A Large-Scale Binational Survey of International Migrants from Rural Bangladesh: Preliminary Evidence on Migration Costs, Earnings and Health

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The literature on migrant health is gravitating towards a social-ecological model that accounts for self-selection, structural conditions and the context of origin and destination in understanding the consequences of migration (Acevedo-Garcia et al. 2012; Abraído-Lanza et al. 2016). This theoretical progress has come in tandem with a call for binational panel surveys of migrants and non-migrants that can account for self-selection, baseline factors and trip characteristics in estimating the effects of migration on health and well-being (Beauchemin 2014). The few existing binational surveys tend to include small migrant samples (Rubalcava et al. 2008), purposive migrant samples (Beauchemin and Gonzalez-Ferrer 2011) or are just now collecting data (Ghimire et al. 2017). Few contain extensive health data, and even fewer contain health indicators at baseline.

Using two rounds of survey data from the Matlab Health and Socioeconomic Survey (1996, 2012), we compare the health and livelihoods of international migrants, primarily but not exclusively contract guest workers, to non-migrants and internal migrants from the same representative sample drawn in 1996. To our knowledge, this is the largest binational panel study of migrant health ever conducted. It is also, along with Ghimire et al. (2017), the first study of guest worker health and the first study of migrants to the Persian Gulf region to use either longitudinal or comparative data. Our study addresses three key questions:

1) Do migrants achieve better or worse health outcomes than non-migrants and internal migrants from the same group?
2) Do effects persist after controlling for prior differences in health and self-selection into migration based on prior characteristics of the migrant and sending family?
3) To what extent can differences be explained by country of destination, current vs. return migration status, duration overseas, livelihoods and migration costs?

We address outcomes relating to general self-rated health, injury, hypertension, depression, and risk factors such as smoking and obesity. We briefly review the theoretical background, context and contributions of our work before describing our methods and presenting initial results.

Background

Recent studies of migrant well-being have recognized the importance of comparing migrants and migration-affected populations to a no-migration counterfactual comparison group, to answer the basic question "is migration good for your health?" (Jasso et al. 2004; Feliciano 2005; Akresh and Frank 2008). After accounting for self-selection, a counterfactual model using panel data can isolate net changes over time for migrants relative to trajectories in the absence of migration (Riosmena, Palloni and Wong 2013; Riosmena, Kuhn and Jochem 2016). Because so few binational surveys exist, the literature on migrant health has depended largely on cross-sectional designs, retrospective reporting, comparisons to the host population, or matching migrants and non-migrants across samples (Bosdriesz et al. 2013; Riosmena, Kuhn and Jochem 2016). Given

the methodological challenges facing these studies and the continued struggle just to account for self-selection across context, these studies have yet to give rise to a systematic or generalizable set of conclusions regarding the health consequences of migration on migrants. Only a handful of studies of internal migration have applied panel data to study migrant health (Lu and Qin 2014).

Along with Ghimire et al. (2017), our study is also the first to address the serious but poorly understudied conditions of health, well-being and human security affecting both temporary guest workers. Although scientific estimates are scarce, one source suggests that there were 66 million temporary guest workers in the world in 2017, constituting about ¼ of global migrants, including a rapidly growing share of migrants OECD countries. Temporary guest workers in any setting face a unique set of legal conditions, given that their right to remain a country is linked entirely to their employment and thus to their relationship to their employer. Concerns have also been raised about the welfare of return migrants. While some argue that many migrants return only after having achieved certain targets, others raise concern that returning to the origin area can lead to culture shock, identity threat and relived trauma of past migration experiences.

These concerns have been especially loud for low-skill guest workers in emerging economies, particular the oil-rich states of the Gulf Cooperation Council (GCC). Popular attention has recently focused on the harsh occupational and human rights conditions facing guest workers in the GCC, with numerous reports and rights campaigns alleging untold levels of peril. Ethnographic research documents the threats to human rights and the potential consequences for well-being of the *kafala* system of labor sponsorship in which legal permission to live in the country is held by the employer (Longva 1997, Strobl 2009). Yet few quantitative surveys have addressed these issues, owing both to the difficulty of conducting in-person field research in GCC states and more specifically among guest workers themselves. A recent systematic review of all studies related to migrant mental health in the Gulf – including antecedents of mental illness such as occupational risk, exploitation or abuse – identified fewer than a dozen articles published between 2002 and 2010 (Kronfol, Saleh and Al-Ghafry 2014).

Data

The study uses two rounds of panel survey data from the Matlab Health and Socioeconomic Survey (MHSS), with MHSS1 conducted in 1996-97 and MHSS2 conducted in 2012-14. Matlab is the site of the Matlab Health and Demographic Surveillance System (MHDSS), the longest-running vital registration system in the Global South, instituted by the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b). HDSS provides prospective records from of all birth, death, marriage and migration episodes in a 141-village study area. HDSS confers numerous advantages for the collection of high-quality health survey data, including 1) precise age data for individuals born since 1974; 2) prepopulated data on past demographic events; 3) long-term baseline data from censuses conducted in 1974 and 1982; 4) documentation of high-impact health and development interventions that affect migration; and 5) spatial and kinship linkages that can be used to control for prior human capital and social networks of immediate kin, extended family and village as controls for long-term status and drivers of self-selection.

In 1996-1997, the Matlab Health and Socioeconomic Survey (MHSS1) was conducted with NIA/NICHD funding by icddr,b, the University of Colorado Boulder (CU), and partner

institutions. MHSS1 collected detailed data on health, social, demographic, and economic outcomes for 2,637 MHDSS households, a 7% sample. For the purposes of this study, MHSS1 included data on migration, household economics, kinship, remittances, schooling and health. MHSS1 also included a community and facility survey in the area. MHSS1 data provide individual and parental baseline data for key outcomes of interest and data for models of self-selection into migration.

MHSS2 was conducted from September 2012 to December 2014. The survey was designed to facilitate evaluation of the impacts over 35 years of the Matlab Maternal and Child Health / Family Planning (MCH/FP) program and subsequent high-impact health and development interventions. MHSS2 included all individuals surveyed in MHSS1 and their descendants, along with a small sub-sample of individuals who left Matlab prior to 1996 and thus were not included in MHSS1. MHSS2 included survey measures of migration, migrants living conditions, employment, a wide range of self-reported health measures (general health, activities of daily, chronic morbidity and subjective well-being); non-invasive anthropometric and biomarkers (Body Mass Index, blood pressure, grip strength) and extensive psychometric testing (CES-D depression scale, digit span test of cognitive performance, and personality indicators). The panel data from MHSS1/MHSS2 can also be linked back to censuses conducted in 1974 and 1982 to account for long-term variations in health and the propensity to migrate.

MHSS2 aimed to capture as many migrants out of the MHDSS study site, initially focusing on internal migrants but quickly expanding to international migrants. Efforts to track migrants were motivated by general concerns about statistical power and attritions bias in an area of extraordinarily high out-migration, along with the specific concern that the MCH/FP program itself had resulted in lower rates of out-migration in treatment versus comparison area (Barham and Kuhn 2014). Migrant tracking was carried out in four phases: 1) as part of the regular fieldwork, 2) through a rapid response method aimed at maximizing familial connections to quickly complete interviews with migrants; 3) interviews with returning overseas migrants and migrants in faraway domestic locations during the Muslim Eid festivals; and 4) a 30-minute phone survey that captured a subset of key survey questions. As a result, we were able to interview 92% of all surviving MHSS1 respondents, including 87% of international migrants and 91% of rural-urban migrants. A separate paper addresses the data quality of income, height/weight and CES-D scores for festival interviews and phone interviews. These results suggest high validity of income and height/weight reports.

Our study focuses on males born from 1958 to 1992, meaning that they were age 20-54 at the time of MHSS2. Table 1 shows that we began with 5,086 MHSS1 respondents, of whom 4,685 (92%) were successfully tracked to their current location or the location at the time of death. Of these cases, 52% remained in Matlab or the home district of Chandpur, 30% had migrated internally, and 18% had migrated abroad. Mortality was rare in this relatively young sample, with 137 respondents dying (2.7% of total). Figure 1 presents estimates of mortality by migration status and finds that modest reductions in mortality associated with overseas migration. These effects are large in magnitude but significance is only modest. Nonetheless, we observe no excess migration among overseas migrants, and this allays concerns about selective mortality bias. The resulting sample includes 4,548 respondents with 842 current overseas migrants (and 218 former overseas migrants), 1,372 internal migrants and 2,333 non-migrants.

Methods

Initial models use OLS and logistic regressions to estimate the health and well-being of overseas migrants in comparison to individuals who had not migrated or had migrated internally. Key outcomes of interest include income, mental health, occupational injuries and chronic disease risk factors. We also examine variations in mortality to rule out mortality selection as a mechanism driving our results. We begin with a simple regression design of the following form

$$Y_{i,2} = \alpha + \beta_1 * Mig_{i,2} + \beta_2 * I_{i,*} + \beta_3 * I_{i,1} + \beta_4 * I_{i,2} + \beta_5 * F_{i,0} + \varepsilon$$

Where Y is the outcome of interest for person i at time 2 (MHSS2), $Mig_{i,2}$ is the respondent's migration status (overseas internal, internal migrant, return migrant, non-migrant) at MHSS2, $I_{i,*}$ are time-invariant individual characteristics (year of birth, religion), $I_{i,1}$ are individual characteristics measured in 1996 in MHSS1 including schooling and health, $I_{i,2}$ are individual characteristics measured in MHSS2 including school, health, cognition and non-cognitive assessments, and $F_{i,0}$ are family of origin characteristics measured in 1974, to further account for family histories of advantage or disadvantage. In this abstract, we report results for the main effects of migration status and not the controls. We present results in the form of marginal predictions of the outcome variable for each migrant status group, holding all other variables at the mean, thereby allowing for ready comparison of differences and levels.

Additional models in the final paper will take a variety of strategies for accounting for self-selection. First, we will simply assess the possible presence of health selection into migration

$$Mig_{i,2} = \alpha + \beta_2 * I_{i,*} + \beta_3 * I_{i,1} + \beta_4 * I_{i,2} + \beta_5 * F_{i,0} + \mu$$

Following the lead author's earlier work using propensity score matching to estimate the effects of migration net of self-selection (Kuhn, Everett and Silvey 2011, Riosmena, Kuhn and Jochem 2016), we will reestimate models using a propensity score matching procedure that accounts for observable sources of self-selection into migration. Finally, if these results reveal the potential for further unobserved heterogeneity, we will explore the use of a two-stage instrumental variables approach that identifies selection into migration on the basis of MCH/FP program participation, oil price shocks, and measures of migration-specific social capital.

Within the group of overseas migrants, we also explore variation by current vs. return migration status, country of destination and duration of migration. We exploit country-level variations in guest worker rights regimes across a continuum including Saudi Arabia (most restrictive), other GCC states, United Arab Emirates, and Singapore and Malaysia (least restrictive), with migrants to other countries (including Europe, US, Australia, and East Asia) acting as a further comparison group. Among 1,060 respondents currently or formerly abroad, the distribution of last known location was 27% in Saudi Arabia, 25% in United Arab Emirates, 18% in other GCC countries, 20% in Singapore or Malaysia, and 10% in other countries.

Preliminary Results

Table 2 reports selected migrants trip characteristics by country of destination. The vast majority of migrants across all destinations had work permits and used a manpower agency to gain their visa and employment. Few migrants are in possession of their own passports (17%), with the lowest share in Saudi Arabia (10%) and UAE (10%) and the highest share in other destination countries (42%). Only a small percentage can read and write the local language, ranging from just 1% in other GCC to countries to 17% in other destination countries. About half of the respondents lived in company housing, ranging from 38% in other GCC countries to 56% in Singapore/Malaysia.

Table 3 reports the distribution of key economic and health outcomes by migration status. Overseas migrants earn about four times more than non-migrants and 2.5 times more than internal migrants. Work effort is high for all groups, but overseas migrants work only slightly longer hours than internal migrants. We note that return migrants earn comparable or higher wages than non-migrants on slightly fewer hours worked. Further analysis of income will estimate the return on investment (ROI) relating annual income to migration costs. Earnings are highest in Singapore/Malaysia and other destinations, but so are costs. Migrants to Saudi Arabia pay about the same as migrants to UAE and other GCC destinations, but earn about 20% more per year and per hour. This may suggest either that deeper stocks of destination-specific social capital to Saudi Arabia reduce migration costs, or that the relative hardships migrants face in Saudi Arabia A deeper exploration of the income distribution for current migrants reveals that the vast majority (>90%) earned more in a year than their total migration costs, while fewer than 2% were unemployed or unpaid.

The lower panels of Table 3 evaluate the association between migration status and a number of health measures. Current international migrants are 60% less likely to report poor general health status than non-migrants (6.2% vs. 15.6%, significant at the $p<0.001$ level). Compared to non-migrants, both international migrants and internal migrants are about half as likely to report an injury, with both effects significant at the $p<0.01$ level. When considering only work-related injuries, the magnitude of the migrant advantage is reduced and results are no longer significant. But clearly these results run counter to the perception of guest worker employment as being prone to excess risk of injury. Overseas migrants are significantly less likely to be a current smoker (29.0% vs. 37.7% for non-migrants), an effect that is largely explained by migrants to Saudi Arabia.

We next turn to objective health measures, which were only conducted during in-person interviews and thus exclude migrants who answered the phone survey. Current international migrants are 80% less likely than non-migrants to present a mobility limitation than non-migrants (4% vs. 20%, significant at the $p<0.001$ level). They also appear to be strong, with a lower likelihood of having a grip strength below <36 kgf (17.1% vs. 26.2%, significant at $p<0.05$ level). On the other hand, both international and internal migrants are more likely to be overweight than non-migrants (23.9% and 20.9% vs. 14.1%), but they are no more likely to be obese. Finally, current international and internal migrants are substantially more likely to have stage 1 hypertension based on blood pressure tests (16.8% for international, 11.9% internal, 7.2% for non-migrants).

We note few statistically significant differences between return migrants and non-migrants, due in part to the relatively small sample size for this group. On most indicators, including those that favored or disfavored international migrants, return migrants tended to sit in between international migrants and non-migrants. Contrary to expectations that return migrants might be severely disadvantaged upon their return, they appear to be neither advantaged nor disadvantaged.

Finally, we turn to measures of mental health. Figure 2 reports the kernel density estimates of aggregate CES-D scores by migrant status and mode of interview. Contrary to our concerns about the validity of phone survey responses, these results suggest that the greater threat comes from the timing of festival interviews. Because interviews are conducted at the one time in a 3-year period in which respondents are reunited with family and friends, levels of mental health are substantially more positive than any other group, including phone survey respondents. We, therefore, exclude festival interviews cases from our analysis of mental health.

Table 4 presents estimates of composite CES-D score and selected component items by migrant status. Composite CES-D scores are comparable for international migrants and non-migrants, but internal migrants report lower levels of depression. Unpacking the composite score reveals unique patterns for overseas migrants. In terms of positive dimensions, overseas migrants report substantially better outcomes for happiness, hopefulness and enjoyment. In each case overseas migrants report nearly an extra day of positive feelings compared to non-migrants and returned migrants. On the other hand, international migrants also report an additional day of feeling lonely compared to all other groups (1.5 days vs. 0.6 for non-migrants, 0.5 for internal migrants). Further analysis will also explore dimensions of personality including fatalism, which is significantly higher among international migrants.

Brief conclusion

Analysis is still proceeding, but we are beginning to piece together a narrative of the health and well-being of overseas guest workers that fits well with the existing literature on migrant health and runs counter to widespread popular expectations of a crisis of migrant well-being. Most notably, migrants are far less likely to have experienced an injury. Although the work that many migrants carry out is dangerous both in perception and reality, the counterfactual of remaining in Matlab or moving to Dhaka carries physical perils as well. On measures of general health, overseas migrants are dramatically healthier, due no doubt in large part to positive selection. Selection models and analysis of mediating pathways will further substantiate this. They also bring an irrepressible attitude, call it a thick skin, that is reflected in measures of happiness and fatalism. Yet in spite of these advantages that migrants carry with them are enduring, there is evidence of substantial wear and tear on the bodies and minds of migrants, as evidenced by higher risk of overweight, stage 1 hypertension and higher levels of reported loneliness. While these raise cause for concern, the intermediate levels of metabolic and mental health among returned migrants point to a high level of resilience to the perils of the trip. Further research will need to look more closely at better indicators of exposure to trip and work-related risks (e.g., occupational and environmental risk, abuse), additional measures of health, and measures of satisfaction and subjective well-being.

Table 1: Respondent migration status at time of resurvey

Group	Cases	Percent of those located
MHSS1 respondents	5,086	
Interviewed or located	4,685	
Last known location:		
Non-Migrant	2,413	52%
Internal migrant	1,412	30%
Overseas migrant	860	18%

Table 2: Selected migrant trip characteristics, by destination country

Country	Visa/ Work permit	Used manpower agent	Keeps passport	Read/write local language	Lives in company housing
Saudi Arabia	92%	97%	10%	7%	47%
UAE	93%	97%	10%	2%	55%
Other GCC	92%	98%	18%	1%	38%
Sing/Malaysia	94%	98%	19%	13%	56%
Other	92%	93%	42%	17%	49%
Total	93%	97%	17%	6%	49%

Table 3: Estimates of key livelihood and health outcomes, by migrants status
Marginal predictions from regression models

| Status	Non-migrant	Internal migrant		Current International migrant		Returned International Migrant
Hours and Wages						
Income	$1,277	$1,877	***	$5,115	***	$1,408
Hours worked	51	60	***	62	***	46
Hourly earnings	$0.52	$0.66		$1.56		$0.79
Self-reported health measures						
Fair/Poor self-rated health	15.6%	14.6%		6.2%	***	10.2%
Injury	9.6%	5.4%	***	4.7%	**	7.3%
Work-related injury	5.4%	3.8%		3.1%		4.5%
Current smoker	37.7%	38.2%	*	29.0%	**	40.0%
Observed health measures						
Mobility limitation	20.2%	19.0%		4.2%	***	14.4%
Grip Strength < 36 kgf	26.4%	20.8%		17.1%		28.2%
Overweight	14.1%	20.9%	***	23.9%	***	17.0%
Obese	6.4%	4.5%	*	1.3%		5.9%
Hypertension - Stage 1	7.2%	11.9%	***	16.8%	*	9.9%

Note: Marginal predictions from regression estimates controlling for current age, education, survey timing, 1996 covariates
Statistical test of difference from non-migrant: *** $p<0.001$; ** $p<0.01$; * $p<0.05$

Table 4: Estimates of mental health outcomes by migrants status
Marginal predictions from regression model

	Non-migrant	Internal migrant		International, phone		Returned international
Composite score	7.9	7.2	**	8.1		7.6
Positive measures						
Hopeful	3.9	4.0		4.7	***	4.2
Happy	4.2	4.6	***	5.1	***	4.2
Enjoyed the day	3.6	3.6		4.4	***	3.7
Negative measures						
Lonely	0.6	0.5		1.5	***	0.5
Depressed	0.9	0.8		**1.3**		0.9
Unhappy	1.0	1.0		1.2		1.1

Figure 1: Variations in mortality between MHSS1 and MHSS2, by migration status
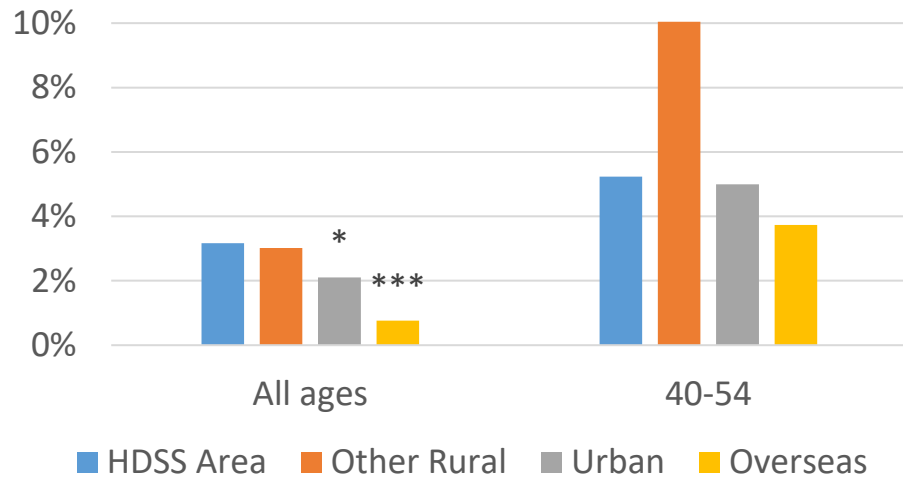
Test of difference from HDSS: *** p<0.001; ** p<0.01; * p<0.05
Models control for age and parental schooling

Figure 2: Kernel density estimate of CES-D scores by migrant status and mode of interview
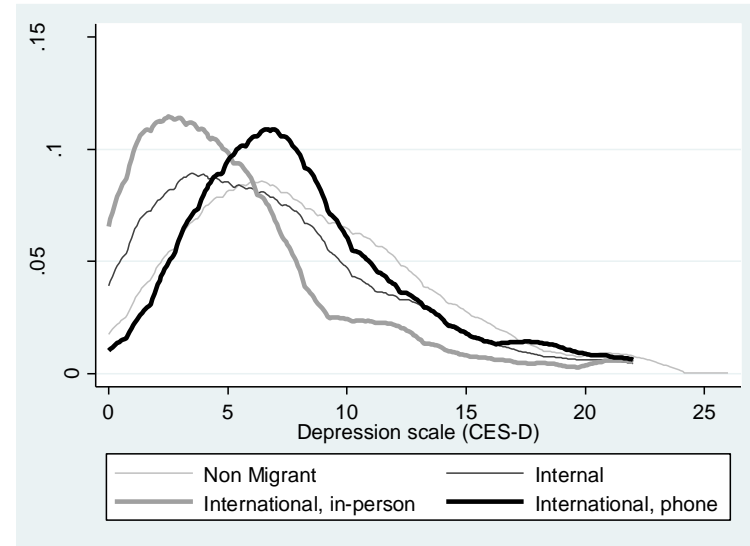
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