WHO/RPS/98.5
Distr.: Limited
English only

SPATIAL HEALTH RESEARCH IN AFRICA: A REVIEW OF THE RECENT LITERATURE

David R Phillips & Gavin J Andrews
Health Research Group
Department of Geography
University of Nottingham
United Kingdom

WHO Collaborating Centre for
Spatial Health Modelling
June 1998

CONTENTS

PREFACE

This literature review was undertaken by the authors with support from the World Health Organization and was completed in the early part of 1998. Its principal objective was to review the literature with a spatial/geographical research orientation and associated social health research with a country or region specific focus, published on Africa and African issues during the 1990s. In view of the very broad range of topics this subject could potentially cover and the time limitations on the project, a decision was made to focus the literature search on selected key journals and publications in English, with only essential reference to others. As the review had an explicit focus on spatial health research and related topics, the major sources reviewed were concerned with health geography, area studies and spatial aspects of public health. The main journals selected were *Social Science and Medicine*, *Health and Place*, *Health Transition Review*, *Health Policy and Planning*, *Third World Planning Review*, *Transactions of the Institute of British Geographers*, *Area* and *World Health Forum*. Publications by the Associations of American and Canadian Geographers were also searched and selected key books published in the period were also included although the focus was primarily on international refereed journals. For the purpose of this review, 'spatial health research' was taken to refer not solely to papers reporting studies of accessibility and utilization, location, GIS (Geographical Information Systems) or spatial modelling, but more widely to research which considers health and which has an explicit place or spatial element.

The literature search was limited principally to books and articles published during the 1990s. The review has inevitably been selective and, whilst extensive, the literature was amenable to categorisation under fifteen sub-headings, with a smaller number of sub-sections. These sub-headings form a framework for the review of the literature as well as being indicative of key research areas in themselves. Some research publications clearly fall under more than one heading and, where this happens and is significant, cross-references are made. Certain perhaps obvious categories are not used. Population, for example, is not discussed as an individual topic except in the context of migration, population movements and their relations with health. Population is increasingly regarded as a cross-cutting issue that features in and, indeed, influences all other areas of human activity. Therefore, population change, growth, ageing and

demographic and epidemiological transitions are discussed in the context of, for example, fertility, mortality and health care provision. We have similarly regarded gender as an all-pervasive issue and do not focus individually on women's or men's health but we do have a specific section focusing on maternal and child health in view of its prominence as a topic and in the literature on Africa. We have not dealt under a separate heading with the activities of donor or aid agencies but we have introduced these as and when relevant in other sections of the review. It might be considered somewhat unusual that, in a review covering the health geography literature, we have not focuses specifically on disease ecology. Rather, we have principally discussed diseases in their social and healthcare contexts as appropriate.

The review was undertaken by the authors who are members of the Health Research Group in the Department of Geography in the University of Nottingham, UK. The Group is a WHO Collaborating Centre in Spatial Health Modelling and, with their partner, the Geografisch Instituut at the Vrije Universiteit, Brussels, form a resource for training and research in spatial health studies and analysis. The contact address of the Collaborating Centre is provided below. The authors are grateful for the support of WHO and, in particular, the encouragement of Dr. B.Mansourian, Director, Research Policy and Strategy Coordination, in the completion of this review.

David R Phillips
WHO Collaborating Centre
for Spatial Health Modelling
College
Department of Geography
University of Nottingham
University Park
Nottingham NG7 2RD
United Kingdom
&
Director,
Asia-Pacific Institute of Ageing Studies
Lingnan College
Hong Kong

Gavin Andrews
Faculty of Health Studies
Buckinghamshire University

Newlands Park Campus
Chalfont St Giles HP8 4AD
United Kingdom

1. HEALTH MANAGEMENT AND FINANCING; HEALTH SECTOR REFORM

1.1 Development

Health care is often viewed as critical within the wider development process. In particular, its nature, financial resourcing, delivery systems, physical and socio-economic accessibility can be key influences in health and development. The evolution of health and of health care systems is arguably integral to the development process itself. However, in terms of organization, accessibility, training and efficiency, health care in much of Africa has been said frequently to be in "a shambles" (Iyun 1994).

Much has occurred this decade in terms of the evolution of health care systems and provision in many countries of Africa. Not all has been positive and some systems are perhaps leaving the last decade of the twentieth century in a worse shape than they were in 1990. However, a number of advances have been made although many classical aspects of the spatial provisioning of health care and between and within countries of the continent and regional differences in standards and care are often of considerable magnitude. Health sector reform has been widely if not always effectively introduced in many countries. It has generally aimed to increase efficiency and effectiveness, often demanding reduced direct public expenditure, the development of public-private sector partnerships and a refocusing of resources and activities. Indeed, it has become in many places, not only in Africa, a cornerstone of much recent change in health care (Berman 1995) and it is being implemented in a number of African settings.

Mabogunje (1995) considers the nature of health care and of health sector reform in Africa in the context of economic development and argues that the decline in the standard of health of the African population goes beyond issues of financial resources and fiscal policies. He suggests that declining health is a product of our inadequate appreciation of how African countries stand in the development process and what could be done to advance their present position in this process. Mabogunje further argues that health is inextricably linked to development and that it is difficult to isolate problems of health care delivery from the socio-economic context in which they are deeply embedded. Nevertheless, he suggests that health issues can and have been tackled individually on their own merit. However, he considers that, for health care

delivery systems to be sustainable in the long term, they have to be conceived as part of wider development processes. Furthermore, it is argued that health care activities and developmental processes can support each other and be mutually reinforcing.

Among a number of country studies, an individual country perspective is provided by Freund (1995) in which deterioration in health services in Zambia are set in the context of and related to wider economic constraints brought about by the fall in world copper prices, rapid population growth and urbanisation. Similarly, Mwabu (1995) analyses the process of health care reform in Kenya over the past thirty years. He sets this in the context of the country's development plans and notes obstacles and encouragements to reform. Clearly, these illustrate country-specific examples of the more general arguments forwarded by Mabogunie (1995). They should also be considered in the context of international, often donor-required economic strategies, including austerity and structural adjustment programmes (Asthana 1994; Sahn and Bernier, 1995) and health sector reform (Berman 1995), which feature in a number of the sections below.

The emergence and development of the health sector in Africa has for some time been viewed in an historical context, as has health sector reform. A number of commentators have illustrated how traditional organisational structures still influence health care delivery in Africa. Kalapula (1995) identifies three phases in health care patterns in Zambia; the colonial, the postcolonial and the primary health care approach which includes hierarchical structures and the introduction of catchment areas. The author suggests that the last phase has not dramatically changed the old structure and identifies problems with financing and acceptance by both communities and practitioners. Anyinam (1991) considers health care in Ghana and comments that although health care facilities have increased considerably in recent years, the unequal distribution of facilities remains a mayor problem with facilities being located on the basis of political and economic expediency rather than on the basis of relative need. One reason suggested for this is the Western-orientated health care model established by colonialists which has traditionally informed the planning of health authorities.

1.2 Health sector reform and financing health care

The financial resources funding health care originate principally from three principal sources: governments, communities (including private individuals) and the

international donor community (Gallagher, 1992) although there is increasing emphasis on private sector initiatives. The literature engages with each of these sources. Alubo, writing at the beginning of the period of this literature review in 1990, comments that, during the 1960s, when many African countries gained independence, solving the problems of poverty and disease became a common goal. Alubo suggests that initial progress was made but, since 1980, much of this progress has been reversed as Africa faced an increasing debt burden. The author noted that health and health services development are tied to this embattled political economy and effective debt management programmes have to be adopted if the situation is to improve.

Health sector reform is a term with wide appeal but which it is difficult to define precisely. Berman (1995, p. 15) suggests health sector reform may be defined as "sustained, purposeful change to improve the efficiency, equity and effectiveness of the health sector". The health sector itself may be taken to mean the totality of policies, programmes, institutions and providers of health and related services, organized efforts to treat and prevent disease. The issue is that reform needs to be sustained, rather than one-off efforts to address particular problems or reap specific windfalls. Reform thus should be on-going and, indeed, entail provision for its own maintenance and momentum. It is interlinked with changing roles for government from, say, service providers to financiers and managers in the health sector. A range of tools and a wide range of specific reform strategies are noted. In the context of sub-Saharan Africa, Gilson and Mills (1995) discuss the need for coherent packages of reforms rather than isolated implementations. They discuss the lessons learned in the past decade and focus on three popular strategies of introducing user fees, community financing and decentralization. These are set in the context of two specific types of strategy that have been initiated by governments: reform of financing strategies and reform of public sector organizations and procedures. They point out the crucial role of donors in reform of SSA (sub-Saharan Africa) countries. Gilson and Mills (1995) also provide a useful framework for evaluating health care reform, with evaluative questions focusing on desired impacts (efficiency, equity, content, context, actors and process). They note that it is still relatively early days for reform and even where experience exists, appraisal of its efficiency and equity impact has been limited. Many of the issues they address are discussed by Mwabu (1995) in the case of a specific country, Kenya, in the same edited collection.

A further issue, also complex, is the relationships of health sector reform to structural adjustment programmes. Stabilization is generally viewed as shorter-term, crisis management through contraction whilst structural adjustment refers to attempts to achieve medium to long-term improvements in economic efficiency through rationalizing resource allocation among other strategies. They do however generally involve a reduction in overall demand for services and the effects on health status have therefore been assumed to be on balance negative. There is also a complex, often place-specific, interrelationship between public, private and donor spending, the sectors on which spending is targeted, household budgets, employment opportunities, nutrition and many other variables that make a simple analysis of the impacts of any reform, adjustment or stabilization almost impossible. There is an a priori concern that stabilization and adjustment in Africa may have resulted in lower health expenditures with deleterious effects especially on the poor (Sahn and Bernier, 1995). The authors conclude, however, that African structural adjustment programmes they considered had not reduced public health expenditures. In fact, they noted higher real expenditures after adjustment. There remains the paradox that many indicators of health status deteriorated in spite of this. They conclude that other systematic biases, including biases to tertiary care and a general weakness in the public sector's capacity to deliver adequate health care services even with higher real health sector budgets, must underpin this deterioration. Whilst progress is often being made in reforms, many biases and problems remain.

Within and outside the wider context of health sector reform, the financing of health services has become an increasingly urgent issue (Richter and Gorgen, 1992). As in the case of many countries in the Western world and in other regions of the developing world, many African governments recognise or have been obliged by international donors to recognise private revenue and/or cost recovery as potential solutions to financing problems. Consequently, a growing portion of the literature on health care and health sector reform considers features such as user charges, including the origins of and discussion of cost recovery programmes following the Bamako initiative after 1987 (Phillips, 1990; Gilson and Mills, 1995). Ritcher and Gorgon (1992) suggest that these forms of cost-recovery must be utilised with caution although fee-for-service could account for 10-15% of health budgets. The authors call for more studies and trials to develop appropriate and fair schemes. More specifically,

Moens (1990) considers a community financing scheme for hospital care in Zaire. A pre-paid health plan was introduced which recorded a steadily increasing membership and doubled the hospitals cost recovery after two years. Conversely, Asenso-Okyere (1995) found that user charges in Ghana to have produced less revenue than was initially hoped. Abel-Smith and Rawal (1992) consider 'free' health services in Tanzania and suggest that, because of inadequate supplies of drugs and food, many patients had to pay substantial costs for these necessities. It is concluded that modest charges, with attempts to exempt poorer citizens, would be a fairer system. It is also suggested that charges could be based on willingness to pay as this would ensure adequate supplies of drugs and food.

Detailed studies of the impacts of user charges on usage and (even more important, perhaps) on health status are urgently needed and quite a number are emerging. For example, Mwabu et al (1995) consider the effects of user charges in Kenyan health facilities on attendance and revenue. The authors found attendance to have dropped by about 50% until fees were suspended and the revenue generated by user fees to cover 2.4% of the health budget. However, 40% of facilities were found not to have spent the revenue that they had collected due to bureaucratic procedures involved in expenditure approvals. The authors conclude that user charges are likely to be reversed or neglected if they do not permit an improvement in service quality and user charges would be better introduced in phases than at once. Similarly, Mbugua et al (1995) consider the effects of user fees on attendance in Kenya. The findings support those of Mwabu et al (1995) as attendance at government health facilities was found to be lower during periods that full fees were charged. Importantly, the charges did appear to impact disproportionately on the poor as the poorest households made less use of fee-charging health facilities than better-off households. Doubts are cast on the ability of the system to sensitively discriminate in favour of those in economic need, as the exemption system was found not to adequately protect the people it was supposed to benefit.

There has been some discussion as to the potential effects of levels of charges and certain studies in the literature focus on fee levels. Changes in the levels of hospital fees are considered by Weaver et al (1994), which study concludes that, in the case study of Niger, eliminating exemptions can be as important as increasing fees. Huber (1993) considers the effect user fees have had on patients in three districts in Kenya.

The author suggests that 11-33% of outpatient fees should be waved to avoid undue burdens on low income households. However, difficulties are recognised in identifying those unable to pay. Travis Bassett et al (1997) discuss the introduction of fees in the health sector in Zimbabwe. These were introduced after the 1991 structural adjustment programme and utilization did subsequently decrease. This supports the more general experience of adverse effects of user charges on utilization in spite of the arguments by some of a positive effect. The Zimbabwe study also indicated the charges amongst other things increased friction between professional groups such as nurses and the communities they served, but for a complexity of reasons. Both nurses and patients were found to suffer from a lack of funding for the health care system.

The Bamako initiative - the cost recovery/rolling programme of support for essential drugs and services - has received specific attention, most of which concerns debate over the ability of patients to pay for services. Jarrett and Ofosu-Amaah (1992) review the first four years of the initiative's implementation, suggesting that the initiative has strengthened health care systems at a local level. However, they note that there are still problems including access for the very poor who cannot afford to pay fees for services. These contentions are supported by country specific case studies. Haddad and Fournier (1995) analyse the effects of the Bamako initiative in Zaire. The authors suggest that utilisation of health services had diminished by 18-32% over the period 1987-1991 as a result of charges, and that improvements in technical quality of services and quality of staff did not compensate for the decreases in utilization. It is, however, recognised that in other locations, the initiative has increased the quality of services offered while maintaining utilization rates. Habiyambere and Wertheimer (1993) note that, in Rwanda, the cost recovery system recommended by the Bamako Initiative programme can be expected to increase the availability of essential drugs. However, the authors claim that access to drugs will remain difficult unless people receive financial assistance to help them pay for medicines. Vogel (1995), assessing evidence from Ogun State, Nigeria, discusses how cost recovery can generate additional revenue and improve quality and how equity would be enhanced by spending some of the additional net cost-recovery revenue on health care for the poor.

Health insurance schemes are widely recognised as a potential method of securing private funding and cost recovery in the health sector. They are increasingly becoming utilised as a source of private revenue. For example, a national health card

insurance scheme in Burundi is investigated by Arhin (1994) where it was found that although the scheme only funded the outpatient drugs consumed by participants by 34%, it performed a social equity function. Married women, for example, who had little access to cash, were empowered as the scheme enabled them to make decisions regarding drug consumption for their families without first consulting their husbands. The author suggests that the financial performance of the scheme was poor because of the low membership rate. It is concluded that the encouragement of lower risk households would improve financial performance and local governments should use the greater part of the schemes revenue to facilitate improvements in services. This again, it is thought, would help encourage greater participation in the scheme. The case for compulsory health insurance in Tanzania is debated by Abel-Smith and Rawal (1994). In the past, employers in Tanzania have spent on average 11% of their payroll on health care for employees. It is argued that compulsory health insurance could be introduced in the formal sector of employment as it would lower employees labour costs. Price (1994) considers the potential of health insurance in South Africa and suggests that one method of countering the decrease in equity and access to health care services is to draw on the financial resources currently being spent by the private sector through the national health insurance scheme.

Certain studies have suggested that health insurance schemes can be beneficial to health economies. Abel-Smith and Rawal (1994) suggest that, if introduced, a compulsory Tanzanian health insurance scheme would be beneficial to the health economy. Banda and Simukonda (1994) suggest that the emergence of the health insurance industry and the expansion of drug outlets in Malawi have been mutually re-enforcing.

Various publications consider donor funding and health reform. Bossert (1990), for example, investigates donor funding by the American government of health projects in Africa and Central America. The study found that, after donor funding ceased, health projects in Africa were less firmly sustained than those in Central America. Weak economic and political contexts were found to inhibit sustainability. The author suggests that wider development issues need to be addressed in those countries before health projects are sustained for longer. Bossert also provides general guidelines for project design and implementation. Foltz (1994) claims that during the past ten years, donors have recognised the need for reforms to achieve the sustainable development of

health projects. The paper comments that using non-project assistance, donors have attempted to invoke reform by offering finance on the condition that reforms are made. Foltz suggests that, in countries with a high level of fiscal accountability and high institutional capacity, this approach may be most effective in achieving reforms. Ogbu and Gallagher (1992) introduce a note of caution and suggest that donors are reluctant to make up government funding shortfalls when a government itself has not made the best use of resources. They discuss the fact that donors often prefer to fund capital projects rather than to make good recurrent spending shortfalls. It is also suggested that for a government to accept donor support for the most basic services, is almost an admission of its inability to address basic human needs.

On the issue of timing of financial inputs, Ogbu and Gallagher (1992) discuss internal public expenditures on health care. The authors argue that governments spending on health care should be counter-cyclical, ie government health spending should increase during economic down turns. This would offset the immediate problems facing communities and their declining ability to pay for private services. However, they recognise that this may involve wishful thinking in many circumstancesas it would include adjustments such as cutting military budgets. Ogunbekun (1991) calls for an autonomous health fund in Nigeria to help stop a decline in health care standards associated with underfunding of the public sector.

1.3 Structural change

Reform of the organisation and structure of health systems is attracting increasing attention, sometimes as part of wider health sector reform and hence closely linked with the preceding discussions of structural adjustment and relations to health sector reform. The literature is mostly country specific although some comparative studies are emerging and, as noted earlier, a very good series of review papers a number of which are focused on Africa is to be found in Berman (1995). Cassels and Janovsky (1992) consider health planning in Ghana. The authors describe the decentralisation of health services and consider the practical implications of current policy directions. More recently, Cassels and Janovsky (1996) compare and contract the reform of the health sector in Ghana and Zambia. They discuss the political and economic contexts of the reforms in the two countries and reject the notion of linear stages of health sector reform. They stress the need to understand difficulties and

constraints to be overcome and warn of the risk that health sector reform may be promoted as an end in itself. As in much of the developed world, they argue that the challenge is to define realistic objectives in relation to issues such as efficiency, equity and responsiveness to users.

Earlier, Ogunbekun (1991) illustrated how bureaucracy has restricted health provision in Nigeria over the past decade and that overdependence on tax based funding has compounded the problem. Innovative management, more efficient spending and the introduction of risk-sharing arrangements are proposed to improve the quality of health care. Essomba et al (1993) examine the reorientation and restructuring of health care in Cameroon. The paper identifies obstacles to progress as including: lack of an adequate legal framework, incompatibility between political and health structures, a lack of trained staff in health management, poor co-ordination of human resources, inadequate information systems and poor co-ordination of research. The lessons learned from Cameroon are thought to be relevant to other countries undertaking the structural reorganisation of health systems.

1.4 Privatisation and the public/private mix

In many parts of the world, including many African countries, demographic pressures and limited public sector financial resources have led to an increasing role and opportunities for the private sector in the provision of healthcare facilities and services. The relative change in the public/private mix of health services is an important consideration in the literature. Much discussion can be seen in the context of health sector reform and in the approaches encouraged by the 1993 *World Development Report* (World Bank 1993). The Report explicitly advocates the promotion of diversity and competition in the delivery and management of health care. With respect to the African literature, Price (1994) documents the changing public/private mix in the South African health sector from 1980 to 1991 and highlights some emerging inequalities. The private sector is shown to have grown during the period but often at the expense of the public sector. The author states that in 1991 the private health sector provided for only one-fifth of the population but contained over half of the countries doctors, almost all the dentists and had an overall expenditure larger than the public sector. It is suggested that post-apartheid debate in South Africa has changed from nationalisation verses privatisation to more consensus on goals if not yet on methods. To help reduce

inequalities Price recommends that private providers should be further integrated into the publicly financed health system. Banda and Simukonda (1994) consider the public/private mix in the healthcare system in Malawi. They suggest that, since the 1987 Medical Practitioners and Dentists Act, more liberal registration of medical practitioners and the relaxation of policies restricting private practice by government doctors, private for-profit providers have rapidly grown in numbers. It is concluded that to aid the effectiveness of this 'boom', changes could be made in the financing of structural adjustment and a greater co-ordination amongst health care providers could minimalise the duplication of services.

Ways in which the private sector can extend services form an important concern for policy and practice although the limitations of private provision in poor countries and for poor populations are increasingly evident. McPake and Hongoro (1995) discuss the contracting out of health services in Zimbabwe. A case study of Colliery hospital illustrates that private services can be provided at a lower unit cost than government services. However, the authors note that there has been a failure to contain the total costs and only a minority of the population has access to the hospital.

1.5 Other important foci, including quality issues and the implications of population ageing

There are many other publications during the period of this review which consider health management, financing and health sector reform but which do not fit clearly into the above categories. This literature is often issue and sometimes place specific. For example, Walley et al (1991) consider non-government organizations (NGOs) in Ethiopia and discusses their approaches, strengths and weaknesses. The authors found NGOs to have co-operated with each other and the government and to have helped to improve district health management and care. The authors suggest that NGOs have aided the implementation of government policies. Conn et al (1996) consider management of district health teams in The Gambia and assesses a management strengthening project. The project was found to have improved the quality of team planning and the management of resources. However, the effectiveness of management teams was found to be limited by the policies and practice of central government and donor agencies.

Beattie et al (1993) examine the role of South Africa in the development of the health sector in the whole Southern African region. The authors suggest a need to move away from past hostilities towards co-operation. Many areas of health are identified that could potentially benefit from greater co-operation, including disease control, nutrition, medicines, health services, health personnel and research.

Quality of care and quality of services form an increasingly important focus for much research and, of course, should be crucial to considerations of health sector reform. At times, cost savings may adversely impinge on quality, as might the introduction of practices such as cost recovery or user fees. Sometimes, combinations of cost issues and utilization patterns can prompt health managers to change care delivery systems. Pepperall et al (1995) note that there is a need to examine carefully existing services with regard to utilization, quality and costs before adopting different patterns of health care delivery. In the case of Lesotho, in their study, the adoption of urban reference centres is identified as a solution to congested hospitals.

Last, and by no means least as far as future studies are concerned, are those that consider the impacts of demographic change and population ageing and the demands that these will place on health and social care systems in Africa (Apt and Grieco, 1994). At present, ageing and policies for elderly people are not accorded as high a research and policy priority as they are in, for example, the Asia-Pacific region and increasingly in South Asia and Latin America. Africa's health problems and challenges are still regarded predominantly as arising from the fight against infectious diseases, the struggle for maternal and child health and nutrition, the provision of essential care for poor urban and rural populations, and the impacts of war and natural disasters. Nevertheless, many African countries are turning their attention to current and future needs and demands of ageing populations (Apt, 1993). A recent example is the study of reforms to the Ghanaian social security system in which increasing expenditure on elderly people is identified as one proposal (Darkwa, 1997). In a report on ageing in Morocco, Fowler and McNamara (1993) note that elderly people in a predominantly young country might receive scant support when family resources become strained. Although Islam obligates children to provide their parents with housing, the Moroccan government has still seen the need to institute statutes to require this. Issues surrounding elderly people in Africa are likely to become even more important as life

expectancies extend or as grandparents, for example, become carers again for children in generations orphaned by AIDS and other conditions.

2. THE ENVIRONMENT, URBANIZATION AND HEALTH

There is in the 1990s an important and growing body of publications on the relationships between the environment (social and physical) and human health and well-being. Much of this literature has a very explicitly geographical and spatial context. Much is also set within a broad framework such as that of the WHO Commission on Health and Environment's report *Our planet, our health* (see, for example, WHO 1992) and builds on themes introduced in the 1992 World Development Report *Development and the environment* (World Bank 1992). Some of the material focuses on the health impacts of development and development policies (Cooper Weil et al 1990). Others look at more specific types of health impacts, such as such as the potential exacerbation of parasitic diseases when water resources are developed, stressing the need for intersectoral negotiation (Hunter et al 1993).

The health impact assessment of development projects in a range of sectors of activity has been well documented by Birley (1995) who also outlines a framework for health impact assessment. Specific health issues, such as those related to the very rapid growth of urbanization, urban populations and the urban environment in the developing world, have also become key foci of concern. Key publications on this topic include those by Harpham (1994a, 1994b); Iyun et al (1995); Harpham and Tanner (1995), Satterthwaite et al (1996) and Werna et al (1998). This important general issue of environmental change and its impacts on human physical *and* mental underpins much of the remainder of the literature included in this review. UNICEF has in a number of its annual *State of the world's children* reports this decade focused on the interaction between poverty, population and the environmental deterioration, using the term the 'PPE problem' (see, for example, UNICEF, 1994, 1995). Their reports also stress the interaction between PPE problems and social and political instability which can exacerbate them (UNICEF 1995). PPE problems can have crucial and rapid impacts on individual and community health status, via increasing vulnerability, increasing the population exposed to particular health risks and reducing the capability of the health sector and other related sectors to help.

There are also important and growing numbers of case-studies of urbanization, environment and health on African countries. For example, Fetter (1992) illustrates impacts on the health of mining communities in Central and Southern Africa. The study

outlines how these working communities are subject to specific physical micro-environments. These micro-environments are shown to be influenced by capital investment and regulated by changing government policies. Much of Africa has experienced rapid development, environmental factors will inevitably effect the health of localised populations. There is an obvious need for future research in this area.

The influence of social divisions is particularly important in African countries. Beckerleg et al (1994) consider gender variations in the use of health facilities in The Gambia. Women were found to make greater use of a medical service, while men resorted more frequently to local remedies and healers. Rodda (1991) has prepared an overview of the wider roles of women and the environment in the context of development, noting in particular the influence of women as agents of change. Using the case study of Ethiopia, Ayalew (1992) highlights the social context of health care planning in Africa and argues the case for a people and community-orientated planning approach. Carr-Hill (1990) considers social conditions and health in Africa. The issues discussed include monitoring of social conditions, population growth, education, war and urbanisation.

The rapid growth of cities in most countries in the developing world and especially in Africa has also been a major source of concern on spatial aspects of health. Third world cities in general and a number of African cities have been the subject of research into links with their urban growth and health. For example, their general environments have been noted by Hardoy et al (1993) and Harpham and Tanner (1995) and the effects of environment on children's and parents' health by Satterthwaite et al (1995). Poverty and issues receive considerable attention with respect to the urban environment (Stephens 1995) as it does in the wider context of Third World health. In addition to physical health, mental health in the urban environment is also seen as justifying far higher priority than currently accorded (Harpham 1994b), discussed further in Section 11.

There is growing interest in the healthy cities movement and the potential for developing healthy cities in the Third World. This is particularly with regard to addressing the health problems of the urban poor who often face double jeopardy. They are often at risk from infectious diseases of rural and Third World areas and also from urban problems such as pollution and stress. The aim of the healthy cities project is to attack the causes of ill-health, many of which are beyond the scope of struggling

and under-funded health services. Werna et al (1998) draw on a range of examples of the healthy cities project, which aims to place health high on the agenda of urban officials, integrating it into all areas of planning and development. A major feature of the healthy cities initiative is that public health should be integrated into urban management. They discuss the establishment, implementation, evaluation and sustainability of healthy cities in developing countries.

The combination of Geographical Information Systems (GIS), spatial analysis and epidemiological techniques to research in the links between environment and infectious diarrhoeal disease is well exemplified in *Environment, Health and Population Displacement* (Collins, 1998). In this book, considerable advances are shown in the analysis of the spatial and temporal variations in incidence of infectious diseases. Collins provides a very good example of how to investigate the relative influences of environmental, demographic and socio-economic factors on infectious diseases in rapidly changing areas of the developing world. The book has a comprehensive discussion of the ecology and geoecology of cholera and bacillary dysentery and their spatial and temporal incidence, focusing on the situation in Africa. It then draws on a detailed study of the nature and context of cholera and bacillary dysentery in Mozambique, a country undergoing major demographic and political changes which has suffered in the first part of the 1990s some of the highest infectious disease incidence in the world. The study focuses on three contrasting urban centres, Gorongosa, Quelimane and Beira, which illustrate a range of environmental conditions and experience of population displacement.

Collins (1998) illustrates the ways in which understanding of the complex inter-relationship between pathogen ecology and human vulnerability in the context of environmental and structural change can provide guidance for environmental health management. A secondary, mainly methodological contribution, is to illustrate the potential development of appropriate applications of GHIS (Geographical Health Information Systems) for assisting planning in areas of developing countries which are susceptible to disease. The applications of GIS (Geographical Information Systems) and GPS (Global Positioning Systems) may be of increasing use in the surveillance of emergency environmental health situations. These might accompany large-scale population displacement in war zones or following natural environmental catastrophes.

3. THE ACCESSIBILITY AND LOCATION OF HEALTH SERVICES

The bulk of the populations of many - indeed, the majority - of African countries are dispersed and located in rural areas, often remote from major settlements and large health facilities. The continent also has an important an growing number of very large cities. These two facets of population distribution have had particular consequences for the nature of health service provision in many parts of this region. Health services therefore often have to meet the twin demands of poor dispersed rural populations and swelling numbers of urban poor. This frequently places great pressure on health and other human services to provide even a minimal coverage and accessibility.

The accessibility, more frequently the inaccessibility, of health services is known to affect utilisation rates, sometimes quite severely (Joseph and Phillips, 1984; Phillips, 1990). The accessibility of health services and their location have gained increasing importance as planning issues, given the costs and investment in many forms of health care (especially hospitals) and the drive for more effective and equitable care. This also poses major challenges for the location of primary care services, which are the main hope in many African countries of providing any form of formal modern health care for both rural and poor urban populations. "One of the main objectives of primary health care projects, particularly for countries with large dispersed rural populations, is to increase the physical accessibility of health care facilities" (Massam et al, 1991, p. 183). There is a broad literature that identifies access to health services as a frequent and persistent problem in Africa as in many other developing regions (Phillips, 1990; Phillips and Verhasselt, 1994). Indeed, many important initiatives to extend accessibility have been unsuccessful, abandoned or have not achieved their full potential.

Massam et al (1991) examine the planning of the location of health centres in Zambia and develop a general model for planning the location of a potential facility. Nigeria, too, has received particular attention in terms of spatial health analysis (Iyun, 1993, 1995; Iyun et al, 1995). The country has something of a tradition for undertaking expensive large-scale projects, many of which have reached completion or, even if completed, have been successfully maintained. An important counter-trend advocated has been the development of smaller and cheaper facilities which allow greater access

for more people (Okafor 1991; Ajibola 1991). Okafor (1991) examines patterns of health care provision in Nigeria and discusses government policies designed to minimalise imbalances. The author concludes that Nigeria has two main problems related to limited resources and the inadequate spatial organisation of facilities. The continued provision of many smaller facilities is considered to be the most economic method of rectifying disparities. Okafor further highlights the need for a review of the administration of health care provision in Nigeria, and calls for positive discrimination for disadvantaged areas.

On a smaller scale, Ajibola (1991) takes a micro-spatial perspective and considers the spatial layout and design of the new smaller health facilities which have, in the main, been converted from residential use. The author concludes that the conversions are both practical and affordable, and recommends the government to make full use of the communities' existing residential stocks. Adequate planning and community participation is considered to be important to the future provision of health facilities.

Tayeb et al (1991) consider the spatial distribution of, and accessibility to, medical services in the Sudan. They suggest that the geographical distribution of medical services does not necessarily ensure equal access and that the population's average income greatly affects accessibility. In this way, access is associated with the performance of the national economy. The authors suggest that the situation in Sudan is problematic and compounded by the distribution of medical services which does not reflect the distribution of the population and, as in many developing countries, medical services are biased to the most developed regions. Tayeb et al note, however, that special programmes have been implemented since the 1970s to help address the situation.

Perhaps surprisingly, given the success of some mobile immunisation programmes and the importance of peripatetic services in many public health care systems in Africa and elsewhere, there has been relatively little research completed or published on the provision of mobile health facilities in Africa. The literature expresses concerns over costs and effectiveness of such facilities. Borgdorff and Kachidza (1990) consider the cost and output of mobile clinics in a farming area in Zimbabwe. Mobile clinics were found to improve accessibility but their cost was found to be higher than that of static clinics. However, the authors found staff time to be more efficiently

utilized in mobile clinics. It is concluded that outreach clinics should continue. The distribution of possible stopping locations for mobile clinics is being considered as a result of the research.

Aliou (1992) considers mobile health units in Niger which are intended to meet the needs of nomadic populations. The author finds them to be relatively ineffective in meeting needs and to be excessively costly. The paper recommends that mobile clinics be discontinued and concludes that the needs of nomadic populations would be better met by fixed structures with a wide radius of coverage and some mobile capacity. Omar (1992) argues that there is a growing recognition that pastoral nomadism is a nationally important, efficient, low cost and ecologically friendly use of land, yet these groups are often neglected by planners, economists and governments. The author calls on authorities to develop practical approaches for the delivery of health care to these populations.

Economic development has encouraged the expansion and improvement of the road networks of many African countries and this may affect access to health services. Airey (1992) discusses the impact of road construction on the spatial characteristics of a hospitals utilisation in Kenya. The paper suggests that improvements in transport systems have not significantly changed the spatial pattern of in-patient utilization although it is suggested that the hospital is attracting out-patients from further afield. The impacts of new transport systems and the wider issue of transport to and from health care and the impacts on health care in Africa are clearly an important area for future research.

4. UTILIZATION AND RATES OF ATTENDANCE

The potential effects of user charges and location on the utilisation of services have been discussed above. However, there are numerous other important factors that can and do affect the utilization of and attendance at health services. Zwart and Voorhoeve (1990), for example, assess the influence of public health clinics (PHC) on hospital attendance in rural Ghana. They suggest that fewer people attend a hospital if the community participates in a PHC programme and the local community health worker is experienced. Kloos (1990) considers the utilisation of hospitals and health centres in Southern and Western Ethiopia and reveals a steep distance decay and underutilization of rural health services. The type and cost of transportation, type of illness, patient preferences, socio-economic status of patients and referral patterns are identified as important factors in utilization. Many of the studies in the edited collection by Iyun et al (1995) discuss explicitly and implicitly aspects of geographical variations in accessibility and factors affecting utilization.

5. STDS AND HIV/AIDS

HIV/AIDS is a priority policy and research area. Publications on this topic alone account for almost one-half of all recent spatial health research on Africa which has appeared in the journals and books covered in this Review. As a consequence, only a general summary of the main themes and some key literature is possible. As the literature on sexual behaviour and HIV transmission is itself very extensive, this review selectively focuses mainly on studies that have a geographical, spatial and/or planning orientation. The review does not, at present, extend to the specialist HIV/AIDS journals and circulars, nor to the medical literature.

In many countries of east, central and south-central Africa, sexually transmitted diseases (STDs) and HIV/AIDS have assumed epidemic proportions (Barnett and Blaikie 1992; Schoepf 1993; Orubuloye et al 1995; Caldwell, 1997a, 1997b). In terms of the sheer numbers of people dying from AIDS, the current epidemic far exceeds the 1347-1351 European black death epidemic and the 1917-1919 global influenza epidemic. Indeed, globally, 6 million people are estimated already to have died from AIDS and a further 23 million HIV positive people are expected to die in the future. In many African countries in particular, AIDS is now considered likely to be an important influence on population growth, through its effects on fertility as well as mortality (Caldwell, 1997b). The disease is already well over a quarter of a century old and levels of infection are still rising in many developing countries. The intensity of the AIDS epidemic in sub-Saharan Africa is immense and no other area of the world has experienced its impact to the same extent.

The main affected population is largely located in a long belt shown in Figure 5.1, stretching from the Central African Republic and Sudan through Uganda, Rwanda, Burundi, Kenya, Tanzania, Malawi, Zambia, Zimbabwe, Botswana, South Africa and Namibia (Caldwell, 1997b). Over 180 million people are at risk in these countries, 3 per cent of the world's population but afflicted with about 55 per cent of the world's HIV/AIDS. Of the general (low-risk) adult populations in these countries, seroprevalence levels in the capital or major city in the mid-1990s ranged from 13.7 per cent in Tanzania to 32.8 per cent in Malawi, based on US Bureau of the Census reviews. Outside the capital or major city of these countries, seroprevalence levels ranged from 1.6 per cent in Burundi to 16 per cent in Botswana and Zimbabwe.

However, Caldwell (1997b) cautions that these data are often more suggestive than definitive, due to paucity of HIV testing and also to some extent because of the location of survey sites in the countries concerned. In any event, it is clear that the problem remains very real. Caldwell suggests that, if current trends continue, the majority of city dwellers in the aforementioned areas potentially will face death from AIDS.

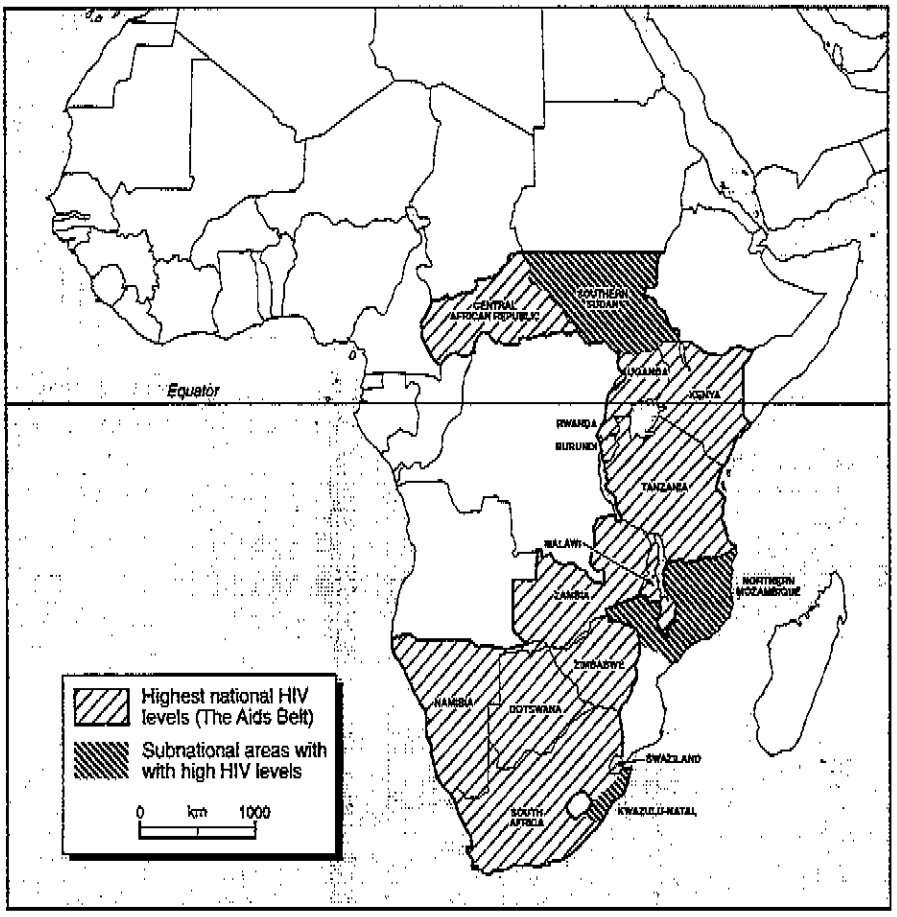

Figure 5.1 The AIDS belt in Africa **Source:** Caldwell (1997b, p.171)

In terms of health promotion and AIDS care in Africa, there is a range of literature discussion sexual health and reproductive behaviour, campaigns, health care strategies and implications. Some are considered in the context of aid, health sector reform, poverty and access. A very useful text, which focuses on Tanzania but has a wealth of information of relevance to sub-Saharan Africa is edited by Ng'weshemi et al (1997). Their book has the explicit aim of synthesizing experiences and tested methods related to the broad range of activities needed to meet the challenges HIV/AIDS poses to district health systems. The book has a wide range of authors who examine Tanzania's experiences, a country hard-hit by AIDS and with a district organized

health system. The hope is that ideas for feasible interventions can be stimulated although there is little evidence as yet that these monitored and evaluated interventions have as yet started to roll back the epidemic.

5.1 Sexual Behaviour

A substantive proportion of the HIV/AIDS literature focuses on psycho-social aspects of human behaviour and sexual networking (see for example Orubuloye et al 1995). However, a number of papers and authors including Anarfi and Awusabo-Asare (1993), still note a lack of detailed information on sexual behaviour. Nevertheless, this review does highlight a wide range of place specific research. More generally, Caldwell (1997a, 1997b) and Orubuloye and Caldwell (1992) and Caldwell (1997a) argue that most governments in sub-Saharan Africa have made little effort to change the sexual behaviour of their populations. Indeed, the authors comment that many governments consider the sexual behaviour of their populations to be so deeply culturally embedded that information interventions would be futile.

Magezi (1991) attributes the rapid spread of HIV in Africa to traditions including polygamy as well as to new cultural practices adopted under western influences. MacDonald (1996) reviews the AIDS epidemic in Botswana and attributes the rapid transmission of HIV to the position of women in society, cultural attitudes to fertility and social migration patterns. Schopper et al (1993) investigate sexual behaviour in Northern Uganda. In this study as in other studies, more men than women reported pre-marital sex (50% and 18.5%), single men were found to be 2.5 times more likely to engage in casual sex than married men, whilst men were more likely to engage in casual sex than women. Conversely, Rutenberg et al (1994) suggest marital status (as conventionally defined) is an inadequate proxy for the likelihood of engaging in risky sexual behaviour. Isiugo-Abanihe (1994) identifies 54% of Nigerian men and 39% of women having extramarital relations. These findings are supported by Oyeneye and Kawonise (1993) who also suggest that virginity at marriage is becoming less important for Nigerians and that many people now engage in multiple sexual relationships for fun. Omorodion (1993a) illustrates that there are high rates of extramarital relationships for certain types of married women. In a survey of market women in Benin City, Nigeria, 70% of respondents admitted to having extramarital sexual relationships. Similarly, Pickering et al (1997) found 42% of married women in

a rural fishing community in Uganda to be regularly engaging in extramarital sexual relationships with casual paying partners.

Moses et al (1994) consider sexual behaviour in Kenya and reports higher mean numbers of sexual partners for STD clinic patients. The authors comment that men often form a bridging role in the transmission of STDs between female sex workers and the general population of women.

The sexual behaviour of young people is a major concern in the literature. Varga (1997) addresses sexual decision-making among young South African couples. Communication between partners was found generally to be poor, whilst males tended to be able to enforce their sexual preferences over females. Of considerable concern is the finding that AIDS was not a significant factor in any aspect of sexual decision making. Earlier, Oloko and Omoboye (1993) researching adolescent sexual behaviour in Lagos, Nigeria found almost half of secondary school children to be sexually active, but knowledge of HIV transmission was limited. Most respondents did however favour premarital chastity for girls and the authors recommended that this is used as a basis for family-life education. Likewise, Kalunde's (1997) investigation of sexual behaviour among youths in Zambia found that the young did not to take STDs seriously and did not to consider AIDS as a threat to their lives. Of most concern is that AIDS did not generally act as a hindrance to sexual activity and relationships. It is evident from the above research that improvements are required in the education of young people.

In spite of the above findings that suggest that many people are either unaware of or ignoring the risks of STDs and HIV/AIDS, some studies have identified various changes in sexual behaviour due to the fear of HIV infection. For example, Pool et al (1996) report research involving Tanzanian factory workers which found that fear of AIDS has reduced the numbers of partners with whom respondents had sexual relations. For many, reducing the number of partners was found to be preferable to condom use. Anarfi and Awausabo (1993) and Anarfi (1993) comment that although Ghanaian society has generally accepted sexual networking, it appears that many people are changing their sexual habits due to a campaign on AIDS, which has instilled fear into the population. Irwin et al (1991) earlier investigated knowledge attitudes and beliefs about HIV infection among factory workers and their wives in Zaire. The authors found that although many people had a fairly good understanding of the causes

of HIV infection, myths did exist. In particular, many thought that condom use would not prevent infection.

Elderly people in an African context should be given more attention in research and action for AIDS. In addition, as well as sometimes being at risk of AIDS themselves, elderly people are often bearers of knowledge of traditional practices which may be important in understanding sexual behaviour, transmission patterns and interventions. Ingstad et al (1997), writing on the elderly in southern Botswana, argue for a more in-depth understanding of the role of elderly people in the HIV/AIDS epidemic. Through their position as respected and influential community members, they may also be a resource group in HIV/AIDS prevention programmes.

A number of studies consider HIV transmission in the context of geographical networks. In many cases, these networks are employment based and so are economically founded. Obbo (1993) in Uganda and Chirwa (1997) in Malawi both found long distance lorry drivers and prostitutes at trading towns to be important sources of HIV transmission. Lurie et al (1997) notes that circular employment migration in Southern Africa promotes the spread of HIV. Underlying this is the report by Letamo and Bainame (1997) which identifies prolonged geographical separation between spouses as a key factor in why people became involved in risky extra-marital sexual behaviour. Bond (1997) found high rates of sexual liaisons between young girls and older migrant males both working on a commercial farm in Zambia. The study highlights the potential problems in decision making based on research findings. In this case, the author found herself 'between a rock and a hard place'. As the immediate outcome of her anthropological investigations, the farm management immediately took the decision to sack all under-age workers.

5.2 Prostitution/commercial sex workers

Prostitution, as an important factor underlying STD and HIV transmission, receives considerable attention. Pickering et al (1992) investigate the working behaviour of prostitutes and their clients in The Gambia. Prostitutes were found to be highly spatially mobile and often to have an education level and standard of living higher than the national average. They were found to work an average of four days a week, used condoms 80% of the time and had sex with between two and three clients a night. Conversely, Wilson et al (1990) found commercial sex workers in Zimbabwe to

have a relatively low educational level, which reduced their ability to earn an income in other ways. The authors found sex workers to work an average of 3.6 nights a week, use condoms 39.3% of the time and have sex with an average of 1.3 clients per night. Pickering and Wilkins (1993) found 93% of Gambian prostitutes used condoms. Interestingly, the authors suggest that these women, in the main, did not have to sell sex but did so because of the comparatively high earning potential. Saunders and Sambo (1991) and Schoepf (1993) agree that economic crisis and structural adjustment in many African countries has increased poverty. This has had the effect of increasing commercial sex activity and poverty itself is of course recognised as a major factor in prostitution. Research in Malawi regards poverty therefore as a potential major factor in the spread of AIDS (Kishindo, 1995) and more generally in Sub-Saharan Africa (Oppong 1995).

5.3 Sexual practices; condom use

A considerable amount of research on sexual practices is now emerging. The practice of 'dry sex' has received particular attention. Civic and Wilson (1996) consider dry sexual practice in Zimbabwe and the implications for condom use. Vaginal dryness was not found to deter the general use of condoms, however, some women were found to be reluctant to use condoms for fear of loosing the effect of drying agents. Condoms were reported to frequently break when drying agents were used. Brown et al (1993) consider the effects of drying agents on HIV infection in Zaire. The authors suggest that 'dry sex' can foster epithelial trauma for the woman and her partner, which may promote the passage of organisms that cause AIDS.

An extensive literature focuses specifically on condom use and reasons for non-use and it appears probable that attitudes, practices and usage may be changing over recent years. There is a general concern that condom use is not always generally practised even among high risk groups (condom use amongst prostitutes and couples practising 'dry sex' has been considered above). Earlier, Taylor's (1990) study of condom use in Rwanda suggested that women are often reluctant to have their partners use them. This due to a fear that the condom may remain lodged inside the vagina after intercourse and a desire to engage in potentially fertile sex. Messersmith et al (1994) indicate that educational level, number of sexual partners, and experience of an STD are positively associated with the use of condoms by Nigerian men and women.

Ogbuagu and Charles (1993) found widespread sexual networking and very little use of condoms in the Calabar district of Nigeria. More recently, Feldman et al (1997) consider condom use amongst Zambian adolescents and found that very few used condoms and fewer than half of sexually active adolescent had ever used a condom. Renne (1993b) focuses on the advertising of condoms in Nigeria. The author suggests that comic-style newspapers have an authority with young people that makes them useful in educating adolescents about HIV and AIDS.

5.4 Social impacts of HIV/AIDS

The social impacts of HIV infection have received considerable attention, both in general and in country-specific studies in Africa. The AIDS epidemic "raises a whole raft of issues" (Caldwell, 1997a). Keogh et al (1994) focus on HIV positive women in Rwanda. The women were found to prioritise food, housing and money as present needs and child-care and money in the event they developed AIDS. Preferred sources of support were identified as individual counselling and their priest. In general their partners were supportive; however, 21% had not told their partner their test result. The authors recommend that basic survival services are needed for affected families. Muyinda et al (1997) discuss the social stigma related to AIDS in Uganda. Due to social stigma, the treatment seeking behaviour of persons with HIV/AIDS was found to have changed. However, the authors note that, due to improved counselling services and home care schemes, both families and society were gradually developing more tolerant attitudes towards the condition.

5.5 Socio-demographic impacts of HIV/AIDS in Africa

A large number of publications especially in the later years of this review period are concerned with the socio-demographic impacts of AIDS in Africa. Whilst AIDS is having considerable socio-demographic impacts in much of sub-Saharan Africa, the region has the poorest demographic and epidemiological data of any area of the world (Mann and Tarantola 1996, Awusabo-Asare et al 1997). As a consequence, it is particularly hard to track with accuracy the progress of the epidemic and past debates concerning the socio-demographic impact of AIDS have been based mainly on estimates and models (Awusabo-Asare et al, 1997). The debate continues and much of the following research below was presented at a conference organised by the

International Union for the Scientific Study of Population. Prior to that, Decosas and Pedneault (1992) in a consideration of the demographic implications of AIDS noted that HIV infection is most prevalent in males of 25-35 years and women of 15-25 years because most sexual relationships are formed between older men and younger women. These findings have obvious implications for the future age structures of African populations.

A number of studies consider mortality and morbidity trends amongst people with HIV infection and AIDS symptoms. Caldwell (1997b), for example, observes that nearly everyone who is infected with HIV is doomed to die although the period of latency or grace varies. However, in contrast to the west, many people who are HIV positive in sub-Saharan Africa actually do not know that they are infected until the final symptomatic stage or die as the first symptoms develop. The author comments that although this may reduce stress for infected persons, it also reduces the possibility of intervening to reduce the level of transmission.

It has been noted that studies which attempt to model the demographic trends of AIDS are far more numerous than empirical studies of adult mortality (Bicego, 1997). This is often because of the still-current shortage of data on adult mortality for nearly all countries in sub-Saharan Africa. However, it is argued that DHS-type sibling histories are a useful, and so far largely unused or underused source of data, which can add to our present understanding of AIDS and mortality dynamics in Africa. Boerma et al (1997) discuss changing adult mortality trends in rural Tanzania with special reference to HIV/AIDS. The authors found that the HIV/AIDS epidemic has caused overall mortality rates to increase by one-third and that there is likely to be further increases in future. Furthermore, it is suggested that the AIDS epidemic has helped to delay the onset of the epidemiological transition in much of Africa. On a related note, Glynn et al (1997) review the impact of HIV on morbidity and mortality from tuberculosis in Africa. A case study of Malawi found nearly 40% of tuberculosis cases to be directly attributed to HIV. The authors note that the impact of HIV on tuberculosis is, in effect, even greater as increased cases of tuberculosis increase its transmission to both HIV-infected and non-infected sections of the population

Other studies in the literature investigate HIV and fertility and the potential for HIV to have long-term demographic impacts as a result. Both biological and behavioural factors have been considered. Caldwell (1997b) notes that it is becoming

increasingly apparent that HIV almost certainly lowers fertility through biological mechanisms, a statement supported by Ryder et al (1991) and Batter et al (1994) amongst others. In addition, the greatest single impact on fertility may be from behavioural change due to HIV infection ie. greater use of contraception and adversity to having children. Caldwell (1997b) argues that interpretations of the AIDS epidemic will have to be radically changed. It will almost certainly reduce population growth rates further than thought to date. In the past, much of the influence of AIDS on population growth has been attributed purely to increased mortality. Caldwell argues that commentators will now have to incorporate the influence of declining fertility whether this be through biological or social factors. The two factors combined are likely to lead to estimates of very low rates of population growth in many Eastern and Southern African countries. The AIDS epidemic may also have provided a misleading suggestion of voluntary fertility transition in some countries.

Indeed, Gregson et al (1997) report that fertility transitions and HIV epidemics are currently running parallel in some African populations. The authors investigate the mechanisms through which the HIV epidemic can affect birth rates and, through a case study in Zimbabwe, speculate that HIV could accelerate recent declines in birth rates. These findings are supported by Carpenter et al (1997) whose estimate the impact of HIV on fertility in a rural Ugandan population. The authors found women who were not infected by HIV to have a higher fertility than HIV infected women. The authors suggest that reduced sexual activity due to clinical symptoms associated with HIV and lower fertility due to co-existing infections, are the most likely explanations for this.

Households are also a focus of attention. Nalugoda et al (1997) investigate HIV infection in rural households in Uganda where HIV prevalence was found to be high. The authors found 31.3% of households to have at least one HIV-infected adult, 27% of household heads to be HIV positive and 3.6% of households to have experienced the death of an HIV-positive adult. It is concluded that the associated mortality imposes a substantial economic and social burden on families. Recently, much more attention has been devoted to the subject of orphans (Caldwell, 1997a, 1997b). Urassa et al (1997) investigate AIDS, orphanhood and fostering in Tanzania. The authors found 7.6% of children under 15 and 8.9% of children under 18 to have lost one or both parents. Family responsibility was found to be high and virtually all orphans and foster children were looked after by relatives. The research found no evidence to

suggest that orphans were disadvantaged and it is thought that, at present, the extended family appears to be able to absorb increased numbers of orphans. Conversely, Foster et al (1997) in considering factors leading to the establishment of child-headed households in Zimbabwe, found Such households to result from the overburdening of relatives. Relatives did, however, visit regularly and provide as much support as was possible. The authors call for community groups to help extended families cope with the burden of orphans.

5.6 Governments, health care systems and HIV/AIDS

Dealing with the outcomes of AIDS and attempting to prevent its spread has many obvious and some less evident implications for the health care systems of African countries. Over the recent years, it has presented a considerable challenge to many. Cabral (1993) noted that the cost of coping with AIDS might become unaffordable for many countries with health budgets that are already strained. The paper suggests that rural hospitals may not be able to deliver even minimum standards of service whist urban hospitals may be flooded with patients. Other papers similarly report the enormity of challenges and the responses of governments and health care systems to the problem of AIDS. Caldwell et al (1992) note that there has been an under-reaction to AIDS amongst many governments in Sub-Saharan Africa. This, the authors suggest, is due to a lack of confidence in success, a reluctance to give leadership in personal matters and due to a more fundamental under-reaction that has come from communities themselves. Government under-reaction is also thought to have weakened immediate community responses and reduced the pressure for international donor funding.

The growing literature on AIDS/HIV and health care systems includes many country specific case studies. An HIV/AIDS counselling program in Ghana is described by Ego and Moran (1993). The program was found to be a general success but difficulties included a lack of time and staff and a lack of resources. In the case of South Africa, Zwi and Bachmayer (1990) argue the need for greater involvement of homosexual, worker, community and public health personnel in developing policies of control over HIV. This, it is thought, would provide a more socially sensitive approach and improve results. Green (1992a) considers such sensitive approaches, particularly the role of traditional healers. It is argued that, because of the trust placed in traditional

practitioners by many societies, they need to be central to any scheme designed to lower the incidence of STDs. Green et al (1995) investigate the success of training traditional healers in South Africa in AIDS/HIV prevention. The healers were found to have used their training well by informing their patients while training 'second generation' healers to a similar standard. Religious leaders have also taken a role in educating society on HIV and AIDS. Orubuloye et al (1993a) suggest that Christian and Muslim religious leaders have long preached against premarital and extramarital sexual relationships. However, the authors feel that the AIDS epidemic has provided an additional spur for such teaching. Most religious leaders were found to preach that the AIDS epidemic is a divine punishment for sexual immorality. It is nevertheless generally thought that religious leaders can work alongside governments in the fight against AIDS.

Finally, there is a clear need for research which examines the immediate and future pressures on health care systems resulting from high levels of HIV/AIDS and research which investigates approaches which would benefit patients.

5.7 The future

There remains widespread speculation as to what may happen with regard to HIV/AIDS in Africa. Indeed, much of the research outlined above includes speculative comment on what the future may hold. Caldwell (1997b) summarises some general opinions and emphasises that predicting the future course of the African epidemic is fraught with difficulties. The paper presents an informed estimate that the main AIDS belt will expand no further although the epidemic may intensify within existing geographical boundaries. The most pessimistic scenario is that the peak of the African epidemic is decades away. If true, then the worst is still to come. Certainly, Caldwell (1997a) suggests that the epidemic will only begin to pass when there is a significant change in sexual behaviour. To date, national efforts have been insufficient to secure this change. An affordable and effective vaccine may or may not be developed and made readily available ands currently appears very unlikely. In the absence of such a prophylactic, changing people's behaviour seems the only way forward. HIV/AIDS remains the most prominent health issue in Africa and a priority matter. There are many potential future avenues of enquire.

6. INFECTIOUS AND CHRONIC DISEASE

6.1 Mortality

UNICEF's *State of the world's children* reports are, amongst others, major sources of accessible general and case-study information on developments in child health and mortality amongst children in the developing world. A number of good texts provide overviews of disease and mortality in sub-Saharan Africa (see, for example, Feachem and Jamison, 1991), as well as the annual reports of the WHO and regional reports and papers. Nevertheless, it is still suggested that little is known about detailed mortality, and particularly its spatial incidence, in many third world countries and African ones in particular (Iyun, 1993). Indeed, she notes that differential levels of mortality are reported in a number of different regions and countries of Africa, with higher childhood mortality rates being recorded in West and Central Africa. She further calls on geographers to use clinic-based data and to conduct interdisciplinary research on mortality in Africa.

In this respect, Asuzu et al (1996) describe the benefits of verbal autopsy, or retrospective inquiry into symptoms before death. It is considered that this enables the collection of more accurate information which can help health authorities prioritise problems and solutions. Egunjobi (1993) suggests that 36 notifiable diseases account for nearly all reported deaths in Nigeria. Measles, malaria, pneumonia, tetanus, dysentery and tuberculosis accounting for 85% of these deaths. Most of the literature in the following section relates to infectious disease. However, Iyun (1995) suggests that although infectious disease plays a prominent role in morbidity trends, there is now some evidence of a significant contribution of non-infectious disease, particularly heart disease.

6.2 Malaria

Malaria remains a major health problem in many African countries and its spatial distribution varies considerably throughout the continent and also within individual countries. There is also a very large literature on the disease, its spread, control and attitudes to it. Nevill (1990) notes that it has been mathematically modelled, vertically attacked and continuously appraised still approximately 2.6 billion people are at risk world-wide and over 1 million people have died. The paper notes

that the social and economic consequences of malaria have not been adequately documented. Nevertheless, the literature is developed in respect to awareness and prevention. Wang'ombe and Mwabu (1993) have studied malaria control in Kenya and identify a high level of awareness of malaria as a health problem. However, largely for methodological reasons, the authors could not trace the effects upon income or agricultural production. Nur (1993) examines the economic impact of malaria in Sudan and quantifies labour losses within families. Asenso-Okyere (1994) considers malaria control in Ghana and comments that the disease accounts for 9% of the countries deaths, 30% of outpatients visits and 9% of hospital admissions. The author suggests that a knowledge of people's perceptions of the disease and of its socio-economic implications is of value when designing and implementing control programmes. Malaria is a disease with wide spatial variations and it can, like many other parasitic diseases, be unintentionally exacerbated by development strategies, extension of human settlements into new environments and by water resource development (see, for example, Hunter et al, 1993).

In two Tanzanian cities, Dar es Salaam and Tanga, Stephens et al (1995) found high levels of awareness of mosquitoes in a community survey. Almost all respondents claimed to use some form of domestic mosquito control product for their personal protection (indeed, often consuming a significant portion of household income). However, knowledge of the different types and risks of mosquitoes and of the suitable controls over real breeding sites was not particularly accurate. Neither were the residents' priorities for public control measures the same as those of the urban malaria control project, but evidence shows that mutual co-operation is essential.

Mwenesi et al (1995) consider child malaria treatment practices among mothers in Kenya. The authors found that malaria was perceived as a mild everyday illness and that the link between malaria and mosquitoes was not recognised. Anti-malarial drugs were often found to be withdrawn or not given to children suffering from malaria due to a misunderstanding of certain symptoms. However, ill children were often treated promptly by the purchase of over-the-counter drugs. Prophylaxis by avoidance of being bitten is a growing area of interest in the absence of effective drug treatments or the development of a vaccine. In this respect, Thompson et al (1996) consider geographical aspects of bednet use and malaria transmission in The Gambia, further discussed by Aikins et al (1998) as discussed below. Thompson et al note a lower

prevalence of malaria where the levels of bednet use were higher and suggest that malaria prevalence cannot be independently associated with factors such as area, ethnic group, habitat or distance from a river. The authors suggest that a program of bednet impregnation with insecticide is most likely to be effective in villages near to rivers and alluvial soils. Makemba et al (1995) consider a project to promote insecticide impregnated mosquito nets in Tanzania. The project involved the creation of bed net committees in 13 villages. Although the project largely proved a success, problems were identified in households being unable to afford nets for all members and the potential sustainability of the system was considered uncertain.

Most recently, malaria control programmes have become the focus of economic evaluation. This aspect of an health-economic approach relatively novel but is helping to gain a greater understanding of the cost-effectiveness of key interventions. Aikins et al (1998) evaluate the cost, consequences and cost-effectiveness of the Gambian National Bednet Programme. The authors calculated the cost-effectiveness ratio per death avoided to be $471 and mosquito nets appeared as one of the most efficient methods of reducing child deaths. Economic evaluation is increasingly being recognised as a valuable aid to decision making in most western health care systems. Indeed, the three main methods of economic evaluation, cost-effectiveness, cost-utility, and cost-benefit analysis, are becoming more widely applied in a greater variety of settings and scenarios. Certainly, in future, they will increasingly be applied in African health care systems where resources are desperately scarce. They are also likely to be increasingly applied in cross-national, within-country-regional and between-programme comparisons.

6.3 Other diseases

A wide range of other infectious and chronic diseases in Africa have been considered in the literature. As Iyun (1995) notes, a number of chronic diseases associated with development and the later stages of epidemiological transition are now becoming evident. In particular, heart disease is increasing in prevalence in much of Africa. Ekra and Bertrand (1992) consider rheumatic heart disease in Africa and call for implementation of inexpensive methods of prevention and assistance from the international community. Gyapong et al (1996) consider attitudes towards filariasis in Northern Ghana and suggest that the disease was mainly attributed to supernatural

factors and, in general, the community was caring towards people with the disease. The authors offer a more general conclusion stating that, because of the implications for treatment, the cultural perceptions of a disease cannot be over emphasised.

Super et al (1994) consider child care and infectious respiratory disease in Kenya and comment that an increase in the risk of infection in Kenyan children can be associated with increased contact between children in day care and in work groups for cash cropping. The authors conclude that modern features of household economies influence patterns of illness in young children. Mwaniki et al (1994) investigate endemic fluorosis in Kenya and identify a low level of knowledge amongst communities regarding prevention. Barrett and Browne (1992) investigate an outbreak of the deficiency disease beri-beri in the Gambia in 1988 and note that the outbreak had a specific age and gender bias. However, the authors indicate that, at the time, medical treatment took precedence over socio-economic investigations and, as a result, it is difficult to assess why certain groups were affected more and others less. The authors conclude that socio-economic studies have to be combined with medical investigations if future outbreaks are to be avoided.

Human factors have increasingly been identified in infectious disease transmission. Watts et al (1998), for example, consider aspects of human behaviour and schistosomiasis transmission in Morocco. They argue that a conventional water contact study, involving observation of water contact sites, is inappropriate considering the large number of sites, the small number of people and the wide variety of activities that they undertake. Instead they applied three related concepts to study behaviour of households, the family, time geography and the gendered use of space. The study highlighted a complexity of water use and water contact which needs to be considered in future disease control strategies.

In terms of defeating an infective condition, dracunculiasis (guinea worm disease) has received considerable attention. Among the most recent literature, Watts (1998a) reports that a global eradication effort took place during the 1980s, and, although the target date of 1995 has now passed, the program has achieved a considerable reduction in the number of recorded cases world-wide. However, the author highlights that over 99% of cases are now found in Africa alone whilst dracunculiasis has almost been eradicated from India and Yemen. The paper goes on to discuss African eradication policies in the context of the limited resources available to

African primary health care programs. In a country specific historical study, Watts (1998b) discusses the end of dracunculiasis in Egypt. Egypt may have been free from the disease for a considerable period of time but the exact date of eradication remains a topic of dispute. The author discusses the Egyptian example in the context of the global eradication campaign and the preparation of certificates of eradication for individual countries.

Given the range, relative severity and impact of infectious and chronic disease on the African population, social scientific and geographical perspectives are likely to be increasingly combined with medical investigations in future research on a variety of infectious and chronic diseases (Phillips and Verhasselt, 1994; Iyun et al, 1995). The combination of spatial research with epidemiological approaches and geographic techniques such as GIS are likely to produce very powerful explanations and policy related information to deal with future infectious disease incidence and prevalence (Collins, 1998)

7. MATERNAL AND CHILD HEALTH/REPRODUCTIVE HEALTH

7.1 Diarrhoeal diseases

Diarrhoeal diseases remain a principal cause of ill-health and mortality amongst children (and many adults) in Africa and are a major continuing health problem in many countries in the continent. The ecology and socio-spatial aspects of various diarrhoeal diseases are discussed by Collins (1998). Key issues underlying the incidence and treatment of such diseases are identified in various sources in the literature. The causation of diarrhoeal diseases is complex and involves the interaction between natural environment, social behaviour and the disease-causing organisms. They may be represented in a systems approach as in Figure 7.1.

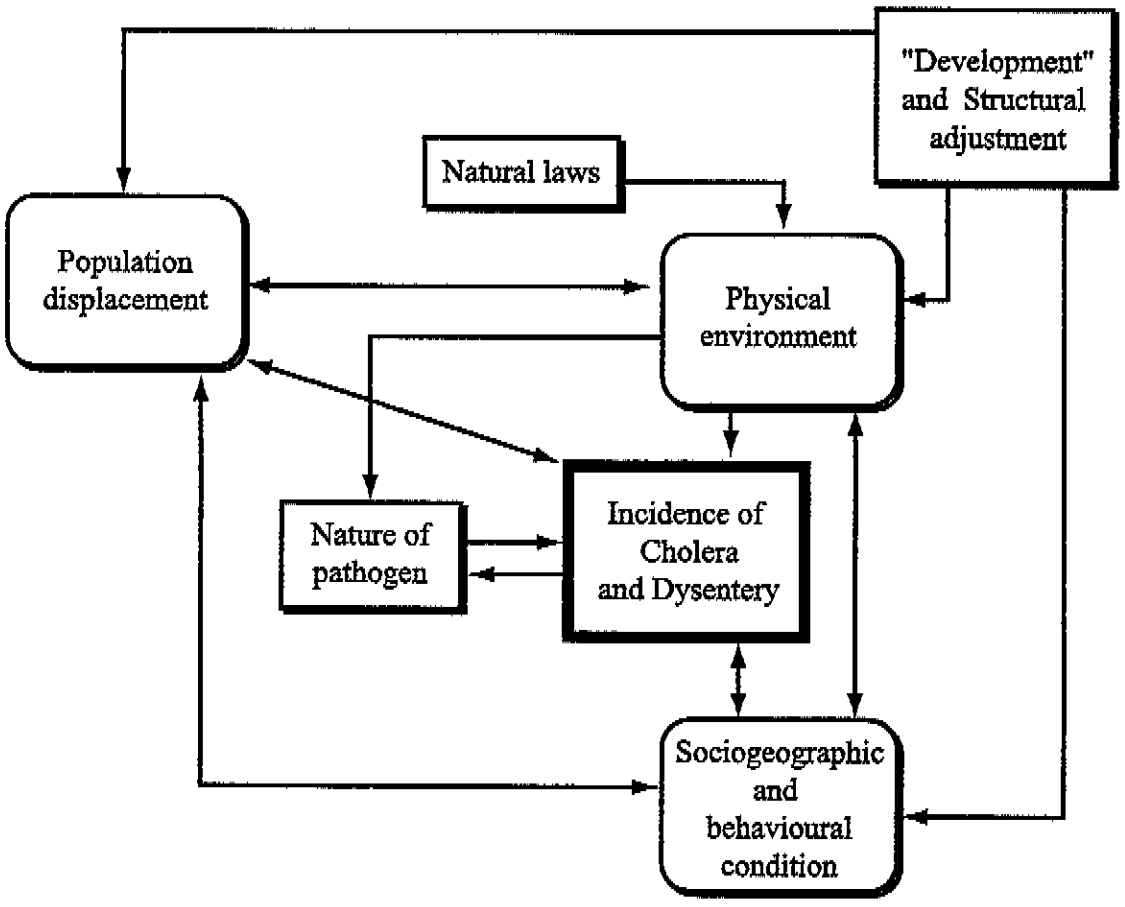

Figure 7.1 A systems approach to analysis of incidence of cholera and dysentery
Source: Collins (1998, p. 57)

In Figure 7.1, the curved corner boxes represent the elements of a sub-system that are hypothesised as being proximate influences on the incidence of cholera and dysentery (Collins, 1998). Clearly, many of these variables require field investigation

and a detailed understanding of their inter-relationships. They may well be positively or adversely affected by the process of 'development' and by programmes such as structural adjustment. Understanding of the nature of the pathogen may change and improve as biomedical and genetic theories develop. However, all the understanding needs to be set in the context of the dynamics of chaos and complexity in the physical world, represented by 'natural laws' (Collins, 1998).

In terms of treatment of diarrhoeal diseases, Oral Rehydration Therapy (ORT) has become recognised as a standard approach to reducing infant diarrhoeal disease mortality in the developing world (Kenya et al 1990). However, there is a recognition of the need to move from a policy that solely emphasises the treatment of ORT. This could be to an approach that attempts to break the cycle of susceptibility and infection that ensures the persistence of diarrhoeal and other similar diseases in disease-prone environments and vulnerable groups of people. High density slum areas, underpinned by poverty, concentrations of displaced people, poor sanitary conditions and a lack of potable water and health knowledge are multifaceted factors underlying the disease persistence. Many of these factors have very strong socio-spatial features and a geographic understanding of the issues involved is often a key component to policies.

However, even where a treatment (rather than cures) such as ORT is applied, it is not always used as often or as effectively as it could be. Its use in treating bouts of diarrhoea in the under-five's treated with oral rehydration did increase from 28% in 1988 to 49% in 1993 in sub-Saharan Africa although this increase is not as large as that seen in Latin America (UNICEF 1995). Neither is professional knowledge and behaviour always as good as it might be: for example, Igun (1994) notes that few pharmacists in Borno State, Nigeria prescribe ORT. This might partly be profit driven and the author suggests that incentives should be introduced for those who prescribe and sanctions for those who do not. Olango and Abound (1990) found that only 20% of Ethiopian mothers gave their child ORT or Oral Rehydration Salts (ORS). Langsten and Hill (1995) consider the use of ORS in Egypt and state that although there have been substantial increases in the knowledge and use of ORS during the 1980s, problems remain. In particular, prescription of ORS is far from universal, with government clinics more likely than private pharmacies to prescribe ORS. Langsten and Hill recommend the reinstating of the government education campaign and that private physicians must also be better educated. Kenya et al (1990) described an ORT

intervention campaign in Western Kenya and noted that a commercial approach, with the use of mass communication techniques, could further sales of ORS by increasing demand. This, the authors feel, should be combined with the free distribution of ORS through primary care sources.

It is important that diarrhoea is treated at an early a stage as possible and that parents are aware of its symptoms and the appropriate actions to take. The literature does highlight many potential problems with the recognition and treatment of diarrhoela disease. Cogswell et al (1991) found that only 36% of Nigerian mothers recognised a recent episode of diarrhoea as defined by clinical criteria. It is recommended that diarrheal control programs should explore factors affecting its recognition to assure that treatment can be applied as quickly as possible. Csete (1993) found that factors such as age of the child at the time of illness, previous death of a child in the household, and women's control on household expenditure to have an influence on health seeking behaviour of Rwandan mothers. Csete also found that women who live at the highest altitudes tended to respond less to their child's diarrhoea due to the difficulty of the journey to the nearest health centre.

Improper care and treatment has also been identified as a problem. Whilst conditions may be better today, Olango and Abound (1990) found that over 50% of Ethiopian mothers restricted the child's fluid intake and 70% stopped or decreased food intake. The authors considered that only about a quarter of mothers had sufficient knowledge and highlight cultural beliefs such as that many thought that diarrhoea was caused by teething and only 7.3% took a child to a health institution. The authors found the outcome of diarrhoea to be positively associated with having gained modern treatment and to be negatively associated with taking the advice of a traditional healer.

7.2 Fertility

Fertility and has, perhaps, been one of the largest single health-related topics to feature in the African and international literature. In much of the African continent, human fertility remain an important issue, not only because fertility rates are often still high and fertility influences future population dynamics but also because attitudes towards fertility are important cultural issues affecting societies. This review will not cover the now extensive publications stemming from the Demographic and Health Surveys. Readers may be referred to, for example, the DHS *Newsletter* and

comparative studies from the DHS which focus on general and specific topics such as unmet need, childbearing attitudes and intentions, men's fertility and contraceptive knowledge, use and sources (see, for example, Curtis and Neitzel 1996). Many of the DHS studies are country specific and provide detailed and valuable information on spatial differences in family planning and reproductive health.

A wide range of studies has been published on African countries in recent years. For example, Feldman-Savelsberg (1994) illustrates cultural attitudes which have, in many cases, been evident for hundreds of years and describes the way the people of Cameroon are preoccupied with threats to reproductive health. The social and economic development of a country may effect attitudes towards fertility. Hollos and Larsen (1992) consider fertility in Southern Nigeria in this context and confirm the frequent finding that education has an important effect on fertility. The authors suggest that if women are educated and therefore more likely to be in waged labour, they typically consider children as an expense and not as part of the household workforce. Pick and Obermeyer (1996) consider fertility in the context of urbanisation in South Africa and find fertility to be related to age, income, education and urbanisation. Women who had been in urban areas for longer than 10 years were found to have a total fertility rate (TFR) of 2.5, while those who had lived in urban areas for fewer than 10 years had a TFR of 5.8. Other recent studies have dealt with problems related to conception and infertility, sometimes in the context of reduced fertility subsequent to STDs and AIDS. Sundby et al (1998) examine infertility and health care seeking behaviour in the Gambia. The authors found a primary infertility rate of 3% and a secondary infertility rate of 6%. Only half of the infertile couples sought formal health care and, as treatment possibilities are often limited in availability and success, many couples looked for alternative forms of treatment.

Family planning and its geographical variations are also quite widely discussed in the literature on Africa. Taha (1993) considers family planning practice in Central Sudan and found knowledge of a family planning method of 51% amongst community women. The major predictors of use of family planning were socio-economic status, knowledge of the service and maternal age. In general, women were found to favour spacing children rather than limiting the number of their children. The study, as many others, emphasises the need for more accessible and better advertised family planning services. There is evidence that, for many reasons, average family size in many African

countries is reducing. However, in many cases, traditional cultural attitudes remain entrenched. In this respect, Adongo et al (1997) discuss cultural factors constraining the introduction of family planning in Northern Ghana. The authors note that women who practice contraception risk social ostracism and even family conflict. Few women viewed decisions regarding contraceptives as being theirs to make. Furthermore, children are valued greatly both economically and culturally. Because of the high mortality rate, contraception imposes a high risk in that a woman may have no surviving children during her reproductive life. The authors call for health planning programmes that provide better support and highlight the need to build a closer relationship with community values.

The social, legal health and ethical issues surrounding abortion, and its effects and consequences have also been the subject of considerable research. Machungo et al (1997) in perhaps the first comparative study of illegal and legal abortion in Africa, considers post-abortion health in women who had undergone illegal and legal abortions in Maputo. The authors found that women who had undergone illegal abortions were generally younger and had less knowledge of contraceptives than women who had undergone legal abortions. The most frequent illegal abortionist was a health worker.

7.3 Mortality

Research into the factors that influence infant, child and maternal mortality rates has an extensive history and literature. The literature on Africa is likewise extensive and considers a wide range of aspects, including social and spatial variations in mortality and the factors underpinning it. With regard to vulnerability, Defo (1996) has identified the most vulnerable groups of children in Cameroon as rural residents, residents of the East, North and South, children whose mothers are uneducated, are traditionalists, are unmarried and had no maternal schooling. Kalipeni (1993) in Malawi also found the district of residence to be strongly associated with infant mortality. Interestingly, Adetunji (1995) found higher rates of infant mortality in Nigeria among the offspring of more educated mothers, contrary to the findings of many other studies. This, the author feels, may be partly explained by harsh economic conditions preventing mothers make full use of their education. Mturi and Curtis (1995) confirm findings of many other studies that short birth intervals, teenage pregnancies and previous child deaths are associated with increased risk of infant and child death in

Tanzania. Root (1997) considers population density and child mortality and suggests that population density may provide an explanation for spatial variation in child mortality in Zimbabwe.

Lerer et al (1995) suggest that traditional measures of mortality give only limited insight into the role of carers and health care providers; if understood better these persons may improve care and reduce mortality rates. The authors illustrate this and consider infant deaths in Cape Town, South Africa, noting that, prior to death, infants with respiratory disease were more likely to have been taken to hospital than infants which died of diarrhoea.

Weaver et al (1996) consider service quality improvement programs in the Central African Republic and the willingness of the population to pay for improvements which may decrease child mortality rates. The authors found willingness to pay differed among types of services and different types of drugs and willingness to pay was, perhaps surprisingly, greater in rural than in urban areas. The authors conclude that the national improvement program has good prospects for financing as the majority of the population is willing to pay the estimated costs and more than half of the population is prepared to pay substantially more costs.

Despite improvements in health services, high rates of maternal mortality in both mothers and children remains a problem in much of Africa. Paul (1993) comments that, at 1 in 21, African women of reproductive age have the highest death rate from maternal causes of any women in the world. The highest maternal mortality rates (MMR) in Africa are in the Sub-Saharan region, which is sadly consistent with data reported annually by UNICEF in *The State of the World's Children.* Paul notes that MMR is strongly influenced by population size, crude birth rate, crude dearth rate, calorie supply, access to safe water and percentage of urban population. Cultural factors such as female circumcision and infibulation are also associated with a high MMR. An international comparative study of visions and discussions on genital mutilation of girls considers the extent of FGM in Africa and provides a useful overview of official and other attitudes to the phenomenon, and especially to regulations with respect to FGM (Smith, 1995). This study is set in the context of the UN Convention on the Rights of the Child which came into effect in 1990.

Mbaruku and Bergstom (1995) consider maternal mortality in children in Tanzania and suggest that low cost intervention programs aimed at issues of

avoidabilty and local solutions could reduce mortality rates. In much of the African continent, Traditional Birth Attendants (TBAs) provide perinatal and obstetric assistance for the majority of births at home. Western-trained midwives are often concentrated in or near higher level care facilities. Eades et al (1993) consider the role of TBAs and their effect on infant mortality at birth in Ghana. The authors found that trained TBAs helped to reduce mortality rates. However, the authors note that many TBAs had to perform high risk deliveries because their patients would not attend higher level care. The reasons for this were found to be financial limitations, a lack of transportation and a fear of disrespectful treatment. Jaffre and Prual (1994) further explore notions such as 'disrespectful treatment'. They note high mortality rates in Niamey, the capital of Niger, and highlight the many complaints involving midwives and patients which centre around delivery techniques and cultural requirements. The authors note that this often leads to open confrontation and suggest that midwives must learn how to implement medical techniques within specific cultural environments. With respect to higher level care, in the case of childbirth in rural Nigeria, Nwakoby (1992) also confirm other geographical studies in which distance from a health centre can heavily influence its use.

A relatively new research area with respect to child health and mortality in Africa relates to the effects of violence. The potential effects of violence at the household or community level on health and health care have been recognised for some time (Phillips and Verhasselt, 1994). Due to continuing conflicts and civil unrest in many African countries, children undoubtedly face violence in a variety of situations and settings. Studies are relatively few although the impacts of war on refugees and on physical and mental health of populations is of increasing importance. Ramphele (1997) discusses the violence of adults encountered by children in a South African township and their reactions to it. Children faced violence at home, at school and in the street. Nevertheless, children were often found to have devised coping strategies, such as the negotiation of relationships with adults and peers and to have positive life aspirations.

7.4 Child nutrition

A wide range of subjects are considered under the general category of child nutrition. A significant proportion of this literature is concerned with practices related to the breastfeeding and weaning of young babies. Cosminsky et al (1993) investigate

child feeding practices in rural Zimbabwe and comment that their findings run counter to those of The World Bank Report as mothers were found in their study to introduce solid food to their children too early and not too late.

Attitudes towards breast-feeding and weaning have been found to be heavily influenced by an interplay of cultural beliefs (Harrison et al ,1993; Cosminsky et al, 1993). For example, Harrison et al (1993) found the timing of weaning in Egypt to be influenced by perceptions of summertime as a time of increased risk of diarrohoea and by fasting during Ramadam. Guptill et al (1993) report on a project that used education techniques to introduce a home-prepared weaning food in Nigeria. The project was found to be a success and mothers were encouraged to adopt the food.

There are many other political, social and economic factors which effect child malnutrition. Howard (1994) illustrates how, in the case of the Chagga people of Tanzania, fluctuations in the world economy, ecological stresses, demographic pressures and class formation influences the ability of parents to provide for their children. Onyango et al (1994) consider the effect of male and female household headship on child nutrition and finds the children of female headed households to consume a greater variety of foods and have a lower prevalence of low weight. However, the authors note that, in statistical analysis, headship did not relate significantly to nutritional intake. On a different note, Nathan et al (1996) associate child malnutrition in Kenya to community lifestyle. The authors suggest that a pastoral nomadic diet offered children greater nutrition in times of drought than a sedentary community diet.

8. MEDICINES, DRUGS AND DRUG USE

Throughout Africa, a number of projects have aimed at improving the distribution and awareness of drugs and the literature includes description and evaluation of many of them. The supply and use of essential drugs is examined by Foster (1991) who noted that Africa has specific geographical and spatial constraints to improving supply which are far more severe than those in most other continents. The author clearly does not regard the private sector as providing a complete solution and considers that local production of drugs must be carefully considered. Foster recognises that measures to improve the selection, storage, distribution, prescription and use of drugs have resulted in improvements in many countries. However, she concludes that greater political support is required in the future.

Specific country studies have reviewed the Essential Drugs Programme (EDP), for example in Nigeria, where Adikwu and Osondu (1991) found 100% of health professionals questioned to be aware of the Essential Drugs List (EDL). Mabadeje et al (1995) analyse the impacts of the EDP, also in Nigeria. By contrast, the authors found 74.3% of doctors interviewed to be aware of the EDP but only 53.2% were aware of the EDL. However, they found that 96% considered that the list should be repealed; medical doctors prescribed drugs and pharmacists stocked drugs largely without regard to the list; the EDL was not included in universities curricula and the drug supply by manufacturers was considered inadequate. Elsewhere, Mnyika and Killewo (1991) consider the use of drugs and the EDP in Tanzania and note that health workers with long service were more prone to over-diagnose malaria and prescribe drugs not indicated than those more recently qualified. Improvements of drug information at all levels of health care are suggested. Jallow (1993) comments that The Gambia has improved the efficiency of its pharmaceutical services by adopting the EDP.

The marketing of drugs has received specific attention. Chirac et al (1993) discuss drug marketing in French-speaking African countries and comment that many drug advertisements were of poor quality. The authors found indications to be absent in 3.5% of cases and exaggerated in 29.8%; side effects were not mentioned in 26.2% and were incomplete in a further 14.2%. Indeed, it is suggested that pharmaceutical companies do not always follow an ethical code of conduct and that they are free to exploit the lack of advertising controls in developing countries. It is not only with

pharmaceutical companies that problems have been found. For example, Wolf-Gould et al (1991) discussed misinformation about medicines in rural Ghana. Whilst doctors and medical assistants were found to have an adequate knowledge of the correct use of drugs, chemists were found to be poorly informed. The authors conclude that chemists have contributed to drug misuse by providing misinformation and by selling drugs according to demand. Education programs for the public and chemists are recommended. However, expenditure on medicines is often an area of concern. Pezzino and Haile (1991) considered Ethiopia's drug budget to be reasonable but highlight problems with the procurement and utilisation of supplies. The authors suggested ways of rationalizing drug management. Access to and supply of contraceptive modalities, particularly oral contraceptives, is also an area of quite extensive research, some of which is relevant to this section of the review. Bamgboye and Ladipo (1992), for example, comment that Nigeria has a declining mortality rate but fertility remains high and, as a result, the promotion of contraception remains important. The authors suggest that people have been made aware of oral contraception but its usage has been limited by its high costs.

Professional rivalry in the dispensing of drugs has become a recent focus of attention and it might be expected to increase as competition and the private sector become increasing factors in the distribution of medicines. Gilbert (1998), for example, considers the poor relationship between pharmacists and dispensing doctors in South Africa. The author notes intense competition between the two groups which has spilled over into public debate and involves attempts to protect professional activity. Many pharmacists have commented that doctors were their main problem, whilst doctors fiercely argued their right to dispense medicines. Gilbert uses the South African example to discuss 'business' verses 'professional' task boundaries in medicine more generally.

The misuse, abuse and control of medicines and pharmaceutical products are major concerns; the misuse of drugs and substance abuse form the subject of the following Section 9. Alubo (1994) examines the 1990 paracetamol poisoning in Nigeria which resulted in the death of over one-hundred children. The paper contends that the availability of drugs is as important as the dangers of drugs. To reduce 'drug swindling', the author calls for both greater regulation and consumer initiatives. Ndosi and Waziri (1997) consider parasuicide in Tanzania, reporting the average age of

parasuicide to be 23.7 and the ratio of females to males to be 2.2. Most persons attempting suicide were unemployed, nearly one-fifth had a history of mental illness in their family while 12% had individual or a family history of suicide attempts.

9. DRUGS AND SUBSTANCE ABUSE

This literature concerns the use and abuse of a range of intoxicants, varying from tobacco to cocaine and varying from the legal and widely accepted to the illegal and not tolerated. Obot (1990) noted that substance abuse has become an increasing problem in Africa in recent years. In many African countries, as in much of the world, tobacco smoking is a major cause of ill-health. Caring for and treating the sufferers of smoking-related diseases is a major user of health resources and finance. For many African countries with already inadequate health budgets and limited resources, smoking presents an additional, arguably unnecessary but intractable problem. However, attempts to measure the impact of the tobacco business on health, society and the environment are in the early stages (Yach 1996). The author calls for control strategies to prevent a major epidemic of smoking-related disease in Africa. Research by Amonoo and Pappoe (1992) highlights the prevalence of smoking amongst school children in Ghana. The authors found that 31.3% of secondary school students had smoked previously and that 10.3% smoke cigarettes regularly. It was also found that children from a higher socio-economic background were more likely to smoke. Amonoo and Pappoe suggest that most students appear to know that smoking can damage their health but advertising appears to be a major factor explaining why students begin to smoke. The authors call for legislation to prevent the sale of tobacco to young people and to prohibit smoking in public places. They feel that, as Ghana develops, smoking could become an ever-increasing cost in lives and financial cost to the government. It is suggested that developing Third World countries should learn the lessons from more industrialised countries. Furthermore, Caldwell (1997b) argues that smoking in sub-Saharan Africa desperately needs not only greater introspection but also adequate social research.

Gender differences in smoking have been noted frequently in international studies. In an African context, Kaplan et al (1990) discuss gender differences in tobacco use in Kenya. They found that among older generations there was no gender difference in the prevalence of smoking. By contrast, for younger generations, men were much more likely to smoke than women. Many younger women commented that they did not smoke because it was not considered socially acceptable. The authors

suggest that this social prohibition was part of a more general restriction on women's behaviour resulting from men's greater social power.

The prevalence of marijuana or cannabis use is increasingly becoming of interest to researchers and its use among secondary school children in Zimbabwe is examined by Eide and Acuda (1997). The authors used principal components analysis and regression analysis to investigate the relationship between culture and cannabis use. The research highlighted a global or western cultural orientation to be positively associated with its increasing use. Local, Zimbabwean cultural orientation was found not to be associated with the use of cannabis. This study suggests that global music, film and popular fashion are influencing the drug taking behaviours of young Africans. Marajuana use in Malawi is considered by Carr et al (1994). From a survey of admissions into a mental hospital, the authors suggest that "a typical marajuana abusing patient is 27, male, a subsistence farmer and takes the drug because it is the cheapest form of intoxication". The user reports seeing things clearly, but displays general apathy and, compared to other patients is more likely to originate from a chamba growing area, is less likely to have been raised by his natural parents and has had more schooling (Carr et al 1994, p. 401).

The increasing abuse of harder drugs such as heroin and cocaine in Nigeria is reported by Obot (1990). It is suggested that drug trafficking by Nigerians experienced unprecedented increases during the previous ten years and this contributed to an observed shift in drug abuse from cannabis and alcohol to cocaine and heroin. The author suggested that governments in Africa should share information and treat with top priority the formulation and implementation of broadly-based drug policies. Obot (1992) builds on the earlier research and considers the control of drug abuse and drug trafficking in Nigeria. The author emphasises a consistent feature of drug control in Nigeria as being the reduction of supply through harsh if inconsistent punishments. Obot suggests that other initiatives aimed at demand reduction, such as education and rehabilitation, have been neglected due to international pressures and military regimes with a priority for law and order. The paper calls for a comprehensive and clearly-defined policy aimed both at controlling supply and reducing demand.

To summarise, whilst there are relatively few recent detailed studies on drugs and substance abuse in Africa, the research area and topic requires systematic research because of the social, health and economic aspects of drug and substance abuse. There

is an obvious need for research into many important issues. The control of drug use and substance abuse is a policy concern throughout the world. The development of practical, enforceable policies with respect to tobacco use and smoking is also an important issue. As African counties develop and to some extent become more westernised, problems associated with drugs will inevitably intensify. Research should play a part in addressing problems and in formulating solutions.

10. EDUCATION AND TRAINING

In almost all societies, Kane and Ruzicka (1996) note that parental education can be associated with progress in demographic transition. The authors note that family size preferences and the use of effective contraception can be associated with the education level of married couples. Furthermore, and as outlined above, parental education can be closely associated with chances of child survival (Gille, 1987; LeVine, 1994; Defo, 1996).

A number of research papers on health-related training in Africa are reported in recent literature. Ofori-Adjei and Arhinful (1996), for example, consider the training of medical assistants on the clinical management of malaria in Ghana and found initial gains in knowledge to have deteriorated within a year. Over-dosing and under-dosing were both found to occur. Blair (1994) reports on a training programme in Malawi which aimed to train potential 'orthopaedic clinical officers'. It was thought that these officers could perform everyday procedures associated with musculoskeletal disorders such as setting bones, performing minor surgical operations and dispensing drugs and that this would take the pressure off orthopaedic surgeons. The programme was reported to be a success with twenty-seven out of the thirty trainees graduating and subsequently caring for an estimated 150 000 patients a year. Ndeki et al (1995) consider a distance learning project in Tanzania, which enables health workers to continue education without taking them away from their everyday duties. The authors found face-to-face contact between students and tutors to be particularly important to the programme.

Public health education is also of growing interest in the literature. Tayeh et al (1996) describe a public health education intervention in Ghana designed to promote the use of cloth filters for drinking water. These filters were designed to reduce dracunculiasis prevalence. The authors found that education was successful in persuading 56% of households to buy filters. The intervention had measurable impact on dracunculiasis prevalence. Bjonheden and Sithole (1994) describe a preventative dental care programme in Zimbabwe aimed at schoolchildren and consider it essential to base similar programmes within established administrative structures.

11. MENTAL HEALTH

The literature on mental health and mental illness considers a broad range of topics including different definitions and conceptualisations of mental health and ill - health. In this topic, more perhaps than many others, cultural perceptions come to the fore as to what constitutes mental ill-health and the appropriate ways for dealing with its manifestation. In terms of formal provision for mental health care, it is widely accepted that, at present, psychiatric services are in great need of improvement throughout most of the African continent. The role, place and appropriateness of traditional modes of medical practice in the context of mental health also form an important area of research and discussion. Harpham (1994) provides a very good overview of the general issues involved in mental health sector in urban areas in developing countries in general, many of which are very pertinent for Africa.

It is increasingly recognised that psychotherapeutic attention can enhance the quality of many forms of patient care. In the case of Nigeria, for example, Ezeilo (1990) assesses the need for the full integration of psychological services into the health care delivery system at the primary, secondary and tertiary levels, and notes that this integration has already been achieved in many developed countries. The author argues that such a change in Nigeria would place considerable demands on manpower and that graduate and postgraduate training will therefore have to be improved. Emeke and Yoloye (1993) estimate there to be almost 2 million mentally disadvantaged people in Nigeria and suggests that their low productivity and high reliance will have a negative effect on Nigeria's development. The authors argue that the productivity of mentally disadvantaged people can be improved through adequate training and the provision of educational health programmes.

Vogelman (1990) considers potential problems with the transformation of the mental health care system in post-apartheid South Africa. The paper considers that finance limitations, the increase in demand, resistance from professionals, community involvement and the location of ethnic groups will make the transformation difficult to achieve. Pillay and Lockhat (1997) consider the development of mental health services for children in South Africa. The authors suggest that because of the apartheid, mental health care for black people has been either inadequate or non-existent and that children have been most neglected in respect to their mental health. The research traces

a project designed to develop a community programme for children with emotional problems. It is argued that primary health workers need to be trained in mental health and that childhood mental health care should be properly integrated into the primary health care structure. Elsewhere, Osei (1993) considers the importance of family support for psychiatric patients in Ghana. The author reports the successes of a psychiatric programme which combines conventional medicine and family support with traditional medicine.

12. POPULATION, MIGRATION AND RESETTLEMENT

There is a wide general literature on population, migration and resettlement, particularly with respect to Africa. There has been important geographical interest in the voluntary and forced movement of population in Africa and their health implications (Prothero, 1994). Collin's book, referred to below, is an important publication in this respect. There is also a considerable amount of work on disease occurrence in refugee camps which appears in a range of sources. The Médecins sans Frontières report on world crisis intervention makes a useful starting point for discussions on intervention and non-intervention for populations in danger and has a number of chapters on African countries (see for example, Jean, 1993). A general perspective on population growth, health and development is taken by Ohadike (1992) and Speth (1994) who comment that poverty in Africa is not only due to overpopulation and underdevelopment but to the delayed demographic transition. A lasting transition, these papers suggest, should include markedly reduced mortality and fertility, and should involve the expansion of education, health facilities and employment opportunities. Gaisie (1996) considers the implications of demographic transitions for future research. The author comments that Africa remains a demographically challenging region, research strategies require reorientation, effective research instruments have to be designed, research requires streamlining and broad national objectives require defining. Collins's (1998) book, *Environment, Health and Population Displacement,* discussed in Section 3, provides a very good discussion of the links between environment, health, disease ecology and wide-scale population displacement. It discusses general issues in Africa as well as providing detailed case studies in Mozambique which have much wider general relevance.

The problem of international migration of health personnel away from sub-Saharan Africa is receiving initial recognition in the literature, although some time after it has been noted in other Third World countries. Olayinka Ojo (1990) comments that this 'brain drain' has received no meaningful official concern and recommends that attention is centred on measures to encourage highly trained people to stay at home. The author feels that this should be combined with more general measures for economic and social development such as investment in technology, reform of universities, selective capital investment, improved transportation and rational design

of the medical and health education system. It is suggested that change should be guided by a policy to concentrate efforts and resources to high priority objectives.

In a large part due to war, famine and environmental problems, population movement in and between countries has been a significant feature in Africa. Indeed, the 1997 *Amnesty International* annual report notes that, of 15 million refugees world-wide, 5 million were in Africa and, in this continent, a further 10 million people were displaced within their own countries. Both voluntary and involuntary or forced movements of population within and between countries have been found to have numerous health implications. For example, health aspects of government-sponsored resettlement in Ethiopia are considered by Kloos (1990) who reports that the movement of 600 000 drought victims in 1984/85 from the Northern and Central parts of the country to the West of the country has produced health hazards. Indeed, Kloos notes that the re-settles are more at risk of contracting and a range of infectious diseases such as malaria and yellow fever and developing other conditions such as psychological stress.

Urbanisation has occurred alongside industrial development and, in turn, produces specific health outcomes, many of which are only now becoming apparent. Harpham (1996) reviews urban health in The Gambia and comments that rapid urbanisation can be associated with urban slums, degraded environment, poverty and inadequate health services. The author states that this has encouraged the government to plan strategies for future urban development. However, Harpham suggests that there is a lack of information on which to base urban health planning and she calls for a review of urban-rural and intra-urban health differences. The issues surrounding the co-ordination of urban planning and environmental efforts to achieve healthy cities in developing countries was discussed in Section 2 (Werna et al, 1998).

13. WAR AND CONFLICT

In Africa, conflict has caused relocation, injury and suffering to hundreds of thousands, probably millions, of people in this decade alone. It has placed stresses on health care systems and has affected their development. It has also, as noted in Scetion 12, been responsible for enormous numbers of people being displaced from their homes and livelihoods and hence rendered the vulnerable to ill-health and injury through poverty and insecurity. The health care systems of some African countries are in a constant state of damage and recovery from prolonged and intermittent periods of conflict and political strife. These countries have arguably sometimes inherited inappropriate and certainly often unaffordable health systems. This can place long term burdens on health and health services (Macrae et al, 1996).

Post-conflict rehabilitation of the Ugandan health care system is investigated by Macrae et al (1996) who argue that government policies have exacerbated rather than alleviated the health crisis. The authors suggest that whilst resources have been allocated to the physical development of the health infrastructure, issues of sustainability have been ignored. They call for development-orientated rehabilitation with accurate analysis of the health crisis, identification of political, institutional and financial opportunities and policies with modest and realistic objectives. Other authors have written on the impacts of violence in society, not necessarily associated with war. As noted earlier in Section 7, Ramphele (1997) for example discusses the violence of adults encountered by children in a South African township and their reactions to it.

War and internal armed conflict have had a major impact on health and development in many African countries and regions over the decades. This is poignantly illustrated in the case of Mozambique by Collins (1998). Elsewhere, Dodge (1990) considers the health implication of war in Uganda and Sudan and comments that civil war disrupts trade, reduces tax revenues and so drains resources from health budgets to finance military expenditures. The author comments that health professionals were forced to urban areas in search of peace and employment, many health centres and health programmes were abandoned leaving large populations vulnerable to controllable infectious diseases.

Cliff and Noormahomed (1993) discuss the impact of war on children's health in Mozambique and point out that attacks on economic and civilian targets had at the

time lead to the closure of 48% of the primary health care network. This had the effect of displacing over 3 million people and causing an additional 500 000 children's deaths. It is thought that many more have suffered violence or have witnessed atrocities. The authors identify that programmes to reunite families and new vaccination strategies have been introduced. Englund (1998) addresses the treatment of war trauma amongst Mozambican refugees in Malawi, with special reference to their mental and spiritual well-being and the therapeutic salience of funerals and spirit exorcism. Collins (1998), discussed in Section 3, provides detailed case studies in Mozambique of disease hazards associated with population displacement, a major impact of the war, and when physical and biological changes coincide with and respond to a vulnerable society.

Kloos (1998) considers primary health care in Ethiopia under three political systems, the feudal regime under emperor Haille Sellassie, the socialist/military rule under Mengistu and an emerging democratic free market system under Meles Zenawi. Kloos notes that, despite the rapid expansion of primary health care under military rule, community participation was hampered by continuing conflict and an urban-based bureaucratic approach. The paper identifies factors promoting and impeding the development of participatory health care in this war environment and discusses public health care and community participation in the transition to a post-war era.

Other papers in a wide range of sources, in which the media play an important and prominent role, note the dangers to military and civilian life from land-mines and direct military action in many African settings. An academic perspective complements the recent coverage of such issues by the popular press. This is an area of continuing concern and deserves serious policy and research attention in a number of African countries.

14. TRADITIONAL MEDICINE AND RELIGION

In much of rural Africa, the delivery of improved health care is more complicated than simply offering good health services; it must as elsewhere also take account of peoples' religious orientation and beliefs (Phillips, 1990; Kirby, 1993). There is a very large and interesting literature on traditional medicines and many readable case studies appear in *World Health Forum* among other sources. Many African populations trust traditional medicine and traditional healers as much if not more than Western drugs and trained medical professionals. As a result, efforts to enhance the effectiveness of traditional practitioners may often bear considerable fruit in terms of increased utilization and uptake of health care. A WHO-sponsored study investigated the effectiveness of training projects for traditional practitioners as primary health workers in three countries, one of which was Ghana (WHO 1995). This study found that, in the Ghanaian case, there was an annual decrease in the number of still births between 1990 and 1992 in the areas where trained TBAs were working and nutritional status improved. A general recommendation from the study was that trained traditional practitioners played an important role in promoting primary health care services, identifying critical cases early, in referrals and improving community health generally.

Religion is so very strongly embedded in many African societies that it is increasingly realised that health care solutions would do better to work with, rather than against, traditional healers and religious leaders. Indeed, as noted above, Orubuloye et al (1993a) in the context of AIDS, found religious leaders to have a valuable role to play in teaching against pre-marital and extra-marital sex. Green et al (1995) found, because of the trust placed in them, traditional healers can be useful in teaching on HIV prevention. Kirby (1993) comments that in Northern Ghana there has been a dialogue between African traditional beliefs and Western medical institutions which has helped people understand and make better use of Western biomedicine.

Not all is positive, however, because, as has been argued over a number of years, many traditional medical practices can have negative and sometimes serious effects. Some papers consider traditional healers and their role in eye medicine. In this respect, Klauss and Adala (1994) and Chana et al (1994) all argue that there is little evidence to suggest that traditional treatments are beneficial and suggest that in some

cases they may be harmful. However, these authors present a solid case, based on treatment and economic grounds, for their integration into the modern health care system. It is also suggested that traditional healers can provide an understanding of cultural beliefs relating to eye disease and provide eye care, rather than treatment, perhaps, at the local level. Ogunbodede (1991) suggests that dental services in the Third World could be greatly improved by combining traditional and modern medicine.

Freeman and Motsei (1992) suggest that there is a potential role for traditional healers in health care, although they stress the need for caution. Minimum standards and codes of practice need to be established with adequate training. Adetunji (1992) notes that in the Yoruba community in Nigeria almost one-half of births were delivered in faith clinics by midwives who offered no medicine to their clients. The paper does however suggest that these midwives were relatively successful as they emphasised good food, cleanliness, rest, relaxation and the avoidance of stress. It is also recognised that these midwives have a valuable role to play in educating on preventative health and they should not have to work in opposition and in competition with modern health care. This, it is thought, is in line with current WHO policy to emphasise communication and prevention in the health sector.

Omorodion (1993b), in the context of the Esan communities of Nigeria, found individuals choices between traditional and modern medicine to be determined by belief systems as well as by distance and cost. Interestingly, the author found the retreat of traditional medicine to be less associated with the introduction of modern medicine and more associated with the impact of Christianity which was displacing traditional religion and so traditional medicine.

There is an important area of literature touching on traditional medicine which has a strong environmental-biogeographic underpinning. This involves research which considers aspects such as bio-diversity and the value of medicinal plants. Many authors stress the importance of identifying, cataloguing and analysing for pharmacological value the many plant species that may contribute to current of future developments of medicines. A large number of these plants and trees in Africa and elsewhere are at risk from environmental damage, slash and burn clearance and human encroachment into their habitats. Akerele (1993), among others, notes that many plant-derived drugs are important to both traditional and modern medicine. It is suggested that, if present trends continue, a quarter of the worlds plant species will be extinct by 2050. The

paper supports calls for the protection of a diversity of species and the cultivation of medicinal plants.

15. AGRICULTURE, FOOD AND NUTRITION

It perhaps goes without saying that, in Africa in particular, a high proportion of health issues can be associated with access to and the nutritional quality of food. Correspondingly, the literature has engaged a wide variety of topics, the role of women in food preparation and decisions being a dominant issue. There is a growing literature on food distribution systems, urban agriculture and the peri-urban shift of development and concomitant changes in food demand and production. However, relatively little of the work as yet directly relates to health and health status, an obvious area of detailed future research. Drakakis-Smith (1991) argued that little was then known about the supply systems of food to the urban poor. He identifies three main food sources; the conventional retail sector which has increasingly changed dietary preferences and increased prices; the informal sector and the subsistence sector. Drakakis-Smith suggested that, in general, governments have held repressive attitudes to the informal and subsistence sectors because they run counter to an image of a modernizing city. However, the author suggests that these sectors have an important and essential role to play and calls for more research on the urban food supply system.

Madge (1994) voices concern that both women's domestic knowledge and collected food products are two important aspects of rural African life that have received little attention. Indeed, Madge's case study reveals that both are important to household survival. The author suggests that domestic knowledge is both spatially and socially variable and is embedded within macro-economic and political relations.

The role of women in agricultural production is a prominent area of research. Soyibo et al (1992) consider the relationships of Agricultural Development Projects (ADPs) and women's quality of life in Nigeria. The authors found ADPs not to have significantly improved quality of life for women; access to water had improved but income remained low. ADPs were actually found to make women even more dependent on their spouses. The authors call for the needs of women to be taken into account when planning ADPs. Lados (1992) considers female participation in agricultural production in Kenya, Ghana, The Gambia, Nigeria and Sudan. Like Soyibo et al, Lados found agricultural development to have marginalised women. Their control over resources in the subsistence sector had decreased while their work burden had increased. Lados concludes that considerations of women's roles in agriculture should

not neglect the structured basis of their inequality and that research is required on both men's and women's food production activities. Indeed, the author reiterates the call for the integration of women into a development process which is sensitive to their needs, circumstances and potentials.

Foster (1993) considers agricultural production in the Monze district in Zambia. The author describes three catastrophes which occurred simultaneously. At the same time as the 1992 drought, there was an epidemic of East Coast fever amongst cattle and as many as one in 6.5 households had experienced illness or death due to AIDS. Foster suggests that smaller households with fewer workers and cattle were most vulnerable and that, in the long run, whilst herds will recover, AIDS will remain a problem for many households. She recommends interventions targeted specifically at AIDS affected households to prevent the break-up of families and their financial ruin.

REFERENCES

Abel-Smith B & Rawal P 1992 Can the poor afford 'free' health services? a case study of Tanzania *Health Policy and Planning* 7 4 329-341

Abel-Smith B & Rawal P 1994 Employer's willingness to pay: the case for compulsory health insurance in Tanzania *Health Policy and Planning* 9 4 409-418

Abound F *et al* 1991 Intellectual, social and nutritional status of children in an Ethiopian orphanage *Social Science and Medicine* 33 11 1275-1280

Adetunji J A 1991 Response of parents to five killer diseases among children in a Yoruba community, Nigeria *Social Science and Medicine* 32 12 1379-1387

Adetunji J A 1992 Church-based obstetric care in a Yoruba community, Nigeria *Social Science and Medicine* 35 9 1171-1178

Adetunji J A 1995 Infant mortality and mothers' education in Ondo State, Nigeria *Social Science and Medicine* 40 2 253-263

Adetunji J A 1996 Preserving the pot and water: A traditional concept of reproductive health in a Yoruba community, Nigeria *Social Science and Medicine* 43 11 1561-1567

Adewunmi O A 1993 Funds squeezed and stretched: the predicament of health care *World Health Forum* 14 4 346

Adikwu M U & Osondu B O 1991 Four years of essential drugs' list in Nigeria *Social Science and Medicine* 33 9 1005-1010

Adongo P B, Phillips J F, Kajihara B, Fayorsey C, Debpuur C & Binka F N 1997 Cultural factors constraining the introduction of family planning among the Kassenda-Nakana of Northern Ghana *Social Science and Medicine* 45 12 1789-1804

Afolabi Bamgboye E & Ladipo O A 1992 Oral contraceptive marketing in Ibadan, Nigeria *Social Science and Medicine* 35 7 903-906

Ahmed A M, Mung'ong'o E & Massawe E 1991 Tackling obstacles to health care delivery at district level *World Health Forum* 12 4 483-489

Ahonsi B A 1991 Components of stably high fertility in three areas of West Africa *Social Science and Medicine* 33 7 849-857

Aikins M K, Fox-Rushby J, D'Alessandro U, Langerock P, Cham K, New L, Bennett S, Greenwood B & Mills A 1998 The Gambian National Impregnated Bednet Programme: costs, consequences and net cost-effectiveness *Social Science and Medicine* 46 2 181-191

Airey T 1992 The impact of road construction on the spatial characteristics of hospital utilization in the Meru district of Kenya *Social Science and Medicine* 34 10 1135-1146

Ajibola K 1991 Health services and space utilisation in urban and rural communities, *Third World Planning Review* 13 3 297-307

Akerele O 1993 Nature's medicinal bounty: don't throw it away *World Health Forum* 14 4 391

Akin J S, Guilkey D K & Denton E H 1995 Quality of services and demand for health care in Nigeria: a multinomial probit estimation *Social Science and Medicine* 40 11 1527-1537

Aliou S 1992 What health system for nomadic populations? *World Health Forum* 13 4 311

Alokan O O 1995 Transportation and health in the context of sustainable development: the Nigerian case, in *The health of nations*, ed **B F Iyun, Y Verhasselt and J A Hellen,** Avebury, Aldershot

Alubo S O 1994 Death for sale: a study of drug poisoning and deaths in Nigeria *Social Science and Medicine* 38 1 97-103

Amonoo-Lartson R & Pappoe M E 1992 Prevalence of smoking in secondary schools in the Greater Accra region of Ghana *Social Science and Medicine* 34 11 1291-1293

Anarfi J K & Awusabo-Asare K 1993 Experimental research on sexual networking in some selected areas of Ghana *Health Transition Review* 3 Supplement 29-43

Anarfi J K 1993 Sexuality, migration and AIDS in Ghana - a socio-behavioural study, *Health Transition Review* 3 Supplement 45-67

Anyinam C 1991 Modern and traditional health care systems in Ghana, in *Health care patterns and planning in developing countries*, ed **R Akhtar,** Greenwood Press, London

Apt N A 1993 Care of the elderly in Ghana: an emerging issue *Journal of Cross-Cultural Gerontology* 8 301-302

Apt N A & Grieco M 1994 Urbanization, caring for the elderly people and the changing African family: the challenge to social policy *International Social Security Review* 47 3-4 111-121

Arhin D C 1994 The health card insurance scheme in Burundi: A social asset or a non-viable venture? *Social Science and Medicine* 39 6 861-870

Asenso-Okyere W K 1994 Socioeconomic factors in malaria control *World Health Forum* 15 3 265

Asenso-Okyere W K 1995 Financing health care in Ghana *World Health Forum* 16 1 86

Asuzu M C, Johnson O O, Owoaje E E, Rotimi C N, Kaufman J S & Cooper R S 1996 Questions on adult mortality *World Health Forum* 17 4 373-376

Awusabo-Asare K, Anarfi J K & Agyeman D K 1993 Women's control over their sexuality and the spread of STDs and HIV/AIDS in Ghana *Health Transition Review* 3 Supplement 69-83

Awusabo-Asare K, Pisani E, Boerma T & Zaba B 1997 Introduction *Health Transition Review* 7 Supplement 2 1

Ayalew S 1992 The social context of health care planning in Africa: Ethiopian case studies and perspectives *Social Science and Medicine* 34 1 103-104

Barnett T & Blaikie P 1992 *AIDS in Africa: its present and future impact* Belhaven Press, London

Barrett H R & Browne A W 1992 Beri-beri: age-gender bias in The Gambia *Social Science and Medicine* 34 11 1295-1297

Beattie A, Rispel L & Booysen M 1993 Problems and prospects for health sector links in the Southern African region: the role of South Africa *Social Science and Medicine* 37 7 927-935

Beckerleg S, Austin S & Weaver L 1994 Gender, work and illness: the influence of a research unit on an agricultural community in The Gambia *Health Policy and Planning* 9 4 419-428

Bentley M E, Dickin K, Mebrahtu S, Kayode B, Oni G, Verzosa C, Brown K and Idowu J 1991 Development of a nutritionally adequate and culturally

appropriate weaning food in Kwara State, Nigeria: an interdisciplinary approach *Social Science and Medicine* 33 10 1103-1111

Berman P, Quinley J, Yusuf B, Anwar S, Mustaini U, Azof A & Iskandar 1991 Material tetanus immunization in Aceh province, Sumatra: the cost-effectiveness of alternative strategies *Social Science and Medicine* 33 2 185-192

Berman P ed 1995 *Health sector reform in developing countries: making health development sustainable* Harvard University Press, Boston

Bicego G 1997 Estimating adult mortality rates in the context of the AIDS epidemic in sub-Saharan Africa: analysis of DHS sibling histories *Health Transition Review* 7 Supplement 2 7-22

Birley M H 1995 *The health impact assessment of development projects* HMSO, London

Bjornheden K M & Sithole W D 1994 Good teeth without dentists *World Health Forum* 15 1 19

Blair E 1994 A training project for disability prevention in Malawi *World Health Forum* 15 4 408

Boerma J T, Ngalula J, Isingo R, Urassa M, Senkoro K P, Gabone R & Nkumbo E N 1997 Levels and causes of adult mortality in rural Tanzania with special reference to HIV/AIDS *Health Transition Review* 7 Supplement 2 63-74

Bond V 1997 'Between a rock and a hard place': applied anthropology and AIDS research on a commercial farm in Zambia *Health Transition Review* 7 Supplement 3 69-83

Bossert T J 1990 Can they get along without us? Sustainability of donor-supported health projects in Central America and Africa *Social Science and Medicine* 30 9 1015-1023

Brown J E, Ayowa O B & Brown R C 1993 Dry and tight: sexual practices and potential AIDS risk in Zaire *Social Science and Medicine* 37 8 989-994

Butchart A & Seedat M 1990 Within and without: images of community and implications for South African psychology *Social Science and Medicine* 31 10 1093-1102

Cabral A J R 1993 AIDS in Africa: can the hospitals cope? *Health Policy and Planning* 8 2 157-160

Caldwell J C 1997a What are the limits? *Health Transition Review* 7 1 73-75

Caldwell J C 1997b The impact of the African AIDS epidemic *Health Transition Review* 7 Supplement 2 169-185

Caldwell J C & Caldwell P 1994 The neglect of an epidemiological explanation for the distribution of HIV/AIDS in sub-Saharan Africa: exploring the male circumcision hypothesis *Health Transition Review* 4 23-46

Caldwell J C, Caldwell P, Ankrah E, Anarfi J, Agyeman D, Awusabo-Asare K & Orubuloye I 1993 African families and AIDS: Context, reactions and potential interventions *Health Transition Review* 3 Supplement 1-16

Caldwell J C, Orubuloye I O & Caldwell P 1992 Underreaction to AIDS in sub-Saharan Africa *Social Science and Medicine* 34 11 1169-1182

Carpenter L, Nakiyingi J, Ruberantwari A, Malamba S, Kamali A & Whitworth J 1997 Estimates of the impact of HIV infection on fertility in a rural Ugandan population cohort *Health Transition Review* 7 Supplement 3 113-127

Carr S, Ager A, Nyando C, Moyo K, Titeca A & Wilkinson A 1994 A comparison of chamba (marijuana) abusers and general psychiatric admissions in Malawi *Social Science and Medicine* 39 3 401-406

Carr-Hill R A 1993 Social conditions in sub-Saharan Africa *Social Science and Medicine* 37 8 1087-1090

Cassels A & Janovsky K 1992 A time of change: health policy, planning and organization in Ghana *Health Policy and Planning* 7 2 144-154

Cassels A & Janovsky K 1996 *Reform of the health sector in Ghana and Zambia: commonalities and contrasts* Division of Strengthening of Health Services WHO, Geneva

Chapko M K, Toure I A & Salissou O 1991 Costs of hospital care in Niger for hypertension and cardiovascular disease *Health Policy and Planning* 6 4 320-326

Chirac P, Pikon A, Poinsignon & Vitry A 1993 Drug marketing in French-speaking African countries *Social Science and Medicine* 36 12 1541-1543

Chirwa W C1997 Migrant labour, sexual networking and multi-partnered sex in Malawi *Health Transition Review* 7 Supplement 3 5-15

Civic D & Wilson D 1996 Dry sex in Zimbabwe and implications for condom use *Social Science and Medicine* 42 1 91-98

Cliff J & Noormahomed A R 1993 The impact of war on children's health in Mozambique *Social Science and Medicine* 36 7 843-848

Cogswell M E, Oni G, Stallings R, Brown K 1991 Sociodemographic and clinical factors affecting recognition of childhood diarrhoea by mothers in Kwara State Nigeria, *Social Science and Medicine* 33 10 1209-1216

Collins A E 1998 *Environment, health and population displacement: development and change in Mozambique's diarrhoeal disease ecology* Ashgate, Aldershot

Conn C P, Jenkins P & Touray S O 1996 Strengthening health management: Experience of district teams in The Gambia *Health Policy and Planning* 11 1 64-71

Cooper Weil D E, Alicbusan, A P, Wilson, J F, Reich M R & Bradley D J 1990 *The impact of development policies on health: a review of the literature* WHO, Geneva

Cosminsky S, Mhloyi M & Ewbank D 1993 Child feeding practices in a rural area of Zimbabwe *Social Science and Medicine* 36 7 937-947

Csete J 1993 Health-seeking behaviour of Rwandan women *Social Science and Medicine* 37 11 1285-1292

Curtis, S L & Neitzel K 1996 *Contraceptive knowledge, use and sources* Demographic and Health Surveys Comparative Studies No 19, Macro International, Calverton, Maryland

Darkwa O K 1997 Reforming the Ghanaian social security system: prospects and challenges. *Journal of Cross-Cultural Gerontology* 12 2 175-187

Dean N R 1994 A community study of child spacing, fertility and contraception in West Pokot district, Kenya *Social Science and Medicine* 38 11 1575-1584

Decosas J & Pedneault V 1992 Women and AIDS in Africa: Demographic implications for health promotion *Health Policy and Planning* 7 3 227-233

Defo B K 1996 Areal and socioeconomic differentials in infant and child mortality in Cameroon *Social Science and Medicine* 42 3 399-420

Dodge C P 1990 Health implications of war in Uganda and Sudan *Social Science and Medicine* 31 6 691-698

Drakakis-Smith D 1991 Urban food distribution in Asia and Africa *The Geographical Journal* 157 1 51-61

Eades, C A, Brace C, Osei L & LaGuardia K 1993 Traditional birth attendants and maternal mortaltiy in Ghana *Social Science and Medicine* 36 11 1503-1507

Ego M L & Moran M 1993 HIV/AIDS counselling program: a rural Ghana experience *Health Transition Review* 3 Supplement 85-91

Egunjobi L 1993 Spatial distribution of mortality from leading notifiable diseases in Nigeria *Social Science and Medicine* 36 10 1267-1272

Eide A & Acuda S 1997 Cultural orientation and use of cannabis and inhalants among secondary school children in Zimbabwe *Social Science and Medicine* 45 8 1241-1249

Ekra A & Bertrand E 1992 Rheumatic heart disease in Africa *World Health Forum* 13 4 331

El Tayeb G E D, Awadalla S A & El Abdin E 1991 Socio-spatial disparities in the provision of medical services in the Sudan, in *Health care patterns and planning in developing countries*, ed **R Akhtar**, Greenwood Press, London

Emeke E A & Yoloye T W The population of mentally disadvantaged in Nigeria: Health and development programme, in *The health of nations,* ed **B F Iyun, Y Verhasselt and J A Hellen,** Avebury, Aldershot

Englund H 1998 Death, trauma and ritual: Mozambican refugees in Malawi *Social Science and Medicine* 46 9 1165-1174

Essomba R O, Bryant M & Bodart C 1993 The reorientation of primary health care in Cameroon: rationale, obstacles and constraints *Health Policy and Planning* 8 3 232-239

Ezeilo B N 1990 Psychology and health in Africa *Social Science and Medicine* 31 6 705-710

Feachem R G & Jamison D T eds 1991 *Disease and mortality in Sub-Saharan Africa* Oxford University Press, New York

Feinberg R 1990 Spiritual and natural etiologies on a Polynesian outlier in Papua New Guinea *Social Science and Medicine* 30 3 311-323

Feldman D A *et al* 1997 HIV prevention among Zambian adolescents: developing a value utilization/norm change model *Social Science and Medicine* 44 4 455-468

Feldman-Savelsberg P 1994 Plundered kitchens and empty wombs: fear of infertility in the Cameroonian grassfields *Social Science and Medicine* 39 4 463-474

Ferrinho D, Robb H & Rex G Primary health care in support of community development *World Health Forum* 14 2 158-163

Fetter B 1992 The mines of Southern and Central Africa: an ecological framework *Health Transition Review* 2 125

Foltz A-M 1994 Donor funding for health reform in Africa: is non-project assistance the right prescription? *Health Policy and Planning* 9 4 371-384

Foster G, Makufa C, Drew R & Kralovec E 1997 Factors leading to the establishment of child-headed households: the case of Zimbabwe *Health Transition Review* 7 Supplement 2 155-168

Foster S 1991 Supply and use of essential drugs in sub-Saharan Africa: Some issues and possible solutions *Social Science and Medicine* 32 11 1201-1218

Foster S 1993 Maize production, drought and AIDS in Monze district, Zambia *Health Policy and Planning* 8 3 247-254

Fowler T B & McNamara M A 1993 Aging trends: Morocco *Journal of Cross-Cultural Gerontology* 8 2 161-168.

Freeman M & Motsei M 1992 Planning health care in South Africa - is there a role for traditional healers? *Social Science and Medicine* 34 11 1183-1190

Freud P J 1991 Politics, planning and primary health care in Zambia, in *Health care patterns and planning in developing countries*, ed **R Akhtar**, Greenwood Press, London

Gaisie S K 1996 Demographic transition: the predicament of sub-Saharan Africa *Health Transition Review* 6 345-369

Gerein N M & Ross D A 1991 Is growth monitoring worthwhile? An evaluation of its use in three child health programmes in Zaire *Social Science and Medicine* 32 6 667-675

Gilbert L 1998 Dispensing doctors and prescribing pharmacists: a South African perspective *Social Science and Medicine* 46 1 83-95

Gilson L, Alilio M & Heggenhougen K 1994 Community satisfaction with primary health care services: an evaluation undertaken in the Morogoro region of Tanzania *Social Science and Medicine* 39 6 767-780

Gilson L and Mills A 1995 Health sector reform in sub-Saharan Africa: lessons of the last 10 years, in *Health sector reform in developing countries: making health development sustainable*, ed **P Berman**, Harvard University Press, Boston

Glynn J R, Warndorff D K, Fine P E M, Msiska G K, Munthali M M & Ponnighaus J M 1997 The impact of HIV on morbidity and mortality from tuberculosis in sub-Saharan Africa: a study in rural Malawi and review of the literature *Health Transition Review* 7 Supplement 2 75-87

Green E C 1992a Sexually transmitted disease, ethnomedicine and health policy in Africa *Social Science and Medicine* 35 2 121-130

Green E C 1992b The anthropology of sexually transmitted disease in Liberia *Social Science and Medicine* 35 12 1457-1468

Green E C, Zokwe B & Dupree J D 1995 The experience of an AIDS prevention program focused on South African traditional healers *Social Science and Medicine* 40 4 503-515

Gregson S, Garnett G, Shakespear R, Foster G & Anderson R 1994 Determinants of the demographic impact of HIV-1 in sub-Saharan Africa: the effect of a shorter mean adult incubation period on trends in orphanhood *Health Transition Review* 4 65-92

Gregson S, Zhuwau T, Anderson R M & Chandiwani S K 1997 HIV and fertility change in rural Zimbabwe *Health Transition Review* 7 Supplement 2 89-113

Guptill K S *et al* 1993 Evaluation of a face-to-face weaning food intervention in Kwara State, Nigeria: Knowledge, trial, and adoption of a home-prepared weaning food *Social Science and Medicine* 36 5 665-672

Gyapong M, Gyapong J, Adjei S, Vlassoff C & Weiss M 1996 Filariasis in Northern Ghana: Some cultural beliefs and practices and their implications for disease control *Social Science and Medicine* 43 2 235-242

Haddad S & Fournier P 1995 Quality, cost and utilization of health services in developing countries. a longitudinal study in Zaïre *Social Science and Medicine* 40 6 743-753

Habiyambere V & Wertheimer A 1993 Essential drugs should be accessible to all people *World Health Forum* 14 2 140

Harjinder S, Schwab L & Foster A 1994 With an eye to good practice: traditional healers in rural communities *World Health Forum* 15 2 144

Harpham T 1994a Cities and health in the Third World, in *Health and development*, ed **D R Phillips and Y Verhasselt**, London, Routledge

Harpham T 1994b Urbanization and mental health in developing countries: research roles for social scientists, public health professionals and social psychiatrists *Social Science and Medicine* 39 2 233-245

Harpham T 1996 Urban health in the Gambia: a review *Health and Place* 2 1 45-49

Harpham T & Tanner M 1995 *Urban Health in Developing Countries* Earthscan, London

Harrison A, Lurie M & Wilkinson N 1997 Exploring partner communication and patterns of sexual networking: qualitative research to improve management of sexually transmitted diseases *Health Transition Review* 7 Supplement 3 103-107

Harrison G G, Zaghloul S S, Galal O M & Gabr A 1993 Breastfeeding and weaning in a poor urban neighborhood in Cairo, Egypt: Material beliefs and perceptions *Social Science and Medicine* 36 8 1063-1069

Heap M & Ramphele M 1991 The quest for wholeness: Health care strategies among the residents of council-built hostels in Cape Town *Social Science and Medicine* 32 2 117-126

Hollos M & Larsen U 1992 Fertility differentials among the Ijo in Southern Africa: Does urban residence make a difference? *Social Science and Medicine* 35 9 1199-1210

Howard M 1994 Socio-economic causes and cultural explanations of childhood malnutrition among the Chagga of Tanzania *Social Science and Medicine* 38 2 239-251

Huber J H 1993 Ensuring access to health care with the introduction of user fees: a Kenyan example *Social Science and Medicine* 36 4 485-494

Hunter J M 1992 Elephantiasis: a disease of development in North East Ghana *Social Science and Medicine* 35 5 627-649

Hunter J M, Rey L, Chu K Y, Adekolu-John E O & Mott K E (1993) *Parasitic diseases in water resources development: the need for intersectoral development* Geneva, World Health Organization

Igun U A 1994 Reported and actual prescription of oral rehydration therapy for childhood diarrhoeas by retail pharmacists in Nigeria *Social Science and Medicine* 39 6 797-806

Igun U A 1995 Prescription for childhood watery diarrhoea in Nigeria: A comparison of pharmaceutical chemists and patent medicine shops Nigeria, in *The health of nations,* ed **B F Lyun, Y Verhasselt & J A Hellen,** Avebury, Aldershot

Ingstad B Bruun F J & Tlou S T 1997 AIDS and the elderly Tswana: the concept of pollution and the consequences for AIDS prevention *Journal of Cross-Cultural Gerontology* 12 4 357 372

Inhorn M C & Buss K A 1994 Ethnography, epidemiology and infertility in Egypt *Social Science and Medicine* 39 5 671-686

Irwin K, Bertrand J, Mibandumba N, Mbuyi K, Muremeri C, Mukoka M, Munkolenkole K, Nzilambi N, Bosenge N, Ryder R, Peterson H, Lee N, Wingo P, O'Reilly & Rufo K 1991 Knowledge, attitudes and beliefs about HIV infection and AIDS among healthy factory workers and their wives, Kinshasa, Zaire *Social Science and Medicine* 32 8 917-930

Isiugo-Abanihe U C 1994 Extramarital relations and perceptions of HIV/AIDS in Nigeria *Health Transition Review* 4 111-125

Iyun B F 1993 The geographical inequalities in mortality in Africa *Social Science and Medicine* 36 10 1243-1245

Iyun B F 1994 Health care in the Third World: Africa, in *Health and development,* ed **D R Phillips & Y Verhasselt,** London, Routledge

Iyun B F 1995 Cardiac morbidity in Nigerian society: trends and inter-relationships, in *The health of nations,* ed **B F Iyun, Y Verhasselt & J A Hellen,** Avebury, Aldershot

Jaffre Y & Prual A 1994 Midwives in Niger: an uncomfortable position between social behaviours and health care constraints *Social Science and Medicine* 38 8 1069-1073

Jallow M T 1993 Essential drugs in The Gambia *World Health Forum* 14 2 136-140

Jarrett S W & Ofosu-Amaah S 1992 Strengthening health services for MCH in Africa: The first four years of the 'Bamako Initiative' *Health Policy and Planning* 7 2 164-176

Jean F ed 1993 *Life, Death and Aid: the Médecins sans Frontières Report on World Crisis Intervention* Routledge, London

Kabwe Kalunde W 1997 HIV/AIDS and sexual behaviour among youth in Zambia *Health Transition Review* 7 Supplement 3 91-95

Kalapula E S 1991 Health care delivery patterns and planning in Zambia: colonial, populist and crisis interventionist approaches, in *Health care patterns and planning in developing countries*, ed **R Akhtar**, Greenwood Press, London

Kalipeni E 1993 Determinants of infant mortality in Malawi: a spatial perspective *Social Science and Medicine* 37 2 183-198

Kalipeni E & Oppong J 1998 The refugee crisis in Africa and implications for health and disease: a political ecology approach. *Social Science and Medicine* 46 12 1637-1653

Kane P & Ruzicka L 1996 Women's education and the demographic transition in Africa *Health Transition Review* 6 101-113

Kaplan M, Carriker L & Waldron I 1990 Gender differences in tobacco use in Kenya *Social Science and Medicine* 30 3 305-310

Kenya P R, Gatiti S, Muthami N, Agwanda R, Mwenesi H, Katsivo M, Omondi-Odhiambo, Surrow A, Juma R, Ellison R, Cooper G & Andel F 1990 Oral rehydration therapy and social marketing in rural Kenya *Social Science and Medicine* 31 9 979-987

Keogh P, Allen S, Almedal C & Temahagili B 1994 The social impact of HIV infection on women in Kigali, Rwanda: A prospective study *Social Science and Medicine* 38 8 1047-1053

Killewo J, Dahlgren L & Sandström A 1994 Socio-geographical patterns of HIV-1 transmission in Kagera region, Tanzania *Social Science and Medicine* 38 1 129-134

Kirby J P 1993 The islamic dialogue with African tradition religion: Divination and health care *Social Science and Medicine* 36 3 237-247

Kishindo P 1995 Sexual behaviour in the face of risk: the case of bar girls in Malawi's major cities *Health Transition Review* 5 Supplement 153-160

Klauss V & Adala H S 1994 Traditional herbal eye medicine in Kenya *World Health Forum* 15 2 138-144

Kloos H 1990a Utilization of selected hospitals, health centres and health stations in Central, Southern and Western Ethiopia *Social Science and Medicine* 31 2 101-114

Kloos H 1990b Health aspects of resettlement in Ethiopia *Social Science and Medicine* 30 6 643-656

Kloos H 1998 Primary health care in Ethiopia under three political systems: community participation in a war-torn society *Social Science and Medicine* 46 4 505-522

Kloos H, Etea A, Degefa A, Aga H, Soloman B, Abera K, Abegaz A & Belemo G 1991 Health services development, illness and health behaviour in Ethiopia, in *Health care patterns and planning in developing countries*, ed **R Akhtar**, Greenwood Press, London

Korte R, Richter H, Merkle F and Görgen H 1992 Financing health services in sub-Saharan Africa: options for decision makers during adjustment *Social Science and Medicine* 34 1 1-9

Lado C 1992 Female labour participation in agricultural production and the implications for nutrition and health in rural Africa *Social Science and Medicine* 34 7 789-807

Langsten R & Hill K 1995 Treatment of childhood diarrhea in rural Egypt *Social Science and Medicine* 40 7 989-1001

Lerer L B, Butchart A & Blanche M T 1995 'A bothersome death' - narrative accounts of infant mortality in Cape Town, South Africa *Social Science and Medicine* 40 7 945-953

Leshabari M & Kaaya S 1997 Bridging the information gap: sexual maturity and reproductive health problems among youth in Tanzania *Health Transition Review* 7 Supplement 3 29-44

Letamo G & Bainame K 1997 The socio-economic and cultural context of the spread of HIV/AIDS in Botswana *Health Transition Review* 7 Supplement 3 97-101

Loewenson R, Sanders D & Davies R 1991 Challenges to equity in health and health care: A Zimbabwean case study *Social Science and Medicine* 32 10 1079-1088

Lurie M, Harrison A, Wilkinson D & Karim S A 1997 Circular migration and sexual networking in rural KwaZulu/Natal: implications for the spread of HIV and other sexually transmitted diseases *Health Transition Review* 7 Supplement 3 17-27

Lyons M 1992 *The Colonial Disease: a Social History of Sleeping Sickness in Northern Zaire 1900-1940* Cambridge, Cambridge University Press

Mabadeje A F B, Abosede O & Abiose A K 1995 Awareness and acceptability of the essential drugs list by doctors - a preliminary study in Nigeria, in *The health of nations,* ed **B F Iyun, Y Verhasselt and J A Hellen,** Avebury, Aldershot

Mabogunje A L 1995 Beyond health care delivery in Africa, in *The health of nations,* ed **B F Iyun, Y Verhasselt and J A Hellen,** Avebury, Aldershot.

MacDonald D S 1996 Notes on the socio-economic and cultural factors influencing the transmission of HIV in Botswana *Social Science and Medicine* 42 9 1325-1333

McGrath J W 1993 Anthropology and Aids: The cultural context of sexual risk behaviour among urban Baganda women in Kampala, Uganda *Social Science and Medicine* 36 4 429-439

Machungo F, Zanconato G & Bergstrom S 1997 Reproductive characteristics and post-abortion consequences in women undergoing illegal and legal abortion in Maputo *Social Science and Medicine* 45 11 1007-1015

McPake B & Hongoro C 1995 Contracting out of clinical services in Zimbabwe *Social Science and Medicine* 41 1 13-24

Macrae J, Zwi A B & Gilson L 1996 A triple burden for health sector reform: 'post'-conflict rehabilitation in Uganda *Social Science and Medicine* 42 7 1095-1108

Madge C 1994 Collected food and domestic knowledge in The Gambia, West Africa *The Geographical Journal* 160 3 280-294

Magezi M G 1991 Against a sea of troubles: AIDS control in Uganda *World Health Forum* 12 3 302-306

Makemba A M *et al* 1995 Community-based sale, distribution and insecticide impregnation of mosquito nets in Bagamoyo District, Tanzania *Health Policy and Planning* 10 1 50-59

Malkhazova S M & Karimova T Y 1995 Medico-geographical aspects of farming in Africa, in *The health of nations*, ed **B F Iyun, Y Verhasselt and J A Hellen,** Avebury, Aldershot

Mann, J M and Tarantola D J M eds 1996 *AIDS in the World II* New York, Oxford University Press

Martina A 1996 The quantity/quality of children hypothesis in developing countries: Testing by considering some demographic experiences in China, India and Africa *Health Transition Review* 6 191-212

Massam B H, Akhtar R & Askew I D 1991 Applying operations research to health planning: locating health centres in Zambia, in *Health care patterns and planning in developing countries*, ed **R Akhtar**, Greenwood Press, London

Mbaruku G & Bergström S 1995 Reducing material mortality in Kigoma, Tanzania *Health Policy and Planning* 10 1 71-78

Mbugua J K, Bloom G H & Segall M M 1995 Impact of user charges on vulnerable groups: the case of Kibwezi in rural Kenya *Social Science and Medicine* 41 6 829-835

Messersmith L J *et al* 1994 Patterns of sexual behaviour and condom use in Ile-Ife, Nigeria: implications for AIDS/STD prevention and control *Health Transition Review* 4 197-216

Mnyika K S & Killewo J Z J 1991 Irrational drug use in Tanzania *Heath Policy and Planning* 6 2 185-187

Moens F 1990 Design, implementation, and evaluation of a community financing scheme for hospital care in developing countries: a pre-paid health plan in the Bwamanda health zone, Zaire *Social Science and Medicine* 30 12 1319-1327

Moses S, Muia E, Bradley J, Nagelkerke N, Ngugi E, Njeru E, Eldridge G, Olenja J, Wotton K, Plummer F & Brunham R 1994 Sexual behaviour in

Kenya: implications for sexually transmitted disease transmission and control *Social Science and Medicine* 39 12 1649-1656

Mturi A K & Curtis S L 1995 The determinants of infant and child mortality in Tanzania *Health Policy and Planning* 10 4 384-394

Muyinda H, Seeley J, Pickering H & Barton T 1997 Social aspects of AIDS-related stigma in rural Uganda *Health and Place* 3 3 143-147

Mwabu G 1995 Health care reform in Kenya: a review of the process, in *Health sector reform in developing countries: making health development sustainable*, ed **P Berman**, Harvard University Press, Boston

Mwabu G, Mwanzia J & Liambila W 1995 User charges in government health facilities in Kenya: effect on attendance and revenue *Health Policy and Planning* 10 2 164-170

Mwaniki D L, Courtney J M & Gaylor J D 1994 Endemic fluorosis: an analysis of needs and possibilities based on case studies in Kenya *Social Science and Medicine* 39 6 807-813

Mwenesi H, Harpham T & Snow R W 1995 Child malaria treatment practices among mothers in Kenya *Social Science and Medicine* 40 9 1271-1277

Nalugoda F, Wawer M J, Konde-Lule J K, Menon R, Gray R H, Serwadda D, Sewankambo N K & Li C-J 1997 HIV infection in rural households, Rakai District, Uganda *Health Transition Review* 7 Supplement 2 127-140

Nathan M A, Fratkin E M & Roth E A 1996 Sedentism and child health among Rendille pastoralists of Northern Kenya *Social Science and Medicine* 43 4 503-515

Ndeki S S, Towle A, Engel C E & Parry E H O 1995 Doctor's continuing education in Tanzania: distance learning *World Health Forum* 14 1 59-65

Ndosi N K & Waziri M C 1997 The nature of parasuicide in Dar Es Salaam, Tanzania *Social Science and Medicine* 44 1 55-61

Nevill C G 1990 Malaria in sub-Saharan Africa *Social Science and Medicine* 31 6 667-669

Ngalande Banda E E & Simukonda M 1994 The public/private mix in the health care system in Malawi *Health Policy and Planning* 9 1 63-71

Ng'weshemi J, Boerma T, Bennett J & Schapink D eds *1997 Health Prevention and AIDS in Africa: a District Level Approach* Royal Tropical Institute, Amsterdam

Nnko S & Pool R 1997 Sexual discourse in the context of AIDS: dominant themes on adolescent sexuality among primary school pupils in Magu District, Tanzania *Health Transition Review* 7 Supplement 3 85-90

Ntozi J P M 1995 The East African AIDS epidemic and the absence of male circumcision: what is the link? *Health Transition Review* 5 97-117

Nur E T M 1993 The impact of malaria on labour use and efficiency in the Sudan *Social Science and Medicine* 37 9 1115-1119

Nwakoby B N 1992 The influence of new material care facilities in rural Nigeria *Health Policy and Planning* 7 3 269-278

Obbo C 1993 *HIV* transmission through social and geographical networks in Uganda *Social Science and Medicine* 36 7 949-955

Obot I S 1990 Sustance abuse, health and social welfare in Africa: An analysis of the Nigerian experience *Social Science and Medicine* 31 6 699-704

Obot I S 1992 Ethical and legal issues in the control of drug abuse and drug trafficking: the Nigerian case *Social Science and Medicine* 35 4 481-493

Ofori-Adjei D & Arhinful D K 1996 Effect of training on the clinical management of malaria by medical assistants in Ghana *Social Science and Medicine* 42 8 1169-1176

Ogbu O & Gallagher M 1992 Public expenditures and health care in Africa *Social Science and Medicine* 34 6 615-624

Ogbuagu S C & Charles J O 1993 Survey of sexual networking in Calabar *Health Transition Review* 3 105-119

Ogoh Alubo S 1990 Debt Crisis, health and health services in Africa *Social Science and Medicine* 31 6 639-648

Ogunbekun I O 1991a Which direction for health care in Nigeria? *Health Policy and Planning* 6 3 254-261

Ogunbekun I O 1991b Cash for health care: the unending search *World Health Forum* 12 4 423

Ogunbodede E 1991 Dental care: the role of traditional healers *World Health Forum* 12 4 443

Ohadike D C 1991 Diffusion and physiological responses to the influenza pandemic of 1918-19 in Nigeria *Social Science and Medicine* 32 12 1393-1399

Ohadike P O 1996 The African population growth and development conundrum *Health Transition Review* 6 325-344

Ojo K O 1990 International migration of health manpower in sub-Saharan Africa *Social Science and Medicine* 31 6 631-637

Okafor S I 1991 Spatial aspects of health care provision in Nigeria, in *Health care patterns and planning in developing countries*, ed **R Akhtar**, Greenwood Press, London

Olango P & Aboud F 1990 Determinants of mothers' treatment of diarrhoea in rural Ethiopia *Social Science and Medicine* 31 11 1245-1249

Oloko B A & Omoboye A O 1993 Sexual networking among some Lagos State adolescent Yoruba students *Health Transition Review* 3 Supplement 151-157

Omar M A 1992 Health care for nomads too, please *World Health Forum* 13 4 307-311

Omorodion F I 1993a Sexual networking among market women in Benin City, Bendel State, Nigeria *Health Transition Review* 3 Supplement 159-169

Omorodion F I 1993b The socio-cultural context of health behaviour among Esan communities, Edo State, Nigeria *Health Transition Review* 3 2 125-137

Oni J B 1995 Fostered children's perception of their health care and illness treatment in Ekiti Yoruba households, Nigeria *Health Transition Review* 5 21-34

Onyango A, Tucker K & Eisemon T 1994 Household headship and child nutrition: A case study in Western Kenya *Social Science and Medicine* 39 12 1633-1639

Oppong C 1995 A high price to pay: for education, subsistence and a place in the job market *Health Transition Review* 5 Supplement 35-56

Orubuloye I O, Caldwell J C & Caldwell P 1993 The role of religious leaders in changing sexual behaviour in Southwest Nigeria in an era of AIDS, *Health Transition Review* 3 Supplement 93-103

Orubuloye I O, Caldwell J C & Caldwell P 1993 African women's control over their sexuality in an era of AIDS *Social Science and Medicine* 37 7 859-872

Orubuloye I O, Caldwell J C, Caldwell P & Jain S eds (1995) The Third World AIDS epidemic *Health Transition Review*, Supplement to Vol 5 Canberra, Australian National University

Osei Y 1993 Family support for psychiatric patients *World Health Forum* 14 4 385-390

Oshiname F O & Brieger W R 1992 Primary care training for patent medicine vendors in rural Nigeria *Social Science and Medicine* 35 12 1477-1484

Oshomuvwe J O 1990 Health services for the aged in sub-Saharan Africa *Social Science and Medicine* 31 6 661-665

O'Toole Erwin J 1993 Reproductive tract infections among women in Ado-Ekiti, Nigeria: Symptoms recognition, perceived causes and treatment choices *Health Transition Review* 3 Supplement 135-149

Oyeneye O Y & Kawonise S 1993 Sexual networking in Ijebu-Ode, Nigeria: An exploratory study *Health Transition Review* 3 Supplement 171-183

Packard R M & Epstein P 1991 Epidemiologists, social scientists, and the structure of medical research on AIDS in Africa *Social Science and Medicine* 33 7 771-794

Parker M 1992 Re-assessing disability: the impact of schistosomal infection on daily activities among women in Gezira Province, Sudan *Social Science and Medicine* 35 7 877-890

Paul B K 1993 Material mortality in Africa: 1980-87 *Social Science and Medicine* 37 6 745-752

Pepperal J, Garner P, Fox-Rushby J, Moji N & Harpham T 1995 Hospital or health centre? A comparison of the costs and quality of urban outpatient services in Maseru, Lesotho *International Journal of Health Planning and Management* 10 59-71

Pezzino G & Mesfin H 1991 The right drugs in the right amounts *World Health Forum* 12 2 175

Phillips D R 1990 *Health and health care in the Third World* London, Longman

Phillips D R & Verhasselt Y eds 1994 *Health and development* London, Routledge

Pick W M & Obermeyer C M 1996 Urbanisation, household composition and the reproductive health of women in a South African city *Social Science and Medicine* 43 10 1431-1441

Pickering H, Todd J, Dunn J, Pepin J & Wilkins A 1992 Prostitutes and their clients: a Gambian survey *Social Science and Medicine* 34 1 75-88

Pickering H & Wilkins H A 1993 Do unmarried women in African towns have to sell sex, or is it a matter of choice? *Health Transition Review* 3 17-27

Pickering H, Okongo M, Bwanika K, Nnalusiba B & Whitworth J 1997 Sexual behaviour in a fishing community on Lake Victoria, Uganda *Health Transition Review* 7 1 13-20

Pillay A & Lockhat M 1997 Developing community mental health services for children in South Africa *Social Science and Medicine* 45 10 1493-1501

Pool R, Maswe M, Boerma J T & Nnko S 1996 The price of promiscuity: why urban males in Tanzania are changing their sexual behaviour *Health Transition Review* 6 203-221

Preble E A 1990 Impact of HIV/AIDS on African children *Social Science and Medicine* 31 6 671-680

Preston-Whyte E 1994 Gender and the lost generation: the dynamcis of HIV transmission among black South African teenagers in KwaZulu/Natal *Health Transition Review* 4 241-255

Price M 1994 The impact of political transformation in South Africa on public/private mix policy debates *Health Policy and Planning* 9 1 50-62

Prothero R M 1994 Forced movements of population and health hazards in tropical Africa *International Journal of Epidemiology* 23 4 657-664

Prual A, Youssouf G, Djakounda M & Huguet D 1994 Traditional uvulectomy in Niger: a public health problem? *Social Science and Medicine* 39 8 1077-1082

Ramphele M 1997 Adolescents and violence: adults are cruel, they just beat, beat, beat *Social Science and Medicine* 45 8 1189-1197

Renne E P 1993a Changes in adolescent sexuality and the perception of virginity in a southwestern Nigerian village *Health Transition Review* 3 Supplement 121-133

Renne E P 1993b Condom use and the popular press in Nigeria *Health Transition Review* 3 1 41-55

Renne E P 1996 Shifting boundaries of fertility change in Southwestern Nigeria *Health Transition Review* 6 169-190

Reynolds J & Swartz L 1993 Professional constructions of a 'lay' illness: 'nerves' in a rural 'coloured' community in South Africa *Social Science and Medicine* 36 5 657-663

Rip M R & Hunter J M 1990 The community perinatal health care system of urban Cape Town, South Africa - II geographical patterns *Social Science and Medicine* 30 1 119-130

Rodda A 1991 *Women and the environment* London, Zed Books

Root G 1997 Population density and spatial differentials in child mortality in Zimbabwe *Social Science and Medicine* 44 3 413-421

Rutenberg N, Blanc A K & Kapiga S 1994 Sexual behaviour, social change, and family planning among men and women in Tanzania *Health Transition Review* 4 173-196

Sahn D & Bernier R 1995 Has structural adjustment led to health sector reform in Africa? , in *Health sector reform in developing countries: making health development sustainable*, ed **P Berman,** Harvard University Press, Boston

Sanders D & Sambo A 1991 AIDS in Africa: The implications of economic recession and structural adjustment *Health Policy and Planning* 6 2 157-165

Satterthwaite D, Hart R, Levy, C, Mitlin, D, Ross D, Smit J & Stephens C 1996 *The Environment for Children: Understanding and Acting on the Environmental Hazards that Threaten Children and their Parents* Earthscan, London

Schoepf B G 1991 Ethical, methodological and political issues of AIDS research in Central Africa *Social Science and Medicine* 33 7 749-763

Schoepf B G 1993 AIDS action-research with women in Kinshasa, Zaire *Social Science and Medicine* 37 11 1401-1413

Schopper D, Doussantousse S & Orav J 1993 Sexual behaviors relevant to HIV transmission in a rural African population *Social Science and Medicine* 37 3 401-412

Schopper D, Doussantousse S, Ayiga N, Ezatirale G, Idro W & Homsy J 1995 Village-based AIDS prevention in a rural district in Uganda *Health Policy and Planning* 10 2 171-180

Seeley J A, Kengeya-Kayondo J F & Mulder D W 1992 Community-based HIV/AIDS research - whither community participation? Unsolved problems in a research programme in rural Uganda *Social Science and Medicine* 34 10 1089-1095

Seidel G 1993 The competing discourses of HIV/AIDS in sub-Saharan Africa: Discourses of rights and empowerment vs discourses of control and exclusion *Social Science and Medicine* 36 3 175-194

Setel P 1996 AIDS as a paradox of manhood and development in Kilimanjaro, Tanzania *Social Science and Medicine* 43 8 1169-1178

Shehu D 1995 Prevention of communicable diseases: Lessons from the expanded immunization programme in north-western Nigeria, in *The health of nations,* ed **B F Iyun, Y Verhasselt and J A Hellen,** Avebury, Aldershot.

Shokunbi W A, Saliu I and Essien E M 1993 Incidence of antibodies to HIV_1 and HIV_2 gene products in seropostive cases seen in Ibadan, Nigeria *Health Transition Review* 3 Supplement 185-188

Smith, J 1995 *Visions and discussions on genital mutilation of girls: an international survey* Defence for Children International Section, The Netherlands Ministry of Foreign Affairs, The Hague

Soeters R & Nzala S 1994 Primary health care trading companies for sustainable development *World Health Forum* 15 1 51

Sonko S 1994 *Fertility and culture in sub-Saharan Africa: a review* UNESCO, Blackwell, Oxford

Soyibo A, Iyun B F & Oyejide T A 1995 Agricultural development projects and women's quality of life in Nigeria: A case study, in *The health of nations,* ed **B F Lyun, Y Verhasselt and J A Hellen,** Avebury, Aldershot

Standing H 1992 AIDS: Conceptual and methodological issues in researching sexual behaviour in sub-Saharan Africa *Social Science and Medicine* 34 5 475-483

Stephens C 1995 The urban environment, poverty and health in developing countries *Health Policy and Planning* 10 2 109-121

Stephens C, Masamu E T, Kiama M G, Keto A J, Kinenekejo M, Ichimori K & Lines J 1995 Knowledge of mosquitos in relation to public and domestic control activities in the cities of Dar es Salaam and Tanga *Bulletin of the World Health Organization* 73 1 97-104

Sundby J, Mboge R & Sonko S 1998 Infertility in The Gambia: frequency and health care seeking *Social Science and Medicine* 46 7 891-899

Super C M, Keefer C H & Harkness S 1994 Child care and infectious respiratory disease during the first two years of life in a rural Kenyan community *Social Science and Medicine* 38 2 227-229

Taha T E T 1993 Family planning practice in Central Sudan *Social Science and Medicine* 37 5 685-689

Tayeh A, Cairncross S & Maude G H 1996 The impact of health education to promote cloth filters on dracunculiasis prevalence in the Northern region, Ghana *Social Science and Medicine* 43 8 1205-1211

Taylor C C 1990 Condoms and cosmology: the 'fractal' person and sexual risk in Rwanda *Social Science and Medicine* 31 9 1023-1028

Taylor L, Seeley J & Kajura E 1996 Informal care for illness in rural southwest Uganda: the central role that women play *Health Transition Review* 6 49-56

Tekce B 1990 Households, resources and child health in a self-help settlement in Cairo, Egypt *Social Science and Medicine* 30 8 929-940

Thomson M *et al* 1996 Geographical perspectives on bednet use and malaria transmission in the Gambia, West Africa *Social Science and Medicine* 43 1 101-112

Travis Bassett M Bijlmakers L & Sanders D M 1997 Professionalism, patient satisfaction and quality of health care: experience during Zimbabwe's structural adjustment programme *Social Science and Medicine* 45 12 1845-181852

Turton R W & Chalmers B E 1990 Apartheid, stress and illness: The demographic context of distress reported by South African Africans *Social Science and Medicine* 31 11 1191-1200

Udegbe I B 1991 Current adjustment patterns of elderly Yoruba women and their health implications, in *The health of nations,* ed **B F Iyun, Y Verhasselt and J A Hellen,** Avebury, Aldershot

UNICEF (Annual) *The state of the world's children* Oxford University Press, New York

Urassa M, Boerma J T, Ng'weshemi J Z L, Isingo R, Schapink D & Kumogola Y 1997 Orphanhood, child fostering and the AIDS epidemic in rural Tanzania *Health Transition Review* 7 Supplement 2 141-153

Uyanga J 1990 Economic development strategies: maternal and child health *Social Science and Medicine* 31 6 649-659

Van Bergen J E A M 1996 Epidemiology and health policy - a world of difference? A case-study of a cholera outbreak in Kaputa district, Zambia *Social Science and Medicine* 43 1 93-99

Varga C 1997 Sexual decision-making and negotiation in the midst of AIDS: youth in KwaZulu/Natal, South Africa *Health Transition Review* 7 Supplement 3 45-67

Venier J, Ross M & Akande A 1998 HIV/AIDS-Related social anxieties in adolescents in three African countries *Social Science and Medicine* 46 3 313-320

Vogel R J 1994 Health care cost-recovery simulations from parametric estimates: methodology and results from Ogun State, Nigeria *International Journal of Health Planning and Management* 9 183-198

Vogleman L 1990 Psychology, mental health care and the future: is appropriate transformation in post-apartheid South Africa possible? *Social Science and Medicine* 31 4 501-505

Vos J, Borgdorff M W & Kachidza E G 1990 Cost and output of mobile clinics in a commercial farming area in Zimbabwe *Social Science and Medicine* 31 11 1207-1211

Walley J, Tefera B & McDonald, M, 1991 Integrating health services: the experience of NGOs in Ethiopia *Health Policy and Planning* 6 4 327-335

Wandel M & Holmboe-Ottesen G 1992 Child malnutrition and development processes in two Tanzanian villages *Health Policy and Planning* 7 2 123-134

Wang'ombe J K & Mwabu G M 1993 Agricultural land use patterns and malaria conditions in Kenya *Social Science and Medicine* 37 9 1121-1130

Watts S 1998 Perceptions and priorities in disease eradication: dracunculiasis eradication in Africa *Social Science and Medicine* 46 7 799-810

Watts S 1998 An ancient scourge: The end of dracunculiasis in Egypt *Social Science and Medicine* 46 7 811-819

Watts S, Khallaayoune K, Bensefia R, Laamrani H & Gryseels B 1998 The study of human behaviour and schistosomiasis transmission in an irrigated area in Morocco *Social Science and Medicine* 46 6 755-765

Weaver M, Ndamobissi R, Kornfield R, Blewane C, Sathe A, Chapko M, Bendje N, Nguembi E & Senwara-Defiobona 1996 Willingness to pay for child survival: results of a national survey in Central African Republic *Social Science and Medicine* 43 6 985-998

Weaver M, Wong H, Sako A, Simon R & Lee F 1994 Prospects for reform of hospital fees in sub-Saharan Africa: a case study of Niamey National hospital in Niger *Social Science and Medicine*38 4 565-574

Werner E, Harpham T, Blue I and Goldstein G 1998 *Healthy cities in developing countries* Earthscan, London

Wilson D, Sibanda B, Mboyi L, Msimanga & Dube G 1990 A pilot study for an HIV prevention programme among commercial sex workers in Bulawayo, Zimbabwe *Social Science and Medicine* 31 5 609-618

Woelk G B 1994 Primary health care in Zimbabwe: Can it survive? *Social Science and Medicine* 39 8 1027-1035

Wolf-Gould C S *et al* 1991 Misinformation about medications in rural Ghana *Social Science and Medicine* 33 1 83-89

World Bank 1992 *World development report 1992: development and the environment* Oxford University Press, New York

World Bank 1993 *World development report 1993: investing in health* Oxford University Press, New York

World Health Organization 1992 *Our planet, our health; report of the WHO Commission on Health and Environment* WHO, Geneva

World Health Organization 1995 *Traditional practitioners as primary health care workers; a study of effectiveness of four training projects in Ghana, Mexico and Bangladesh* Division of Strengthening of Health Services and Traditional Medicine Programme, WHO, Geneva

Yach D 1996 Tobacco in Africa *World Health Forum* 17 1 29-36

Zwart S & Voorhoeve H W A 1990 Community health care and hospital attendance: a case study in rural Ghana *Social Science and Medicine* 31 7 711-718

Zwi A & Bachmayer D 1990 HIV and AIDS in South Africa: what is an appropriate public health response? *Health Policy and Planning* 5 4 316-326