



## Intention to leave and associated factors among psychiatric nurses in China: A nationwide cross-sectional study



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### ABSTRACT

**Background:** The retention of psychiatric nurses is an important concern for healthcare administrators in China. However, Chinese psychiatric nurses' intention to leave their jobs and the factors associated with it have been scarcely studied.

**Objective:** To investigate Chinese psychiatric nurses' intention to leave their jobs, and to explore the associations between the intention to leave and individual characteristics, job-related factors and job satisfaction.

**Design:** A cross-sectional, anonymous survey of a nationwide sample was conducted.

**Settings:** Thirty-two tertiary psychiatric hospitals in 29 provincial capital cities in China.

**Participants:** All 9907 nurses in 32 hospitals were targeted for this survey conducted in December 2017; 8493 responded (response rate = 85.7%), and 7933 (without logic errors in the data) were included in the analysis.

**Methods:** A questionnaire was used to investigate the respondent's intention to leave their job and to collect data on related factors, including individual characteristics (gender, age, marital status, educational background and self-rated health), job-related factors (professional title, working years, income, work hours, history of patient-initiated violence, perceived respect from patients, social recognition as well as physician-nurse coordination and trust) and job satisfaction. The short version of the Minnesota Satisfaction Questionnaire was used to assess job satisfaction. Chi-square tests and multilevel logistic regression analysis were used to examine associations between an intention to leave and other factors.

**Results:** Among 7933 respondents, 20.2% reported an intention to leave their current jobs. The multiple regression analysis showed that better self-rated health (i.e. OR = 0.373, 95%CI = 0.308–0.452 for good health, reference: poor health), working more than 20 years (OR = 0.479, 95%CI = 0.389–0.590, reference: 20 years or less), higher monthly income (i.e. OR = 0.521, 95%CI = 0.399–0.680 for 6001–8000 RMBs, reference: 4500 RMB or less), perceived patient respect (OR = 0.727, 95%CI = 0.623–0.849), physician-nurse coordination (OR = 0.549, 95%CI = 0.480–0.629) and being satisfied with one's job (OR = 0.373, 95%CI = 0.308–0.452) were negatively associated with an intention to leave; while those who were male (OR = 1.879, 95%CI = 1.605–2.199), working more than 40 hours per week (OR = 1.584, 95%CI = 1.374–1.825) and experienced patient-initiated violence in the past 12 months (OR = 1.566, 95%CI = 1.376–1.781) had a higher odds of reporting an intention to leave.

**Conclusions:** Self-rated health, monthly income, work hours, patient-initiated violence, perceived patient

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respect, physician–nurse coordination and job satisfaction are significant factors associated with a nurse's intention to quit their job. In order to retain nurses in Chinese tertiary psychiatric hospitals, the government and hospital administrators should consider ways to address these factors.

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### What is already known about the topic?

- Turnover and shortage of psychiatric nurses may lead to a low quality of healthcare and adverse patient outcomes.
- Psychiatric nurses' intention to leave is associated with several individual characteristics and job-related factors, some of which are modifiable.
- China faces a shortage of psychiatric nurses, and studies examining Chinese psychiatric nurses' intention to leave are needed to guide policy change and resource allocation.

### What this paper adds

- The proportion of Chinese psychiatric nurses who intend to leave their current job is relatively high.
- Better self-rated health, perceived respect from patients, physician–nurse coordination and job satisfaction are significantly associated with a lower likelihood of intending to leave one's job.
- One-third of Chinese psychiatric nurses have experienced patient-initiated violence in the past 12 months, and they have a greater likelihood of intending to leave compared with their counterparts who have not experienced patient violence.

## 1. Introduction

Mental health in China has become an increasingly important topic for the public as well as for the government. According to an epidemiological study, there are about 173 million adults with mental disorders in China (1.8 per 100,000 adult inhabitants) (Phillips et al., 2009). Psychiatric hospitals have played a very important role in treating psychiatric patients, especially those with severe mental illness. Specialty psychiatric hospitals provide more than 90% of mental health services in China (MoH, 2017).

Psychiatric nurses are on the frontlines of healthcare services for psychiatric patients, and nursing care in psychiatric hospitals can be challenging. Most psychiatric wards in China are in isolated management, meaning nurses are required to provide basic daily care in addition to therapeutic nursing (Mao and Du, 2010). Moreover, many of them work in acute stabilization units where they are exposed to verbal and physical threats from patients and have to deal with malpractice litigation (Mao and Du, 2010).

China faces a critical shortage of psychiatric nurses (Liu et al., 2013). There are only 3.77 psychiatric nurses per 100,000 residents in China, which is lower than the average of upper middle-income countries (7.10 per 100,000 residents) and is much lower than that of high-income countries (31.90 per 100,000 residents) (WHO, 2014).

Research indicates that challenging work experiences can lead to high turnover and a shortage of nursing staff (Alexander et al., 1998; Paris and Hoge, 2010). A shortage of nurses may lead to lower quality healthcare and result in adverse patient outcomes such as patient suicide (Appleby, 2015).

An intention to leave can predict the actual turnover of employees (Zhang et al., 2014a,b) as people who report this feeling tend to follow through (Price and Mueller, 1981). Many factors, such as individual characteristics including age, gender, education

background, health status and marital status, were found to be associated with intention to leave among nurses working at general or psychiatric hospitals (Alsaraireh et al., 2014; de Oliveira et al., 2017; Heinen et al., 2013; Ito et al., 2001). Job-related factors including long work hours, low salary, negative relationships with patients and physicians and a lack of support from organizations were predictors of having an intention to leave (Bobbio and Manganelli, 2015; Heinen et al., 2013; Ito et al., 2001; van der Heijden et al., 2010). The relationship between job satisfaction and intention to leave were explored among psychiatric nurses in Japan (Ito et al., 2001), Jordan (Alsaraireh et al., 2014) and the U.S. (Yanchus et al., 2017), and all showed that job satisfaction was negatively associated with intention to leave.

To our knowledge, only a few empirical studies were published on such topics among psychiatric nurses in China, and those studies were limited by small sample sizes and were based on reports from one local hospital (Shao et al., 2016; Sun et al., 2016; Wu et al., 2015; Yang and Sun, 2012). Moreover, some factors (such as health status, patient-initiated violence and job satisfaction) were not examined in the studies of Chinese psychiatric nurses. In response to these limitations, this study aimed to investigate the intention to leave among psychiatric nurses in China, and to identify associated factors by examining a range of individual characteristics, job-related factors and job satisfaction.

## 2. Methods

### 2.1. Design, setting and participants

This study was part of a national cross-sectional survey conducted in December 2017 with the purpose of evaluating the performance of tertiary hospitals to ultimately improve healthcare quality and satisfaction. This survey included basic information about the participating hospitals (e.g. number of beds, nurses and discharges) and investigations among their staff and their patients. In psychiatric settings, the China's Ministry of Health purposefully sampled 32 tertiary psychiatric hospital in the capital city of the 29 provinces in mainland China (3 were selected from Beijing, 2 were selected from Anhui province; Tibet and Gansu were excluded because there were no tertiary psychiatric hospitals in their capital cities at the time of survey). These sampled tertiary hospitals accounted for 3.1% of all 1026 psychiatric hospitals and 13.9% of all 1,723,337 psychiatric discharges.

There were 9907 psychiatric nurses (15.7% of all psychiatric nurses in China) listed in these hospitals and all were targeted for this online survey through WeChat, a social media application. Each WeChat account could only submit one questionnaire. This would avoid the possibility of double registration. Student nurses were not included in this survey. To ensure that the response rate was no less than 80%, hospital administrators in each hospital organized staff meetings and placed posters in hospitals to facilitate the process of data collection, but they had no access to the data.

### 2.2. Measures

The online questionnaire asked respondents about individual characteristics such as gender, age, marital status, educational level and health status. It also asked about job-related variables

such as the respondent's professional title, income, work hours, the perceived relationship between nurses and patients and between nurses and physicians, and whether they experienced patient-initiated violence within the last 12 months (Eltaybani et al., 2018; Ito et al., 2001; Shi et al., 2015). All variables were treated as categorical ones. Cut-off points for age, work hours and income were chosen to ensure balance in each stratum.

The short form of the Minnesota Satisfaction Questionnaire was used to measure job satisfaction. This instrument consists of 20 items on a 5-point Likert scale: very dissatisfied-1, dissatisfied-2, moderate-3, satisfied-4 and very satisfied-5 (Weiss et al., 1967). The total score of the 20 items ranges from 0 to 100 which can reflect the general job satisfaction. Typically, 60 indicates a neutral attitude, and 80 and above indicates satisfaction towards one's job (Sharp, 2008). The Cronbach's alpha value of these job satisfaction items was 0.96 in our sample, suggesting good reliability (Streiner and Norman, 2003). Job satisfaction served as one of the independent variables when examining intention to leave. Those scoring 80 or above were classified as 'satisfied', and those below 80 were classified as 'other' (Sharp, 2008).

Health status as one of the individual characteristics was measured by self-rated health, and a 5-point Likert scale was used: very poor-1, poor-2, fair-3, good-4, very good-5. To simplify the analysis, the self-rated health status was re-categorized into three groups: those who scored 1 or 2 were re-categorized into the 'poor health' group, those who scored a 3 were re-categorized into the 'fair health' group, and those who scored a 4 or 5 were re-categorized into the 'good health' group (de Oliveira et al., 2017). Similar to previous studies (Fang et al., 2015; Lu et al., 2016), perceived respect from patients, social recognition, physician-nurse coordination and trust were assessed by items with a 5-point Likert scale: very dissatisfied-1, dissatisfied-2, moderate-3, satisfied-4 and very satisfied-5. Those who scored a 4 or 5 were classified as 'satisfied', while those who scored a 1, 2, or 3 were classified as 'other'.

As an outcome variable, the respondent's intention to leave was assessed by asking them to indicate whether they planned to leave their jobs (Ito et al., 2001). Responses included "No", "Yes, I plan to leave in the next six months", and "Yes, I plan to leave but no certain time frame". Participants responding "No" were categorized as 'stayers', others were categorized as 'potential leavers'.

### 2.3. Ethics statement

The study protocol has been approved by the Ethical Committee of the corresponding institute. The online survey was anonymous. Participants' consent was obtained when they accessed the online survey.

### 2.4. Statistical analysis

Descriptive analyses about the distribution of sample were conducted. Chi-square tests were used to determine whether the proportions for each variable were significantly different between leavers and stayers. Before the multivariate regression analysis, Spearman correlations and variance inflation factors were used to test multicollinearity in all the variables. Backward stepwise logistic regression was used to drop variables without significant associations with an intention to leave. Since respondents in this study were nested in 32 hospitals, a multilevel multiple logistic regression was then used to examine associations between intention to leave and factors involved in the analysis, which allowed for association across respondents within hospitals (Wang et al., 2009). We used a stepped modeling approach to compare the fit of three sets of variables. Model 1 only contained individual characteristics; Model 2

contained both individual and job-related factors; Model 3 was a full model which also included job satisfaction. Parameters including -2log likelihood, Akaike's information criterion (AIC) and Bayesian information criterion (BIC) were used to compare these multilevel models.

In order to test the robustness of the results, we re-categorized intention to leave as follows: those who responded "Yes, I plan to leave but no certain time frame" were placed in the stayer group, together with those who answered they would not leave their job, and the same analysis was run. Stata 14 (StataCorpLP, College Station, TX, USA) was used for all analyses. P values in this study were two-tailed. Alpha was set at 0.05 for statistical significance.

## 3. Results

### 3.1. Descriptive analysis of hospitals and participants

The basic data of 32 tertiary psychiatric hospitals are shown in Table 1. The number of beds within these hospitals ranged from 169 to 2134 with a median of 810. The number of discharges in the past 12 months ranged from 859 to 33,472 with a median of 6094. The average length of stay for each discharge was 49.5 days. The number of nurses, the number of nurses per 100 occupied beds, and the nurse-physician ratio also varied, with medians of 303 (inter-quartile range (IQR)= 161), 0.10 (IQR= 0.06), and 2.0 (IQR= 0.5), respectively.

Out of 9907 nurses in 32 tertiary psychiatric hospitals, 8493 nurses responded to the survey (response rate=85.7%). After dropping the results with logic errors (such as age and work hours per week more than 100, practice years exceeding one's age), 7933 respondents were involved in the analysis. Missing values of questions involved in this study were avoided by implementing a must-answer design within the online questionnaire.

As shown in Table 2, the respondents were predominately female (81.9%), and their median age was 32 years old. More than 70% of them were married, and 57.0% had a bachelor's or higher degree. Approximately, 70% of them reported their health status as poor or fair. Two-thirds held a junior professional title, their median working years was 9, median monthly income was 6000 RMB (US\$923), and only 15.0% reported a salary of 8000 RMB per month or above (US\$1230). About a quarter worked more than 40 hours per week. One third reported having directly experienced patient-initiated violence (including verbal abuse and physical assaults) in the past 12 months. 47.4%, 37.4% and about 70% of nurses were satisfied with the amount of respect they receive from their patients, the amount of social recognition they receive for their work, and the amount of physician-nurse coordination and trust, respectively. 34.3% of nurses reported being satisfied with their jobs (total score of 80 or above). 1599 (20.2%) reported an intention to leave their jobs, among which 25 nurses responded "Yes I plan to leave but no certain time frame", and 1574 nurses responded "Yes I plan to leave within six months".

**Table 1**  
Basic information of 32 tertiary psychiatric hospitals in 2017.

Hospital information	Median	IQR	Minimum	Maximum
Number of beds	810	546	169	2134
Number of discharges	6094	4368	859	33472
Average length of stay (days)	49.5	29.7	15.9	135
Number of Nurses	303	161	38	710
Nurses per 100 occupied beds	0.10	0.06	0.04	0.19
Nurse-physician ratio	2.0	0.5	1.4	3.3

IQR, inter-quartile range.

**Table 2**  
Univariate and bivariate analysis of study variables, N (%).

Variables	Nurses' intention to leave the current job			$\chi^2$	P-value
	Total N = 7933	Leavers N = 1599 (20.2%)	Stayers N = 6334 (79.8%)		
<b>Individual characteristics</b>					
<b>Gender</b>					
Male	1439 (18.1%)	407 (28.3%)	1032 (71.7%)	72.147	<0.001
Female	6494 (81.9%)	1192 (18.4%)	5302 (81.6%)		
<b>Age<sup>a</sup></b>					
27 and below	2041 (25.7%)	486 (23.8%)	1555 (76.2%)	129.08	<0.001
28–32	2193 (27.7%)	522 (23.8%)	1671 (76.2%)		
33–40	1843 (23.2%)	384 (20.8%)	1459 (79.2%)		
41 and above	1856 (23.4%)	207 (11.2%)	1649 (88.9%)		
<b>Marital status</b>					
Not married	2218 (28.0%)	538 (24.3%)	1680(75.7%)	32.155	<0.001
Married	5715 (72.0%)	1061 (18.6%)	4654 (87.4%)		
<b>Educational background</b>					
Below bachelor's degree	3404 (43.0%)	649 (19.0%)	2759 (81.0%)	4.598	0.032
Bachelor's degree and above	4525 (57.0%)	950 (21.0%)	3575 (79.0%)		
<b>Self-rated health</b>					
Poor	2540 (32.0%)	876 (34.5%)	1664 (65.5%)	539.610	<0.001
Fair	3116 (39.3%)	533 (17.1%)	2583 (82.9%)		
Good	2277 (28.7%)	190 (8.3%)	2087 (91.7%)		
<b>Job-related factors</b>					
<b>Professional title</b>					
Junior	5156 (65.0%)	1172 (22.7%)	3984 (77.3%)	68.481	<0.001
Middle	2360 (29.8%)	384 (16.3%)	1976 (83.7%)		
Senior	417 (5.3%)	43 (10.3%)	374 (89.7%)		
<b>Working years<sup>b</sup></b>					
4 years and below	2115 (26.7%)	478 (22.6%)	1637 (77.4%)	125.040	<0.001
5–9 years	1968 (24.8%)	479 (24.3%)	1489 (75.7%)		
10–20 years	1993 (25.1%)	434 (21.8%)	1559 (78.2%)		
21 years and above	1857 (23.4%)	208 (11.2%)	1649 (88.8%)		
<b>Average monthly income<sup>c</sup></b>					
4500 RMB and below	2187 (27.5%)	554 (25.3%)	1633 (74.7%)	92.786	<0.001
4501–6000 RMB	2574 (32.5%)	548 (21.3%)	2026 (78.7%)		
6001–8000 RMB	1966 (24.8%)	350 (17.8%)	1616 (82.2%)		
8001 RMB and above	1206 (15.2%)	147 (12.2%)	1059 (87.8%)		
<b>Average workhours per week</b>					
40 hours and below	5975 (75.3%)	1006 (16.8%)	4969 (83.2%)	165.750	<0.001
41 hours and above	1958 (24.7%)	593 (30.3%)	1365 (69.7%)		
<b>Directly experienced patient-initiated violence in the past 12 months</b>					
Yes	2505 (31.6%)	745 (29.7%)	1760 (70.3%)	208.962	<0.001
No	5428 (68.4%)	854 (15.7%)	4574 (84.3%)		
<b>Respect from patients<sup>d</sup></b>					
Satisfied	3762(47.4%)	386(10.3%)	3376(89.7%)	435.379	<0.001
Other	4171(52.6%)	1213(29.1%)	2958(70.9%)		
<b>Social recognition of your specialty<sup>e</sup></b>					
Satisfied	2964 (37.4%)	222(7.5%)	2742(92.5%)	471.741	<0.001
Other	4969 (62.6%)	1377(27.7%)	3592(72.3%)		
<b>Physician-nurse coordination<sup>f</sup></b>					
Satisfied	5580 (70.3%)	735(13.2%)	4845(86.8%)	570.216	<0.001
Other	2353 (29.7%)	864(36.7%)	1489(63.3%)		
<b>Physician-nurse trust<sup>g</sup></b>					
Satisfied	5430 (68.5%)	692(12.7%)	4738(87.3%)	587.530	<0.001
Other	2503 (31.5%)	907(36.2%)	1596(63.8%)		
<b>Job satisfaction<sup>h</sup></b>					
Satisfied	2719 (34.3%)	146 (5.4%)	2573 (94.6%)	562.038	<0.001
Other	5214 (65.7%)	1453 (27.9%)	3761 (72.1%)		

<sup>a</sup> The median age of the respondents is 32 years old, the inter-quartile range (IQR) is 13.

<sup>b</sup> The median working years of the respondents is 9 (IQR = 16).

<sup>c</sup> The median monthly income of the respondents is 6000 RMB (IQR = 3500 RMB).

<sup>d</sup> The median score of respects from patients was 3 (IQR = 2).

<sup>e</sup> The median score of social recognition was 3 (IQR = 2).

<sup>f</sup> The median score of physician-nurse coordination was 4 (IQR = 1).

<sup>g</sup> The median score of physician-nurse trust was 4 (IQR = 1).

<sup>h</sup> The median score of job satisfaction was 75 (IQR = 16).

### 3.2. Bivariate analysis of intention to leave

All individual characteristics, job-related factors, and job satisfaction were significantly associated with an intention to leave. Nurses of male gender, single status, a higher level of

education, working more than 40 hours per week and experiencing patient-initiated violence were more likely to have an intention to leave. Nurses who were older, had better self-rated health, a higher professional title, more years employed, a higher average monthly income, who were more satisfied with the amount of patient

respect, social recognition, physician–nurse coordination and trust, and who were overall satisfied with their job were more likely to be stayers in their current position (see Table 2).

### 3.3. Multivariate logistic regression analysis

Based on the results of the Spearman correlation analysis and the variance inflation factors test (see S1 Table and S2 Table in the Supplementary Data), we excluded age, professional title, social recognition and nurse–physician coordination from the multiple regression model to minimize multicollinearity in these independent variables. In Model 2 and Model 3, marital status and education background were removed due to their non-significant associations with intention to leave. The fixed effects component of the multilevel multiple regression analysis is shown in Table 3. The  $-2\log$  likelihood, AIC, BIC of Model 1, Model 2, and Model 3 became smaller, indicating that the fit of the models improved.

In the full model (Model 3 in Table 3), male nurses were more likely to have an intention to leave than female nurses (odds ratio [95% confidence interval]: 1.879 [1.605 to 2.199]). Compared to those with poor health status, those reporting fair and good health status had a significantly lower likelihood of reporting an intention to leave (0.512 [0.446 to 0.587] for fair status, 0.373 [0.308 to 0.452] for good status). Nurses who had worked more than 20 years were less likely to have an intention to leave compared to those working less than 5 years (0.479 [0.389 to 0.590]); those working 5 to 9 years (1.106 [0.933 to 1.312]) and those working 10 to 20 years (0.958 [0.804 to 1.142]) showed no significant difference. Monthly income level was inversely associated with intention to leave (0.826 [0.697 to 0.978] for 4501 to 6000 RMB, 0.705 [0.572 to 0.870] for 6001 to 8000 RMB, 0.521 [0.399 to 0.680] for 8001 RMB and above, refer to 4500 RMB and below). Working more than 40 hours per week and having experienced patient-initiated violence were associated with an increased likelihood of intending to leave (1.584 [1.374 to 1.825], 1.566 [1.376 to 1.781]). Nurses satisfied with the respect they receive from patients, the physician–nurse coordination, and

their jobs had a lower odds of reporting an intention to leave (0.727 [0.623 to 0.849], 0.549 [0.480 to 0.629], 0.355 [0.2885–0.438], respectively).

To test the robustness of the analysis, we recategorized intention to leave using a different coding, and the results of bivariate and multiple analysis were very similar to those of the initial analysis (see S3 Table and S4 Table in the Supplementary Data).

## 4. Discussion

Using a large, nationwide sample of nurses from 32 tertiary psychiatric hospitals in China, this study examined nurses' intention to leave their job and explored factors associated with that choice. In addition, this study provided a profile of the respondents using descriptive analysis. One strength of this study was that we not only focused on nursing staff in specialty psychiatric hospitals but also integrated several individual characteristics and job-related factors in models focused on a national sample. Several factors included in this model (such as health status, patient-initiated violence, job satisfaction) have rarely been explored in studies of Chinese psychiatric nurses, and factors related to nurse–patient and physician–nurse relations have only been examined at local levels.

### 4.1. The profile and intention to leave of nurses working in psychiatric hospitals

The proportions of male nurses and nurses having a bachelor's degree or higher working in Chinese psychiatric hospitals were 18.1% and 57.0%, respectively. These proportions were greater than those seen in all types of China's hospitals (2.4% and 18.7%, respectively) (MoH, 2017). These results may indicate that either psychiatric hospitals were inclined to recruit male nurses and those with more advanced education or that something about psychiatric nursing tends to appeal more to men and to those who

**Table 3**  
Multilevel logistic regression examining individual characteristics, job-related factors and job satisfaction associated with intention to leave.

Variables	Odds Ratio		
	Model 1	Model 2	Model 3
<b>1. Individual characteristics</b>			
Male (ref. female)	2.003 <sup>***</sup>	1.863 <sup>***</sup>	1.879 <sup>***</sup>
Married (ref. not married)	0.703 <sup>***</sup>		
Bachelor's degree and above (ref. below bachelor's degree)	1.181 <sup>*</sup>		
Self-rated health (ref. poor)			
Fair	0.384 <sup>***</sup>	0.483 <sup>***</sup>	0.512 <sup>***</sup>
Good	0.184 <sup>**</sup>	0.311 <sup>***</sup>	0.373 <sup>***</sup>
<b>2. Job-related factors</b>			
Working years (ref. 4 years and below)			
5–9 years		1.123	1.106
10–20 years		0.990	0.958
21 years and above		0.500 <sup>***</sup>	0.479 <sup>***</sup>
Monthly income (ref. 4500 RMB and below)			
4501–6000 RMB		0.805 <sup>*</sup>	0.826 <sup>*</sup>
6001–8000 RMB		0.692 <sup>**</sup>	0.705 <sup>**</sup>
8001 RMB and above		0.496 <sup>***</sup>	0.521 <sup>***</sup>
Working more than 40 hours per week (ref. 40 hours and below)		1.664 <sup>***</sup>	1.584 <sup>***</sup>
Directly experienced patient-initiated violence in the past 12 months (ref. no)		1.568 <sup>***</sup>	1.566 <sup>***</sup>
Satisfied with respect from patients (ref. other)		0.573 <sup>***</sup>	0.727 <sup>***</sup>
Satisfied with physician–nurse coordination (ref. other)		0.478 <sup>***</sup>	0.549 <sup>***</sup>
<b>3. Satisfied with job (ref. other)</b>			
–2 log likelihood	7043.627	6535.688	6432.532
Akaike's information criterion (AIC)	7057.627	6565.688	6464.532
Bayesian information criterion (BIC)	7106.479	6670.370	6576.192

<sup>\*</sup>  $p < 0.05$ .

<sup>\*\*</sup>  $p < 0.01$ .

<sup>\*\*\*</sup>  $p < 0.001$ .

are more educated. Approximately, two thirds of psychiatric nurses rated their health status as poor or fair, 60% of them earned a monthly income less than 6000 RMB (US\$923), and a quarter of them worked more than 40 hours per week. Overall, psychiatric nurses fared poorly compared to their peers in other tertiary hospitals in China (Zhou et al., 2018).

31.6% of nurses reported directly experiencing patient-initiated violence in the past 12 months. This was lower than that reported in psychiatric settings in Japan (41.3%) and Botswana (44.1%) (Ito et al., 2001; Olashore et al., 2018), but higher than that reported in general hospitals in China (25.8%) (Xu and Meng, 2014). Most nurses (about 70%) were satisfied with the level of physician–nurse coordination and trust, while less than half of the nurses reported satisfaction with the levels of patient respect and the social recognition they received. Two-thirds of them were under-satisfied with their job (MSQ < 80).

About 20% of these psychiatric nurses reported an intention to leave their current jobs, which was significantly higher than that reported in a national survey of nurses working in general hospitals throughout China (5.1%) (Zhang et al., 2014a, b). However, this rate was lower than that reported by Ito et al. (2001) among psychiatric nurses in 27 psychiatric hospitals in Japan (44.3%) and that within general hospitals of some western countries (22.7% in US, 38.9% in England, 30.3% in Scotland) (Aiken et al., 2001; Ito et al., 2001).

#### 4.2. Factors associated with an intention to leave

Consistent with some previous studies (Baum and Kagan, 2015; de Oliveira et al., 2017; El-Jardali et al., 2013; Ito et al., 2001), nurses with a long work history were more likely to stay in their current job, health status was negatively associated with an intention to leave, and male nurses were more likely to desire to leave their job. These findings can help psychiatric hospital administrators target their retention efforts towards specific groups, such as younger, male nurses and should include health promotion interventions to improve the wellbeing of all nurses.

With regard to job-related factors, we found income level, perceived respect from patients and physician–nurse coordination were negatively related to intention to leave, and workhours were positively associated with intention to leave. This finding was similar to prior reports (Liu et al., 2012; Yanchus et al., 2017). Experience of patient-initiated violence in the past 12 months was significantly associated with an intention to leave, which was consistent with findings in previous reports from South Korea and Japan (Chang and Cho, 2016; Ito et al., 2001). These findings indicate patients' attitudes toward nurses play an important role in the retention of psychiatric nurses. The government should develop ways to promote the value of nurses to the general public in an effort to improve the respect patients show nurses. It should also work with the hospitals to find ways to mitigate patient-initiated violence against nurses and keep nurses safe (Wang et al., 2012).

This study also confirmed that job satisfaction was negatively associated with having an intention to leave. This was consistent with previous reports (Alsaraireh et al., 2014; Ito et al., 2001; Yanchus et al., 2017) and speaks to the need for administrators to proactively and regularly survey their nurses' level of satisfaction and consider ways to improve it.

Our finding in bivariate analysis that a higher rate of intention to leave was reported among nurses who were single and had a higher level of education, was consistent with previous findings (Alsaraireh et al., 2014; Liu et al., 2012). However, neither of these associations remained statistically significant in the multiple regression analyses, in which confounding effects were controlled. Moreover, given the heterogeneity of composition of some variables in this sample (such as gender, marital status), any relationship with intention to leave should be made with caution.

#### 4.3. Limitations and suggestions for future research

Several limitations of this study need to be acknowledged. First, psychiatric nurses included in this study were from the top psychiatric hospitals in each province, and their representativeness of nurses in psychiatric hospitals across China, especially those in smaller cities and rural areas was limited. As China is a hierarchical society, there are reasons to believe the overall conditions are worse for those working in psychiatric hospitals in smaller cities and rural areas, as those hospitals often have limited resources and are understaffed (Dong et al., 2016). Second, due to the nature of the cross-sectional design, causal relationships cannot be established. Time-based data could be collected in future studies to explore factors leading to an intention to leave, which may provide policy-makers a clearer idea of where to intervene. Third, some measures used in this study may render some results less reliable. For example, self-reported income might be understated, work hours might be exaggerated, and items such as health status and intention to leave were asked with a single question which limited the depth of the nurses' response. Further research could use objective data or scales to measure such variables. Fourth, this survey did not consider the hospitals' organizational characteristics (such as leadership or organizational support) nor the nurses' psychological status (such as burnout syndrome or mental stress) which could have added more context to the results. The associations between those factors and intention to leave could be explored in future research.

### 5. Conclusions

This cross-sectional study demonstrated that gender, personal health, income, workload, items related to nurse–patient and nurse–physician relationships as well as job satisfaction were significantly associated with an intention to leave among psychiatric nurses in China. Given that psychiatric nurses in China are playing a very important role in providing psychiatric care in China and that they are already in short supply, we suggest that the government and hospital administrators pay attention to the wellbeing and job satisfaction of psychiatric nurses, take measures to ensure that nurses' income fairly compensates for their workload, and promote interpersonal relationships in their work environment, thereby improving the retention of nurses in tertiary psychiatric hospitals. However, this study did not address the potential effects of nurses' individual mental health nor their organizational contexts, and could not determine the causal relationships between associated factors and an intention to leave. Future longitudinal studies should be undertaken to address these limitations.

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#### Conflict of interests

None declared.

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## Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.ijnurstu.2019.03.013>.

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