

**Health consequences of migration: Evidence from South Africa's rural northeast
(Agincourt)**

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Introduction

Demography's "stepchild", migration has been under-studied relative to the extensive international research literature on mortality and fertility. Nevertheless, a body of migration work in demography exists, as it does within other disciplines including anthropology, economics, history, law, political science and sociology. While many research questions would benefit from a cross-disciplinary approach and perspective, work that draws on two or more disciplines remains relatively rare (Brettell and Hollifield, 2000). The literature on migration in Southern Africa derives from a range of disciplines, yet little attention is paid to intra-household dynamics, and the study of macro patterns of migration in South Africa is limited by the dearth of national data for quantitative research (Posel 2002).

Historically, research on migration and health in Southern Africa has focused largely on tuberculosis and pneumoconiosis suffered by migrant mine workers from within South Africa as well as from other labour-producing countries in the sub-continent, including Lesotho, Malawi, Zambia and Mozambique (Leger JP 1992; Marks 2003; Packard RM 1989). More recent work has focused on migration and HIV/AIDS (Jochelson et al 1991; Lurie et al 1997; Lurie et al 2000; Lurie 2000). Given the complexity of the relationship between migration and health, and an HIV/AIDS epidemic still on the rise, more policy-relevant research is urgently needed. The longitudinal Agincourt Health and Demographic Surveillance System (AHDSS) is able to measure and track temporary and permanent migration over time, and to link these moves with mortality trends and cause-of-death data. This unusual data source yields important insights on migration and health generally, and migration and HIV/AIDS more specifically.

This paper aims to raise some of the issues contributing to the complex relationship between migration and health, and to briefly review some of the current literature regarding migration and HIV/AIDS in Southern Africa. Thereafter, findings from the Agincourt HDSS and related research on male labour migration will be presented and discussed (in many ways, Agincourt typifies rural sending communities across the South African interior). These include trends in migration out of the rural Agincourt sub-district of Limpopo Province from 1992 to 2001, a decade spanning major socio-political transition, as well as emergence of the HIV/AIDS

epidemic in this border region of the country. The paper goes further to examine negative and positive health outcomes of migration.

Relationship between migration and health

The relationship between migration and health is a complex one: it operates in both directions and is mediated by socio-political factors, environment and disease exposure (figure 1). The relationship can produce either positive or negative effects, on both the migrant him/herself as well as on other family and household members. In order to explore migration as a risk factor, information is needed on the type of migration and reasons for it, factors in both the sending and receiving communities, including political, socio-economic, cultural and environmental factors, disease prevalence, dietary and lifestyle factors, and the integrity or fragmentation of social networks.

On the positive side, a move for work is likely to result in increased income and hence better nutrition and ability to access health care. Education may be more readily available and of higher quality in more developed areas where employment opportunities exist. Certain jobs, however, expose workers to particular occupational hazards, for example tuberculosis, pneumoconiosis and accidental workplace injury experienced by migrant mine workers. Temporary circular migration leads to family breakdown, fragmentation of social networks and psychosocial stress. Extended sexual networks result in sexually transmitted infections (STIs), including HIV/AIDS, which affect temporary migrants themselves as well as their permanent partners residing in the sending communities. Commercial sex workers based near those workplaces employing temporary migrants bear a heavy burden of STIs and HIV infection.

Temporary female migration, while increasing household income through remittances, results in the need for alternative childcare arrangements. Where social networks through extended family are strong enough to assume these childcare responsibilities, the net effect of female migration on children can be positive. Where not, children may experience neglect following migration of their mothers.

New emerging infectious diseases, as is currently the case with Severe Acute Respiratory Syndrome (SARS), can spread rapidly across the globe due to extensive international cross-border travel. In situations of forced migration, whether internal or cross-border, populations are often vulnerable and at added risk. Forced migration can be consequent on conflict and war, political or religious persecution, economic hardship, famine and other natural disasters. Populations forced to migrate may be compromised by the experiences precipitating their flight. These may include violence and psychosocial stress, lack of food, and breakdown of health services. Their mental and physical state at time of departure, the length and difficulty of their journey, and conditions at their destination will all impact on the health of forced migrants. Exposure to new pathogens in the host community, together with overcrowding, poor nutrition and inadequate health care, can result in epidemic outbreaks. In 1994, an outbreak of cholera amongst Rwandan refugees in Goma, Eastern Zaire, resulted in an estimated 12 000 deaths (Siddique et al 1995). Movement of populations from non-malaria areas to destinations with endemic malaria results in a high morbidity and mortality burden consequent on the absence of natural immunity.

Migration and HIV/AIDS

The association of temporary migration and HIV infection is affirmed by several authors in South Africa (Jochelson et al, 1991), (Lurie, 2000), and other parts of sub-Saharan African (Nunn, et al, 1995), (Pison, et al, 1993), (Decosas, et al, 1995), (Quin, 1994), (Basset, 1992). A study of the sero-prevalence of HIV in rural Kwazulu Natal found a three-fold higher risk of HIV infection among people who had recently changed their place of residence (Abdool Karim, et al., 1992). Mobility increases the risk for HIV and other STDs seemingly because migrants are more likely than non-migrants to have additional sexual partners (Lurie, et al 1997). This situation can be exacerbated by rural migrants experiencing emotional instability on exposure to the urban environment, which can lead to 'temporary solutions in serial and potentially high-risk sexual relationships' (Evian, 1995).

Syphilis was spread in this way throughout Europe, especially in the nineteenth century at the time of industrialization and rapid urbanisation. As in South Africa, job opportunities

attracted people from the rural areas, who were particularly susceptible to multiple partnerships and sexually transmitted infections (Shorter, 1992).

While the link between circular migration and increased risk of HIV infection is supported by a variety of literatures, Lurie identifies an important gap in our understanding, i.e. the implication for the rural communities to which the migrants regularly return (Lurie, 2000). He also reports an increase in the frequency of contact between labour migrants and their rural partners, both at work and in the rural setting, due to improved transport infra-structure and other factors like improved working conditions (Lurie, 1997). However, the social disruption institutionalized by a century of extensive labour migration affects not only the migrant in the work-place, but also the extent of sexual networking in the sending area (Dladla, et al, 2001). HIV discordance among migrant couples was investigated in a cohort study involving migrant workers and their partners in Kwazulu Natal. Preliminary data showed that nearly 40% of discordant migrant couples contained an HIV infected woman and an uninfected male migrant partner (Lurie, et al, 2000). This indicates that the link between migration and HIV transmission may be more complex than first suggested and more research is needed to understand the dynamics of the epidemic in rural areas.

Levels of HIV incidence in ante-natal clinics are higher in Kwazulu Natal than in the Limpopo Province (34% in Kwazulu Natal and 20% in Limpopo in 2000)(Department of Health, 2000), while levels of male labour migration remain equally high in both provinces (around 60% of adult males absent for the majority of the time) (Hosegood, 2002), (Collinson, et al., 2001). This may be explained through the fact that the heterosexual HIV epidemic was brought to South Africa mainly through the sex trade in the seaports of Richard's Bay and Durban, which served the Witwatersrand economy while the country was in political isolation (Williams & Campbell, 1998). The epidemic progressed subsequently to the Witwatersrand. Male labour migrants from Kwazulu Natal traveled primarily to Gauteng, Durban, Empangeni and Richard's Bay (Lurie, et al., 1997), while migrant activity from Limpopo is centred on Gauteng and Nelspruit (Collinson, et al.,2000). Thus, an explanation of why the Limpopo epidemic is behind rural Kwazulu Natal, even though the prevalence of labour migration is similar, may relate to the timing of first exposure of migrants to the HI virus in Durban and Richards Bay. While this implies that the

epidemic can grow equally large in Limpopo, it also indicates a window of opportunity to intervene and curb the acceleration of the epidemic in the interior provinces.

Methods

Two data sources are used in this paper to examine migration and health: firstly, the health and demographic surveillance system (HDSS) of the Agincourt Health and Population Unit, including the analysis of verbal autopsies, and secondly, a specialized survey based on the HDSS, which examined the partnership practices and risk perceptions of a sample of migrant and non-migrant men.

Study Area

The Agincourt sub-district, comprising 21 villages with a population of some 69 000 is situated in the Bohlabela region of South Africa's rural north-east, adjacent to the country's border with Mozambique. The dependency ratio is high, with 44% of the population under 15 years of age and 4% over 65 years (Tollman et al, 1999). Labour migration is extensive as local employment opportunities are few. The area, which is densely populated (148 persons per square kilometre) and arid with low rainfall, does not adequately support subsistence agriculture. Around 60% of men and 20% of women 30-49 years migrate from the area to work elsewhere for at least 6 months of every year. Although school enrolment often occurs late, 85% of children aged 10-14 years enter primary school. Less than 50% continue to secondary school, however, and only 3% receive post-secondary education.

Nearly a third of the population (31%) are of Mozambican origin. Significant differentials in well-being exist within the Agincourt study population with former Mozambican refugees representing a particularly vulnerable group (Dolan et al, 1997), (Hargreaves et al, 2002). This group largely arrived as the RENAMO-FRELIMO conflict in Mozambique escalated from 1984. Mozambicans fled into South Africa across its eastern border and dispersed within local settlements or settled on land allocated to them by local Tribal authorities. In 1993, group refugee status was granted to Mozambicans who had fled the conflict, yet access to water,

sanitation, labour markets and legal rights has remained persistently poor for most (Dolan et al, 1995). Nevertheless, uptake to voluntary repatriation programmes has been low (Hargreaves et al, 2002).

Agincourt Health and Demographic Surveillance

The Agincourt Health and Population Unit of the University of the Witwatersrand conducts health and demographic surveillance on a rural sub-district population in the former homeland district of Bushbuckridge, some 500km north east of Johannesburg (see figure 1). A baseline census in the twenty villages of the Agincourt sub-district was conducted in 1992. Since then rigorous annual updates have been conducted, collecting information on all births, deaths, in- and out-migrations in the surveillance population. The update involves visiting every household, where a fieldworker verifies existing records, records new individual- or household-level data, and records the demographic events that have occurred since the preceding year's census update. A verbal autopsy is conducted for every death. (Tollman, 1999), (Tollman, et al., 1999) (Kahn, et al., 1999). The study population in 2001 numbered around 68 000 people.

During the 2000 census update round a cross-sectional labour module was conducted, which recorded key features of labour force participation on all de jure persons in the sub-district aged ten years or older. The definition of “working” and categories of unemployment were derived by starting with conventional definitions and undertaking a process of discussion and refinement with local field staff and community members. Several iterations of questionnaire piloting were conducted in the study site and elsewhere in Bushbuckridge. For the study, “work” was defined as an activity that brought income or resources into the household from outside. Categories of unemployment included job seeking, subsistence farming, home domestic work, studying, not looking for a job, disabled, volunteer work, in between fixed period work, or in between occasional work.

The HDSS is a powerful tool for exploring migration. Migration and household definitions are built into the demographic surveillance process and were developed to capture the movement patterns prevailing in this border area of Limpopo Province. Temporary migrants are

defined as household members who are away most of the time but retain a significant link to a surveillance household. A household is defined as the social unit that usually eats together, plus the temporary migrants who are linked to the household. During annual census updates the residence status of all individuals in the household is updated. This involves recording the number of months that a person is physically resident during the previous year. A person is considered a temporary migrant if the months resident in the surveillance household number less than six and the respondent declares that the migrant retains strong links with the household. If the migrant leaves with a permanent intention the individual is removed from the household roster and considered a permanent migrant.

The Agincourt Male Labour Migration Study methods

Between 1998 and 2000 a study of male labour migration was conducted in the Agincourt field site, which explored aspects of migration and sexual histories in both migrant and non-migrant men. The study consisted of three main components: focus groups among men and women conducted in October and November 1998, a questionnaire survey conducted between December 1999 and May 2000, and qualitative in-depth life histories of migrants conducted over Easter 2000 to explore the intertwining of migrant and sexual histories. The data used for this paper is drawn from the questionnaire survey.

A random sample of 1482 men, aged 20-49, was drawn from the census database. Fieldwork was concentrated over holiday periods of Christmas and Easter and weekends at the end of each month to increase the chances of contacting migrant men on their return home to the rural area. The survey interview was conducted by trained fieldworkers, preceded by an introductory discussion and guarantee of confidentiality, and included a self-administered questionnaire covering the more sensitive aspects of sexual partnership practices.

All households of sampled respondents were contacted. If respondents were not found at home letters were left informing prospective participants about the nature of the study and encouraging participation. A maximum of four household visits were made before efforts to contact respondents were dropped. A total of 869 interviews were conducted, of which 857 were

completed among men fitting the eligibility criteria. This represents an overall contact rate of 58 percent.

Poverty measures used in the study

During the 2001 census round a cross-sectional household asset survey was conducted which recorded salient features of the living conditions and assets of each household in the surveillance population. The questionnaire contained 34 ordinal variables, covering such areas as building materials and structure of the main dwelling, access to water and power, and ownership of appliances, transport and livestock. Variables were developed through a process of discussion and refinement with local field staff and community members. Several iterations of questionnaire piloting were conducted in the study site and elsewhere in the district.

For assessing equity a relative index of economic status was constructed by combining the variables from the household asset survey and conducting a principal component factor analysis to determine the relevant weights to assign to each variable. The model which used the first principal component was selected because it summarised the most information across the variables, and in subsequent testing correlated best with the individual variables making up the score. The first principal component was divided into quintiles, which were labelled: low, medium low, medium, medium high and high economic status.

FINDINGS

Mobility trends in Agincourt:

In 2000, 72% of the Agincourt population had not moved, 8% had undergone permanent migration, and 20% temporary migration.

Permanent migration

In 2001, 8% of the rural population under surveillance made a permanent change of residence into or out of a field-site household. Of these permanent movers, those with both origin

and destination within the rural setting constituted 71%. With respect to urbanisation, 15% of out-migrations were to rural towns and 6% to a city. Nearby towns were an important destination, with pronounced one-way migration to rural towns observed in 1994/5 following the onset of democracy. This related in part to the change of government, in particular the decline of traditional authority structures which controlled movement of people. The most mobile age-sex category across all permanent migration was women aged 15-25. This follows from the marriage custom that a woman usually moves into her husband's household. The most important units of movement are "woman alone" and "woman with children", followed by "woman with man and children" (Collinson, et al, 2000).

Changes in labour migration trends

Figure 2 shows trends in the proportion of migrant worker or migrant work-seeker at the time of the census. Labour migration showed no significant overall shift for older adult males in the decade of the 1990's, staying high at 60% -- an unexpected finding as some change had been anticipated consequent on socio-political change after 1994. The younger adult males, aged 15-34 years, show a trend of an annual increase since 1997. Reasons include looking for work, formal and informal employment. (Collinson, et al. 2001). Prior to 1997 the level of female labour participation remained stable at fairly low levels of 15% of 35-54 year olds and 5% of 15-34 years olds. From 1997 the trend started to increase, and by 2000 these proportions had reached 25% of 35-54 years olds and 17% of 15-34 years olds. The reasons for temporary migration of adult females in 1999 and 2000 is provided in figure 3. The types of work were mainly informal selling of food and other goods, farm work and domestic work; although younger women with matriculation or tertiary level education were entering the formal labour market in clerical or business assistant positions. In 2000, 32% of temporary migrant women were employed in Gauteng Province, 45% on farms in Mpumalanga, and 12% in towns along the N4 road, a major development route that connects Gauteng with the port city of Maputo.

Negative health consequences of Migration.

Three negative consequences of migration are explored in this paper: the spread of HIV/AIDS and other sexually transmitted infections, increased risk of homicide and motor vehicle accidents, and increased risk of child mortality among settled Mozambican refugees.

The spread of AIDS/ HIV and other sexually transmitted infections

Figure 4 shows a key outcome of the Male Labour Migration study, namely the percentage of men reporting 0, 1 or 2+ sexual partners in the year preceding interview, by work and migrant status. Men reporting two or more sexual partners are differentiated by work and migration status. Unemployed men have the least likelihood of reporting two or more partners, though still fairly high, at 38%. Employed migrant men are the next mostly likely to report two or more partners in the preceding year, at 45%. The highest category are rural-based, employed men, with more than 50% reporting two or more partners in the year preceding interview.

Figure 5 reports two multi-variate models that further explore the relationship between migration and work status and the odds of reporting two or more partners in the last year. Both models control for “ever worked away”, age, education level, current marital status and Mozambican nationality. Model 1 explores the variables expressed in figure 4, namely “local employed” (the reference category), “local unemployed” and “working away”. Compared with local employed men the odds of reporting two or more partners in the last year are significantly lower for unemployed local men and for men working away. Model 2 breaks out the “working away” category by patterns of returning home to the rural area. In this model, compared to locally employed men, the odds of reporting two or more sexual partners in the last year is significantly lower for locally employed men (Odds ratio: 0.66; p-value 0.071). Of the men who work away there is a differentiation by pattern of home return. Men who only return once or twice a year seem more likely to report multiple partnerships than the locally employed men (Odds ratio: 1.57; p-value 0.290), although this does not reach statistical significance. Men who return home on a monthly basis are the least likely of all men to report multiple partnerships (Odds ratio: 0.47; p-value 0.024).

Figure 6 shows the perceived risk of HIV by migrant status. There is a remarkably low perception of high or moderate risk of HIV infection in both migrant and non-migrant men. A low risk of HIV infection was reported slightly more often among migrants. The perception of no HIV risk is extremely high in both migrant and non-migrant categories, with 56% of migrants and 65% of non-migrants declaring no perception of HIV risk at all.

Increased violent and accidental death among male labour migrants

External causes of death (accidental and intentional injuries) were ranked highest between 1992 and 1995 in the age groups 5-14 and 15-49. Causes of death were ascertained by verbal autopsy. Mortality from injury was four-fold higher for men than women. Half of male deaths from both homicide and road traffic incidents (RTIs), and a quarter of female RTI deaths, occurred in urban locations. This indicates a risk of injury at least partly related to migratory work patterns. This relationship derives from greater exposure to certain risks, such as travelling greater distances, and may result from the city and work place being inherently more violent than rural areas. (Kahn et al, 2000)

Increased child mortality of settled refugees

In the late 1980's some 300 000 Mozambicans fled the civil war and settled in South Africa. In 2001, 25 000 were under demographic surveillance in Agincourt. This population tends to inhabit the poorest quintile of the Agincourt population. An analysis of child survival compared South African with Mozambican communities and showed a significantly higher risk of child mortality in the Mozambican communities (OR=1.7; 95% CI: 1.33 – 2.14). In the analysis, several mediating factors were explored at an individual (maternal) and household level, but none of them mediated the impact of nationality on child mortality. (Hargreaves, et al 2002) Factors associated with being a settled former-refugee appear to produce this inequitable burden of child mortality, including lack of legal status and social and economic barriers. These have both direct negative consequences, such as poor access to health and social services, as well as indirect negative consequences such as social discrimination and marginalisation.

Positive health consequences of Migration.

Two positive consequences of migration are explored in this paper: migration and economic status, and the health status of children of migrant mothers

Migration and Economic status

The five category ordinal variable “Economic Status” described in the methods section is used here to regress the economic index of the household on the likelihood of individual members having a history of either temporary or permanent migration.

Permanent migration is not associated with economic status in any sense. This has the implication that people make permanent moves (family improvements, units forming and dissolving) no matter what their economic position. While there are patterns to discern, the likelihood of making a permanent move appears to be independent of socio-economic status.

Temporary migration is positively associated with economic status. A member of a “High Economic status” household [ES(High)] is substantially more likely to be a temporary migrant: ES(High) is 30% higher than ES(Medium), and ES(Low) is 25% lower than ES(Medium).

Regressing economic index on individual’s temporary migration status yields the following:

Economic status	Odds ratio	p-value
Low	0.75	0.000
Medium low	0.88	0.015
Medium	2	reference category
Medium high	0.85	0.001
High	1.3	0.000

Work in health equity demonstrates a generally positive correlation between health and economic status (Kahn, et al., 2003). Hence temporary migration status, through improvements

in economic status, is likely to result in positive health outcomes for the household. The migrant-linked family may have better access to a healthy environment, to better quality health and educational services, as well as to a wider range of nutritional and lifestyle options.

Children of migrant mothers

A study of child survival showed that temporary female migration did not increase their children's mortality risk - in fact there was a small protection effect afforded by a mother being a temporary migrant (OR: 0.84; 95% CI: 0.69 -1.03) (Collinson, MSc(Med) thesis). This finding implies that kinship and neighbourhood networks are currently adequately supporting migrant women's children. Exploring this result further through multivariate regression, including education, showed that this apparent migration benefit was more likely consequent on the better education status of migrant women. Women with tertiary education had lower risk of child mortality, whether or not they were migrant.

While children of temporary migrant mothers are not currently at risk of higher mortality, caution should be taken in assuming this will continue. Household resources are already straining under the emerging burden of AIDS mortality in young adults, with decreasing household income, increasing health care costs, and greater numbers of AIDS orphans. Emerging and escalating non-communicable disease in older adults may well diminish the pool of back-up childcare in the future. (Hargreaves, et al., 2003), (Kahn, et al, 2003)

Discussion

Male Temporary migration trends

The Agincourt data demonstrates that adult men are largely absent from the population, given poor opportunities for local employment or agricultural pursuit. The levels of male temporary migration showed no significant overall shift for older adult males in the decade of observation. This is surprising, since change was anticipated following the lifting of restrictive apartheid laws and changes in the labour market caused by large-scale retrenchments in the mining sector (Crush and James, 1995). The U-shaped curve of younger adult males may be

related in part to retrenchments and/or despondency in the earlier part of the decade, but this recovers and the curve climbs steeply after 1997. It is presently not clear what caused this reversal in the trend.

Female labour migration

Female temporary migration is on a steep rise, with an average of one in five adult women temporarily migrant in 2000, and that proportion possibly increasing. Several scenarios regarding “push and pull” factors have emerged from research in the Agincourt area. Young women migrate to obtain a better education. Also valued is the possibility to experience life with more autonomy than is possible in the conservative patriarchy of the rural areas. Families are usually supportive as this constitutes a diversity of income to rural households. The opportunities these young women find range from clerical and small business assistant work, to domestic work and informal selling. Another group of female temporary migrants are older, married women, who work as small-scale entrepreneurs and informal retailers. Strong women’s networks based on solidarity and mutual support facilitate the effective informal selling networks in towns and cities.

A key employment destiny for men and women is on commercial farms, particularly in Mpumalanga. Wages tend to be very low and accommodation poor, but impoverished people of all ages and marital statuses make use of these seasonal opportunities. Labour conditions on these farms can be stark, although the farming community is diverse and its approach to labour varies. As eco-tourism is promoted in the area, a range of job opportunities is emerging in the hospitality industry, in either privately owned game farms or state-run nature reserves. Working conditions are diverse and range from administrative positions to cleaning work. Usually the contract involves residing in on-site staff communities of varying sizes. Women in these jobs tend to get leave to visit home, family and children only on sporadic off-duty times. A typical example would be cycles of three months on duty followed by two weeks off.

Male labour migration and HIV risk

Several studies done in South Africa and elsewhere purport that male migration leads to higher risk behaviour. Our data show on the contrary, that rurally based men demonstrate as

much if not more risk behaviour as their migrant counterparts. Moreover the level of reported risk behaviour among migrants depends on the frequency of return. The majority who work in nearby destinations such as game parks or commercial farms report fewer partners than either long-distance migrants who return once or twice a year, or resident employed men. This latter group are most likely to report multiple partners, indicating the prevalence of transactional sex, where men exchange money or other support benefits for sex. Local unemployed men, who are mostly in the age group 20-29, report fewest partners of all.

Perception of HIV infection risk

Over 90 percent of men perceive little or no personal risk of infection - a startling finding that may impact severely on the course of the epidemic. Sexual networking is a key factor in HIV transmission, and high levels of risk behaviour are unlikely to reverse until men have more awareness of personal risk.

High trend of labour migration related to political history.

Negative factors persist in current society that have their roots in the social engineering programme of the Apartheid regime. These structural factors include intractable high levels of labour migration, dense settlements in unfertile rural areas, a noticeable and unfortunate break with agriculture that has shaped the path of development in the area, and a reduction in formal employment across the decade, even in cities. The negative factors include social fragmentation created by several decades of households experiencing disunity in myriads of direct and indirect ways. One such direct factor is the high level of sexual networking encountered by women and men. HIV risk is fanned by sexuality acquiring a low-key economic value and norms changing around marriage. People are challenged by the pressures of the times without social models of the past to guide them.

Vulnerabilities

Households without a labour migrant appear to be economically disadvantaged. On the other hand households containing a labour migrant are exposed to vectors of infection for sexually transmitted diseases. An even higher risk of exposure to HIV was shown for rurally resident employed men, and their partners.

Limited banking facilities in the rural area compel temporary migrants to transport money themselves. This, coupled with their migrant status can make them vulnerable to violent crime.

Conclusions

Migration, particularly temporary migration, is pronounced and patterns are changing. Since migration articulates with development and survival strategies, it both confers specific health risks yet may result in positive health outcomes. The complexity of the relationship between migration and health needs to be further explored and better understood if the negative impacts of migration are to be successfully mediated by health and social development interventions.

Intractably high levels of male labour migration, coupled with infrequent visits home by long-distance migrants and low levels of personal HIV risk perception, indicate that the potential for spread of HIV in this setting is explosive. Strategies to enable more frequent contact between migrant men and their rural families, though enormously challenging, are urgently needed. These include structural developments that would either bring labour markets closer to the rural setting, or facilitate more frequent returns home.

Extensive sexual networks of resident men locally employed, and hence independent of migration patterns, indicate probable high levels of HIV transmission within the rural area itself. This indicates the urgent need for prevention and awareness raising activities for all men and their partners, not especially migrants.

References

- Abdool Karim Q, Abdool Karim SS, Singh B, Short R, Ngxongo S. 1992. Seroprevalence of HIV infection in rural South Africa. *AIDS* 6, 1535-1539.
- Basset MT, Latif AS, Katzenstein DA, Emmanuel JC. 1992. Sexual Behaviour and risk factors for HIV infection in a group of male factory workers who donated blood in Harare, Zimbabwe. *J. Acq. Immun. Def. Synd.* 5,6, 556-559.
- Brettell C and Hollifield JF, eds. 2000. *Migration theory: Talking across disciplines*. London: Routledge.
- Collinson MA, Garenne M, Tollman SM, Kahn K, Mokoena O. 2000. *Moving to Mkhuhlu: Emerging patterns of migration in the new South Africa*. A chapter in the African Census Analysis Project monograph series volume 1. (In press)
- Collinson MA, Tollman SM, Garenne M, Kahn K, 2001. *Temporary female migration and labour force participation in rural South Africa*. A working paper of the Agincourt Health and Population Unit, University of the Witwatersrand. A working paper of Princeton University's, Center for Migration and Development.
- Crush J and James W (editors). 1995. "*Crossing boundaries: Mine Migrancy in a Democratic South Africa*." Institute for Democracy in South Africa. ISBN 1-874864-12-8.
- Decosas J, Kane F, Anarfi J, et al. 1995. Migration and AIDS. *Lancet* 346, 826-828.
- Dolan, C. and Nkuna, V. 1995. "*Refugees*", "*Illegal aliens*" and the labour market – *the case for a rights based approach to labour movement in South Africa*. 1995. Unpublished work.
- Dolan C, Tollman S, Nkuna V, Gear JSS. 1997. The links between legal status and environmental health: A case study of Mozambican refugees and their hosts in the Mpumalanga (Eastern Transvaal) Lowveld, South Africa. *International Journal of Health and Human Rights* 2:62-84.
- Department of Health, South Africa. 2000. *HIV Ante-Natal Clinic Survey*.
- Dladla AN, Hiner CA, Qwana E, Lurie M. 2001. Speaking to rural women: The sexual partnerships of rural South African women whose partners are migrants. *Society in Transition*. 32(1).

- Evian C. 1995. AIDS and social security. *AIDS Scan* 7, 3: 8-11.
- Hargreaves J, Collinson M, Kahn K, Tollman S, Clark S. 2002. *What explains inequity in childhood mortality between Mozambicans and South Africans living in rural South Africa?* Unpublished manuscript.
- Hosegood V, Solarsh GC. Population mobility and household dynamics in rural South Africa: implications for demographic and health research. *Soc Sci Med* (forthcoming)
- Jochelson K, Mothobeli M, Leger J. 1991. Human immunodeficiency virus and migrant labor in South Africa. *Int. J. Hlth. Serv.* 21, 157-173.
- Kahn K, Collinson M, Hargreaves J, Clark S, Tollman S. 2003. *Socio economic status and child mortality in a rural sub-district of South Africa.* Unpublished manuscript.
- Kahn K, Zwi A, Garenne M, Tollman S. 2000. *Deaths from violence and unintentional injuries in a rural area of South Africa.* Unpublished manuscript.
- Leger JP. 1992. Occupational diseases in South African mines – a neglected epidemic? *South African Medical Journal* 18:197-201.
- Lurie M, Harrison A, Wilkinson D, Abdool Karim S. 1997. Circular migration and sexual networking in rural Kwazulu/Natal: implications for the spread of HIV and other sexually transmitted diseases. *Health Transition Review.* Vol7, supplement 3,17-27
- Lurie M, Williams B, Sturm AW, et al. 2000. *Migration and the spread of HIV in Southern Africa; prevalence and risk factors among migrants and their partners, and non-migrants and their partners.* Poster XIII International AIDS Conference, Durban.
- Lurie M. 2000. Migration and AIDS in Southern Africa: a review. *Southern African Journal of Science.* Vol. 96, June 2000.
- Marks S. 2003. *The silent scourge? Silicosis, respiratory disease and gold-mining in South Africa.*
- Nunn A, Wagner H, Kamali A. et al. 1995. Migration and HIV 1 seroprevalence in a rural Ugandan population. *AIDS* 9, 503-506.
- Pison G, LeGuanno B, Lagarde E, et al. 1993. Seasonal Migration: a risk factor for HIV in rural Senegal. *J. Acq. Immun. Def. Synd.* 6,196-200.

- Quin TC. 1994. Population migration and the spread of types 1 and 2 human immunodeficiency virus. *Proc. Nat. Acad. Sci. USA* 91,2407-2414.
- Packard RM. 1989. *White Plague, Black Labor. Tuberculosis and the Political Economy of Health and Disease in South Africa*. Berkeley and Los Angeles: University of California Press.
- Posel D. 2002. *A review of current literature and recent research on migration in Southern Africa*. Work in progress (unpublished).
- Shorter E. 1992. *What can two historical examples of sexually transmitted diseases teach us about AIDS*. In Tyson T. (ed.) *Social behaviour and networking: Anthropological and socio-cultural studies of the transmission of HIV*, pp49-64, Liege: Derouaux-Ordina.
- Siddique AK, Salam A, Islam MS, Akram K, Majumdar RN, Zaman KZ, Fronczak N, Laston S. 1995. Why treatment centres failed to prevent cholera deaths among Rwandan refugees in Goma, Zaire. *The Lancet* 345:359-361.
- Williams B and Campbell C Understanding the epidemic of HIV in South Africa. *South African Medical Journal*. 1998. 88 3. 247-251.

Figure 1. Causal framework linking migration, health and socio-economic status

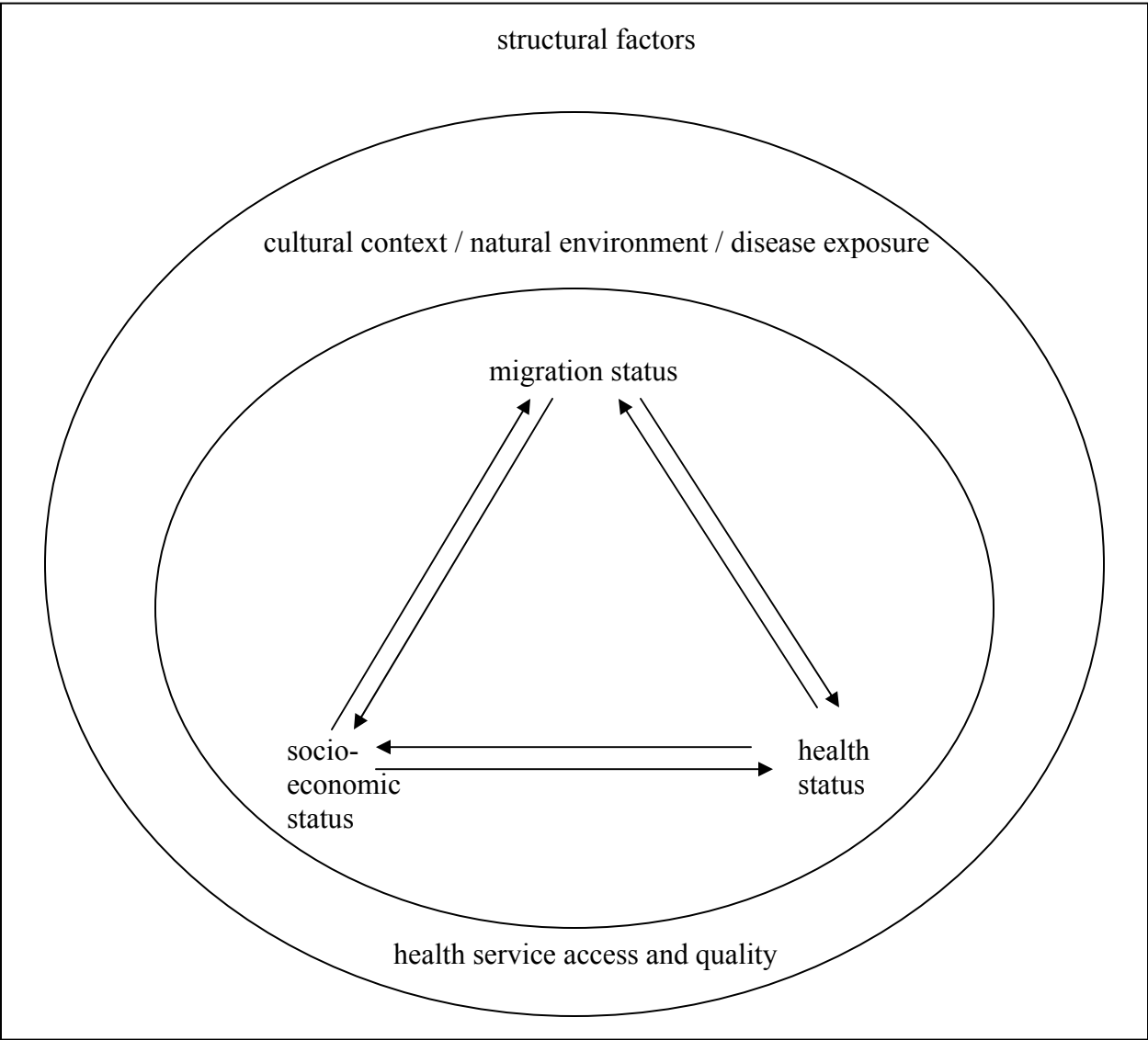


Figure 2. Trends in proportion migrant worker or migrant work seeker at the time of the census, Agincourt, 1992-2001

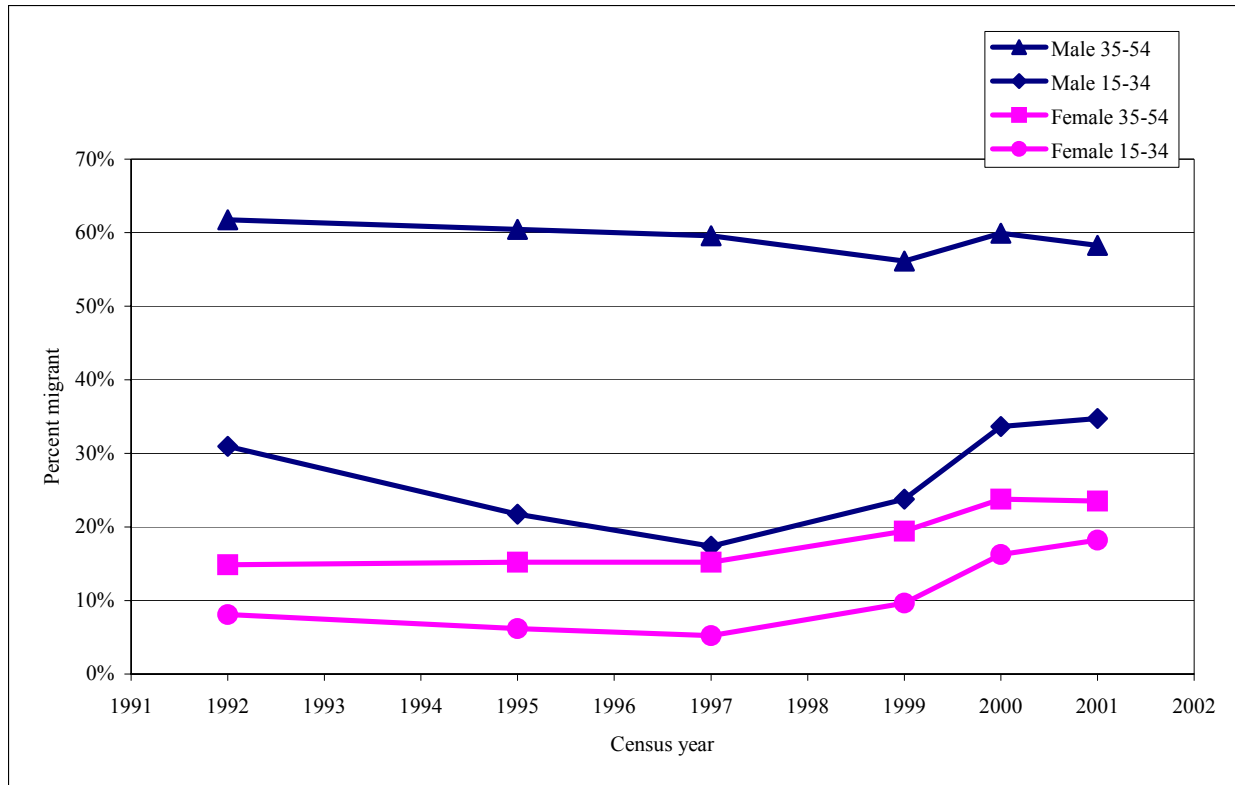


Figure 3.

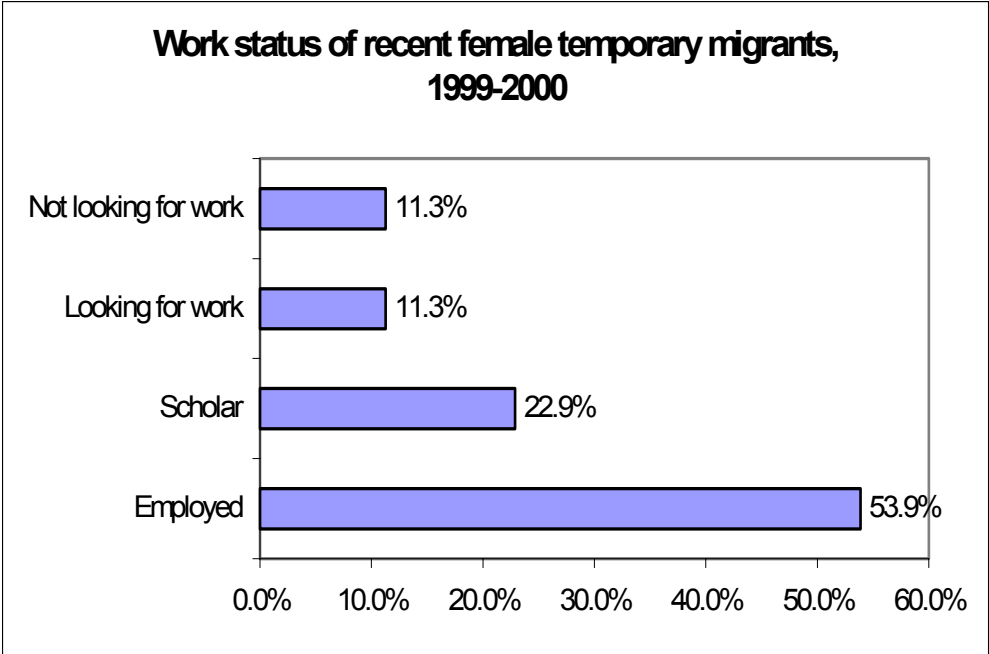


Figure 4. Percentage reporting 0, 1 or 2+ sexual partners in the last year by work status

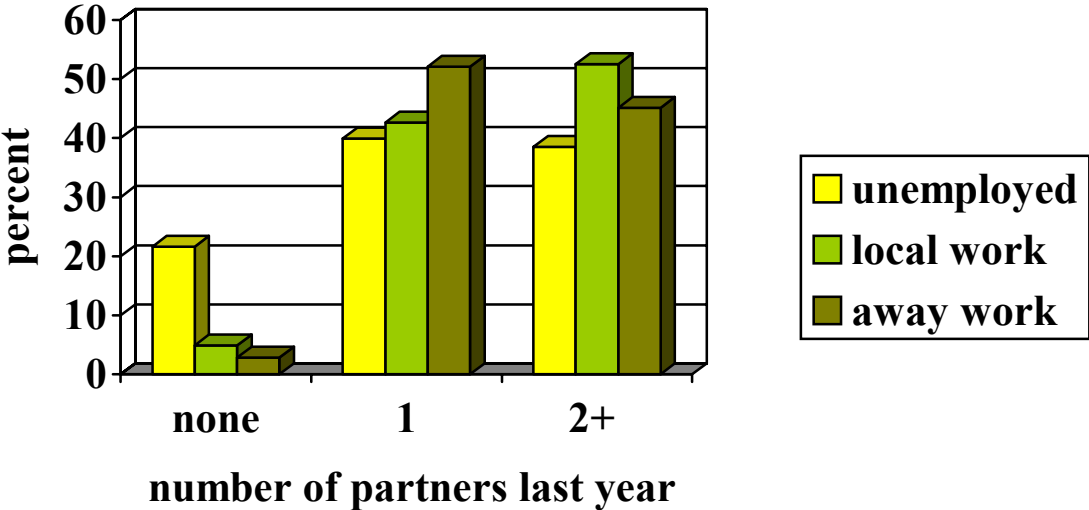


Figure 5. Multivariate odds of reporting two or more partners in the last year

	Model 1 **		Model 2 **	
	OR	p	OR	p
Local employed	1.00	--	1.00	--
Local unemployed	0.64	(.058)	0.66	(.071)
Working away	0.58	(.075)		
-- return < 3 times	--		1.57	(.290)
-- return 4-9 times	--		0.65	(.195)
-- return monthly	--		0.47	(.024)
-- non-numeric	--		0.30	(.005)
Log likelihood	-568.5		-560.2	
N	857		857	

** Controlling for ever worked away, age, education level, current marital status, and Mozambican nationality

Figure 6. Perceived risk of HIV infection by migrant status

