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Common mental health problems in rural-to-urban migrant workers in Shenzhen, China: prevalence and risk factors

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Aims. Rural-to-urban migrant workers are a large marginalised population in urban China. Prevalence estimates of common mental health problems (CMHPs) in previous studies varied widely and very few studies have investigated migration-related factors of CMHPs in migrant workers. The objective of this study was to determine the prevalence and risk factors of CMHPs among Chinese migrant workers.

Methods. A random sample of 3031 migrant workers of ten manufacturing factories in Shenzhen, China, completed a standardised questionnaire containing socio-demographic and migration-related variables and the Chinese 12-item General Health Questionnaire (GHQ-12). A GHQ-12 score of three or higher was used to denote the presence of CMHPs.

Results. The prevalence of CMHPs was 34.4% in Chinese migrant workers. In multiple logistic regression, risk factors for CMHPs included being 16–25 years old (odd ratio [OR] 1.65, 95% confidence interval [CI] 1.28, 2.12), being 26–35 years old (OR 1.36, 95% CI: 1.05, 1.75), low monthly income (OR 1.42, 95% CI 1.04, 1.92), poor living condition (OR: 1.76, 95% CI: 1.22, 2.54), physical illness in the past 2 weeks (OR 1.72, 95% CI 1.43, 2.05), having worked in many cities (OR 1.34, 95% CI 1.03, 1.74), infrequently visiting hometown (OR 1.56, 95% CI 1.22, 1.99), poor Mandarin proficiency (OR 1.51, 95%CI 1.13, 2.01), a low level of perceived benefits of migration (OR 1.33, 95% CI 1.14, 1.55) and working more than 8 h/day (OR 1.39, 95% CI 1.14, 1.70).

Conclusions. CMHPs are very prevalent among Chinese migrant workers. Given the large number of Chinese migrant workers, there is an urgent need to address the mental health burden of China's migrant worker population.

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Introduction

Over the past three decades, China has experienced a significant demographic transition, characterised by a dramatic rise in the number of rural-to-urban migrant workers – individuals who migrate from impoverished rural villages to prosperous cities to seek better job opportunities and pursue higher quality of life (Xiao, 2016). In 2015, there were 277 million migrant workers in China, making up approximately one-fifth of the entire Chinese population (National Bureau of Statistics of China, 2016). These workers have been the backbone of China's manufacturing and export orientated economy; however, due to the administrative barriers of China's household registration system (*hukou*), migrant workers are still classified as temporary residents of the cities (Wong *et al.* 2007). Because *hukou* plays an important role in social resource allocation, migrant workers have very limited access to benefits such as social welfare, labour security, health insurance, public education of their children and housing subsidies that are available for registered urban residents (Gong *et al.* 2012). Accordingly, migrant workers often have to take up low-wage '3D' (dirty, dangerous and demanding) jobs that urban people eschew, work long hours to increase their income, expose to workplace hazardous factors and experience various forms of stigmatisation and rural-to-urban

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acculturative stress (Li *et al.* 2007; Lau *et al.* 2012; Fitzgerald *et al.* 2013; Zhong *et al.* 2016*b*). As such, migrant workers have long been identified as a particularly vulnerable group of Chinese society and therefore are more likely to be mentally unhealthy.

Mental disorders, especially depressive and anxiety disorders, are notable contributors to the global burden of disease worldwide (Whiteford *et al.* 2013). In Global Burden of Disease Study 2013, China alone accounted for 17% of the global mental illness burden and the burden of mental illness was expected to increase by 10% in China between 2013 and 2025 (Charlson *et al.* 2016). Given the very large number of migrant workers and their potentially high risk of mental health problems, interventions targeted at migrant workers might be a cost-effective way to reduce the burden of mental disorders in China.

During the past decades, many studies have extensively investigated the prevalence of common mental health problems (CMHPs) in Chinese migrant workers. While most existing studies have demonstrated that migrant workers are more susceptible to a variety of mental health problems such as depression, anxiety and loneliness (Wen & Wang, 2009; Qiu *et al.* 2011; Zhong *et al.* 2013, 2016*a*; Yang *et al.* 2016), prevalence estimates of CMHPs in migrant workers still vary substantially across studies. For example, data from studies using the depression subscale of Symptom Checklist-90-Revised (SCL-90-R) and the Center for Epidemiologic Studies Depression Scale (CES-D) showed that 6.5–56.4 and 10.5–52.9% of migrant workers had a clinically relevant level of depressive symptoms (Wang, 2005; Chen *et al.* 2006; Mou *et al.* 2011; Qiu *et al.* 2011; Zhuo *et al.* 2011; Zeng *et al.* 2012; Dai *et al.* 2015), respectively. Although methodological differences may partly explain the prevalence variations, i.e. random *v.* convenience sampling, large *v.* small sample sizes and SCL-90-R *v.* CES-D mental health assessments, our meta-analysis based on 48 surveys revealed that heterogeneity in characteristics of study samples contribute considerably to the large variations in CMHPs prevalence (Zhong *et al.* 2013). Several recent studies (Yang *et al.* 2012, 2016; Li *et al.* 2014) also found that the prevalence of poor mental health among migrant workers varied widely across age-groups, genders, educational attainments, industries (i.e. manufacturing *v.* construction), working conditions, geographic regions of origin (i.e. north *v.* south China) and even cities they worked in. It seems that CMHPs prevalence varies depending on the composition of migrant worker sample (i.e. proportion of high-risk subgroup), suggesting that migrant workers are a highly heterogeneous population and multiple factors contribute to the pathogenesis of CMHPs of migrant workers. Therefore, it would be of greater importance to investigate the high-risk groups within migrant worker population, not merely the prevalence of CMHPs.

According to the theory of international migration (Kirmayer *et al.* 2011), migration *per se* is a dynamic process and can be divided into three phases: pre-migration, migration and post-migration. Risk factors specific to each phase would negatively influence the mental health of immigrants, i.e. early age at first migration and 'no clear motive for migration' before migration (Takeuchi *et al.* 1998; Fenta *et al.* 2004), exposure to violence during migration (Bhugra, 2003) and poor language skills in the host country language after migration (Mirsky *et al.* 2008; Im *et al.* 2014). Consequently, CMHPs prevalence is also influenced by the trajectory of migration, varying over time. Because of Chinese migrant workers' 'clock pendulum' pattern of migration-moving back and forth yearly between their home villages where they belong permanently and cities where they temporarily work in (Zhong *et al.* 2015), their process of migration is prolonged, even endless, and it is very likely that these migration-related risk factors have more profound effects on their mental health. In this case, a greater understanding on the epidemiology of CMHPs, particularly risk factors related to migration, may lend additional insights into prevention efforts for migrant workers. Unfortunately, most previous studies focused on the most basic socio-demographic correlates of CMHPs among migrant workers, very few have specifically examined migration-related factors of CMHPs (Shen *et al.* 1998; Wang, 2005; Chen *et al.* 2006; Wong *et al.* 2008; Mou *et al.* 2011; Qiu *et al.* 2011; Zhuo *et al.* 2011; Yang *et al.* 2012, 2016; Zeng *et al.* 2012; Li *et al.* 2014).

We set out to investigate the prevalence and risk factors of CMHPs in Chinese migrant workers. The hypothesis of this study was that the CMHPs would be prevalent in migrant workers, and they will be associated with a number of socio-demographic and migration-related characteristics.

Method

Setting and sampling

This study was part of a large-scale cross-sectional survey (Zhong *et al.* 2015), which investigated mental health of factory migrant workers in Shenzhen, China, between August 2012 and January 2013. Shenzhen is a modern metropolis in southeastern China. As one of the major destinations for migrants from impoverished western and central inland regions of China, it has been China's largest migrant city with 7.8 million rural-to-urban migrants in 2012 (Zhong

et al. 2015). Eligible subjects were workers registered as rural residents, aged 16 years or older, working in manufacturing factories and living in Shenzhen. Multistage sampling method was used to obtain a representative sample of factory migrant workers. The details of sampling, recruitment process, data collection and quality control have been described elsewhere (Zhong *et al.* 2015). In brief, we first purposively selected ten factories (three electronic, two machinery, two shoes, two cosmetic and one garment) to represent factories of Shenzhen. Second, a total of 41 production units (2–6 units/factory) were randomly selected from the 397 production units of the ten factories. Finally, all eligible subjects of these identified units were invited to participate in this survey.

The study protocol was approved by the Survey and Behavioral Ethics Committee of the Chinese University of Hong Kong. All participants provided written informed consent prior to participating in the survey. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Procedures

Before the formal study, a pilot study was conducted to test our survey questionnaires and procedures. This survey was composed of three parts. First, the survey team leader gave all subjects a brief introduction on the survey and instructions for filling out the questionnaires. Second, migrant workers independently and anonymously completed the questionnaires. Trained investigators were assigned to read out questions in the questionnaires for participants who were illiterate or had difficulties in reading. Last, trained investigators checked the questionnaires for illogical responses or missing values before the collection of questionnaires.

Measures

Basic socio-demographic factors in the questionnaire included age, gender, education, marital status, self-rated living condition in Shenzhen (good, moderate and poor) and average monthly income.

Physical health of respondents was assessed with the 2-week morbidity. This health indicator was directly adapted from China's National Health Services Surveys (Zhu *et al.* 2015), which asked whether the subject had experienced any physical health problems, including infectious diseases and chronic non-communicable diseases during the past 2 weeks.

Migration-related variables were age at first migration, geographic region of origin (eastern, central and western China) (National Bureau of Statistics of China, 2015), length of working outside hometown, total number of cities that migrant workers had worked in, frequencies of contacting families by phone and hometown visit, migration pattern (alone, with some family members and with all family members), self-rated standard Mandarin (the official language in China) proficiency (good, moderate and poor), Scale of Perceived Benefits of Migration (PBM), total number of jobs that migrant workers had engaged in and average working hours per day.

Age at first migration was the exact age when migrant workers first came to cities for jobs. Considering that migration should not be all bad for the mental health of migrant workers, the self-rated Scale of PBM was specifically developed to assess migrant workers' subjective feelings about the benefits of out-migration work. First, 23 migrant workers of various types of factories were invited to join a Focus Group Discussion study, in which they were guided to talk about their individual experiences about the benefits of out-migration work. Based on these qualitative data, we generated an item pool of the scale and pilot tested it among 204 factory migrant workers. By using the pilot test data, item and exploratory factor analyses were performed and the final version of the Scale of PBM, a seven-item unidimensional scale, was developed. Finally, the psychometric property of the scale was tested in another sample of 210 factory migrant workers and the Cronbach's α coefficient of it was 0.90. The seven items were: (1) Migration work improves my personal economic conditions; (2) Migration work improves my family's economic conditions; (3) Migration work improves my working abilities; (4) Migration work gives me a good opportunity to make many friends; (5) Migration work makes me realise personal economic independence and freedom; (6) Migration work enriches my social experiences; and (7) Migration work makes me realise personal life value. These items were assessed on a five-point scale (ranging from '1 = disagree' to '5 = strongly agree') and summed up to generate a total score, with higher total score indicating higher level of PBM.

The primary outcome of this study, CMHPs, was measured by the Chinese 12-item General Health Questionnaire (GHQ-12). This scale was developed as a screening tool to detect those likely to have or be at risk of developing mental illness (Goldberg, 1972) and has been widely used an indicator of CMHPs in a variety of settings (Craig, 2007). Each GHQ item has four-point responses: 'not at all = 0', 'same as usual = 0', 'rather more than usual = 1', and 'much more than usual = 1'. The GHQ score, obtained by summing up

the scores of the 12 items, measures the severity of minor psychiatric morbidity (Pevalin, 2000). The Chinese GHQ-12 is reliable and valid in Chinese population and a score of three or above was used to denote the presence of CMHPs (Yang *et al.* 2003).

Statistical analyses

Participants were divided into subgroups according to socio-demographic and migration-related characteristics. Prevalence rates of CMHPs in the whole group and different subgroups of migrant worker sample were calculated. Chi-square (χ^2) test was used to compare rates between subgroups. Multiple logistic regression with a backward stepwise entry of all significant factors in univariate analysis was used to identify risk factors of CMHPs. Odds ratio (OR) and 95% confidence intervals (CI) were generated for each variable. The statistical significance level was set at $p < 0.05$ (two-sided). SPSS software version 15.0 package was used for analyses.

Results

A total of 3140 migrant workers were invited to join the study, 71 did not complete the questionnaire and 38 refused to participate; leaving 3031 subjects (96.5%) completed the survey. The 3031 completers and 109 non-completers were comparable in proportion of females (68.3 *v.* 61.5%, $\chi^2 = 2.278$, $P = 0.131$), but not comparable in age (27.5 ± 6.8 *v.* 25.3 ± 10.0, $t = 3.254$, $P = 0.001$). Detailed socio-demographic and migration-related characteristics of the respondents are displayed in Table 1.

The mean score of GHQ-12 was (2.2 ± 2.5) in the whole sample. Totally 34.4% respondents had CMHPs, with 36.1% in men and 33.6 % in women.

Results of the univariate analysis (Table 1) show that significantly higher CMHPs prevalence rates were observed among migrant workers who were young, had a low level of educational attainment, had a marital status of 'others', reported poor living condition, had a low monthly income, were ill in the previous 2 weeks, migrated before adulthood, worked outside hometowns for less than 10 years, had worked in five cities or more, infrequently called family members, infrequently visited hometowns, migrated alone, reported poor Mandarin proficiency, had a low level of PBM, had engaged in five jobs or more and worked more than 8 h/day, compared with their corresponding counterparts.

Multivariate logistic regression analysis (Table 2) revealed that young age, low monthly income, poor living condition, physical illness in the past 2 weeks, having worked in many cities, infrequently visiting hometown, poor Mandarin proficiency, a low level of PBM and working more than 8 h/day were independently and positively associated with CMHPs. Taken together, these factors accounted for 27.6% of the variance in the prevalence of CMHPs among these subjects.

Discussion

Main findings

The massive rural-to-urban migration has posed serious challenges to China's healthcare system, but its health services are still unprepared to cope with the needs of this large population (Mou *et al.* 2013; Zhong *et al.* 2016*c*), therefore understanding the mental health of its large migrant worker population is an essential component of a successful health strategy. The present study is one of the very few large-scale studies that examine the epidemiology of CMHPs in Chinese manufacturing factory migrant workers. We found that the prevalence of CMHPs in migrant workers was as high as 34.4%. Compared to studies using the GHQ-12, this prevalence is much higher than those found in other cohorts of Chinese general population, including the 21.7% prevalence in urban population (Yang *et al.* 2003), the 15.2% prevalence in community residents (Yuan *et al.* 2005), the 12.8% prevalence in workers of a state-owned enterprise (Liu & Zhu, 2011) and the 23.8% prevalence in older adults (Wang *et al.* 2016). The prevalence we found in migrant workers is similar to that reported among Latin American migrants of Australia (32.6%) (McDonald *et al.* 1996), among Romanian migrants of Spain (39.5%) (González-Castro & Ubillos, 2011) and among rural-to-urban migrants of Peru (38.0%) (Loret *et al.* 2012). The higher prevalence in migrant workers than Chinese general population and comparable prevalence between migrant workers and international migrants in this study support the increased risk of CMHPs in Chinese migrant workers.

Our study further explored the associations between CMHPs and potential factors, especially migration-related factors, identified some risk factors that are unique to China's rural-to-urban migration context (i.e. infrequently visiting hometowns and low PBM) and replicated several findings from international migrant studies (i.e. the negative effect of poor language proficiency), thereby filling the gap between Chinese migrant worker and international migrant literature.

In our migrant worker sample, as shown in Table 1, nearly two-thirds had an educational attainment of junior high school or below, about 50% were

Table 1. *Characteristics of subjects and prevalence rates of common mental health problems (CMHPs) by socio-demographic and migration-related factors*

Variables		No.	No. of subjects with CMHPs	Prevalence rate (%)	χ^2	*P*
Gender	Male	960	347	36.1	1.873	0.171
	Female	2071	696	33.6		
Age (years)	36–56	460	135	29.3	12.035	0.002
	26–35	1124	368	32.7		
	16–25	1447	540	37.3		
Education level	≥Senior high school	1126	398	35.3	6.411	0.041
	Junior high school	1694	558	32.9		
	≤Elementary school	211	87	41.2		
Marital status	Married	1595	512	32.1	8.089	0.018
	Never married	1406	519	36.9		
	Others[a]	30	12	40.0		
Self-rated living condition	Good	200	54	27.0	32.858	<0.001
	Moderate	2301	752	32.7		
	Poor	530	237	44.7		
Average monthly income (USD)	≥600	833	255	30.6	7.559	0.023
	301–599	1923	686	35.7		
	≤300	275	102	37.1		
Recent 2-week morbidity	No	2354	742	31.5	39.008	<0.001
	Yes	677	301	44.5		
Age at first migration (years)	≥18	2034	669	32.9	6.332	0.012
	<18	997	374	37.5		
Geographic region of origin	Eastern China	746	249	33.4	5.474	0.065
	Central China	1511	501	33.2		
	Western China	774	293	37.9		
Years of working outside hometown	>10	583	178	30.5	4.813	0.028
	≤10	2448	865	35.3		
No. of cities have worked in	1–2	1496	483	32.3	7.176	0.028
	3–4	1237	443	35.8		
	≥5	298	117	39.3		
Frequency of calling family members	≥Once a week	843	263	31.2	5.341	0.021
	<Once a week	2188	780	35.6		
Frequency of hometown visit	≥Twice a year	870	265	30.5	14.494	0.001
	Once a year	1690	586	34.7		
	<Once a year	471	192	40.8		
Migration pattern	With all family members	277	81	29.2	7.618	0.022
	With some family members	1568	523	33.4		
	Alone	1186	439	37.0		
Self-rated Mandarin proficiency	Good	647	212	32.8	17.607	<0.001
	Moderate	2066	688	33.3		
	Poor	318	143	45.0		
Scale of perceived benefits of migration[b]	>22	1420	430	30.3	20.185	<0.001
	≤22	1611	613	38.1		
No. of jobs have engaged in	1–4	2545	856	33.6	4.240	0.039
	≥5	486	187	38.5		
Average working hours per day	≤8	673	193	28.7	12.600	<0.001
	>8	2358	850	36.0		

[a]'Others' marital status included remarried, separated, cohabitating, divorced and widowed.
[b]Score of scale of perceived benefits of migration was dichotomised at the median value.

Table 2. *Multivariable logistic regression results of risk factors for common mental health problems of migrant workers*

Factor		*P*	OR (95% CI)
Age (years)	36–56		Reference
	26–35	0.019	1.36 (1.05, 1.75)
	16–25	<0.001	1.65 (1.28, 2.12)
Average monthly income (USD)	≥600		Reference
	≤300	0.027	1.42 (1.04, 1.92)
Self-rated living condition	Good		Reference
	Poor	0.003	1.76 (1.22, 2.54)
Recent 2-week morbidity	No		Reference
	Yes	<0.001	1.72 (1.43, 2.05)
No. of cities have worked in	1–2		Reference
	≥5	0.032	1.34 (1.03, 1.74)
Frequency of hometown visit	≥Twice a year		Reference
	<Once a year	<0.001	1.56 (1.22, 1.99)
Self-rated Mandarin proficiency	Good		Reference
	Poor	0.005	1.51 (1.13, 2.01)
Scale of perceived benefits of migration	>22		Reference
	≤22	<0.001	1.33 (1.14, 1.55)
Average working hour per day	≤8		Reference
	>8	0.001	1.39 (1.14, 1.70)

unmarried, over 70% had a monthly income of 599 USD or lower (lower than 50% of the average monthly income of urban residents), approximately 80% worked more than 8 h/day and nearly 40% migrated alone. As a result, the majority of migrant workers had low socioeconomic status, often worked long hours and lacked social connections with their family members. Due to these disadvantages, it is not surprising to find a high CMHPs prevalence in our migrant worker sample.

In the general population, both old age and female sex are among the most common demographic risk factors for CMHPs (Wilhelm *et al.* 2003; Ma *et al.* 2009; Drapeau *et al.* 2012), but we found a significant association between young age and CMHPs and no association between gender and CMHPs in the analysis. These findings are consistent with two previous international migrant studies (Furnham & Li, 1993; Abbott *et al.* 1999). Perhaps there are particular pressures on young migrant workers arising from establishing new careers and adapting to the new environment, often without support of parents and the extended family. There is evidence that a low socioeconomic status is associated with poor mental health (Muntaner *et al.* 2004; Lund *et al.* 2010); this is in accordance with our findings that migrant workers who had a low monthly income and poor living condition had higher prevalence of CMHPs. The significant association between recent 2-week physical morbidity and CMHPs is similar to two earlier studies (Silveira & Ebrahim, 1998; Ortega *et al.* 2006), which reported a strong link between poor mental health and physical illness in international migrants.

In the current study, infrequent visit of hometown was a risk factor for CMHPs. Because migrant workers are largely isolated from the mainstream of urban society (Zhong *et al.* 2015), family is the main available source of support for them when facing difficulties, though they work in remote cities. For migrant workers who infrequently visit hometown, their social support from family members might be inadequate to buffer against the negative effects of daily living stress and difficulties, thus a significant association between frequency of home visit and CMHPs was found in this study. Our study revealed that having worked in many cities was positively associated with CMHPs. As number of cities that migrant workers have worked in could be regarded as a measure of their mobility, this finding resembles the notion that high mobility is a risk factor for poor mental health of migrants (Ismayilova *et al.* 2014).

Similar to earlier findings in international migrants (Furnham & Li, 1993), migrant workers with difficulties in Mandarin were more likely to have CMHPs in this study. China has many dialects, migrant workers from various parts of China speak different dialects. Owing to their low level of education, migrant workers often have difficulties in speaking fluent Mandarin and have to face many barriers such as problems in communication and making friends, which further increases the possibility of developing CMHPs.

The association between long working hours and CMHPs is consistent with the epidemiological evidence

from a systematic review (Bannai & Tamakoshi, 2014), but such finding is seldom reported in international migrant literature, which is mainly attributed to different reasons of the two populations' migration: migrant workers move for work while international migrants for permanent resettlement.

As shown above, although several negative aspects of migration work are harmful to the mental health, the positive aspects of migration work such as economic independence, improvement in economic conditions of migrant workers' remote families and obtaining new social skills, could still increase migrant workers' mental wellbeing, thereby reducing risk of CMHPs in migrant workers. Correspondingly, migrant workers who perceived inadequate benefits from migration work may be at higher risk of CMHPs, as suggested in the current study.

Limitations

Results of this study need to be interpreted with caution due to several limitations. First, our migrant worker sample was recruited from manufacturing factories of an affluent large city in southern China, migrant workers of other industries, i.e. service industry, and other cities were not included, potentially limiting the generalisability of our findings. Second, due to the cross-sectional and observational nature of our study, the causal relationships between CMHPs and identified risk factors need to be further verified in longitudinal studies. Third, because young migrant workers were at greater risk for CMHPs and the non-completers of this survey were significantly younger than completers, the present study may underestimate the true prevalence of CMHPs. Fourth, although we obtained a theoretically representative sample of factory migrant workers in Shenzhen by using multistage sampling, we were unable to provide specific data to prove the representativeness of our sample due to unavailable data on the demographic characteristics of the whole city's factory migrant workers. Due to the same reason, we have no data on sampling weights to adjust the prevalence estimate of CMHPs when necessary. Finally, some other risk factors of CMHPs in international migrants, such as discrimination, negative acculturation strategies and acculturative stress (Butler *et al.* 2015), were not measured in this study. More studies are warranted to determine the relationship between these factors and CMHPs in migrant workers.

Based on the same migrant worker sample, our previous study estimated the prevalence of DSM-IV major depression was only 1.4% (Zhong *et al.* 2015), it is therefore very likely that quite a large number of detected CMHPs cases in the current study are subjects with sub-threshold mental disorders. However, accumulating evidence indicates that these subclinical psychiatric disorders are significantly associated with poor health-related quality of life, increased health services utilisation, high economic and disease burden, suicide risk and excess mortality (Rucci *et al.* 2003; Balazs *et al.* 2013; Cuijpers *et al.* 2014). Therefore, CMHPs of migrant workers still deserve greater attention from mental health professionals, social workers and health policymakers.

In summary, CMHPs are extremely prevalent among Chinese migrant workers, indicating the high mental health care needs of migrant workers. There is an urgent need for health authorities and health workers to address the epidemic of CMHPs in migrant workers. Amongst migrant workers, a range of risk factors, in particular migration-related factors, are associated with CMHPs. Efforts to promote the mental health of migrant workers may be useful to target on those who have worked in many cities, infrequently visit hometown, are unable to speak fluent Mandarin, have a low level of PBM and work long hours. Services for migrant workers (and for migrant workers of other industries) should include periodic evaluation of CMHPs, expanded social supports that specifically focus on improving mental wellbeing, and, when necessary, psychiatric assessment and treatment.

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Conflict of Interest

None.

Ethical Standard

The authors assert that all procedures contributing to this work comply with the ethical standards of the

relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Availability of Data and Materials

All relevant data are available without any restriction. Requests for data can be sent to Dr. Bao-Liang Zhong at adam@cuhk.edu.hk.

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