

Mental Health Status and Related Characteristics of Chinese Male Rural–Urban Migrant Workers

Tingzhong Yang · Xiaochao Xu ·
Mu Li · Ian R. H. Rockett · Waner Zhu ·
Alejandra Ellison-Barnes

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Abstract To explore mental health status and related characteristics in a sample of Chinese male rural–urban migrants. Subjects were 1,595 male rural–urban migrant workers selected through a multi-stage sample survey conducted in two cities (Hangzhou and Guangzhou). Data were collected by means of a self-administered questionnaire. Both life and work stressors were examined. Stress and mental health status were measured by the Chinese Perceived Stress Scale (CPSS) and the Chinese Health Questionnaire (CHQ), respectively. Unconditional logistic regression analysis was performed to identify factors associated with probable mental disorders. There are approximately 120 million rural–urban migrants in China. The prevalence of probable mental disorders in the sample population was 24.4% (95% CI: 23.3–25.5%), which was higher than among urban residents (20.2%, 95% CI: 18.8–21.7%). Logistic regression analysis revealed that five characteristics were positively associated with risk for probable mental disorders: originating in the South (OR = 2.00; 95% CI = 1.02, 4.00), higher life stress (OR = 7.63; 95% CI = 5.88, 10.00), staying in the city for

5–9 months each year (OR = 2.56; 95% CI = 1.67, 3.85), higher work stress (OR = 2.56; 95% CI = 1.96, 3.33), and separation from wife (OR = 2.43; 95% CI = 1.61, 3.57). Employment in machinery and transportation (OR = 0.54; 95% CI = 0.36, 0.81) and higher self-worth (OR = 0.42; 95% CI = 0.28, 0.62) were negatively associated. Findings support an urgent need to develop specific policies and programs to address mental health problems among Chinese rural–urban migrants.

Keywords Migrant workers · Stress · Mental health · China

Introduction

China is largely an agrarian nation. Farmers comprise more than three-quarters of the total population. In the past two decades, many have moved to cities seeking employment. The scale of this rural–urban migration is massive. Migrant numbers rose from 50 million in 1990 to 121 million by 2000. Prior to the current economic downturn, this number was projected to reach 160 million by 2010. This figure would represent about 25% of the Chinese working population (China National Bureau of Statistics (CNBS) 2001).

Research on the relationship between migration and mental health problems has been reported in the literature. Some studies concluded that migration and related experiences of insecurity and loss of familiar social networks represent a major risk factor for psychological ill-health (China National Bureau of Statistics (CNBS) 2001; Fox et al. 2001; Noh and Avison 1992). The mental health of a migrant group has multifactoral determinants involving society of origin, the migration process, and society of resettlement. These three elements need to be considered in

T. Yang (✉) · X. Xu · W. Zhu
Center for Tobacco Control Research, Zhejiang University
School of Medicine, Yuhangtang Road, Hangzhou, China
e-mail: Ytingzhongyang@yahoo.com

M. Li
School of Public Health, University of Sydney, Sydney,
NSW, Australia

I. R. H. Rockett
Injury Control Research Center and Department of Community
Medicine, West Virginia University, Morgantown, WVU, USA

A. Ellison-Barnes
Wellesley College, Wellesley, MA, USA

the effort to reduce or comprehend the extent of mental disorders in any migrant group (Murphy 1997). Migration can be a stress-inducing phenomenon. However, not all migrants experience an excess of mental problems. Some studies suggest that since migrants typically leave their homes to increase their opportunities and improve their economic status, such changes may actually improve psychological health (Coutinho Eda et al. 1996; Krahl and Hashim 1998).

Differing from migrants in the traditional sense, rural–urban migrants form a special and vulnerable population group in China. The term “rural–urban migrants,” as used here, refers to individuals who move from rural to urban areas seeking employment and higher living standards without first establishing permanent urban residency (China National Bureau of Statistics (CNBS) 2001). Migration from rural to urban areas is restricted in China through the household registration “*hukou*” system. When rural residents migrate to an urban area, not only are they denied some basic citizenship rights at the destination, but they also have a lower socioeconomic status than their urban counterparts. The reason is that their move was not sanctioned through the household registration system. Rural migrants encounter barriers to employment, and often can only occupy jobs that the city residents reject, such as handling of corpses, sewage, chemical wastes, and working on construction sites. They typically live in labor compounds provided by their employers. These compounds are usually overcrowded and offer substandard sanitation and living conditions. Migrant workers are frequently marginalized in urban communities and are targets of discrimination (Yang et al. 2006). All of these deleterious factors can induce high levels of stress, which in turn may elevate the risk for mental disorders. There are limited data on the mental health status of Chinese rural–urban migrants. One study examined mental health symptoms among 371 (166 males and 205 females) migrant workers in Shenzhen, China (Shen et al. 1998). These migrant workers manifested poorer mental health than their non-migrant counterparts and the general Chinese population. A qualitative study revealed that a substantial number of migrants experienced mental health symptoms, such as depression, anxiety, hostility, and social isolation (Li et al. 2006). Other studies also showed migrant workers to be in poorer mental health status than non-migrants (Hu and Gu 2008; Jiang et al. 2007). All these studies had relatively small sample sizes. It is a public health imperative to estimate the prevalence of poor mental health in the very large rural–urban migrant worker population in order to develop appropriate policies, prevention strategies, and interventions. The primary purpose of this study was to examine mental health status and related characteristics among male Chinese rural–urban migrants.

Based on the Chinese mental health literature (Shen et al. 1998; Li et al. 2006; Hu and Gu 2008; Jiang et al. 2007) we hypothesized that there would be (a) a high prevalence of mental disorders among rural–urban migrants and that (b) geographic regions and other salient sociodemographics, such as age, sex, education, marital status, income, region of origin, employment status, length of stay in city each year, as well as separation from wife in the migration period (married migrants only), stress, and self-worth would all be associated with mental health status. Because our health questionnaire is a screening tool, not a diagnostic one, positive cases do not simply approximate true cases. In fact, we employ the term “probable mental disorders” as a proxy for “mental disorders” in this study.

Methods

Sampling

We employed a multi-stage cluster sampling procedure to select our subjects. In Stage One, we selected as survey sites two cities, Guangzhou and Hangzhou, which are located in the Zhujiang River and the Yangtze River areas of China, respectively. These two cities are the most economically developed areas in China, and have a large number of migrant workers, mainly rural–urban migrant workers. Guangzhou has an estimated resident population of 9.9 million and migrant population of 3.1 million (Yu 2007; National Bureau of statistics of China 2006). Corresponding estimates for Hangzhou are 6.2 million and 2.0 million. In Stage Two, we obtained a composite sample, approximately proportionate to the overall distribution of the migrant population by occupational cluster. Work sites were used as the sampling units to generate a list of subsets of worksites. From this scheme, we generated four types of worksites and subsets of worksites (in parentheses): (1) factory sites (manufacturing, machinery, electronics, textiles, and printing), (2) building sites (construction and other operation sites such as traffic conveyance and maintenance of roads or buildings), (3) service sites (tourism, hotels, restaurants, barbershops and beauty salons, bath houses, night clubs, karaoke, dance halls, and bars), and (4) commercial sites (markets, street vendors, and small retail shops) (Yang et al. 2006). Stage Three entailed selection, from the subsets of worksites, male migrant workers aged 18 and older with a rural “*hukou*” (that is, registered as a permanent rural resident) who had been living at the urban destination for at least 6 months. We surveyed males only since they comprise the large majority of Chinese rural–urban migrant workers (Yang et al. 2006).

Questionnaire

The questionnaire has been tested for reliability and validity (Yang et al. 2006; Yang et al. 2009; Yang and Huang 2003). It was pilot-tested and revised before used for data collection in this study. Questionnaire items were organized within the following categories:

Sociodemographics: age (date of birth); level of education; marital status; residential region of origin; work type; and personal income.

Living and working status in the period of migration: items were length of stay in the city in each year; and separation from wife.

Perceived life stressors: items covered family economics; housing conditions; food; health; marriage; sex; child education; entertainment; and discrimination (Yang et al. 2009).

Perceived work stressors: items covered working hours; work intensity; working conditions; wage; relationship with boss; relationship with fellow workers; delay of payment; and job security (Yang et al. 2009; Yang and Huang 2003).

All items were rated on a five-point scale: “feeling no stress” (0); “little stress” (1); “some stress” (2); “more stress” (3); and “much more stress” (4). Inapplicable items were assigned a score of 0. The total score was obtained by summing up the scores for each individual item. Higher scores indicated higher stress levels. Subjects with an average score exceeding 2 equated to “higher score,” indicating a higher stress level (Yang et al. 2009; Yang and Huang 2003).

Stress symptoms (stress) were also measured by the Perceived Stress Scale, Chinese version (CPSS). Questions supporting this scale include “Do you feel nervous or stressed?” and “Do you feel unable to control the important things in your life?” This scale comprises 14 items for assessing perceptions of stress during the previous month. Items are rated on a 5-point Likert-type scale, and range from 0 (never) to 4 (very often) (Yang et al. 2009; Yang and Huang 2003).

Mental health status was measured by the Chinese Health Questionnaire (CHQ). The Chinese Health Questionnaire (CHQ) was developed in Taiwan and derived from the General Health Questionnaire (GHQ), which is widely used around the world. Familiar to many English-language readers, the GHQ is used to screen for mental disorders in community settings (Goldberg and Williams 1991; Chong and Wilkinson 1989). The CHQ had been revised as a Mandarin version, and is both reliable and valid (Yang et al. 2003). This revision is now commonly utilized in research in community and primary care settings in China (Ma et al. 2007; Qiu et al. 2006; He et al. 2008).

The CHQ is a self-administered 12-item instrument designed for detecting probable mental disorders in both the community and among primary care patients. It has a four-point response scale: “not at all” and “same as usual” both = 0 and “rather more than usual” and “much more than usual” = 1. The total score, obtained by summing up the scores for the individual items, measures the severity of probable mental disorders. A cut-off score of 3 or more on the CHQ signified a probable mental disorder, with sensitivity 76.9%, specificity 73.8%, and a Kappa value of 0.44 (SE:0.07, U:8.43, $P < 0.01$) (Chong and Wilkinson 1989; Yang et al. 2003).

Some reports indicated that rural–urban migrant workers have lower self-worth than urban residents (Hu and Gu 2008; Sun 2007). In this study, we also explored the relationship between self-worth and mental health status. Self-worth was measured by a 5-item self-value questionnaire. Questions supporting this scale included “How do you perceive your social position?” and “How do you perceive your reputation?” Items were rated on a 5-point Likert-type scale ranging from 1 to 5, reflecting how people viewed their self-worth. The total score was obtained by summing up the scores of the individual items. Higher scores indicated higher self-worth, and the classification was implemented at a cut-off point of 3 plus, reflecting whether self-worth is higher or lower. This questionnaire has manifested good reliability and validity (Yang et al. 2009).

Procedures

Eligible individuals were contacted at their work sites or dormitories by medical professionals from local health departments. These professionals received intensive training prior to the survey. The final instrument required approximately 30 minutes to complete. We employed a number of strategies to reach the migrants at their work sites. First, employers at sampling units were contacted for permission to conduct the survey on their premises. Following permission, the “leaders” of migrant worker groups were contacted to ask them to mobilize and encourage their fellow workers to participate. Migrant worker groups are informal organizations, and their “leaders” possess high authority. In order to ensure greater data reliability, all subjects were mobilized and provided with full details of the study. Secondly, the survey was administered individually in dormitories or in a secluded area away from colleagues. Thirdly, investigators were on-hand to help with any queries about the questionnaire. Assistance was provided to those participants who had difficulty completing the questionnaire. Difficulty was primarily due to limited education. Finally, investigators reviewed the returned questionnaires for completeness, and questionnaires were modified where appropriate. Respondents were given a

small token of appreciation (tooth brush and tooth-paste; value US\$0.50) for their participation in the study. Each respondent was required to sign his name and provide a contact number for verification purposes. The Ethics Committee of the Medical Center, Zhejiang University approved the study protocol and informed consent was obtained from each participant.

Data Analysis

All survey data were entered into a database using Microsoft Excel. The dataset was imported into SAS (6.12 version) for the statistical analyses. We conducted Chi-square tests to calculate the prevalence of probable mental disorders, with their 95% confidence intervals, in order to show differences across demographics, migration characteristics, and stressors. All variables are categorical. We then conducted unconditional logistic regression analysis to test hypotheses about associations between the independent variables and dependent variable. For this analysis, we operationalized our dependent variable, mental disorders, as a binary response (disorder = 0, no disorder = 1). The independent variables in this analysis were those emerging as statistically significant in the Chi-square tests. All categorical, they are listed in Table 2. The first category in each variable served as the referent in the logistic regression analysis. A Wald test was used to test the statistical significance of each coefficient in the model. Backward stepwise regression is a preferred method for exploratory analyses, where analysis begins with a full or saturated model and variables are eliminated from the model in an iterative process. The significant independent predictors from these analyses were then selected for possible use in the overall model. The odds ratio (OR) expressed the relative likelihood of having a probable mental disorder. *P* values of 0.05 or less (2-tailed) indicated statistical significance.

Results

A total of 2,189 individuals were identified as potential subjects for the sampling list for this study. Of these, 1,953 individuals were approached and 1,744 agreed to interview, which resulted in a participation rate of 92.0%. Of the participants, complete data were obtained from 1,595, yielding a response rate of 91.5%. Non-responders gave no reason for non-participation, and we were unable to collect any other identifying information.

A total of 1,595 migrant workers participated in this study. Of participants, 48% were from Guangzhou and the remainder from Hangzhou. The mean age of respondents was 29.7 years (*SD* = 7.8). Eleven percent had attained an

elementary school or lower level of education, 52% were educated at the junior high school level, 26% at the high school level, and 11% at college level or higher, respectively. The majority (66%) were married. The “never married” and “divorced or widowed” comprised 32% and 2.5% of subjects, respectively. Forty seven percent worked in construction, 25% in machinery and transport, 18% in textiles, electronics and services, 8% in business, and 2% pursued other activities.

Life stressors and work stressors: attesting to satisfactory reliability, Cronbach’s coefficients for the life and work stressor questionnaires were 0.84 and 0.87, respectively. The mean score of perceived stress from daily life was 2.41 (*SD* = 0.84, 95% *CI*: 2.37–2.46). The mean score of perceived stress from work was 2.43 (*SD* = 0.900, 95% *CI*: 2.38–2.47). Some 19.5% (95% *CI*: 17.7–21.4%) of study participants were categorized as having higher life stress, and 21.6% (95% *CI*: 19.6–23.6%) as having higher work stress. A cut-off value of 3 or more distinguished higher from lower stress on each stressor variable. Percentages of participants classified in the higher perceived stress category (“more” or “much more” stress) for each life and work stressor are presented in Table 1 (Yang et al. 2009). The most frequently identified life stressor was “unhappy marriage,” followed by “lack of entertainment after work,” and “familial financial difficulty.” The most frequent work-related stressor was “excessively low

Table 1 Prevalence of perceived “more” or “much more” stress for each life and work stressor (*n* = 1,595)

Stressors	<i>n</i>	%
Work		
1. Long working hours and excessive workload	379	23.8
2. Poor relationship with fellow workers	165	10.3
3. Excessively low salary	406	25.5
4. Poor relationship with boss	317	19.9
5. Pay delay	382	23.9
6. Poor working conditions	296	18.6
7. Job insecurity	364	22.8
Life		
8. Instability of living and employment	362	22.7
9. Perceived discrimination	238	14.9
10. Poor living conditions	254	15.9
11. Poor food quality and nutrition	323	20.3
12. Lack of entertainment after work	419	26.3
13. Sexual oppression	316	19.8
14. Poor health (self or family members)	296	18.6
15. Familial financial difficulty	406	25.5
16. Obstacles to children’s education	350	21.9
17. Unhappy marriage	284	27.0

Table 2 Prevalence of mental disorders by demographics, migration characteristics and stressors

Characteristic	n	Number of people identified with mental disorders	%	95% CI	X ²	P
City worked						
Guangzhou	764	213	27.9	24.9–31.2	9.69	0.001**
Hangzhou	831	176	21.2	18.5–24.1		
Age (years)						
<20	96	27	28.1	20.1–37.8	7.34	0.197
20–24	407	103	25.3	21.3–29.7		
25–29	408	87	21.3	17.6–25.6		
30–34	366	81	22.2	18.2–26.7		
35–39	168	50	29.8	23.4–37.1		
40+	150	41	27.3	20.8–35.0		
Education						
Elementary school or less	177	49	27.7	21.6–34.7	12.73	0.005**
Junior high school	831	179	21.5	18.9–24.5		
High school	413	124	30.0	25.8–34.6		
College or more	174	37	21.3	15.8–27.9		
Region of origin (based on Chinese administrative regions)						
North	98	14	14.3	8.7–22.6	11.62	0.020*
Southwest	363	91	25.1	20.9–29.8		
South	376	109	29.0	24.6–33.8		
Middle East	269	68	25.3	20.5–30.8		
Southeast	489	107	21.9	18.4–25.8		
Marital status						
Never married	504	125	24.5	21.2–28.8	12.29	0.002**
Married	1051	245	23.3	20.9–26.0		
Widowed/divorced	40	19	47.5	32.9–62.5		
Employment						
Construction	754	210	27.9	25.1–31.5	9.55	0.049*
Machinery and transportation	402	83	20.7	17.0–24.9		
Textiles, electronics, and services	288	64	22.2	17.8–27.4		
Business	126	27	21.4	15.2–29.4		
Other	25	5	20.0	8.4–38.3		
Length of stay in city each year						
<5 months	339	71	22.5	17.0–25.6	13.73	0.001**
5–8 months	238	80	33.6	27.9–39.8		
> = 9 months	1018	238	23.4	20.9–26.1		
Separation from wife in migration period (married only)						
No	335	59	17.6	13.9–22.1	8.68	0.001*
Yes	716	186	26.0	22.9–29.3		
Life stress						
Lower score	1284	206	16.0	14.1–18.2	248.7	0.001**
Higher score	311	183	58.8	53.3–64.2		
Work stress						
Lower score	1250	255	20.4	18.3–22.7	49.86	0.001**
Higher score	345	211	38.8	55.9–66.2		
Self-worth						
Lower score	443	130	29.4	25.3–33.8	8.17	0.004**
Higher score	1152	259	22.5	20.2–25.0		
Total	1595	389	24.4	22.3–26.6		

* Significant at $P \leq 0.05$ ** Significant at $P \leq 0.01$

salary,” followed by “delayed pay” and “long working hours and excessive workload.”

Stress and mental health status: the mean score for subjects on the Chinese Perceived Stress Scale was 26.43 (SD = 4.52), and the mean score on the CHQ was 2.15 (95% CI: 2.05–2.27). The estimated prevalence of probable mental disorders among this population was 24.4% (95% CI: 23.3–25.5%). Prevalence estimates disaggregated across population characteristics are presented in Table 2.

City worked, region of origin, education, marital status, employment, length of stay in city each year, separation from wife in the migration period, life stress, work stress, and self-worth were all significantly linked to probable mental disorders in the univariate analyses (Table 2).

The multiple logistic regression analysis showed that originating in the South (OR = 2.0), being widowed or divorced (OR = 4.4), manifesting higher life stress (OR = 7.63) or work stress (OR = 2.56), staying in the city for 5–9 months each year (OR = 2.59), and separation from wife (OR = 2.43) were all positively associated with probable mental disorders (Table 3). Working in Hangzhou (OR = 0.59), employment in machinery and transportation (OR = 0.45), and higher self-worth (OR = 0.42) were negatively associated.

Discussion

This large-scale cross-sectional study was conducted in two major, rapidly growing Chinese cities. The prevalence of probable mental disorders among rural–urban migrant workers was estimated, and associated risk factors were assessed. Twenty-three percent of respondents reported moderate stress, 9% severe stress, and 6% extreme stress. More precisely, 14.6% (95% CI: 14.0–15.2%) of respondents reported severe or extreme stress. This estimate exceeds the 13.2% (95% CI: 12.8–13.6%) of male urban residents who had reported severe or extreme stress in a previous study (Yang and Huang 2003). Furthermore, the mean scores of perceived stress from work [2.43 (95% CI: 2.38–2.47)] and life [2.41 (95% CI: 2.37–2.46)] in this study population surpassed corresponding scores for male urban residents [2.03 (95% CI: 2.01–2.06) and 2.17 (95% CI: 2.14–2.20)] (Yang and Huang 2003). Our results suggest that migrant workers encounter more work and life challenges than urban residents, and need multiple social supports—especially in terms of job security, working conditions, entertainment, and family life.

The mean score of CPSS was 26.4 (95% CI: 26.2–26.60) in our study population, as compared to 23.8 (95% CI: 23.5–24.1) in male urban residents and 24.8 (95% C.I: 24.7–25.0) in rural male residents—previously reported (Yang et al. 2009; Yang and Huang 2003). Comparatively

Table 3 Multiple logistic regression results for association of demographics, migration characteristics, and stressors with mental disorders

Variable	Adjusted odds ratio	95% CI
City worked		
Guangzhou	1.00	
Hangzhou	0.59**	0.44, 0.80
Region of origin		
North	1.00	
Southwest	1.89	0.94, 3.70
South	2.00**	1.02, 4.00
Middle East	1.93	0.98, 3.85
Southeast	1.92	0.96, 3.88
Marital status		
Never married	1.00	
Married	0.90	0.68, 1.20
Widowed/divorced	4.35**	1.43, 6.25
Employment		
Construction	1.00	
Machinery and transportation	0.54**	0.36, 0.81
Textiles, electronics, and service	0.81	0.49, 1.27
Business	0.65	0.43, 1.05
Other	0.55	0.15, 2.04
Length of stay in city each year		
<5 months	1.00	
5–9 months	2.56**	1.67, 3.85
> = 9 months	1.25	0.94, 1.72
Separation from wife in migration period		
No	1.00	
Yes	2.43	1.61, 3.57
Life stress		
Lower score	1.00	
Higher score	7.69**	5.88, 10.00
Work stress		
Lower score	1.00	
Higher score	2.56**	1.96, 3.33
Self-worth		
Lower score	1.00	
Higher score	0.42*	0.28, 0.62

* Significant at $P \leq 0.05$

** Significant at $P \leq 0.01$

speaking, stress is highest among migrant workers, followed by rural and urban residents. The estimated prevalence of probable mental disorders was 24.4% (95% CI: 23.3–25.5%), which was significantly higher than that reported for urban residents (20.2, 95% CI: 18.8–21.7%) (Yang et al. 2003). This gap suggests that migrant workers have relatively poor mental health. Moreover, it corroborates previously reported findings that rural–urban migrant

workers not only have elevated stress levels, but experience more psychological problems (Shen et al. 1998; Li et al. 2006; Hu and Gu 2008; Jiang et al. 2007). These problems may partially stem from a persistently depressed socio-economic status, which ensues from denial of certain rights of citizenship at the urban destination. These rural–urban migrants are socially marginalized, a situation reinforced by physical isolation, discrimination, and limited social and economic opportunities (Yang et al. 2006).

The univariate analysis showed that city worked, region of origin, marital status, employment, length of stay in city each year, separation from wife in the migration period, life stress, work stress, and self-worth significantly related to probable mental disorders. Only education was excluded from the final logistic equation.

We found that several factors are associated with probable mental disorders among migrant workers. Migrants employed in Guangzhou have a higher prevalence of probable mental disorders than those working in Hangzhou. This finding may reflect significant regional differences in workstyle and culture between these two cities. A similar difference also existed for urban residents of Guangzhou and Hangzhou (Yang and Huang 2003). We also found that migrants from the South have a higher prevalence of probable mental disorders than those originating elsewhere. Other factors associated with probable mental disorders were type of job, length of stay in the city each year, separation from wife during the migration period, life and work stressors, and self-worth.

Migrants engaged in construction work tend to have a higher prevalence of probable mental disorders than those engaged in machinery and transportation (OR: 1.85). While construction is difficult and hazardous work, wages are very low and often delayed or withheld. The socioeconomic status of construction workers is the lowest among migrant workers, and may contribute to their excess mental problems (Yang et al. 2006).

Duration of stay in the city in each year was positively associated with probable mental disorders. This finding provides additional support for the notion that migration adversely impacts mental health (Williams 1989; Fox et al. 2001; Li et al. 2006; Jiang et al. 2007). The group staying in the city between 5 and 9 months each year suffer the most. Nevertheless, there was no difference in the prevalence of probable mental disorders between migrants staying in the city for 9 months or longer and those staying less than 5 months. This anomaly may be because those staying in cities for the longer period adapted better to the urban environment and coped better with stress (Tseng and Wu 1958).

Another new finding from this study was that workers who live in the city without their wives have a higher prevalence of probable mental disorders than opposites.

Chinese value the family as the fundamental unit of society, and social support from the family is a key buffer against personal stress. Indeed, rural–urban migrants may be particularly vulnerable in the absence of familial support (Sun 2007; Tseng and Wu 1958). The plight of isolated migrants points to the importance of designing and implementing measures to improve living conditions of migrant workers by enabling them to live with their wives and their children.

Our findings affirm those from previous studies that life (Tseng and Wu 1958; Pace et al. 2002; Dennis and Husseini 2004) and work stress (Estryn-Behar et al. 1990; Calnan et al. 2001) elevates risk for mental disorders. Most rural–urban migrant workers in China encounter major challenges. They live in overcrowded accommodation with poor sanitation while separated from wives and family (Yang et al. 2006). Furthermore, they also encounter many occupational problems, since they typically engage in the poorly paid, difficult, unsanitary, and hazardous work which city residents eschew. This study found that, among life stressors, the most common problems are “unhappy marriage,” “lack of entertainment after work,” and “familial financial difficulties.” These findings suggest that the main life stressors are psychological and financial. Among work stressors, the most common problems are “low pay,” “deferred pay,” “long working hours, and excessive workload;” that is, they concern remuneration and work-time.

This study revealed that migrant workers with lower self-worth feel the burden of discrimination and have a higher prevalence of probable mental disorders than those with higher self-worth. A growing body of research indicates a strong association between perceived discrimination and mental health. A study among gay men in New York demonstrated that stigmatization (implicating internalized homophobia, expectations of rejection and discrimination, and actual prejudicial events) generated stress and factored in a number of mental health symptoms (Meyer 1995). The Detroit Area Study (DAS) indicated that there was an association between perceived discrimination (both chronic and acute) and diminished mental health, which manifested as depression and psychological distress (Ren et al. 1999; Williams et al. 1997). Analysis of data from the National Survey of Midlife Development in the United States (MIDUS) showed an association between perceived discrimination and mental health (Kessler et al. 1999). Another analysis of MIDUS data revealed a positive association between perceived discrimination and both reduced quality of life and increased psychiatric morbidity among homosexuals and bisexuals (Mays and Cochran 2001).

Noteworthy, this study attained a very high “participation rate” relative to comparable Western studies. Many Chinese studies have achieved similar rates (Yang et al.

2009; Yang and Huang 2003; Qiu et al. 2006; Sun 2007). One probable determinant for this success is cultural. Chinese culture supports an ethos of cooperation. However, as a vulnerable group, rural–urban migrants are prone to obey instructions from others. This is especially likely when instructions emanate from their employers, since the workers generally reside in accommodation provided by them. We contacted employers and secured their cooperation for this research. We also employed other strategies to induce full study participation. These strategies included recruiting the assistance of “leaders” of migrant worker groups to mobilize their charges to participate. We also provided subjects with a token of appreciation for their participation.

Mental and neurological disorders account for 13% of the global burden of disease. (World Health Organization 2007) In addition, more than ten of the leading risk factors that cause one-third of premature deaths worldwide have behavioral determinants, for example, unsafe sex and tobacco and alcohol consumption. However, mental health remains an under-researched public health area in most of the world.

In any large population it is difficult to detect mental disorders diagnostically. Our sample-survey research profiled probable mental disorders in a special population, male rural–urban migrants. Findings from this research call for followup studies that employs diagnostic tools to provide a more complete and objective appraisal of the mental health status of such a population, as a prelude to providing and targeting appropriate mental health prevention and treatment measures. Consideration needs to weigh the degree to which such prevention and treatment involves community clinics, hospitals, and households.

Our study discerned associations between probable mental disorders and the migrant lifestyle. These associations signal a need to improve the quality of life for rural–urban migrants based on modified policies. The government should consider changing the current policy on the household registration system, that is, the *hukou* system, to guarantee these workers the same legal rights of citizenship at the urban destination enjoyed by local residents. Only when this major barrier to equality is eliminated will their working and living conditions improve. It is essential to develop policies for preventing or ameliorating mental disorders in general, as well as implementing prevention and intervention strategies to address the epidemic of mental disorders within this marginal migrant population. In leaving their previous rural habitat and social milieu, the migrant workers commonly entered a life of isolation in the city. The government and other stakeholders, including the healthcare and voluntary sectors, need to end or minimize this problem of isolation though creating a strong system of social support.

Since rural–urban migrants are excluded from health insurance, we strongly recommend they receive the same coverage as urban residents. A general major problem is that the mental health service network misses most of the Chinese population, and community prevention programs remain largely absent. It is important to build a network of representatives from government and key organizations to facilitate implementation of locally appropriate policy frameworks for community mental health services that will embrace migrants as well as urban residents (World Health Organization 2007; Chee et al. 2009).

Prevention of mental disorders should be integrated into community healthcare programs to enhance synergies and avoid inefficiencies and treatment gaps. Different types of health services should be afforded these migrants. Community-based care should be developed within a mental health hospital system. Some hospitals have developed community outreach teams to provide specialist mental health services in local settings, and to train primary health workers and community agencies (World Health Organization 2007; Chee et al. 2009). Community health services should organize and facilitate educational sessions, and act as liaisons between community health agencies and migrant workers. These workers should be targeted by health education programs which address such special topics as identification of risk factors for mental problems and strategies for coping with migratory stressors. A special mental health counseling clinic should be established in the community to provide rural–urban migrant workers with psychological counseling. It should be mentioned that Chinese stigmatize mental illness, especially in rural areas. This stigma impedes people from directly accessing counseling and treatment. Thus, it is necessary to conduct web-based and telephone mental health counseling. The rural–urban populace is a marginalized sector of Chinese society and easily aggrieved. Local community centers should establish support groups to provide a forum in which rural–urban migrant workers can discuss their problems and be offered stress-avoidance mechanisms. By providing emotional support, support groups would help them improve their self-esteem and reduce their isolation. In addition, a key component of community mental health care is provision of adequate and timely crisis intervention services to respond to people with acute psychiatric conditions or psychiatric emergencies.

This study has a number of limitations. Most importantly, its cross-sectional design precluded any inference of causation. Currently, there are no longitudinal studies being conducted in China that track the mental health of migrant workers. Future studies need to collect both cross-sectional and longitudinal mental health surveillance data on this population. In addition, community-health promotion and policy-level data are needed to facilitate

understanding of the relationship between mental health and both community-level health regulations and mental health promotion campaigns. Generalizability of results was constrained because the study was confined to male migrant workers. Future research should incorporate female counterparts. Finally, since CHQ is a screening instrument, we believe that there is some inevitable misclassification in estimating mental health status. Enabled by appropriate funding, future research should utilize established clinical diagnostic methods to yield a more objective picture. Such studies would not only better justify clinical interventions, but should also identify and employ pathways for referral and followup on an as-needed basis. These studies would be even more effective if they incorporated mobile clinics as part of their research apparatus.

Conclusion

This study expands the existing literature by documenting the high prevalence of probable mental disorders among Chinese male rural–urban migrant workers. There is an urgent need for policies and approaches to address mental health in this marginal population. An imperative is that prevention efforts include changing the present policy of *hukou*, in order to guarantee migrants legal rights of citizenship in their urban destinations. At the same time, both government and local health authorities need to address the epidemic of mental problems among this population.

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