

Title: The association between migration and mortality among 15 to 49 year-olds in the rural Umkanyakude district of KwaZulu Natal, South Africa.

1. Background

The study uses data from the Africa Centre Demographic Information System (ACDIS), a surveillance system following approximately 89,000 individuals in a rural, highly mobile population with high rates of AIDS mortality. Since 1st January 2000, all births, deaths and in/out-migrations have been recorded at four monthly household visits. Cause of death is established by verbal autopsy for resident and non-resident household members.

2. Objectives

The primary aim of this research was to investigate the association between migration and mortality for individuals aged between 15 to 49 years of age, who were members of households in the DSA between 1st January 2000 to 31st December 2001. The hypothesis was that adult migrants have a higher risk of mortality than non-migrant members. A secondary aim was to assess the extent to which this association differs if the death is the result of AIDS.

3. Methods

This analysis deals with 48,633 individuals who were members of households in the Demographic Surveillance Area (DSA) between 1st January 2000 to 31st December 2001 and aged between 15 to 49 years of age as of 1st January 2000. During this period of observation there were 1,465 deaths recorded. Three categories of members have been defined for the purpose of this analysis. Members who started residency on 1st January 2000 and whose membership and residency end dates were coterminous, or extended beyond the period of investigation, have been defined as always resident in the DSA. Members who never reported an episode of residency during 2000 and 2001 have been defined as never resident in the DSA. Members who were either always or never resident, are collectively defined as non-migrant members as they did not change residency status during the period of observation. Any member with a residency start date after 1st January 2000 (in-migrated), or who ended residency before the end of their membership if their membership ended before 31st December 2001 (out-migrated), or reported multiple episodes of residency during 2000 or 2001, have been defined as migrants.

4. Results

Based on episodes of residency, household members were categorised as migrant (if they in/out-migrated at least once during the observation period) (41%), never resident (32%), or always resident (27%). 53% of the study population were women, with a sex ratio of 0.87. This differed per residency status with women accounting for 57% of migrants, 57% of always resident members, and only 45% of never resident members. If we compare migrants to members who are never resident in the DSA, we see that women are 38% less likely to never be resident in the DSA than men (OR: 0.62; P-value:0.00). It is also noteworthy that men were 51% more likely to be employed than women. A number of individual and social characteristics altered the direction of the association to migration whilst retaining statistical significance. For example employed members are 39% less likely to be migrants compared to non-migrants, but 19% more likely to be migrants compared to members who are always resident. These changes highlight the distinct characteristics between non-migrants who were always resident and non-migrants who were never resident. For the purpose of consistency, age was calculated as of 1st January 2000, and the average age of the sample on that date was 27.5 (SD: 9.36, Range 15-49). 50% of migrants were under 24 years of age, compared to 41% of never resident members, and 44% of always resident members.

During the period of observation, 1465 deaths were reported. The overall mortality rate was 30 per 1000 members. The mortality rates for migrants, members never resident, and members always resident, were 21, 33, and 42 per 1000 respectively. Counter to the hypothesis of this research, migration reduced the risk of mortality by 44% for migrants compared to non-migrants, 51% for migrants compared to members who were always resident, and 37% for migrants compared to never resident members. Never resident members had a 22% lower risk of mortality than members who are always resident. Sex, age, educational status, employment status, and relationship to household head are all associated to both migration and mortality. The difference between the mortality rates of residency categories remained statistically significant after controlling for all of these factors, although after adjustment the protective factor against mortality for migrants compared to always resident members increased (61%) and decreased compared to never resident members (28%). After adjusting, the difference in mortality between never resident and always resident members increased further (48%). We can therefore conclude that within the context of this study, members who are always resident in the DSA have the highest risk of mortality.

Within the sample population, AIDS accounted for 68% of all deaths, attributable to 55% of female deaths and 45% of male deaths. Migrants had a 45% higher chance of dying of AIDS than a non-HIV related disease when compared to members who were always resident. Never resident members had a 54% higher chance of dying of AIDS than a non-HIV related disease when compared to members who were always resident (Unadjusted OR: 1.51; Adjusted OR: 1.54; Adjusted P-value: 0.019). The difference between migrants and non-migrants (Adjusted OR: 1.23; P-value: 0.22), and migrants and never resident members (Adjusted OR: 0.94; P-value: 0.77) was not significant in univariate or multivariate analysis. The highest risk of dying of AIDS occurred in the 25 to 29 year old age-group, except for comparing migrants to never-resident members where the risk was higher for 30 to 34 year olds. This difference probably relates to the predominance of males as never resident members. Difference in risk for 15 to 39 year-olds remained significant throughout the analysis. Interestingly sex only remained significant in the multivariate model assessing the association between always and never resident members, where females had a 35% higher risk of dying of AIDS (Unadjusted OR: 0.68; Adjusted OR: 0.65; P-value 0.03). After adjustment, there was no statistically significant association to AIDS related death for age groups 40 to 49, current educational status, current employment status, or relationship to head of household. Given the above analysis we can conclude that in this sample, always being resident in the area increases the risk of mortality, but decrease the risk of dying of AIDS compared to migrants and never resident members.

The research also looked at rudimentary patterns of in and out migration prior to death. Of the 1,465 deaths reported in this study, 560 (38%) were not resident in the DSA at the time of their death. Of these, 53 (9.5%) out-migrated prior to death, and for all but 1 it was their first out migration in the period of observation. 31 of these had originally in-migrated after 1st January 2000 before out-migrating prior to death. The average time period from out migration to death was 119 days (SD: 111; Range 2-471). Of the members who out-migrated prior to death 79% of deaths occurred within 6 months of out-migration, with 36% in the first month. Of those that out-migrated within 6 months of death (42), 55% were female, 43% were aged between 20 to 29, and 79% were AIDS deaths. Interestingly 53% of the total number who out-migrated prior to death were reported as dying at home, inferring that the household at which they were a member in the DSA was not considered the primary "home".

Of the 905 members who were resident in the DSA at the time of death, 356 (39%) members in-migrated prior to death, only 4 of which were return migrants. The average time period from in-migration to death was 297 days (SD: 200; Range 1-716). Overall 125 (35%) of these residencies commenced within 6 months of death, with 17% dying within 1 month of arriving in the DSA. Of these 125 members, 59% were female, the majority were between the ages of 25 to 39 (63%), and 76% died of AIDS. 56% of the deaths occurring within 6 months of residency in the DSA occurred at home, with only 31% at a hospital. Of all migrants who returned within 6 months prior to death, 22% (27) died at Hlabisa hospital.

5. Conclusion

The relationship between migration and mortality is complex in an area with both a high prevalence of HIV and a well established pattern of labour migration. This study supports the findings of other studies suggesting that migration is associated with a higher risk of HIV infection. However, adult migrants have a lower risk of dying from all non-AIDS causes. The protective effect of employment for young adult survival is therefore undermined by increased HIV infection risk.