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## Discrimination, Perceived Social Inequity, and Mental Health Among Rural-to-Urban Migrants in China

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### Abstract

Status-based discrimination and inequity have been associated with the process of migration, especially with economics-driven internal migration. However, their association with mental health among economy-driven internal migrants in developing countries is rarely assessed. This study examines discriminatory experiences and perceived social inequity in relation to mental health status among rural-to-urban migrants in China. Cross-sectional data were collected from 1,006 rural-to-urban migrants in 2004–2005 in Beijing, China. Participants reported their perceptions and experiences of being discriminated in daily life in urban destination and perceived social inequity. Mental health was measured using the symptom checklist-90 (SCL-90). Multivariate analyses using general linear model were performed to test the effect of discriminatory experience and perceived social inequity on mental health. Experience of discrimination was positively associated with male gender, being married at least once, poorer health status, shorter duration of migration, and middle range of personal income. Likewise, perceived social inequity was associated with poorer health status, higher education attainment, and lower personal income. Multivariate analyses indicate that both experience of discrimination and perceived social inequity were strongly associated with mental health problems of rural-to-

urban migrants. Experience of discrimination in daily life and perceived social inequity have a significant influence on mental health among rural-to-urban migrants. The findings underscore the needs to reduce public or societal discrimination against rural-to-urban migrants, to eliminate structural barriers (i.e., dual household registrations) for migrants to fully benefit from the urban economic development, and to create a positive atmosphere to improve migrant's psychological well-being.

## Keywords

China; Rural-to-urban migrants; Discrimination; Perceived social inequity; Mental health; SCL-90

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## Introduction

Migration is population movement from one country, region, or other place of residence to another location. A substantial global literature suggests that migration is associated with increased risk for poor mental and physical health (McKay et al. 2003). This increased risk may be related to contextual and psychosocial factors associated with the migration experience or migratory lifestyle such as adjusting to the new socio-cultural environment, changes in traditions and lifestyles, economic transitions, or barriers to access local community services including health care. Previous research has also documented that the discrimination and perceived unfair treatment encountered by migrants in their new destination may cause anxiety which contributes to mental and physical illnesses (Darmon and Khlat 2001; Pudaric et al. 2000; Li et al. 2006).

The impact of actual or perceived discrimination (or unfair treatment) on the health of those individuals who are the target of the discrimination and unfair treatment can be enormous. Discriminated individuals, when compared to non-discriminated individuals, generally have an increased risk for both mental and physical health problems (Link and Phelan 2001). The cumulative effect of the stress-response (physiological, cognitive, emotional, and behavioral) stands at the forefront when discussing discrimination and the long-term impact on a person's health (LeBel 2008). The cognitive appraisal (i.e., identifying a situation as serious, threatening, and considering resources available for coping) of the situation is essential to the way by which the discriminated individual reacts to the associated stress (Miller and Kaiser 2001). Negative appraisal usually results in lower self-esteem, social withdrawal (Miller and Kaiser 2001), depression (LeBel 2008), anger, frustration, exclusion (Kurzban and Leary 2001; Smith 2002), and feelings of inferiority (Major and O'Brien 2005). However, there are individuals who may actually succeed in a discriminating situation. In this case individuals look upon being discriminated as a motivator to accomplish their task. They use an empowering model of behavior (i.e., focus on their value, enhance interpersonal skills, and increase assertiveness) to deal with the discrimination rather than a coping model (i.e., constantly adjusting to the adversity). It is living with an internal resiliency to channel energy toward the positive aspects of life and not succumb to the discrimination (Shih 2004).

However, the existing literature on the relationship between actual or perceived discrimination and mental health among migrants has largely been limited to migrants within North American and European countries, and those seeking permanent resettlements, such as trans-culture or trans-country immigrants and war refugees (Darmon and Khlat 2001; Pudaric et al. 2000). Data are limited regarding the relationship between discrimination or perceived social inequity and its effect on mental health among temporary, economy-driven migrants in many developing countries, including China, which is home to one-fifth of the world's population.

Migration from rural to urban areas was restricted in China through the official household registration (“hukou”) system for almost a quarter century until economic reform took place in the late 1970s (Zhang 2001). Under the “hukou” system, each individual is officially registered as either a rural or an urban resident. Rural residents were not permitted to freely move to or settle in urban areas. With the introduction in 1979 of the Rural Household Contract Responsibility System, a form of rural economic reform, China experienced rapid growth in agricultural productivity (Anderson et al. 2004) and a subsequent surplus of rural labor (Anderson et al. 2004). Concurrently, rapid economic growth in urban China continuously widened the income gap between the urban and rural areas (Good Read 2008). This increasing income gap has provided a strong incentive for rural residents to migrate to urban areas in search of employment opportunities and better lives. Consequently, millions of Chinese farmers have left their villages to cities, forming the rural-to-urban migration, one of the largest internal migrations in China's recent history (Zhang 2001).

According to the recent Chinese governmental statistics, there are approximately 225.5 million rural-to-urban migrants in China, accounting for 31% of total rural labor and 17% of the total population in China (China National Bureau of Statistics 2009). Rural-to-urban migrants work or live in urban areas without official urban household registration (i.e., urban “hukou”). Most of these migrants come from the poor rural areas in interior provinces, to form a general geographic pattern of migration from the middle and western parts of China to the eastern and coastal regions, where economic development was more advanced. Because of existing legal restrictions on employment and housing in urban areas, approximately 80% of the migrants do not permanently relocate (e.g., obtaining official urban “hukou”; Zhang 2001).

While the current magnitude of the rural-to-urban migration is already substantial, China is facing an anticipated increase of rural-to-urban migration in the coming years because of several salient socioeconomic factors. Both the rural–urban income disparity and the rural labor surplus have continued to rise in China in recent years (Anderson et al. 2004). In addition, the Chinese government has gradually been relaxing its control on rural to urban population-movement. Both central and local governments have started to relax some regulations on rural-to-urban migration. For example, the Beijing government abolished the employment restriction in 2001 and waived some mandatory fees for rural migrants in 2002.

Given the size of this mobile population movement and the likelihood that this process will accelerate as modernization and industrialization proceeds, the mental health status of this migratory population has become a significant public health issue in China. In moving from the rural to the urban context, migrants also encounter a rapid change of working and living conditions, a weakening of family supports, and a fragmentation of their social support network that may negatively impact their well-being and health status (Diaz et al. 2001; Huang 2000; Pernice and Brook 1996).

Even though the proportion of the rural-to-urban migrants is substantial (about 17% of the total Chinese population) and it is well recognized that these migrants are experiencing substantial “status-based” discrimination in their daily lives in cities, little data are available regarding the association of their discrimination experience and perceived social inequity with mental health status among these Chinese migrants. Therefore, the current study, utilizing data from 1,006 rural migrants in Beijing, was designed to examine the discrimination and perceived social inequity and their relationship with mental health problems among rural migrants in China.

## Method

### Participants and Sampling Procedures

The data used in this analysis were derived from a larger comparative study on mental health among the Chinese population (Li et al. 2009). The rural-to-urban migrant sample ( $N = 1,006$ ) was recruited in Beijing in 2004–2005. Beijing is the capital city of China, with a permanent population of 13 million. According to governmental statistics, there were more than 3 million rural-to-urban migrants (69% males and 31% females) in Beijing in 2003, and the majority of them were between 18 and 40 years of age (Beijing Bureau of Statistics 2001).

The rural-to-urban migrant sample was recruited in Beijing using the occupational cluster-based “quota sampling” scheme to ensure the representative nature of the migrant sample (Li et al. 2004). According to 2003 Beijing government statistics of migrant employment, five occupational clusters employed 82% of the rural-to-urban migrants in Beijing (i.e., construction, hotel and restaurant, wholesale and retail, manufacture, domestic service and other service sectors). These five occupational clusters were selected as the sampling frame for rural-to-urban migrants in the current study. The number of participants recruited in each occupational cluster was approximately proportionate to the overall estimated distribution of migrants in the cluster. In addition, the sampling was also stratified by gender to match the overall gender distribution of the migrant population in Beijing. The eligibility criteria for participation in the study included: (1) between 18 and 40 years of age; (2) born in a rural area and registered as a permanent rural resident; (3) worked in Beijing without a permanent Beijing residence; (4) had been physically present in Beijing for at least 1 month. The local research teams used workplaces (store, shop, club, office, factory, construction site) as the sampling units. Streets were used as the sampling units for migrants who did not have fixed workplaces (such as repairmen, street vendors). Once a sampling unit was identified and selected according to the pre-established sampling scheme, employers (or managers) at the sampling unit were contacted for permission to conduct the survey on their premises. A total of 38 sampling units were approached and 34 (89%) agreed to participate. Upon receiving permission, the interviewers randomly approached eligible rural-to-urban migrants in the sampling unit. This process was repeated until target numbers of sampling units or numbers of participants in each sampling stratum were reached. To prevent over-sampling of migrants from any single sampling unit, the number of migrants recruited from any unit was limited to 50. This sampling process yielded a final sample of 1,006 rural-to-urban migrant workers from the 34 sampling units. These sampling units, stratified by occupational cluster, spread across 10 large geographic locations (e.g., downtown areas, business districts, major streets, and suburban townships) in two central urban districts, two “near” suburban districts, and two “outer” suburban districts/counties in Beijing.

### Survey Procedures

Once an eligible individual was identified in a sampling unit, trained interviewers provided the individual with a detailed description of the study design and the consenting procedure and invited her/him to participate in the survey. A total of 1,020 individuals were approached and 14 (1.4%) of them refused to participate (8 males and 6 females). Eligible individuals who agreed to participate and provided written informed consents were asked to complete a self-administered anonymous questionnaire. Questionnaires were pilot-tested for comprehension and appropriateness of language prior to administration. It typically took about 45 min to complete the survey. Participants completed the survey individually or in a small group (3–5 people) at workplaces, homes or other locations preferred by the participants. For a few participants ( $N = 9$ ) with limited literacy, interviewers read questions to them, and the participants gave oral responses to the interviewers who recorded the

responses in questionnaires. During the survey, necessary clarification or instruction was provided promptly to the participants when needed. No identifiable personal information was collected from the participants. Each participant was provided with a small monetary incentive (approximately equivalent of \$2.5) as a token of appreciation for their participation. The study protocol was approved by the Institutional Review Boards at Wayne State University in the United States and Beijing Normal University in China.

## Measures

**Demographic Characteristics**—Participant's age, gender, ethnicity, education level (i.e., illiterate, elementary school, middle school, high/technical school, college or above), and marital status (i.e., never married, married, divorced, remarried, and widowed) were collected. Because of small frequencies in some categories of education and marital status measures (e.g., “illiterate” and “college” in education and “divorced”, “remarried”, and “widowed” in marital status), responses were grouped into three categories for education ( $\leq$ elementary school, middle school, and  $\geq$ high school) and two categories for marital status (never married and married at least once) in bivariate or multivariate analysis. Because only 3% of participants were non-Han ethnicities, these ethnic groups were collapsed into a single category (i.e., non-Han). Participants were also asked to self-rate their overall health status on a 5-point scale (very poor, poor, fair, good, and very good). Due to the low frequency in “very poor” category, the response was grouped into four categories: poor (very poor/poor), fair, good, and very good, with a higher score indicating a better health status. All participants were asked about their average monthly income (in Chinese currency Yuan (8 Yuan = one US dollar at the time of survey)).

**Discrimination Experience**—The questionnaire contains 20 items assessing discriminatory acts or unfair treatment experienced or perceived by participants during their work and life (e.g., “when I look for a job, I do not have same opportunity as others”, “If something got lost, people will first suspect me”). All items were presented on a 4-point scale (1 = “never happened” to 4 = “happened frequently”). The internal consistency estimate (Cronbach alpha) of the scale was .88 for the current study sample.

**Perceived Social Inequity (PSI)**—The questionnaire contains 18 items to measure PSI among participants in areas such as social prejudice and exclusion (e.g., I am viewed negatively by mainstream society; I feel that society views me as an inferior being). These items were culturally adapted from a published scale (Harvey 2001). All items were presented on a 4-point scale (1 = “strongly disagree” to 4 = “strongly agree”). The internal consistency estimate (Cronbach alpha) was .78 for the current study sample.

**Mental Health Symptoms**—The participant's mental health symptoms during the most recent 7 days were measured with the symptom checklist-90 (SCL-90; Derogatis et al. 1973). The SCL-90 is a self-report multidimensional inventory designed to screen for a broad range of psychological problems and symptoms of psychopathology. The SCL-90 has nine primary symptom dimensions (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism) and a subscale of seven additional items. The scale, originally developed for assessment of symptomatic behavior of psychiatric outpatients, has been used with a variety of populations from non-patient “normal” population to medical patients or individual with psychiatric disorders, and has been translated into numerous languages including Chinese (Derogatis et al. 1973; Wang 1993). Within the Chinese population, the SCL-90 has been used to assess mental health symptoms or trauma symptoms among community sample, nurses, women undergoing an early abortion, adolescents, patients of functional dyspepsia, unemployed workers, and migrant workers (Shen et al. 1998; Wang et al. 2000; Hu et al.

1997; Luo et al. 1996; Xia and Qian 2001; Jiang et al. 2000; Wu et al. 2001). The internal consistency estimates (Cronbach alpha) of the 10 subscales ranged from .70 to .87 for the current study sample.

### Statistical Analysis

Descriptive statistics were employed to examine the pattern of missing data and distributional property of the main study variables. Because of the relatively small amount of missing data (i.e., <3.8% on any demographic items and <2.2% on any of the discrimination, PSI and mental health items), no imputation procedures were employed to treat the missing data. The calculation of the composite scores and various statistical procedures were performed based on available data (i.e., valid responses). The mean scores (rather than sum scores or count scores) were employed as composite scores for main study variables (discrimination, PSI, and SCL-90 subscales) to minimize the potential effect of missing data. While most of the main study variables were negatively skewed (i.e., with positive skewness statistics), their deviation from the normal distribution remain mild (with skewness statistics ranging from .32 to 1.44 and Kurtosis statistics ranging from .18 to 1.96). Therefore, no attempts (e.g., data transformation) were made to improve the distributional properties, given that all the statistical procedures (e.g., chi-square test, analysis of variance, and general linear model) employed in the current study were robust when mild violation of distributional normality is present. The following analytic approaches were further employed to achieve the research objective in the current study.

First, analysis of variance (ANOVA) was employed to assess the association between demographic characteristics and discrimination and PSI measures. Second, Pearson Product Moment Correlation Coefficient (i.e., Pearson  $r$ ) was employed to assess the association between discrimination and PSI and mental health symptoms (SCL-90 scales). Third, multivariate analysis using general linear model (GLM) was employed to assess the association of mental health symptoms with discrimination and PSI measures controlling for potential confounders. Because of the conceptual differences between discrimination and PSI (e.g., experience vs. perception; specific events vs. general perceptions) and also the high positive correlation between the two scales ( $r = .274, P < .0001$ ), we conducted two GLM analyses separately for the discrimination and PSI. To use discrimination and PSI measures as between-subjects factors in ANOVA analysis, both measures were categorized into three groups (low, medium, and high) using the 25th and 75th percentile of the responses as cutoffs (i.e., bottom 25%, middle 50%, and top 25%). Age, gender, and other demographic characteristics that were significantly associated with discrimination or PSI were included in the GLM as either additional between-subjects factor variables (for categorical variables) or covariates (for continuous variables). All covariates (e.g., age, education, health status, length of migration, and personal income) were entered into the GLM analyses as continuous variables in their original measurement metrics.

## Results

### Socio-Demographic Characteristics

The socio-demographic characteristics of 1,006 rural migrants are shown in Table 1. Nearly two-thirds of the participants were male. The mean age of the sample was about 25.39 years (range 18–40 years). The average monthly income was 980 Yuan, equivalent to US \$120 at the time of survey. The majority was Han ethnicity (97%). Seventy-two percent of the participants had received no more than middle school education. About 61% had never been married. More than two-thirds of the sample reported “very good” or “good” health. Male and female migrants significantly differed on most of the demographic characteristics with male migrants being older and making more money than females. In addition, more male



migrants were of Han ethnicity and being married at least once. More male migrants than female migrants reported having “very good” health.

### Demographic Correlates of Discrimination and PSI

As shown in Table 2, male migrants reported a higher level of discrimination and PSI than female migrants, although only the difference in discrimination reached statistical significance. Discrimination was increased with age and younger migrants (18–20 years of age) and older migrants (31–40 years of age) reported a higher level of PSI than the middle age group (21–30 years of age), albeit neither of the trends was statistically significant. Migrants who married at least once reported a significantly higher level of discrimination than single migrants, although both groups reported similar levels of PSI. Health status was negatively associated with both discrimination and PSI in a linear fashion with poorer health status being associated with high discrimination and PSI. Education attainment was negatively associated with PSI with lower education being associated with higher PSI, but not with discrimination. Length of migration was positively associated with discrimination, but not with PSI. Monthly income was significantly associated with discrimination and PSI, but only the association with PSI showed a negatively linear trend. Further test using ANOVA (data not shown) revealed a significant quadratic (rather than linear) relationship between discrimination and income ( $P < .042$ ). Migrants whose incomes were in the middle range of the sample reported the highest level of discrimination.

### Mental Health Symptoms and Discrimination and PSI

The Pearson correlation coefficients between SCL-90 subscales and discrimination and PSI are shown in Table 3. The Pearson  $r$  with SCL-90 subscales ranged from .24 to .33 for discrimination and from .17 to .25 for PSI and all correlation coefficients were statistically significant ( $P < .0001$ ).

Table 4 depicts the GLM results for association between mental health and discrimination, controlling for age, gender, marital status, health status, length of migration, and personal income. Discrimination was a significant factor ( $P < .0001$ ) in multivariate test and univariate tests for all SCL-90 subscales. In addition, gender was a significant factor in multivariate test ( $P < .0001$ ) and univariate tests for depression ( $P < .01$ ), anxiety ( $P < .01$ ), and phobic anxiety ( $P < .001$ ). Marital status (single vs. married at least once) was a significant factor in univariate tests for interpersonal sensitivity ( $P < .05$ ), depression ( $P < .05$ ), anxiety ( $P < .05$ ), psychoticism ( $P < .01$ ), and additional items ( $P < .05$ ). There were no multivariate or univariate significant 2-way or 3-way interaction terms except gender-by-marital status interaction that was significant for “additional items” subscale ( $P < .05$ ). Among the covariates, age was significant in multivariate test ( $P < .01$ ) and univariate tests for hostility ( $P < .05$ ) and phobic anxiety ( $P < .001$ ). Self-reported health status showed significance ( $P < .0001$ ) in multivariate test and univariate tests for all SCL-90 subscales. Personal income was only significant in univariate test for depression ( $P < .05$ ). Length of migration was not a significant covariate in either multivariate test or any of the univariate tests.

The GLM results for PSI are shown in Table 5. After controlling for gender, age, health status, education attainment, and personal income, PSI was a significant factor ( $P < .0001$ ) in multivariate test and univariate tests for all SCL-90 subscales. Gender was a significant factor in multivariate test ( $P < .001$ ) and univariate tests for phobic anxiety ( $P < .01$ ), paranoid ideation ( $P < .01$ ), and psychoticism ( $P < .05$ ). The 2-way interaction between PSI and gender did not show significance in multivariate test but was significant in univariate tests for all SCL-90 subscales except somatization. Among the covariates, age was significant in multivariate test ( $P < .001$ ) and univariate tests for all SCL-90 subscales

except somatization. Self-reported health status was a significant covariate ( $P < .0001$ ) for multivariate test and univariate tests for all SCL-90 subscales. Education attainment was a significant covariate for multivariate test ( $P < .01$ ) and all SCL-90 subscales except the hostility. Personal income was only a significant covariate in univariate test for depression.

## Discussion

Data in the present study confirm and expand the findings from earlier studies. Consistent with previous research, our study found a high level discrimination experience and PSI among rural migrants in urban China. Migrants might be stigmatized in cities because of their attributes (e.g., dressing, talking, accent, and farmer habits). The common images of rural migrants created by the media were poor, dirty, ignorant, and prone to violence (Li et al. 2007). In addition, rural migrants were frequently blamed for the increasing crime rates and social instability in the cities (Li et al. 2006).

Consistent with the existing literature (Link and Phelan 2001; LeBel 2008), our results provide strong evidence that experience of discrimination in daily life and perceived social inequity (PSI) are negatively associated with mental health. Experience of discrimination in daily life may create and enhance the perception of social inequity. Both discriminatory experience and PSI may lower migrant's self-esteem and self efficacy, cause migrant's feelings of inferiority, depression, frustration, and social exclusion, which in turn result in psychological problems among rural-to-urban migrants (Miller and Kaiser 2001; Kurzban and Leary 2001; Major and O'Brien 2005).

Inconsistent with prevailing findings in the literature (Bonicatto et al. 2001; Sabbah et al. 2003), we found that male migrants on average perceived a higher level of discrimination and social inequity in the urban areas than female migrants. One reason for this gender difference in discrimination and social inequity among Chinese migrants might be due to the fact that men usually take major responsibility for all aspects of their family life in China, and are more likely to be discriminated against by urban dwellers and communities through their experiences in search for jobs and other social activities. Therefore, compared with women, there are more chances for men to be (or to feel being) discriminated or unfairly treated.

In addition, self-report health status was negatively associated with both discrimination and PSI. Migrants with a better self-report health status perceived lower social inequity and discrimination. One possible reason is that the healthier migrants might be more empowered to deal with the difficulties and stress and to adjust themselves to urban environment. Alternatively, discrimination and PSI might also have some negative impact on migrant's physical health.

There are some potential limitations in this study. First, despite the efforts to ensure the representativeness of the samples, our study sample remains a convenience sample of rural-to-urban migrants from a single metropolis (the national political and culture center) in China, which limits our ability to generalize our findings to migrants from other areas of China. Second, cross-sectional data in the current study prevent causal interpretation of the findings. A longitudinal research is needed to explore the causal relationship between discrimination and PSI and mental health. Third, because discrimination, PSI, and mental health were assessed with a self-administered questionnaire and therefore the data might be subject to socially desirable response and self-reporting bias.

Regardless of these potential limitations, this study represents one of the first efforts to examine the relationship between discrimination/PSI and mental health status among rural-to-urban migrants using validated scales among community-based samples in China. The

results from this study have significant implications for health promotion programs to improve the mental health status of rural-to-urban migrants. First, migrants make a major contribution to China's industrial development and economic growth in the past decades. However, their contributions are not well recognized by the public. They are frequently marginalized in urban areas and are targets of discrimination. Future interventions should seek to improve public attitudes toward rural-to-urban migrants and generate actions to eliminate discrimination and social inequity. Second, the government and legislature should eliminate structural barriers (e.g., dual urban–rural household registration systems) for migrants to fully benefit from the urban economic development. Third, migrant's poor working/living conditions and insufficient social support may affect their psychological well-being (Li et al. 2006). Thus, the government and concerned organizations should seek to improve living conditions and social support for young migrant workers. Fourth, the present study has shown that migrants with low socioeconomic status (e.g., less education, low income) perceived higher levels of social inequity. This might be the result of limited job opportunities for these migrants in urban areas. Future stigma-reduction efforts need to help these migrants to learn or improve necessary occupational skills before or during migration. Finally, the future health promotion efforts need to help migrants in urban areas to actively cope with various unsatisfactory or even stressful life experiences to alleviate the negative effect of these experiences on their mental health and other aspects of their migratory life.

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Table 1

## Individual characteristics of study sample

Characteristics	Overall	Female	Male	F/ $\chi^2$	P-value
N (%)	1,006 (100%)	332 (33%)	670 (67%)		
Mean age in years (SD)	25.39 (6.21)	23.76 (5.55)	26.21 (6.36)	35.811	.000
Mean monthly income (SD) <sup>a</sup>	980 (703)	827 (787)	1,055 (646)	23.839	.000
Han ethnicity	968 (97%)	308 (93%)	658 (98%)	17.466	.000
Education				2.560	.278
≤Elementary school	101 (10%)	38 (12%)	63 (9%)		
Middle school	618 (62%)	210 (63%)	408 (61%)		
≥High school	279 (28%)	83 (25%)	196 (29%)		
Marital status				6.538	.011
Single	612 (61%)	221 (67%)	389 (59%)		
Married at least once	386 (39%)	109 (33%)	275 (41%)		
Perceived health				8.339	.039
Very good	365 (37%)	109 (33%)	256 (39%)		
Good	348 (35%)	133 (40%)	215 (32%)		
Fair	242 (24%)	72 (22%)	170 (25%)		
Poor	41 (4%)	17 (5%)	24 (4%)		

<sup>a</sup>Measured in Chinese currency Yuan (8 Yuan = one US dollar at the time of survey)

**Table 2**  
 Bivariate association of discrimination and perceived social inequity (PSI) with sociodemographic factors

	Discrimination			PSI				
	M	SD	F-value	P-value	M	SD	F-value	P-value
Gender			44.860	.000			3.358	.067
Female	1.72	.45			2.29	.47		
Male	1.96	.55			2.35	.48		
Age group			2.033	.131			2.850	.058
18-20	1.83	.50			2.38	.43		
21-30	1.89	.51			2.30	.49		
31-40	1.93	.59			2.35	.51		
Marital status			5.459	.020			1.051	.305
Single	1.85	.50			2.34	.46		
Married at least once	1.93	.56			2.31	.51		
Health status			16.292	.000			11.888	.000
Very good	1.83	.52			2.28	.48		
Good	1.82	.51			2.31	.46		
Fair	1.99	.54			2.40	.49		
Poor	2.18	.48			2.60	.45		
Education			1.071	.343			5.987	.003
≤Elementary school	1.88	.52			2.44	.51		
Middle school	1.90	.55			2.34	.47		
≥High school	1.84	.49			2.26	.46		
Total length (year)			9.022	.000			.500	.607
≤1	1.79	.48			2.34	.45		
1-3	1.82	.50			2.35	.45		
>3	1.95	.56			2.32	.51		
Income			6.557	.001			9.892	.000
≤700	1.83	.49			2.40	.46		
700-1,000	1.95	.56			2.33	.49		
>1,000	1.83	.52			2.22	.46		

**Table 3**

Correlation coefficients between SCL-90 subscale scores and discrimination and perceived social inequity (PSI)

SCL-90 scales	Discrimination	PSI
Somatization	.31*	.22*
Obsessive-compulsive	.30*	.20*
Interpersonal sensitivity	.31*	.23*
Depression	.33*	.25*
Anxiety	.28*	.22*
Hostility	.27*	.17*
Phobic anxiety	.26*	.19*
Paranoid ideation	.31*	.21*
Psychoticism	.29*	.23*
Additional items	.24*	.18*

\*  $P < .0001$



**Table 4**

General linear model for association between mental health symptoms and discrimination

	Main effect			Interaction <sup>d</sup>			Covariate <sup>b</sup>		
	Discrimination	Gender	Marital	Gender × Marital	Age	Health	Income		
Multivariate <i>F</i>	4.72****	6.54****	1.37	1.59	2.47**	8.98****	<1		
Somatization	2.69****	<1	<1	<1	<1	82.14****	1.41		
Obsessive-compulsive	25.44****	<1	1.85	1.55	1.11	33.67****	<1		
Interpersonal sensitivity	30.62****	2.72	5.46*	1.36	2.47	39.73****	3.44		
Depression	37.87****	7.39**	3.89*	1.66	1.37	44.58****	3.92*		
Anxiety	27.74****	8.50**	3.86*	3.29	1.63	34.93****	2.48		
Hostility	25.61****	2.33	1.72	<1	5.93*	32.98****	<1		
Phobic anxiety	27.84****	11.64****	<1	1.50	11.43****	28.18****	3.45		
Paranoid ideation	27.38****	<1	2.22	<1	3.65	23.78****	2.00		
Psychoticism	23.15****	<1	6.61**	1.53	1.05	43.58****	2.01		
Additional items	18.48****	<1	5.64*	4.70*	<1	35.48****	1.98		

<sup>a</sup> All other 2-way and 3-way interaction terms were excluded in the table because of absence of both multivariate and univariate significances

<sup>b</sup> Only those demographic variables that were significantly correlated with discrimination were included in the GLM as covariates. One covariate (length of migration) was excluded in the table because of absence of both multivariate and univariate significances

\*  $P < .05$ ;

\*\*  $P < .01$ ;

\*\*\*  $P < .001$ ;

\*\*\*\*  $P < .0001$

**Table 5**  
General linear model for association between mental health symptoms and perceived social inequity (PSI)

	Main effect		Interaction		Covariate <sup>a</sup>			
	PSI	Gender	PSI × Gender	Age	Health	Education	Income	
Multivariate <i>F</i>	3.19 <sup>****</sup>	7.49 <sup>***</sup>	1.22	5.76 <sup>***</sup>	8.35 <sup>****</sup>	2.58 <sup>**</sup>	<1	
Somatization	14.45 <sup>****</sup>	<1	2.06	<1	76.54 <sup>****</sup>	9.65 <sup>**</sup>	<1	
Obsessive-compulsive	13.36 <sup>****</sup>	2.35	3.07 <sup>*</sup>	6.42 <sup>*</sup>	32.29 <sup>****</sup>	9.67 <sup>**</sup>	<1	
Interpersonal sensitivity	19.66 <sup>****</sup>	<1	3.13 <sup>*</sup>	15.94 <sup>****</sup>	36.93 <sup>****</sup>	1.15 <sup>****</sup>	2.35	
Depression	21.89 <sup>****</sup>	<1	3.31 <sup>*</sup>	8.64 <sup>**</sup>	45.13 <sup>****</sup>	4.42 <sup>*</sup>	3.88 <sup>*</sup>	
Anxiety	17.30 <sup>****</sup>	1.66	4.94 <sup>**</sup>	12.598 <sup>***</sup>	32.85 <sup>****</sup>	11.28 <sup>****</sup>	2.13	
Hostility	9.65 <sup>****</sup>	<1	5.12 <sup>**</sup>	22.45 <sup>****</sup>	35.22 <sup>****</sup>	<1	<1	
Phobic anxiety	13.80 <sup>****</sup>	7.13 <sup>**</sup>	4.67 <sup>**</sup>	29.56 <sup>****</sup>	3.64 <sup>****</sup>	9.92 <sup>**</sup>	3.65	
Paranoid ideation	18.30 <sup>****</sup>	9.45 <sup>**</sup>	7.19 <sup>***</sup>	18.27 <sup>****</sup>	23.74 <sup>****</sup>	8.57 <sup>**</sup>	1.64	
Psychoticism	21.10 <sup>****</sup>	6.06 <sup>*</sup>	7.20 <sup>***</sup>	14.54 <sup>****</sup>	4.41 <sup>****</sup>	8.61 <sup>**</sup>	1.50	
Additional items	8.24 <sup>****</sup>	1.07	3.15 <sup>*</sup>	7.50 <sup>**</sup>	37.08 <sup>****</sup>	9.69 <sup>**</sup>	1.44	

<sup>a</sup> Only those demographic variables that were significantly correlated with discrimination were included in the GLM as covariates

\*  $P < .05$ ;

\*\*  $P < .01$ ;

\*\*\*  $P < .001$ ;

\*\*\*\*  $P < .0001$