CV Risk Factors in Rural-to-Urban Migrants Versus the Urban-Born in South India

Rural-to-urban migration is among 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 <25% in 1985 to >30% in 2014 [1]. The prevalence of chronic noncommunicable diseases 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 noncommunicable diseases.

Existing research 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. Because 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/nonmigrant 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 whereas others do not.

Our correspondence describes migrant/nonmigrant differences in the age profile of 4 important CVD risk factors (diabetes, hypertension, hypercholesterolemia, and unhealthy weight) in Chennai, India. Our main goal was to see whether preliminary descriptive evidence supports the hypothesis that rural-to-urban migrants experience a faster accumulation of CVD risk factors compared to the urban-born.

Data for this analysis were from a subsample of 535 individuals from the Chennai cohort of the CARRS (Centre for Cardiometabolic Risk Reduction in South Asia) 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 cutoffs 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 because 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.

We measured differences in the pace of cardiovascular risk factor accumulation by estimating migrant/nonmigrant 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.

The difference in the predicted probability of each CVD risk factor between migrants and nonmigrants by age, separately for men and women is depicted (Figure 1). For women, we find large migrant/nonmigrant differences in the age profiles of diabetes and hypertension. Between the ages of 25 and 40, migrant and nonmigrant women have very similar levels of all 4 risk factors. However, after age 40, migrant women have a much higher prevalence of hypertension (between 15 and 25 percentage points higher in older age groups; $p < 0.05$) and diabetes (between 10 and 20 percentage points higher in older age groups; $p < 0.05$). In contrast to women, migrant and nonmigrant men had similar age profiles of all 4 risk factors.

Results from this preliminary exploration of migrants and nonmigrants provide suggestive evidence that migrant women may experience accelerated onset of CVD risk factors relative to urban—born women. Given these results, important questions remain as to what explains these differences? Because migrants at older ages have likely lived in urban areas longer than younger migrants have, a possible explanation is duration of residence in urban areas. Studies that have examined duration of residence find that the health of recent migrants starts off better than the urban-born but eventually converges to the levels of the urban-born with increased time spent in urban areas [5]. However, duration of residence seems an unlikely explanation for our patterns because 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 because 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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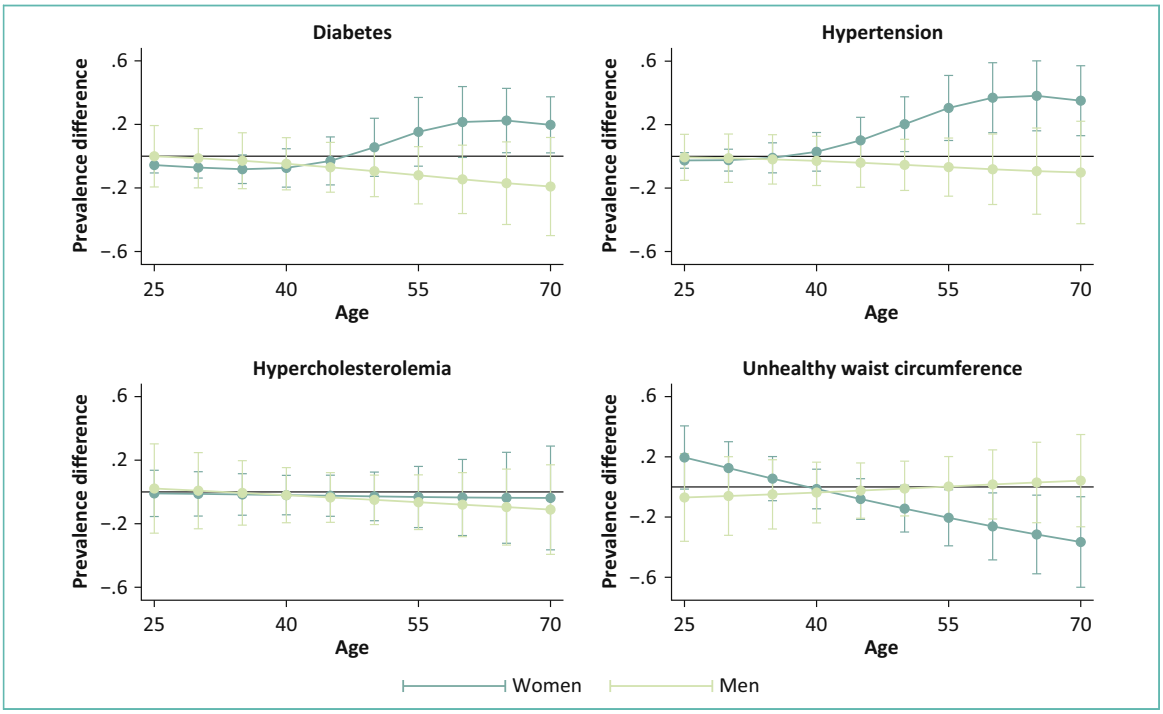

FIGURE 1. Estimated migrant/nonmigrant differences in the prevalence of cardiovascular risk factors over age. Chennai, India, 2010, N = 535.

Institutes of Health's Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Nikkil Sudharsanan, Philadelphia, PA, USA;*
Lulu Tian, Atlanta, GA, USA;
Emily Ambinder, Atlanta, GA, USA;
Alex Ambinder, Atlanta, GA, USA;
Neil K. Mehta, Atlanta, GA, USA;
Rajendra Pradeepa, Chennai, India;
Mohan Deepa, Chennai, India;
Viswanathan Mohan, Chennai, India; and
Mohammed K. Ali, Atlanta, GA, USA
**Correspondence: N. Sudharsanan (nsud@sas.upenn.edu)*

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