Mobility over the life course: Migration and HIV risk among Men who have Sex with Men in Seattle, WA
Extended Abstract

Introduction

In the United States, men who have sex with men (MSM) have the highest lifetime risk of being diagnosed with HIV.[1] Migration, a move to a new location, may lead to changes in both sexual and health behavior that would increase the risk of HIV. Men who move to a new area may be more likely to seek multiple sex partners and encounter new sexual norms that place them at an increased risk for HIV.[2,3] A lack of social support could also increase the likelihood of engaging in risky sexual behavior.[4] After migration, men may be unfamiliar with local health resources and less likely to seek HIV testing.

Knowledge of migration among MSM is limited, but research suggests that the majority of MSM in large US urban centers are in-migrants.[5] Qualitative studies of migration among gay men describe relocation as being closely connected to the process of coming out, or a desire to explore their sexuality.[6] After migration, many men describe a change in sexual practices. The anonymity of being in a new population, combined with easier access to other gay men through bars, clubs, and public sex venues, can lead to riskier sexual practices.[3] Frequent migration among gay men throughout the life course could make them especially vulnerable to HIV infection and help explain current disparities in HIV rates.

In this paper, we describe a history of migration over the life course for a sample of men who have sex with men. We estimate age-specific migration rates stratified by HIV status and race/ethnicity for both 5-year and 1-year mobility. We also aim to evaluate the relationship between in-migration and HIV risk in this population, and whether that association differs by perceived level of social support.

Data & Methods

Analyses for this paper use data from the Mobile study, a cross-sectional study designed to measure migration rates, sexual behavior, social support, and history of HIV testing behavior among MSM. The Mobile study was conducted in Seattle, WA at the Public Health STD clinic at Harborview Medical Center from July 2014 to August 2015. Mobile study participants were 18-59-year-old men who reported same-sex partners in the past 12 months. Data is available for 336 sexually active men. Study protocols, materials, and procedures were all approved by the University of Washington Institutional Review Board.

The survey measured retrospective information about the participant's residential mobility in five-year time periods from age 15 through age 55. Participants were also asked to describe up to 3 residences from the past 12 months. Detailed information was collected, including zip code, household composition, and reason for the move. Ego-centric information on the last 5 sex partners during the past 12 months was obtained, including dates, location of sex, condom use, and HIV status disclosure. HIV status and history of testing for HIV and sexually transmitted infections (STI) were also abstracted from the participant's clinic chart. Current Social Support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS), which consisted of 12 questions rated on a 7-point Likert scale (Very Strongly Disagree to Very Strongly Agree).

5-year age-specific migration rates (ASMR) were constructed from information about how many times a participant moved in a five-year time interval (Zero; Just once; 2-4 times; 5 or more times). The survey also asked participants for the number of places they lived in during the past year, including their current residence (One, Two, Three or more), which was used to determine one-year migration rates. Migration rates were stratified by HIV status, race, and Latino ethnicity (yes/no). Future work will describe migration rates by distance, such as different address, same city; different city, same state; or different state or country.

Analyses will examine whether migration is associated with HIV status, history of STI, risky sexual behavior, and low measures of social support. Level of social support (low/high) will be evaluated as an effect modifier. Outcome variables include self-reported HIV serostatus, HIV and STI history obtained from clinic records, HIV testing in the past 6 and 12 months, unprotected anal intercourse (UAI) with a partner of unknown or discordant HIV status during the past year, and level of social support. A multivariable logistic regression model will be constructed for each outcome of interest to adjust for potential confounders including income, education, race, and age.

The primary exposure measure is migrant status, constructed from self-reported residential history. Recent migrants include men who have lived in their current Metropolitan Statistical Area (MSA) for less than one-year. Mid-migrants have resided in their MSA for 1 through 4 years, and settled men are those who have lived in their current MSA for 5 or more years. We plan to include exploratory analyses with the sensitivity of the definition for migration into the area. We will explore distance between the moves to determine an appropriate scale for in-migration and create a separate exposure variable for whether or not a man was born in the Seattle area (a non-migrant).

We evaluated demographic and sexual risk variables for significant differences by migrant group, using hypothesis tests for independence (Pearson's chi-squared of Fisher's exact test).

Preliminary Results

Demographic and Sexual Behavior Variables

The highest proportion of men (48.2%) are settled (5+ years), and the smallest group are recent-migrants (<1 year) (22%). [Table 1]. When stratified by migrant status, the following variables had significant differences: age, annual income, and employment status (results not shown). While nearly half of the men in our sample are under 30, 70% of men are under age 30 in the recent migrant group, compared to 32% in the settled group (35.8% of settled men are aged 40-59, compared to 5.4% of recent migrants, p=0.000). A large proportion of our sample is of low and middle income, but income was higher among the settled men. Among men making $75,000 or higher, 13.6% were in the settled group, compared to 4% in the recent migrant group (p=0.048). A higher percentage of settled men are employed full-time (53.1% compared to 40-49% in other groups), and the largest percentage of unemployed men was found among recent-migrants (21.6% compared to 15.4% of settled men, p=0.033).

5-year Age-specific Migration Rates (ASMR)

ASMR for one or more moves in a 5-year period were highest between ages 20 and 25 (88.9%), and then declined in each time-interval to the lowest rate of 33.3% between ages 45 and 50, and between ages 50 and 55. The only difference in 5-year ASMR by HIV status that was found to be statistically significant was reported for ages 20 to 25, with 91.6% of HIV-negative men reporting at least one move, compared to 80% of HIV-positive men (chi-squared p=0.023). Five-year ASMR did not show a clear pattern when tabulated by race or Latino ethnicity, with no statistically significant differences between groups.

One-year migration rates for the past year

Among all 336 men, 58.9% reported no mobility, 28% reported living in 2 or more places, and 13.1% reported living in 3 or more places during the past year. ASMR for mobility during the past year (2 or more residences) followed a similar pattern as the 5-year rates, with the highest rate among men aged 21-24 (58.8%) and the lowest rate of zero for men 56-59 years of age. [Figure 1]. When past-year mobility was stratified by HIV status, no significant difference was found (40.7% for HIV-negative men and 37.5% for HIV-positive, n=306, p=0.678). In men ages 41-45, 6.6% of HIV-negative men reported 2 or moves in the past year, compared to 57.1% of HIV-positive men (n=23, Fisher's exact p=0.017). Past-year age-specific migration rates did not exhibit any patterns when stratified by race or ethnicity. Only one age-group had a statistically significant difference in mobility, with 17% of non-Latinos reporting 1-year mobility compared to 100% of Latino men in the 36-40-year-old age-group (n=29, fishers exact p=0.001).

Predictors of HIV risk

In our sample, we found that Black men were 4.9 times more likely to be HIV-positive when compared to white men. [Table 2] We found no statistically significant relationship between migration status and HIV risk thus far in our current crude models. Future analyses will include multivariate models to adjust for confounders, and a broader definition of migrant status, as discussed above. We also plan to assess the relationship between migrant status and social support.

Tables and Figures

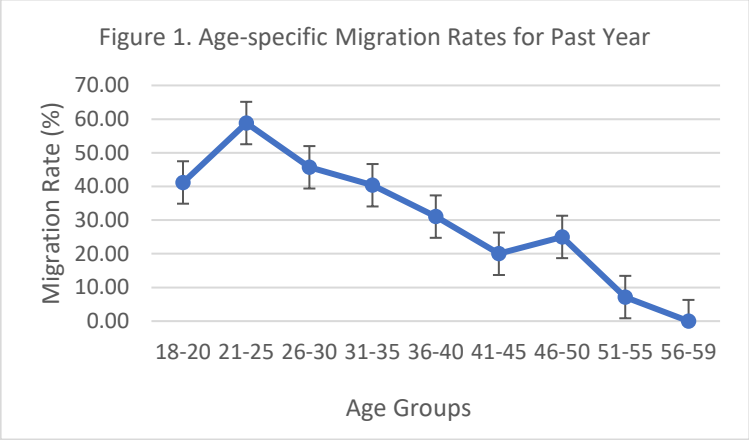
Table 1—Characteristics of sexually active men who have sex with men from a Seattle, WA Clinic, 2014-2015

N=336 except where noted	n	%		n	%
Age (years)			**Migrant Status**		
18-24	81	24.1	Recent migrant (<1 year)	74	22.0
25-29	84	25.0	Mid-migrant (1 - 4 years)	100	29.8
30-39	98	29.2	Settled migrant (5+ years)	162	48.2
40-59	73	21.7	**Born in the US**		
Sexual Orientation			No	44	13.1
Gay or homosexual	264	78.6	Yes	287	85.4
Straight or heterosexual	3	0.9	Refuse to answer	5	1.5
Bisexual	26	7.7	**Ever had an HIV test**		
Queer	4	1.2	No	11	3.3
Other	2	0.6	Yes	325	96.7
>1 orientation selected	36	10.7	**HIV test in past 12 months** (n=289)		
Refuse to answer	1	0.3	No	38	13.2
Race and ethnicity			Yes	250	86.8
White, non-Hispanic	192	57.1	**HIV status** (n=323)		
Asian, non-Hispanic	25	7.4	Negative	258	79.8
Black, non-Hispanic	22	6.6	Positive	48	14.9
Hispanic or Latino	58	17.3	Don't know	17	5.3
Other or mixed race	32	9.5	**Lifetime male sex partners** (n=272)		
Refuse to Answer	7	2.1	Less than 20	64	23.5
Annual gross income ($)			20-49	72	26.5
0 to 9,999	74	22.0	50-100	71	26.1
10,000 to 19,999	53	15.8	101+	65	23.9
20,000 to 29,999	58	17.3	**Number of male sex partners in past 12 months** (n=315)		
30,000 to 49,999	60	17.9	1-4	94	29.8
50,000 to 74,999	29	8.6	5-9	69	21.9
75,000 or more	35	10.4	10-20	89	28.2
Refuse to answer	13	3.9	21+	63	20.0
Don't know	14	4.2	**Number of male UAI partners in past 12 months** (n=317)		
Education completed (n=334)			Zero	45	14.2
<12th grade	12	3.6	1-2	112	35.3
12th grade or GED	34	10.1	3-9	104	32.8
Some college,2-year degree	156	46.4	10 or more	56	17.7
Bachelor's degree	98	292	**UAI with man of unknown or discordant**		
Any post-graduate work	34	10.1	**HIV status for most recent partner** (n=210)		
Current Health Insurance			No	148	70.5
No	71	21.1	Yes	62	29.5
Yes	249	74.1	**UAI with man of unknown or discordant**		
Don't know	7	2.1	**HIV status, any partner in past year**		
Refuse to answer	9	2.7	No	234	69.6
			Yes	102	30.4

Table 2—Predictors of HIV risk among sexually active men who have sex with men from a Seattle, WA clinic, 2014-2015

	Odds Ratio	p-value	95% CI
Self-reported HIV status (n=306)			
Settled migrant (5+ years)	Ref	Ref	Ref
Recent migrant (<1 year)	0.59	0.222	(0.25, 1.37)
Mid-migrant (1 - 4 years)	0.50	0.079	(0.23, 1.08)
Self-reported HIV status (n=300)			
White, non-Hispanic	Ref	Ref	Ref
Asian, non-Hispanic	0.31	0.262	(0.40, 2.41)
Black, non-Hispanic	4.94	0.003	(1.75, 13.93)
Hispanic or Latino, any race	0.91	0.822	(0.39, 2.13)
Other or mixed race, non-Hispanic	0.62	0.453	(0.18, 2.18)
Tested for HIV in past 12 months (n=288)			

Settled migrant (5+ years)	Ref	Ref	Ref
Recent migrant (<1 year)	1.08	0.873	(0.42, 2.79)
Mid-migrant (1 - 4 years)	0.59	0.179	(0.28, 1.27)
UAI with male partner of unknow or discordant HIV status in past year (n=336)			
Settled migrant (5+ years)	Ref	Ref	Ref
Recent migrant (<1 year)	0.97	0.921	(0.53, 1.78)
Mid-migrant (1 - 4 years)	1.26	0.396	(0.74, 2.15)



Discussion

Men in our study had predictable patterns of age when stratified by migration. The majority of recent migrants are under age 30, and two-thirds of the settled men are over age 30. A higher proportion of settled men were employed full-time and earning more money, likely a reflection of their age. Age-specific migration rates were much higher compared to the overall U.S. population as seen in the American Community Survey, but the pattern by age is similar.

Despite an abundance of research on the association between migration and HIV, little is known about the health implications of migration among MSM. Among MSM in South Florida, HIV prevalence and frequency of UAI was higher in men who migrated 1-5 years ago when compared to either migration within the past year or migration over 5 years ago. Very recent migrants (<1year) had the lowest HIV prevalence and risk behavior, suggesting a non-linear association between duration of residency and HIV risk.[7] Other studies provide further evidence that duration of residency is associated with HIV risk. An analysis of 2011 NHBS data found that MSM who had been living in San Francisco for more than 5 years had almost twice the odds of HIV infection when compared to those who had lived there 5 years or less, while nativity (US vs. foreign-born) had no association with HIV risk behaviors or prevalence.[8]

In our study, bivariate models did not support the hypothesis that migrant status is associated with HIV risk. We plan to include multivariate models and an assessment of social support in future analyses. In this sample of MSM, we found that Black men have nearly five-times the odds of being HIV-positive compared to White men. We plan to further describe HIV risk and history of mobility over the life course in this vulnerable group of men.

Bibliography

1. Hess, Kristen L., et al. "Lifetime risk of a diagnosis of HIV infection in the United States." *Annals of epidemiology* 27.4 (2017): 238-243.
2. Kobrak, Paul, Rafael Ponce, and Robert Zielony. "New arrivals to New York City: vulnerability to HIV among urban migrant young gay men." *Archives of sexual behavior* 44.7 (2015): 2041-2053.

3. Bianchi, Fernanda T., et al. "The sexual experiences of Latino men who have sex with men who migrated to a gay epicentre in the USA." *Culture, health & sexuality* 9.5 (2007): 505-518.
4. Glick, Sara Nelson, and Matthew R. Golden. "Early male partnership patterns, social support, and sexual risk behavior among young men who have sex with men." *AIDS and Behavior* 18.8 (2014): 1466-1475.
5. Catania, Joseph A., et al. "Understanding the demographic characteristics of urban men who have sex with men." *Journal of Homosexuality* 51.3 (2006): 33-51.
6. Gorman-Murray, Andrew. "Rethinking queer migration through the body." *Social & Cultural Geography* 8.1 (2007): 105-121.
7. Egan, James E., et al. "Migration, neighborhoods, and networks: approaches to understanding how urban environmental conditions affect syndemic adverse health outcomes among gay, bisexual and other men who have sex with men." *AIDS and Behavior* 15.1 (2011): 35-50.
8. Lama, T. T., et al. "Migration and HIV Risk Among Men Who Have Sex With Men, San Francisco, 2011." *AIDS Education and Prevention* 27.6 (2015): 538-546.