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Tracing Long- and Short-term Migrants for Participation in Demographic and Epidemiological Studies: Evidence from Senegal

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Abstract

Migration of participants in demographic and epidemiological studies results in missing data. One approach to reduce resulting losses in statistical power and potential biases is to follow up migrants at their new residence.

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We describe the follow-up of migrants who were eligible for participation in a trial of a new questionnaire to measure adult mortality in Niakhar, Senegal. We conducted a short inquiry in the migrant's last known household to obtain contact information and then attempted to contact and interview 661 migrants who resided in Dakar, Mbour, and rural areas close to Niakhar. About two-thirds of migrants were successfully enrolled in the study. Having a contact phone number and knowing the name of the head of compound at destination increased the likelihood of successful enrollment. Following up migrants in demographic studies is feasible in low- and middle-income countries, including long-term migrants who have not been contacted for extended periods of time.

Globally, there were an estimated 244 million international migrants and 740 million internal migrants in 2017 (International Organization for Migration 2018). Migration is a complex phenomenon with multifactorial linkages to health, economic activity, and social relations. For example, with respect to population health, migration may lead to increases in morbidity and mortality as a result of poorer access to health services and a heightened risk of infectious diseases among immigrants (Bocquier et al. 2011; Levira et al. 2014; Olawore et al. 2018). However, improved housing conditions, socioeconomic status, and education achieved through migration may also foster better health among migrants (Byass et al. 2013; Ginsburg et al. 2016). Understanding these multidirectional relationships between migration and health requires longitudinal study designs in which individuals are observed, both in their origin and destination communities (Anglewicz et al. 2017).

Migration also often represents a major potential limitation in socioeconomic, demographic, and epidemiological studies because it results in loss to follow-up and missing data. It may reduce the statistical power of a study to identify a relation of interest and introduce biases in study estimates if the participants who temporarily or permanently move during follow-up represent a selective subset of the sample population (Egger et al. 2011; Grimsrud et al. 2016; Verguet et al. 2013). Reduced statistical power and bias stemming from migration may be addressed through multiple imputation procedures when data are missing at random (Kim and Yang 2014; Rubin 1976; Wang et al. 2011). However, if loss to follow-up is related to unobserved characteristics of respondents, then data are not missing at random and require more complex adjustment procedures (Andridge and Little 2010; Heckman 1979).

Another approach to alleviating potential biases due to migration in demographic and epidemiological studies is to follow up migrants at their new residence for study enrollment. However, this can be operationally challenging and time-consuming, particularly in low- and middle-income countries (LMICs). As a result, only a small number of cohort studies attempt to follow up migrants with varying levels of success (Anglewicz et al. 2017; Baird et al. 2016; Fuwa 2011; Louis et al. 2012; Tanser et al. 2008; Thomas et al. 2012). Furthermore, these studies primarily focus on following up recent migrants (i.e., individuals who have left their community of origin in the previous one to two years). There is, however, increasing interest in following up individuals who have not been contacted for longer periods of time, particularly in studies concerned with ascertaining long-term effects of childhood exposures that may unfold during adolescence and/or adulthood. Several evaluations have thus sought to contact migrants who have moved out of the area where a trial of a health intervention was conducted, even several decades after completion of the trial (Baird et al. 2016; Barham et al. 2016; Hoddinott et al. 2008).

Unfortunately, few of these studies have reported the factors associated with successful follow-up of migrants who had not been contacted for extended periods of time. A better understanding of these factors would help inform the design and implementation of studies of the long-term effects of childhood exposures and health interventions. Here, we describe the follow-up of migrants during the trial of a new questionnaire to measure adult mortality in LMICs (Helleringer et al. 2014b). This trial was conducted among individuals who had ever participated in a rural population cohort in Senegal, West Africa. We attempted to contact individuals who had migrated out of the area covered by this cohort. Contrary to other studies predominantly focused on recent migrants, we also attempted to contact long-term migrants who had not been followed up for up to 30 years prior to our questionnaire trial. The objectives of the study were twofold: to examine the spatial distribution of migrants based on destination and assess the factors associated with successful migrant follow-up.

Method

Study Setting

Between January and March 2013, we conducted a trial of questionnaires aimed at measuring adult mortality in LMICs. We did so among the

population ever enrolled in the Niakhar Health and Demographic Surveillance System (HDSS; Helleringer et al. 2014b). The Niakhar HDSS was established in 1962 and provides demographic, epidemiological, and socioeconomic information on about 44,000 residents of a rural area east of Dakar (Delaunay et al. 2013). The surveillance site encompasses 30 villages where predominantly Serer people reside. Every few months, trained field staff visit all households in the HDSS area to record vital events and changes in other socioeconomic and health characteristics that have occurred since the last data collection round. The date and place of all deaths among HDSS residents are recorded, and verbal autopsies are performed to ascertain the cause of death (Ba et al. 2003). As in other HDSS, migration events within, into, and out of the surveillance area are recorded and confirmed in the subsequent data collection round (Bocquier 2016). Date, place, and reasons for out-migration are collected; however, no further surveillance data are collected on individuals who have exited the study population. In particular, HDSS interviewers no longer ascertain the vital status of migrants, unless the individuals return to reside in the HDSS area.

Between 2009 and 2011, the Niakhar HDSS had an out-migration rate of 23 per 1,000 person-years at risk (Delaunay et al. 2013). Migration from the Niakhar HDSS has been primarily related to seasonal patterns of agricultural labor, with young adults often seeking employment elsewhere shortly after harvests have been completed, and later returning to Niakhar to prepare fields for planting. Labor migrants from Niakhar often move to areas in Senegal where other former residents of the Niakhar area have settled and found employment (e.g., various neighborhoods in Dakar). International migrations (e.g., to other African countries or to Europe) are rare but might occur after an initial residence in the major urban centers of Dakar or Mbour. More recently, with the expansion of educational opportunities in Senegal, new migration patterns have emerged that are more closely related to the timing of school and university sessions. Finally, marriage is another important reason for migration out of the Niakhar HDSS area, particularly among women. Whereas labor migrants often move to Dakar or other major urban areas, migrations due to marriage frequently take place between neighboring rural villages within a short distance of the Niakhar HDSS area. More detailed descriptions of the patterns of migration in and out of the Niakhar area are available elsewhere (Delaunay et al. 2016; Lalou and Delaunay 2015; Mondain et al. 2016).

Study Procedures

Eligibility for participation in the questionnaire trial was restricted to individuals who were 15–59 years of age at the time of the study and who had ever been registered by the HDSS (regardless of their current residence). The questionnaires on adult mortality tested in the parent trial asked respondents to report deaths among their maternal siblings (Helleringer et al. 2014b). As a result, we excluded individuals who had no known sibling in the HDSS data set because no reference HDSS data on mortality were available for this subset of the population.

The list of HDSS members eligible for inclusion in the trial included individuals who had migrated out of the HDSS area prior to the study, possibly several decades ago. Such migrants were followed up during this trial because we hypothesized that they might report adult deaths that had occurred among their siblings less accurately than nonmigrants who had remained close to the family's residence in the Niakhar HDSS area. This might occur, for example, if migrants have not been in contact with (some of) their siblings for some time. Trial results indicated that migrants omitted to report more deaths during the survey interview than nonmigrants, particularly deaths among their adult brothers (Helleringer et al. 2014b; Helleringer et al. 2015).

Based on the sampling frame of 20,517 eligible individuals identified in the HDSS data sets, 1,580 potential participants representing 1,092 sibships were initially selected using stratified random sampling (Helleringer et al. 2014a). We reviewed registers maintained by the HDSS to extract data on age, sex, residency status, date of entry into the HDSS, location of last known household, and date of exit out of the HDSS for potential participants. Field staff then visited the last known household to enroll selected individuals. For individuals reported to have temporarily or permanently moved outside of the HDSS area at the time of the survey (hereafter referred to as migrants), field staff approached the remaining household members to administer a short migrant inquiry. During this interaction, they collected migrants' contact information including reported destination, contact phone number where the migrant could be reached, and name of the head of the compound where the migrant resided. If no members of the migrant's former household were available (or if the household no longer existed), field staff workers instructed to seek this information from neighbors of the household.

All migrants were potentially eligible for enrollment in the questionnaire trial, regardless of the time elapsed since they last resided within the HDSS

area. However, for logistical and financial reasons, we only followed up migrants selected for study participation who had moved to the highly populated geographic areas of Dakar and Mbour and to rural areas near Niakhar. We refer to these localities as the "tracing area" of this study. Similar to procedures used in other studies that have included migrant follow-up (Anglewicz 2012), we used information reported during the migrant inquiry to contact selected migrants.

If a phone number was available, we called this number to schedule an appointment to conduct the enrollment process and survey. If possible, we asked the household informant to call the migrant immediately after the completion of the migration inquiry (with costs covered by the study team) to inform the migrant about the study and our intention to contact them in person. This process allowed for the verification of the phone number(s) provided and collection of additional phone number(s) in case the initial phone number provided was not functional. Unfortunately, we did not record how frequently initial contact with the migrant was made by the household informant rather than by the fieldworker. However, fieldworkers informally reported greater success in contacting a migrant if the informant made the initial contact than if they did so themselves.

If no phone number was available, we only tried to contact migrants who had moved to rural localities around Niakhar which were included in the tracing area. In such localities, we could potentially locate the migrant by asking for the head of the compound where she or he was said to reside. This strategy was not feasible in highly populated geographic areas of Dakar and Mbour; thus, we did not pursue contacting migrants who had moved to these areas and for whom we did not have a contact number. In total, we made up to three contact attempts for each migrant included in the follow-up. Consent to be contacted for follow-up studies was obtained at time of entry into the HDSS, and consent to participate in the parent trial was obtained from all participants at the point of enrollment.

Analysis

First, we compared the age distribution of migrants and nonmigrants in our study sample by sex. Second, we compared the characteristics of migrants included in the tracing area to those of migrants who were excluded from this area. Some of the characteristics we considered were variables obtained from the HDSS, such as age at the time of survey (categorized as 18–24, 25–34, 35–44, $\geq$45 years), sex, size of the last known HDSS household (categorized as 2–5, 6–7, and $\geq$8 persons), time since first entry into the

HDSS (categorized as <15, 15–29, and ≥30 years ago), and amount of time since exiting out of the HDSS. This latter variable was categorized as less than two years, thus describing recent and temporary migrants typically followed up in studies that have sought to contact migrants (Anglewicz 2012; McGrath et al. 2015; Olawore et al. 2018), versus two or more years ago, thus describing longer-term migrants.

We also included variables obtained during the migration inquiry, such as binary variables indicating whether a contact phone number was provided (yes/no) or whether the name of the head of household at destination was reported (yes/no) and a categorical variable denoting the type of relationship between the migrant and the informant (parent, sibling, or spouse vs. other relations). In this latter variable, the category of other relations was composed of other relatives who were members of the HDSS household where the migrant was last recorded as resident and neighbors of this household. To assess differences between included and excluded migrants, we used χ^2 tests of the association between two categorical variables.

Third, we geo-coded reported migrant destinations by assigning the global positioning system coordinates of the nearest neighborhood and slightly jittering these coordinates to preserve confidentiality. To explore the spatial distribution of migrations flows from the Niakhar HDSS, we mapped the geolocations of migrants using ArcMap version 10.4.1 (ESRI, Redlands, California). Fourth, among migrants who were included in the tracing area, we investigated covariates associated with successful enrollment in the questionnaire trial (yes/no) using univariate and multivariate logistic regressions. In multivariate models, we only retained covariates with a p value <0.2 in univariate analyses. The main independent variable of interest was the binary variable denoting the time since exiting out of the HDSS (<2 years, ≥2 years). To better understand the relations between the likelihood of enrollment in the questionnaire trial and the time since a migrant exited the HDSS area, we calculated the proportion of migrants enrolled in the trial at each duration since exit from the HDSS (in years) and used a Lowess smoother to detect potential trends in trial enrollment associated with duration. In particular, we explored whether the proportion of migrants enrolled in the trial declines with time since exit from the HDSS among the long-term migrants.

Finally, we tested whether the determinants of migrants' enrollment in the questionnaire trial varied between recent and longer-term migrants by including interaction terms in our multivariate model. Associations were expressed as odds ratios with 95% confidence intervals.

All analyses were performed using Stata version 14.1 (Stata Corporation, College Station, Texas).

Results

Among the 1,580 individuals selected for study participation, slightly more than half ($N = 835$, 53%) resided outside the HDSS at the time of the study and potentially required follow-up. While almost two-thirds (60%) of individuals resident outside the HDSS were 25–44 years of age at the time of the survey, less than half (45%) of HDSS residents were in the same age category. Among all migrants, 272 (32.6%) were born into the Niakhar HDSS. Others were either already present at the time the first HDSS census was conducted or entered the HDSS through in-migration. The time since exiting the HDSS ranged from 0 to 30 years, with about half of selected individuals having left the Niakhar area (either temporarily or permanently) within the previous year (Figure 1). Compared to females, a higher proportion of males had exited the HDSS within the preceding year, suggesting gendered patterns of labor-related seasonal migration.

Of the 835 migrants, 174 resided outside the tracing area determined by budget and logistical constraints; therefore, 661 (79%) were selected for follow-up. Compared to other migrants, migrants included in the tracing area were younger ($p = .02$), were more likely to have a contact phone number ($p < .001$), and had entered the HDSS more recently ($p = .002$). They were also more likely to have exited the HDSS area in the previous two years prior to the study ($p < .001$). There were no differences in sex ($p = .2$) and size of HDSS household ($p = 0.7$) by inclusion/exclusion from the tracing area (see Table 1). The type of informant who provided contact information did not differ between migrants included in the tracing area and other migrants (Table 1). In total, contact information was obtained from neighbors of a migrant's last known household only 14 times (1.7%, data not shown).

We mapped the reported geolocations of migrants separately for those included and excluded from the tracing area (Figure 2). Consistent with the purposive selection of migrants to follow up, migrant locations clustered around Dakar, Mbour, and areas surrounding the HDSS site in Niakhar. In Dakar, the most common destinations were the neighborhoods of Ben Tally, Ouakam, Pikine, and Yarakh, areas where migrant populations have historically clustered (Brockerhoff 1990).

Two-thirds (441/661, 67%) of migrants in the tracing area were enrolled in the parent questionnaire trial. The enrollment rate was significantly

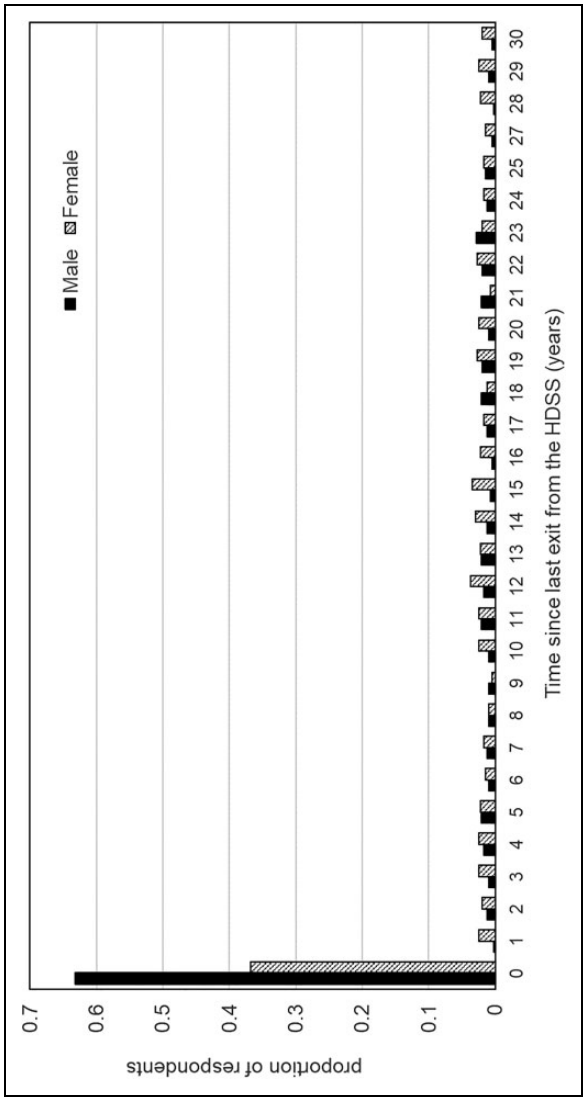

Figure 1. Distribution of time since migration by sex ($N = 835$).

Table 1. Characteristics of Migrants by Follow-up Status.[a]

Characteristic	In Tracing Area *n* (%)	Not in Tracing Area *n* (%)	*p* Value[b]
Number of migrants	661 (79)	174 (21)	
Variables obtained from HDSS			
Age (years)			.02
18–24	153 (85)	28 (15)	
25–34	235 (82)	53 (18)	
35–44	154 (73)	57 (27)	
≥45	119 (77)	36 (23)	
Sex			.2
Female	331 (81)	77 (19)	
Male	330 (77)	97 (23)	
Household size in HDSS			.7
2–5	258 (78)	74 (22)	
6–7	191 (80)	49 (20)	
≥8	212 (81)	51 (19)	
Time since first entry into the HDSS (years)			.002
<15	163 (85)	28 (15)	
15–29	296 (81)	69 (19)	
≥30	202 (72)	77 (28)	
Time since last exit out of the HDSS (years)			<.001
<2	377 (88)	54 (12)	
≥2	284 (70)	120 (30)	
Age at exit categories (years)			
5–14	56 (70)	24 (24)	
15–24	260 (78)	72 (22)	
≥25	345 (82)	78 (18)	
Variables obtained from migrant inquiry			
Relationship of informant to migrant			.9
Parent, sibling, or spouse	377 (79)	100 (21)	
Other relatives or neighbors	284 (79)	74 (21)	
Availability of the name of head of compound			.001
No	353 (84)	69 (16)	
Yes	308 (75)	105 (25)	
Availability of a phone number for the migrant			<.001
No	91 (65)	48 (35)	
Yes	570 (82)	126 (18)	

Note: HDSS = Health and Demographic Surveillance System.
[a]Row percentages presented.
[b]*p* values are based on the χ^2 test for categorical variables.

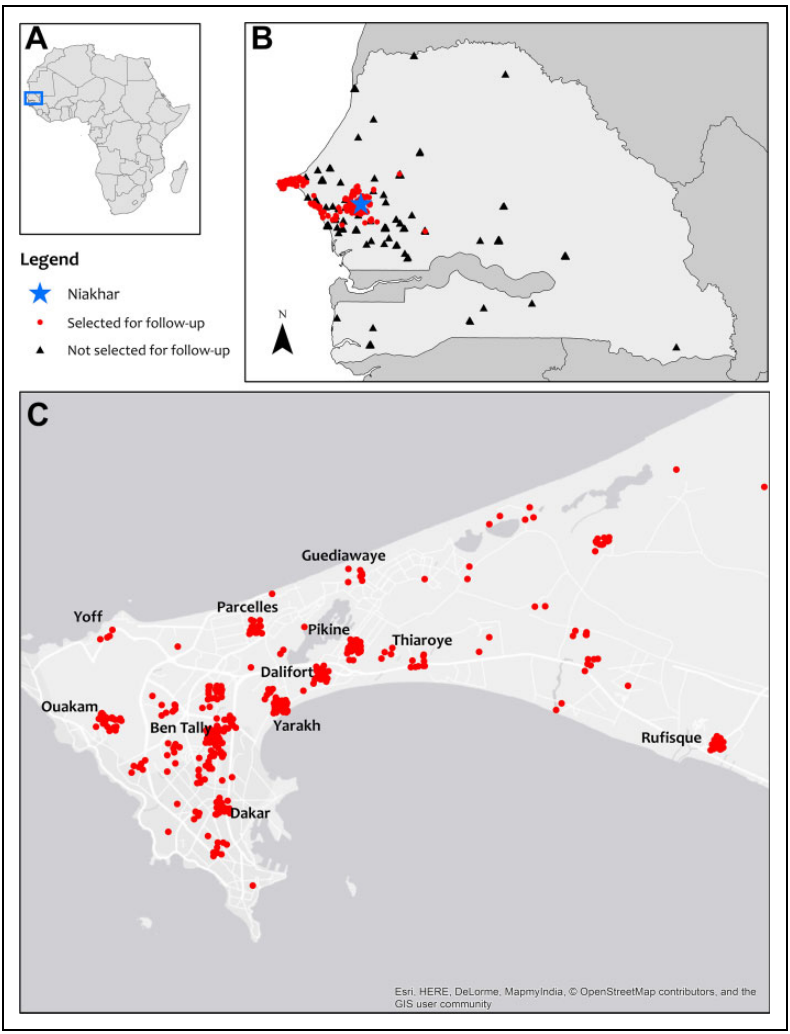

Figure 2. Spatial distribution of migrant destinations. (A) Map of Africa showing location of Senegal. (B) Map of Senegal showing migrant destinations. (C) Zoomed map of migrant destinations in Dakar, Senegal. Migration destinations outside of Senegal ($N = 14$) included Cote d'Ivoire (1), France (1), Gambia (6), Germany (1), Italy (2), Saudi Arabia (1), Spain (1), and Switzerland (1).

higher among migrants who were older than 25 years at the time of their HDSS exit (71%, Table 2) compared to those who were younger than 25 years (63%). It was also higher when a contact phone number was available for the migrant (71% vs. 44%) and when the name of the head of the compound at destination was reported (71% vs. 64%). Migrants were more likely to be enrolled in the trial when the informant who provided contact data about the migrant was a parent, sibling, or spouse compared to other relatives or neighbors (72% vs. 61%; Table 2). The likelihood of enrollment did not vary by age at the time of the survey, sex, or HDSS household size.

In the multivariate analysis, having a contact phone number tripled the odds of enrollment (*aOR*: 3.01, 95% CI: 1.88–4.82; Table 2). Knowing the name of the head of compound (aOR: 1.62, 95% CI: 1.14–2.30) also improved the odds of enrollment. Finally, enrollment also appeared more likely when contact information was obtained from the migrant's spouse, sibling, or parent (*aOR*: 1.38, 95% CI: 0.98–1.95). Compared to migrants who were 25 years or older at the time they moved out of the HDSS, younger migrants aged 15–24 years had a decreased likelihood of enrollment (*aOR*: 0.68, 95% CI: 0.47–0.98). After controlling for other factors, last exiting the HDSS in the previous two years was not associated with a higher likelihood of enrollment (*aOR*: 1.16, 95% CI: 0.80–1.69).

In more detailed analyses (Figure 3), we did not find evidence for a linear relationship between the number of years elapsed since the migrant's exit from the HDSS and the likelihood of enrollment in the questionnaire trial. Among long-term migrants (i.e., those who exited the HDSS $\geq$ 2 years ago), enrollment rates remained high (>50%) even among migrants who had not been contacted for 20 years or more.

Some of the covariates of enrollment differed between recent migrants and longer-term migrants. The association between the availability of a contact phone number and enrollment was stronger among recent migrants than among longer-term migrants (interaction $aOR = 0.26$, $p = .008$). Only 29.6% of recent migrants for whom a contact number was not available were enrolled versus 73.9% when such a number was available. Among longer-term migrants, these figures were 53.4% and 66.9%, respectively (Figure 4). On the other hand, there were no interactions between (a) availability of the name of the head of compound at destination, or (b) the relation between the informant and the migrant, and the time since the migrant's exit from the HDSS.

Table 2. Factors Associated with Enrollment of Migrants Residing in the Tracing Area.

Characteristic	Tracing Success (%)	*OR* (95% CI)	*aOR* (95% CI)
Variables obtained from HDSS			
Age (years)			
18–24	67	Reference	
25–34	69	1.13 (0.73–1.75)	
35–44	63	0.85 (0.53–1.36)	
≥45	68	1.07 (0.64–1.78)	
Sex			
Female	66	Reference	
Male	68	0.90 (0.65–1.25)	
Household size in HDSS			
2–5	67	Reference	
6–7	69	1.12 (0.75–1.67)	
≥8	65	0.95 (0.65–1.40)	
Time since first entry into the HDSS (years)			
<15	64	Reference	
15–29	65	1.02 (0.68–1.52)	
≥30	72	1.44 (0.92–2.25)	
Time since exiting the HDSS (years)			
<2	70	1.37 (0.99–1.90)	1.16 (0.80–1.69)
≥2	63	Reference	Reference
Age at exit categories (years)			
5–14	63	0.69 (0.38–1.24)	0.81 (0.42–1.59)
15–24	63	0.71 (0.50–1.00)	0.68 (0.47–0.98)
≥25	71	Reference	Reference
Variables obtained from migrant inquiry			
Relationship of informant to migrant			
Parent, sibling, or spouse	72	1.66 (1.20–2.31)	1.38 (0.98–1.95)
Other relatives or neighbors	61	Reference	Reference
Availability of the name of head of compound			
No	64	Reference	Reference
Yes	71	1.42 (1.02–1.97)	1.62 (1.14–2.30)
Availability of a phone number for the migrant			
No	44	Reference	Reference
Yes	71	3.08 (1.96–4.83)	3.01 (1.88–4.82)

Note: CI = confidence interval; *OR* = odds ratio; *aOR* = adjusted odds ratio; HDSS = Health and Demographic Surveillance System.

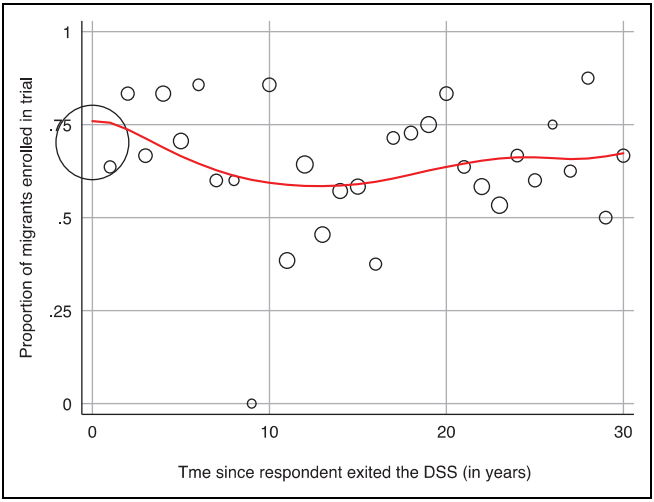

Figure 3. Enrollment rates by duration since exit from the HDSS. The size of the markers in this graph is proportional to the number of migrants in the study sample who had exited the HDSS at a particular time (in years). The red line was obtained by applying a Lowess smoother.

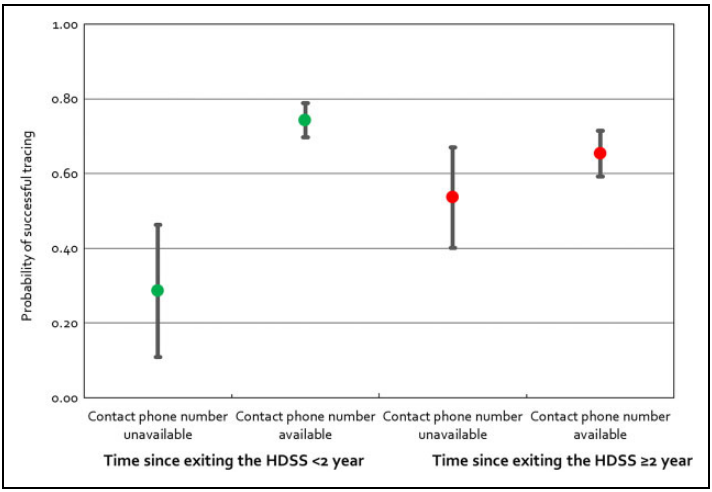

Figure 4. Interaction between time since migration and availability of contact phone number for migrant enrollment.

Discussion

In this study, we followed up individuals who had temporarily or permanently moved out of the Niakhar HDSS area in Senegal, and we characterized the factors influencing their enrollment in a trial of questionnaire aimed at measuring adult mortality. Contact attempts were made for 661 (79%) individuals who had moved out of Niakhar HDSS and were eligible for participation in the parent trial. Of those selected for follow-up, 67% were successfully enrolled in the trial. This is comparable to studies conducted in other settings that have shown follow-up rates among migrants ranging from 50% to 90% (Anglewicz 2012; Anglewicz et al. 2017; White et al. 2013). These studies were, however, focused primarily on short-term or recent migrants. Our study, on the other hand, shows that follow-up rates remain high, even if the migrant has not had contact with data collectors for extended periods of time (up to 30 years).

The availability of information about the head of the migrant's compound at destination improved the likelihood of enrollment among migrants as did the availability of a contact number. Information about the name of the head of the compound and a phone number was available for 49% and 83% of migrants requiring follow-up, respectively. We found, however, that the association between the availability of a contact number and enrollment in the trial varied according to the amount of time since the migrant had left the HDSS area. Among long-term migrants, the difference in the likelihood of successful tracing was limited (13.5 percentage points), whereas it was much larger among recent migrants (44.3 percentage points).

There are several possible explanations for this interaction. On the one hand, more than 90% of recent migrants had a contact number, compared to 80% among long-term migrants. Recent migrants without a mobile phone might thus be a more selective group. In particular, they might include a higher proportion of migrants who did not seek to maintain ties with their household of origin. Unfortunately, we did not collect data on those ties and are unable to test this hypothesis. On the other hand, recent migrants also included a larger proportion of seasonal migrants who had moved to Dakar and its suburbs to seek short-term employment or attend school: This was the case for 67.1% of recent migrants versus 33.4% among longer-term migrants. Since we did not attempt to find migrants who had moved to Dakar and for whom a contact number was not available, this difference in destinations between recent and long-term migrants might explain why the association between availability of a contact number and trial enrollment varied with migration duration.

There are several limitations to our study. First, while we attempted to contact 79% of individuals who had moved out of the HDSS, these individuals might not be representative of all migrants from the HDSS population, as the sample only included migrants who resided in Dakar, Mbour, and rural areas surrounding the HDSS, were 18–59 years, and had a sibling. The success rates in enrollment of migrants may be lower for groups that were not included in this study (e.g., migrants who resided in areas that were more difficult to reach or had less frequent contact with members of their last known HDSS households). Second, our study only included individuals who had a known sibling in the HDSS data sets. As a result, our sample likely had stronger ties to the Niakhar HDSS area than other population members who did not have a known sibling. Third, we only attempted to follow up individuals aged 15–59 years old at the time of the study. Our study thus does not provide any additional information on the likelihood of following up migrants at younger and older ages. Finally, our study did not record several steps of the follow-up process, including, for example, whether the household informant initiated contact with the migrant or how many contact attempts were made prior to securing the migrant's enrollment in the trial. Such information would have been particularly useful in further refining strategies for migrant follow-up. Future studies that attempt to enroll migrants should collect more detailed data on the follow-up process.

Nevertheless, this study demonstrated the feasibility of tracing migrants for study participation up to 30 years after migration. Several factors might further improve follow-up rates among migrants in the near future. Mobile phone ownership and use is still on the rise in Senegal as in other LMICs, and a number of technological tools might also allow maintaining contact with study participants more conveniently and at lower costs. Mobile health (mHealth) has increasingly been used to improve health service delivery and outcomes in LMICs (Free et al. 2013), and mHealth apps now frequently include modules to maintain contact with patients to maximize retention in care (Kiwanuka et al. 2018; Venter et al. 2018). Recent calls have been made to leverage this technology in the study of migration events (Herbst et al. 2015), and further research is needed to explore how mobile tools can be used to improve the follow-up of migrants in empirical research studies. Finally, future investigations should evaluate and report the factors affecting migrant follow-up in other LMIC settings. This will help us devise more robust follow-up strategies and improve the estimation of the long-term effects of exposures and interventions on health outcomes.

Declaration of Conflicting Interests

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