Job satisfaction and associated factors among health care staff in township health centers——a cross-sectional survey in rural Central China

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ABSTRACT
Township health centers play a cornerstone role in the primary healthcare in China while it’s development is largely limited by the brain drain. Job satisfaction is closely related to brain drain, investigating the relevant factors of job satisfaction can provide strategies to reduce brain drain. This research was conducted in Huangpi, China. Convenience sampling methods and self-administered questionnaires were used. We collected 1370 valid samples, with an effective rate of 97.72%. Descriptive statistics are used to describe sociodemographic information. The Pearson Chi-square statistical was used to test the binary association between job satisfaction and another categorical variable. All the sociodemographic information was applied to the binary logistic regression model using the stepwise selection method. The mean age was 36.98 (SD = 9.84), factors that affect job satisfaction include educational background ($x^2 = 7.99$, $p<0.05$), marital status ($x^2 = 8.96$, $p<0.05$), monthly income ($x^2 = 51.43$, $p<0.01$), hire form ($x^2 = 7.64$, $p<0.05$), hours worked per week ($x^2 = 33.48$, $p<0.01$), parent had a stable job ($x^2 = 10.65$, $p<0.01$). Government and management should consider the impact of current policies on job satisfaction. Increasing the welfare of healthcare staff and promoting equity are potential strategies for improving low levels of job satisfaction.

Background
The shortage of professionals in healthcare centers will eventually affect the health of the rural population and exacerbate health inequality. Improving job satisfaction is crucial for reducing turnover intention in township health centers (Fang et al., 2014; Wen et al., 2018). Job satisfaction originated from Hawthorne’s experiment to study the work efficiency of workers (Gillespie, 1991). After years of development, there are a plenty concepts and measurement methods of job satisfaction, which reflects the work-related psychological behavior has become a consensus.

A previous study on healthcare staff in township health centers showed that job security, reward and promotion opportunities were important factors affecting job satisfaction. We observed that job satisfaction was negatively associated with job turnover intention (Chen et al., 2018). This study has several limitations, such as the small sample size and the cross-sectional design, which may affect the generalizability of the results.

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satisfaction (Liu et al., 2010). For healthcare staff, low job satisfaction is detrimental to physical and mental health and reduces well-being (Faragher et al., 2005; Jarosova et al., 2017). For medical institutions, decline in the quality of medical services, increased doctor-patient conflict are associated with poor job satisfaction (Patel et al., 2008). Chinese government launched a new medical reform to strengthen primary healthcare and promote the public welfare in 2009. While the reform has benefited service users, it has been accompanied by a decline in the income of healthcare staff and a brain drain from township health centers (Zhou et al., 2014). Huangpi first put forward the concept of health management, and became the national health management demonstration area. We are concerned about the job satisfaction of healthcare staff and its influencing factors in this composite context.

**Methods**

**Settings and participants**

A cross-sectional survey and convenience sampling methods were used. The investigation was conducted anonymously with informed consent. Eligible participants met the following inclusion criteria: (1) Time of service was more than one year. (2) Individuals who have no history of mental illness or who have not suffered mental damage recently. (3) Participants were voluntary. The total number of healthcare workers in township health centers in Huangpi is around 2400. We distributed 1402 questionnaires with 97.72% (1370/1402) effective rate.

**Measures**

The original questionnaire was developed by Fudan University (Zhang, 2011). Sociodemographic characteristics include gender, age, educational background, marital status, professional status, occupation, monthly income, hire form, hours worked per week, years of service, night shift frequency, parents had a stable job or not. The questionnaire of job satisfaction includes 18 items which evaluate satisfaction with work environment, remunerations, management and the work itself. A five-point Likert scale was adopted, all questions were positive scoring. The mean score of job satisfaction more than 3.5 points (out of 5 points) was classified as good (Lu et al., 2016) (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree).

The value of Kaiser-Meyer-Olkin(KMO) is 0.96, and Bartlett’s test was significant at $\chi^2 (0.05,153) = 34832.83 \ (p<0.01)$. Cronbach’s alpha was used to evaluate the reliability of the questionnaire, exploratory factor analysis was performed to test the construct validity. The value of Cronbach’s alpha reflects the internal consistency of the questionnaire. As shown in Table 1, the Cronbach’s alpha value of each dimensions ranged from 0.89 to 0.98, which indicated the reliability of the questionnaire is good. The construct validity was acceptable if the factor loading of each item was greater than 0.40 (Lu et al., 2016), and the factor loading of each item met the criteria. The four factors were named as ‘working environment’, ‘management rules’, ‘remunerations’ and ‘the work itself’, respectively.
Table 1. Factor loading of items using the exploratory factor analysis and Cronbach’s α of the questionnaire.

| Items                                                                 | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|-----------------------------------------------------------------------|----------|----------|----------|----------|
| 1. The comfort level of the working environment (office environment,  | 0.81     |          |          |          |
| greening, lighting, etc.)                                              |          |          |          |          |
| 2. The organization can provide sufficient technical equipment       | 0.81     |          |          |          |
| (professional information inquiry resources, instruments, etc.) for  |          |          |          |          |
| work use.                                                             |          |          |          |          |
| 3. Interpersonal relationship within the organization (peer         | 0.88     |          |          |          |
| relationship and subordinate relationship).                          |          |          |          |          |
| 4. Happy cooperation between different departments within the        | 0.85     |          |          |          |
| organization.                                                        |          |          |          |          |
| 5. The work style of the organization is very good.                  | 0.79     |          |          |          |
| 6. The leadership of the workplace is very good.                     | 0.80     |          |          |          |
| 7. Current income level satisfied you.                               | 0.78     |          |          |          |
| 8. The welfare of the work organization satisfied you.               | 0.79     |          |          |          |
| 9. Work development prospects satisfied you.                         | 0.77     |          |          |          |
| 10. Satisfaction with the training opportunities (number, form and  | 0.70     |          |          |          |
| content) offered.                                                     |          |          |          |          |
| 11. The income distribution system of the organization is             | 0.78     |          |          |          |
| reasonable.                                                          |          |          |          |          |
| 12. The performance appraisal mechanism of the organization is       | 0.77     |          |          |          |
| set up reasonably.                                                    |          |          |          |          |
| 13. The performance of the organization’s performance reward        | 0.77     |          |          |          |
| system is good.                                                      |          |          |          |          |
| 14. The management system and business process of the organization   | 0.69     |          |          |          |
| are good.                                                            |          |          |          |          |
| 15. I am very interested in my current job.                          | 0.75     |          |          |          |
| 16. My character and ability suit current position.                  | 0.68     |          |          |          |
| 17. My work is very challenging.                                     | 0.65     |          |          |          |
| 18. I feel that my daily work tasks are heavy.                       | 0.78     |          |          |          |
| Eigenvalue                                                            | 10.60    | 3.03     | 1.30     | 1.02     |
| % variance                                                            | 59.97    | 72.01    | 82.90    | 85.69    |
| Cronbach’s alpha                                                      | 0.96     | 0.96     | 0.98     | 0.89     |

Statistical analysis

SPSS version 20.0 was used to analyze the data. Descriptive statistics are used to describe sociodemographic information. The Chi-square test was used to test the binary association between job satisfaction and another categorical variable. The Odds Ratio (OR) and 95% Confidence Interval (CI) of the association between different factors and job satisfaction were analyzed via binary logistic regression model using the stepwise selection method. All tests were conducted at the 0.05 level of statistical significance.

Results

Descriptive of sociodemographic characteristics

The sociodemographic characteristics of respondents are tabulated in Table 2. In this sample, 31.09% of participants were male. Their average age was 36.98 ± 9.84 years, the largest proportion of participants (35.77%) was in the less than 31 years old group. The educational background of 46.42% of staff surveyed was junior college. The proportion of respondents who were married was 77.29%. Most of participants had primary professional status (52.85%). The majority were clinicians (42.77%). There were 519 respondents (37.88%) with a monthly income of 3001–4000 RMB, and 759 workers were permanent staff. The respondents worked for 31–40 hours per week (h/wk) account for 71.02%, and only 1.31% worked for less than 31 h/wk. Participants’ average years of
Table 2. Sociodemographic characteristics of respondents (n=1370) and assessment on the factors related to job satisfaction of medical staff in township health centers.

| Sociodemographic characteristic | n  | %   | n  | %   | n  | %   | \( \chi^2 \) | \( p \)   |
|---------------------------------|----|-----|----|-----|----|-----|----------|---------|
| Gender                          |    |     |    |     |    |     |          |         |
| Male                            | 426| 31.09| 311| 22.71| 115| 8.39| 1.75     | 0.20    |
| Female                          | 944| 68.91| 656| 47.88| 288| 21.02|          |         |
| Age                             |    |     |    |     |    |     |          |         |
| <31                             | 490| 35.77| 331| 24.16| 159| 11.61| 5.40     | 0.15    |
| 31-40                           | 332| 24.23| 231| 16.86| 101| 7.37 |          |         |
| 41-50                           | 442| 32.26| 325| 23.72| 117| 8.54 |          |         |
| >50                             | 106| 7.74 | 80 | 5.84 | 26 | 1.90 |          |         |
| Educational background          |    |     |    |     |    |     |          |         |
| University and above            | 423| 30.88| 280| 20.44| 143| 10.44| 7.99     | 0.046*  |
| Junior college                  | 636| 46.42| 453| 33.07| 183| 13.36|          |         |
| High school/Technical school    | 286| 20.88| 217| 15.84| 69 | 5.04 |          |         |
| Junior high school and below    | 25 | 1.82 | 17 | 1.24 | 8  | 0.58 |          |         |
| Marital status                  |    |     |    |     |    |     |          |         |
| Married (living with spouse)    | 990| 72.26| 713| 52.04| 277| 20.22| 8.96     | 0.042*  |
| Married (not living with spouse)| 69 | 5.03 | 50 | 3.65 | 19 | 1.39 |          |         |
| Unmarried                       | 270| 19.71| 180| 13.14| 90 | 6.57 |          |         |
| Divorced/widowed                | 41 | 2.99 | 24 | 1.75 | 17 | 1.24 |          |         |
| Professional status             |    |     |    |     |    |     |          |         |
| Senior/deputy                   | 44 | 3.21 | 31 | 2.26 | 13 | 0.95 | 2.24     | 0.53    |
| Intermediate                    | 207| 15.11| 152| 11.09| 55 | 4.01 |          |         |
| Primary                         | 724| 52.85| 499| 36.42| 225| 16.42|          |         |
| Lower than primary              | 395| 28.83| 285| 20.80| 110| 8.03 |          |         |
| Occupation                      |    |     |    |     |    |     |          |         |
| Clinicians                      | 586| 42.77| 378| 27.60| 208| 15.18| 8.00     | 0.33    |
| Nurse                           | 562| 41.02| 420| 30.66| 142| 10.36|          |         |
| Public health staff             | 66 | 4.82 | 48 | 3.50 | 18 | 1.31 |          |         |
| Other occupation                | 156| 11.39| 120| 8.76 | 36 | 2.63 |          |         |
| Monthly income (RMB)            |    |     |    |     |    |     |          |         |
| <2000                           | 109| 7.96 | 59 | 4.31 | 50 | 3.65 | 51.43    | 0.000** |
| 2001-3000                       | 413| 30.15| 258| 18.83| 155| 11.31|          |         |
| 3001-4000                       | 519| 37.88| 392| 28.61| 127| 9.27 |          |         |
| 4001-5000                       | 274| 20.00| 206| 15.04| 68 | 4.96 |          |         |
| >5000                           | 55 | 4.01 | 52 | 3.80 | 3  | 0.22 |          |         |
| Hire form                       |    |     |    |     |    |     |          |         |
| Personnel agent staff           | 221| 16.13| 533| 38.91| 228| 16.64| 7.64     | 0.049*  |
| permanent staff                 | 759| 55.40| 169| 12.34| 52 | 3.80 |          |         |
| Temporary staff                 | 390| 28.47| 265| 19.34| 125| 9.12 |          |         |
| Hours worked per week           |    |     |    |     |    |     |          |         |
| <31                             | 18 | 1.31 | 15 | 1.09 | 3  | 0.22 | 33.48    | 0.000** |
| 31-40                           | 973| 71.02| 727| 53.07| 246| 17.96|          |         |
| 41-50                           | 235| 17.15| 135| 9.85 | 100| 7.30 |          |         |
| >51                             | 144| 10.51| 90 | 6.57 | 54 | 3.94 |          |         |
| Years of service                |    |     |    |     |    |     |          |         |
| 1-5                             | 404| 29.49| 277| 20.22| 127| 9.27 | 7.93     | 0.094   |
| 6-10                            | 230| 16.79| 155| 11.31| 75 | 5.47 |          |         |
| 11-15                           | 134| 9.78 | 98 | 7.15 | 36 | 2.63 |          |         |
| 15-20                           | 166| 12.12| 110| 8.03 | 56 | 4.09 |          |         |
| >20                             | 436| 31.82| 327| 23.87| 109| 7.96 |          |         |
| Night shift frequency (per month)|    |     |    |     |    |     |          |         |
| 0                               | 868| 63.36| 596| 43.50| 272| 20.22| 4.42     | 0.11    |
| 1-3                             | 450| 32.85| 334| 24.38| 116| 8.47 |          |         |
| >3                              | 52 | 3.80 | 37 | 2.70 | 15 | 1.09 |          |         |
| Parents had a stable job or not |    |     |    |     |    |     |          |         |
| Yes                             | 505| 36.86| 383| 27.96| 122| 9.15 | 10.65    | 0.001** |
| No                              | 865| 63.14| 584| 42.63| 281| 20.51|          |         |
| Total                           | 1370| 100 | 967| 70.58| 403| 29.42|          |         |

*p<0.05, **p<0.01.
service were 14.65 ± 10.87 years. Most of respondents (63.36%) had no night shift per month. Additionally, 865 participants’ parents had a stable job (63.14%).

Univariate analysis

The results of the univariate analysis are also shown in Table 2. The job satisfaction is associated with educational background ($\chi^2 = 7.99, p < 0.05$), marital status ($\chi^2 = 8.96, p < 0.05$), monthly income ($\chi^2 = 51.43, p < 0.01$), hire form ($\chi^2 = 7.64, p < 0.05$), hours worked per week ($\chi^2 = 33.48, p < 0.01$), parent had a stable job ($\chi^2 = 10.65, p < 0.01$).

Binary logistic regression analysis

Table 3 shows the relationship between individual factors and job satisfaction. Marital status, professional status, monthly income, hire form, hours worked per week, parents have had a stable job or not were significantly associated with job satisfaction. Participants with high school/special (or technical) secondary school were less likely to report job satisfaction than staff with university and above (OR = 1.679, 95%CI = (1.110, 2.539), $p < 0.05$). Marital status of divorce or widowhood were 0.421 times less likely to report job satisfaction than marital status of married (living with spouse) (95% CI = (0.213, 0.830), $p < 0.05$). Healthcare staff who had a professional status of primary were less likely to be satisfied with their job than respondents with lower than primary (OR = 0.297, 95%CI = (0.123, 0.720), $p < 0.01$). Employees with higher monthly income were more likely to be satisfied with their job (OR$_{2001-3000RMB}$ = 2.076, 95% CI = (1.282,3.361), $p < 0.01$; OR$_{3001-4000RMB}$ = 5.000, 95%CI = (2.891,8.648), $p < 0.01$; OR$_{4001-5000RMB}$ = 5.298, 95%CI = (2.897,9.689), $p < 0.01$; OR$_{>5000RMB}$ = 31.703, 95% CI = (8.453,118.901), $p < 0.01$). Temporary staff were less likely to be satisfied than permanent staff (OR = 0.570, 95%CI = (0.375, 0.869), $p < 0.01$). Employees who worked 31 to 40 h/wk were more likely to report job satisfaction than staff who worked more than 50 h/wk (OR = 2.343, 95%CI = (1.517,3.619), $p < 0.01$). Respondents whose parents had a stable job were more likely to be satisfied than those didn’t have (OR = 1.373, 95% CI = (1.040, 1.814), $p < 0.05$).

Discussion

The average score of healthcare staff is 4.24. A survey conducted in township health centers in poor rural areas of China used a similar measurement with a score equivalent to 4.17 (Liu et al., 2010). The slightly lower score in the survey may be related to worse work pay and working conditions in poor rural areas.

Divorced or widowed staff report significantly lower levels of satisfaction than married (living with a spouse), a previous study confirmed our results (May, 2003). The average time spent with spouse daily has a positive effect on marriage quality and job satisfaction, which could be a potential explanation for the results. Although previous studies have shown a significant correlation between marriage and job satisfaction, deeper reasons such as whether lives with spouse, work-family conflict, and marital quality remain to be explored (Al-Enezi et al., 2009; Shahnazi et al., 2014).
Table 3. Binary logistic regression to explore factors associated with job satisfaction.

| Variables                                  | $B$   | $p$   | Odds Ratio | lower  | upper  |
|--------------------------------------------|-------|-------|------------|--------|--------|
| Gender (ref. Female)                       |       |       |            |        |        |
| Male                                       | 0.027 | 0.857 | 1.027      | 0.767  | 1.376  |
| Age (ref. >50)                             |       |       |            |        |        |
| 18-30                                      | 0.180 | 0.679 | 1.198      | 0.510  | 2.815  |
| 31-40                                      | 0.338 | 0.374 | 1.403      | 0.665  | 2.961  |
| 41-50                                      | 0.220 | 0.447 | 1.246      | 0.706  | 2.198  |
| Educational background (ref. University and above) |       |       |            |        |        |
| Junior college                             | 0.209 | 0.190 | 1.232      | 0.902  | 1.683  |
| High school/special (or technical) secondary school | 0.518 | 0.014*| 1.679      | 1.110  | 2.539  |
| Junior high school and below               | 0.192 | 0.697 | 1.212      | 0.460  | 3.193  |
| Marital status (ref. Married (living with spouse)) |       |       |            |        |        |
| Married (not living with spouse)           | 0.136 | 0.657 | 1.145      | 0.630  | 2.083  |
| Unmarried                                  | −0.056| 0.795 | 0.946      | 0.621  | 1.440  |
| Divorce or widowhood                       | −0.865| 0.013*| 0.421      | 0.213  | 0.830  |
| Professional status (ref. Lower than primary) |       |       |            |        |        |
| Primary                                    | −1.213| 0.007**| 0.297     | 0.123  | 0.720  |
| Intermediate                               | −0.405| 0.112 | 0.667      | 0.405  | 1.099  |
| Senior/deputy                              | −0.321| 0.056 | 0.725      | 0.522  | 1.008  |
| Occupation (ref. Other occupation)         |       |       |            |        |        |
| Clinicians                                 | 0.963 | 0.965 | 1.231      | 0.256  | 1.289  |
| Nurse                                      | 0.654 | 0.658 | 2.324      | 0.658  | 5.369  |
| Public health staff                        | 1.254 | 0.874 | 0.561      | 0.213  | 1.254  |
| Monthly income (ref. <2000 RMB)            |       |       |            |        |        |
| 2001-3000 RMB                              | 0.731 | 0.003**| 2.076     | 1.282  | 3.361  |
| 3001-4000 RMB                              | 1.609 | 0.000**| 5.000     | 2.891  | 8.648  |
| 4001-5000 RMB                              | 1.667 | 0.000**| 5.298     | 2.897  | 9.689  |
| > 5000 RMB                                 | 3.456 | 0.000**| 31.703    | 8.453  | 118.901|
| Hire form (ref. Permanent staff)           |       |       |            |        |        |
| Temporary staff                            | −0.561| 0.009**| 0.570     | 0.375  | 0.869  |
| Personnel agent staff                      | −0.060| 0.810 | 0.942      | 0.580  | 1.412  |
| Hours worked per week (ref. >50)           |       |       |            |        |        |
| <31                                        | 1.205 | 0.080 | 3.337      | 0.865  | 12.865 |
| 31-40                                      | 0.851 | 0.000**| 2.343     | 1.517  | 3.619  |
| 41-50                                      | −0.120| 0.612 | 0.887      | 0.557  | 1.412  |
| Years of service (ref. >21)                |       |       |            |        |        |
| 1-5                                        | −0.008| 0.983 | 0.992      | 0.473  | 2.081  |
| 6-10                                       | −0.083| 0.820 | 0.921      | 0.452  | 1.875  |
| 11-15                                      | −0.179| 0.605 | 0.836      | 0.425  | 1.646  |
| 16-20                                      | −0.210| 0.416 | 0.811      | 0.489  | 1.344  |
| Times of night-shift a week (ref. >3 times) |       |       |            |        |        |
| 0                                          | −0.502| 0.151 | 0.605      | 0.305  | 1.202  |
| 1-3                                        | 0.301 | 0.403 | 1.352      | 0.667  | 2.738  |
| Parents have had a stable job or not (ref. No) |       |       |            |        |        |
| Yes                                        | 0.317 | 0.026*| 1.373      | 1.040  | 1.814  |
| Constant                                   | 2.260 | 0.021*| 9.583      | —      | —      |

*p<0.05, **p<0.01.

Healthcare staff with high professional status and high salary were more likely to be satisfied, which is consistent with the previous research (Yoshiaki et al., 2018). However, a study conducted in Guangdong Province found the opposite (Lu et al., 2016). Their survey included tertiary public hospital healthcare staff, who undertake the heaviest workload at different levels of care. It adversely affect the overall job satisfaction and may develop higher stress levels and burnout syndrome (Zhou et al., 2018). This also explains why staff with low educational background and staff who work too long hours per week are less satisfied in our study.
The potential reason that temporary healthcare staff are more likely to have low satisfaction is that temporary contracts increase vulnerability to work-related stress (De Simone et al., 2018). There was no significant difference between personnel agents and long-term employees, we surmise this may be related to the fact that personnel agents are close to regular employees in many aspects such as salary and benefits in public medical institutions. It was found that higher satisfaction was associated with parents had stable jobs. Those whose parents had stable jobs often mean less time and financial cost in caring for elderly parents. In addition, work-family conflict is less and more internal support is obtained from family (Chan et al., 2020).

Limitations lie in study type, single-district aspect, less representative research subjects, making the results difficult to be generalized. Nevertheless, the results are still meaningful.

**Conclusion**

Job satisfaction was significantly related to work, personal and family factors. Increasing welfare security, promoting equity, and focusing on individual characteristics are potential strategies for improving job satisfaction.

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**Authors’ contributions**

XC and HY carried out the research design, data analysis and manuscript writing. LR contributed to the data collection and literature research. XT and XC made a second revision to the manuscript. All authors have read and approved the final version.

**Availability of data and materials**

The data that support the findings of this study are available from the CDC of Huangpi district but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of the CDC of Huangpi district.

**Consent for publication**

Not applicable.

**Disclosure of potential conflicts of interest**

The authors declare that they have no competing interests.
Ethics approval and consent to participate

The ethics committee of Wuhan University School of Medicine (WUSM) reviewed it, and verified it to comply with the Declaration of Helsinki and its revised version, as well as the relevant regulations of biomedical journals, and approved the research (No.2018YF0080).

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