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The effect of rural-to-urban migration on social capital and common mental disorders: PERU MIGRANT study

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Abstract

Objective This study aims to investigate whether there are differences in the prevalence of common mental disorders and social capital between migrant and non-migrant groups in Peru.

Methodology The PERU MIGRANT study is a cross-sectional study comprising three groups: an urban group from a shanty town in Lima; a rural group from a community in Ayacucho-Peru; and a migrant group originally from Ayacucho currently living in the same urban shanty town. Common mental disorders were assessed using the General Health Questionnaire (GHQ-12), and social capital was assessed using the Short Social Capital Assessment Tool (SASCAT). Poisson regression with robust standard errors was used to estimate prevalence ratios.

Results The overall prevalence of common mental disorders was 39.4%; the highest prevalence was observed in the rural group. Similar patterns were observed for cognitive social capital and structural social capital. However after adjustment for sex, age, family income and education, all but one of the significant relationships was attenuated, suggesting that in this population migration per se does not impact on common mental health disorders or social capital.

Conclusions In the PERU MIGRANT study, we did not observe a difference in the prevalence of common mental disorders, cognitive and structural social capital between migrant and urban groups. This pattern of associations was also similar in rural and urban groups, except that a higher prevalence ratio of structural social capital was observed in the rural group.

Keywords Peru · Migration · Social capital · Mental health

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Introduction

Globally, mental health disorders are ranked the second leading cause of disability-adjusted life years (DALY's) and years of life lived with disabilities; accounting for 12 and 31% of the total global burden of disease, respectively [1]. In Peru, 30% of the people are affected by mental health disorders [2] and in Lima, Peru's capital, almost 7% of the population suffer from depression [3]. Given the magnitude of the disease burden in Peru, there is a need to identify country-specific risk factors, so that appropriate prevention and treatment programs can be developed.

Peru is a culturally diverse country and, during the past 30 years, has experienced large internal migration from

rural-to-urban areas. During the decades of political violence, between the 1970s and 1990s [4], mass migration occurred throughout the country. During this period thousands died and thousands of families were displaced, mostly from rural areas [5, 6] creating a strong pushing factor to migrate. More than half of these deaths occurred in the Andean department of Ayacucho [6] and most of the migration from Ayacucho was to Lima, Peru's capital [7].

Migration is an important health issue, as changes in the physical and social environment may influence disease patterns [8–10], especially those related to mental health [9, 11, 12]. Despite numerous studies investigating the relationship between migration and mental health [9, 12–15], there is inconsistent evidence as to whether migration is a significant risk factor for mental health disorders. Furthermore, very few studies [16] have studied internal migration within developing countries and their findings might not necessarily apply to the Peruvian context. In the context of increased migration and urbanization in low- and middle-income countries, such questions related to mental health and social capital following migration remain to be addressed.

It is recognized that rural populations have stronger social structures [17] and thus we would expect the process of internal migration, from rural-to-urban settings, to alter social capital and mental health risk. Social capital, defined as the social relationships, bonds and perceptions within societies or groups of people [18], is strongly related to mental health, and some of such evidence was derived from Peru [18, 19]. A recent literature review in the Latin America and Caribbean region concluded that social capital could have a protective relationship with several health-related areas, and not only mental health. Other areas where social capital has been linked to health include mortality, quality of life, trauma and nutrition [20].

This paper aims to identify the effect of migration on both, social capital and common mental disorders in Peru. Subsequently, we will investigate whether factors such as age at first migration, cumulative time lived in an urban area or percentage of lifetime exposure to an urban environment affect the social capital and common mental disorders.

Methods

Study design

The cross-sectional PERU MIGRANT study, conducted in 2007, aimed to establish the effect of migration on cardiovascular risk factors. Details of the study design have been reported in detail elsewhere [21].

Setting

Peru offers a unique opportunity to assess the impact of migration on health. The patterns of migration in Peru changed dramatically during the political violence that occurred in the 1970–1990s period [4], where approximately 70,000 deaths occurred—79% of them in rural areas—together with high rates of displacement—approximately 120,000 displaced families. Ayacucho, an Andean department, was one of the most severely affected areas during this period of violence—more than 50% of all deaths occurred in Ayacucho. For the period 1988–1993, 50.7% of the total emigrants from Ayacucho moved to Lima, making Ayacucho the leading source of migrants to Lima. Given these circumstances, large numbers of people were placed under strong pressure to migrate and it could be suggested that the study population did not represent typical migrants. Also, it is relevant to establish the difference between the concepts of migration from displacement in a political violent situation. First, the self-ascertainment of displacement, particularly given the context of terrorism in Peru, constitutes sensitive information. Most migrant participants did not feel comfortable about exposing their reasons to move to Lima. Second, we believe that there is a temporal dimension attached to the definition of displacement in relation to the duration (in months or even years) of these processes. Given the sensitive nature of this information and also, more objectively, given the extended length of period of migration in this study, we do prefer to use the term migration throughout the paper rather than displacement.

The study was composed of three distinct groups: rural, rural-to-urban migrants and urban born dwellers. The village of San Jose de Secce, located in the Santillana District, Huanta Province in Ayacucho was selected as the rural study site. "Las Pampas de San Juan de Miraflores" in Lima, was selected as the urban area. Both urban and rural–urban migrant participants were selected from the Pampas de San Juan de Miraflores area, a periurban shanty town in the south of Lima.

Participants

A single-stage random sampling method was used in all groups. In the case of San Jose de Secce in Ayacucho, a census was conducted in mid-2007 to identify all adult population permanently living in the area. The sampling frame for the urban group was derived from the local census, conducted in year 2000. All those who reported to have been born in Lima in the 2000 census and currently living permanently in the recorded address were considered eligible for the study. In the case of the rural-to-urban migrant group, the same 2000 census was updated in 2006

to identify all those who were referred to have been born in the department of Ayacucho and were currently living in Lima.

Individuals aged 30 years old and over, permanently living in their residence, were considered to be eligible. Pregnant women and anyone unable to understand and give written consent were excluded. Language was not considered an exclusion criterion to take part in the study and some of our fieldwork personnel in Lima and all of them in Ayacucho were fluent in Quechua. Participant's selection was stratified by age groups and sex to ensure balanced distribution of covariates. The overall participation rate in the PERU MIGRANT study at enrollment was 73.2% [21] and of these 75.3% completed the study ($n = 989$). Detailed participation rates and flowcharts per group have been previously published and are freely available online at http://www.biomedcentral.com/1471-2261/9/23 [21].

Study variables

The primary exposure was migration from a rural-to-urban environment, defined by study group, i.e., rural, rural-to-urban migrant and urban groups. The urban group was defined as individuals who were born in Lima and were permanent residents of the urban site "Las Pampas de San Juan de Miraflores". Migrants were those born in Ayacucho, moved to Lima and were permanent residents of the urban site. The rural group included people born in Ayacucho who were permanent residents of the rural area of the village of San Jose de Secce, located in the Santillana district, Huanta province in Ayacucho, Peru. Of note, the rural group did not consider migrants who returned to their villages.

Social capital was defined as the social relationships, bonds and perceptions within societies or groups of people [18]. In this study, we focused on two components of social capital: first, the structural component which measures the quantity of social relationships inside a community; second, the cognitive component, defined as the person's perception about the quality of this relationship [22]. Social capital was measured using the Short Social Capital Assessment Tool (SASCAT). The SASCAT questionnaire has been previously validated in Peru [19, 22] and includes both, a cognitive and a structural social capital component. In the cognitive component of the SASCAT, a score of three or more, out of four points, was considered "high cognitive social capital" [19, 22]. The score in the structural social capital (group membership, involvement in citizenship activities and support from individuals in the community) was initially categorized in quartiles and subsequently made into a dichotomous variable with the lowest quartile as the reference.

Common mental disorders (the presence of depression, anxiety and somatic distress) were measured using the General Health Questionnaire (GHQ-12) [23]. This tool was not intended to establish a diagnosis, but was a proxy of the mental health status of the person. The GHQ-12 has not been previously validated in Peru; however after consultation, a group of local experts concluded it was appropriate for this setting. The GHQ-12 score ranges from 0 to 12 points and was dichotomized; a score of 5 or more was considered a positive case based on a previous study conducted in Santiago de Chile [24].

Migration status (rural, migrant, urban) was the primary exposure variable. Sex, age, education level and monthly family income were considered as potential confounders. A secondary analysis was performed where we divided the group of migrants by age of migration (<12 years, >12 years), years living in an urban area and by percentage of lifetime exposure to an urban area, categorized by quartiles.

Statistical analysis

Chi-squared tests, including trend analysis, and one-way ANOVA were used for descriptive statistics and univariate analysis. Multivariable analysis was conducted, using generalized linear models (GLM), with the Poisson distribution and robust standard errors to calculate the prevalence ratios (PR). Prevalence ratios were preferred as summary estimates because of the high prevalence observed for the outcomes of interest and, as discussed elsewhere [25], odds ratios would likely yield overestimations in the relationship of interest. Poisson regression with robust standard errors was considered more appropriate, as negative binomial regression models did not converge [25]. Data were analyzed using the statistical program Stata 10 (Stata, College Station, TX, USA).

Results

The study population is described in Table 1. A total of 932,911, and 982 measurements were available for GHQ-12, cognitive social capital and structural social capital, respectively. The migrant population in this study was an established migrant group; 90% had migrated to Lima more than 20 years ago. The majority was older than 12 years at the time of migration and approximately 50% of the group had spent at least half of their lifetime in the urban area (Table 2).

The study groups were similar with respect to sex and age distribution. However, the groups differed in education level and family income (Table 1). The rural group had lower levels of education and lower family income. The urban

Table 1 Demographic and socioeconomic variables by migration status

	Group			Total	p*
	Urban	Migrant	Rural		
Sex					
Male	92 (46.2%)	281 (47.6%)	95 (47.3%)	468 (47.3%)	0.943
Age					
Mean age	48.1 (46.5–49.8)	47.8 (46.8–48.7)	48.3 (46.5–50.1)	48 (47.2–48.7)	0.84**
Education level					
None	2 (1%)	59 (10%)	68 (33.8%)	129 (13.1%)	<0.001
Incomplete primary	11 (5.6%)	124 (21.1%)	64 (31.8%)	199 (20.2%)	
Complete primary	23 (11.6%)	99 (16.8%)	30 (14.9%)	152 (15.4%)	
Incomplete secondary	50 (25.3%)	126 (21.4%)	16 (8%)	192 (19.5%)	
Complete secondary	112 (56.6%)	180 (30.6%)	23 (11.4%)	315 (31.9%)	
Family income per month					
≤$50	2 (1%)	8 (1.4%)	109 (68.9%)	119 (13.1%)	<0.001
$51–150	36 (18.7%)	143 (25.8%)	32 (20.3%)	211 (23.3%)	
$151–250	104 (53.9%)	292 (52.6%)	10 (6.3%)	406 (44.8%)	
$251–350	40 (20.7%)	82 (14.8%)	4 (2.5%)	126 (13.9%)	
$351–450	8 (4.2%)	26 (4.7%)	2 (1.3%)	36 (4%)	
≥$450	3 (1.6%)	4 (0.7%)	1 (0.6%)	8 (0.9%)	

* p value for Chi-square bivariated analysis within groups

** p value using one-way ANOVA

group was mostly likely to complete secondary school (57%), and the majority earned between $152 and 250 per month (54%). Migrants had similar income patterns, but differed in education from both the urban and rural groups.

The overall prevalence of common mental disorders was high in the PERU MIGRANT population (39.4%). A trend of increasing prevalence was observed: the urban group had the lowest prevalence (33%), followed by the migrant group (38%) and the rural group (49%) (p for trend <0.001). Similar trends were also observed for high cognitive social capital (urban 41%, migrants 50% and rural 74%; p for trend <0.001) and structural social capital above the lowest quartile (urban 62%, migrants 68%, and rural 92%; p for trend <0.001).

Common mental disorders

In the crude model adjusted for age and sex only (Table 3), the rural group had a prevalence ratio for common mental disorders 1.49 (95% CI 1.09–2.05) times higher than the urban group. However, in the fully adjusted model, the difference was attenuated. The migrant group was not different from the urban group.

Cognitive SASCAT

Similarly, in the crude analysis the rural group had a prevalence ratio for cognitive social capital 1.80 (95% CI

Table 2 Patterns of migration

Percentage of those living in an urban area	
0–25%	141 (25.2%)
25–50%	139 (24.9%)
50–75%	142 (25.4%)
75–100%	137 (24.5)
Years living in an urban area	
<20 years	53 (9.5%)
20–29 years	203 (36.3%)
30–39 years	169 (30.2%)
>39 years	134 (24.0%)
Migration age	
<12 years old	225 (38.5%)
>12 years old	360 (61.5%)

1.36–2.37) times higher compared to the urban group; this relationship was also attenuated and not significant in the fully adjusted model. The migrant group had a prevalence ratio of 20% higher than the urban group, but this difference was not statistically different from the urban group.

Structural SASCAT

In both the crude and adjusted models, the rural group had a higher structural social capital compared to the urban group, with adjusted PR 1.55 (95% CI 1.11–2.15). Migrants had a PR 10% higher than the urban group, but

Table 3 Crude and adjusted prevalence ratios for GHQ-12, cognitive and structural social capital by migration status

Outcome	Category	Crude PR[a]	p	PR adjusted[b]	p
GHQ-12	Urban ($n = 188$)	1	Reference	1	Reference
	Migrant ($n = 544$)	1.17 (0.88–1.56)	0.27	1.07 (0.79–1.45)	0.647
	Rural ($n = 200$)	1.49 (1.09–2.05)	0.01	1.17 (0.71–1.94)	0.538
Cognitive SASCAT	Urban ($n = 186$)	1	Reference	1	Reference
	Migrant ($n = 534$)	1.20 (0.93–1.55)	0.16	1.19 (0.92–1.55)	0.18
	Rural ($n = 191$)	1.80 (1.36–2.37)	<0.001	1.33 (0.87–2.04)	0.192
Structural SASCAT	Urban ($n = 196$)	1	Reference	1	Reference
	Migrant ($n = 585$)	1.10 (0.90–1.35)	0.34	1.12 (0.90–1.38)	0.31
	Rural ($n = 201$)	1.49 (1.19–1.88)	<0.001	1.55 (1.11–2.15)	0.01

[a] Crude analysis included adjustment by age and sex

[b] Model adjusted by age, sex, family income and education level

this was not statistically significant in either the crude or adjusted model.

Pattern of migration

The age of migration, number of years living in an urban area and the percentage of lifetime exposure to an urban area did not affect the interpretation of the results for any of the three outcomes (data not shown).

Discussion

Main findings

The PERU MIGRANT study is the first study in Peru to evaluate the relationship between migration and common mental disorders and social capital. We did not find differences in the prevalence of common mental disorders, cognitive social capital or structural social capital between migrant and urban groups. Compared with the urban group, the rural group had higher prevalence of common mental disorders and cognitive social capital; however, this relationship was fully attenuated in the adjusted models, suggesting that education and income may explain part or most of this relationship. On the other hand, also comparing rural and urban groups, the structural social capital maintained this association in the adjusted model, suggesting that the rural region may have a better social structure.

Comparison with other studies

The high levels of social capital observed in the rural setting are consistent with other reports addressing social capital in Peru [17]. Following the period of political violence, social capital in rural areas has largely been re-constructed as a result of local social support programs [17]. The previous rural social networks, destroyed by terrorism, were replaced with community organizations, women's groups, residents' associations, self-defense committees and individual networks [17].

The lower levels of social networks observed in migrants in this study could reflect the length of residence in urban areas. Given their rural origin, in a context where strong social networks were present, we would expect that migrants had initially similar strong interactions through social networks as many of the settlers to Pampas originated from the same rural areas. However, over time and paired with sustained urban exposure, it is possible that these networks may have been reduced or dissolved. This may explain why differences between migrant and urban group in terms of common mental disorders and levels of social capital were not observed.

Our results concerning common mental disorders are consistent with those of a recent meta-analysis [15], which concluded there was no relationship between migration and common mental disorders. The limited number of studies that found an association between migration and common mental disorders was based on international migration and settings different from Peru [12, 26–28], including a recent study of Ecuadorian migrants living in Spain [29]. This discordance may be due to the heterogeneity of the definition of "migrant", including labor migrants and/or refugees, and the use of different tools to measure common mental disorders. Of interest, however, is that most of the international migration studies tend to place migrant population as disadvantaged in terms of their mental health compared to local non-migrant residents [14]. The evidence with regard to rural-to-urban migration seems to indicate the opposite, indicating that the migration process is a much more complex phenomena. The results from a recent study focusing on rural-to-urban migration of
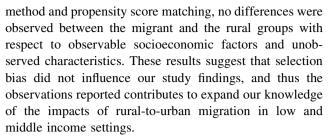
Chinese migrant workers [16] suggest that migrants are better off than their rural counterparts in terms of mental health. A more recent publication of the same group, focusing on the general population of Beijing, suggests a possible deteriorative effect of the migratory experience on mental health status [30]. Our study provided similar results—of a gradient of increasing rates of common mental disorders from urban to migrant to rural groups—in the exploratory analyses but such estimates were not confirmed in the multivariable regression models. Such attenuation in the estimates also occurred in the Chinese-based studies [16, 30].

A previous work carried out in the same rural area of Ayacucho has focused on post-traumatic stress disorders. Tremblay et al. [31], who also used the GHQ-12 as an exploratory tool, found a 72% prevalence of common mental disorders. Their study, however, used a lower cutoff, GHQ-12 >2 instead of 5 as used in our study and was conducted in a much younger population, >15 years of age, thus making it difficult to compare their estimates with the prevalence obtained in this study [31]. In this study, we also observed a very high prevalence of common mental disorders, particularly in the rural group. Although our mental health tools were not validated in this population, we used a conservative cutoff of common mental disorders to avoid over-estimating the prevalence. However, the high prevalence of mental health disorders observed are in line with those reported in earlier studies evaluating mental health in the same region of Peru [4, 31] suggesting that rural residents in Ayacucho have a high and underdiagnosed prevalence of common mental health disorders. As this tool was not designed to investigate mental health in rural residents, further studies are needed to validate the GHQ and to evaluate the prevalence of mental health in rural populations.

Strengths and limitations

This study benefits from having long-term residents in a rural area, long-term residents in an urban area and those who migrated from that specific rural area to a common urban area. The availability of these groups enables a more appropriate comparison of migrant populations.

Some of the limitations of our study are noteworthy. As with any migration study, selection bias does introduce additional challenges in the interpretation of the results of such studies [32–34]. Given Peru's political circumstances, especially in rural areas [7], a large number of people were placed under strong pressures to migrate and it could be suggested that the study population does not represent typical migrants. In a separate analysis of the Peru MIGRANT dataset [35], using the instrumental variable method and propensity score matching, no differences were observed between the migrant and the rural groups with respect to observable socioeconomic factors and unobserved characteristics. These results suggest that selection bias did not influence our study findings, and thus the observations reported contributes to expand our knowledge of the impacts of rural-to-urban migration in low and middle income settings.

Being a cross-sectional study, any causal relationship between migration, common mental disorders and social capital cannot be inferred. In addition, since the study was not powered to investigate subgroup differences, we are less confident regarding the lack of association between length of migration or exposure to the urban environment and mental health and social capital. The measurement of social capital before migration would have been useful to address the level of impact of trauma on migration; however due to the cross-sectional nature of the study this information was not available.

Conclusions and implications

In this secondary analysis of the PERU MIGRANT study, we did not find differences in the prevalence of common mental disorders or cognitive social capital between migrant and urban groups. In the case of the estimates attenuated in fully adjusted models, the results suggest that education and income may explain the differences between rural and urban residents in Peru, with the exception of structural social capital that was higher in the rural group. In light of these results, future studies in Peru should aim to verify these findings in different migrant groups and extend them to younger populations using, if possible, different tools to measure mental health.

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