavily on Sindiga (1990) and Sindiga (1984).
2. It is likely however that a small proportion of these people would attend adult literacy classes at some point in their lives. But the numbers would be too small to be significant.
3. *Enkang* is the correct Maasai name for village. In certain literature, however, the term *manyatta* which means a separate settlement for the *ilmurran* (warriors) during their period of residence, is used synonymously with *enkang*.
4. An 'age-set' is a social group comprising of persons who were initiated - usually circumcised during the same period. Each group is organized as a corporate body, ranked hierarchically in relation to other such groups. Members of the same age-set share certain rights and obligations to one another and the society. In addition, members of the same age-set enjoy equality both in social relationships and economic functions. See Sankan, 1971: 31-35; and Jacobs, 1968: 10-31.

## References Cited

- Aborampah, O. 1987. Plural Marriage and Fertility Differentials: A study of the Yoruba of Western Nigeria. *Human Organization*, 46 (1): 29-38.
- Adadevoh, B.K. 1974. *Sub-fertility and Infertility in Africa*. Ibadan: Caxton.
- Ayot, H.O. 1976. *A History of the Luo-Abasuba of Western Kenya*. Nairobi; Kenya Literature Bureau.
- Barrett, J.C. and J. Marshall. 1969. The Risk of Conception on Different Days of the Menstrual Cycle. *Population Studies*, 23 (3): 455-461.
- Belsey, M.A. 1976. The Epidemiology of Infertility: A Review with Particular Reference to Sub-Saharan Africa. *Bulletin of World Health Organization*, 54: 319-341.
- Bennett, F.J. and J. Maneno. eds. 1986. *National Guidelines for the Implementation of Primary Health Care in Kenya*. Nairobi: Ministry of Health, Government of Kenya. The Non-governmental Organizations of Kenya, World Health Organization, and United Nations Children's Fund.
- Bernard, F.E. 1982. Rural Population Pressure and Redistribution in Kenya. *Redistribution of Population in Africa*. Edited by J.I. Clarke and L.A. Kosinski. London; Heinemann, 150-156.
- Biss, K. et. al. 1971. Some Unique Biologic Characteristics of the Maasai of East Africa. *New England Journal of Medicine*, 284 (13): 694-699.
- Bleck, W. 1987. Lying Informants: A fieldwork Experience from Ghana. *Population and Development Review*, 13 (2): 314-322.
- Bongaarts, J. 1980. Does Malnutrition Affect Fecundity? A Summary of Evidence. *Science*, 208: 564-569.
- Bongaarts, J. and R.G. Potter. 1983. *Fertility, Biology, and Behaviour: An Analysis of the Proximate Determinants*. New York: Academic Press.
- Bongaarts, J., O. Frank and R. Lesthaeghe. 1990. The Proximate Determinants of Fertility. *Population Growth and Reproduction in Sub-Saharan Africa: Technical Analyses of Fertility and its Consequences*. Edited by G.T.F. Acsadi et. al. Washington D.C: World Bank, 133-143.
- Bulatao, R.A. 1984. *Reducing Fertility in Developing Countries: A Review of Determinants and Policy Levers*. Washington D.C: World Bank.

Caldwell, P. and J.C. Caldwell. 1981. The Function of Child-Spacing in Traditional Societies and the Direction of Change. *Child-Spacing in Tropical Africa: Traditions and Change*. Edited by H.J. Page and R. Lesthaeghe. London: Academic Press, 73-92.

David, N. and D. Voas. 1981. Societal Causes of Infertility and Population Decline among the Settled Fulani of North Cameroon. *Man (New Series)*, 16 (4): 644-664.

Davis, K. and J. Blake. 1956. Social Structure and Fertility: An Analytic Framework. *Economic Development and Cultural Change*, 4(3): 211-235

DC, Kajiado. 1948. Summary of Age Grade Customs and Ceremonies, 29 December 1946. File No. PC/SP/6/2/1B. Nairobi: KNA.

DC, Narok. 1919-20. *Annual Report of the Narok District*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1930. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1931. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA

\_\_\_\_\_ 1941. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1942. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1943. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1944. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1945. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1946. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1949. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1952. *Annual Report*. File No. DC/NRK/1/1/1. Nairobi: KNA.

\_\_\_\_\_ 1948. Moran Office Safari Report October 30, 1948. File No. PC/SP 6/2/1B. Nairobi.

Doenges, C.E. and J.L. Newman. 1989 Impaired Fertility in Tropical Africa. *Geographical Review*, 79(1): 99-111.

Ehret, C. 1974. Cushites and Highland and Plains Nilotes. *Zamani: A Survey of East African History*. Edited by B.A. Ogot. Nairobi. East African Publishing House and Longman, 150-169.

- Eraj, Y. 1985. Infertility and Sexually Transmitted Diseases in Women in Africa. *Women and Health: Report of the Kenya NGO Sub-Committee-Report No. 4*. Edited by L.N Omondi and E. M. Standa. Nairobi: Kenya Non-Government Organization Organizing committee for the NGO Forum of the Women's End of Decade World Conference.
- Frisch, R.E. 1978. Population, Food Intake and Fertility. *Science*, 199: 22-30.
- Gachuhi, J.M. 1975. Family Planning in Kenya and the Problem of Drop-outs: Institute for Development Studies Discussion Paper No. 220. Nairobi: University of Nairobi.
- Gebbie, D.A.M., A Wiersinga and W. Savage. 1971. Anaemia in Pregnancy. *Health and Diseases in Africa: The Community Approach*. Edited by G. Clifford Gould. Nairobi: Kenya Literature Bureau, 266-270.
- Ghai, D., M. Godfrey and F. Lisk. 1980. *Planning for Basic Needs in Kenya: Performance, Policies and Prospects*. Geneva: International Labour Office.
- Gray, R.H. 1981. Birth Intervals, Postpartum Sexual Abstinence and Child Health. *Child-Spacing in Tropical Africa*. Edited by H.J. Page and R. Lesthaeghe. London: Academic Press, 73-92.
- Great Britain. 1934. *Report of the Kenya Land Commission September 1933*. London: His Majesty's Stationery Office.
- \_\_\_\_\_. 1961. *East Africa Royal Commission 1953-1955 Report*. London: Her Majesty's Stationery Office.
- Greeley, E.H. 1977. *Men and Fertility Regulation in Southern Meru: A Case Study from the Kenya Highlands*. Ph.D Dissertation. The Catholic University of America.
- Gulliver, C. 1979. Land Alienation and Sedentarization in Kenya Maasailand. Department of Geography Discussion Paper No. 55. Syracuse; Syracuse. University.
- Henin, R.A. 1969. The Patterns and Causes of Fertility Differentials in the Sudan (with reference to Nomadic and settled populations). *Population Studies*, XX111(2): 71-198.
- Holford-Walker, A.F. 1959. Moran System: An Alternative Approach. Political Records - Miscellaneous, Narok District. File No. DC/NRK/3/1. Nairobi: KNA.
- Hollis, C. 1943. The Maasai. *Journal of the Royal African Society*, 42: 119-126.
- International Labour Office. 1972. *Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya*. Geneva: ILO.



- Jacobs, A.H. 1969. A Chronology of the Pastoral Maasai. *Hadith 1*. Edited by B.A. Ogot. Nairobi: East African Publishing House, 10-31.
- \_\_\_\_\_ 1973. The Pastoral Maasai of Kenya and Tanzania. *Cultural Source Materials for Population Planning in East Africa Vol. III*. Edited by A. Molnos. Nairobi: East African Publishing House. 399-405.
- Kantai, B.K. 1971. Foreword. In *The Maasai* by S.S. Sankan. Nairobi: East African Literature Bureau, vii - xxix.
- Kenya Colony and Protectorate. 1935. *Medical Department Annual Report 1933*. Nairobi: Government Printer.
- Kenya, Republic of. 1978. Women in Kenya. *Social Perspectives*, 3(3). Nairobi: Central Bureau of Statistics, Ministry of Finance.
- \_\_\_\_\_ 1979. *Development Plan for 1979-1983 Part 1*. Nairobi: Government Printer.
- \_\_\_\_\_ 1979a. *Narok District Development Plan 1979-1983*. Nairobi: Government Printer.
- \_\_\_\_\_ 1979a. *Narok District Development Plan 1979-1983*. Nairobi: Ministry of Finance and Planning.
- \_\_\_\_\_ 1980. *Kenya Fertility Survey 1977-1978, First Report*. Nairobi: Central Bureau of Statistics, Ministry of Economic Planning and Development.
- \_\_\_\_\_ 1981. Infant Mortality in Kenya: Past and Present Differentials. *Social Perspectives*, 6(1); 1-4.
- \_\_\_\_\_ 1981b. *Kenya Population Census, 1979 Volume 1*. Central Bureau of Statistics, Ministry of Economic Planning and Development. Nairobi: Kenya Literature Bureau.
- \_\_\_\_\_ 1982. *The Integrated Rural Surveys 1976-79: Basic Report*. Nairobi: Central Bureau of Statistics, Ministry of Economic Planning and Development.
- \_\_\_\_\_ 1982a. *Social Perspectives*, 7(1). Nairobi: Central Bureau of Statistics.
- \_\_\_\_\_ 1983a. *Development Plan 1984-1988*. Nairobi: Government Printer.
- \_\_\_\_\_ 1983b. *Population Projections for Kenya 1980-2000*. Nairobi: Central Bureau of Statistics, Ministry of Economic Planning and Development.
- \_\_\_\_\_ 1983c. *Third Rural Child Nutrition Survey 1982*. Nairobi: Central Bureau of Statistics, Ministry of Finance and Planning.

- \_\_\_\_\_ 1984. *Kajiado District Development Plan 1984-88*. Nairobi: Ministry of Finance and Planning.
- \_\_\_\_\_ 1984a. *Population Policy Guidelines. Sessional Paper No. 4 of 1984*. Nairobi: National Council for Population and Development.
- \_\_\_\_\_ 1984b. *Kenya Contraceptive Prevalence Survey 1984: First Report*. Nairobi: Central Bureau of Statistics, Ministry of Planning and National Development.
- \_\_\_\_\_ 1984c. *Narok District Development Plan 1984-1988*. Nairobi: Ministry of Finance and Planning.
- \_\_\_\_\_ 1986. *Kenya Contraceptive Prevalence Survey 1984: Summary Report*. Nairobi: Central Bureau of Statistics, Ministry of Planning and National Development.
- \_\_\_\_\_ 1988. *Narok District Environmental Assessment Draft Report*. Nairobi: National Environmental Secretariat, Ministry of Environment and Natural Resources.
- \_\_\_\_\_ 1989a. *Kenya Demographic and Health Survey 1989*. Nairobi: National Council for population and Development, Ministry of Home Affairs and National Heritage.
- \_\_\_\_\_ 1989b. *Development Plan 1988-1993*. Nairobi: Government Printer.
- \_\_\_\_\_ 1989c. *Narok District Development Plan 1989-93*. Nairobi: Ministry of Planning and National Development.
- \_\_\_\_\_ no date. [a]. *Women of Kenya: A Statistical Data Sheet*. Nairobi: Women's Bureau, Ministry of Culture and Social Services.
- \_\_\_\_\_ no date. [b]. *1979 Population Census Volume II: Analytical Report*. Nairobi: Central Bureau of Statistics, Ministry of Finance and Planning.
- Kenyatta, J. 1984. *Facing Mount Kenya*. Nairobi: Heinemann.
- Kituyi, M. 1990. *Becoming Kenyans: Socio-economic Transformation of the Pastoral Maasai*. Nairobi: African Centre for Technology Studies.
- Kipury, N. 1983. *Oral Literature of the Maasai*. Nairobi: Heinemann.
- Kjekshus, H. 1977. *Ecology Control and Economic Development in East African History: The Case of Tanganyika 1850-1950*. London: Heinemann.
- Kreager, P. 1982. Demography in Situ. *Population and Development Review.*, 8(2); 237-266.

- Kuczynski, R.R. 1977. *Demographic Survey of the British Colonial Empire*. New Jersey.
- Lesthaeghe, R. 1980. On the social Control of Human Reproduction. *Population Development Review*, 6(4): 527-548.
- \_\_\_\_\_. P.O. Ohadike, J. Kocher and H.J. Page. 1981. Child-spacing and Fertility in sub-Saharan Africa: An Overview of the Issues. *In Child-spacing in Tropical Africa*.
- Le Vine R. and B. Le Vine. 1966. Nyansongo: A Gusii Community in Western Kenya. New York: John Wiley.
- Lewis, R.W.E. 1967. The Maasai Traditional Way of Life. Nairobi: City and Region. Edited by W.T.W. Morgan. Nairobi: Oxford, 67-77.
- Maasai Annual Report. 1921. Report of the officer in charge of Maasai Province-Nairobi: KNA.
- \_\_\_\_\_. 1924. Report of the officer in charge of Maasai Province. Nairobi: KNA.
- Mati, J.K.G. et. al. 1973. A Second Look into the Problem of Primary Infertility in Kenya. *East African Medical Journal*, 50(50): 94-97.
- Matson, A.T. 1972. *Nandi Resistance to British Rule 1890-1906*. Nairobi: East African Publishing House.
- Mbiti, J.S. 1968. *African Religions and Philosophy*. London: Heinemann.
- Menken, J. 1979. Seasonal Migration and Seasonal variation in Fecundability: Effects on Birth Rates and Birth Intervals. *Demography*, 16(1): 103-119.
- Mol, F. 1978. *Maa: A Dictionary of the Maasai Language and Folklore-English-Maasai*. Nairobi: Marketing and Publishing Ltd.
- Molnos, A. 1972. *Cultural Source Materials for Population Planning in East Africa Volume I*. Nairobi: East African Publishing House.
- Muriuki, G. 1974. *A History of the Kikuyu*. Nairobi: Oxford.
- Ndeti, K. and C. Ndeti. no date. *Cultural Values and Population Policy in Kenya*. Nairobi: Kenya Literature Bureau.
- Newman, J.L. 1986. Sedentarization and Fertility change among African Pastoralists. *Proceedings: African Agricultural Development Conference May 28 - June 1, 1985*. Edited by Y.T. Moses. Pomona: California State Polytechnic University, 144-150.

- \_\_\_\_\_ and R. Lura. 1983. Fertility Control in Africa. *Geographical Review*, 73 (4): 396-406.
- Ohadike, O.P. 1974. The Influence of Conjugal Mobility: Fertility and the Number of Unions. *Sub-Fertility and Infertility in Africa*. Edited by B.K. Adadevoh. Ibadan: Caxton Press, 29-30.
- Page, H.J. and R. Lesthaeghe. eds. 1981. *Child-Spacing in Tropical Africa: Traditions and change*. London: Academic Press.
- Population Reports. 1985. Youth in the 1980s: Social and Health concerns Series M number 9, vol XIII No. 5. Baltimore: Johns Hopkins University.
- Ratel-Laurentin, A. 1974. Some observations on the Bobo-Oule and the Mossi Tribes of the Upper Volta. *Sub-fertility and Infertility in Africa*. Edited by B.K. Adadevoh. Ibadan: Caxton Press, 29.
- Sankan, S.S. 1971. *The Maasai*. Nairobi: East African Literature Bureau.
- Schoenmackers, R., et. al. 1981. The Child-Spacing Tradition and the Postpartum Taboo in Tropical Africa: Anthropological Evidence. *Child-Spacing in Tropical Africa: Traditions and Change*. Edited by H.J. Page and R. Lesthaeghe. London: Academic Press, 25-71.
- Sindiga, I. 1984. Land and Population Problems in Kajiado and Narok, Kenya. *African Studies Review*, 27(1): 23-39.
- \_\_\_\_\_ 1985. The Persistence of High Fertility in Kenya. *Social Science and Medicine*, 20(1): 71-84.
- \_\_\_\_\_ 1986. *Population and Development in Maasailand, Kenya*. Ph.D. Dissertation. Syracuse University.
- \_\_\_\_\_ 1987. Fertility Control and Population Growth among the Maasai. *Human Ecology*, 15(1): 53-66.
- \_\_\_\_\_ 1990. Health and Disease. *Themes in Kenyan History*. Edited by W.R. Ochieng. Nairobi. Heinemann and James Currey, 133-144.
- \_\_\_\_\_ Forthcoming. Ethnomedicine and Access to Health Care in Kenya. *Proceedings of the International Conference on Ethnomedical systems in Sub-Saharan Africa*. Edited by L.J. Slikkerveer, et. al. Leiden: Leiden University (in Press).
- Sombroek, W.G. et.al. 1982. *Exploratory Soil Map and Agro-Climatic Zone Map of Kenya 1980*. Exploratory Soil Survey Report No. E1. Nairobi: Kenya Soil Survey.
- Sorrenson, M.P.K. 1968. *Origins of European Settlement in Kenya*. Nairobi: Oxford.

- Spencer, P. 1973. *Nomads in Alliance: Symbiosis and Growth among the Rendille and Samburu of Kenya*. London: Oxford University Press.
- St. Joseph's Hospital. 1987. *23rd Annual Report 1986* by the Medical Officer in charge. Kilgoris: St. Joseph's Hospital.
- Sutton, J.E.G. 1966. The Archaeology and Early peoples of the Highlands of Kenya and Northern Tanzania. *Azania*, 1: 37-57.
- \_\_\_\_\_. 1974. The Settlement of East Africa. *Zamani: A Survey of East African History*. Edited by B.A.Ogot. Nairobi: East African Publishing House and Longman, 70-97.
- \_\_\_\_\_. 1986. Maasailand Before the Maasai Revolution: New Insights into Agricultural and Pastoral Developments. Department of History Staff Seminar Paper No. 10 91985/86). Nairobi: University of Nairobi.
- Wisner, B. 1989. *Power and Need in Africa*. Trenton, New Jersey: Africa World Press.
- World Bank. 1984. *World Development Report 1984*. New York: Oxford.
- \_\_\_\_\_. 1985. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1987. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1988. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1989. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1990. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1991. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1992. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1993. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1994. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1995. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1996. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1997. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1998. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 1999. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2000. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2001. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2002. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2003. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2004. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2005. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2006. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2007. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2008. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2009. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2010. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2011. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2012. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2013. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2014. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2015. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2016. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2017. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2018. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2019. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2020. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2021. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2022. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2023. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2024. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.
- \_\_\_\_\_. 2025. *Population and Development in Kenya and Tanzania*. Nairobi: East African Publishing House.

**APPENDIX I**  
**MOI UNIVERSITY**  
**FERTILITY AND HEALTH SURVEY**

**A. BASIC DATA**

1. District of residence \_\_\_\_\_
2. Division \_\_\_\_\_
3. Location \_\_\_\_\_
4. Sub-Location \_\_\_\_\_
5. Village \_\_\_\_\_
6. Ethnic Group \_\_\_\_\_
7. Were you born in this district? Yes/No
8. If no, where were you born (district and division) \_\_\_\_\_
9. Name \_\_\_\_\_
10. Age (fast birth day) \_\_\_\_\_
11. Education (highest class attended) \_\_\_\_\_
12. Can you:  
    read and write  
    read, not write  
    can read name only  
    cannot read or write
13. If no formal education, have you ever attended any adult literacy classes? Yes/No.
14. Religion (e.g. African, AIC, SDA, Catholic etc.) \_\_\_\_\_
15. What do you do for a living? (e.g. housewife, herder, farmer, trading etc.) please specify.

**B HOME ENVIRONMENT**

Is your main house grass-thatched or mabati-roofed?

17. Do you have a toilet at home? Yes/No

18. If yes, what type is it? Ordinary pit, water closet. (specify where do you get water for domestic use?)

- river
- spring
- ordinary well
- well with hand pump
- pond
- pipe
- other (specify)

19. How far (in kilometres) is your nearest water source?

20. Do you usually boil water before drinking? Yes/No

### C. MARITAL STATUS

21. Are you married, single, separated, divorced or widowed?

22. If currently married, are you in a polygamous or monogamous union?

23. If in a polygamous union, how many co-wives do you live?

24. Are you the first, second, fourth or fifth wife?

25. What is the occupation of the husband?

26. Please tell me how old you were at the time you got married

### D. FECUNDITY AND FERTILITY

27. How old were you when you experienced your first menstruation? \_\_\_\_\_ years

28. How old were you when you bore your first live birth? \_\_\_\_\_ years

29. How many children have you ever born alive? \_\_\_\_\_

30. How many children born alive are still living? \_\_\_\_\_

31. Have you ever given birth to a child who died at birth? Yes/No

32. If yes, how many?

33. Have you ever given birth to a stillbirth? Yes/No \_\_\_\_\_
34. Have you ever experienced a spontaneous abortion? Yes/No \_\_\_\_\_
35. If yes, what was the reason for the last abortion? \_\_\_\_\_
36. How many times have you experienced abortion? \_\_\_\_\_
37. Was the last birth a boy or a girl? \_\_\_\_\_
38. What is the birth interval (in years) between your:
- (a) first and second birth \_\_\_\_\_ years
- (b) second and third \_\_\_\_\_
- (c) third and fourth \_\_\_\_\_
- (d) fourth and fifth \_\_\_\_\_
- (e) fifth and sixth \_\_\_\_\_
- (f) sixth and seventh \_\_\_\_\_

#### E. SEXUAL ACTIVITY

39. How old were you when you had your first sexual intercourse? \_\_\_\_\_ years
40. Please tell me, how many days you have engaged in sexual intercourse within the past one week \_\_\_\_\_ days
41. If none, what is the reason? \_\_\_\_\_
42. When was the last time you had sexual intercourse?
- \_\_\_\_\_ days ago
- \_\_\_\_\_ weeks ago
- \_\_\_\_\_ months ago
- \_\_\_\_\_ years ago

#### F. ANTENATAL CARE AND DELIVERY

43. Are you pregnant now? Yes/No \_\_\_\_\_
44. If yes, how old (in months) is your pregnancy? \_\_\_\_\_
45. Have you ever attended an antenatal clinic? Yes/No \_\_\_\_\_
46. If attended, was it for normal check up or sickness? \_\_\_\_\_



47. If you have not attended a clinic, who provides antenatal care?
- traditional birth attendant
  - relative
  - self
  - other (specify) \_\_\_\_\_

48. After giving birth, how long does a woman stay before engaging in sexual intercourse? \_\_\_\_\_ months

49. Was your last birth at a hospital or at home? \_\_\_\_\_

50. If at home, who helped you to deliver?

- TBA \_\_\_\_\_ (a) first and second birth
- relative \_\_\_\_\_ (b) third has been birth
- self \_\_\_\_\_ (c) third and fourth
- other (specify) \_\_\_\_\_ (d) fourth and fifth
- \_\_\_\_\_ (e) fifth and sixth
- \_\_\_\_\_ (f) sixth and seventh

51. Why did you not go to the hospital? \_\_\_\_\_  
 \_\_\_\_\_ separated, divorced or widowed?

52. Who provided antenatal care?

- TRA
- hospital/health centre
- both of the above
- other (specify) \_\_\_\_\_

53. Are there foods which expectant mothers are advised to eat? Yes/No

54. If yes, identify the foods and the reason for eating them

Food	Reason
_____	_____
_____	_____
_____	_____
_____	_____

55. Do expectant mothers use traditional medicine during pregnancy? Yes/No

56. If yes, for what reason? \_\_\_\_\_

### C. FAMILY PLANNING

57. Have you ever heard of family planning? Yes/No

58. If yes, who/where did you hear it? \_\_\_\_\_

- friend
- radio/TV
- newspaper
- traditional birth attendant
- nurse/doctor
- other (specify)

59. Have you ever used a family planning method? Yes/No

60. If yes, which one is it?

- sexual abstinence
- withdrawal
- pill
- IUD
- injection
- other (specify)

61. If no, why are you not using a method to avoid pregnancy?  
\_\_\_\_\_

62. If currently pregnant or had a previous child, did you plan the pregnancy or did it come accidentally? Planned/Accidental/Other

63. Have you ever talked with your husband about family planning? Yes/No

64. If yes, does he approve of your using a modern method to delay pregnancy? Yes/No.

65. How many children do you want to get in all or, for older women, how many did you get in all?  
\_\_\_\_\_

#### H. HEALTH SERVICES

66. How far is the nearest health facility to your home?

Dispensary \_\_\_\_\_ km

Health Centre \_\_\_\_\_ km

Hospital \_\_\_\_\_ km

67. Do you usually go to a modern health facility when sick? Yes/No

68. If no, where do you get alternative treatment?

- shop
- traditional healer
- collect herbs myself
- other (specify)

## GLOSSARY

- fecundable ability to conceive
- fecundable the potential ability to reproduce, that is, to bear a live birth.
- fertility actual reproduction, that is, actual realization of a live birth.
- infant or child loss failure of a live birth to survive.
- infertility also called *infecundity* or *sterility* or *physiological infertility*. This refers to the inability to reproduce, i.e. incapacity to get a conception or to impregnate (Belsey, 1976). Infertility then refers to childlessness which may come about by choice or by biological infecundity (Bongaarts and Potter, 1983). Whereas sterility or infecundity suggests infertility, the reverse is not true. *Primary infertility* refers to childlessness and secondary infertility is inability to get a live birth after a previous one.
- spontaneous intrauterine mortality inability of a group to obtain sufficient live births. This means that group's fertility is below the expected standard (see Adadevoh, 1974: 2).