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The association between recent migration and sexual partnership among women interviewed at sites known for sexual meeting in Burkina Faso

Introduction

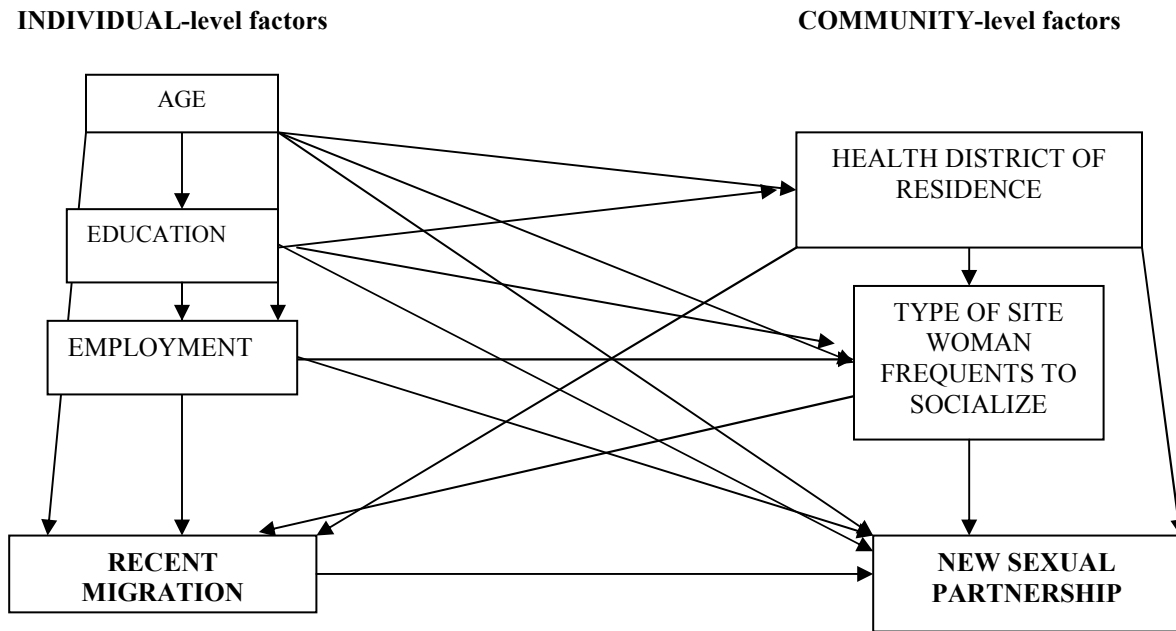
Migration remains an important contributing factor to the spread of HIV (UNAIDS 2001). Increased rates of HIV have been documented among migrant populations in numerous African settings (Nunn A et al. 1995, Pison G et al. 1993, Kane F et al. 1993, Barongo L et al. 1992). The phenomenon of migrating to the city, contracting HIV/AIDS and then returning to the village to die has been documented as a potential route of spreading transmission between urban and rural areas (Caraël 1997). Anarfi et al. has also documented the particular temporary migration of Ghanaian women to Côte d'Ivoire to earn money as prostitutes, after which they would return home to their villages (1997).

Migration could increase transmission because mobility enables contact with new potential sexual partners, while it also may encourage sexual freedom. Mobile populations may abandon customs that had constrained traditional mores when they move away from their homes (Caraël 1997), and migrants may seek alternative social networks because the migration has disrupted their own networks.

The current analysis examines the relationship between recent migration and sexual partnership among a sample of women interviewed at sites where people meet new sexual partners in Burkina Faso. The Burkina Faso National AIDS Program (CNLS) estimates HIV prevalence is 7%, making it the most infected country in West Africa after its southern neighbor, Côte d'Ivoire. Burkina Faso historically has experienced substantial internal and international migration. About 602,000 people have migrated internationally between 1988-92, most often to Côte d'Ivoire or Ghana in search of work (EDSBF-II 2000). Migration is facilitated by a train route and a national highway which links Burkina Faso to Côte d'Ivoire, as well six major highways within the country.

Under direction of the Burkina Faso National AIDS Control Program (CNLS), the Priorities for Local AIDS Control Efforts (PLACE) study was implemented in two Burkina Faso Health Districts to identify sites where rates of new sexual partnership formation are high, for the purpose of planning HIV/AIDS interventions. This analysis examines the relationship between a woman's recent migration on her probability of having a new sexual partner in the past month, considering individual and community-level factors that are likely associated with both new partnership and migration (Figure 1). Recent migration is defined as living in the current residence for less than a year.

Figure 1. Hypothesized relationship between outcome (having a new sexual partner in the past month), the primary exposure (migration to current residence within the year prior to the survey) and potential covariates.



Data

In June through October 2001, an observational study using the PLACE Method (Priorities for Local AIDS Control Efforts) was performed in the Banfora and Tenkodogo Health Districts of Burkina Faso for the purpose of planning HIV/AIDS interventions. The PLACE method provides a description of sexual partnership and identifies where to focus AIDS prevention programs in order to reach key members of the underlying sexual network. First, 471 community informants identified key sites for sexual partnership. At a sample of 63 sites, interviewers questioned 436 women about their sexual behavior and AIDS awareness, new sexual partnership in the past month, and the primary exposure of interest, migrant status. The current analysis uses socio-demographic, geographic and sexual behavior indicators of 432 women with non-missing data for the outcome variable (new partnership in the past month) and the exposure variable (migration to the area within the past year).

Model

An ordered logit was used to assess the relationship between migrant status and the probability of having either low, medium or high levels of new partnership, defined at having 0, 1 and 2 or more new sexual partners in the month prior to the study, respectively. The final model used to quantify the relationship between migrant status and low, medium or high levels of partnership included an interaction term for site type as well as age, education and work status. The outcome of interest is a function of the primary variable of interest, migrant status, the covariates listed in the table and a random error term (see Table 1 for an explanation of the variables). The original

continuous variable for number of years women have lived in their current residence was dichotomized at the one year mark, because the highest partnership rates cluster among women who have lived in the area for one year or less. Table 1 presents the variables included in the analysis.

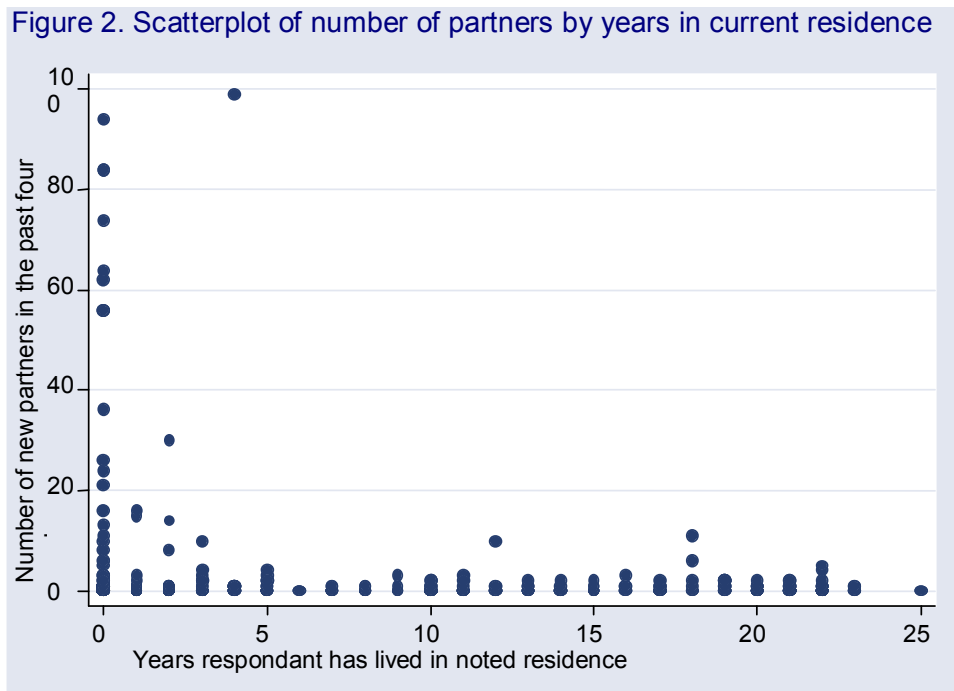
Table 1. Summarization of variables used in ordered logistic regression (number in each group)

Variable		Number in each category
New sexual partnership in past month	None (referent)	263
	1	94
	2+	75
	Missing	0
Migration within the past year to area of current residence	No (referent)	331
	Yes	101
	Missing	0
Age (years)	15-26 (referent)	325
	27-30	49
	31-38	43
	39	9
	Missing	0
Years of education ducation level	0	90
	1	109
	2-4	109
	5-9	89
	10+ (referent)	34
	Missing	1
Employed	No (referent)	191
	Yes	239
	Missing	2
Health district in which interviews were held	Tenkodogo Health District (referent)	256
	Banfora Health District	176
	Missing (n=0)	
Type of socializing site where interview took place	Small informal sites	83
	Large public site	157
	Formal commercial site	192
	Missing	0
Recent migrant*site type	Migrant women interviewed at large public site	15
	Migrant women interviewed at formal sites	67
Cluster variable: Site where woman was interviewed	Site 0-63	432
	Missing	0

Results

Descriptive analysis

Preliminary analysis suggested there is a relationship between migrant status and increased number of sexual partners. The scatterplot indicates that women with the highest number of sexual partners are likely to have lived in the study area for less than a year (Figure 2). Among women reporting no new partners in the past month, only 17.1% reported living in the study area for less than a year, compared with 27.7% of women with 1 new partner in the past month and 40.0% of women with 2 more new partners in the past month.



Multivariate analysis

From the ordinal logistic regression we obtain three estimates of the relationship between migrant status and new sexual partnership, one for each of the three site types, controlling for education, work status and age. The hypothesized relationship between increased migrant status and increased partnership was observed at formal commercial establishments; women who migrated to the area within the past year had 4.00 times the odds of having medium /high rates of partnership than those who have lived in the area for the past year (95% CI=1.38,11.61). Stratification has decreased sample size and resulted in imprecise effect estimates. There is, nonetheless, evidence of an effect of migration on sexual partnership among this sample of women.

The same hypothesized relationship between migration and sexual partnership was not observed at other sites types. In contrast, recent migrants had lower odds having medium /high rates of partnership than non-migrants

among women at small informal sites (OR: 0.44; 95% CI=.17, 1.17) and large public sites (95% CI=.17, 3.07). The coefficients were not statistically significant and the confidence intervals around the odds ratio are quite wide, suggesting imprecision in the effect estimates. The model results indicate a null effect of migrant status on new partnership at these sites.

Model-predicted probabilities of falling into one of the three categories were calculated (Table 2). Women interviewed in formal commercial establishments were more likely to have had 2 or more partners in the past month than 1 partner or no partners (41.9%) than among women at small informal sites (6.7%) and large public sites (9.9%). The fact that migrant status has little association with new partnership in informal small sites and large public sites is apparent as the predicted probabilities of being in each category of partnership when comparing migrants and non-migrants are comparable at these sites.

Table 2. Model predicted probabilities of low, medium and high level of sexual partnership, by migrant status and site type

	Low level (0 new partners)	Medium (1 new partner)	High level (2+ new partners)
Small informal sites			
Recent migrant	.799	.134	.067
Not recent migrant	.702	.189	.109
Large public sites			
Recent migrant	.724	.176	.099
Not recent migrant	.678	.201	.121
Formal commercial sites			
Recent migrant	.291	.289	.419
Not recent migrant	.599	.234	.166

* The probability of having a low level of partnership is the probability that S_j is below the lowest cutpoint, or the $\Pr(S_j < .7546)$, where $S_j = \alpha + \beta_1(\text{Migrant status}) + \beta_2(\text{Large public sites}) + \beta_3(\text{Formal commercial establishments}) + \beta_4(\text{Interaction term: Migrant at large public sites}) + \beta_5(\text{Interaction term: Migrant at formal commercial establishments}) + \beta_6(\text{Age}) + \beta_7(\text{Education}) + \beta_8(\text{Work status}) + u_j$. The probability of having a high level of partnership is \Pr that S_j is greater than the highest cutpoint, $\Pr(S_j > 2.06)$. The probability of having a medium level of partnership is $\Pr(.7546 < S_j < 2.06)$.

To assess model fit, the model predicted probabilities were compared with the actual of proportions of women observed in each category. There were similar observed and predicted proportions, suggesting adequate model fit. For example, the actual proportions of women interviewed in formal commercial establishments reporting 2 or more partners in the past month, 1 partner and no partners (.41, .299 and .284, respectively) were very similar to the model-predicted probabilities (.419, .289 and .291, respectively).

Limitations

First, limitations arise from the study design. This is an observational study, thus the cross-sectional nature prevents making claims about direction of causality. There is prior evidence to suggest that women in West Africa migrate for the purpose of employment as a sex worker. However, it is also possible that recent migration itself is the cause of increased new partnership.

There are possibilities for bias in the data collection as well. Specifically, it is expected that self-reported sexual behavior will be affected by self-presentation bias. Underreporting of sexual partnerships is likely, particularly among women.

Another limitation is omitted variable bias, as failure to measure all possible confounding factors means certain unmeasured confounders will impact the estimate of the effect of migrant status on new sexual partnership. For example, differing reasons for migration is one of the major unmeasured confounders.

Conclusion

There is a relationship between recent migrant status and new sexual partnership at formal commercial establishments, such as bars and clubs. The relationship between migration and partnership observed at formal commercial sites supports the West African phenomenon noted in prior literature, in which women migrate for the purpose of earning money in the sex trade (Caraël 1997, Anarfi 1997). This relationship does not hold among women interviewed at small informal sites and large public sites, both of which were named as sites where people meet new sexual partners. The fact that migration was not associated with decreased partnership among women at small informal sites and large public sites reflects the contextual difference between sites of sexual encounter. Small informal sites, more often located in rural areas, perhaps draw a more traditional crowd who may not follow the hypothesized migration-partnership relationship. Similarly, the effect of transience on partnership may not be illuminated as clearly among women interviewed at public sites such as bus stops. Women may be present at these sites for reasons other than for sex.

It is at the formal commercial establishments that we would expect to see the strongest association between migrant status and partnership, because women who migrate from other areas for the purpose of earning money as sex workers would go to these types of establishments first to solicit clients. Intervention implemented in formal commercial sites will reach a vulnerable population of mobile women in Burkina Faso.

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