

**Review and annotated bibliography:
Responding to inequalities in health in
urban areas**

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This annotated bibliography is the first stage of work on exploring urban inequalities in health in the east and southern African region and is being used to inform the focus for follow up work using various forms of evidence.

We acknowledge support from IDRC Canada

Executive summary

Training and Research Support Centre (TARSC) as cluster lead of the “Equity Watch” work in EQUINET is following up on the findings of the 2012 Regional Equity Watch and the country Equity Watch reports with a deeper systematic analysis of available evidence on inequalities in health and its determinants *within* urban areas and the responses to urban inequalities from the health sector and through health promoting interventions of other sectors and communities acting on public health and the social determinants of health. This document presents evidence from 105 published papers in English post 2000 on patterns of and responses to urban inequalities in health in ESA countries. The evidence is presented in an annotated bibliography and analysis. It is being used to identify key areas of focus and parameters for deeper review and analysis.

While urbanisation is associated with rising and often conspicuous wealth in some groups and with increasing social media, it also involves many dimensions of urban stress identified in the literature, often in close proximity to wealth:

- In poor living conditions, including substandard and overcrowded housing, water, sanitation systems, unhealthy cooking fuels and technologies, ground water contamination and solid waste, air and water pollution; traffic including injury from motorcycles and other forms of ‘public transport’;
- In employment and income insecurity; poor quality and costly food and from harmful use of alcohol, tobacco and other drugs; and
- In conditions of social insecurity, crime and different forms of violence, co-existing with isolation, exclusion and power imbalances across different age and social groups.

While health services are generally available, cost, quality and acceptability barriers are leading to inverse care, with poorest groups using services less, moreso than in rural areas. This is disrupting the continuity of care necessary for common chronic and SRH conditions reported earlier. The barriers to care point to the possibility of ‘closing the gap’ through the way services are organized and delivered.

The literature points to broad trends, but includes less evidence on social inequalities in health *within* urban areas in ESA countries. Much of the published evidence comes from DSS sites located in Nairobi urban ‘slums’ and from South Africa, where household data is more available over time. Ad hoc studies point to a range of other social features that are associated with health inequalities *within* urban areas, associated with commonly measured factors such as mother’s education and wealth, but also with:

- high mobility and different waves of inward *migration*, with greater insecurity, weaker social support and higher HIV risk noted in more recent migrants into cities;
- different *forms of residency*, not only in terms of informal settlements but including also groups living in informal housing and ‘backyard shacks’ or as lodgers in formal areas;
- living in *different areas in the city*, both in terms of peripheries and slums, and high density suburbs historically sited in less healthy environments, where residents face new risks of epidemic disease from failed water systems and use of shallow wells; and
- *different age groups and stages of the life-course*, including the sexual and reproductive, dietary, social and environmental risks faced by adolescents transitioning to adulthood, the risk of chronic conditions in adults and the physical and social risks of elderly people.
- *different levels of formal recognition*, in terms of the security of informal settlement, employment, and in terms of inequitable past and current distribution of services and infrastructure.

The picture presented in the literature is not a coherent one- it is rather a series of fragments of different and often disconnected facets of risk, health and care within urban areas. There is also limited direct voice of those experiencing the changes and limited report of the features of urbanisation that promote wellbeing. Some papers point to these in the role of: urban agriculture (UA) in supporting food security, schools and other facilities in promoting sports and other facilities

for children; community health workers and supportive families enabling service uptake; or increased levels of social power and autonomy in women supporting improved reproductive health.

The health challenges raised imply a demand for urban health services and responses that are appropriate and accessible to the wide diversity of people serviced, across different areas, residences, gender, stages of life, wealth, recency of migration, employment security, social power and inclusion; in ways that tap the resources, capacities and assets that exist within urban areas, and that build coherence and continuity with communities and with other sectors.

However, the literature found was significantly more focused on the challenges than on the solutions. The papers sourced confirmed the relevance of primary care and community-based approaches, with CHWs, to carry out participatory assessments, promote new PHC approaches, use social media and support service uptake to address urban determinants. However the documented interventions made weak links between PHC services, urban public health and the work of other sectors. Some approaches segment poorer groups in small risk pools in community based schemes without confronting the wider imbalances in resources, power, or in sectoral practices and planning. The studies raised a range of health promoting responses from other sectors, in regulating harmful practice; promoting appropriate technologies for UA, food security, environments and energy; in addressing deficits in urban sanitation, safe water, in using solar power for water disinfection, rainwater harvesting, cooking technologies, and in relation to the services they provide. They pointed to sites that merit greater attention in promoting public health, such as market places. Here too, however, there seemed to be 'sectoral silos' with limited collaborative interaction or measures to build synergies across sectors in what is documented. Local councils are documented to play a key role in co-ordination, and state investments are reported to play a key role in leveraging community oriented private sector innovation. The papers indicate the importance of an adequately resourced public health capacity in the state to encourage and ensure the role of other sectors, including in terms of the legal obligations in public health and other law. They also note that public health laws needed to be updated to take into account urban realities and to achieve a better balance between competing goals that both affect health: such as between ensuring safe microbial levels in waste water used in UA and ensuring adequate food.

Many of the papers recommended community involvement in policy and actions to address these urban health determinants. However, few papers presented interventions that implemented and tested these recommendations, with almost no exploration of the community assets, capacities, roles and perceptions that inform, shape and sustain health actions, or their impact on social cohesion, solidarity, segmentation and exclusion across cities. The paucity of papers on this suggests the need for a further and more specific search on the health assets in urban communities, on the health promoting and harming ways communities address the drivers raised earlier of social inequality and poor health in urban areas; including on the peer to peer, informal support networks, information sharing and connectedness through social media and other more socially grounded approaches to promoting health in urban areas.

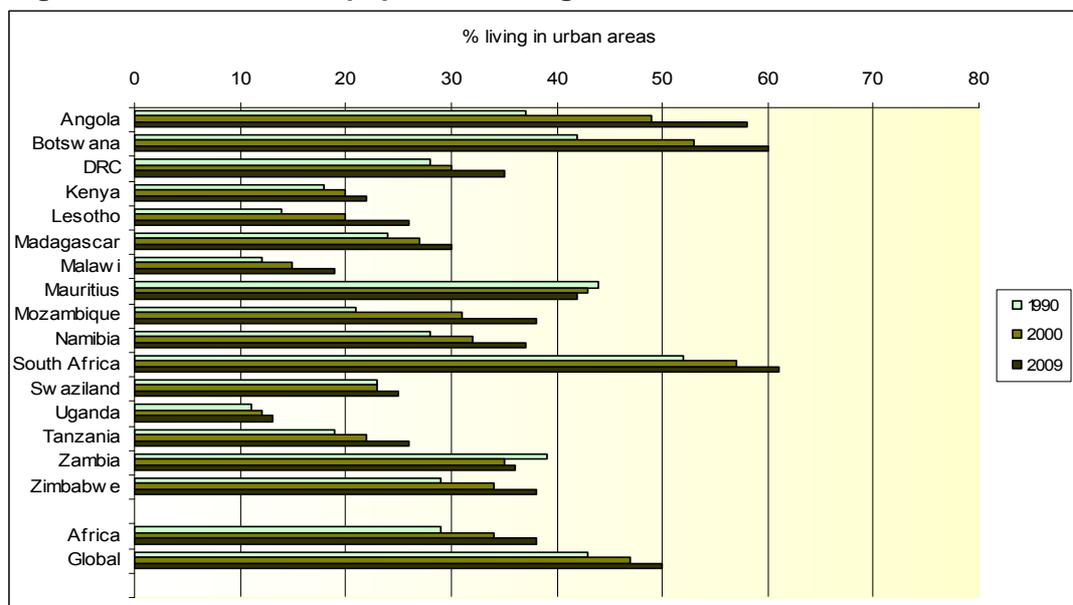
These gaps in information may be addressed through some additional searches, including of grey literature and inclusion of wider determinants in site surveillance such as DSS sites that cover more areas in cities. The rapid, diverse and multifactorial changes taking place in urban areas, some of which are poorly documented, also call for participatory approaches that include the direct voice of those experiencing urban life. Participatory action research can provide a more 'people' centred' approach to address this complexity, drawing on the lived experience of and evidence from specific (cohort) groups across the city. The cohort may be one of adolescents in transition to adulthood from different parts of the city; of different strata of market women; informal producers; recent migrants; or lodgers/ backyard dwellers, noting that they are found in many parts of the city and not just the poorest localities. Participatory approaches also raise the opportunity of using cycles of action to build or support participatory, systemic and grounded practice in the responses to health inequalities, including in urban primary health care.

1. Background

The 2012 Regional Equity Watch provided evidence of aggregate improvements in a number of health outcomes in east and southern Africa (ESA), including in child survival and in HIV prevalence and in access to services for immunisation and HIV prevention and care. Less progress was found in child nutrition, however, and there were rising levels of non-communicable disease (NCD) (EQUINET 2012). Aggregate data does not provide the full picture: There were seven fold differences in under-five year mortality between countries of the region, wide differences in nutrition by wealth and wider social and geographical inequalities in access to reproductive health and maternal health services within countries than for many other areas of health service delivery.

An important *demographic* context for health equity in the region has been the rapid pace of urbanisation. By 2050, sub-Saharan Africa's (SSA) urban population is expected to grow from 414 million to over 1.2 billion (Hopewell and Graham 2014). While there is some variability across countries, the urban share of the population in ESA countries has increased from 28% in 1990 to 35% in 2009, a growth of 7% points which is faster than the global or African average (WHO 2011, See Figure 1).

Figure 1: Percent of the population living in urban areas 1990-2009



Source: EQUINET 2012 based on data from WHO 2011

The rapid rate of urbanisation has, in many countries in the region, also been associated with emerging social inequalities within urban areas. On the one hand, primary health care (PHC) interventions have closed some social and health inequalities that existed between urban and rural areas. In Zambia, for example, rural-urban gaps in access to safe water and immunisation and in child nutrition were substantially reduced, despite a widening gap in poverty levels between rural and urban areas in the period (UNZA, MoH Zambia, TARSC 2011). In some cases, however, urban areas have had a more rapid spread of disease. HIV transmission and prevalence was higher in wealthier, more educated and urban groups (EQUINET 2012). Higher income urban groups who do not use public services have been found to have lower coverage of PHC services. Hence, for example, South African Demographic and Health Surveys show evidence of rural and less educated groups having even higher immunization coverage than their urban, educated counterparts (DoH, MRC, ORC Macro 2007). Wealth related inequalities *within* areas (rural and urban) have become increasingly important. In one analysis of 2008 data from African countries, in 26 countries, *within-*

country wealth-related inequalities accounted for more than one quarter of the national overall coverage gap in maternal health services (Hosseinpour et al 2011). DHS surveys in ESA countries indicated very wide wealth inequalities in contraceptive prevalence, in unmet need for family planning, and skilled assistance for deliveries (EQUINET 2012). WHO AFRO found in 2010 in 11 African countries studied that socioeconomic position accounted for at least half of the inequality in skilled birth attendance (WHO AFRO 2010). DHS data from 19 countries in ESA identified that while geographical inequalities are pronounced in relation to child mortality, social status and wealth are more important factors in inequalities in access to maternal and disease control services and even more so in access to the social determinants that affect health (Loewenson et al 2010).

Income poverty is high across most of the region and has increased between 1990 and 2010. In the last two decades income poverty has grown even in countries experiencing per capita GDP growth (EQUINET 2012). While urban populations in ESA countries have historically had higher income levels and better social conditions than rural, the deregulation of employment and commercialisation of essential services in the structural adjustment programmes in African countries reduced urban employment and income security and raised costs of basic services for urban residents (EQUINET 2012).

Poor living conditions, insecure employment, low wages and high food prices contribute to urban poverty. Three quarters of the urban population living under slum conditions globally are in Sub Saharan Africa (UNFPA 2008). Many urban informal settlements are built on land poorly suited for housing without basic services, as they are not recognized by municipal authorities. This leads to a vicious cycle where poor urban dwellers lack services because they live in informal settlements, and their areas are seen as informal because they lack services (Misilu 2010). Rising food prices are a particularly significant factor in urban poverty, as almost half (49.6%) of total expenditure by poor urban households was found to be on food. In South Africa, for example, where food inflation, at 16.7% between October 2007 and October 2008, outstripped overall inflation (at 12.1%), the poorest urban households would have had to raise their incomes by at least 22% to maintain the same food basket between April 2007 to October 2008 (Frayne et al 2010). In Zambia, urban workers losing secure jobs struggled to access food, transport, housing and other services, especially with rising prices, and were found to have higher levels of depression and harmful alcohol use (Fallavier et al 2005). In DRC urban poverty has been linked to social insecurity, crime and social conflict, particularly given close proximity of visible signs of wealth (Misilu 2010). With such common negative health consequences of growing urbanisation, African ministers of health noted that while “globalization, trade and urbanization” are important for human development, they are also major external drivers of health problems and widening health inequities (WHO AFRO 2011b).

1.1 Aims

These findings led Training and Research Support Centre (TARSC) as cluster lead of the “Equity Watch” work in EQUINET to carry out work to follow up on the 2012 Regional Equity Watch and the country Equity Watch reports with a deeper systematic analysis of available evidence on inequalities in health and its determinants *within* urban areas. Efforts to address urban inequalities in health are not well studied or documented in many countries in the region, particularly in terms of the cross sectoral, collaborative and participatory approaches that appear to have been associated with improved outcomes in some deprived urban areas (Gardener 2006). TARSC is thus exploring responses to urban inequalities from the health sector and through health promoting interventions of other sectors and communities acting on public health and the social determinants of health. This work is intended for report to national, regional and international levels, including in discussion on interventions that aim to deliver on sustainable development goals. It intends to give specific attention to actions that ‘close the gap’, to motivate discussion on participatory interventions to address urban inequalities in health.

2. Methods

The analysis of evidence on health inequalities within urban areas and the responses to them is being done in stages. In the first stage we have produced an annotated bibliography and analysis of published papers on the pattern of and responses to urban inequalities in health in ESA countries. This review is being used to identify key areas of focus and parameters for follow up review and analysis.

The first phase of work was implemented in August 2015 using an online search of papers drawn from English language literature post 2005 accessed from google, google scholar, pubmed, medline and other online libraries, Cleveland State University and Case Western Reserve University using the search terms:

- 'urban' OR 'city' OR 'peri-urban' AND
- 'Inequalities' OR 'equity' OR 'differentials' OR 'trends' AND
- 'Africa' OR 'by name of each of the 16 countries in East and Southern Africa covered by EQUINET, listed that is Angola, Botswana, DRC, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe; AND
- 'health' OR 'health care' OR 'health services' OR 'social determinants' OR 'public health' OR 'intersectoral action' OR 'health promotion' .

An initial search post 2000 in English in Google Scholar, Medline and Pubmed was used to test the date range and search terms. Given the large numbers of papers found, the search was narrowed to post 2005, and for relevance the terms were searched in the titles. An initial review of the abstracts was used to identify relevance to the inclusion criteria and 118 papers included of the 1060 found. A list was prepared by the second author (MM) of the papers sourced and their abstracts or brief descriptors (<500 words) on the aims, geographical scope, main methods, main findings and conclusions and the abstracts reviewed by the first author (RL) for relevance to the theme. Where the abstract was not sufficiently clear the full paper was reviewed (this was done in about 10% of papers). The number included after this round was 90 papers. *Table 1* below provides the information on the number of papers sourced in this search.

Table 1: Papers sourced and included

Source	Numbers based on searches for 2005-current 'urban' OR 'city' OR 'peri-urban' AND 'inequalities' OR 'equity' OR 'differentials' OR 'trends' AND 'Africa' OR 'each of 16 ESA countries' AND				# of papers found using search terms	# of papers included in the final list	Reasons for variances
	+ 'health'	+ 'health care' OR 'health services'	+ 'social determinants'	+ 'intersectoral action' OR 'health promotion'			
Google/ google scholar	340	55	1	1	397	35	Duplicates; paper not available; paper not from 16 ESA countries;
Pubmed/ Medline	472	157	8	26	663	55	duplicates; not relevant, eg rural inequality was the focus; lack of results; articles focused outside of 16 ESA countries
TOTAL	812	212	9	27	1060	90	

Publication in this area is growing and more specific search terms are likely to yield further papers. Doing this work in stages thus allows us to identify the areas of focus from the more general search. Using these terms, the search had reached saturation, with papers repeated in other online sources, repeating later papers or yielding the same information by the same author.

The papers included were produced in an annotated bibliography with the title, citation, url, abstract covering the purpose, method, key findings and recommendations and keywords covering the content theme, country/region and type of study. The bibliography entries are organized within the categories below and are shown in the final section:

- i. Inequalities in health and mortality within urban areas
- ii. Inequalities in social determinants within urban areas
- iii. Inequalities in access to, coverage, uptake of health care/ services within urban areas
- iv. Health sector responses to urban inequalities in health
- v. Health promoting interventions of other sectors

Table 2 below summarises the papers sourced by their main features.

Table 2: Summary features of the papers sourced

(*) some papers appear in more than one section

FEATURE	Papers sourced N=90	
	Number	percent
CATEGORY (*)		
Inequalities in health and mortality within urban areas	23	25.6
Inequalities in access to, coverage, uptake of health care/ services in urban areas	17	18.9
Inequalities in social determinants within urban areas	40	44.4
Health sector responses to urban inequalities in health	14	15.6
Health promoting interventions of other sectors	11	12.2
Community responses to urban health/ health care	11	12.2
ESA COUNTRY covered (*)		
South Africa	22	24.4
Kenya	34	37.8
Other ESA countries	25	27.8
Regional	11	12.2
TYPE OF PAPER (*)		
Quantitative Survey report (excluding DHS and DSS)	47	52.2
Qualitative study report	12	13.3
DHS/ household data analysis	14	15.6
DSS site analysis	10	11.1
Routine data / HIS analysis	4	4.4
Other	16	17.8
YEAR OF PAPER		
2005-2009	20	22.2
2010-2014	56	62.2
2015	14	15.6

A further 12 papers from EQUINET work in the 2007 and 2012 Regional Equity Watch reports are cited in were included in the reference list, and a further two highly relevant papers obtained from snowballing after the initial searches. Generally the publication of papers appears to have increased between 2010 and 2015 (See Table 2). The majority of papers included were on inequalities in social determinants within urban areas, followed by inequalities in health and mortality within urban areas. Only a quarter of papers discussed interventions to address inequalities, and documentation specifically on community responses to urban inequalities in health was sparse. The papers particularly covered evidence from Kenya and South Africa, although 40% of papers did come from other countries or from regional analysis. The papers largely used ad hoc quantitative surveys (52%), with a further 27% analysing or reporting household and sentinel site survey data. This raises caution on interpreting trends found from what is documented as there is likely to be a bias, with far more limited evidence from lower income countries, from community driven interventions and from qualitative evidence. The methodological focus of the papers found can also be argued to weaken representation of experiences, perceptions and other forms of evidence on inequalities. These issues will be considered in interpreting the evidence from the review.

3. Findings

3.1 Inequalities in health within urban areas

Falling rural-differences and rising urban ill health and intra-urban inequality in health

People living in the slums of large cities in low income countries experience *high mortality*, attributed to extreme poverty, family disintegration, lack of hygiene, sanitation and medical care, poor nutritional status, HIV/AIDS, tuberculosis, environmental hazards, accidents and violence (Garenne 2010).

Informal settlement residents in ESA countries were also found to have high levels of ill health, with narrowing urban-rural differentials in selected health outcomes. DHS survey data from 22 African countries found mixed performance in relation to urban child mortality in the 2000s with an equal number of countries (5) recording declines as increases, and 12 countries recording only minimal decline (Fotso et al., 2007). The 1993-2008 Kenya Demographic and Health Surveys (DHS) and the Nairobi Urban Health and Demographic Surveillance System (NUHDSS) provided a rich source of longitudinal data from two Nairobi slums between 2003 and 2012, providing source data for a number of papers. Nairobi urban slum residents in 2007 to 2010 had high mortality primarily due to infectious diseases (Olack et al., 2014). These surveys found that while rural areas had a rapid and statistically significant downward trend in IMR, CMR and U5MR, this was not found in urban areas, *narrowing the urban-rural differential over time* (Kimani-Murage et al, 2014).

While rural-urban inequalities have narrowed due to improvements in rural areas, the lack of the same progress in urban areas appears to be associated with *worsening health in some urban communities, and widening intra-urban disparities in health*. Data from two rounds of DHS surveys between 2000 and 2011 across 10 major African cities found evidence of intra-urban inequalities in Kinshasa, Luanda, Abidjan, and Addis Ababa, but also noted that data samples from DHS are too small to reliably quantify the level and significance of these within city inequalities (Quentin et al. 2014). Urban disparities in child health were found in case study data from 1993-2003 in Kenya and Zambia, with poorest levels in lowest income urban households (Fotso et al., 2007). A survey of nearly 3000 men and women in two Nairobi slums in 2006/7 and the 2008/2009 Kenya DHS found strong intra-urban differences: HIV prevalence among slum residents was double that in non-slum urban and rural residents, with narrower male-female gaps in the slums than in other urban areas (Madise et al., 2012).

In Zambia and Kenya, low income urban households had high fertility rates (Fotso et al., 2007), and NUHDSS data showed limited decline in fertility in Nairobi slum settlements over the period (Emina et al., 2011). Sexual and reproductive health (SRH) risks for the urban poor were severe and included high rates of unwanted pregnancies, sexually transmitted infections, and poor maternal and child health outcomes (Mberu et al., 2014). A literature review and online discussion pointed to health challenges women and girls face in low-income urban areas in Africa, linked to: sexual, reproductive and maternal health; alcohol use; non-communicable diseases related to poor diet, tobacco and sedentary lifestyles; as well as an ongoing high prevalence of infectious diseases such as HIV and TB. The stresses of surviving on the economic margins in large cities and facing high levels of crime and violence is noted to lead to mental health burdens, particularly given more fragmented access to social support. These disease burdens occur at the intersections of different axes of socially constructed inequality, calling for more holistic evidence and programming rather than standalone projects, and particularly include the voices of those directly experiencing life in these settlements (Hawkins et al., 2013).

Higher mortality and morbidity in low income households and informal settlements in urban areas was associated in a number of studies with poor living and social conditions and low immunisation coverage. In Kenya the greatest declines in access to clean water and full vaccination between rural and urban areas occurred in urban slum areas, while in Zambia, infants in poor urban households had a 46% higher probability of dying than in poor rural households, with declining access to piped

water and vaccination coverage in the lowest income urban households (Fotso et al., 2007). Self-reported health status in low income areas of Nairobi, Kenya found that education, occupation, wealth, and main source of livelihood were associated with health outcomes (Falkingham et al., 2011).

Food security, quality and diet also appears to be factors that are driving intra-urban inequalities. A cross-sectional descriptive study in school children aged 6-12 years in Kawangware peri-urban slum, Nairobi found that 4.5% were wasted, 14.9% underweight and 30.2% stunted, with nutritional status significantly associated with monthly household income, food prices, morbidity trends, mode of treatment and school attendance (Chesire et al., 2008). A survey of 73 689 women aged 14-52 years attending antenatal care clinics between 1995 and 2004 in Dar es Salaam, Tanzania, found a rising prevalence of obesity and no change in the prevalence of wasting. This suggests a widening polarization in diets across urban groups, with socioeconomic status as a major factor driving differentials (Villamor et al., 2006).

Rising levels of NCDs in diverse urban communities

While communicable and nutritional disorders have been major factors in health and survival outcomes in the past, there is evidence that *non-communicable diseases (NCDs) are rising, and that the rise is more rapid for some urban communities.*

In Kenya, TB, injuries and HIV/AIDS were major causes of death but deaths due to injury, cardiovascular disease, neoplasms and respiratory tract infections (RTIs) were also rising. Substantial epidemiological transition was underway, with deaths linked to communicable diseases declining from 66 % in 2003 to 53 % in 2012, and deaths due to NCDs increasing four-fold from 5 % in 2003 to 21% in 2012, with another two-fold increase in deaths due to external causes (injuries) from 11 % in 2003 to 22 % in 2012 (Mberu et al 2015). A cross-sectional study in urban metropolitan (Kinshasa city) and rural (Kikwit) areas found that urban location, age, abdominal obesity, arterial hypertension, physical inactivity, inappropriate diet (lack of fruits-vegetables, refined sugar, animal fat and protein, starvation), social inequalities, cigarette smoking and alcohol intake to be significantly and positively associated with diabetes in general and type 2 diabetes in particular (Kasiam et al., 2009).

The 2007 National Injury Mortality Surveillance System in South Africa found significantly higher homicide and unintentional (non-transport) injury death rates in urban than rural areas, although transport-related injury mortality rates were significantly higher in the rural provinces (Sherriff et al. 2014). A 2005 nationally representative survey in Mozambique found that among women (and not men), hypertension was more frequent in urban areas, although hypertension control was also less frequent in urban women (Damasceno et al., 2009). The Tanzania Stroke Incidence Project recorded stroke incidence in two well defined demographic surveillance sites (DSS) between 2003 and 2006. Age-standardised stroke incidence rates in urban Dar-es-Salaam were higher than seen in most studies in developed countries (Walker et al., 2010), and a rapid increase in stroke incidence was found in another study in the city, with implications for the incidence of diabetes, hypertension, cardiovascular disease, cancer, and other non-communicable diseases in this population (Villamor et al., 2006). A cross-sectional, comparative, population-based survey in North West Province South Africa stratified subjects into five groups representing different levels of urbanisation: namely, deep rural, farms, squatter camps, townships and towns/cities. Rural groups had lower household incomes, less formal education, were shorter and had lower body mass indices than urban groups, but urbanization, while accompanied by an improvement in dietary quality and micronutrient intakes, was also associated with increases in overweight, obesity and several risk factors for NCDs (Vorster et al., 2005).

There were also intra-urban inequalities in these trends. Obesity rose in urban women with no or primary education and fell among women with secondary education or higher (Ziraba et al., 2009). DHS data from seven African countries between 1992 and 2005 found that the prevalence of urban

overweight/obesity increased by nearly 35% during the period, more so among the poorest (+50%) than among the richest (+7%).

As for communicable diseases, these NCD outcomes are associated with material, community, income and social conditions. A community survey in Nakuru, Kenya found that the accumulation of material resources was positively associated with hypertension and diabetes (Ploubidis et al., 2013). In South Africa, urban groups had the highest alcohol consumption (Oyebode et al. 2015). Young adults residing in urban areas, and those in lower socioeconomic strata, are argued to be most affected by rising NCDs. Furthermore, the cost of care for major CVDs and diabetes is beyond the coping capacities of individuals, households, families and governments in most African countries calling for a life-course perspective in managing NCDs (Kengne et al., 2013).

Summary comment

As the epidemiological transition progresses and social inequalities grow within urban areas, this data suggests a need to monitor inequalities beyond the commonly measured rural-urban divide, to identify and develop responses to poor health from both communicable and non-communicable diseases, and to respond to differentials in risk environments and health outcomes *within* urban areas, acknowledging that city dwellers are not a homogeneous group.

The distribution of health outcomes indicates that disease burdens occur at the intersections of different axes of socially constructed inequality, with measured factors including wealth, occupation, living conditions, especially water and sanitation, and access to PHC and education. However, there is a caveat that these are commonly measured parameters in DHS surveys, and that other less easily measured parameters may not be adequately exposed in quantitative surveys. Responding to urban inequalities calls not only for robust evidence, but also for studies that explore multiple factors and interventions that go beyond stand-alone time limited projects. The trends point to the diversity of conditions affecting health, rooted within changing and polarizing patterns of urbanization. The evidence suggests the need to explore life course interventions that address different dimensions of deprivation and risk. Further, with the rapid, diverse and sometimes hidden changes taking place, it is argued that 'evidence' include the voices of those experiencing urban life (Hawkins et al., 2013). These issues are further explored in the next sections.

3.2 Social differentials in determinants of health in urban areas

Diverse forms of in-migration generating different environments for health

There is a frequent focus on informal settlements in NUHDSS and other surveys, as presenting poorer conditions for improved health. The populations in these settlements are poorly characterized, but there is some evidence of internal diversity within them.

Data from the 2003-2010 NUHDSS showed a *high level of population mobility* (in- and out-migration) in Nairobi slum settlements, but also found evidence that the slum settlements are long-term homes for many people (Emina et al., 2011). There is also evidence of *different forms of integration of migrants*, as lodgers within low income or other urban areas and in specific informal sites, and with different risks and experiences based on the timing and source of migration. A 2008 household survey in South African urban formal inner city and informal settlements found that South African internal migrants were significantly more likely to reside in the urban informal settlement, entering through its periphery, while cross-border migrants were significantly more likely to reside in the formal inner-city. This in turn affected their conditions for health. Migrants living on the periphery of the city experienced challenges in accessing water, sanitation, electricity and refuse collection. Those living in the centre were seen to have more available services (Vearey et al., 2010). However they may also face barriers in accessing services due to their own socio-economic insecurity. In 28 sub-Saharan African countries, data from 1987 to 2005 showed a strong association between recent in-migration and HIV prevalence for women up to 2000 that was not confounded by the developmental indicators such as GNI per capita, income inequalities, or adult literacy (Voeten et al., 2010).

The earlier discussion highlights the nexus of low income and poor social and living conditions associated with poor health outcomes. There are also *gender and age differentials*. A study in urban Zimbabwe found a significant correlation between women's empowerment and use of dual protection (condoms and other contraceptives) (Mutowo et al., 2014). Further, secondary analysis of data from the Transition to Adulthood (TTA) project among 12-22 years olds living in two informal settlements, Korogocho and Viwandani, in Nairobi, Kenya found that *adolescents living in the slums faced a distinct set of challenges in transitioning to adulthood in a hostile environment* characterized by high levels of unemployment, crime, poor sanitation, substance abuse, poor education facilities, and lack of recreational facilities. This raised particular pressures for the poor SRH and high fertility noted earlier. The Kenya study findings indicated poor knowledge of the menstrual cycle and fertility experiences; persistence of culturally normative attitudes; early initiation of sexual activity; low use of dual protection; disconnect between adolescents' SRH attitudes and their behavior; a high burden of unwanted and mistimed pregnancies; and threat of unwanted, transactional and coercive sex (Beguy et al., 2013).

Environmental challenges for residents and municipalities

Rapid urban growth is reported to have led to many challenges, but most commonly mentioned are those related to living and community environments. Surveys in Kenya identified that the health of the most vulnerable segments of the urban population to be most affected by poor water supply, sanitation, solid waste management, food environments, housing, and by the organization of health care services and transportation (Muchukuri and Grenier 2009; de Villiers et al., 2011).

Rapid urbanisation has raised challenges for municipalities attempting to provide access to water supply and sanitation (WS&S). DHS data between 2000 and 2012 in thirty-one Africa cities found increasing access in overall availability of improved water supply and sanitation in the majority of cities (65% and 83%, respectively), but far less progress in amount of time spent collecting water and increasing levels of open defecation. This study highlights the need to *better characterize access, beyond definitions of improved and unimproved* (Hopewell and Graham 2014). The provision of safe water and sanitation was reported to be a priority challenge in a multi-city study of health equity, but also seen to demand difficult processes of cross sectoral collaboration to address (Prasad et al., 2015). In some African cities the majority of people live in poor environments. More than 60% of Kampala's population resides in settlements with the lowest basic service levels (sanitation, water supply, solid waste collection, stormwater and greywater disposal), exposing them to contaminated and stagnant water sources and water consumption levels below the WHO recommended standard quantity of 50 litres. Many residents shared poorly maintained pit latrines, sewage lines were unavailable, landlords did not maintain toilets, and waste and waste water was being illegally dumped (Kulabako et al., 2010).

The studies also highlight the need to explore the different factors undermining safe water supply and sanitation in different urban communities. Two separate surveys in low and high income suburbs in 2007/8 in Bulawayo, Zimbabwe's second largest city, found water scarcity to be *more severe in low income than in high income suburbs due to a skewed water distribution policy*. Per capita water consumption in both suburbs was below internationally recommended levels and coliforms in water obtained from the tap and alternative sources were at levels above WHO and Zimbabwean standards (Nyemba et al., 2010). In part this related to the historical location of high and low income suburbs: Secondary data on cholera attack rates by suburb in Harare Zimbabwe found a lower cholera risk in the highest elevation suburbs that were also the highest income areas. For each 100 meters of increase in the topographical elevation, the cholera risk was 30% lower with a rate ratio of 0.70 (Luque Fernandez et al., 2012). Findings suggest that at lower elevations shallow wells used due to irregular water supplies may be more easily contaminated, particularly during the rainy season in highly populated areas where runoff enters the lower parts of towns.

Informal settlements are identified as facing particular problems. Many of their residents use groundwater where piped supplies are intermittent or unavailable, with an assessment of

groundwater and hand-dug well water quality in two informal settlements in Kisumu city, Kenya finding increasing contamination risks with increasing pit latrine density (Okotto-Okotto et al., 2015). In Nairobi, poor environments were associated with an unequal distribution of essential services and the marginalisation of slum areas in development plans, with land-tenure systems exacerbating water-supply problems within slum areas. The authors indicate that it is hard to see how water supply in these communities can improve without the direct and active involvement of the government in infrastructural development and oversight of the water-supply actors (Mudege and Zulu 2011).

However, even in suburbs with better safe water supply and sanitation infrastructure, there is lower access by some social groups. The population density from backyard shacks has implications for the ability of local councils and infrastructures to cope with numbers. A study in Cape Town, South Africa revealed, for example, that *those living in 'backyard dwellings'* as lodgers in four low-cost housing communities within the city had non-operational toilets, gross faecal pollution in groundwater, and homes with major structural damage. They had high rates of diarrhoea and TB - including Multiple Drug Resistant TB- and no residents were on TB treatment (Govender 2011).

While not as well documented, there is evidence that *urban waste of diverse forms presents an increasing problem*. Residents of Masvingo, Zimbabwe, are reported to generate waste when they throw away weeds and garden debris, construction debris, food left-overs and packages, old tyres, metal scraps, among many others. Although there are regulations and by-laws on how to handle solid waste, in practice these appeared not to be enforced. People were reported to discard solid waste by throwing bottles, fast food containers, and other items on the street or out of car windows. Residents used metal and plastic medium sized bins, plastic paper, cardboard boxes and sacks for temporary waste storage, depending what they could afford to purchase, but most high density residents were reported to store their waste in open areas as they cannot afford bins. The study reported that non enforcement by the city council of regulations and by-laws on waste storage encouraged littering in residential area (Musingafi et al., 2014).

Poor environments lead to or exacerbate wider ecological challenges. The increasing prevalence of asthma in urban areas has been associated with rising urban pollution, particularly due to sulfur dioxide, nitrogen dioxide, ozone and particulate matter from motor vehicle, industrial and cooking energy sources (Jassal 2014). Seasonal patterns of child mortality in NUHDSS 2008–2010 data in Nairobi slums found that high rainfalls and cold temperatures exacerbated risks of ill health (Moberg 2015), while analysis for 2003-2008 found raised mortality in people aged 50+ and below 5 years due to low temperatures, with deaths due to acute infections, while rainfall was associated with all-cause pneumonia and NCD deaths, highlighting the exposure of people living in poor conditions in informal settlements to added risk of climate effects (Egondi et al., 2012).

Growing polarization in urban food security

The evidence presented earlier points to the co-existence of underweight and obesity in urban areas. Undernutrition was associated with low household income and high food prices (Chesire et al., 2008), while food safety was also noted as a factor, such as in relation to the conditions for pig slaughter in Dar es Salaam in 2007/8 (Mkupasi 2008). The most common determinants of urban nutrition raised in the papers were urban agriculture (UA) and food markets.

Thirty percent of residents in Nairobi were reported to be involved in UA, most using untreated sewage for irrigation. This practice was shown to lead to selected metals in crops that exceeded the maximum permissible limits. A high coliform count was also found in the wastewater used, and in sampled leafy vegetables in informal urban markets (Karanja et al., 2010). However such risks also need to be put in the context of the role of UA in meeting food needs for poor households. A review of urban agriculture (UA) raised the *need for better description of UA practices and their impacts, including in terms of their benefits in food security, nutritional improvements, and income and job generation*. While there are major concerns in relation to wastewater use and disposal and recycling

of waste from chickens and other small livestock, the review observed that UA can support access to food when there are cost barriers in commercial markets (Boischio et al., 2006).

While some experience undernutrition, urban conditions are increasing the risk of obesity for others. In Mozambique, youth had significantly lower levels of habitual physical activity between 1992 and 2012 (dos Santos et al., 2014). In North West Province South Africa sugar intake was found to have increased rapidly (Vorster et al., 2014). A study of 960 children from 12 schools from three different socio-economic suburbs in KwaZulu Natal, South Africa, found that children's socio-economic status affected the resources and facilities available to the children, with lower levels of health promoting activity and facilities in schools serving the poorest communities. The results indicated that children know the factors that influence their health but do not necessarily practice positive behaviours, in part due to differences in standard of sporting facilities across schools (Morar et al., 2014). However the findings are mixed, with some suggesting that higher income groups are less active, despite their better access to facilities. A review of evidence on physical activity and fitness transition among Sub-Saharan African school-aged children found higher socioeconomic status, urban, female children engaged in lower levels of activity and performed worse on aerobic fitness measures compared to lower socioeconomic status, rural, male children (Muthuri et al., 2014).

Urbanization carries potential health benefits due to an increased variety of food imports, although for the growing number of urban poor, this has often meant increased reliance on cheap, highly processed food commodities. Reduced barriers to trade have eased the importation of such commodities, particularly with corporate consolidation over global and domestic food chains. *Higher profit margins on processed foods have led to their promotion, creating 'obesogenic' environments.* A study of four African countries (Kenya, Cameroon, Nigeria, and South Africa) found increased grocery retail sales and rising daily caloric intake in three countries, with a strong, albeit not significant, relationship with overweight and between obesity and death from cardiovascular disease. At the same time the rates of undernutrition and low calorie intake also increased, indicating a *growing polarization in urban food security and nutrition from market trends* (Schram et al., 2013).

Trade, market and related determinants

Liberalised food markets are not the only economic and trade pressures in urban areas. A review of health challenges faced by women and girls living in low-income urban settlements in cities in Kenya and South Africa found threats to health from marketing of alcohol and tobacco, and from the high levels of *crime and violence*, as raised earlier (Hawkins et al., 2013). In one industrialized section of Durban, South Africa, pesticides were found in several residential areas (Batterman et al., 2008). In another paper the technologies marketed and used for household energy were found to lead to household indoor air pollution levels that would cause an estimated 9.8 million premature deaths in Africa by 2030 if left unaddressed (Baillis et al., 2005). Motorcycle injuries are argued to constitute a major but neglected emerging public health problem in Mwanza city as the most common cause or agent of road traffic injuries, with a median age of 26 years and less than a quarter (23%) using helmets (Chalya et al., 2010). Generally, however, there were *limited papers describing or analyzing the health impacts of urban production and market activities*. Beyond UA practices, there was even less documented information on the economic activities in the informal sectors of cities and their distribution of positive or negative impacts on health.

Summary comment...

There is common evidence of the role of poor living conditions in urban inequalities in health, particularly in terms of differing access to safe eater supplies and sanitation. However the measures used for assessing water supplies and sanitation may not adequately reflect the safety, adequacy, functioning or access to these services in different communities, including for low income communities living in higher income areas, such as backyard lodgers. There are few studies that explore other social determinants, including power, culture, social cohesion, and violence, that generate mental, physical and social ill health. There are many dimensions of interaction in social determinants: Environmental conditions impact on (and are affected by) wider ecological factors; different forms of migrancy interact with urban location and social conditions; and knowledge of

health promoting practices interacts with the distribution of the facilities needed to implement that knowledge. Urban areas are sites of market, corporate and informal sector practices and socio-economic interactions that interface with these other social determinants. The health patterns these interactions generate can be complex- such as of under-nutrition and obesity co-existing within the same low income communities. While the specific perspective offered in each paper adds to understanding, the information is inadequate to fully understand the multi-faced interaction of these determinants, how they are experienced by different urban groups and what this means for health outcomes across the life course. Cross sectional surveys probably provide too limited a method for accessing this type of evidence. Repeat NUHDSS household surveys have enabled a more dynamic understanding of trends in a cohort. However there appears to be scope and demand for methodological innovation to better understand the transforming and interacting social determinants driving the distribution of and trends in health in urban areas.

3.3 Inequalities in access and coverage of health services within urban areas

Health services can address inequalities through the actions they take to prevent exposure to risks, to treat those exposed and to prevent disability, if provided to those with highest health need. In urban areas, this implies building comprehensive PHC approaches that are universal and accessible to and address the health needs of the poorest households and areas. These include young people, migrants, and people living in insecure settlements (slums, backyard shacks, lodgings).

Available health services, but with inverse care

A population-based survey among adults aged 15 years in 2003 in Zambia found that 53% of urban and 57% of rural respondents utilized health facilities in the past 12 months. In urban areas, significantly more females than males utilized health facilities, higher in those with higher wealth and educational attainment. Urban respondents with mental distress were 1.7 times more likely to use health facilities than those without mental distress (Zyaambo et al., 2012). A cross-sectional household community survey in three high density suburbs in Harare, Zimbabwe in 2007/8 found that the majority of individuals either sought care at a facility (44%) or did not seek care at all (32%), with women, large households and those with more severe illness more likely to seek care (Bandason 2008). The evidence suggests that *health services are playing a role in addressing social inequalities in health, with this effect limited by inverse use of health services in poorer groups*. While the population densities in urban areas mean that services are often geographically accessible, there are wide variations in their uptake. In Kenya, in urban households, there were wider inequities in treatment-seeking behavior in urban than rural areas, and poor urban households were more likely to use shops, government dispensaries and herbs for treatment than health facilities (Chuma et al., 2007).

A number of papers draw attention to poor service access in informal settlements, largely from Kenya. In Kenya, while the proportion of fully immunized children increased from 57% in 2003 to 77% in 2008-9 at national level and 73% in Nairobi, only 58% of children living in informal settlement areas were fully immunized, with lower levels in children in poorest families and 78% of this inequality explained by the mother's level of education (Egondi et al., 2015). Data from Nairobi's Urban Health and Demographic Surveillance Systems (HDSSs) in 2011 found lower vaccination coverage in Nairobi slums due to problems of access, related to the number of public health facilities, distance to facilities, and costs of maternal health services (Soura et al., 2015). While numerous for-profit health facilities were found in the Nairobi slums, the quality of these services were reported to be substandard and to raise cost barriers (Rossier et al., 2014). A maternal health project in two slums of Nairobi, Kenya in 2006 found further that although 70% of women reported that they delivered in a health facility, only 48% delivered in a facility with skilled attendant. Besides education and wealth, the main predictors of place of delivery included being advised during antenatal care to deliver at a health facility, pregnancy "wantedness", and parity. The influence of health promotion (i.e., being advised during antenatal care visits) was significantly higher among the poorest women (Fotso et al., 2009).

The barriers leading to inverse care affect the continuity of care that is necessary for care of NCDs, maternal health, SRH and HIV. In Beira, Mozambique in 2009/10 those with chronic conditions were found to have longer delays in seeking care (Saifodine et al., 2013). Ethnographic fieldwork in Dar es Salaam in 2008 among urban poor households found that although Tanzania is actively developing its diabetes services, many people with diabetes and low socioeconomic status are unable to engage continuously in treatment (Kolling et al., 2010). While the Tanzania Diabetes Association and Ministry of Health have established a network of subsidised clinics at district, regional, and referral hospitals, low-income patients eligible for free treatment still struggled to access the national exemption waivers to obtain care and adhere to follow up and self-care due to poverty and competing needs of other family members; substituting treatment with alternative therapies such as herbal medicines (Kolling et al., 2010). In a low social income area of Nairobi, despite available services for ANC, postnatal care (PNC), prevention of vertical transmission (PMTCT) and obstetric care, there was late initiation and low frequency of ANC attendance, low PMTCT knowledge and delayed first visit and uptake of ARV's among HIV+ women from the low socioeconomic groups (Imbaya and Odhiambo-Otieno 2015).

Inverse care due to quality, acceptability, communication and cost barriers

If services are largely available in urban areas, what factors are leading to inverse care? In Lubumbashi DRC, those women who had not attended ANC rarely came back for postnatal consultations, even if they had given birth at a healthcare facility. Similarly, those who gave birth without complications made use of postnatal consultations less frequently. The findings suggest weak communication between the healthcare system and the community (Abel Ntambue et al., 2012). Service providers of urban PHC in South Africa were reported to experience barriers in providing services, reducing the quality and acceptability of care, despite users finding services to be accessible (Scheffler et al., 2015).

Cost was a major barrier to service uptake. The cost of care for CVDs and diabetes was reported to be beyond the coping capacities of individuals, households, families and governments in urban areas of most African countries (Kengne et al., 2013). In Kenya, urban households not seeking treatment cited lack of funds as the main barrier, with the poorest urban households incurring the highest cost burdens, deepening poverty (Chuma et al., 2007). The number of working adults in a household and membership in a social safety net appeared to reduce the risk of catastrophic health expenditure (CHE), while seeking care in a public or private hospital increases the risk of CHE (Buigut et al., 2015).

Cost barriers were also found in cross sectional survey in Zimbabwe, particularly for the poorest groups within urban areas. Poorer urban groups were found to spend a higher share of their income on maternal health services, reported the costs of maternal health services to be unaffordable, selling assets to meet health care costs. However cost was not the only factor. Community health cadres (VHWs, EHTs, CBDs) were found to support effective uptake, as did improved education and income in women and supportive family influence (Loewenson et al., 2012).

Summary comment...

The studies indicate that health services are generally available and are playing a role in addressing social inequalities in health. Community health workers, communication, education and supportive families were found to enable health care uptake. However cost, quality and acceptability barriers are leading to inverse care, with poorest groups using services less, more so than in rural areas. This is disrupting the continuity of care necessary for the common chronic and SRH conditions reported earlier. The fact that the barriers are not in service availability but in costs, communication and other social and service quality and acceptability factors, points to the possibility of 'closing the gap' through the way services are organized and delivered.

3.4 Health sector responses to urban inequalities in health

The challenges raised in the prior sections point to particular demands on urban health services, generally and to address social inequalities in health:

- To recognize the wide diversity of people serviced, whether by area in informal settlements, as insecure groups within more formal settlements, by commonly measured factors such as income/ wealth, education, gender and age, or less commonly measured factors such as time since in-migration, employment security, social power and family support;
- To find strategies to reach and provide acceptable services for these diverse groups, within universal provisioning, addressing cost, communication and acceptability barriers;
- To design PHC approaches that address major urban challenges, including for NCDs, ecological, environmental and trade risks and violence;
- To strengthen the continuity of care and relationship with people in urban communities.

This section explores what the published literature indicated about how these challenges are being responded to,

PHC and community based service responses that reach insecure urban residents

Rapid urbanization and urban poverty is noted in Kenya to have raised high unmet need for family planning (FP) and high unplanned pregnancy. The 1993 to 2008/09 Kenya DHS surveys showed a dramatic change in contraceptive use in the period that closed the gap across income groups. This was reported to be a result of using an equity framework to quantify inequalities in and barriers to access, with equity goals integrated into policies and planning, increased funding for and a focus on delivery of high-quality public sector RH services that reach the most marginalized groups (Fotso et al., 2013). At the same time other authors have commented that family planning as a single intervention will have limited impact in informal settlements and that in these areas further measures are needed to *involve community health workers (CHWs) and community-based organizations and to build partnerships with private outlets in informal settlements* to reach the different social groups (Mberu et al., 2014).

Studies in other settings also point to the value of a range of strengthened community based approaches in urban areas in overcoming inequalities in access to care. The 1986 Ottawa charter suggests that effective health and hygiene promotion requires the empowerment of local communities, collaborative partnerships and a supportive national policy environment. A study in Cape Town, South Africa, highlighted the *ineffectiveness of once-off awareness campaigns* and the need for a more comprehensive approach to health and hygiene promotion (Van Wyk 2009).

More sustained approaches have been applied in some ESA countries, working with CHWs and social media. A caregiver-child attachment assessment by community health workers (CHWs) was integrated as a routine component of Primary Health Care (PHC), focusing on households with children under 5 years of age in three slum communities near Nairobi. Each CHW was assigned households in the specific area most familiar to the CHW, until the CHW reached a maximum of 100 assigned households, for total of 2,400 households. CHWs made regular three monthly visits to these households to monitor growth and diet, and engage with the household on millet porridge supplements, public health education, insecticide-treated bednets and referral to a local government-run health centre for those with more acute needs. Parent workshops were provided as a primary intervention, with re-enforcement of teachings by CHWs on subsequent home visits. The study found that the intervention reduced the risk of children having insecure caregiver attachments, with the attachment supporting improved child health outcomes (Bryant et al., 2012). In Malawi an Emergency Triage, Assessment and Treatment package being rolled out to district and primary clinics was supported by mHealth technologies, *using mobile phones to support communication between patients and services*. The study found positive changes in patient flows and patient and health worker satisfaction indicating that mHealth technologies have the potential to improve primary level health services in resource-poor contexts with high patient numbers and overburdened health staff (O'Byrne et al., 2013). At the same time, *the primary care services that support these community based interventions also need support*. There was less documentation on this. One study

reported that Essential Newborn Care (ENC) training of clinic midwives who provide care in low-risk facilities is a low-cost intervention that can reduce early neonatal mortality in these settings (Manasyan et al., 2011).

Investment in primary care and community services also appears to be important to address the growing double burden of communicable and chronic non-communicable diseases in urban areas, with cost of seeking more expensive private or higher level services for NCDs beyond the coping capacities of many urban residents. Responding to this situation is argued to demand monitoring of diabetes and cardiovascular disease and of the risk factors (smoking, obesity, genes, early life experience, old age, poor diet, physical activity, access to health care, self-management), with prepayment approaches (taxes/insurance) to fund improvements in care and programmes targeting risk factors and investment in research and development to understand and develop context specific interventions to decrease risk and exposure and limit disease progression and complications (Kengne et al. 2013). A community-based participatory action research with community health workers (CHWs) in Khayelitsha, a deprived urban area of Cape Town, also pointed to the gains from these approaches in the uptake of services for NCDs, but noted the need for investment in CHW and community health literacy on hypertension, diabetes and their risk factors that needed to be addressed (Bradley and Puoane 2007).

Allocating resources and addressing cost barriers

Health care provision and access is intertwined with issues of equity in resource allocation and financial protection. Cost barriers for economically insecure households and people were noted in the last section in a number of ESA countries. In a cross sectional 2012 survey in Zimbabwe, there was a consistent view across providers and communities that all *charges for consultation, diagnostics and medicines should be removed at primary care level* (backed by improved supplies), with funding to ensure that this is also applied in urban councils. Views were less consistent on charges at district level. The same study also reported, as above, that removing cost barriers may be necessary but not sufficient to ensure uptake in some urban groups. In addition, community health cadres (VHWs, EHTs, CBDs) were found to support effective uptake, improved education and income in women, and supportive family influence (Loewenson et al., 2012).

A few papers addressed out-of-pocket barriers to access in terms of the role of health insurance. An assessment of the impact on access to care of one community based health insurance, the Jamii Bora Health Insurance in Kibera and Mathare slums, found that the scheme improved uptake, particularly in lower income quintiles (Mwaura and Pongpanich 2012). UHDDS data in two slums in Nairobi found that the majority of the respondents (89%) did not have any type of insurance coverage to support service uptake, with membership in savings and credit cooperative organizations and community-based savings and credit groups associated with higher uptake of health insurance (Kimani et al., 2012).

Ensuring that resources reach those with highest health need has also been argued to require strengthened planning and monitoring approaches. Measures for integrating equity in resource allocation are often applied to provincial or district allocations, suggesting a need for a *second level of resource allocation to address within urban area allocations*, complemented by gap analysis and other planning tools. One study developed a GIS-based planning approach to contribute to equitable and efficient provision of urban health services in cities in sub-Saharan Africa, to address the disparity between the increasing need for medical care in urban areas against the declining carrying capacity of existing public health systems. Spatial performance indicators were generated. The evaluation framework appraised the performance of the existing public sector health delivery system in Dar es Salaam using the indicators to explore how existing health needs could better be served, using a 'what if' approach, by *proposing alternative spatial arrangements of provision using scarce health resources*. The 'what if' instrument was used to (i) detect spatial deficiencies of a given delivery system, (ii) propose priority spatial planning interventions and (iii) estimate the expected impact of potential interventions on spatial performance. Together with other planning tools this was suggested to support urban planning of health services (Amer 2007).

Summary comment...

The studies point to the effectiveness of strengthening PHC, involving local people in community-based initiatives, applying known positive features of PHC (such as CHWs) in urban communities and promoting new PHC approaches to address rising environment, trade, food and NCD burdens and inequalities in health in urban areas. This suggests that health services develop appropriate skills for participatory assessment, planning and monitoring in the local community, particularly in ways that include the groups identified in earlier sections, including through use of available social media and mobile phones. The papers did not address how PHC would address the less commonly measured factors such as recency of migration, employment security, social power and family support, and this may call for stronger links with other sectors and between public health and PHC, discussed in the next section.

The papers point to options for geographical targeting and organization of resources and the lifting of user fees to address economic differentials in health. One paper focuses on using community based health insurance to reduce out of pocket payment. Evidence from ESA countries suggests that such options would need further assessment, however, that community based health insurance has low population coverage, poor cover of many vulnerable households, small risk pools, limited cross subsidies and rapidly increasing expenditures (McIntyre 2012). The papers also raise the need for resource allocation approaches that address differentials within urban areas, and point to opportunities in IT, social communication and community health workers to facilitate this and to enhance communication with and uptake by communities.

3.5 Health promoting interventions of other sectors

Earlier text discussed the impact on urban health inequalities of poor living conditions, wider ecological factors; different forms of migrancy, market and corporate practices, urban agriculture and other social determinants, including power, culture, social cohesion, and violence, that generate mental, physical and social ill health. All of these call for integration of improved health into the actions of other sectors.

A range of environmental interventions are presented in the papers, using a mix of incentives, regulation and support for technology and social innovation. In Dar Es Salaam a cross-sectional survey found that households in informal settlements delay emptying faecal sludge, use full pits beyond what is safe, face high costs even for unhygienic emptying, and resort to unsafe practices like 'flooding out'. They recommended cross-subsidies for the poorest households; financing mechanisms, incentives and regulatory changes for safe pit emptying; and standardized "empty-able" pit latrine specifications and construction regulations (Jenkins et al., 2015). In Kampala, in a review of current environments, local communities suggested that piped water be extended at reduced cost (by removing monthly service fees); that new latrines to be built and existing latrines repaired, handwashing facilities be installed and toilets designed to cater for the specific needs of elderly people, people with disabilities and children. It was proposed that residents emptying faecal sludge in open drains face heavy penalties and that the services for emptying of cesspools be improved in the lowest income areas. In addition to the launch of massive public health education programmes, the council was encouraged to work with communities on community-managed toilets (Kulabako et al., 2010). National stakeholders and local authorities also called for *improved coordination between sectors and strengthened community engagement* to address water infrastructure and quality to match increasing demand; to support household interventions such as solar disinfection; rainwater harvesting; and to strengthen sectoral inputs such as innovative sanitation funding; enforcement of regulations; and improved revenue collection capacity and stakeholder engagement. Communities interviewed expressed willingness to pay councils affordable costs for water and solid waste collection if it were reliable (Kulabako et al., 2010).

In relation to the technologies marketed and used for household energy, a shift to fossil fuel use would reduce emissions by up to 10%. While maintaining charcoal-intensive practices would

increase emissions by as much as 190%, emissions can be reduced through use of current technologies for sustainable production or investment in technological innovation, integrating health outcomes into energy and resource technologies and policies. The paper points to *healthier technology alternatives* to reduce emissions, including harvesting and using biomass waste (reducing emissions by GHG 36%); and shifting to efficient kilns with emission controls. While using petroleum based fuels may have positive benefit for climate change and health, this fuel type is less affordable for low income households, in part due to the capital costs of processing and infrastructure (Bailis et al., 2005).

Technically simple and cheap control measures have also been suggested for UA and food security, including improved irrigation water management at farms, low-cost on-farm treatment of wastewater, sorting of waste at source, provision of clean water in markets, and vegetable washing in households are raised as options to reduce risks (Boischio et al., 2006). The paper suggests that WHO guidelines for wastewater use in agriculture set restrictions that may limit local urban agriculture and trade and that they be reviewed to find a better balance between the two competing goals that both affect health: ensuring safe microbial levels and ensuring adequate food.

These *appropriate technology developments* need co-ordination across sectors. Equally, interventions for improved SRH were argued to require action by other sectors, to support economic empowerment, including vocational skills training, employment creation, and promotion of secondary school uptake (Mberu et al., 2014). The examples indicate the significant role that other sectors play in urban health. As another example, South Africa's Firearm Control Act (FCA), passed in 2000, assessed for its impact on firearm homicide rates across five South African cities from 2001 to 2005, was found to have a statistically significant association with a decreasing trend regarding firearm homicides from 2001, suggesting that stricter gun control accounted for a significant decrease in homicide overall, and firearm homicide in particular (Matzopoulos et al., 2014).

The papers indicate the opportunity of improved technologies for health in urban areas, but also the importance of an *adequately funded public health capacity in the state* to encourage and ensure the role of other sectors, including in terms of the legal obligations in public health and other law. The WHO Healthy Cities Programs strategy, that aims to create environments that are supportive to good health, pointed to *market places as a key site of action*. In Nairobi, for example, *application of the Public Health Act* was found to be weak, with market customers and vendors acknowledging the presence of 'nuisances' prohibited in the market in terms of poor waste disposal, pests, poor sanitary conditions and foul smell. They recommend that public health officers' visits the markets to ensure public health requirements are maintained, but also revealed that the officers lacked official transport arrangements and security details, unless there was a disease outbreak or when conducting arrests. Five out of the six market administrators noted that inadequate finances posed a major challenge in implementation of public health standards, since all the money collected from the markets was submitted to the City Treasury (Kirimi 2011).

The papers also suggest that strategies to address common health risks and the co-ordination of sectors also include *communication with and involvement of the communities affected, including in their design* to address the different risks and environments experienced by different social groups. As an example, one action research study sought to tackle the urban health divide by enabling intersectoral action on social determinants at the local level in Mombasa, Kenya (and Valparaiso, Chile). The findings showed that an action research process using participatory learning and action to address child undernutrition and violence could effectively build the capacity of multi-sectoral teams to take coordinated action and the capacity of communities to sustain them. The groups had increased supplies of fresh vegetables from balcony farming and increased income from selling surplus produce along with an improved level of sanitation and waste disposal. Each cycle of action research started with a workshop to critically reflect on actions taken: challenges encountered; to evaluate progress; agree on new ways of working together; plan small-scale, coordinated intersectoral actions; identify further opportunities for improving the next cycle; and refine the action plan for the next 6 months. The process was found to strengthen the internal organization of

communities and their relations with available government and non-government services. Effective intersectoral action was found to be enabled by the presence of a supportive government policy, broad participation and capacity building, involving policy makers as advisors and strengthened community action (Pridmore et al., 2015).

Summary comment...

The studies point to a range of health promoting responses from other sectors, and the opportunities of combining innovation in appropriate technologies with accessible municipal services. Examples related to applying legal provisions (on public health; firearms); to using appropriate technologies in for UA, food security, environments and energy; and to organizing supporting services for employment, income generation and education. It would be useful to explore further how different communities are themselves innovating with technology to solve problems, and how far they get support for these interventions to be health promoting.

The papers indicate the importance of an adequately resourced public health capacity in the state to encourage and ensure the role of other sectors, including in terms of the legal obligations in public health and other law. While this is noted to demand co-ordination of state actors, and partnerships with non-state actors, several papers indicate the importance of community involvement and participatory processes to engage the experience of, involve and build capacities and learning within the affected communities and multi-sectoral teams to take and sustain coordinated action. This too would be an area for more specific searches, to better understand the organization and methods for such approaches, and their impact on social inequalities in health.

3.6 Community responses in urban health

Surprisingly, given the common reference in other papers to the importance of understanding and engaging communities on health in addressing and closing the gap in urban health, few papers were found in the search that *specifically* addresses this theme, either in terms of understanding the processes taking place within the communities or their role as assets for or obstacles to health promoting action. Katz et al. (2015) note, in contrast, that participation processes that seek to engage grassroots stakeholders in decisions related to municipal infrastructure, land use and services are often ad hoc and limited. They report, however, that where participation processes yield gains, these are often due to independent action by communities.

One paper examined the experience of 27 women living with Type 2 diabetes in Soweto - a township adjacent to Johannesburg known for socio-economic mobility as well as inequality – particularly in relation to how their chronic condition affects their social and health situation. The women described how reconstructing families and raising grandchildren after losing children to AIDS was not only socially challenging but also affected how they ate, how they accepted and managed their diabetes, and the social and health concerns that shaped their responses (Mendenhall and Norris 2015). Another paper reported on work in Cape Town informal settlements exploring the role of community and household capacity to act on community based sanitation delivery programmes, pointing to the need to better link community roles to community and household capacities, and to understand the relationships and roles of the different players involved (Van Wyk 2009).

Summary comment...

The paucity of papers suggests a need for follow up search and assessment of how different communities are perceiving and responding to health challenges, including in grey literature. In other sections, the papers point to community roles in interventions involving health and other sectors, but do not explore the community assets, capacities, roles and perceptions that inform, shape and sustain these actions. The finding of one review on the ad hoc nature of urban processes for participation suggests that these assets or capacities may be poorly valued, understood or tapped in many urban areas. It would be useful to further explore how peer to peer, informal support networks, information sharing and social media connections and other more socially grounded approaches are promoting health in urban areas, including as a potential resource for the health sector. Participatory

research would also more directly involve the communities affected in building such learning. It can for example be used to better understand *with* affected communities the health promoting and harming ways that social groups are addressing drivers of social and health inequality, including less well measures factors such as migrancy, tenure/ employment or income insecurity, environmental risk, and how far these responses intensify or reduce social segmentation, cohesion, exclusion and solidarity in urban areas.

4. Conclusions and follow up research

4.1 Dimensions of urban inequality in health: findings from the search

At national and regional level, the rapid pace of urbanisation is a reality that demands attention. The urban population in SSA is expected to treble by 2050, with faster growth in the ESA region. While rural-urban gaps have closed, the rapid rate of urbanisation has, in many ESA countries, been associated with emerging social inequalities. While urbanisation is associated with rising and often conspicuous wealth in some groups and with increasing social media, it also involves many dimensions of urban stress identified in the literature, often in close proximity to wealth:

- In poor living conditions, including substandard and overcrowded housing, water, sanitation systems, unhealthy cooking fuels and technologies, ground water contamination and solid waste, air and water pollution; traffic including injury from motorcycles and other forms of 'public transport';
- In employment and income insecurity; poor quality and costly food and from harmful use of alcohol, tobacco and other drugs; and
- In conditions of social insecurity, crime and different forms of violence, co-existing with isolation, exclusion and power imbalances across different age and social groups.

These conditions present as contrasting realities, including in health care: of wealthier groups using sophisticated hospital services but not, according to some studies, primary health care services; of poorer urban groups able to reach but not afford services; of poorly enforced public health laws and standards; of wasting and obesity with poor quality diets affecting both; and slow prevention and care responses to non-communicable diseases, despite note of obesity, asthma, hypertension, diabetes, mental disorders and other non-communicable diseases rising more rapidly in some urban areas than in than national averages. While different groups face different levels of risk, many of these conditions may also be diffused throughout cities, in the wider environmental contaminants, market practices and network of interactions that take place. They can provide particular challenges at particular stages of the life-course, such as for adolescents transitioning to adulthood.

While health services are generally available, there are cost, quality and acceptability barriers that lead to inverse care, with poorest groups using services less, moreso than in rural areas. This is disrupting the continuity of care necessary for common chronic and SRH conditions. The barriers to care point to the possibility of 'closing the gap' by addressing the way services are organized and delivered.

While the literature points to broad trends, it includes less evidence on social inequalities in health *within* urban areas in ESA countries. Much of the published evidence comes from DSS sites located in Nairobi urban 'slums' and from South Africa, where household data is more available over time. Yet other cities in the ESA region have experienced significant growth, including Kinshasa, Luanda, Dar es Salaam, but with less evidence at what is taking place in their multiple urban enclaves, or in the many formal and informal social and economic interactions taking place in cities.

Beyond the commonly measured age, gender, wealth and education differentials measures in DHS surveys, studies point to a range of other social features that are associated with health inequalities *within* urban areas:

- high mobility and different waves of inward *migration*, with greater insecurity, weaker social support and higher HIV risk noted in more recent migrants into cities;

- different *forms of residency*, not only in terms of informal settlements but also including living in informal housing and 'backyard shacks' or as lodgers in formal areas;
- living in *different areas in the city*, both in terms of peripheries and slums, and high density suburbs historically sited in less healthy environments, where residents face new risks of epidemic disease from failed water systems and use of shallow wells; and
- *different age groups and stages of the lifecourse*, including the sexual and reproductive, dietary, social and environmental risks faced by adolescents transitioning to adulthood, the risk of chronic conditions in adults and the physical and social risks of elderly people.
- *different levels of formal recognition*, in terms of the security of informal settlement, employment, and in terms of inequitable past and current distribution of services and infrastructure.

There is limited evidence of how these social features intersect with each other, and how they relate to the economic shocks, epidemic disease and care demands that raise the catastrophic spending, poverty and patterns of ill health reported in other studies. The picture presented in the literature is not a coherent one- it is rather a series of fragments of different and often disconnected facets of risk, health and care within urban areas. It provides glimpse of, but poorly describes the multiple situations and interactions in the city, some visible and linked to formal systems, but many in less visible, heterogeneous, informal associations.

There is limited direct voice of those experiencing the changes and limited report of the features of urbanisation that promote *wellbeing*. Some papers point to the latter in the role of: urban agriculture in supporting food security, schools and other facilities in promoting sports and other facilities for children; community health workers and supportive families enabling service uptake; or increased levels of social power and autonomy in women supporting improved reproductive health.

The combination of rapid urbanisation, epidemiological transition and growing social inequality in urban areas suggests a need to obtain a better understanding of these different axes of socially constructed inequality in urban areas, beyond those commonly measured in DHS surveys, and their interaction with wider urban ecologies and systems, to better promote health, plan for urban PHC and to address different dimensions of deprivation and risk. The longitudinal DSS site survey methods offer an example of current methods for a deeper understanding of trends when applied in different urban cohorts, but there is scope for methodological innovation. The rapid, diverse, multifactorial and sometimes hidden changes taking place calls for more embedded approaches, that include direct voice of those experiencing these changes in urban life.

4.2 Options for addressing inequalities in urban health

The health challenges raised imply a demand for urban health services and responses that are appropriate and accessible to the wide diversity of people served, across different areas, residences, gender, stages of life, wealth, employment security, social power and inclusion; in ways that tap the resources, capacities and assets that exist within these communities, that provide a continuity of care and that link with other sectors that impact on health.

The literature found was significantly more focused on the challenges than on the solutions. The papers sourced confirmed the relevance of primary care and community-based approaches, with CHWs, to carry out participatory assessments, promote new PHC approaches, use social media and support service uptake to address urban determinants. However the documented interventions made weak links between PHC services, urban public health and the work of other sectors. Some approaches segment poorer groups in small risk pools in community based schemes without confronting the wider imbalances in resources, power, or in sectoral practices and planning systems.

The studies did raise a range of health promoting responses from other sectors, in regulating harmful practice; promoting appropriate technologies for UA, food security, environments and energy; in addressing deficits in urban sanitation, safe water, in using solar power for water

disinfection, rainwater harvesting, cooking technologies, and in relation to the services they provide. They pointed to sites that merit greater attention in promoting public health, such as market places. Here too, however, there seemed to be 'sectoral silos' with limited collaborative interaction or measures to build synergies across sectors in what is documented. Local councils are documented to play a key role in co-ordination, and state investments are reported to play a key role in leveraging community oriented private sector innovation. The papers indicate the importance of an adequately resourced public health capacity in the state to encourage and ensure the role of other sectors, including in terms of the legal obligations in public health and other law. They also noted that public health laws needed to be updated to take into account urban realities and to achieve a better balance between competing goals that both affect health: such as between ensuring safe microbial levels in waste water used in UA and ensuring adequate food.

Many of the papers recommended encouraging community involvement in policy and actions to address these urban health determinants. However, few papers presented interventions that implemented and tested these recommendations, with almost no exploration of the community assets, capacities, roles and perceptions that inform, shape and sustain health actions, or their impact on social cohesion, solidarity, segmentation and exclusion across cities. One paper notes, an ad hoc and inconsistent nature of processes for engaging communities, with gains made from independent action by communities. The paucity of papers on this suggests a need for further and more specific research on the health assets in urban communities, on the health promoting and harming ways communities address the drivers raised earlier of social inequality and poor health in urban areas; and on the peer to peer, informal support networks, information sharing and social media connections and other more socially grounded approaches that can support health.

4.3 Areas and approaches for follow up

There are gaps in information in the papers sourced that may be addressed through searches in grey literature and more direct collection of evidence:

- Generally on the measures used to assess and surveys of other dimensions of urban inequality relevant to health, including power, culture, migration, formality and type of residence, measures of functionality of infrastructures; and measures of positive contributors to health, such as autonomy and social cohesion.
- On the patterns and trends in African cities of additional dimensions of social inequality associated with health, particularly in how different levels of migration; tenure/ residency; formality/ informality of settlement; social violence affect health.
- On how the cluster of factors and conditions are experienced differently by groups across the city at the same stages of life, with attention to adolescents, those in early adulthood and elderly groups.
- To assessing conditions, health and service coverage of specific groups beyond the widely studied slum dwellers, eg. to include lodgers, backyard shack dwellers and young people.

Based on the evidence in the literature, a number of entry points were identified for improving urban health, including:

- Promoting innovation in and use of appropriate technologies for health in urban areas, linking and providing incentives and support for community, wider sectors and public health actors; and
- Incentives, penalties and other measures used to strengthen the application of public health law and authorities in urban areas, including in urban markets.

A range of determinants were identified as potentially important focus area for such work, specifically

- Access to functioning water sources, and responses when water supplies are not available.
- Solid waste generation, disposal, management and recycling.
- Technologies used in urban areas for energy and cooking;

- Urban agriculture (including processing, storage; use of waste water, metals and microbes in crops and markets, small livestock, the impact on diets and nutrition and the gender differentials in these areas).

The evidence also points to a demand for innovation in the organization of urban primary health care to strengthen the more consistent involvement of and contact with communities in urban health services. This would involve making better use of existing approaches, such as CHWs, strengthening public health and PHC links, strengthening continuity of detection and management of chronic conditions and making better use of information technology and social media.

The papers highlight the gaps both in the countries from which evidence is gathered and in the limitations of household surveys in reporting *within* area inequalities over time. The DSS surveys provide better evidence within urban areas, but are often sited only in specific urban areas, such as the slums in Nairobi. They also focus on specific demographic and health evidence. Neither reflect the diversity of interacting determinants that drive inequalities in health or the way they are being responded to. The papers thus give fragmented glimpses of the rapid, diverse, multifactorial changes taking place in urban areas, and the dynamic interactions across formal and informal spaces, many of which are poorly documented or recognized.

One way to address this is for quantitative longer term site surveillance studies like the DSS to include wider variables that affect urban health, and move beyond segmented measurement of factors and services to obtain a better understanding of their interaction. This would better reflect the way they are experienced by urban communities and enable a shift from identifying the problem, to identifying and advancing responses that integrate the assets and innovations within communities and in numerous sectors affecting health.

A second way may be through participatory approaches that include direct voice of those experiencing urban life. A paper by Pridmore et al., (2015) in Mombasa, Kenya and Valparaiso, Chile demonstrates an example of a participatory action research study that sought to build on the direct experience of urban residents. It developed a series of action cycles to build the shared analysis and capacity of multi-sectoral teams and communities to take coordinated action on nutrition and violence. This more 'people' centred' approach has potential to address the complexity, such as by drawing on the lived experience of and evidence from specific (cohort) groups across the city. The cohort may be one of adolescents in transition to adulthood from different parts of the city; of different strata of market women; informal producers; recent migrants; or lodgers/ backyard dwellers. Whatever the specific cohort selected, it cannot be assumed that they are contained in specific areas, so that the whole city should be covered, and not just the poorest localities. Participatory approaches also raise the opportunity of using cycles of action to build learning on responses that involve affected communities and inform the framing of urban PHC.

Combining a mix of a deeper and more widespread quantitative site surveillance and participatory action research may yield the more holistic picture needed to understand urban inequalities in health, and to build or support participatory, systemic and grounded practice in the responses to them.

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Annotated Bibliography

The papers are organized chronologically with the most recent paper first.

Where a paper is relevant to more than one section only reference is cited and the link to the prior section where full information is found.

A1. Papers on inequalities in health and mortality within urban areas

Trends in causes of adult deaths among the urban poor: Evidence from Nairobi urban health and demographic surveillance system, 2003-2012

Mberu B, Wamukoya M, Oti S and Kyobutungi C (2015) 'Trends in causes of adult deaths among the urban poor: Evidence from Nairobi urban health and demographic surveillance system, 2003-2012,' *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 92(3): 422-445.

<http://link.springer.com/article/10.1007/s11524-015-9943-6?no-access=true>

The authors examine trends in the causes of death among the urban poor in two informal settlements in Nairobi by applying the InterVA-4 software to verbal autopsy data. Cause of death data is examined from 2646 verbal autopsies of deaths that occurred in the Nairobi Urban Health and Demographic Surveillance System (NUHDSS) between 1 January 2003 and 31 December 2012 among residents aged 15 years and above. The results are presented as annualized trends from 2003 to 2012 and disaggregated by gender and age. Over the 10-year period, the three major causes of death are tuberculosis (TB), injuries, and HIV/AIDS, accounting for 26.9, 20.9, and 17.3% of all deaths, respectively. In 2003, HIV/AIDS was the highest cause of death followed by TB and then injuries. However, by 2012, TB and injuries had overtaken HIV/AIDS as the major causes of death. HIV/AIDS was consistently higher for women than men across all the years generally by a ratio of 2 to 1. The authors find significant gender variation in deaths linked to injuries, with male deaths being higher than female deaths by a ratio of about 4 to 1 with a fifteen percent increase in the incidences of male deaths due to injuries between 2003 and 2012. Cardiovascular diseases mortality increased steadily with deaths consistently higher among women. We identified substantial variations in causes of death by age, with TB, HIV/AIDS, and CVD deaths lowest among younger residents and increasing with age, while injury-related deaths are highest among the youngest adults 15-19 and steadily declined with age. Also, deaths related to neoplasms and respiratory tract infections (RTIs) were prominent among older adults 50 years and above, especially since 2005. Emerging at this stage is evidence that HIV/AIDS, TB, injuries, and cardiovascular disease are linked to approximately 73 % of all adult deaths among the urban poor in Nairobi slums of Korogocho and Viwandani in the last 10 years. In sum, substantial epidemiological transition is ongoing in this local context, with deaths linked to communicable diseases declining from 66 % in 2003 to 53 % in 2012, while deaths due to noncommunicable causes experienced a four-fold increase from 5 % in 2003 to 21.3 % in 2012, together with another two-fold increase in deaths due to external causes (injuries) from 11 % in 2003 to 22 % in 2012. It is important to also underscore the gender dimensions of the epidemiological transition clearly visible in the mix.

Recommendations: The elevated levels of disadvantage of slum dwellers in this analysis relative to other population subgroups in Kenya continue to demonstrate appreciable deterioration of key urban health and social indicators, highlighting the need for a deliberate strategic focus on the health needs of the urban poor in policy and program efforts toward achieving international goals and national health and development targets.

Key words: Mortality, informal settlements, Kenya, household survey

Rural, urban and migrant differences in non-communicable disease risk-factors in middle income countries: A cross-sectional study of WHO-SAGE data

Oyebode O, Pape UJ, Lavery AA, Lee JT, Bhan N and Millett C (2015) 'Rural, urban and migrant differences in non-communicable disease risk-factors in middle income countries: A cross-sectional study of WHO-SAGE data,' *PloS One* 10(4): e0122747. doi:10.1371/journal.pone.0122747 [doi]ome countries: A cross-sectional study of WHO-SAGE data

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0122747>

Understanding how urbanisation and rural-urban migration influence risk-factors for non-communicable disease (NCD) is crucial for developing effective preventative strategies globally. This study compares NCD risk-factor prevalence in urban, rural and migrant populations in China, Ghana, India, Mexico, Russia and South Africa. METHODS: Study participants were 39,436 adults within the WHO Study on

global AGEing and adult health (SAGE), surveyed 2007-2010. Risk ratios (RR) for each risk-factor were calculated using logistic regression in country-specific and all country pooled analyses, adjusted for age, sex and survey design. Fully adjusted models included income quintile, marital status and education. Regular alcohol consumption was lower in migrant and urban groups than in rural groups. Occupational physical activity was lower (0.86 (0.72-0.98); 0.76 (0.65-0.85)) while active travel and recreational physical activity were higher (pooled RRs for urban groups; 1.05 (1.00-1.09), 2.36 (1.95-2.83), respectively; for migrant groups: 1.07 (1.0 -1.12), 1.71 (1.11-2.53), respectively). Overweight, raised waist circumference and diagnosed diabetes were higher in urban groups. Exceptions to these trends exist: obesity indicators were higher in rural Russia; active travel was lower in urban groups in Ghana and India; and in South Africa, urban groups had the highest alcohol consumption.

Conclusions: Migrants and urban dwellers had similar NCD risk-factor profiles. These were not consistently worse than those seen in rural dwellers. The variable impact of urbanisation on NCD risk must be considered in the design and evaluation of strategies to reduce the growing burden of NCDs globally.

Key words: rural-urban migration, non-communicable disease, South Africa, community survey

Prioritizing action on health inequities in cities: An evaluation of Urban Health Equity Assessment and Response Tool (Urban HEART) in 15 cities from Asia and Africa

Prasad A, Kano M, Dagg K, Mori H, Senkoro H, Ardakani MA, Elfeky S, Good S, Engelhardt K, Ross A, Armada F (2015) Prioritizing action on health inequities in cities: An evaluation of Urban Health Equity Assessment and Response Tool (Urban HEART) in 15 cities from Asia and Africa *Social Science & Medicine* 145 (2015) 237e242, Retrieved from

<http://www.sciencedirect.com/science/article/pii/S0277953615301337>

Following the recommendations of the Commission on Social Determinants of Health (2008), the World Health Organization (WHO) developed the Urban Health Equity Assessment and Response Tool (HEART) to support local stakeholders in identifying and planning action on health inequities. The objective of this report is to analyze the experiences of cities in implementing Urban HEART in order to inform how the future development of the tool could support local stakeholders better in addressing health inequities. The study method is documentary analysis from independent evaluations and city implementation reports submitted to WHO. Independent evaluations were conducted in 2011e12 on Urban HEART piloting in 15 cities from seven countries in Asia and Africa: Indonesia, Iran, Kenya, Mongolia, Philippines, Sri Lanka, and Vietnam. Local or national health departments led Urban HEART piloting in 12 of the 15 cities. Other stakeholders commonly engaged included the city council, budget and planning departments, education sector, urban planning department, and the Mayor's office. Ten of the 12 core indicators recommended in Urban HEART were collected by at least 10 of the 15 cities. Improving access to safe water and sanitation was a priority equity-oriented intervention in 12 of the 15 cities, while unemployment was addressed in seven cities. Cities who piloted Urban HEART displayed confidence in its potential by sustaining or scaling up its use within their countries. Engagement of a wider group of stakeholders was more likely to lead to actions for improving health equity. Indicators that were collected were more likely to be acted upon. Quality of data for neighbourhoods within cities was one of the major issues. As local governments and stakeholders around the world gain greater control of decisions regarding their health, Urban HEART could prove to be a valuable tool in helping them pursue the goal of health equity.

Key words: equity, urban planning, assessment, Kenya

Trends in childhood mortality in Kenya: The urban advantage has seemingly been wiped out

Kimani-Murage EW, Fotso JC, Egondi T, Abuya B, Elungata P, Ziraba AK, et al. (2014) 'Trends in childhood mortality in Kenya: The urban advantage has seemingly been wiped out,' *Health & Place* 29: 95-103. doi:10.1016/j.healthplace.2014.06.003 [doi]

<http://www.sciencedirect.com/science/article/pii/S13538292140>

This article describes trends in childhood mortality in Kenya, paying attention to the urban-rural and intra-urban differentials. The authors use data from the Kenya Demographic and Health Surveys (KDHS) collected between 1993 and 2008 and the Nairobi Urban Health and Demographic Surveillance System (NUHDSS) collected in two Nairobi slums between 2003 and 2010, to estimate infant mortality rate (IMR), child mortality rate (CMR) and under-five mortality rate (U5MR). Between 1993 and 2008, there was a downward trend in IMR, CMR and U5MR in both rural and urban areas. The decline was more rapid and statistically significant in rural areas but not in urban areas, hence the gap in urban-rural differentials

narrowed over time. There was also a downward trend in childhood mortality in the slums between 2003 and 2010 from 83 to 57 for IMR, 33 to 24 for CMR, and 113 to 79 for U5MR, although the rates remained higher compared to those for rural and non-slum urban areas in Kenya.

Conclusions: The narrowing gap between urban and rural areas may be attributed to the deplorable living conditions in urban slums. To reduce childhood mortality, extra emphasis is needed on the urban slums.

Key words: intra-urban differentials, child/infant/under-five mortality, Kenya, household survey

Inequalities in child mortality in ten major African cities

Quentin W, Abosede O, Aka J, Akweongo P, Dinard K, Ezeh A, et al. (2014) 'Inequalities in child mortality in ten major African cities,' *BMC Medicine* 12: 95-7015-12-95. doi:10.1186/1741-7015-12-95 [doi] <http://www.biomedcentral.com/content/pdf/1741-7015-12-95.pdf>

The existence of socio-economic inequalities in child mortality is well documented. African cities grow faster than cities in most other regions of the world; and inequalities in African cities are thought to be particularly large. Revealing health-related inequalities is essential in order for governments to be able to act against them. This study aimed to systematically compare inequalities in child mortality across 10 major African cities (Cairo, Lagos, Kinshasa, Luanda, Abidjan, Dar es Salaam, Nairobi, Dakar, Addis Ababa, Accra), and to investigate trends in such inequalities over time. Data from two rounds of demographic and health surveys (DHS) were used for this study (if available): one from around the year 2000 and one from between 2007 and 2011. Child mortality rates within cities were calculated by population wealth quintiles. Inequality in child mortality was assessed by computing the rate ratio and the concentration index and two measures of absolute inequality (the difference and the Erreyger's index). Mean child mortality rates ranged from about 39 deaths per 1,000 live births in Cairo (2008) to about 107 deaths per 1,000 live births in Dar es Salaam (2010). Significant inequalities were found in Kinshasa, Luanda, Abidjan, and Addis Ababa in the most recent survey. The difference between the poorest quintile and the richest quintile was as much as 108 deaths per 1,000 live births in Abidjan in 2011-2012. When comparing inequalities across cities or over time, confidence intervals of all measures almost always overlap. Nevertheless, inequalities appear to have increased in Abidjan, while they appear to have decreased in Cairo, Lagos, Dar es Salaam, Nairobi and Dakar.

Conclusions: Considerable inequalities exist in almost all cities but the level of inequalities and their development over time appear to differ across cities. This implies that inequalities are amenable to policy interventions and that it is worth investigating why inequalities are higher in one city than in another. However, larger samples are needed in order to improve the certainty of our results. Currently available data samples from DHS are too small to reliably quantify the level of inequalities within cities.

Key words: Child mortality, inequality, urban, Tanzania, Kenya, household survey

Mortality trends observed in population-based surveillance of an urban slum settlement, Kibera, Kenya, 2007-2010

Olack B, Feikin DR, Cosmas LO, Odero KO, Okoth GO, Montgomery JM and Breiman RF (2014) 'Mortality trends observed in population-based surveillance of an urban slum settlement, Kibera, Kenya, 2007-2010,' *PloS One* 9(1): e85913. doi:10.1371/journal.pone.0085913 [doi] <http://www.ncbi.nlm.nih.gov/pubmed/24489678>

The authors used population based infectious disease surveillance to characterize mortality rates in residents of an urban slum in Kenya. The authors analyzed biweekly household visit data collected two weeks before death for 749 cases who died during January 1, 2007 to December 31, 2010. We also selected controls matched by age, gender and having a biweekly household visit within two weeks before death of the corresponding case and compared the symptoms reported. The overall mortality rate was 6.3 per 1,000 person years of observation (PYO) (females: 5.7; males: 6.8). Infant mortality rate was 50.2 per 1000 PYOs, and it was 15.1 per 1,000 PYOs for children \geq 5 years old. This decrease was predominant in females (7.8 to 5.7 per 1000 PYOs; $p < 0.05$). Two weeks before death, significantly higher prevalence for cough (OR = 4.7 [95% CI: 3.7-5.9]), fever (OR = 8.1 [95% CI: 6.1-10.7]), and diarrhea (OR = 9.1 [95% CI: 6.4-13.2]) were reported among participants who died (cases) when compared to participants who did not die (controls). Diarrhea followed by fever were independently associated with deaths (OR = 14.4 [95% CI: 7.1-29.2]), and (OR = 11.4 [95% CI: 6.7-19.4]) respectively.

Conclusions: Despite accessible health care, mortality rates are high among people living in this urban slum; infectious disease syndromes appear to be linked to a substantial proportion of deaths. Rapid urbanization poses an increasing challenge in national efforts to improve health outcomes, including

reducing childhood mortality rates. Targeting impoverished people in urban slums with effective interventions such as water and sanitation are needed to achieve national objectives for health.

Key words: mortality rates, urban, slum, Kenya, household survey

A comparison of urban-rural injury mortality rates across two South African provinces, 2007

Sherriff B, MacKenzie S, Swart LA, Seedat MA, Bangdiwala SI and Ngude R (2014) 'A comparison of urban-rural injury mortality rates across two South African provinces, 2007,' *International Journal of Injury Control and Safety Promotion* 22(1): 75-85. doi:10.1080/17457300.2013.870580 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/24471441>

This study explored urban-rural variations in the magnitude and patterns of fatal injuries in South Africa.

METHODS: The National Injury Mortality Surveillance System was utilised to select South African mortality cases for the 2007 period and a cross-sectional methodology was employed in order to comparatively analyse injury mortality rates in the urban province of Gauteng and the rural province of Mpumalanga. The results reveal several differences in urban-rural injury trends across the two South African provinces. Overall, homicide and unintentional (non-transport) injury death rates were significantly higher in the urban province, whilst transport-related injury mortality rates were significantly higher in the rural province (66.57/100,000 versus 45.83/100,000; (RR = 0.69 [0.66-0.71])).

Conclusions: The results could be attributed to economic, environmental, and infrastructural differences between urban-rural locations and suggest that injury control strategies could be better targeted to the needs of specific geographic populations in South Africa.

Key words: urban, mortality, injury, homicide, South Africa, surveillance

Bringing sexual and reproductive health in the urban contexts to the forefront of the development agenda: The case for prioritizing the urban poor

Mberu B, Mumah J, Kabiru C and Brinton J (2014) 'Bringing sexual and reproductive health in the urban contexts to the forefront of the development agenda: The case for prioritizing the urban poor,' *Maternal and Child Health Journal* 18(7): 1572-1577. doi:10.1007/s10995-013-1414-7 [doi]

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4152622/>

Sexual and reproductive health (SRH) risks for the urban poor are severe and include high rates of unwanted pregnancies, sexually transmitted infections, and poor maternal and child health outcomes. However, the links between poverty, urbanization, and reproductive health priorities are still not a major focus in the broader development agenda. The authors identify key research, policy and program recommendations and strategies required for bringing sexual and reproductive health in urban contexts to the forefront of the development agenda. Building on theoretical and empirical data, we show that SRH in urban contexts is critical to the development of healthy productive urban populations and, ultimately, the improvement of quality of life.

Conclusions: We posit that a strategic focus on the sexual and reproductive health of urban residents will enable developing country governments achieve international goals and national targets by reducing health risks among a large and rapidly growing segment of the population.

Key words: sexual and reproductive health, urban poor, review, quantitative

In urban South Africa, 16 year old adolescents experience greater health equality than children

Griffiths PL, Johnson W, Cameron N, Pettifor JM and Norris SA (2013) 'In urban South Africa, 16 year old adolescents experience greater health equality than children,' *Economics and Human Biology* 11(4): 502-514. doi:10.1016/j.ehb.2013.05.004 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/23876525>

Despite the strongly established link between socio-economic status (SES) and health across most stages of the life-course, the evidence for a socio-economic gradient in adolescent health outcomes is less consistent. This paper examines associations between household, school, and neighbourhood SES measures with body composition outcomes in 16 year old South African Black urban adolescents from the 1990 born Birth to Twenty (Bt20) cohort. Multivariable regression analyses were applied to data from a sub-sample of the Bt20 cohort (n=346, 53% male) with measures taken at birth and 16 years of age to establish socio-economic, biological, and demographic predictors of fat mass, lean mass, and body mass index (BMI). Results were compared with earlier published evidence of health inequality at ages 9-10 years in Bt20. Consistent predictors of higher fat mass and BMI in fully adjusted models were being female, born post term, having a mother with post secondary school education, and having an obese mother. Most measures of SES were only weakly associated with body composition, with an inconsistent

direction of association. This is in contrast to earlier findings with Bt20 9-10 year olds where SES inequalities in body composition were observed.

Conclusions: Findings suggest targeting obesity interventions at females in households where a mother has a high BMI.

Key words: nutrition, socio-economic status, black, urban, youth, South Africa, multivariate regression

Cardiovascular diseases and diabetes as economic and developmental challenges in Africa

Kengne AP, June-Rose McHiza Z, Amoah AG and Mbanja JC (2013) 'Cardiovascular diseases and diabetes as economic and developmental challenges in Africa,' *Progress in Cardiovascular Diseases* 56(3): 302-313. doi:10.1016/j.pcad.2013.10.011 [doi]

<http://www.sciencedirect.com/science/article/pii/S0033062013001849>

Current estimates and projections suggest that the burden of cardiovascular diseases (CVDs), diabetes and related risk factors in African countries is rapidly growing. Various segments of the population are affected; however, the group mostly affected is young adults residing in urban areas, and increasingly those in the low socioeconomic strata. The African environment is compounded by weak health systems, which are unable to cope with the looming double burden of communicable and chronic non-communicable diseases. This review discusses the economic and developmental challenges posed by CVDs and diabetes in countries in Africa. Using several lines of evidence, the authors demonstrate that the cost of care for major CVDs and diabetes is beyond the coping capacities of individuals, households, families and governments in most African countries. The authors review modeling studies on the current and projected impact that CVDs and diabetes have on the economy and development.

Conclusions: Locally, appropriate strategies to limit the impact of the conditions on the economies and development of countries in Africa are suggested and discussed. These include monitoring diseases and risk factors, and primordial, primary and secondary preventions implemented following a life-course perspective. Structural, logistic, human capacity and organizational challenges to be surmounted during the implementations of these strategies will be reviewed.

Key words: cardiovascular disease, diabetes, urban, Africa, quantitative

The Health of Women and Girls in Urban Areas with a Focus on Kenya and South Africa: Hawkins K, MacGregor H and Oronje R (2013) 'The Health of Women and Girls in Urban Areas with a Focus on Kenya and South Africa: A Review' retrieved on 15 July 2015 at:

http://opendocs.ids.ac.uk/opendocs/handle/123456789/3202#.VaMz_PIVhBc

This thematic review focuses on a range of health challenges faced in particular by women and girls living in low-income urban settlements in expanding cities in Kenya and South Africa. The review has been compiled as part of a larger body of work being conducted by the Institute of Development Studies (IDS) and its partners on gender and international development and financed by the UK Department for International Development (DFID). The review was preceded by a literature search of key databases of published literature, as well as a search for grey literature and documents describing interventions aimed at addressing these health challenges. An online discussion hosted by IDS gave a further indication of current debates and assisted in the identification of interventions. The literature points to ways in which residence in low-income urban areas is thus associated with particular health challenges for women and girls, such as those linked to: sexual, reproductive and maternal health; alcohol use; non-communicable diseases related to poor diet, tobacco and sedentary lifestyles; as well as an ongoing high prevalence of infectious diseases such as HIV and TB. There is also concern about the mental health burden arising from the stresses of surviving on the economic margins in large cities characterised by high levels of crime and violence, and more fragmented access to social support. These disease burdens occur at the intersections of different axes of socially constructed inequality.

Conclusions: The authors suggest that it is important to generate robust evidence and evaluate existing interventions rather than encourage a constant proliferation of standalone projects. However, 'evidence' should include the voices of women themselves and their experience of life in these settlements.

Key words: women, girls, low income, urban, Kenya, South Africa, review

Socioeconomic position and later life prevalence of hypertension, diabetes and visual impairment in Nakuru, Kenya

Ploubidis GB, Mathenge W, De Stavola B, Grundy E, Foster A and Kuper H (2013) 'Socioeconomic position and later life prevalence of hypertension, diabetes and visual impairment in Nakuru, Kenya,' *International Journal of Public Health* 58(1): 133-141. doi:10.1007/s00038-012-0389-2 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/22814479>

The authors examined the extent to which the association between socioeconomic position (SEP) and later life prevalence of hypertension, diabetes and visual impairment in Nakuru, Kenya is mediated by health-related behaviour. Data was used from a community survey of 4,314 participants sampled from urban and rural areas in Nakuru, Kenya. Structural equation modelling was employed to estimate the direct and indirect--via health-related behaviour--effects of SEP on the three health outcomes. The accumulation of material resources was positively associated with hypertension and diabetes. Education and material resources had a negative association with the prevalence of visual impairment. The observed health inequalities were not due to variation between SEP groups in health-related behaviour. *Conclusions:* The pattern of associations between education, material resources and the three health outcomes varied, suggesting that in Kenya, unlike the observed pattern of inequalities in high income countries, different dimensions of SEP provide different aspects of protection as well as risk. Smoking and alcohol use did not appear to mediate the observed associations, in contrast with countries past the epidemiologic transition.

Key words: hypertension, diabetes, visual impairment, socioeconomic, Kenya, community survey

Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa

EQUINET (2012) Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa. EQUINET, Harare.

<http://www.equinet africa.org/bibl/docs/Regional%20EW%202012%20Part%201w.pdf>

An Equity Watch is a means of monitoring progress on health equity by gathering, organizing, analysing, reporting and reviewing evidence on equity in health. This 2012 Regional Equity Analysis updates the 2007 EQUINET Regional analysis of equity in health, drawing on the Equity Watch framework developed by EQUINET in cooperation with the East, Central and Southern African Health Community and in consultation with WHO and UNICEF, with some modifications given its regional nature. The report presents reflection on the experience of implementing equity analysis at country and regional level and on the experience of the Country Equity Watch work in institutionalising planning and monitoring for health equity. The report provides evidence through secondary data from 16 countries in East and Southern Africa, including more detailed evidence from the country Equity Watch reports. The analysis shows past levels and current levels (most current data publicly available) and comments on the level of progress towards health equity. It raises the factors affecting progress and the challenges to be addressed. Aggregate progress in health in the region masks persistent and sometimes widening social inequalities in health and access to services within and between countries in the region and globally. Economies in the region are growing, but with increasing poverty and inequality, through pathways within countries and driven by global economic trends.

Conclusions: The report includes outlines of approaches being taken within the region to advance equity that appear to be yielding progress, with references where further information can be found. Priorities for closing the gaps across groups include investments in social determinants (smallholder food production, early child and secondary education, employment, primary health care and safe water); redistributive health systems particularly at the primary and community level; and social participation, political support, and public leadership in health. Significant health gains could be made if equity is more centrally, explicitly addressed in development policies, including the global development goals.

Key words: health equity, East Africa, Southern Africa, social determinants, equity watch

Are slum dwellers at heightened risk of HIV infection than other urban residents? evidence from population-based HIV prevalence surveys in Kenya

Madise NJ, Ziraba AK, Inungu J, Khamadi SA, Ezech A, Zulu EM, et al. (2012) 'Are slum dwellers at heightened risk of HIV infection than other urban residents? evidence from population-based HIV prevalence surveys in Kenya,' *Health & Place* 18(5): 1144-1152. doi:10.1016/j.healthplace.2012.04.003 <http://www.ncbi.nlm.nih.gov/pubmed/22591621>

In 2008, the global urban population surpassed the rural population and by 2050 more than 6 billion will be living in urban centres. A growing body of research has reported on poor health outcomes among the urban poor but not much is known about HIV prevalence among this group. A survey of nearly 3000 men and women was conducted in two Nairobi slums in Kenya between 2006 and 2007, where respondents were tested for HIV status. In addition, data from the 2008/2009 Kenya Demographic and Health Survey were used to compare HIV prevalence between slum residents and those living in other urban and rural

areas. The results showed strong intra-urban differences. HIV was 12% among slum residents compared with 5% and 6% among non-slum urban and rural residents, respectively. Generally, men had lower HIV prevalence than women although in the slums the gap was narrower. Among women, sexual experience before the age of 15 compared with after 19 years was associated with 62% higher odds of being HIV positive. There was ethnic variation in patterns of HIV infection although the effect depended on the current place of residence.

Conclusions: Population based HIV surveys should include older people to help us understand the HIV situation at older ages. Addressing risky sexual practices such as early sexual debut is one strategy which could lead to lower HIV rates among slum dwellers. In addition, addressing the lack of security and sexual violence in the slums could confer protection among young girls and women. Contrary to what has been published in many reports, socioeconomic status was not positively associated with HIV status in these samples but found that current age, marital status, and ethnicity were the most important in explaining the differences in HIV rates. HIV prevention efforts and treatment programmes should target the urban poor and they should acknowledge that city dwellers are not a homogeneous group.

Key words: intra-urban differences, HIV prevalence, slums, Kenya, quantitative, household survey

Equity Watch: assessing progress toward equity in health in Zambia

University of Zambia Department of Economics, Ministry of Health Zambia, TARSC (2011) Equity Watch: assessing progress towards equity in health in Zambia, UNZA, EQUINET, Harare and Lusaka

<http://www.equinet africa.org/bibl/docs/Zambia%20EW%20Aug%202011%20web.pdf>

This report provides an array of evidence on the responsiveness of Zambia's health system in promoting and attaining equity in health and health care, using the Equity Watch framework. The report introduces the context and the available secondary data evidence within four major areas: equity in health, household access to the resources for health, equitable health systems and global justice. It shows past levels (1980–2005), current levels and comments on the level of progress towards health equity. While between 1980-2000 Zambia experienced significant decline in socio-economic indicators, progress is evident post-2000. This includes declines in poverty, child and maternal mortality, HIV prevalence, and child stunting and improvements in school enrolment and completion, ANC coverage, immunization, and ARV therapy for adults and children. Still health inequalities related to gender, regional, and wealth differentials are present with poor households having the highest levels of poor health outcomes in areas such as child mortality, stunting, ANC, water, and sanitation.

Conclusions: The evidence calls for similar recognition of the inequalities in health within areas that disadvantage the poorest and most marginalized households so that additional measures can be designed and implemented to ensure that these households access the social determinants of health and health care.

Key words: health equity, social determinants, Zambia, household survey

Monitoring of health and demographic outcomes in poor urban settlements: Evidence from the Nairobi urban health and demographic surveillance system

Emina J, Beguy D, Zulu EM, Ezeh AC, Muindi K, Elung'ata P, et al. (2011) 'Monitoring of health and demographic outcomes in poor urban settlements: Evidence from the Nairobi urban health and demographic surveillance system,' *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 88 Suppl 2: S200-18. doi:10.1007/s11524-011-9594-1 [doi]

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3132229/>

The Nairobi Urban Health and Demographic Surveillance System (NUHDSS) was set up in Korogocho and Viwandani slum settlements to provide a platform for investigating linkages between urban poverty, health, and demographic and other socioeconomic outcomes, and to facilitate the evaluation of interventions to improve the wellbeing of the urban poor. Data from the NUHDSS confirm the high level of population mobility in slum settlements, and also demonstrate that slum settlements are long-term homes for many people. Research and intervention programs should take account of the duality of slum residency. Consistent with the trends observed countrywide, the data show substantial improvements in measures of child mortality, while there has been limited decline in fertility in slum settlements.

Conclusions: The NUHDSS experience has shown that it is feasible to set up and implement long-term health and demographic surveillance system in urban slum settlements and to generate vital data for guiding policy and actions aimed at improving the wellbeing of the urban poor. Given the growing importance of slum settlements and longitudinal research platform in Africa's major cities and other urban

areas, such comprehensive and time-series data are vital for guiding policy and program actions aimed at improving the wellbeing of the urban poor.

Key words: urban, poverty, interventions, slum, settlement, Kenya, household survey

Does socioeconomic inequality in health persist among older people living in resource-poor urban slums?

Falkingham JC, Chepngeno-Langat G, Kyobutungi C, Ezeh A and Evandrou M (2011) 'Does socioeconomic inequality in health persist among older people living in resource-poor urban slums?' *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 88 Suppl 2: S381-400. doi:10.1007/s11524-011-9559-4 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/21431465>

Using self-reported health that assesses functionality or disability status, this paper investigates whether there are any differences in health status among older people living in a deprived area of Nairobi, Kenya. Data from a cross-sectional survey of 2,037 men and women aged 50 years and older are used to examine the association between socioeconomic position and self-reported health status across 6 health domains. Education, occupation, a wealth index, and main source of livelihood are used to assess the presence of a socioeconomic gradient in health. All the indicators showed the expected negative association with health across some, but not all, of the disability domains. Nonetheless, differences based on occupation, the most commonly used indicators to examine health inequalities, were not statistically significant. Primary level of education was a significant factor for women but not for men; conversely, wealth status was associated with lower disability for both men and women. Older people dependent on their own sources of livelihood were also less likely to report a disability.

Conclusions: The results suggest the need for further research to identify an appropriate socioeconomic classification that is sensitive in identifying poverty and deprivation among older people living in slums.

Key words: health inequality, older people, urban slums, socioeconomic position, cross-sectional survey

Assessment of hypertension control in a district of Mombasa, Kenya

Jenson A, Omar AL, Omar MA, Rishad AS and Khoshnood K (2011) 'Assessment of hypertension control in a district of Mombasa, Kenya,' *Global Public Health* 6(3): 293-306. doi:10.1080/17441692.2010.510478 <http://www.ncbi.nlm.nih.gov/pubmed/20845123>

As populations move to urban centres across East Africa, lifestyle habits that affect cardiovascular disease have changed, affecting non-communicable disease risk. In particular, the prevalence of hypertension, and associated awareness of this life-threatening condition, has not been studied in Mombasa, Kenya. This paper assesses the rates of prevalence, awareness, treatment and control of hypertension in Old Town, an urban district of the coastal city. The authors surveyed 469 subjects, gathered via a clustered sampling technique. Age-adjusted prevalence of hypertension was measured at 32.6% (+/- 2.2) for adults over 18 and was linearly related to age. Results indicate that hypertension awareness was associated with age and sex, as women were substantially more likely to be aware of and to control their hypertension. Only 23.2% (+/- 2.0) of subjects had knowledge of both the causes of and practical solutions to hypertension, and practical hypertension knowledge was associated with hypertension awareness and gender (women had higher rates of knowledge than men).

Conclusions: The results indicate that hypertension is a real public health concern in Old Town, and that younger individuals, particularly males, are least likely to be aware of the dangers of hypertension. Public health measures should focus on this population.

Key words: hypertension, urban, Kenya, clustered sampling

Stroke incidence in rural and urban Tanzania: A prospective, community-based study

Walker R, Whiting D, Unwin N, Mugusi F, Swai M, Aris E, et al. (2010) 'Stroke incidence in rural and urban Tanzania: A prospective, community-based study,' *The Lancet. Neurology* 9(8): 786-792. doi:10.1016/S1474-4422(10)70144-7 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/20609629>

There are no methodologically rigorous studies of the incidence of stroke in sub-Saharan Africa. The Tanzania Stroke Incidence Project (TSIP) recorded stroke incidence in two well defined demographic surveillance sites (DSS) over a 3-year period from June, 2003. The Hai DSS (population 159,814) is rural and the Dar-es-Salaam DSS (population 56,517) is urban. Patients with stroke were identified by use of a system of community-based investigators and liaison with local hospital and medical centre staff. Patients who died from stroke before recruitment into the TSIP were identified via verbal autopsy, which was done

on all those who died within the study areas.: There were 636 strokes during the 3-year period (453 in Hai and 183 in Dar-es-Salaam). Overall crude yearly stroke incidence rates were 94.5 per 100,000 (95% CI 76.0-115.0) in Hai and 107.9 per 100,000 (88.1-129.8) in Dar-es-Salaam. When age-standardised to the WHO world population, yearly stroke incidence rates were 108.6 per 100 000 (95% CI 89.0-130.9) in Hai and 315.9 per 100,000 (281.6-352.3) in Dar-es-Salaam. Age-standardised stroke incidence rates in Hai were similar to those seen in developed countries. However, age-standardised incidence rates in Dar-es-Salaam were higher than seen in most studies in developed countries; possibly due to a difference in the prevalence of risk factors and emphasises the importance of health screening at a community level.

Conclusions: Health policy makers must continue to monitor the incidence of stroke in sub-Saharan Africa and should base future funding decisions on such data.

Key words: rural, urban, stroke incidence, Tanzania, household survey

Urbanisation and child health in resource poor settings with special reference to under-five mortality in Africa

Garenne M (2010) 'Urbanisation and child health in resource poor settings with special reference to under-five mortality in Africa,' *Archives of Disease in Childhood* 95(6): 464-468.

doi:10.1136/adc.2009.172585 [doi]

<http://adc.bmj.com/content/early/2010/02/22/adc.2009.172585.full>

The health of children improved dramatically worldwide during the 20th century, although with major contrasts between developed and developing countries, and urban and rural areas. The quantitative evidence on urban child health from a broad historical and comparative perspective is briefly reviewed here. In this short review, we will follow this line, and will present quantitative evidence on trends in child health in developing countries and their determinants in urban and rural areas, with the main focus on child survival in sub-Saharan Africa. Before the sanitary revolution, urban mortality tended to be higher than rural mortality. However, after World War I, improvements in water, sanitation, hygiene, nutrition and child care resulted in lower urban child mortality in Europe. Despite a similar mortality decline, urban mortality in developing countries since World War II has been generally lower than rural mortality, probably because of better medical care, higher socio-economic status and better nutrition in urban areas. However, higher urban mortality has recently been seen in the slums of large cities in developing countries as a result of extreme poverty, family disintegration, lack of hygiene, sanitation and medical care, low nutritional status, emerging diseases (HIV/AIDS and tuberculosis) and other health hazards (environmental hazards, accidents, violence).

Conclusions: Excess urban mortality and morbidity are the result of lack of state involvement: lack of environmental and sanitary regulations, lack of equipment (water and sanitation), lack of hygiene, lack of health infrastructure and personnel, lack of preventive medicine and lack of health education. Trends in child health will also depend on social and economic policies, and in particular policies aiming at mitigating the effects of extreme urban poverty. The successful model developed in Western Europe can be used to improve the situation in developing countries, and in particular to mitigate the appalling conditions in the slums. Given the scale of the problem, and the rapid population growth, this will require large-scale concerted efforts, and the creation of appropriate institutions to solve these problems, properly staffed and with proper management skills.

Key words: urbanization, under-five mortality, sub-Saharan Africa, review

Child health in peri-urban communities of Kenya: Determinants and challenges

Othero DM, Oteku J and Alwar J (2010) 'Child health in peri-urban communities of Kenya: Determinants and challenges,' *International Journal of Medicine and Medical Sciences* 2(6): 184-189.

http://www.academicjournals.org/article/article1379176399_Othero%20et%20al.pdf

Infant and child death in developing countries constitute the largest age category of mortality. This is because children under the age of five years are the group most vulnerable to diseases caused by inadequate child care, health risks, and poor environmental conditions. The overall aim of this study was to explore the demographic, environmental, socio-economic and health seeking behavioural factors contributing to childhood mortality in peri-urban communities. A cross-sectional analytical study was undertaken between January and May 2007 adopting both quantitative and qualitative approaches. Quantitative data was collected using a semi-structured questionnaire administered to 384 mothers aged 15 - 49 years and having children aged below five years alive or dead. Qualitative data was collected through focus group discussions and key informant interviews with selected participants. The main outcome measure was identification of the main determinants of childhood mortality at household level in

the peri-urban communities based on proportions of children dead, correlation coefficients and multiple regression analysis. The study revealed that the main determinants of child health in peri-urban communities are maternal occupation and immunizations uptake ($t = -5.094$, $P = 0.000$ and $t = -3.888$, $P = 0.012$ respectively). Treatment of drinking water, source of drinking water and maternal age also had strong influence on child health ($t = -3.647$, $P = 0.028$ and $t = -3.111$, $P = 0.034$ respectively). Maternal occupation emerged as the main determinant of child health in peri-urban communities.

Conclusions: Overindulgence of mothers in small scale businesses and casual work in urban centers compromises child care hence the high infant and child morbidity and mortality reported in peri-urban settings. This calls for focused health education and services targeting the mothers.

Key words: peri-urban, determinants, Infant, child, mortality, morbidity, Kenya, cross sectional survey

Classification and dramatic epidemic of diabetes mellitus in Kinshasa Hinterland: The prominent role of type 2 diabetes and lifestyle changes among Africans

Kasiam LO, Longo-Mbenza B, Nge OA, Kangola KN, Mbungu FS and Milongo DG (2009) Classification and dramatic epidemic of diabetes mellitus in Kinshasa Hinterland: The prominent role of type 2 diabetes and lifestyle changes among Africans, *Nigerian Journal of Medicine : Journal of the National Association of Resident Doctors of Nigeria* 18(3): 311-320.

<http://www.ncbi.nlm.nih.gov/pubmed/20120653>

Classification of diabetes mellitus is not easily stated in Central Africa using the current diabetes classification of World Health Organization/American Diabetes Association. The objective of the study is to determine the prevalence, classification and risk factors of diabetes mellitus in Kinshasa Hinterland. A multilevel and stratified random sample cross-sectional study included 9770 black Africans (4580 men and 5190 women) aged 12 years and above in urban metropolitan (Kinshasa city) and rural (Kikwit) areas. Participants were examined and administered a structured questionnaire and a capillary whole blood glucose test was done. The mean age of participants was 46 +/- 15 years. Overall crude and age adjusted prevalences of diabetes were 25% ($n = 2472$) and 18%, respectively. Using WHO/ADA classification, Type diabetes (80%) was commoner than undetermined form (12%), Type 1B (3.5%), Type 1A (2.5%) and Other specific types (2%). According to plasma insulin and plasma C-peptide levels, participants with undetermined form were classified Type 2 diabetics. Thus, the rate of Type 2 diabetes among diabetics was estimated 92%. Urban location, age, abdominal obesity arterial hypertension, physical inactivity, inappropriate diet (lack of fruits-vegetables, refined sugar, animal fat and protein, starvation, social inequalities, cigarette smoking, alcohol intake were significantly and positively associated with diabetes in general and type 2 diabetes in particular.

Conclusions: The high prevalence of diabetes is due to the unexpected high rates of type 2 diabetes, aging, urbanization, and sedentary lifestyle consequences. The majority of risk factors of diabetes are potentially modifiable by primary prevention.

Key words: diabetes, social inequalities, urban, DRC, cross-sectional survey

Hypertension prevalence, awareness, treatment, and control in Mozambique: Urban/rural gap during epidemiological transition

Damasceno A, Azevedo A, Silva-Matos C, Prista A, Diogo D and Lunet N (2009) 'Hypertension prevalence, awareness, treatment, and control in Mozambique: Urban/rural gap during epidemiological transition,' *Hypertension* 54(1): 77-83. doi:10.1161/HYPERTENSIONAHA.109.132423 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/19470872>

The prediction of cardiovascular risk profile trends in low-income countries and timely action to modulate their transitions are among the greatest global health challenges. This study aimed to quantify the prevalence, awareness, treatment, and control of arterial hypertension in the Mozambican adult population and to compare these estimates between urban and rural areas of residence within the country.: In 2005, the authors evaluated a nationally representative sample of the Mozambican population ($n=3323$; 25 to 64 years old) following the Stepwise Approach to Chronic Disease Risk Factor Surveillance: Prevalence of hypertension (systolic blood pressure \geq 140 mm Hg and/or diastolic blood pressure \geq 90 mm Hg and/or antihypertensive drug therapy), awareness (having been informed of the hypertensive status by a health professional in the previous year), treatment among the aware (use of antihypertensive medication in the previous fortnight), and control among those treated (blood pressure $<$ 140/90 mm Hg) were 33.1% (women: 31.2%; men: 35.7%), 14.8% (women: 18.4%; men: 10.6%), 51.9% (women: 61.1%; men: 33.3%), and 39.9% (women: 42.9%; men: 28.7%), respectively. Urban/rural comparisons are presented as age- and education-adjusted odds ratios (ORs) and 95% CIs. Among

women, hypertension and awareness were more frequent in urban areas. No urban/rural differences were observed in men and prevalence was not significantly different across urban/rural settings. Control was less frequent in urban women and more frequent in urban men.

Conclusions: Our results illustrate the changing paradigms of "diseases of affluence" and the dynamic character of epidemiological transition. The urban/rural differences across sexes support a trend toward smaller differences, emphasizing the need for strategies to improve prevention, correct diagnosis, and access to effective treatment.

Key words: hypertension, adults, urban, rural, Mozambique, quantitative

Overweight and obesity in urban Africa: A problem of the rich or the poor?

Ziraba AK, Fotso JC and Ochako R (2009) 'Overweight and obesity in urban Africa: A problem of the rich or the poor?' *BMC Public Health* 9: 465-2458-9-465. doi:10.1186/1471-2458-9-465 [doi]
<http://www.biomedcentral.com/1471-2458/9/465>

The aim of this study was to shed light on the patterns of overweight and obesity in sub-Saharan Africa, with special interest in differences between the urban poor and the urban non-poor. The specific goals were to describe trends in overweight and obesity among urban women; and examine how these trends vary by education and household wealth. The paper used Demographic and Health Surveys data from seven African countries where two surveys had been carried out with an interval of at least 10 years between them. Among the countries studied, the earliest survey took place in 1992 and the latest in 2005. The dependent variable was body mass index coded as: Not overweight/obese; Overweight; Obese. The key covariates were time lapse between the two surveys; woman's education; and household wealth. Control variables included working status, age, marital status, parity, and country. Multivariate ordered logistic regression in the context of the partial proportional odds model was used. Descriptive results showed that the prevalence of urban overweight/ obesity increased by nearly 35% during the period covered. The increase was higher among the poorest (+50%) than among the richest (+7%). Importantly, there was an increase of 45-50% among the non-educated and primary-educated women, compared to a drop of 10% among women with secondary education or higher. In the multivariate analysis, the odds ratio of the variable time lapse was 1.05 ($p < 0.01$), indicating that the prevalence of overweight/obesity increased by about 5% per year on average in the countries in the study. While the rate of change in urban overweight/obesity did not significantly differ between the poor and the rich, it was substantially higher among the non-educated women than among their educated counterparts.

Conclusions: Overweight and obesity are on the rise in Africa and might take epidemic proportions in the near future. Like several other public health challenges, overweight and obesity should be tackled and prevented early as envisioned in the WHO Global strategy on diet, physical activity and health.

Key words: overweight, obesity, urban, trends, sub-Saharan Africa, household survey

Determinants of under nutrition among school age children in a Nairobi peri-urban slum

Chesire EJ, Orago AS, Oteba LP and Echoka E (2008) 'Determinants of under nutrition among school age children in a Nairobi peri-urban slum,' *East African Medical Journal* 85(10): 471-479.
<http://www.ajol.info/index.php/eamj/article/viewFile/9671/31081>

The aim of this study was to establish the determinants of under nutrition among school age children between 6-12 years in a low-income urban community. A cross-sectional descriptive study was conducted in Kawangware peri-urban slum, Nairobi, Kenya. With 384 school children aged 6-12 years. A total of 4.5% were wasted, 14.9% underweight and 30.2% stunted. The children who were over nine years of age were more underweight and stunted than those below eight years. The girls were more wasted than the boys, whereas the boys were more stunted than the girls. The other variables found to have had significant association with the nutritional status of the children were: monthly household income ($p = 0.008$), food prices ($p = 0.012$), morbidity trends ($p = 0.045$), mode of treatment ($p = 0.036$) and school attendance ($p = 0.044$).

Conclusions: The findings of this study show evidently that there is under nutrition among school age children, with stunting being the most prevalent. The Ministry of Education and Ministry of Health therefore need to develop policies which can alleviate under nutrition among school age children. We also recommend that awareness be created among the school age children, parents and teachers, on the dietary requirements of both boys and girls.

Key words: children, peri-urban, slum, malnutrition, Kenya, cross-sectional study

Progress towards the child mortality millennium development goal in urban Sub-Saharan Africa: The dynamics of population growth, immunization, and access to clean water

Fotso JC, Ezech AC, Madise NJ and Ciera J (2007) 'Progress towards the child mortality millennium development goal in urban Sub-Saharan Africa: The dynamics of population growth, immunization, and access to clean water,' *BMC Public Health* 7: 218. doi:1471-2458-7-218 [pii]

<http://www.biomedcentral.com/1471-2458/7/218>

Improvements in child survival have been very poor in sub-Saharan Africa (SSA). Since the 1990 s, declines in child mortality have reversed in many countries in the region, while in others, they have either slowed or stalled, making it improbable that the target of reducing child mortality by two thirds by 2015 will be reached. This paper highlights the implications of urban population growth and access to health and social services on progress in achieving MDG 4. Specifically, it examines trends in childhood mortality in SSA in relation to urban population growth, vaccination coverage and access to safe drinking water. Correlation methods are used to analyze national-level data from the Demographic and Health Surveys and from the United Nations. The analysis is complemented by case studies on intra-urban health differences in Kenya and Zambia. Only five of the 22 countries included in the study have recorded declines in urban child mortality that are in line with the MDG target of about 4% per year; five others have recorded an increase; and the 12 remaining countries witnessed only minimal decline. More rapid rate of urban population growth is associated with negative trend in access to safe drinking water and in vaccination coverage, and ultimately to increasing or timid declines in child mortality. There is evidence of intra-urban disparities in child health in some countries like Kenya and Zambia.

Conclusions: Failing to appropriately target the growing sub-group of the urban poor and improve their living conditions and health status - which is an MDG target itself - may result in lack of improvement on national indicators of health. Sustained expansion of potable water supplies and vaccination coverage among the disadvantaged urban dwellers should be given priority in the efforts to achieve the child mortality MDG in SSA.

Key words: urban, population growth, childhood mortality, sub-Saharan Africa, household survey

Trends in obesity, underweight, and wasting among women attending prenatal clinics in urban Tanzania

Villamor E, Msamanga G, Urassa W, Petraro P, Spiegelman D, Hunter DJ and Fawzi WW (2006) 'Trends in obesity, underweight, and wasting among women attending prenatal clinics in urban Tanzania, 1995-2004,' *The American Journal of Clinical Nutrition* 83(6): 1387-1394. doi:83/6/1387

<http://www.ncbi.nlm.nih.gov/pubmed/16762951>

This study evaluated changes in the prevalence of obesity, underweight, and wasting in women of reproductive age from Dar es Salaam, Tanzania, during the past 10 years and to identify contemporary sociodemographic correlates of these indicators. We estimated the prevalence of obesity [body mass index (BMI; in kg/m²) > or = 30], underweight (BMI < 18.5), and wasting (mid upper arm circumference < 22 cm) in 73 689 women aged 14-52 y who attended antenatal care clinics in the city of Dar es Salaam, Tanzania, between 1995 and 2004. The prevalence of obesity rose steadily and progressively from 3.6% in 1995 to 9.1% in 2004 [adjusted prevalence ratio (PR): 1.97; 95% CI: 1.66, 2.33; P for trend for year < 0.0001]. Underweight showed only a modest decline from 3.3% in 1995 to 2.6% in 2004 (adjusted PR: 0.91; 95% CI: 0.75, 1.10; P for trend for year = 0.003), whereas no change was observed in the prevalence of wasting. In the most recent years (2003 and 2004), obesity was positively associated with age, parity, and socioeconomic status and inversely with HIV infection. Underweight was inversely related to socioeconomic status and positively to HIV status.

Conclusions: The recent, rapid, and large increase in the prevalence of obesity in women represents a new competing public health priority in urban Tanzania, where underweight and wasting have not decreased substantially. Future studies need to examine the implications of the fast increase in obesity on the incidence of diabetes, hypertension, cardiovascular disease, cancer, and other noncommunicable diseases in this population. Increasing knowledge on the specific causes of obesity in this population, through research on patterns of dietary intake and physical activity, should provide clearer directions for the implementation of culturally tailored public health interventions. It is critical to promote and strengthen surveillance mechanisms to follow trends in the nutritional status of populations in sub-Saharan Africa.

Key words: obesity, underweight, wasting, BMI, women, urban, Tanzania

The nutrition and health transition in the north west province of South Africa: A review of the THUSA (transition and health during urbanisation of South Africans)

Vorster HH, Venter CS, Wissing MP and Margetts BM (2005) 'The nutrition and health transition in the north west province of South Africa: A review of the THUSA (transition and health during urbanisation of South Africans) study' *Public Health Nutrition* 8(5): 480-490. doi:S1368980005000674 [pii]
<http://www.ncbi.nlm.nih.gov/pubmed/16153329>

This study aims to demonstrate how urbanisation influences the nutrition and health transition in South Africa by using data from the THUSA (Transition and Health during Urbanisation of South Africans) study. In the North West Province of South Africa, a total of 1854 apparently healthy volunteers, men and women aged 15 years and older, from 37 randomly selected sites in the North West Province of South Africa were enrolled in this cross-sectional, comparative, population-based survey study. Subjects were stratified into five groups representing different levels of urbanisation in rural and urban areas: namely, deep rural, farms, squatter camps, townships and towns/cities. Socio-economic and education profiles, dietary patterns, nutrient intakes, anthropometric and biochemical nutrition status, physical and mental health indicators, and risk factors for non-communicable diseases (NCDs) were measured using questionnaires developed or adapted and validated for this population, as well as appropriate, standardised methods for the biochemical analyses of biological samples. Subjects from the rural groups had lower household incomes, less formal education, were shorter and had lower body mass indices than those in the urban groups. Urban subjects consumed less maize porridge but more fruits, vegetables, animal-derived foods and fats and oils than rural subjects. Comparing women from rural group 1 with the urban group 5, the following shifts in nutrient intakes were observed: % energy from carbohydrates, 67.4 to 57.3; from fats, 23.6 to 31.8; from protein, 11.4 to 13.4 (with an increase in animal protein from 22.2 to 42.6 g day⁻¹); dietary fibre, 15.8 to 17.7 g day⁻¹; calcium, 348 to 512 mg day⁻¹; iron from 8.4 to 10.4 mg day⁻¹; vitamin A from 573 to 1246 mug retinol equivalents day⁻¹; and ascorbic acid from 30 to 83 mg day⁻¹. Serum total cholesterol, low-density lipoprotein cholesterol and plasma fibrinogen increased significantly across groups; systolic blood pressure >140 mmHg was observed in 10.4-34.8% of subjects in different groups and diabetes mellitus in 0.8-6.0% of subjects. Women in groups 1 to 5 had overweight plus obesity rates of 48, 53, 47, 61 and 61%, showing an increase with urbanisation. Subjects from group 2 (farm dwellers) showed the highest scores of psychopathology and the lowest scores of psychological well-being. The same subjects consistently showed the lowest nutrition status.

Conclusions: Urbanisation of Africans in the North West Province is accompanied by an improvement in micronutrient intakes and status, but also by increases in overweight, obesity and several risk factors for NCDs. It is recommended that intervention programmes to promote nutritional health should aim to improve micronutrient status further without leading to obesity. The role of psychological strengths in preventing the adverse effects of urbanisation on health needs to be examined in more detail.

Key words: nutrition, health transition, urbanization, South Africa, cross-sectional survey

A2. Papers on social differentials in determinants of health in urban areas

Seasonal variations in under-five mortality, stratified by neonatal, post-neonatal and child mortality, in Korogocho and Viwandani urban slums in Nairobi, Kenya: A time-series analysis on secondary data from the Nairobi Urban Health and Demographic Surveillance System (NUHDSS)

Moberg M (2015) 'Seasonal variations in under-five mortality, stratified by neonatal, post-neonatal and child mortality, in Korogocho and Viwandani urban slums in Nairobi, Kenya: A time-series analysis on secondary data from the Nairobi Urban Health and Demographic Surveillance System' <http://www.diva-portal.org/smash/get/diva2:826952/FULLTEXT01.pdf>

This study aims at clarifying if seasonality can be associated with mortality in different child age spans i.e. neonatal, post-neonatal and children under five in two urban slum settlements in Nairobi, Kenya. Secondary seasonal mortality data from the Nairobi Urban Health and Demographic Surveillance System (NUHDSS), collected in the years 2008–2010 in Viwandani and Korogocho slums in Nairobi, Kenya was decomposed into seasonal components with a moving average comparison. Seasonal indices were created on disaggregated data for the different mortality groups and gender strata. The annual mean prevalence of under-five mortality [U5M] and neonatal mortality [NM] was 86 and 20 respectively. Overall U5M increased from April–August. Post-neonatal mortality [PM] had the earliest onset (April–May) followed by NM (May–August). Child mortality [CM] had two peaks, June–August and November.

Conclusions: The displayed seasonal pattern in NM, PM, CM and U5M seemingly corresponded to the yearly fluctuation of temperature and precipitation, with a predominant intensification in the wettest and coldest months. CM seemed to be the only group with increased mortality also in the second rain period, not reflected in the overall mortality index. These findings could be used to set the agenda for preventative interventions aimed at reducing childhood mortality and morbidity.

Key words: Kenya, under-five mortality, urban slums, household survey

A longitudinal study of long-term change in contamination hazards and shallow well quality in two neighbourhoods of Kisumu, Kenya

Okotto-Okotto J, Okotto L, Price H, Pedley S and Wright J (2015) 'A longitudinal study of long-term change in contamination hazards and shallow well quality in two neighbourhoods of Kisumu, Kenya,' *International Journal of Environmental Research and Public Health* 12(4): 4275-4291.

doi:10.3390/ijerph120404275 [doi]

<http://www.mdpi.com/1660-4601/12/4/4275>

Sub-Saharan Africa is experiencing rapid urbanisation and many urban residents use groundwater where piped supplies are intermittent or unavailable. This study aimed to investigate long-term changes in groundwater contamination hazards and hand-dug well water quality in two informal settlements in Kisumu city, Kenya. Buildings, pit latrines, and wells were mapped in 1999 and 2013-2014. Sanitary risk inspection and water quality testing were conducted at 51 hand-dug wells in 2002 to 2004 and 2014. Pit latrine density increased between 1999 and 2014, whilst sanitary risk scores for wells increased between 2002 to 2004 and 2014 ($n = 37$, $Z = -1.98$, $p = 0.048$). Nitrate levels dropped from 2004 to 2014 ($n = 14$, $Z = -3.296$, $p = 0.001$), but multivariate analysis suggested high rainfall in 2004 could account for this. Thermotolerant coliform counts dropped between 2004 and 2014, with this reduction significant in one settlement. Hand-dug wells had thus remained an important source of domestic water between 1999 and 2014, but contamination risks increased over this period. Water quality trends were complex, but nitrate levels were related to both sanitary risks and rainfall.

Conclusions: Given widespread groundwater use by the urban poor in sub-Saharan Africa, the study protocol could be further refined to monitor contamination in hand-dug wells in similar settings.

Key words: water quality, wells, urban, Kenya, longitudinal, mapping

Secular trends in habitual physical activities of Mozambican children and adolescents from Maputo city

dos Santos FK, Maia JA, Gomes TN, Daca T, Madeira A, Damasceno A, et al. (2014) 'Secular trends in habitual physical activities of Mozambican children and adolescents from Maputo city,' *International Journal of Environmental Research and Public Health* 11(10): 10940-10950.

doi:10.3390/ijerph111010940 [doi]

<file:///C:/Users/Masotya/Documents/Downloads/ijerph-11-10940-v2.pdf>

Social and economic changes occurring in the last two decades in Mozambique may have induced lifestyle changes among youth. This study aimed to document secular changes in habitual physical activities of Mozambican youth between 1992, 1999 and 2012. A total of 3393 youth (eight-15 years), were measured in three different time periods (1992, 1999, 2012). Habitual physical activity (PA) was estimated with a questionnaire, including items related to household chores, sport participation, traditional games and walking activities. Biological maturation was assessed. Analysis of Covariance (ANCOVA) was used to compare mean differences in PA across the years. Significant decreases between 1992-1999 and 1992-2012 were observed for boys in household chores, games and walking, and a significant decline between 1999 and 2012 was found in sport participation. Among girls, a significant and consistent decline (1992 > 1999 > 2012) was observed for household chores, a decline between 1992-1999 and 1992-2012 for games and walking, and a significant increase between 1992 and 1999 in sport participation. In general, a negative secular trend was found in habitual PA among Mozambican youth.

Conclusions: Since more than 40% of the Mozambican population is under 15 years old [12,13], different PA/physical education/sports participation programs should be implemented as a potential strategy to reduce the health risks associated with an inactive lifestyle in later life. Moreover,

attention to the urbanization process must be done in order to reduce the impact of activity barriers in the growing cities.

Key words: youth, physical activity, urban, Mozambique, quantitative survey

Pediatric asthma and ambient pollutant levels in industrializing nations

Jassal MS (2014) 'Pediatric asthma and ambient pollutant levels in industrializing nations,' *International Health* 7(1): 7-15. doi:10.1093/inthealth/ihu081 [doi]

<http://inthealth.oxfordjournals.org/content/early/2014/12/03/inthealth.ihu081>

Asthma is one of the most common chronic diseases in childhood and its prevalence has been increasing within industrializing nations. The contribution of ambient pollutants to asthma symptomatology has been explored in some countries through epidemiological investigations, molecular analysis and monitoring functional outcomes. The health effects of rising environmental pollution have been of increasing concern in industrializing nations with rising urbanization patterns. This review article provides an overview of the link between pediatric asthma and exposure to rising sources of urban air pollution. It primarily focuses on the asthma-specific effects of sulfur dioxide, nitrogen dioxide, ozone and particulate matter. Worldwide trends of asthma prevalence are also provided which detail the prominent rise in asthma symptoms in many urban areas of Africa, Latin America and Asia. The molecular and functional correlation of ambient pollutants with asthma-specific airway inflammation in the pediatric population are also highlighted.

Conclusions: The final aspect of the review considers the correlation of motor vehicle, industrial and cooking energy sources, ascribed as the major emitters among the pollutants in urban settings, with asthma epidemiology in children.

Key words: Asthma, pollution, urban, Africa, review

Health and fitness attitudes and lifestyle habits of urban children in South Africa (3)

Morar D, Coopoo Y, Shaw I and Shaw B (2014) 'Health and fitness attitudes and lifestyle habits of urban children in South Africa,' *African Journal for Physical Health Education, Recreation and Dance: A Multi-Disciplinary Approach to Health and Well-being*: Supplement 2 20: 102-112.

http://reference.sabinet.co.za/sa_epublication_article/ajpherd_v20_supp2_sep_a10

South Africa is experiencing an ever-increasing incidence of hypokinetic diseases in both child and adult populations. As such, this study attempted to determine the health and fitness attitudes and lifestyle habits of children in South Africa since positive attitudes and habits have been shown to improve the health status of children. This is especially important since many childhood risk factors, such as childhood obesity, correlate with adult risk factors for common chronic diseases. Nine hundred and sixty children were randomly selected from three different socio-economic suburbs in KwaZulu Natal, South Africa to complete a questionnaire on exercise and sport, physical education classes and teachers, health education classes, nutrition and health and lifestyle habits. Statistical analysis consisted of descriptive statistics to determine frequencies and percentages in addition to computation of cross-tabulations. It is evident that in terms of health, fitness and lifestyle habits, the socio-economic backgrounds of the children played a pivotal role in the differences in the children's responses to the various questions. In this regard, differences were found in the availability of resources and facilities, children's attitudes towards exercise and sport, the frequency of the exercise they engaged in, their participation in school sport, nutritional habits, food preferences, snacking habits, breakfast and meal routines, their perceptions of how people stay healthy or get sick, the activities they would engage in during their free time and to enjoy a healthy lifestyle and their television viewing habits. The results obtained from the health and lifestyle habits of children revealed that children seem to know the various factors that influence their health and what they should or should not do in order to maintain a healthy lifestyle. However, children do not practise those positive attitudes and habits during their free time.

Conclusions: The findings of the present study demonstrate that children cannot assume the responsibility of taking the knowledge they have gained during their health education lessons and putting them into practice in their everyday lifestyle. Based on these findings, the compulsory nature of Physical Education in schools must be ensured and the subject must be taught equally across the different socio-economic areas. This study also revealed that there is an urgent need for strategies that will ensure equal standard of sporting facilities at all schools.

Key words: urban, children, physical activity, fitness, nutrition, South Africa, quantitative survey

Women empowerment and practices regarding use of dual protection among family planning clients in urban Zimbabwe (3)

Mutowo J, Kasu CM and Mufunda E (2014) 'Women empowerment and practices regarding use of dual protection among family planning clients in urban Zimbabwe,' *The Pan African Medical Journal* 17: 300. doi:10.11604/pamj.2014.17.300.3282 [doi]

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4198267/pdf/PAMJ-17-300.pdf>

Gender related vulnerability may increase women's susceptibility to HIV infection and unintended pregnancy. The purpose of the study was to examine the relationship between women empowerment and practices regarding use of dual protection. METHODS: A non-experimental descriptive correlational study design was conducted using systematic sampling method to recruit eighty women aged 18-49 years at an urban clinic in Zimbabwe. Data was collected using a structured interview schedule and was analysed and presented using descriptive and inferential statistics. A weak positive significant correlation existed between women empowerment and use of dual protection ($r = .242, p = 0.03$). Findings demonstrated that as women empowerment levels increase practices regarding use of dual protection also increase. The coefficient of determination, $R^2 = 0.058, b = 0.293$, indicated that the total amount of variation in utilization of dual protection explained by level of women empowerment was 5.8%. The major finding was that use of dual protection was very low (3.8%) and 67.5% had low levels of practices regarding use of dual protection. Additionally, 85.0% were not confident of using the female condom.

Conclusions: Gender inequality within sexual relations was associated with low levels of practices regarding use of dual protection. The study provided evidence for the need for a proactive integrated approach to empower women so that they could negotiate for safer sex practices. To increase female condom utilization, manufacturers need to redesign the female condom so that it becomes user friendly. Health personnel need to involve men for any health reproductive program to succeed.

Key words: women, dual protection, family planning, Zimbabwe, quantitative

Geographical inequalities in use of improved drinking water supply and sanitation across Sub-Saharan Africa: Mapping and spatial analysis of cross-sectional survey data

Pullan RL, Freeman MC, Gething PW and Brooker SJ (2014) 'Geographical inequalities in use of improved drinking water supply and sanitation across Sub-Saharan Africa: Mapping and spatial analysis of cross-sectional survey data,' *PLoS Medicine* 11(4): e1001626.

doi:10.1371/journal.pmed.1001626 [doi]

<http://www.plosmedicine.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pmed.1001626&representation=PDF>

Understanding geographic inequalities in coverage of drinking-water supply and sanitation (WSS) will help track progress towards universal coverage of water and sanitation by identifying marginalized populations, thus helping to control a large number of infectious diseases. This paper uses household survey data to develop comprehensive maps of WSS coverage at high spatial resolution for sub-Saharan Africa (SSA). Analysis is extended to investigate geographic heterogeneity and relative geographic inequality within countries. Cluster-level data on household reported use of improved drinking-water supply, sanitation, and open defecation were abstracted from 138 national surveys undertaken from 1991-2012 in 41 countries. Spatially explicit logistic regression models were developed and fitted within a Bayesian framework, and used to predict coverage at the second administrative level (admin2, e.g., district) across SSA for 2012. KEY FINDINGS: Results reveal substantial geographical inequalities in predicted use of water and sanitation that exceed urban-rural disparities. The average range in coverage seen between admin2 within countries was 55% for improved drinking water, 54% for use of improved sanitation, and 59% for dependence upon open defecation. There was also some evidence that countries with higher levels of inequality relative to coverage in use of an improved drinking-water source also experienced higher levels of inequality in use of improved sanitation. Results are limited by the quantity of WSS data available, which varies considerably by country, and by the reliability and utility of available indicators.

Conclusions: This study identifies important geographic inequalities in use of WSS previously hidden within national statistics, confirming the necessity for targeted policies and metrics that reach the most marginalized populations. The presented maps and analysis approach can provide a mechanism for monitoring future reductions in inequality within countries, reflecting priorities of the post-2015 development agenda.

Key words: water, sanitation, geographic inequalities, sub-Saharan Africa, household survey

Added sugar intake in South Africa: Findings from the adult prospective urban and rural epidemiology cohort study

Vorster HH, Kruger A, Wentzel-Viljoen E, Kruger HS and Margetts BM (2014) 'Added sugar intake in South Africa: Findings from the adult prospective urban and rural epidemiology cohort study,' *The American Journal of Clinical Nutrition* 99(6): 1479-1486. doi:10.3945/ajcn.113.069005 [doi]

<http://ajcn.nutrition.org/content/early/2014/04/16/ajcn.113.069005.full.pdf+html>

Obesity and other noncommunicable disease (NCD) risk factors are increasing in low- and middle-income countries. There are few data on the association between increased added sugar intake and NCD risk in these countries. We assessed the relation between added sugar intake and NCD risk factors in an African cohort study. Added sugars were defined as all monosaccharides and disaccharides added to foods and beverages during processing, cooking, and at the table. The authors conducted a 5-y follow-up of a cohort of 2010 urban and rural men and women aged 30-70 y of age at recruitment in 2005 from the North West Province in South Africa. Added sugar intake, particularly in rural areas, has increased rapidly in the past 5 y. In rural areas, the proportion of adults who consumed sucrose-sweetened beverages approximately doubled (for men, from 25% to 56%; for women, from 33% to 63%) in the past 5 y. After adjustment, subjects who consumed more added sugars ($\geq 10\%$ energy from added sugars) compared with those who consumed less added sugars had a higher waist circumference [mean difference (95% CI): 1.07 cm (0.35, 1.79 cm)] and body mass index (in kg/m²) and lower HDL cholesterol.

Conclusions: This cohort showed dramatic increases in added sugars and sucrose-sweetened beverage consumption in both urban and rural areas. Increased consumption was associated with increased NCD risk factors. In addition, the study showed that the nutrition transition has reached a remote rural area in South Africa. Urgent action is needed to address these trends. Increase in sugar and NCD in both urban and rural

Key words: obesity, sugar, nutrition, urban, South Africa, quantitative survey

Temporal trends and correlates of physical activity, sedentary behaviour, and physical fitness among school-aged children in Sub-Saharan Africa: A systematic review

Muthuri SK, Wachira LJ, Leblanc AG, Francis CE, Sampson M, Onywera VO and Tremblay MS (2014) 'Temporal trends and correlates of physical activity, sedentary behaviour, and physical fitness among school-aged children in Sub-Saharan Africa: A systematic review,' *International Journal of Environmental Research and Public Health* 11(3): 3327-3359. doi:10.3390/ijerph110303327 [doi]

<http://www.mdpi.com/1660-4601/11/3/3327>

Recent physical activity (PA) and fitness transitions, identified as behavioural shifts from traditionally active lifestyles to more industrialised and sedentary lifestyles, have been observed among school-aged children. There is a wealth of supporting evidence of such behavioural transitions in high income countries; however, a paucity of data on lower income countries exists. These transitions pose a particular threat to the welfare of children by accelerating the onset of chronic diseases. This systematic review investigated the evidence for a PA and fitness transition among Sub-Saharan Africa's school-aged children. Temporal trends and correlates of PA, SB, and fitness were examined. Studies were identified by searching the Medline, Embase, Africa Index Medicus, Global Health, Geobase, and EPPI-Centre electronic databases, and were included if they measured outcomes of interest in apparently healthy samples of children (517 years). A total of 71 articles met the inclusion criteria (40 informed PA, 17 informed SB, and 37 informed fitness). Vast heterogeneity in study methodology complicated analysis of transitions over time and no temporal trends were immediately discernible. However, higher socioeconomic status, urban living, and female children were found to engage in lower levels of PA, higher SB, and performed worse on aerobic fitness measures compared to lower socioeconomic status, rural living, and male children.

Conclusions: Data revealed that urbanization was associated with a trend towards decreased PA, increased SB, and decreased aerobic fitness over time. Representative, temporally sequenced data examining a PA and fitness transition are lacking in this region.

Key words: physical activity, children, sub-Saharan Africa, systematic review

Trends in access to water supply and sanitation in 31 major Sub-Saharan African cities: An analysis of DHS data from 2000 to 2012

Hopewell MR and Graham JP (2014) 'Trends in access to water supply and sanitation in 31 major Sub-Saharan African cities: An analysis of DHS data from 2000 to 2012,' *BMC Public Health* 14: 208. doi:10.1186/1471-2458-14-208 [doi]

<http://link.springer.com/article/10.1186/1471-2458-14-208>

By 2050, sub-Saharan Africa's (SSA) urban population is expected to grow from 414 million to over 1.2 billion. This growth will likely increase challenges to municipalities attempting to provide access to water supply and sanitation (WS&S). This study aims to characterize trends in access to WS&S in SSA cities and identify factors affecting those trends. METHODS: DHS data collected between 2000 and 2012 were used for this analysis of thirty-one cities in SSA. Four categories of household access to WS&S were studied using data from demographic and health surveys--these included: 1) household access to an improved water supply, 2) household's time spent collecting water, 3) household access to improved sanitation, and 4) households reporting to engage in open defecation. An exploratory analysis of these measures was then conducted to assess the relationship of access to several independent variables. Among the 31 cities, there was wide variability in coverage levels and trends in coverage with respect to the four categories of access. The majority of cities were found to be increasing access in the categories of improved water supply and improved sanitation (65% and 83% of cities, respectively), while fewer were making progress in reducing the amount of time spent collecting water and reducing open defecation (50% and 38% of cities, respectively). The prevalence of open defecation in study cities was found to be, on average, increasing.

Conclusions: Based on DHS data, cities appeared to be making the most progress in gaining access to WS&S along metrics which reflect specified targets of the Millennium Development Goals. Nearly half of the cities, however, did not make progress in reducing open defecation or the time spent collecting water. This may reflect that the MDGs have led to a focus on "improved" services while other measures, potentially more relevant to the extreme poor, are being neglected. This study highlights the need to better characterize access, beyond definitions of improved and unimproved, as well as the need to target resources to cities where changes in WS&S access have stalled, or in some cases regressed.

Key words: urban, water, sanitation, sub-Saharan Africa, household survey

Public health and environmental challenges in Zimbabwe: The case of solid waste generation and disposal in the city of Masvingo

Musingafi MCC, Manyanye S and Ngwaru K (2014) 'Public health and environmental challenges in Zimbabwe: The case of solid waste generation and disposal in the city of Masvingo,' *Journal of Environments* 1(2): 68-72.

<http://asianonlinejournals.com/index.php/JOEN/article/view/167>

PURPOSE: This paper is mainly an overview of the challenge of solid waste management in the city of Masvingo. METHODS: The paper is based on experiential observation. The researchers are residents of the city of Masvingo. KEY FINDINGS: The paper established that Masvingo residents generate waste when they throw away weeds and garden debris, construction debris, food left-overs and packages, old tyres, metal scraps, among many others. Although there are regulations and by-laws on how to handle solid waste, it seems in practice these are not enforced. People discard solid waste by throwing bottles, fast food containers, and other items on the street or out of car windows. This results in a lot of litter in the city. Residents use metal and plastic medium sized bins, plastic paper, cardboard boxes and sacks for temporary waste storage, as determined by their ability to purchase the waste containers. Most high density residents do not afford bins, cardboard or any other temporary storage equipment. Hence they store their waste in open areas. The Masvingo city council does not take measures on residents who do not store their solid waste as per their regulations and by-laws. This encourages the people to continue littering their residential area.

Conclusions: Among other things, this paper recommends a programme in which the municipality joins hands with other stakeholders (EMA, NGOs, residents' associations, government departments, the business community, and many others) in advocacy campaigns and training sessions to ensure that residents are aware of risks associated with mishandling of solid waste.

Key words: sanitation, solid waste, Masvingo, Zimbabwe, experiential observation

Urbanization and international trade and investment policies as determinants of non communicable diseases in Sub-Saharan Africa

Schram A, Labonte R and Sanders D (2013) 'Urbanization and international trade and investment policies as determinants of noncommunicable diseases in Sub-Saharan Africa,' *Progress in Cardiovascular Diseases* 56(3): 281-301. doi:10.1016/j.pcad.2013.09.016 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/24267436>

There are three dominant globalization pathways affecting noncommunicable diseases in Sub-Saharan Africa (SSA): urbanization, trade liberalization, and investment liberalization. Urbanization carries potential health benefits due to improved access to an increased variety of food imports, although for the growing number of urban poor, this has often meant increased reliance on cheap, highly processed food commodities. Reduced barriers to trade have eased the importation of such commodities, while investment liberalization has increased corporate consolidation over global and domestic food chains. Higher profit margins on processed foods have promoted the creation of 'obesogenic' environments, which through progressively integrated global food systems have been increasingly 'exported' to developing nations.

Conclusions: This article explores globalization processes, the food environment, and dietary health outcomes in SSA through the use of trend analyses and structural equation modelling. The findings are considered in the context of global barriers and facilitators for healthy public policy.

Key words: non-communicable disease, urbanization, globalization, sub-Saharan Africa

The Health of Women and Girls in Urban Areas with a Focus on Kenya and South Africa

Hawkins K, MacGregor H and Oronje R (2013) 'The Health of Women and Girls in Urban Areas with a Focus on Kenya and South Africa: A Review' IDS Evidence Report 42, Brighton: IDS.

http://opendocs.ids.ac.uk/opendocs/handle/123456789/3202#.VaMz_PIVhBc

See Section A1

Status Report on the Sexual and Reproductive Health of Adolescents Living in Urban Slums in Kenya

Beguy D, Mumah J, Wawire S, Muindi K, Gottschalk L in Kenya' and Kabiru C (2013) 'Status Report on the Sexual and Reproductive Health of Adolescents Living in Urban Slums accessed 15 Jul 2015 at:

http://www.researchgate.net/publication/260677868_STATUS_REPORT_ON_THE_SEXUAL_AND_REPRODUCTIVE_HEALTH_OF_ADOLESCENTS_LIVING_IN_URBAN_SLUMS_IN_KENYA

This report provides information on adolescents' background characteristics, sexual and reproductive health knowledge, SRH attitudes, sexual behavior, reproductive life and unintended pregnancies. This report is based on secondary analysis of data from the Transition to Adulthood (TTA) project among 12-22 years olds living in two informal settlements, Korogocho and Viwandani, in Nairobi, Kenya. Findings presented are based on simple descriptive statistics and cross-tabulations of indicators by age, highest level of education, schooling status and current marital status. In addition, this report includes evidence based on qualitative data collected in 2009 through 75 in-depth interviews with adolescents aged 12-24 years in the two slums. Respondents for the in-depth interviews were purposively selected from participants in the baseline survey conducted in 2007-8. Respondents were selected to represent varying; universal knowledge of HIV/AIDS; substantial age and gender differences in HIV testing trajectories of experience with regard to the key markers of the transition from adolescence to adulthood which include; leaving school, getting a first job, leaving their parents' home, entering into a union, and becoming a parent. The report highlights the SRH challenges faced by adolescents living in these slums, as well as the perceptions and strategies that adolescents adopt to deal with each of these challenges. Findings indicate poor knowledge of the menstrual cycle and fertility experiences; persistence of culturally normative

attitudes; early initiation of sexual activity; low use of condoms and other contraceptives with condom use for dual protection; disconnect between adolescents' sexual and reproductive health attitudes and their behavior; high burden of unwanted and mistimed pregnancies; and threat of unwanted, transactional and coercive sex.

Conclusions: Targeted programs are needed to reach adolescents with sexual and reproductive health services at different stages of need. These programs should strengthen sexual and reproductive health education for very young adolescents while providing contraceptive services for adolescents. Poverty reduction strategies must be considered alongside sexual and reproductive health services. Holistic programs that consider the relationship between health and environment are needed to address the complex web of factors that contribute to SRH. Opportunities for income generating activities among adolescents may reduce poverty, empower disenfranchised youth, and provide a forum for integration of SRH education and services.

Key words: slum, Nairobi, Kenya, DSS, quantitative, qualitative

Associations between household and neighbourhood socioeconomic status and systolic blood pressure among urban South African adolescents

Griffiths PL, Sheppard ZA, Johnson W, Cameron N, Pettifor JM and Norris SA (2012) 'Associations between household and neighbourhood socioeconomic status and systolic blood pressure among urban South African adolescents,' *Journal of Biosocial Science* 44(4): 433-458.

doi:10.1017/S0021932012000107 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/22490826>

Factors resulting in high risk for cardiovascular disease have been well studied in high income countries, but have been less well researched in low/middle income countries. This is despite robust theoretical evidence of environmental transitions in such countries which could result in biological adaptations that lead to increased hypertension and cardiovascular disease risk. Data from the South African Birth to Twenty cohort, Bone Health sub-sample (n = 358, 47% female), were used to model associations between household socioeconomic status (SES) in infancy, household/ neighbourhood SES at age 16 years, and systolic blood pressure (multivariate linear regression) and risk for systolic pre-hypertension (binary logistic regression). Bivariate analyses revealed household/neighbourhood SES measures that were significantly associated with increased systolic blood pressure. These significant associations included improved household sanitation in infancy/16 years, caregiver owning the house in infancy and being in a higher tertile (higher SES) of indices measuring school problems/environment or neighbourhood services/problems/crime at 16 years of age. Multivariate analyses adjusted for sex, maternal age, birth weight, parity, smoking, term birth, height/body mass index at 16 years. In adjusted analyses, only one SES variable remained significant for females: those in the middle tertile of the crime prevention index had higher systolic blood pressure (beta = 3.52, SE = 1.61) compared with the highest tertile (i.e. those with the highest crime prevention). In adjusted analyses, no SES variables were significantly associated with the systolic blood pressure of boys, or with the risk of systolic pre-hypertension in either sex.

Conclusions: The lack of association between SES and systolic blood pressure/systolic pre-hypertension at age 16 years is consistent with other studies showing an equalization of adolescent health inequalities. Further testing of the association

Key words: hypertension, urban, adolescents, youth, socioeconomic status, South Africa

Elevation and cholera: An epidemiological spatial analysis of the cholera epidemic in Harare, Zimbabwe, 2008-2009

Luque Fernandez MA, Schomaker M, Mason PR, Fesselet JF, Baudot Y, Boulle A and Maes P (2012) 'Elevation and cholera: An epidemiological spatial analysis of the cholera epidemic in Harare, Zimbabwe, 2008-2009,' *BMC Public Health* 12: 442-2458-12-442. doi:10.1186/1471-2458-12-442

<http://www.ncbi.nlm.nih.gov/pubmed/22708576>

In highly populated African urban areas where access to clean water is a challenge, water source contamination is one of the most cited risk factors in a cholera epidemic. During the rainy season, where there is either no sewage disposal or working sewer system, runoff of rains follows the slopes and gets into the lower parts of towns where shallow wells could easily become contaminated by excretes. In cholera endemic areas, spatial information about topographical elevation could help to

guide preventive interventions. This study aims to analyze the association between topographic elevation and the distribution of cholera cases in Harare during the cholera epidemic in 2008 and 2009. The authors developed an ecological study using secondary data. First, they described attack rates by suburb and then calculated rate ratios using whole Harare as reference. They illustrated the average elevation and cholera cases by suburbs using geographical information. Finally, we estimated a generalized linear mixed model (under the assumption of a Poisson distribution) with an Empirical Bayesian approach to model the relation between the risk of cholera and the elevation in meters in Harare. They used a random intercept to allow for spatial correlation of neighboring suburbs. This study identifies a spatial pattern of the distribution of cholera cases in the Harare epidemic, characterized by a lower cholera risk in the highest elevation suburbs of Harare. The generalized linear mixed model showed that for each 100 meters of increase in the topographical elevation, the cholera risk was 30% lower with a rate ratio of 0.70 (95% confidence interval=0.66-0.76). Sensitivity analysis confirmed the risk reduction with an overall estimate of the rate ratio between 20% and 40%.

Conclusions: This study highlights the importance of considering topographical elevation as a geographical and environmental risk factor in order to plan cholera preventive activities linked with water and sanitation in endemic areas. Furthermore, elevation information, among other risk factors, could help to spatially orientate cholera control interventions during an epidemic.

Key words: cholera, topographical elevation, Harare, Zimbabwe, spatial analysis

Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa

EQUINET (2012) Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa. EQUINET, Harare.

<http://www.equinetafrica.org/bibl/docs/Regional%20EW%202012%20Part%201w.pdf>

See Section A1

Time-series analysis of weather and mortality patterns in Nairobi's informal settlements

Egondi T, Kyobutungi C, Kovats S, Muindi K, Ettarh R and Rocklöv J (2012) 'Time-series analysis of weather and mortality patterns in Nairobi's informal settlements,' *Global Health Action* 5: 23-32. doi:10.3402/gha.v5i0.19065 [doi]

<http://www.globalhealthaction.net/index.php/gha/article/view/19065>

Many studies have established a link between weather (primarily temperature) and daily mortality in developed countries. However, little is known about this relationship in urban populations in sub-Saharan Africa. The objective of this study was to describe the relationship between daily weather and mortality in Nairobi, Kenya, and to evaluate this relationship with regard to cause of death, age, and sex. We utilized mortality data from the Nairobi Urban Health and Demographic Surveillance System and applied time-series models to study the relationship between daily weather and mortality for a population of approximately 60,000 during the period 2003-2008. We used a distributed lag approach to model the delayed effect of weather on mortality, stratified by cause of death, age, and sex. Increasing temperatures (above 75th percentile) were significantly associated with mortality in children and non-communicable disease (NCD) deaths. We found all-cause mortality of shorter lag of same day and previous day to increase by 3.0% for a 1 degree decrease from the 25th percentile of 18 degrees C (not statistically significant). Mortality among people aged 50+ and children aged below 5 years appeared most susceptible to cold compared to other age groups. Rainfall, in the lag period of 0-29 days, increased all-cause mortality in general, but was found strongest related to mortality among females. Low temperatures were associated with deaths due to acute infections, whereas rainfall was associated with all-cause pneumonia and NCD deaths.

Conclusions: Increases in mortality were associated with both hot and cold weather as well as rainfall in Nairobi, but the relationship differed with regard to age, sex, and cause of death. Our findings indicate that weather-related mortality is a public health concern for the population in the informal settlements of Nairobi, Kenya, especially if current trends in climate change continue.

Key words: urban, informal settlement, weather, mortality, Nairobi, Kenya, NUDSS

Equity Watch: assessing progress toward equity in health in Zambia

University of Zambia Department of Economics, Ministry of Health Zambia, TARSC (2011) Equity Watch: assessing progress towards equity in health in Zambia, UNZA, EQUINET, Harare and Lusaka
<http://www.equinet africa.org/bibl/docs/Zambia%20EW%20Aug%202011%20web.pdf>
See Section A1

Monitoring of health and demographic outcomes in poor urban settlements: Evidence from the Nairobi urban health and demographic surveillance system

Emina J, Beguy D, Zulu EM, Ezeh AC, Muindi K, Elung'ata P, et al. (2011) 'Monitoring of health and demographic outcomes in poor urban settlements: Evidence from the Nairobi urban health and demographic surveillance system,' *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 88 Suppl 2: S200-18. doi:10.1007/s11524-011-9594-1 [doi]
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3132229/>
See Section A1

Does socioeconomic inequality in health persist among older people living in resource-poor urban slums?

Falkingham JC, Chepngeno-Langat G, Kyobutungi C, Ezeh A and Evandrou M (2011) 'Does socioeconomic inequality in health persist among older people living in resource-poor urban slums?' *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 88 Suppl 2: S381-400. doi:10.1007/s11524-011-9559-4 [doi]
<http://www.ncbi.nlm.nih.gov/pubmed/21431465>
See Section A1

Discourses of illegality and exclusion: When water access matters

Mudege NN and Zulu EM (2011) 'Discourses of illegality and exclusion: When water access matters,' *Global Public Health* 6(3): 221-233. doi:10.1080/17441692.2010.487494 [doi]
<http://www.ncbi.nlm.nih.gov/pubmed/20628930>

This paper examines the politics and the underlying discourses of water provisioning and how residents of Korogocho and Viwandani slum settlements in Nairobi city cope with challenges relating to water access. We use qualitative data from 36 focus group discussions conducted in the two slums to unravel discourses regarding water provisioning in the rapidly growing slum settlements in African cities. Results show that the problems concerning water provisioning within Nairobi slums are less about water scarcity and more about unequal distribution and the marginalisation of slum areas in development plans. Poor water management, lack of equity-based policies and programmes, and other slum-specific features such as land-tenure systems and insecurity exacerbate water-supply problems within slum areas. It is hard to see how water supply in these communities can improve without the direct and active involvement of the government in infrastructural development and oversight of the water-supply actors.

Conclusions: Innovative public-private partnerships in water provision and the harnessing of existing community efforts to improve the water supply would go a long way towards improving the water supply to the rapidly growing urban poor population in Africa.

Key words: water, access, slum settlements, urban, Africa, qualitative

Assessment of hypertension control in a district of Mombasa, Kenya

Jenson A, Omar AL, Omar MA, Rishad AS and Khoshnood K (2011) 'Assessment of hypertension control in a district of Mombasa, Kenya,' *Global Public Health* 6(3): 293-306. doi:10.1080/17441692.2010.510478 [doi]
<http://www.ncbi.nlm.nih.gov/pubmed/20845123>

As populations move to urban centres across East Africa, lifestyle habits that affect cardiovascular disease have changed, affecting non-communicable disease risk. The prevalence of hypertension, and associated awareness of this life-threatening condition, has not been studied in Mombasa, Kenya. This paper assesses the rates of prevalence, awareness, treatment and control of hypertension in Old Town, an urban district of the coastal city. The authors surveyed 469 subjects, gathered via cluster sampling. Age-adjusted prevalence of hypertension was measured at 32.6% (+/-

2.2) for adults over 18 and was linearly related to age. Results indicate that hypertension awareness was associated with age and sex, as women were substantially more likely to be aware of and to control their hypertension. Only 23.2% (+/- 2.0) of subjects had knowledge of both the causes of and practical solutions to hypertension, and practical hypertension knowledge was associated with hypertension awareness and gender (women had higher rates of knowledge than men).

Conclusions: These results indicate that hypertension is a real public health concern in Old Town, and that younger individuals, particularly males, are least likely to be aware of the dangers of hypertension. Public health measures should focus on this population.

Key words: hypertension, urban, Kenya, clustered sampling

Stroke outcomes in a socio-economically disadvantaged urban community

de Villiers L, Badri M, Ferreira M and Bryer A (2011) 'Stroke outcomes in a socio-economically disadvantaged urban community,' *South African Medical Journal* 101(5): 345-348.

<http://www.ncbi.nlm.nih.gov/pubmed/21837880>

The aim of this study was to determine survival, disability and functional outcomes of stroke patients following their discharge from an acute stroke unit in an urban community with limited rehabilitative resources. Stroke patients were recruited from a district hospital in Cape Town and followed-up for 6 months. Clinical characteristics, demographic and socioeconomic data, and disability and function as measured by modified Rankin Score (mRS), modified Barthel Index (mBI) at recruitment and 3 follow-up visits, were recorded. The study included 196 patients. Median age was 60 (IQR 51-69) years, 135 (68.9%) were female, 57.7% black, 42.3% coloured, and 45 (23%) died within 6 months. At discharge, median mBI score was 7 (IQR 3-12) and median mRS 4 (IQR 3-5). In the multivariate regression models, only function (mBI OR 0.88, 95% confidence interval (CI) 0.79-0.96, $p < 0.0001$) and disability (mRS OR 2.34, 95%CI 1.20-4.54, $p < 0.0001$) were independently associated with risk of death. Shack housing was independently associated with moderate or severe disability (odds ratio 3.42, 95% CI 1.22-9.59, $p = 0.02$). Despite limited rehabilitation resources, 67% of survivors had mild to moderate disability at 6 months.

Conclusions: Apart from initial stroke severity, risk factors for poor survival were a severe disability category and the presence of impaired swallowing at discharge. Shack housing was independently associated with poor functional outcomes. These findings should be helpful in allocating home-based care and inpatient rehabilitation resources to high-risk groups to improve outcomes.

Key words: stroke, survival, disability, outcomes, Cape Town, South Africa, quantitative

The Health and Sanitation Status of Specific Low-Cost Housing Communities as Contrasted with those Occupying Backyard Dwellings in the City of Cape Town, South Africa

Govender T (2011) 'The Health and Sanitation Status of Specific Low-Cost Housing Communities as Contrasted with those Occupying Backyard Dwellings in the City of Cape Town, South Africa' [Dissertation] Stellenbosch University

<http://scholar.sun.ac.za/handle/10019.1/17992>

South Africa embarked on an ambitious program to rehouse the informally housed poor. These initiatives were formerly called the RDP and later the BNG programmes. This was aimed at improving the living conditions of the urban poor and consequently their health and poverty status. These low-cost houses were quickly augmented by backyard shacks in almost all settlements. The present study is an epidemiological assessment of the health and sanitation status of inhabitants of specific low cost housing communities in the City of Cape Town as contrasted with those occupying 'backyard dwellings' on the same premises. The study was undertaken in four low-cost housing communities identified within the City. A health and housing evaluation, together with dwelling inspections were carried out in 336 randomly selected dwellings accommodating 1080 inhabitants from Tafelsig, Masipumelela, Driftsands and Greenfields. In addition, the microbiological pollution of surface run-off water encountered in these settlements was assessed by means of *Escherichia coli* levels (as found by Colilert™ Defined Substrate Technology) as an indication of environmental health hazards. The study population was classified as 'young' - 43% of the study population was aged 20 years or younger. Almost a third of households were headed by a single-parent female. In all four communities combined, 47.3% of households received one or other form of social grant. At the time of inspection 58% of the toilets on the premises were non-operational, while all the houses

showed major structural damage - 99% of homeowners reported not being able to afford repairs to their homes. In 32% of dwellings one or more cases of diarrhoea were reported during the two weeks preceding the survey. Five percent of the participants willingly disclosed that they were HIV positive, while 11% reported being TB positive (one of them Multiple Drug Resistant TB). None of the HIV positive or TB positive persons was on any treatment. The E. coli levels of the water on the premises or sidewalks varied from 750 to 1 580 000 000 organisms per 100 ml of water - thus confirming gross faecal pollution of the environment. Improvements in health intended by the re-housing process did not materialise for the recipients of low-cost housing in this study. The health vulnerability of individuals in these communities has considerable implications for the health services. Sanitation failures, infectious disease pressure and environmental pollution in these communities represent a serious public health risk. The densification caused by backyard shacks also has municipal service implications and needs to be better managed.

Conclusions: Policies on low-cost housing for the poor need realignment to cope with the realities of backyard densification so that state-funded housing schemes can deliver the improved health envisaged. This is in fact a national problem affecting almost all of the state funded housing communities in South Africa. Public health and urban planning need to bridge the divide between these two disciplines in order to improve the health inequalities facing the urban poor.

Key words: health, sanitation, Cape Town, South Africa, dwelling inspection

Spatial dimensions of access and public health implications: The case of Dar es Salaam city, Tanzania

Kabuga SB (2011) 'Spatial dimensions of water access and public health implications: The case of Dar es Salaam city, Tanzania' [Dissertation]

<http://gradworks.umi.com/14/96/1496773.htm>

Access to water is vital for human health and survival of other ecosystems. These requirements have been recognized across national, regional and local communities. Despite that there has been a progressive effort to improve access to water in order to achieve the Millennium Development Goals (MDGs) by 2015; the current level of access is largely insufficient. The disparities have been noted both geographically and economically. Using survey data and statistical analysis, the study identified the spatial disparities in water access in Dar es Salaam. The population that lives in close proximity to water sources and those whose water supply is more than three hours have been noted to have sufficient water access to meet the households' needs.

Conclusions: Poor access to water prevails in low income households. The incidence of water related disease threatens public health especially for typhoid and diarrheal diseases.

Key words: water access, Dar es Salaam, Tanzania, spatial analysis

Urban health in Johannesburg: The importance of place in understanding intra-urban inequalities in a context of migration and HIV

Vearey J, Palmary I, Thomas L, Nunez L and Drimie S (2010) 'Urban health in Johannesburg: The importance of place in understanding intra-urban inequalities in a context of migration and HIV,'

Health & Place 16(4): 694-702. doi:10.1016/j.healthplace.2010.02.007 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/20400354>

Using Johannesburg as a case study, this paper explores the complexities of the urban context by comparing the social determinants of urban health between migrant groups residing in the inner-city and a peripheral urban informal settlement. This paper draws on key findings relating to the social determinants of urban health from the Johannesburg case study of the RENEWAL (Regional Network on AIDS, Livelihoods and Food Security) study that set out to explore the linkages between HIV, migration and urban food security. A total of 195 households (40% of the total population surveyed) were interviewed in the informal settlement and 292 households (60% of the total population surveyed) in urban formal areas of the inner-city. The 2008 study found that South African internal migrants are significantly more likely to reside in the urban informal settlement and cross-border migrants are significantly more likely to reside in the inner-city (chi-square=62.4; p=0.0001). This finding shows that South African internal migrants enter the city through its periphery, whilst cross-border migrants enter directly through the central city. Through the sampling

employed, Zimbabwean migrants accounted for the largest group participating in the survey in the inner-city (38%; n=109). Migrants residing on the periphery of the city are found to experience challenges in accessing water, sanitation, electricity and refuse collection. Those residing in the central-city, however, are significantly more likely to be able to access basic services. Residents of the informal settlement were significantly more likely to report that they felt at risk of HIV (58%; n=106) compared to residents of the inner-city (40%; n=112) (chi-square=14.2; p=0.0002). Overall, female respondents are significantly more likely to report that they feel at risk of HIV (54%; n=138) than male respondents (39%; n=78) (chi-square=1.0; p=0.0013).

Conclusions: The need for improved policies and governance in urban areas has been called for as it is essential that city authorities are able to effectively respond to the health needs of an increasing urban poor population. As highlighted in this paper, urban populations are heterogeneous and city-residents live diverse urban experiences within different places in the city. It is therefore essential that local urban governments are able to engage with this diversity in order to inform spatially targeted, multi-level and multi-sectoral urban health responses. Any attempt to improve the health of urban populations in the context of migration and HIV requires understanding that 'place matters'.

Key words: intra-urban inequalities, migrant groups, social determinants, South Africa

Environmental health practices, constraints and possible interventions in peri-urban settlements in developing countries--a review of Kampala, Uganda

Kulabako RN, Nalubega M, Wozzi E and Thunvik R (2010) 'Environmental health practices, constraints and possible interventions in peri-urban settlements in developing countries--a review of Kampala, Uganda,' *International Journal of Environmental Health Research* 20(4): 231-257. doi:10.1080/09603120903545745 [doi]

<http://www.tandfonline.com/doi/abs/10.1080/09603120903545745#.VZ9DjvVhBc>

Like most cities in developing countries, Uganda's capital city, Kampala, is experiencing urbanisation leading to an increase in population, and rapid development of peri-urban (informal) settlements. More than 60% of the city's population resides in these settlements which have the lowest basic service levels (sanitation, water supply, solid waste collection, stormwater and greywater disposal). A review of earlier studies on infrastructure development and sustainability within Kampala's peri-urban settlements, field surveys in a typical peri-urban settlement in the city (Bwaise III Parish), and structured interviews with key personnel from the National Water and Sewerage Corporation (NWSC), Kampala City Council (KCC), and the National Environment Management Authority (NEMA) were undertaken.

Conclusions: Findings on current environmental health practices as well as perspectives of local communities and interviewed institutions on problems, constraints and possible solutions to basic service provision are presented. The implications of these viewpoints for possible environmental health interventions are presented.

Key words: environmental health, peri-urban settlements, Uganda, quantitative, review

How would early detection be possible? An enquiry into cancer related knowledge, understanding and health seeking behaviour of urban black women in Tshwane, South Africa

Maree JE and Wright SC (2010) 'How would early detection be possible? an enquiry into cancer related knowledge, understanding and health seeking behaviour of urban black women in Tshwane, South Africa,' *European Journal of Oncology Nursing* 14(3): 190-196.

<http://www.ncbi.nlm.nih.gov/pubmed/19944646>

The purpose of the study was to explore what women living in Ga-Rankuwa in Tshwane, South Africa know and understand about cancer as well as their health seeking behaviour should they suspect that they might have cancer. An exploratory, contextual, quantitative door-to-door survey was conducted. The sampling method was convenient (n = 565). Data were gathered by means of self-reports using structured interviews. The study provided evidence that, despite all the interventions to teach the community about cancer, women had a low level of knowledge and understanding of cancer. Cancer was seen as something that primarily happens to the breast. There was no link between the perception of cancer and the seriousness of the warning signs. It is doubtful if the woman, except for the possibility of a lump in the breast, would recognize any sign of cancer and consider it to be serious. Women still needed to ask permission to seek health-care and in some

instances, the health care provider was chosen for them. Not all women were prepared to spend money of their own health and some would even feel guilty should they do so.

Conclusions: Women's knowledge and understanding of cancer and health seeking behaviour related to cancer do not facilitate early detecting and therefore the possibility to be cured. The fundamental strategy of primary and secondary prevention of cancer, teaching the community, remains a challenge for both nursing practice and nursing research.

Key words: cancer, health-seeking behavior, woman, South Africa, structured interviews

Strong association between in-migration and HIV prevalence in urban sub-Saharan Africa

Voeten HA, Vissers DC, Gregson S, Zaba B, White RG, de Vlas SJ and Habbema JD (2010) 'Strong association between in-migration and HIV prevalence in urban sub-Saharan Africa,' *Sexually Transmitted Diseases* 37(4): 240-243. doi:10.1097/OLQ.0b013e3181c3f2d0 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/19959971>

Enormous variation exists in HIV prevalence between countries in sub-Saharan Africa. The contribution of migration to the spread of HIV has long been recognized, but its effect at the population level has never been assessed. In this ecological analysis, we explore how much variation in HIV prevalence in urban sub-Saharan Africa is explained by in-migration. We performed a linear regression to analyze the association between the proportion of recent in-migrants and HIV prevalence for men and women in urban areas, using 60 data points from 28 sub-Saharan African countries between 1987 and 2005. **KEY FINDINGS:** We found a strong association between recent in-migration and HIV prevalence for women (Pearson $R = 57\%$, $P < 0.001$) and men ($R = 24\%$, $P = 0.016$), taking the earliest data point for each country. For women, the association was also strong within east/southern Africa ($R = 50\%$, $P = 0.003$). For both genders, the association was strongest between 1985 and 1994, slightly weaker between 1995 and 1999, and nonexistent as from 2000. The overall association for both men and women was not confounded by the developmental indicators GNI per capita, income inequalities, or adult literacy.

Conclusions: Migration explains much of the variation in HIV spread in urban areas of sub-Saharan Africa, especially before the year 2000, after which HIV prevalences started to level off in many countries. Our findings suggest that migration is an important factor in the spread of HIV, especially in rapidly increasing epidemics.

Key words: HIV prevalence, migration, urban, sub-Saharan Africa, quantitative

Assessment of environmental and public health hazards in wastewater used for urban agriculture in Nairobi, Kenya

Karanja NN, Njenga M, Prain G, Kang'ethe E, Kironchi G, Githuku C, et al. (2010) 'Assessment of environmental and public health hazards in wastewater used for urban agriculture in Nairobi, Kenya,' *Tropical and Subtropical Agroecosystems* 12(1): 85-97.

<http://www.veterinaria.uady.mx/ojs/index.php/TSA/article/viewArticle/367>

Thirty percent of residents in Nairobi practise urban agriculture (UA) with a majority of the farmers using untreated sewage to irrigate crop and fodder. Due to the environmental and health risks associated with wastewater irrigation, a study was carried out in partnership with farmers in Kibera and Maili Saba which are informal settlements along the Ngong River, a tributary of the Nairobi River Basin. Soil, water, crops and human faecal samples from the farming and non-farming households were analysed to elucidate sources, types and level of heavy metal pollutants in the wastewater and the pathogen loads in humans and vegetable crops. Heavy metal accumulation in soils collected from Kibera and Maili Saba were Cd (14.3 mg kg^{-1}), Cr (9.7 mg kg^{-1}) and Pb (1.7 mg kg^{-1}) and Cd (98.7 mg kg^{-1}), Cr (4.0 mg kg^{-1}) and Pb (74.3 mg kg^{-1}), respectively. This led to high phytoaccumulation of Cd, Cr and Pb in the crops that exceeded the maximum permissible limits. No parasitic eggs were detected in the vegetables but coliform count in the wastewater was $4.8 \times 10^8 \pm 2.2 \times 10^{11}/100\text{ml}$.

Conclusions: Soils irrigated with this water had parasitic eggs and non-parasitic larvae counts of 54.62 and 27.5/kg respectively. Faecal coliform and parasitic eggs of common intestinal parasites increased in leafy vegetable sampled from the informal markets along the value chain.

Key words: environmental hazards, contamination, urban agriculture, Kenya

Child health in peri-urban communities of Kenya: Determinants and challenges

Othero DM, Oteku J and Alwar J (2010) 'Child health in peri-urban communities of Kenya: Determinants and challenges,' *International Journal of Medicine and Medical Sciences* 2(6): 184-189.

http://www.academicjournals.org/article/article1379176399_Othero%20et%20al.pdf

See Section A1

Motorcycle injuries as an emerging public health problem in Mwanza City, Tanzania: A call for urgent intervention

Chalya PL, Mabula JB, Ngayomela IH, Kanumba ES, Chandika AB, Giiti G, et al. (2010) 'Motorcycle injuries as an emerging public health problem in Mwanza City, Tanzania: A call for urgent intervention,' *Tanzania Journal of Health Research* 12(4): 214-221.

<http://www.ncbi.nlm.nih.gov/pubmed/24409627>

Motorcycle injuries constitute a major but neglected emerging public health problem in developing countries and are a common cause of road traffic injuries. The aim of this study was to establish the prevalence, injury pattern and treatment outcome of motorcycle injuries in our setting. This was a descriptive cross-sectional study of motorcycle injury patients presenting to the A & E department of Bugando Medical centre between March 2009 and February 2010. After informed consent to participate in the study, all patients were consecutively enrolled in the study. Data was collected using a pre-tested, coded questionnaire and analyzed using SPSS computer software version 11.5. A total of 384 motorcycle injury patients were studied constituting 37.2% of all road traffic injuries. 267 patients (69.5%) were males and 117 (30.5%) were females (Male: Female ratio = 2.3:1). The patients' ages ranged from 4 to 87 years with a mean of 25.7 years and a peak incidence of 21-30 years. The majority of patients were self employed and students accounting for 68.8% and 42.2% respectively. Motorcyclists accounted for the majority of motorcycle injury patients (212, 55.2%), followed by passengers (130, 33.9%) and pedestrians (42, 10.9%). Helmet use was recorded in 87 patients (22.7%). Most patients (352; 91.7%) sustained blunt injuries. Musculoskeletal (extremities) and head injuries were the most common body region injured affecting 234 (60.9%) and 212 (55.2%) patients respectively. The majority of patients (244; 63.5%) were treated surgically. Wound debridement was the most common procedure performed in 212 (86.9%) patients. The overall length of hospital stay ranged from 1 day to 120 days (mean 19.23 days). The LOS for non-survivors ranged from 1 day to 25 days (mean 5.6 days). Patients with major trauma (ISS > 16), severe head injury (GCS 3-8) and those with long bone fractures stayed longer in the hospital and this was significant (p-value < 0.001). Mortality rate was 16.7% (64 deaths). Age of the patient, non-helmeted patients, major trauma (ISS > 16), admission SBP < 90mmHg, severe head injury (GCS < 9), need for ICU admission and need for ventilatory support significantly influenced mortality.

Conclusions: Motorcycle injuries constitute a major but neglected emerging public health problem in Mwanza city and continue to be one of the most common cause or agent of road traffic injuries. The morbidity and mortality can be mitigated by encouraging use of protective gear like helmets and encouraging enforcement of traffic laws.

Key words: motorcycle injury, urban, Tanzania, cross-sectional survey

The impact of water scarcity on environmental health in selected residential areas in Bulawayo City, Zimbabwe

Nyemba A, Manzungu E, Masango S and Musasiwa S (2010) 'The impact of water scarcity on environmental health in selected residential areas in Bulawayo City, Zimbabwe,' *Physics and Chemistry of the Earth, Parts A/B/C* 35(13): 823-827.

<http://www.sciencedirect.com/science/article/pii/S1474706510001579>

This paper assesses the extent of water scarcity at household level and the resultant environmental health impacts in Bulawayo, Zimbabwe's second largest city. **METHODS:** The paper is based on two separate surveys that were undertaken in low and high income suburbs between June 2007 and January 2008. The first survey investigated the extent and impacts of water scarcity at household level. Data was collected by means of a household questionnaire, key informant interviews, review of clinic records and physical observation. The second survey assessed microbial levels in the main water sources and was complemented by examining water-related disease profiles. Water scarcity was found to be more severe in low income than in high income suburbs. This was a consequence

of the city's skewed water distribution policy which favoured the former and failure by residents of the latter to invest in safer water alternatives. Per capita water consumption in both suburbs was below internationally recommended levels. Microbial assessment indicated presence of coliforms in water obtained from the tap and alternative sources at levels above WHO and Zimbabwean standards. Water scarcity resulted in an increase in the incidence of water-related diseases and environmental contamination.

Conclusions: The evidence suggests that water scarcity in Bulawayo represents a huge cost to residents and the environment.

Key words: water scarcity, environmental health, urban, Zimbabwe, household survey

Classification and dramatic epidemic of diabetes mellitus in Kinshasa Hinterland: The prominent role of type 2 diabetes and lifestyle changes among Africans

Kasiam LO, Longo-Mbenza B, Nge OA, Kangola KN, Mbungu FS and Milongo DG (2009) Classification and dramatic epidemic of diabetes mellitus in Kinshasa Hinterland: The prominent role of type 2 diabetes and lifestyle changes among Africans, *Nigerian Journal of Medicine : Journal of the National Association of Resident Doctors of Nigeria* 18(3): 311-320.

<http://www.ncbi.nlm.nih.gov/pubmed/20120653>

See Section A1

Social determinants of health and health inequities in Nakuru (Kenya)

Muchukuri E and Grenier FR (2009) 'Social determinants of health and health inequities in Nakuru (Kenya),' *International Journal for Equity in Health* 8: 16. doi:10.1186/1475-9276-8-16 [doi]

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2687433/>

Dramatic inequalities dominate global health today. The rapid urban growth sustained by Kenya in the last decades has created many difficulties that also led to worsening inequalities in health care. The continuous decline in its Human Development Index since the 1990s highlights the hardship that continues to worsen in the country, against the general trend of Sub-Saharan Africa. This paper examines the health status of residents in a major urban centre in Kenya and reviews the effects of selected social determinants on local health. Through field surveys, focus group discussions and a literature review, this study canvasses past and current initiatives and recommends priority actions. Areas identified which unevenly affect the health of the most vulnerable segments of the population were: water supply, sanitation, solid waste management, food environments, housing, the organization of health care services and transportation.

Conclusions: The use of a participatory method proved to be a useful approach that could benefit other urban centres in their analysis of social determinants of health.

Key words: social determinants, urban growth, health inequalities, Kenya, quantitative, qualitative

PCBs in air, soil and milk in industrialized and urban areas of KwaZulu-natal, South Africa

Batterman S, Chernyak S, Gouden Y, Hayes J, Robins T and Chetty S (2009) 'PCBs in air, soil and milk in industrialized and urban areas of KwaZulu-natal, South Africa,' *Environmental Pollution* (Barking, Essex : 1987) 157(2): 654-663. doi:10.1016/j.envpol.2008.08.015 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/18838199>

Information regarding polychlorinated biphenyls (PCBs) in environmental media in Africa is limited. This paper presents results of a monitoring program conducted in KwaZulu-Natal Province, South Africa designed to characterize levels, trends and sources of airborne PCBs. Particulate and vapor samples were sampled over the 2004-2005 period at three sites. The total PCB concentration averaged 128±47 pgm(-3), and levels were highest in winter. Tri- through hexa-congeners predominated, and the vapor fraction was predominant. Several tetra- through hexa-chlorinated congeners had levels comparable to those at urban sites in the northern hemisphere, but hepta-through deca-congeners resembled levels at background sites. PCB source areas, deduced using spatial and temporal patterns, compositional information and trajectory analyses, likely included local, regional and global sources. Soils at three rural sites showed high PCB concentrations, and milk from a local dairy showed PCB concentrations comparable to USA levels in year 2000.

Conclusions: While diet (especially meat, dairy products and fish) is the main source of human exposure to PCBs for most individuals, the elevated concentrations found in air and soil suggest the

need for further identification and characterization. Follow-up studies sufficient to characterize PCB levels in fish and human milk would help to answer questions regarding human exposure.

Key words: environmental health, urban, PCB concentration, KwaZulu-Natal, South Africa

Determinants of under nutrition among school age children in a Nairobi peri-urban slum

Chesire EJ, Orago AS, Oteba LP and Echoka E (2008) 'Determinants of under nutrition among school age children in a Nairobi peri-urban slum,' *East African Medical Journal* 85(10): 471-479.

<http://www.ajol.info/index.php/eamj/article/viewFile/9671/31081>

See Section A1

Prevalence of Endoparasites of Public Health Importance in Pigs Slaughtered in Dar Es Salaam City, Tanzania

Mkupasi EM (2008) Prevalence of Endoparasites of Public Health Importance in Pigs Slaughtered in Dar Es Salaam City, Tanzania. Sokoine university of Agriculture [Dissertation]

<http://suair.suanet.ac.tz:8080/xmlui/handle/123456789/297>

This study was carried out to establish the prevalence of porcine cysticercosis (caused by *Taenia solium*), hydatidosis and ascariasis in slaughter pigs, and assess the state and distribution of pig slaughter slabs in Dar es Salaam city, Tanzania, between November 2007 and January 2008. All 24 official slaughter slabs located in the three municipalities of Dar es Salaam city (Kinondoni, Ilala, Temeke), were included in the study. A geographical positioning system (GPS) was used to map the location of the slaughter slabs and a checklist was used to assess the state of the slaughter slabs. All the 731 pigs slaughtered in the study area during the study were examined for cysticercosis, hydatidosis, and ascariasis based on national meat inspection guidelines. Data were analysed using SPSS 11.5 and the distribution of pig slaughter slabs was mapped using ArcView 3.2. The pigs slaughtered originated from nine different regions of Tanzania. Out of the 731 pigs examined, (5.9%), (0.4%), and (8.1%) were infected with cysticercosis, hydatidosis, and ascariasis, respectively. There was an important regional variation in the prevalence of porcine cysticercosis, with the highest prevalence in pigs that originating from Manyara and Dodoma regions. The pig slaughter slabs were clustered in certain areas of Dar es Salaam city and most were in poor conditions.

Conclusions: The government of Tanzania should devise strategies to control the pig and pork trades, which should include establishment of an appropriate number of well managed pig slaughter houses to enable proper meat inspection in order to safeguard public health.

Key words: endoparasites, pigs, urban, Tanzania, spatial analysis

Organochlorine pesticides in ambient air in Durban, South Africa

Batterman SA, Chernyak SM, Gounden Y, Matooane M and Naidoo RN (2008) 'Organochlorine pesticides in ambient air in Durban, South Africa,' *The Science of the Total Environment* 397(1-3): 119-130. doi:10.1016/j.scitotenv.2008.02.033 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/18396319>

Despite the existence of numerous sources and continuing use, information regarding emissions and airborne concentrations of organochlorine pesticides in Africa is extremely limited. This paper presents results of a monitoring program conducted in Durban, South Africa that was designed to characterize levels, trends and possible sources of pesticides in both industrial and residential areas. Three monitoring sites were established, two in an industrialized area in the southern part of the city, and the third in a northern residential area. Particulate and vapor samples were sampled over the 2004-5 period and analyzed by GC/MS to estimate long-term levels of a wide range of pesticides. Based on a year of sampling, the sites had comparable levels of many pesticides with exceptions of alpha-chlordane and lindane. Levels of p,p'-DDT (42±27 pg m⁻³) and its derivatives were relatively high and showed an unusual mixture with high levels of p,p'-DDD (12±11 pg m⁻³). Other pesticides detected and quantified included aldrin, chlordanes, hexachlorobenzene and dieldrin. Potential source areas, identified using concentration patterns, local and regional gradients, compositional information and trajectory analyses, suggest that chlordane and lindane arise from both local sources as well as regional/global sources; DDT from regional sources elsewhere in

South Africa, Africa and India; and most of the other long-lived pesticides detected, including gamma-nonachlor, hexachlorobenzene and toxaphene, from global sources.

Conclusions: This monitoring documents the presence and use of long-banned pesticides like aldrin, aiding the understanding of the fate of persistent compounds, identifying pollutants that may contribute to health problems, and informing decision-making aimed at reducing exposures.

Key words: pesticides, ambient air, Durban, South Africa

Health risks and benefits of urban and 'peri-urban' agriculture and livestock (UA) in Sub-Saharan Africa

Boischio A, Clegg A and Mwangi D (2006) 'Health risks and benefits of urban and 'peri-urban' agriculture and livestock (UA) in Sub-Saharan Africa,' Urban Poverty and Environment Series Report 1

<https://idl-bnc.idrc.ca/dspace/bitstream/10625/35531/1/127428.pdf>

This document sums up results from an IDRC-supported workshop held in Nairobi in 2003, where UPE activities related to health risks in UA were initiated (following up on previous CFP PI research experiences). Part I of this document includes six resource papers prepared by specialists working in various areas related to the health risks and benefits of UA. Part II contains the proceedings of the workshop activities in Nairobi, where academics and decision makers discussed the risks and benefits of UA from different perspectives. Part I - Resource papers These papers have been produced with the purpose of identifying the opportunities to enhance the benefits of UA, and to mitigate its associated health risks, based on risk assessments. The combination of different research topics aims to cover the diversity of issues that need to be considered in supporting UA development research. The paper on health impact assessment, risk mitigation and healthy public policy by D. Cole and colleagues provides several methodological concepts and strategies to further elaborate on the knowledge that links hazards, exposures and health effects, in the context of urban agriculture. The paper gives several examples of the way individual decisions for risk mitigation are based on subjective perceptions which stem from knowledge and culture. The paper concludes with useful recommendations for risk mitigation by identifying priorities in terms of critical hazards and counterfactual scenarios where benefits and risks are balanced. F. Yeudall's paper on nutrition perspectives in UA gives an interesting picture of different patterns of diet, nutrition and health conditions, at different levels, in the context of worldwide urbanization processes. The paper concludes with recommendations related to the health risks and the nutritional benefits of UA, through participatory community food security strategies. Increased malaria transmission due to irrigation techniques has been considered an UA health risk. • Report 1 9 by E. Klinkenberg and F. Amerasinghe. Community malaria risk factors are addressed in relation to vector ecology and the urban and rural features of water ponds as breeding sites. Engagement of stakeholders, including affected communities, decision makers, and researchers, is considered key for the implementation of these malaria control measures. Livestock production in Kampala has been addressed by G. Nasinyama and colleagues. Interesting notes on behavioural exposures to the transmission of zoonotic diseases (by keeping livestock in the living places to avoid thefts, for example), and especially the difficulties of managing animal waste are quoted among the challenges to be overcome in UA. The benefits of livestock at different levels (household, community, government) include food security, nutritional improvements, and income and job generation, which can be translated into improved well-being. Some major concerns in UA relate to wastewater use and solid waste recycling, some of the most challenging issues linked to UA. The paper by B. Keraita and colleagues provides a helpful typology of wastes, contents, practices and health issues. Transmission of pathogens is affected by factors that influence exposure. Policy guidance frameworks are discussed, especially in terms of feasibility and perspectives – such as the WHO guidelines for wastewater use in agriculture. The paper provides evidence about the links between disease transmission and UA practices with the purpose of management with policy support. Insights on risk perception for participatory approaches are given with several experiences derived from projects developed in urban areas of Ghana. Finally, a gender perspective on the health risks and benefits of UA, based largely on field research experience, is provided by D. Lee-Smith. Differences in risk perception in UA, based on the different roles and responsibilities of men and women, are highlighted. The roles of women in disaster mitigation worldwide, and opportunities to

act on risk mitigation in the context of UA are considered in terms of resources, as well as knowledge, and perception of current health risks.

Key words: health risks, urban, peri-urban, agriculture, disease transmission, sub-Saharan Africa

The nutrition and health transition in the north west province of South Africa: A review of the THUSA (transition and health during urbanisation of South Africans)

Vorster HH, Venter CS, Wissing MP and Margetts BM (2005) 'The nutrition and health transition in the north west province of South Africa: A review of the THUSA (transition and health during urbanisation of South Africans) study' *Public Health Nutrition* 8(5): 480-490. doi:S1368980005000674 [pii]

<http://www.ncbi.nlm.nih.gov/pubmed/16153329>

See section A1

Mortality and greenhouse gas impacts of biomass and petroleum energy futures in Africa

Bailis R, Ezzati M and Kammen DM (2005) 'Mortality and greenhouse gas impacts of biomass and petroleum energy futures in Africa,' *Science* (New York, N.Y.) 308(5718): 98-103. doi:308/5718/98 [pii]

https://rael.berkeley.edu/wp-content/uploads/2015/04/BailisEzzatiKammen-Science_308_20051.pdf

The authors analyzed the mortality impacts and greenhouse gas (GHG) emissions produced by household energy use in Africa. METHODS: We developed a database of current fuel use and a range of scenarios of household energy futures up to 2050 in SSA. Current national-level energy production and consumption were estimated from the UN Food and Agriculture Organization's (FAO's) forest products database and the International Energy Agency's (IEA's) statistical database of countries not in the Organisation for Economic Cooperation and Development Under a business-as-usual (BAU) scenario, household indoor air pollution will cause an estimated 9.8 million premature deaths by the year 2030. Gradual and rapid transitions to charcoal would delay 1.0 million and 2.8 million deaths, respectively; similar transitions to petroleum fuels would delay 1.3 million and 3.7 million deaths. Cumulative BAU GHG emissions will be 6.7 billion tons of carbon by 2050, which is 5.6% of Africa's total emissions. Large shifts to the use of fossil fuels would reduce GHG emissions by 1 to 10%.

Conclusions: Charcoal-intensive future scenarios using current practices increase emissions by 140 to 190%; the increase can be reduced to 5 to 36% using currently available technologies for sustainable production or potentially reduced even more with investment in technological innovation. This integration of health outcomes into energy and resource technologies and policies offers an opportunity to reduce child mortality, promote gender equality, and improve environmental sustainability.

Key words: greenhouse gas, household energy, Africa

A3. Papers on inequalities in access to and coverage of urban health services

The impact of health service variables on healthcare access in a low resourced urban setting in the Western Cape, South Africa

Scheffler E, Visagie S and Schneider M (2015) 'The impact of health service variables on healthcare access in a low resourced urban setting in the Western Cape, South Africa,' *African Journal of Primary Health Care & Family Medicine* 7(1): 11 pages.

<http://phcfm.org/index.php/phcfm/article/view/820>

Health care access is complex and multi-faceted and, as a basic right, equitable access and services should be available to all user groups. The aim of this article is to explore how service delivery impacts on access to healthcare for vulnerable groups in an urban primary health care setting in South Africa. A descriptive qualitative study design was used. Data were collected through semi-structured interviews with purposively sampled participants and analysed through thematic content analysis. Service delivery factors are presented against five dimensions of access according to the ACCESS Framework. From a supplier perspective, the organisation of care in the study setting resulted in available, accessible, affordable and adequate services as measured against the District Health System policies and guidelines. However, service providers experienced significant barriers in provision of services, which impacted on the quality of care, resulting in poor client and

provider satisfaction and ultimately compromising acceptability of service delivery. Although users found services to be accessible, the organisation of services presented them with challenges in the domains of availability, affordability and adequacy, resulting in unmet needs, low levels of satisfaction and loss of trust. These challenges fuelled perceptions of unacceptable services.

Conclusions: Well developed systems and organisation of services can create accessible, affordable and available primary healthcare services, but do not automatically translate into adequate and acceptable services. Focussing attention on how services are delivered might restore the balance between supply (services) and demand (user needs) and promote universal and equitable access.

Key words: service delivery, access, South Africa, qualitative

Catastrophic health expenditure and its determinants in Kenya slum communities

Buigut S, Ettarh R and Amendah DD (2015) 'Catastrophic health expenditure and its determinants in Kenya slum communities,' *International Journal for Equity in Health* 14:46. doi:10.1186/s12939-015-0168-9 [doi]

<http://link.springer.com/article/10.1186/s12939-015-0168-9/fulltext.html>

In Kenya, where 60 to 80% of the urban residents live in informal settlements (frequently referred to as slums), out-of-pocket (OOP) payments account for more than a third of national health expenditures. However, little is known on the extent to which these OOP payments are associated with personal or household financial catastrophe in the slums. This paper seeks to examine the incidence and determinants of catastrophic health expenditure among urban slum communities in Kenya. The authors use a unique dataset on informal settlement residents in Kenya and various approaches that relate households OOP payments for healthcare to total expenditures adjusted for subsistence, or income. They classified households whose OOP was in excess of a predefined threshold as facing catastrophic health expenditures (CHE), and identified the determinants of CHE using multivariate logistic regression analysis. The results indicate that the proportion of households facing CHE varies widely between 1.52% and 28.38% depending on the method and the threshold used. A core set of variables were found to be key determinants of CHE. The number of working adults in a household and membership in a social safety net appear to reduce the risk of catastrophic expenditure. Conversely, seeking care in a public or private hospital increases the risk of CHE.

Conclusions: This study suggests that a substantial proportion of residents of informal settlements in Kenya face CHE and would likely forgo health care they need but cannot afford. Mechanisms that pool risk and cost (insurance) are needed to protect slum residents from CHE and improve equity in health care access and payment.

Key words: Catastrophic health expenditure, slums, informal settlements, Kenya, quantitative

Accessibility, affordability and use of health services in an urban area in South Africa

Stellenberg EL (2015) 'Accessibility, affordability and use of health services in an urban area in South Africa,' *Curationis* 38(1): 1-7.

<http://www.curationis.org.za/index.php/curationis/article/view/102>

The aim of the study was to explore and describe accessibility, affordability and the use of health services by the mixed race (coloured) population in the Western Cape, South Africa. A cross-sectional descriptive, non-experimental study with a quantitative approach was applied. A purposive convenient sample of 353 participants (0.6%) was drawn from a population of 63 004 economically-active people who lived in the residential areas as defined for the purpose of the study. All social classes were represented. The hypothesis set was that there is a positive relationship between accessibility, affordability and the use of health services. A pilot study was conducted which also supported the reliability and validity of the study. Ethics approval was obtained from the University of Stellenbosch and informed consent from respondents. A questionnaire was used to collect the data. The hypothesis was accepted. The statistical association between affordability ($p = < 0.01$), accessibility ($p = < 0.01$) and the use of health services was found to be significant using the Chi-square (χ^2) test. The study has shown how affordability and accessibility may influence the use of healthcare services. Accessibility is not only the distance an individual must travel to reach the health service point but more so the utilisation of these services.

Conclusions: Continuous Quality Management should be a priority in healthcare services, which should be user-friendly.

Key words: health services, access, affordability, South Africa, cross-sectional, quantitative

Determinants of immunization inequality among urban poor children: Evidence from Nairobi's informal settlements

Egondi T, Oyolola M, Mutua MK and Elung'ata P (2015) 'Determinants of immunization inequality among urban poor children: Evidence from Nairobi's informal settlements,' *International Journal for Equity in Health* 14: 24. doi:10.1186/s12939-015-0154-2 [doi]

<http://www.equityhealthj.com/content/pdf/s12939-015-0154-2.pdf>

Despite the relentless efforts to reduce infant and child mortality with the introduction of the National Expanded Programmes on Immunization (EPI) in 1974, major disparities still exist in immunizations coverage across different population sub-groups. In Kenya, for instance, while the proportion of fully immunized children increased from 57% in 2003 to 77% in 2008-9 at national level and 73% in Nairobi, only 58% of children living in informal settlement areas are fully immunized. The study aims to determine the degree and determinants of immunization inequality among the urban poor of Nairobi. We used data from the Nairobi Cross-Sectional Slum Survey of 2012 and the health outcome was full immunization status among children aged 12-23 months. The wealth index was used as a measure of social economic position for inequality analysis. The potential determinants considered included sex of the child and mother's education, their occupation, age at birth of the child, and marital status. The concentration index (CI) was used to quantify the degree of inequality and decomposition approach to assess determinants of inequality in immunization. The CI for not fully immunized was -0.08 indicating that immunization inequality is mainly concentrated among children from poor families. Decomposition of the results suggests that 78% of this inequality is largely explained by the mother's level of education.

Conclusions: There exists immunization inequality among urban poor children in Nairobi and efforts to reduce this inequality should aim at targeting mothers with low level of education during immunization campaigns.

Key words: urban, children, disparities, immunization, Nairobi, Kenya, cross-sectional survey

Understanding inequities in child vaccination rates among the urban poor: Evidence from Nairobi and Ouagadougou health and demographic surveillance systems

Soura AB, Mberu B, Elungata P, Lankoande B, Millogo R, Beguy D and Compaore Y (2015)

'Understanding inequities in child vaccination rates among the urban poor: Evidence from Nairobi and Ouagadougou health and demographic surveillance systems,' *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 92(1): 39-54. doi:10.1007/s11524-014-9908-1 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/25316191>

Studies on informal settlements in sub-Saharan Africa have questioned the health benefits of urban residence, but this should not suggest that informal settlements (within cities and across cities and/or countries) are homogeneous. They vary in terms of poverty, pollution, overcrowding, criminality, and social exclusion. Moreover, while some informal settlements completely lack public services, others have access to health facilities, sewers, running water, and electricity. There are few comparative studies that have looked at informal settlements across countries accounting for these contextual nuances. In this paper, we comparatively examine the differences in child vaccination rates between Nairobi and Ouagadougou's informal settlements. We further investigate whether the identified differences are related to the differences in demographic and socioeconomic composition between the two settings. We use data from the Ouagadougou and Nairobi Urban Health and Demographic Surveillance Systems (HDSSs), which are the only two urban-based HDSSs in Africa. The results show that children in the slums of Nairobi are less vaccinated than children in the informal settlements in Ouagadougou.

Conclusions: : The difference in child vaccination rates between Nairobi and Ouagadougou informal settlements are not related to the differences in their demographic and socioeconomic composition but to the inequalities in access to immunization services.

Key words: child vaccination, Nairobi, Kenya, DDS, comparative study

Socio demographic characteristics, antenatal clinic attendance and PMTCT knowledge of postnatal HIV women at an urban public health facility in Nairobi, Kenya

Imbaya C and Odhiambo-Otieno G (2015) 'Socio demographic characteristics, antenatal clinic attendance and PMTCT knowledge of postnatal HIV women at an urban public health facility in Nairobi, Kenya,' accessed 15 Jul 2015 at: <http://ir-library.ku.ac.ke/handle/123456789/13070>
<http://ir-library.ku.ac.ke/handle/123456789/13070>

Women who have inadequate or poor knowledge about Prevention of Mother to Child Transmission (PMTCT) of Human Immunodeficiency Virus (HIV) are more likely to default on antiretroviral treatment and less likely to implement MTCT preventive measures thus a sub-optimal viral suppression and an increase in MTCT rates. Early and frequent Antenatal Clinic (ANC) attendance integrated with PMTCT services increases MTCT knowledge and uptake of the services thus optimising intervention outcomes. The aim of this study was to determine the sociodemographic characteristic levels that influence Antenatal Clinic (ANC) attendance, PMTCT knowledge and Antiretroviral (ARV) drugs uptake among postnatal HIV+ women in Pumwani Maternity Hospital in Nairobi, Kenya. This was a cross-sectional descriptive study that was conducted at Pumwani Maternity Hospital which is in a low social income set up in Nairobi County. The hospital has active ANC and Postnatal Clinic (PNC) facilities that provide PMTCT and specialist referral obstetric services to more than 30,000 maternity clients annually. HIV+ positive postnatal women who were seeking health services at the hospital were identified using their health records and recruited into the study either while still in the postnatal ward after delivery or during post natal clinic visits within the period of the study. Standardized structured questionnaire was administered to collect the appropriate study data from the mothers. The main gaps that were observed in this study are the late initiation and low frequency of ANC attendance, low PMTCT knowledge and delayed first visit and uptake of ARV's among HIV+ women in this low socioeconomic set up.

Conclusions: This calls for improvement of health services and community oriented PMTCT education in the peripheral health facilities where the bulk of ANC activities took place.

Key words: PMTCT, ARV uptake, HIV+, women, Nairobi, Kenya, cross-sectional study

Maternal health care utilization in Nairobi and Ouagadougou: Evidence from HDSS

Rossier C, Muindi K, Soura A, Mberu B, Lankoande B, Kabiru C and Millogo R (2014) 'Maternal health care utilization in Nairobi and Ouagadougou: Evidence from HDSS,' *Global Health Action* 7: 24351. doi:10.3402/gha.v7.24351 [doi]

<http://aphrc.org/wp-content/uploads/2014/07/GLOBAL-HEALTH-ACTION.pdf>

Maternal mortality is higher and skilled attendance at delivery is lower in the slums of Nairobi (Kenya) compared to Ouagadougou (Burkina Faso). Lower numbers of public health facilities, greater distance to facilities, and higher costs of maternal health services in Nairobi could explain these differences. By comparing the use of maternal health care services among women with similar characteristics in the two cities, the authors produce a more nuanced picture of the contextual factors at play. Birth statistics were collected between 2009 and 2011 in all households living in several poor neighborhoods followed by the Nairobi and the Ouagadougou Health and Demographic Surveillances Systems (n=3,346 and 4,239 births). We compare the socioeconomic characteristics associated with antenatal care (ANC) use were compared with deliveries at health facilities, controlling for demographic variables. ANC use is greater in Nairobi than in Ouagadougou for every category of women. In Ouagadougou, there are few differentials in having at least one ANC visit and in delivering at a health facility; however, differences are observed for completing all four ANC visits. In Nairobi, less-educated, poorer, non-Kikuyu women, and women living in the neighborhood farther from public health services have poorer ANC and deliver more often outside of a health facility.

Conclusions: These results suggest that women are more aware of the importance of ANC utilization in Nairobi compared to Ouagadougou. The presence of numerous for-profit health facilities within slums in Nairobi may also help women have all four ANC visits, although the services received may be of substandard quality. In Ouagadougou, the lack of socioeconomic differentials in having at least one ANC visit and in delivering at a health facility suggests that these practices stem from the application of well-enforced maternal health regulations; however, these regulations do not cover the entire set of four ANC visits.

Key words: ANC, maternal health care, slums utilization, DSS, Nairobi, Kenya

Cardiovascular diseases and diabetes as economic and developmental challenges in Africa

Kengne AP, June-Rose McHiza Z, Amoah AG and Mbanya JC (2013) 'Cardiovascular diseases and diabetes as economic and developmental challenges in Africa,' *Progress in Cardiovascular Diseases* 56(3): 302-313. doi:10.1016/j.pcad.2013.10.011 [doi]

<http://www.sciencedirect.com/science/article/pii/S0033062013001849>

See Section A1.

Patient and health system delay among patients with pulmonary tuberculosis in Beira City, Mozambique

Saifodine A, Gudo PS, Sidat M and Black J (2013) 'Patient and health system delay among patients with pulmonary tuberculosis in Beira City, Mozambique,' *BMC Public Health* 13: 559-2458-13-559. doi:10.1186/1471-2458-13-559 [doi]

<http://www.biomedcentral.com/1471-2458/13/559/>

The purpose of this study was to assess the prevalence of and identify risk factors associated with patient delay and health system delay among newly diagnosed patients with pulmonary TB. A cross sectional study was carried out in Beira city, Mozambique between September 2009 and February 2010. Patients in the first month of treatment were consecutively selected to this study if they had a diagnosis of pulmonary TB, had no history of previous TB treatment, and were 18 years or older and provided informed consent. Data was obtained through a questionnaire administered to the patients and from patients' files. Among the 622 patients included in the study the median age was 32 years (interquartile range, 26-40) and 272 (43.7%) were females. The median total delay, patient delay and health system delay was 150 days (interquartile range, 91-240), 61 days (28-113) and 62 days (37-120), respectively. The contribution of patient delay and health system delay to total delay was similar. Farming, visiting first a traditional healer, low TB knowledge and coexistence of a chronic disease were associated with increased patient delay. More than two visits to a health facility, farming and coexistence of a chronic disease were associated with increased health system delay. *Conclusions:* This study revealed a long total delay with a similar contribution of patient delay and health system delay. To reduce the total delay in this setting we need a combination of interventions to encourage patients to seek appropriate health care earlier and to expedite TB diagnosis within the health care system.

Key words: pulmonary TB, risk factors, prevalence, Beira, Mozambique, cross-sectional study

Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa

EQUINET (2012) Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa. EQUINET, Harare.

<http://www.equinet africa.org/bibl/docs/Regional%20EW%202012%20Part%201w.pdf>

See Section A1

Health status and socio-economic factors associated with health facility utilization in rural and urban areas in Zambia

Zyaambo C, Siziya S and Fylkesnes K (2012) 'Health status and socio-economic factors associated with health facility utilization in rural and urban areas in Zambia,' *BMC Health Services Research* 12: 389-6963-12-389. doi:10.1186/1472-6963-12-389 [doi]

<http://www.biomedcentral.com/1472-6963/12/389>

With regards to equity, the objective for health care systems is "equal access for equal needs". We examined associations of predisposing, enabling and need factors with health facility utilization in areas with high HIV prevalence and few people being aware of their HIV status. The data is from a population-based survey among adults aged 15 years or older conducted in 2003. The current study is based on a subset of this data of adults 15-49 years with a valid HIV test result. A modified health behaviour model guided our analytical approach. We report unadjusted and adjusted odds ratios and their 95% confidence intervals from logistic regression analyses. Totals of 1042 males and 1547 females in urban areas, and 822 males and 1055 females in rural areas were included in the study. Overall, 53.1% of urban and 56.8% of rural respondents utilized health facilities past 12 months. In

urban areas, significantly more females than males utilized health facilities (OR=1.4 (95% CI [1.1, 1.6])). Higher educational attainment (10+ years of schooling) was associated with utilization of health facilities in both urban (OR=1.7, 95% CI [1.3, 2.1]) and rural (OR=1.4, 95% CI [1.0, 2.0]) areas compared to respondents who attained up to 7 years of schooling. Respondents who self-rated their health status as very poor/ poor/fair were twice more likely to utilize health facilities compared to those who rated their health as good/excellent. Respondents who reported illnesses were about three times more likely to utilize health facilities compared to those who did not report the illnesses. In urban areas, respondents who had mental distress were 1.7 times more likely to utilize health facilities compare to those who had no mental distress. Compared to respondents who were HIV negative, respondents who were HIV positive were 1.3 times more likely to utilize health facilities. *Conclusions:* The health care needs were the factors most strongly associated with health care seeking. After accounting for need differentials, health care seeking differed modestly by urban and rural residence, was somewhat skewed towards women, and increased substantially with socioeconomic position.

Key words: health facility utilization, HIV prevalence, HIV status, adults, quantitative

Determinants of maternal health services utilization in urban settings of the Democratic Republic of Congo--a case study of Lubumbashi City

Abel Ntambue ML, Francoise Malonga K, Dramaix-Wilmet M and Donnen P (2012) 'Determinants of maternal health services utilization in urban settings of the Democratic Republic of Congo--a case study of Lubumbashi City,' *BMC Pregnancy and Childbirth* 12: 66. doi:1471-2393-12-66 [pii] <http://www.biomedcentral.com/1471-2393/12/66/>

This study was undertaken in order to determine the factors that influence the use of mother and child healthcare services in Lubumbashi, Democratic Republic of the Congo. This was transversal study of women residing in Lubumbashi who had delivered between January and December 2009. In total, 1762 women were sampled from households using indicator cluster surveys in all health zones. Antenatal consultations (ANC), delivery assisted by qualified healthcare personnel (and delivery in a healthcare facility) as well as postnatal consultations (PNC) were dependent variables of study. The factors determining non-use of maternal healthcare services were researched via logistic regression with a 5% materiality threshold. The use of maternal healthcare services was variable; 92.6% of women had attended ANC at least once, 93.8% of women had delivered at a healthcare facility, 97.2% had delivered in the presence of qualified healthcare personnel, while the rate of caesarean section was 4.5%. Only 34.6% postnatal women had attended PNC by 42 days after delivery. During these ANC visits, only 60.6% received at least one dose of vaccine, while 38.1% received Mebendazole, 35.6% iron, 32.7% at least one dose of Sulfadoxine Pyrimethamine, 29.2% folic acid, 15.5% screening for HIV and 12.8% an insecticide treated net. In comparison to women that had had two or three deliveries before, primiparous and grand multiparous women were twice as likely not to use ANC during their pregnancy. Women who had unplanned pregnancies were also more likely not to use ANC or PNC than those who had planned pregnancies alone or with their partner. The women who had not used ANC were also more likely not to use PNC. The women who had had a trouble-free delivery were more likely not to use PNC than those who had complications when delivering.

Conclusions: In Lubumbashi, a significant proportion of women continue not to make use of healthcare services during pregnancy, as well as during and after childbirth. Women giving birth for the first time, those who have already given birth many times, and women with an unwanted pregnancy, made less use of ANC. Moreover, women who had not gone for ANC rarely came back for postnatal consultations, even if they had given birth at a healthcare facility. Similarly, those who gave birth without complications, less frequently made use of postnatal consultations. As with ANCs, women with unwanted pregnancies rarely went for postnatal visits. In addition to measures aimed at reinforcing women's autonomy, efforts are also needed to reinforce and improve the information given to women of childbearing age, as well as communication between the healthcare system and the community, and participation from the community, since this will contribute to raising awareness of safe motherhood and the use of such services, including family planning.

Key words: ANC, health care utilization, urban, DRC, indicator cluster survey

Assessment of facilitators and barriers to maternal and child health services in four rural and urban districts of Zimbabwe

Loewenson R, Kadungure A, Laver S, Shamu S, Mushayi W (2012) Assessment of facilitators and barriers to maternal and child health services in four rural and urban districts of Zimbabwe TARSC, UNICEF CCORE Harare

<http://www.tarsc.org/publications/documents/Final%20Report%20barriers%20study%20May%202012.pdf>

This study aimed to assess the facilitators and barriers to access to maternal and child health services in women and in children under five years in Zimbabwe. It was commissioned by UNICEF and implemented by TARSC with guidance and peer review from Ministry of Health and Child Welfare. Using a cross sectional study design, interviews were implemented with 1018 households with at least one woman who was pregnant in the last year and with a live child less than 5 years of age as well as 24 key informants from community, health workers, local government and NGOs personnel. The widest gaps in health need were by residence (urban-rural) and economic/ wealth status, including for poorest groups within urban areas. Geographical targeting and the lifting of user fees in part address economic differentials in health, but further measures are needed to support uptake, such as social communication and interaction with community health workers. The association between absence of safe sanitation and elevated risk of diarrhoeal disease points to the need to invest in improved sanitation. The use of public services for MCH was high across all wealth groups. Distance to services, availability of supplies and costs (transport and service) were the major barriers to service uptake and coverage, more for maternal health services than for child health services. This calls both for fee barriers to be lifted and supplies and staffing to be funded. If supply side issues are not addressed, people incur high costs to travel to more distant services with supplies and staff, increasing catastrophic expenditure even after fees are lifted. The evidence suggests that the most critical measure is to bring the relevant staff and supplies needed for essential maternal and child health services to primary care level, to avoid the cost burdens and differentials in coverage that arise if people have to travel to reach services with supplies and staff. The service deficits identified at primary care level included vaccine supplies, contraceptives, midwives, waiting mother shelters and ambulances, with the latter two needed for referrals to district services. As follow up, comprehensive audit and gap analysis against service standards (essential benefits) at primary care level can inform resource allocation, while supply chain / bottleneck analysis can identify the causes of these shortfalls and stock-outs at primary care level. Cost was a key barrier. The finding that poorer groups in both urban and rural areas spend a higher share of their income on maternal health services is highly inequitable. Lower income households find the costs of maternal health services unaffordable, with high levels of asset sales in the poorest groups that may be contributing to further impoverishment. There was a consistent view across all groups that all charges for consultation, diagnostics and medicines should be removed at primary care level (backed by improved supplies), with funding to ensure that this is also applied in urban councils. There was less consistency in the views on charges at district level. The facilitators are the inverse of the barriers. In addition, community health cadres (VHWs, EHTs, CBDs) were found to support effective uptake, as do improved education and income in women and supportive family influence. *Conclusions:* These factors point to the need for measures that support women at both individual and social level, and that link women to community level actors and resources (community health workers, antenatal groups, early child education groups, waiting mother shelters) to support their decisions and actions on health.

Key words: maternal and child health, women, children under five, Zimbabwe, cross-sectional study

Equity Watch: assessing progress toward equity in health in Zambia

University of Zambia Department of Economics, Ministry of Health Zambia, TARSC (2011) Equity Watch: assessing progress towards equity in health in Zambia, UNZA, EQUINET, Harare and Lusaka

<http://www.equinet africa.org/bibl/docs/Zambia%20EW%20Aug%202011%20web.pdf>

See Section A1

For someone who's rich, it's not a problem". insights from Tanzania on diabetes health-seeking and medical pluralism among Dar es Salaam's urban poor

Kolling M, Winkley K and Von Deden M (2010) 'Research "For someone who's rich, it's not a problem". insights from Tanzania on diabetes health-seeking and medical pluralism among Dar es Salaam's urban poor,' *Globalization and Health* 6(8)

<http://www.biomedcentral.com/content/pdf/1744-8603-6-8.pdf>

The prevalence of chronic non-communicable disease, such as type 2 diabetes mellitus (T2DM), is rising worldwide. In Africa, T2DM is primarily affecting those living in urban areas and increasingly affecting the poor. Diabetes management among urban poor is an area of research that has received little attention. Based on ethnographic fieldwork in Dar es Salaam, the causes and conditions for diabetes management in Tanzania have been examined. In this paper, we focus on the structural context of diabetes services in Tanzania; the current status of biomedical and ethnomedical health care; and health-seeking among people with T2DM. Two months of ethnographic fieldwork was carried out in 2008 among urban poor with T2DM in Dar es Salaam, Tanzania. In 2009 a brief follow-up visit was conducted. We demonstrate that although Tanzania is actively developing its diabetes services, many people with diabetes and low socioeconomic status are unable to engage continuously in treatment.

Conclusions: There are many challenges to be addressed to support people accessing diabetes health care services and improve diabetes management.

Key words: diabetes management, Dar es Salaam, Tanzania, ethnographic study

Urban health in Johannesburg: The importance of place in understanding intra-urban inequalities in a context of migration and HIV

Vearey J, Palmayr I, Thomas L, Nunez L and Drimie S (2010) 'Urban health in Johannesburg: The importance of place in understanding intra-urban inequalities in a context of migration and HIV,' *Health & Place* 16(4): 694-702. doi:10.1016/j.healthplace.2010.02.007 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/20400354>

See Section A2

Hypertension prevalence, awareness, treatment, and control in Mozambique: Urban/rural gap during epidemiological transition

Damasceno A, Azevedo A, Silva-Matos C, Prista A, Diogo D and Lunet N (2009) 'Hypertension prevalence, awareness, treatment, and control in Mozambique: Urban/rural gap during epidemiological transition,' *Hypertension* 54(1): 77-83. doi:10.1161/HYPERTENSIONAHA.109.132423 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/19470872>

See Section A1

What does access to maternal care mean among the urban poor? factors associated with use of appropriate maternal health services in the slum settlements of Nairobi, Kenya

Fotso J, Ezech A, Madise N, Ziraba A and Ogollah R (2009) 'What does access to maternal care mean among the urban poor? factors associated with use of appropriate maternal health services in the slum settlements of Nairobi, Kenya,' *Maternal and Child Health Journal* 13(1): 130-137.

<http://link.springer.com/article/10.1007/s10995-008-0326-4>

The study seeks to improve understanding of maternity health seeking behaviors in resource-deprived urban settings. The objective of this paper is to identify the factors which influence the choice of place of delivery among the urban poor, with a distinction between sub-standard and "appropriate" health facilities. The data are from a maternal health project carried out in two slums of Nairobi, Kenya. A total of 1,927 women were interviewed, and 25 health facilities where they delivered, were assessed. Facilities were classified as either "inappropriate" or "appropriate". Place of delivery is the dependent variable. Ordered logit models were used to quantify the effects of covariates on the choice of place of delivery, defined as a three-category ordinal variable. Although 70% of women reported that they delivered in a health facility, only 48% delivered in a facility with skilled attendant. Besides education and wealth, the main predictors of place of delivery included being advised during antenatal care to deliver at a health facility, pregnancy "wantedness", and

parity. The influence of health promotion (i.e., being advised during antenatal care visits) was significantly higher among the poorest women.

Conclusions: Interventions to improve the health of urban poor women should include improvements in the provision of, and access to, quality obstetric health services. Women should be encouraged to attend antenatal care where they can be given advice on delivery care and other pregnancy-related issues. Target groups should include poorest, less educated and higher parity women.

Key words: maternal health behavior, delivery, urban, Kenya, quantitative survey

Patterns and determinants of health care utilization: An assessment of high density urban areas in Harare, Zimbabwe

Bandason N (2008) 'Patterns and determinants of health care utilization: An assessment of high density urban areas in Harare, Zimbabwe,' [Dissertation] University of Cape Town

<http://open.uct.ac.za/handle/11427/9429>

Zimbabwe has been well known, since independence in 1980, to have one of the best health care systems in Sub-Saharan Africa regardless of a low economic growth pattern. The gains in health status that have been reaped in the 1980s and early 1990s have now been reversed due to the combination of the effects of structural adjustments policies, intermittent drought, a decline in the quality of health care services and severe economic decline. The current economic environment places pressure on households, especially the poorest, to meet the rising costs of individual medical care. The study focused on the evaluation of the patterns and determinants of health care utilization, which can aid in understanding the responsiveness of individuals to the current health care system in light of the economic climate. A detailed assessment of health seeking behaviour and health care utilization was performed using a cross-sectional household community survey comprising of 527 households (2302 individuals) that were randomly selected in three high density suburbs in Harare, Zimbabwe. Information pertaining to demographics, socio-economic status, and health status in addition to the experiences in the use of health care services or health care providers was collected using a questionnaire. A tenth of the sample population suffering from a health problem or illness in the 4 weeks preceding the interviews. The majority of individuals either sought care at a facility (44%) or did not seek care at all (32%). Health issues ranged from fever to chronic disease. Females, large sized households, and those with more severe illness were more likely to seek care. The majority of individuals felt that the quality of health services is poorer than it was before the economic crisis ensued in 2002.

Conclusions: The health care system needs to present viable solutions in order to maintain health care service delivery amidst the economic crisis. Of great concern to many was the availability and affordability of drugs (28%) and improved work environment and number of health workers (21%).

Key words: determinants, patterns, health care utilization, urban, Zimbabwe, cross-sectional survey

Treatment-seeking behaviour, cost burdens and coping strategies among rural and urban households in coastal Kenya: An equity analysis

Chuma J, Gilson L and Molyneux C (2007) 'Treatment-seeking behaviour, cost burdens and coping strategies among rural and urban households in coastal Kenya: An equity analysis,' *Tropical Medicine & International Health*: 12(5): 673-686. doi:TMI1825 [pii]

<http://www.ncbi.nlm.nih.gov/pubmed/17445135>

Ill-health can inflict costs on households directly through spending on treatment and indirectly through impacting on labour productivity. The financial burden can be high and, for poor households, contributes significantly to declining welfare. This study investigated socio-economic inequities in self-reported illnesses, treatment-seeking behaviour, cost burdens and coping strategies in a rural and urban setting along the Kenyan coast. The authors conducted a survey of 294 rural and 576 urban households, 9 FGDs and 9 in-depth interviews in each setting. Key findings were significantly higher levels of reported chronic and acute conditions in the rural setting, differences in treatment-seeking patterns by socio-economic status (SES) and by setting, and regressive cost burdens in both areas.

Conclusions: These data suggest the need for greater government and non-government efforts to protect poor people from catastrophic illness cost burdens. Promising health sector options are elimination of user fees, at least in targeted hardship areas, developing more flexible charging

systems, and improving quality of care in all facilities. The data also support a multi-sectoral approach to protecting households. Potential interventions beyond the health sector include supporting the social networks that are key to household livelihood strategies and promoting micro-finance schemes that enable small amounts of credit to be accessed with minimal interest rates.
Key words: health services, urban, socioeconomic inequalities, Kenya, household survey

A4. Papers on health sector responses to urban inequalities in health

Stroke admission and case-fatality in an urban medical unit in sub-Saharan Africa: A fourteen year trend study from 1999 to 2012

Lekoubou A, Nkoke C, Dzudie A and Kengne AP (2015) 'Stroke admission and case-fatality in an urban medical unit in sub-Saharan Africa: A fourteen year trend study from 1999 to 2012,' *Journal of the Neurological Sciences* 350(1-2): 24-32. doi:10.1016/j.jns.2015.02.002 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/25684340>

Data on recent stroke trends in the context of rapidly deteriorating risk profile of populations within Africa is very limited. We investigated the admission trend for stroke and related outcomes in a major referral hospital in Cameroon. Admission and discharge registries, and patient files for the period 1999-2012 of the medical department of the Yaounde Central Hospital were reviewed for evidence of admission for stroke, and outcomes during hospitalization. Trajectories of case-fatality and risk factors over time were assessed, with adjustment for confounders using logistic regression models. Of the 28,239 medical admissions registered during the study period, 1688 (6.0%) were due to stroke. This proportion ranged from 2.5% in 1999-2000 to 13.1% in 2011-2012 overall and similarly in men and women. Mean age, alcohol consumption and history of stroke varied across years (all $p \leq 0.006$). Computed tomography confirmed that stroke increased from 34.4% in 1999-2000 to 84.2% in 2011-2012, while the length of stay decreased from 21 to 10 days (both $p < 0.0001$ for linear trend). Case-fatality rate increased from 14.4% to 22.4%. The adjusted odd ratio (95% CI) 2011-2012 vs. 1999-2000 was 2.93 (1.40-6.13), $p < 0.0001$ for the linear trend across years. The unadjusted relative risk of death from stroke patients vs. general admissions was 0.95 (0.87-1.05) overall, 0.82 (0.71-0.94) in men and 1.08 (0.95-1.23) in women.

Conclusions: These During the last decade and a half, stroke admissions and case-fatality have increased in the study setting, reflecting in part the inadequate coping capacity of the health care system.

Key words: Admission, stroke, case-fatality, risk factors, Africa, qualitative, routine data

Bringing sexual and reproductive health in the urban contexts to the forefront of the development agenda: The case for prioritizing the urban poor

Mberu B, Mumah J, Kabiru C and Brinton J (2014) 'Bringing sexual and reproductive health in the urban contexts to the forefront of the development agenda: The case for prioritizing the urban poor,' *Maternal and Child Health Journal* 18(7): 1572-1577. doi:10.1007/s10995-013-1414-7 [doi]

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4152622/>

See Section A1

Cardiovascular diseases and diabetes as economic and developmental challenges in Africa

Kengne AP, June-Rose Mchiza Z, Amoah AG and Mbanya JC (2013) 'Cardiovascular diseases and diabetes as economic and developmental challenges in Africa,' *Progress in Cardiovascular Diseases* 56(3): 302-313. doi:10.1016/j.pcad.2013.10.011 [doi]

<http://www.sciencedirect.com/science/article/pii/S0033062013001849>

See Section A1

Closing the poor-rich gap in contraceptive use in urban Kenya: Are family planning programs increasingly reaching the urban poor?

Fotso JC, Speizer IS, Mukiira C, Kizito P and Lumumba V (2013) 'Closing the poor-rich gap in contraceptive use in urban Kenya: Are family planning programs increasingly reaching the urban poor?' *International Journal for Equity in Health* 12: 71-9276-12-71. doi:10.1186/1475-9276-12-71 [doi]

<http://www.biomedcentral.com/content/pdf/1475-9276-12-71.pdf>

Kenya is characterized by high unmet need for family planning (FP) and high unplanned pregnancy, in a context of urban population explosion and increased urban poverty. It witnessed an improvement of its FP and reproductive health (RH) indicators in the recent past, after a period of stalled progress. The objectives of the paper are to: a) describe inequities in modern contraceptive use, types of methods used, and the main sources of contraceptives in urban Kenya; b) examine the extent to which differences in contraceptive use between the poor and the rich widened or shrank over time; and c) attempt to relate these findings to the FP programming context, with a focus on whether the services are increasingly reaching the urban poor. We use data from the 1993, 1998, 2003 and 2008/09 Kenya demographic and health survey. Bivariate analyses describe the patterns of modern contraceptive use and the types and sources of methods used, while multivariate logistic regression models assess how the gap between the poor and the rich varied over time. The quantitative analysis is complemented by a review on the major FP/RH programs carried out in Kenya. There was a dramatic change in contraceptive use between 2003 and 2008/09 that resulted in virtually no gap between the poor and the rich in 2008/09, by contrast to the period 1993-1998 during which the improvement in contraceptive use did not significantly benefit the urban poor. Indeed, the late 1990s marked the realization by the Government of Kenya and its development partners, of the need to deliberately target the poor with family planning services. Most urban women use short-term and less effective methods, with the proportion of long-acting method users dropping by half during the review period. The proportion of private sector users also declined between 2003 and 2008/09.

Conclusions: The narrowing gap in the recent past between the urban poor and the urban rich in the use of modern contraception is undoubtedly good news, which, coupled with the review of the family program context, suggests that family planning programs may be increasingly reaching the urban poor.

Key words: Family planning, contraceptives, Kenya, household survey, quantitative

Improving recognition of severe illness and patient pathways in primary health services using mHealth technology in urban Blantyre, Malawi

O'Byrne T, Nyirenda D, Perrin R, Marshall S, Geldof M, Bar-Zeev S, et al. (2013) 'Improving recognition of severe illness and patient pathways in primary health services using mHealth technology in urban Blantyre, Malawi,' *Journal of Mobile Technology in Medicine* 2(4s): 2-3.

<http://www.journalmtm.com/2013/improving-recognition-of-severe-illness-and-patient-pathways-in-primary-health-services-using-mhealth-technology-in-urban-blantyre-malawi/>

Recent research into health seeking pathways in Malawi identified primary level barriers linked to service provision and misdiagnoses. In Malawi an Emergency Triage, Assessment and Treatment (ETAT) package, approved by the World Health Organisation (WHO) has been introduced at tertiary level and is being rolled out to district and primary clinics. mHealth technologies are likely to sustain quality in implementing clinical protocols, particularly when community-based health providers with limited formal training are increasingly working to offset primary level staff shortages. We aimed to develop and evaluate feasibility and acceptability of a prototype primary care level intervention to improve triage, assessment and referral of children with severe illness in Blantyre and to investigate whether this facilitates systematic and timely recognition and response to severe illness. All paediatric cases within five primary clinics in urban Blantyre were triaged and assigned Red for Emergency, Amber for Priority and Green for Queue using the mHealth triage algorithm. Phones were assigned to triage, to clinicians and the A&E department within the local tertiary, referral hospital (Queen Elizabeth Central Hospital (QECH)) for monitoring patient referrals. Seventy-four healthcare staff were trained across five urban primary clinics. A total of 41,358 patients were assessed using the mHealth triage algorithm from December 2012 to May 2013, of whom 1.56%

were referred to QECH. Rates of concordance between triage and clinician assessment showed a good level of agreement above chance. Pre- and post-Patient Journey Modelling tools identified positive changes in patient flows. Overall patient and health worker satisfaction was high with indirect impact on quality of clinical assessment amongst health workers based at intervention clinics but not directly involved in the intervention. This study has shown that mHealth technologies have the potential to improve primary level health services in resource-poor contexts with high patient numbers and overburdened health staff.

Conclusions: Working in collaboration with the Ministry of Health the data we present will inform the development of a cluster-randomised trial to rigorously evaluate the role of mHealth in the implementation of ETAT. This will aid policy decisions around ETAT implementation at primary health level.

Key words: primary care, children, Malawi, m-health

Assessment of the uptake of neonatal and young infant referrals by community health workers to public health facilities in an urban informal settlement, KwaZulu-natal, South Africa

Nsibandé D, Doherty T, Ijumba P, Tomlinson M, Jackson D, Sanders D and Lawn J (2013) 'Assessment of the uptake of neonatal and young infant referrals by community health workers to public health facilities in an urban informal settlement, KwaZulu-natal, South Africa,' *BMC Health Services Research* 13: 47-6963-13-47. doi:10.1186/1472-6963-13-47 [doi]
<http://www.biomedcentral.com/1472-6963/13/47/>

Globally, 40% of the 7.6 million deaths of children under five every year occur in the neonatal period (first 28 days after birth). Increased and earlier recognition of illness facilitated by community health workers (CHWs), coupled with effective referral systems can result in better child health outcomes. This model has not been tested in a peri-urban poor setting in Africa, or in a high HIV context. The Good Start Saving Newborn Lives (SNL) study (ISRCTN41046462) conducted in Umlazi, KwaZulu-Natal, was a community randomized trial to assess the effect of an integrated home visit package delivered to mothers by CHWs during pregnancy and post-delivery on uptake of PMTCT interventions and appropriate newborn care practices. CHWs were trained to refer babies with illnesses or identified danger signs. The aim of this sub-study was to assess the effectiveness of this referral system by describing CHW referral completion rates as well as mothers' health-care seeking practices. Interviews were conducted using a structured questionnaire with all mothers whose babies had been referred by a CHW since the start of the SNL trial. Descriptive analysis was conducted to describe referral completion and health seeking behaviour of mothers. Of the 2423 women enrolled in the SNL study, 148 sick infants were referred between June 2008 and June 2010. 62% of referrals occurred during the first 4 weeks of life and 22% between birth and 2 weeks of age. Almost all mothers (95%) completed the referral as advised by CHWs. Difficulty breathing, rash and redness/discharge around the cord accounted for the highest number of referrals (26%, 19% and 17% respectively). Only 16% of health workers gave written feedback on the outcome of the referral to the referring CHW.

Conclusions: We found high compliance with CHW referral of sick babies in an urban South African township. This suggests that CHWs can play a significant role, within community outreach teams, to improve newborn health and reduce child mortality. This supports the current primary health care re-engineering process being undertaken by the South African National Department of Health which involves the establishment of family health worker teams including CHWs.

Key words: maternal health, community health worker, South Africa

Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa

EQUINET (2012) Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa. EQUINET, Harare.

<http://www.equinet africa.org/bibl/docs/Regional%20EW%202012%20Part%201w.pdf>

See Section A1

Addressing social determinants of health by integrating assessment of caregiver-child attachment into community based primary health care in urban Kenya

Bryant JH, Bryant NH, Williams S, Ndambuki RN and Erwin PC (2012) 'Addressing social determinants of health by integrating assessment of caregiver-child attachment into community based primary health care in urban Kenya,' *International Journal of Environmental Research and Public Health* 9(10): 3588-3598.

<http://www.mdpi.com/1660-4601/9/10/3588/htm>

A principle strategic insight of the Final Report for WHO's Commission on Social Determinants of Health (SDOH) is that the nurturant qualities of the environments where children grow up, live, and learn matter the most for their development. A key determinant of early childhood development is the establishment of a secure attachment between a caregiver and child. This paper reports on initial field-tests of the integration of caregiver-child attachment assessment by community health workers (CHWs) as a routine component of Primary Health Care (PHC), focusing on households with children under 5 years of age in three slum communities near Nairobi, Kenya. Households in the targeted communities with one or more children under five years of age were included in this project. Each CHW was assigned households in the specific area most familiar to the CHW, until the CHW reached a maximum of 100 assigned households, for a maximum total of 2,400 households. Regular visits to households with children under 5 years of age began in 2008, and included many components of typical PHC models that are used in similar settings. Of the 2,560 children assessed from July–December 2010, 2,391 (90.2%) were assessed as having a secure attachment with a parent or other caregiver, while 259 (9.8%) were assessed as being at risk for having an insecure attachment. Parent workshops were provided as a primary intervention, with re-enforcement of teachings by CHWs on subsequent home visits. Reassessment of attachment by CHWs showed positive changes.

Conclusions: Assessment of caregiver-child attachment in the setting of routine home visits by CHWs in a community-based PHC context is feasible and may yield valuable insights into household-level risks, a critical step for understanding and addressing the SDOH.

Key words: social determinants of health, community health workers, urban, Kenya, survey

Assessment of facilitators and barriers to maternal and child health services in four rural and urban districts of Zimbabwe

Loewenson R, Kadungure A, Laver S, Shamu S, Mushayi W (2012) Assessment of facilitators and barriers to maternal and child health services in four rural and urban districts of Zimbabwe TARSC, UNICEF CCORE Harare

<http://www.tarsc.org/publications/documents/Final%20Report%20barriers%20study%20May%202012.pdf>

See Section A3

Equity Watch: assessing progress toward equity in health in Zambia

University of Zambia Department of Economics, Ministry of Health Zambia, TARSC (2011) Equity Watch: assessing progress towards equity in health in Zambia, UNZA, EQUINET, Harare and Lusaka

<http://www.equinetafrica.org/bibl/docs/Zambia%20EW%20Aug%202011%20web.pdf>

See Section A1

Access to health care: The role of a community based health insurance in Kenya

Mwaura JW and Pongpanich S (2012) 'Access to health care: The role of a community based health insurance in Kenya,' *The Pan African Medical Journal* 12:35.

<http://www.ncbi.nlm.nih.gov/pubmed/22891093>

Out-of-pocket payments create financial barriers to health care access. There is an increasing interest in the role of community based health insurance schemes in improving equity and access of the poor to essential health care. The aim of this study was to assess the impact of Jamii Bora Health Insurance on access to health care among the urban poor. Data was obtained from the household health interview survey in Kibera and Mathare slums, which consisted of 420 respondents, aged 18 and above who were registered as members of Jamii Bora Trust. The members of Jamii Bora Trust were divided into two groups the insured and the non-insured. KEY In

total, 17.9% respondents were hospitalized and women (19.6%) were more likely to be admitted than men (14.7%). Those in the poorest quintile had the highest probability of admission (18.1%). Those with secondary school education, large household size, and aged 50 and above also had slightly greater probability of admission ($p < 0.25$). 86% of admissions among the insured respondents were covered JBHI and those in the poorest quintile were more likely to use the JBHI benefit. Results from the logistic regression revealed that the probability of being admitted, whether overall admission or admission covered by the JBHI benefit was determined by the presence of chronic condition ($p < 0.01$).

Conclusions: Utilization and take up of the JBHI benefits was high. Overall, JBHI favoured the members in the lower income quintiles who were more likely to use health care services covered by the JBHI scheme.

Key words: access, health care, community based health insurance, urban, slums, Kenya,

Determinants for participation in a public health insurance program among residents of urban slums in Nairobi, Kenya: Results from a cross-sectional survey

Kimani JK, Ettarh R, Kyobutungi C, Mberu B and Muindi K (2012) 'Determinants for participation in a public health insurance program among residents of urban slums in Nairobi, Kenya: Results from a cross-sectional survey,' *BMC Health Services Research* 12: 66-6963-12-66. doi:10.1186/1472-6963-12-66 [doi]

<http://www.biomedcentral.com/1472-6963/12/66/>

The government of Kenya is making plans to implement a social health insurance program by transforming the National Hospital Insurance Fund (NHIF) into a universal health coverage program. This paper examines the determinants associated with participation in the NHIF among residents of urban slums in Nairobi city. The study used data from the Nairobi Urban Health and Demographic Surveillance System in two slums in Nairobi city, where a total of about 60,000 individuals living in approximately 23,000 households are under surveillance. Descriptive statistics and multivariate logistic regression analysis were used to describe the characteristics of the sample and to identify factors associated with participation in the NHIF program. Only 10% of the respondents were participating in the NHIF program, while less than 1% (0.8%) had private insurance coverage. The majority of the respondents (89%) did not have any type of insurance coverage. Females were more likely to participate in the NHIF program (OR = 2.4; $p < 0.001$), while respondents who were formerly in a union (OR = 0.5; $p < 0.05$) and who were never in a union (OR = 0.6; $p < 0.05$) were less likely to have public insurance coverage. Respondents working in the formal employment sector (OR = 4.1; $p < 0.001$) were more likely to be enrolled in the NHIF program compared to those in the informal sector. Membership in microfinance institutions such as savings and credit cooperative organizations (SACCOs) and community-based savings and credit groups were important determinants of access to health insurance.

Conclusions: The proportion of slum residents without any type of insurance is high, which underscores the need for a social health insurance program to ensure equitable access to health care among the poor and vulnerable segments of the population. As the Kenyan government moves toward transforming the NHIF into a universal health program, it is important to harness the unique opportunities offered by both the formal and informal microfinance institutions in improving health care capacity by considering them as viable financing options within a comprehensive national health financing policy framework.

Key words: public health insurance, NHIF, urban, slum, Kenya, cross-sectional survey

Stroke outcomes in a socio-economically disadvantaged urban community

de Villiers L, Badri M, Ferreira M and Bryer A (2011) 'Stroke outcomes in a socio-economically disadvantaged urban community,' *South African Medical Journal* 101(5): 345-348.

<http://www.ncbi.nlm.nih.gov/pubmed/21837880>

See Section A2

Cost-effectiveness of essential newborn care training in urban first-level facilities

Manasyan A, Chomba E, McClure EM, Wright LL, Krzywanski S, Carlo WA and Eunice Kennedy Shriver National Institute of Child Health and Human Development Global Network for Women's and

Children's Health Research (2011) 'Cost-effectiveness of essential newborn care training in urban first-level facilities,' *Pediatrics* 127(5): e1176-81. doi:10.1542/peds.2010-2158 [doi] <http://www.ncbi.nlm.nih.gov/pubmed/21502223>

To determine the cost-effectiveness of the World Health Organization (WHO) Essential Newborn Care (ENC) training of health care providers in first-level facilities in the 2 largest cities in Zambia. Data were extracted from a study in which the effectiveness of the ENC training was evaluated (including universal precautions and cleanliness, routine neonatal care, resuscitation, thermoregulation, breastfeeding, skin-to-skin care, care of the small infant, danger signs, and common illnesses) at 5-day ENC training-of-trainers in Lusaka to certified 18 college-trained midwives as ENC instructors. The costs to train an ENC instructor for each first-level delivery facility and the costs of salary/benefits for 2 coordinators responsible for maintenance of the program were recorded in 2005 US dollars. The incremental costs per life gained and per disability-adjusted life-year averted were calculated. The instructors trained all clinic midwives working in their first-level facilities as part of a before-and-after study of the effect of ENC training on early neonatal mortality conducted from Oct 2004 to Nov 2006. All-cause 7-day (early) neonatal mortality decreased from 11.5 per 1000 to 6.8 per 1000 live births after ENC training of the clinic midwives (relative risk: 0.59; 95% confidence interval: 0.48-0.77; $P < .001$; 40 615 births). The intervention costs were \$208 per life saved and \$5.24 per disability-adjusted life-year averted.

Conclusions: ENC training of clinic midwives who provide care in low-risk facilities is a low-cost intervention that can reduce early neonatal mortality in these settings.

Key words: neonatal, urban, primary care, Zambia

A review of health and hygiene promotion as part of sanitation delivery programmes to informal settlements in the city of Cape Town (South Africa)

Van Wyk, R. (Apr 2009). A review of health and hygiene promotion as part of sanitation delivery programmes to informal settlements in the city of cape town (South Africa). Proceedings of the 2007 National Conference on Environmental Science and Technology, 121-126

<http://www.biomedcentral.com/1472-6963/14/173>

Good sanitation includes appropriate health and hygiene promotion. This implies that proper health and hygiene promotion would have the desired effect as part of sanitation service delivery. However, lessons learnt worldwide show that in the promotion of health and hygiene, it is not enough simply to provide facilities, because if people do not use the available facilities properly, conditions do not improve or the system breaks down. The Ottawa charter (WHO, 1986) suggests that effective health and hygiene promotion require the empowerment of local communities, collaborative partnerships and a supportive national policy environment. Against this background, the focus of this study is the extent to which health and hygiene promotion forms part of sanitation delivery programmes to informal settlements in the City of Cape Town. METHODS: The investigation is confined to a comparative review of approaches to health promotion in 4 case study sites (Khayelitsha, Joe Slovo, Kayamandi and Imizamu Yetho) in respect of community and household capacity to take responsibility for community based programmes, role-players forming collaborative partnerships across departments and implementation of health and hygiene aligned with national policy.

Conclusions: Analysis of the case studies highlights the ineffectiveness of once-off awareness campaigns and the need for a more comprehensive approach to health and hygiene promotion in line with the Ottawa Charter.

Key words: sanitation, hygiene promotion, urban, South Africa, comparative review

Towards spatial justice in urban health services planning: A spatial-analytic GIS-based approach using Dar es Salaam, Tanzania as a case study

Amer S (2007) 'Towards spatial justice in urban health services planning: A spatial-analytic GIS-based approach using Dar es Salaam, Tanzania as a case study' [Dissertation] Utrecht University. Retrieved from <http://dspace.library.uu.nl/handle/1874/19334>

<http://dspace.library.uu.nl/handle/1874/19334>

The overarching aim of this study is to develop a GIS-based planning approach that contributes to equitable and efficient provision of urban health services in cities in sub-Saharan Africa. Its prime concern is with (i) the identification of theoretical and methodological constructs that can be used to

analyse and improve the spatial performance of public health service delivery systems, and (ii) the development of a corresponding spatial-analytic and GIS-based planning approach using Dar es Salaam as a case study. The context of the study is the 'urban health crisis'; a term that refers to the disparity between the increasing need for medical care in urban areas against the declining carrying capacity of existing public health systems. The evaluation framework appraises the performance of the existing Dar es Salaam governmental health delivery system on the basis of generic quantitative accessibility indicators. The intervention framework explores how existing health needs can better be served by proposing alternative spatial arrangements of provision using scarce health resources. It consists of a set of 'what if' type of planning instruments to support health planners to (i) detect spatial deficiencies of a given delivery system, (ii) propose priority spatial planning interventions and (iii) estimate the expected impact of potential interventions on spatial performance.

Conclusions: When used in concert the developed planning instruments offer a flexible framework with which health planners can formulate and evaluate alternative intervention scenarios and deal with the most important problems involved in the spatial planning of urban health services. The planning instruments, finally, are designed to contribute to making informed spatial decisions; not to automate but rather to support part of the planning process. The guiding principles of the primary health care approach (equity, effectiveness and efficiency) form the point of departure of the research. They demonstrate that health care provision is inevitably tied up with issues of resource allocation, distribution and priority setting. Decisions have to be made about the nature and range of services to provide and how they are distributed amongst the members of society. Such decisions are informed by economic, political, medical and ethical considerations but - as this research underlines - should also consider the spatial dimension

Key words: urban, health services, equity, Tanzania, spatial analysis

Prevention of hypertension and diabetes in an urban setting in South Africa: Participatory action research with community health workers

Bradley HA and Puoane T (2007) 'Prevention of hypertension and diabetes in an urban setting in South Africa: Participatory action research with community health workers,' *Ethnicity and Disease* 17: 49-51.

<http://repository.uwc.ac.za/xmlui/handle/10566/182>

The project aimed to identify factors that contribute to hypertension and diabetes and to design and implement appropriate local interventions to prevent these non-communicable diseases and promote healthy lifestyles. This was a community-based participatory action research project in which researchers and community health workers (CHWs) were the main participants. The triple A approach to planning interventions was used, that is, the process of assessing the situation, analyzing the findings, and taking action based on this analysis. Both qualitative and quantitative methods were employed. Twenty-two CHWs working in site C, Khayelitsha, a deprived urban area of Cape Town, South Africa, participated in the study. **KEY FINDINGS:** Findings from the situational assessment indicated a lack of knowledge among CHWs and the community about hypertension and diabetes and the risk factors for these non-communicable diseases. Economic constraints and cultural beliefs and practices influenced the community's food choices and participation in physical activity.

Conclusions: On the basis of these findings, a training program was proposed that would provide CHWs with the skills to prevent hypertension and diabetes in their community. A program was developed and piloted by the project team. A health club that focuses on promoting healthy lifestyles is currently being piloted. This paper illustrates the unique involvement of CHWs in a successful participatory action research project on the prevention of hypertension and diabetes and promotion of health in a deprived urban setting. *Conclusions:* The project emphasizes the importance of involving local people in community-based initiatives to promote health and identifies that the primary role of health services is to develop appropriate skills in the local community, monitor activities, and facilitate a link with primary health services.

Key words: hypertension, diabetes, urban, South Africa, participatory action research

A5. Papers on health promoting interventions of other sectors

Tackling the urban health divide through enabling intersectoral action on malnutrition in Chile and Kenya

Pridmore P, Carr-Hill R, Amuyunzu-Nyamongo M, Lang'o D, McCowan T and Charnes G (2015) 'Tackling the urban health divide through enabling intersectoral action on malnutrition in Chile and Kenya,' *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 92(2): 313-321. doi:10.1007/s11524-015-9942-7 [doi]

<http://www.medscape.com/medline/abstract/25758598>

As momentum grows for a sustainable urbanisation goal in the post-2015 development agenda, this paper reports on an action research study that sought to tackle the urban health divide by enabling intersectoral action on social determinants at the local level. The study was located in the cities of Mombasa in Kenya and Valparaiso in Chile, and the impact of the intervention on child nutrition was evaluated using a controlled design. The findings showed that an action research process using the social educational process known as PLA could effectively build the capacity of multisectoral teams to take coordinated action which in turn built the capacity of communities to sustain them. The impact on child nutrition was inconclusive and needed to be interpreted within the context of economic collapse in the intervention area. Four factors were found to have been crucial for creating the enabling environment for effective intersectoral action (i) supportive government policy (ii) broad participation and capacity building (iii) involving policy makers as advisors and establishing the credibility of the research and (iv) strengthening community action. *Conclusions:* If lessons learned from this study can be adapted and applied in other contexts then they could have a significant economic and societal impact on health and nutrition equity in informal urban settlements.

Key words: intersectoral action, social determinants, child nutrition, Kenya, PLA

Pit latrine emptying behavior and demand for sanitation services in Dar es Salaam, Tanzania

Jenkins MW, Cumming O and Cairncross S (2015) 'Pit latrine emptying behavior and demand for sanitation services in Dar es Salaam, Tanzania,' *International Journal of Environmental Research and Public Health* 12(3): 2588-2611. doi:10.3390/ijerph120302588 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/25734790>

Pit latrines are the main form of sanitation in unplanned areas in many rapidly growing developing cities. Understanding demand for pit latrine fecal sludge management (FSM) services in these communities is important for designing demand-responsive sanitation services and policies to improve public health. We examine latrine emptying knowledge, attitudes, behavior, trends and rates of safe/unsafe emptying, and measure demand for a new hygienic latrine emptying service in unplanned communities in Dar Es Salaam (Dar), Tanzania, using data from a cross-sectional survey at 662 residential properties in 35 unplanned sub-wards across Dar, where 97% had pit latrines. A picture emerges of expensive and poor FSM service options for latrine owners, resulting in widespread fecal sludge exposure that is likely to increase unless addressed. Households delay emptying as long as possible, use full pits beyond what is safe, face high costs even for unhygienic emptying, and resort to unsafe practices like 'flooding out'. We measured strong interest in and willingness to pay (WTP) for the new pit emptying service at 96% of residences; 57% were WTP \geq U.S. \$17 to remove \geq 200 L of sludge.

Conclusions: Emerging policy recommendations for safe FSM in unplanned urban communities in Dar and elsewhere are discussed.

Key words: Pit latrine, sanitation, urban, Tanzania, cross-sectional survey

Firearm and nonfirearm homicide in 5 South African cities: A retrospective population-based study

Matzopoulos RG, Thompson ML and Myers JE (2014) 'Firearm and nonfirearm homicide in 5 South African cities: A retrospective population-based study,' *American Journal of Public Health* 104(3): 455-460. doi:10.2105/AJPH.2013.310650 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/24432917>

The authors assessed the effectiveness of South Africa's Firearm Control Act (FCA), passed in 2000, on firearm homicide rates compared with rates of nonfirearm homicide across 5 South African cities from 2001 to 2005. They conducted a retrospective population-based study of 37067 firearm and nonfirearm homicide cases. Generalized linear models helped estimate and compare time trends of firearm and nonfirearm homicides, adjusting for age, sex, race, day of week, city, year of death, and population size. There was a statistically significant decreasing trend regarding firearm homicides from 2001, with an adjusted year-on-year homicide rate ratio of 0.864 (95% confidence interval [CI] = 0.848, 0.880), representing a decrease of 13.6% per annum. The year-on-year decrease in nonfirearm homicide rates was also significant, but considerably lower at 0.976 (95% CI = 0.954, 0.997). Results suggest that 4585 (95% CI = 4427, 4723) lives were saved across 5 cities from 2001 to 2005 because of the FCA.

Conclusions: Strength, timing and consistent decline suggest stricter gun control mediated by the FCA accounted for a significant decrease in homicide overall, and firearm homicide in particular, during the study period.

Key words: firearm, homicide, urban, South Africa, retrospective study

Bringing sexual and reproductive health in the urban contexts to the forefront of the development agenda: The case for prioritizing the urban poor

Mberu B, Mumah J, Kabiru C and Brinton J (2014) 'Bringing sexual and reproductive health in the urban contexts to the forefront of the development agenda: The case for prioritizing the urban poor,' *Maternal and Child Health Journal* 18(7): 1572-1577. doi:10.1007/s10995-013-1414-7 [doi]

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4152622/>

See Action A1

In urban South Africa, 16 year old adolescents experience greater health equality than children

Griffiths PL, Johnson W, Cameron N, Pettifor JM and Norris SA (2013) 'In urban South Africa, 16 year old adolescents experience greater health equality than children,' *Economics and Human Biology* 11(4): 502-514. doi:10.1016/j.ehb.2013.05.004 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/23876525>

See Section A1

Cardiovascular diseases and diabetes as economic and developmental challenges in Africa

Kengne AP, June-Rose McHiza Z, Amoah AG and Mbanya JC (2013) 'Cardiovascular diseases and diabetes as economic and developmental challenges in Africa,' *Progress in Cardiovascular Diseases* 56(3): 302-313. doi:10.1016/j.pcad.2013.10.011 [doi]

<http://www.sciencedirect.com/science/article/pii/S0033062013001849>

See Section A1

Urbanization and international trade and investment policies as determinants of non communicable diseases in Sub-Saharan Africa

Schram A, Labonte R and Sanders D (2013) 'Urbanization and international trade and investment policies as determinants of noncommunicable diseases in Sub-Saharan Africa,' *Progress in Cardiovascular Diseases* 56(3): 281-301. doi:10.1016/j.pcad.2013.09.016 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/24267436>

See Section A2

The Health of Women and Girls in Urban Areas with a Focus on Kenya and South Africa

Hawkins K, MacGregor H and Oronje R (2013) 'The Health of Women and Girls in Urban Areas with a Focus on Kenya and South Africa: A Review' IDS Evidence Report 42, Brighton: IDS.

http://opendocs.ids.ac.uk/opendocs/handle/123456789/3202#.VaMz_PIVhBc

See Section A1

Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa

EQUINET (2012) Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa. EQUINET, Harare.

<http://www.equinet africa.org/bibl/docs/Regional%20EW%202012%20Part%201w.pdf>

See Section A1

Discourses of illegality and exclusion: When water access matters

Mudege NN and Zulu EM (2011) 'Discourses of illegality and exclusion: When water access matters,' *Global Public Health* 6(3): 221-233. doi:10.1080/17441692.2010.487494 [doi]

<http://www.ncbi.nlm.nih.gov/pubmed/20628930>

See Section A2

Factors Influencing Implementation of Public Health Standards in Selected City Council Markets in Nairobi, Kenya

Kirimi FK (2011) 'Factors Influencing Implementation of Public Health Standards in Selected City Council Markets in Nairobi, Kenya,'

<http://etd-library.ku.ac.ke/handle/123456789/1882>

Public Health involves the organized efforts by societies to protect, restore and promote the health of the population. Public health programs and activities focus on the prevention of disease and enhancement of health. They are directed towards the population as a whole rather than individuals. Creation of healthy market places is part of the Healthy Cities Programs (HCP) strategy developed by World Health Organization. This approach aims to create environments that are supportive to good health. However, many market places set a poor example. Most of the Nairobi City Council markets have questionable public health standards but little is known about the factors leading to such state of affairs. No remedial measures can be taken if such conditions are not identified, hence the need to carry out this study. The purpose of the study was to find out the factors influencing implementation of public health standards in Nairobi City Council markets. The markets were conveniently selected due to their location. The study employed a descriptive survey research design because it allowed for extensive data collection on a large population within a short period of time. The study population consisted of three hundred customers, one hundred food vendors, six market administrators, four public health officers and two senior staff from the department of social services and housing. Pre-tested questionnaires and interview schedules were used for data collection, while observations were used as illustrations to major findings. Data was analyzed using Statistical Package for Social Sciences (SPSS) software. Majority of the food vendors (66%) were aware of the requirements of the public health act. A significant number of vendors (63%) underwent a medical check up in line with section 135 of the public health act. There was no significant association between medical examination and duration of operation in the market ($\chi^2=2.384$; $df=$ $p^3?0.05$). Nuisance is prohibited in section 115 of the Act. Never the less, both customers and vendors acknowledged presence of nuisance in the market which included poor waste disposal, presence of pests, poor sanitary conditions and foul smell. Public health officers' visits to the markets are paramount to ensure public health requirements are maintained, in line with section 123 of the Act. However, the study revealed that the officers lacked official transport arrangements and security details, unless there was a disease outbreak or when conducting arrests. Five out of the six market administrators noted that inadequate finances posed a major challenge in implementation of public health standards, since all the money collected from the markets was submitted to the City Treasury. *Conclusions:* Decentralization of funds generated from the markets is thus recommended. These funds can then be re-invested in maintenance, expansion and offering better services within the markets. The results of this work could be useful to the city council of Nairobi in ensuring that public health standards are observed in the markets.

Key words: public health, disease prevention, city council market, Nairobi, Kenya, descriptive survey

Environmental health practices, constraints and possible interventions in peri-urban settlements in developing countries--a review of Kampala, Uganda

Kulabako RN, Nalubega M, Wozzi E and Thunvik R (2010) 'Environmental health practices, constraints and possible interventions in peri-urban settlements in developing countries--a review of Kampala, Uganda,' *International Journal of Environmental Health Research* 20(4): 231-257.

doi:10.1080/09603120903545745 [doi]

<http://www.tandfonline.com/doi/abs/10.1080/09603120903545745#.VZ9DjvVhBc>

See Section A2

Health risks and benefits of urban and 'peri-urban' agriculture and livestock (UA) in Sub-Saharan Africa

Boischio A, Clegg A and Mwangi D (2006) 'Health risks and benefits of urban and 'peri-urban' agriculture and livestock (UA) in Sub-Saharan Africa,' *Urban Poverty and Environment Series Report 1*

<https://idl-bnc.idrc.ca/dspace/bitstream/10625/35531/1/127428.pdf>

See Section A2

Mortality and greenhouse gas impacts of biomass and petroleum energy futures in Africa

Bailis R, Ezzati M and Kammen DM (2005) 'Mortality and greenhouse gas impacts of biomass and petroleum energy futures in Africa,' *Science* (New York, N.Y.) 308(5718): 98-103. doi:308/5718/98 [pii]

https://rael.berkeley.edu/wp-content/uploads/2015/04/BailisEzzatiKammen-Science_308_20051.pdf

See Section A2

A6 Papers on community responses in urban health

Bringing stakeholders together for urban health equity: hallmarks of a compromised process

Katz A, Cheff RM and O'Campo P (2015) Bringing stakeholders together for urban health equity: hallmarks of a compromised process, *International Journal for Equity in Health* (2015) 14:138

<http://www.equityhealthj.com/content/14/1/138>

There is a global trend towards the use of ad hoc participation processes that seek to engage grassroots stakeholders in decisions related to municipal infrastructure, land use and services. We present the results of a scholarly literature review examining 14 articles detailing specific cases of these processes to contribute to the discussion regarding their utility in advancing health equity. We explore hallmarks of compromised processes, potential harms to grassroots stakeholders, and potential mitigating factors. We conclude that participation processes often cut off participation following the planning phase at the point of implementation, limiting convener accountability to grassroots stakeholders, and, further, that where participation processes yield gains, these are often due to independent grassroots action. Given the emphasis on participation in health equity discourse, this study seeks to provide a real world exploration of the pitfalls and potential harms of participation processes that is relevant to health equity theory and practice.

Key words: equity, participatory processes, community engagement, governance

Remaking suffering in a South African township

Mendenhall E and Norris SA (2015) 'When HIV is ordinary and diabetes new: Remaking suffering in a South African township,' *Global Public Health* 10(4): 449-462. doi:10.1080/17441692.2014.998698

http://www.researchgate.net/publication/271773076_When_HIV_is_ordinary_and_diabetes_new_Remaking_suffering_in_a_South_African_Township

Escalation of non-communicable diseases (NCDs) among urban South African populations disproportionately afflicted by HIV/AIDS presents not only medical challenges but also new ways in which people understand and experience sickness. In Soweto, the psychological imprints of political violence of the Apartheid era and structural violence of HIV/AIDS have shaped social and health discourses. Yet, as NCDs increasingly become part of social and biomedical discussions in South African townships, new frames for elucidating sickness are emerging. This article employs the concept of syndemic suffering to critically examine how 27 women living with Type 2 diabetes in Soweto, a township adjacent to Johannesburg known for socio-economic mobility as well as

inequality, experience and understand syndemic social and health problems. For example, women described how reconstructing families and raising grandchildren after losing children to AIDS was not only socially challenging but also affected how they ate, and how they accepted and managed their diabetes. Although previously diagnosed with diabetes, women illustrated how a myriad of social and health concerns shaped sickness. Many related diabetes treatment to shared AIDS nosologies, referring to diabetes as 'the same' or 'worse'.

Conclusions: These narratives demonstrate how suffering weaves a social history where HIV becomes ordinary, and diabetes new.

Key words: noncommunicable disease, diabetes, HIV, AIDS, urban, women, South Africa, qualitative

Health and fitness attitudes and lifestyle habits of urban children in South Africa

Morar D, Coopoo Y, Shaw I and Shaw B (2014) 'Health and fitness attitudes and lifestyle habits of urban children in South Africa,' *African Journal for Physical Health Education, Recreation and Dance: A Multi-Disciplinary Approach to Health and Well-being*: Supplement 2 20: 102-112.

http://reference.sabinet.co.za/sa_epublication_article/ajpherd_v20_supp2_sep_a10

South Africa is experiencing an ever-increasing incidence of hypokinetic diseases in both child and adult populations. As such, this study attempted to determine the health and fitness attitudes and lifestyle habits of children in South Africa since positive attitudes and habits have been shown to improve the health status of children. This is especially important since many childhood risk factors, such as childhood obesity, correlate with adult risk factors for common chronic diseases. Nine hundred and sixty children were randomly selected from three different socio-economic suburbs in KwaZulu Natal, South Africa to complete a questionnaire on exercise and sport, physical education classes and teachers, health education classes, nutrition and health and lifestyle habits. Statistical analysis consisted of descriptive statistics to determine frequencies and percentages in addition to computation of cross-tabulations. It is evident that in terms of health, fitness and lifestyle habits, the socio-economic backgrounds of the children played a pivotal role in the differences in the children's responses to the various questions. In this regard, differences were found in the availability of resources and facilities, children's attitudes towards exercise and sport, the frequency of the exercise they engaged in, their participation in school sport, nutritional habits, food preferences, snacking habits, breakfast and meal routines, their perceptions of how people stay healthy or get sick, the activities they would engage in during their free time and to enjoy a healthy lifestyle and their television viewing habits. The results obtained from the health and lifestyle habits of children revealed that children seem to know the various factors that influence their health and what they should or should not do in order to maintain a healthy lifestyle. However, children do not practise those positive attitudes and habits during their free time.

Conclusions: The findings of the present study demonstrate that children cannot assume the responsibility of taking the knowledge they have gained during their health education lessons and putting them into practice in their everyday lifestyle. Based on these findings, the compulsory nature of Physical Education in schools must be ensured and the subject must be taught equally across the different socio-economic areas. This study also revealed that there is an urgent need for strategies that will ensure equal standard of sporting facilities at all schools.

Key words: urban, children, physical activity, fitness, nutrition, South Africa, quantitative

Women empowerment and practices regarding use of dual protection among family planning clients in urban Zimbabwe

Mutowo J, Kasu CM and Mufunda E (2014) 'Women empowerment and practices regarding use of dual protection among family planning clients in urban Zimbabwe,' *The Pan African Medical Journal* 17: 300. doi:10.11604/pamj.2014.17.300.3282 [doi]

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4198267/pdf/PAMJ-17-300.pdf>

See section A2

Status Report on the Sexual and Reproductive Health of Adolescents Living in Urban Slums in Kenya

Beguy D, Mumah J, Wawire S, Muindi K, Gottschalk L in Kenya' and Kabiru C (2013) 'Status Report on the Sexual and Reproductive Health of Adolescents Living in Urban Slums accessed 15 Jul 2015 http://www.researchgate.net/publication/260677868_STATUS_REPORT_ON_THE_SEXUAL_AND_REPRODUCTIVE_HEALTH_OF_ADOLESCENTS_LIVING_IN_URBAN_SLUMS_IN_KENYA

See Section A2

Socioeconomic position and later life prevalence of hypertension, diabetes and visual impairment in Nakuru, Kenya

Ploubidis GB, Mathenge W, De Stavola B, Grundy E, Foster A and Kuper H (2013) 'Socioeconomic position and later life prevalence of hypertension, diabetes and visual impairment in Nakuru, Kenya,' *International Journal of Public Health* 58(1): 133-141. doi:10.1007/s00038-012-0389-2 [doi] <http://www.ncbi.nlm.nih.gov/pubmed/22814479>

See Section A1

Bringing justice to unacceptable health care services? street-level reflections from urban South Africa

Harris B, Eyles J, Penn-Kekana L, Fried J, Nyathela H, Thomas L and Goudge J (2013) 'Bringing justice to unacceptable health care services? street-level reflections from urban south africa,' *International Journal of Transitional Justice* doi:10.1093/ijtj/ijt028

<http://ijtj.oxfordjournals.org/content/early/2013/12/30/ijtj.ijt028.short>

Transforming repressive institutions into respected instruments of justice is necessary for the social reconstruction of fragile and post-conflict states. Yet, little attention has been given to the role of health systems in facilitating such change. This study situates South Africa's right to access health care as part of a broader sociopolitical endeavour to 'bring justice' in the aftermath of apartheid and argue that street-level bureaucrats tasked with delivering health services are a gauge of both individual and institutional transformation. Using cases from two urban areas, the authors consider responses to inaccessible antiretroviral therapy, tuberculosis treatment and maternal deliveries and ask whether these ameliorate or compound access barriers. They also explore some conditions for bringing justice to street-level interactions. Findings suggest that, if left unchallenged, negative street-level bureaucracy may compound inaccessible care for patients and perpetuate a wider culture of disempowerment, deprivation and poverty – ongoing structural violence – for citizens, while positive provider practices may be ameliorative. Strengthening street-level accountability and engendering respectful, empathetic provider practices is consequently vital to improving access to services and contributing more generally to the restoration of justice and health in society.

Key words: health rights, accountability, South Africa, qualitative

Patient and health system delay among patients with pulmonary tuberculosis in Beira City, Mozambique

Saifodine A, Gudo PS, Sidat M and Black J (2013) 'Patient and health system delay among patients with pulmonary tuberculosis in Beira City, Mozambique,' *BMC Public Health* 13: 559-2458-13-559. doi:10.1186/1471-2458-13-559 [doi]

<http://www.biomedcentral.com/1471-2458/13/559/>

See Section A3

Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa

EQUINET (2012) Regional Equity Watch 2012: Assessing progress towards equity in health in East and Southern Africa. EQUINET, Harare.

<http://www.equinetafrica.org/bibl/docs/Regional%20EW%202012%20Part%201w.pdf>

See Section A1

Factors Influencing Implementation of Public Health Standards in Selected City Council Markets in Nairobi, Kenya

Kirimi FK (2011) 'Factors Influencing Implementation of Public Health Standards in Selected City Council Markets in Nairobi, Kenya,'

<http://etd-library.ku.ac.ke/handle/123456789/1882>

See Section A5

Environmental health practices, constraints and possible interventions in peri-urban settlements in developing countries--a review of Kampala, Uganda

Kulabako RN, Nalubega M, Wozzi E and Thunvik R (2010) 'Environmental health practices, constraints and possible interventions in peri-urban settlements in developing countries--a review of Kampala, Uganda,' *International Journal of Environmental Health Research* 20(4): 231-257.

doi:10.1080/09603120903545745 [doi]

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A review of health and hygiene promotion as part of sanitation delivery programmes to informal settlements in the city of Cape Town (South Africa)

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Treatment-seeking behaviour, cost burdens and coping strategies among rural and urban households in coastal Kenya: An equity analysis

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Prevention of hypertension and diabetes in an urban setting in South Africa: Participatory action research with community health workers

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See Section A4

Equity in health implies addressing differences in health status that are unnecessary, avoidable and unfair. In southern Africa, these typically relate to disparities across racial groups, rural/urban status, socio-economic status, gender, age and geographical region. EQUINET is primarily concerned with equity motivated interventions that seek to allocate resources preferentially to those with the worst health status (vertical equity). EQUINET seeks to understand and influence the redistribution of social and economic resources for equity oriented interventions, EQUINET also seeks to understand and inform the power and ability people (and social groups) have to make choices over health inputs and their capacity to use these choices towards health.

EQUINET implements work in a number of areas identified as central to health equity in east and southern Africa

- Protecting health in economic and trade policy
- Building universal, primary health care oriented health systems
- Equitable, health systems strengthening responses to HIV and AIDS
- Fair Financing of health systems
- Valuing and retaining health workers
- Organising participatory, people centred health systems
- Social empowerment and action for health
- Monitoring progress through country and regional equity watches

EQUINET is governed by a steering committee involving institutions and individuals co-ordinating theme, country or process work in EQUINET from the following institutions: TARSC, Zimbabwe; CWGH, Zimbabwe; University of Cape Town (UCT), South Africa; Health Economics Unit, Cape Town, South Africa; MHEN Malawi; HEPS and CEHURD Uganda, University of Limpopo, South Africa, University of Namibia; University of Western Cape, SEATINI, Zimbabwe; REACH Trust Malawi; Min of Health Mozambique; Ifakara Health Institute, Tanzania, Kenya Health Equity Network; and SEAPACOH

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