Do rural-to-urban migrants experience a faster accumulation of cardiovascular risk factors compared to the urban born?
Evidence from Chennai, India

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INTRODUCTION

Rural-to-urban migration is one of the most prominent demographic trends in low- to middle-income countries (LMICs). In India, the share of the population living in urban areas has increased from under 25\% in 1985 to over 30\% in 2014 (1). The prevalence of chronic non-communicable diseases (NCDs) has also been growing at an alarming rate in India and other LMICs (2). This growth in disease is especially pronounced in cities: for example, as of 2006, cardiovascular disease (CVD) is the leading cause of death in all adult age groups in urban India for both men and women (3). As rural-to-urban migrants become an increasingly large segment of urban dwellers, understanding nuances in disease risk in this population has implications for urban health systems trying to manage the ever-growing burden of NCDs.

The existing literature on differences in CVD risk factors between rural-to-urban migrants and the urban born in LMICs is mixed, with studies finding migrant advantages, disadvantages, and no differences. Since many CVD risk factors, such as diabetes and hypertension, vary strongly by age, comparing mean measures of CVD risk factors between rural-to-urban migrants and the urban born may mask important migrant/non-migrant differences in the pace of CVD risk factor accumulation. Age differences in cardiovascular risk factors across and within populations may also explain why some studies find migrant health advantages while others do not.
Our correspondence describes migrant/non-migrant differences in the age-profile of four important CVD risk factors (diabetes, hypertension, hypercholesterolemia, and unhealthy weight) in Chennai, India. Our main goal was to see if preliminary descriptive evidence supports the hypothesis that rural-to-urban migrants experience a faster accumulation of CVD risk factors compared to the urban born.

MATERIALS AND METHODS

Data

Data for this analysis were from a subsample of 535 individuals from the Chennai cohort of the Centre for Cardiometabolic Risk Reduction in South Asia (CARRs) Study. Our primary outcomes were: diabetes, hypertension, hypercholesterolemia, and high waist circumference. Diabetes, hypertension, and hypercholesterolemia were based on self-reported prior physician diagnosis, reported medication use, and standard cut-offs for clinical biomarkers; high waist circumference was based on anthropometric measurements and the World Health Organization cutoffs for the Asia-pacific region. We chose waist circumference over body mass index based since studies indicate it may be a better indicator of unhealthy weight (4). Individuals were classified as rural-to-urban migrants if they were born in a rural area before moving to Chennai. Our final sample contained 121 migrants and 414 urban-born individuals.

Statistical Methods

We measured differences in the pace of cardiovascular risk factor accumulation by estimating migrant/non-migrant differences in the age-profile of each outcome. Given the small size of our sample, we estimated the age-specific prevalence using a logistic regression model with a continuous indicator of age so that we were powered to provide a clear picture of how the prevalence of risk factors vary over age.

RESULTS

Figure 1 graphs the difference in the predicted probability of each CVD risk factor between migrants and non-migrants by age and separately for men and women. For women, we find large migrant/non-migrant differences in the age-profiles of diabetes and hypertension. Between the ages of 25 and 40, migrant and non-migrant women have very similar levels of all four risk factors. However, after age 40, migrant women have a much higher prevalence of hypertension (between 15-25 percentage points higher in older age groups, p<0.05) and diabetes (between 10-20 percentage points higher in older age groups, p<0.05). In contrast to women, migrant and non-migrant men had similar age-profiles of all four risk factors.

CONCLUSIONS

Results from this preliminary exploration of migrants and non-migrants provide suggestive evidence that migrant women may experience accelerated onset of CVD risk factors compared to the urban-born. Given these results, important questions remain as to what explains these differences? Since migrants at older ages have likely lived in urban areas longer than younger migrants, one possible explanation is duration of residence in urban areas.
areas. Studies that have examined duration of residence find that the health of recent migrants starts off better than urban born but eventually converges to the urban born with increased time spent in urban areas (5). However, duration of residence seems an unlikely explanation for our patterns since we find that diabetes and hypertension prevalence among migrant women do not converge with but actually become much higher than the urban-born over age.

These results are preliminary and should be interpreted as suggestive since our data have limitations. However, we believe that these results motivate further inquiry into migrant/nonmigrant differences in the pace of CVD risk factor onset in LMICs. Larger-scale representative data with information on duration of residence for multiple birth cohorts would greatly help disentangle age, duration, and cohort effects.

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REFERENCES