Preplanned Studies

Associations of Occupational Stress and Coping Styles with Well-Being Among Couriers — Three Cities, Zhejiang Province, China, 2021

Panqi Xue[1]; Yixin Zhang[2]; Fang Wei[1]; Lifang Zhou[1]; Xinglin Fang[1]; Yong Hu[1]; Yu Hong[2]; Shuang Li[3]; Xiaoming Lou[1]; Hua Zou[1,#]

Summary

What is already known about this topic?

Prior research has primarily concentrated on occupational health concerns, including injuries and heatstroke, among couriers. Nevertheless, there has been a scarcity of emphasis on mental health aspects, with existing studies predominantly addressing the risk factors associated with occupational stress.

What is added by this report?

The present study demonstrated a significant association between occupational stress and well-being among couriers, with positive coping strategies acting as a mediating factor. Furthermore, the results indicate that implementing a positive coping style may mitigate the impact of occupational stress on well-being.

What are the implications for public health practice?

Future public policy initiatives should focus on promoting the well-being of couriers by fostering improvements in the workplace environment, reevaluating the organization of work, and delivering support to couriers in managing occupational stress.

In recent years, the rapid development of the express industry in China has led to an increase in occupational stress among couriers, potentially contributing to poor well-being (*1*). A positive attitude in the workplace significantly impacts reducing occupational stress, and coping styles are crucial factors in well-being (*2*–*3*). This study aimed to investigate the association between occupational stress, coping styles, and well-being and explore the intermediary effect of coping styles on the relationship between occupational stress and well-being among couriers. The research used a cluster random sampling method to select 1,200 couriers from mainstream express companies in three cities (Ningbo, Jiaxing, and Taizhou) within Zhejiang Province, China. The Core Occupational Stress Scale (COSS) was employed to assess occupational stress, the World Health Organization's five-item Well-Being Index (WHO-5) scale to measure well-being, and the Trait Coping Style Questionnaire (TCSQ) to evaluate coping styles. Poor well-being was found to be relatively common among couriers in the three cities within Zhejiang Province, accounting for 43.5% in this study. Couriers' well-being was correlated with occupational stress (r_s=−0.142, P<0.01) and positive coping styles (r_s=0.059, P<0.05), with occupational stress exhibiting a direct effect on well-being and an indirect effect through positive coping styles. The findings of this study emphasize the need for a coordinated, multi-level effort to control the prevalence of occupational stress among couriers and actively guide them in managing stressors to promote their mental health.

This cross-sectional study was conducted from September to November 2021 and included 1,200 employees aged 18 years or older, with at least one year of work experience from 20 leading express companies in Ningbo, Jiaxing, and Taizhou cities in Zhejiang Province. An anonymous, self-administered questionnaire was employed for data collection, and all investigators underwent uniform training prior to conducting the survey. The study received approval from the Medical Ethics Committee of the National Institute of Occupational Health and Poison Control, and informed consent was provided by all participants. A total of 1,161 valid questionnaires were collected, yielding a response rate of 96.8%.

The WHO-5 scale was employed to assess subjective well-being (*4*), with a total score below 13 indicating poor well-being. Occupational stress was evaluated using the COSS (*5*), which consists of four subscales: social support, organization and return, demand and pay, and autonomy. A total score exceeding 50 denotes occupational stress. The TCSQ, comprising 20 items, is divided into positive coping and negative coping

aspects, each containing 10 items. The scores for both coping styles are determined by summing up their respective items. Data analysis was conducted using SPSS (version 25.0, IBM Corporation, Armonk, NY, USA) and AMOS (version 24.0, IBM Corporation, Armonk, NY, USA). The relationship between occupational stress, coping styles, and well-being was examined via Spearman's rank correlation analysis. To further investigate the associations among occupational stress, coping styles, and well-being, structural equation modeling (SEM) was implemented. Two-tailed *P* values <0.05 were deemed statistically significant.

The study sample included 1,161 couriers, primarily aged between 31 and 40 years and with 1–5 years of work experience (Table 1). The prevalence of occupational stress among these couriers was found to be 52.9%. A majority (72.5%) of the couriers exhibited a predominantly positive coping style, whereas 19.6% displayed a negative coping style. Poor well-being was reported by 43.5% of the participants.

A significant difference in the prevalence of poor well-being was observed between couriers with different education levels (χ^2=10.932, *P*=0.027). Additionally, a statistically significant difference was found in the prevalence of poor well-being among couriers with various working hours (χ^2=23.416, *P*<0.001).

Table 2 presents the results of the correlation analysis between occupational stress, coping styles, and well-being. Couriers' well-being was found to be negatively correlated with occupational stress (r_s=−0.142, *P*<0.01) and positively correlated with the positive coping style (r_s=0.059, *P*<0.05). However, no significant correlation was observed between well-being and negative coping style (r_s=0.011, *P*>0.05).

The final output model illustrated research variables' correlations and effect paths (Figure 1). It can be observed that occupational stress was negatively related to the positive coping style (β =−0.107, *P*<0.05), and the positive coping style was positively related to well-being (β =0.010, *P*<0.001).The 95% confidence interval (*CI*) of the estimation of the two-mediation path does not include 0, which means that the total effect of occupational stress on well-being was statistically significant, and occupational stress had significant indirect effects through the positive coping style on well-being (Supplementary Table S1, available in http://weekly.chinacdc.cn). However, the negative coping style did not demonstrate direct or indirect effects on well-being (*P*>0.05).

DISCUSSION

This study investigated the relationship between occupational stress, coping styles, and well-being among Chinese couriers. The results indicated a prevalence of poor well-being in 43.5% of the participants, with occupational stress and positive coping styles being associated with well-being. Well-being encompasses individuals' emotional responses and satisfaction in various life domains. Couriers often experience a heavy workload, frequent overtime, and time constraints related to delivery tasks, leading to increased occupational stress. The long-term accumulation of stress can contribute to mental health deterioration.

In recent years, a growing number of studies have focused on the connection between well-being and occupational stress in diverse professions, examining the mediating role of coping styles. For instance, Ryu et al. (*6*) identified coping styles as significant mediating factors between occupational stress and well-being among police officers in the Republic of Korea. Similar results were observed in a study involving nurses (*7*). However, few studies have specifically examined couriers in this context.

Occupational stress was found to be inversely correlated with well-being in this study, with positive coping styles mediating the relationship between the two. Coping styles refer to individuals' cognitive and behavioral efforts or strategies used to regulate their emotions and reduce adverse effects when faced with stressful events. Individuals experiencing stress often adopt coping styles to mitigate its impact on well-being (*8*). Positive coping styles can generate a more positive mood, thus reducing the effects of occupational stress (*9*). Consequently, couriers with high levels of positive coping styles can effectively resist occupational stress, maintaining a positive and resilient approach to life.

However, our findings only revealed a moderating role for positive coping styles in the relationship between occupational stress and well-being. The association between negative coping styles and well-being requires further investigation. It is possible that compared to a negative coping style, a positive coping style actively alleviates personal psychological stress through emotion regulation, whereas a negative coping style hampers well-being improvement.

These findings suggest that the well-being of couriers could be enhanced by both reducing their occupational stress and encouraging the adoption of

TABLE 1. Prevalence of occupational stress, coping styles, and poor well-being among couriers in three cities in Zhejiang Province, China, 2021.

Characteristic	Total, *n* (%)	Occupational stress			Positive coping style			Negative coping style			Poor well-being		
		n (%)	χ^2	*P*	*n* (%)	χ^2	*P*	*n* (%)	χ^2	*P*	*n* (%)	χ^2	*P*
Total	1,161 (100)	614 (52.9)			842 (72.5)			228 (19.6)			505 (43.5)		
Gender			6.186	0.023		6.500	0.011		4.533	0.033		2.024	0.155
Male	835 (71.9)	459 (55.0)			623 (74.6)			151 (18.1)			374 (44.8)		
Female	326 (28.1)	155 (47.5)			219 (67.2)			77 (23.6)			131 (40.2)		
Age (years)			24.305	<0.001		6.113	0.191		5.075	0.280		3.097	0.542
18–25	206 (17.7)	103 (50.0)			151 (73.3)			40 (19.4)			89 (43.2)		
26–30	297 (25.6)	179 (60.3)			206 (69.4)			61 (20.5)			133 (44.8)		
31–40	428 (36.9)	240 (56.1)			306 (71.5)			91 (21.3)			194 (45.3)		
41–50	191 (16.5)	77 (40.3)			146 (76.4)			33 (17.3)			75 (39.3)		
>50	39 (3.4)	15 (38.5)			33 (84.6)			3 (7.7)			14 (35.9)		
Education level			42.431	<0.001		13.466	0.009		16.638	0.002		10.932	0.027
≤Middle school	265 (22.8)	95 (35.8)			198 (74.7)			45 (17.0)			105 (39.6)		
High school	506 (43.6)	282 (55.7)			377 (74.5)			89 (17.6)			244 (48.2)		
College	241 (20.8)	145 (60.2)			168 (69.7)			53 (22.0)			104 (43.2)		
University	129 (11.1)	79 (61.2)			91 (70.5)			31 (24.0)			46 (35.7)		
≥Graduate school	20 (1.7)	13 (65.0)			8 (40.0)			10 (50.0)			6 (30.0)		
Marital status			4.976	0.290		15.853	0.003		11.976	0.018		2.385	0.665
Unmarried	301 (25.9)	151 (50.2)			215 (71.4)			60 (19.9)			126 (41.9)		
Married	676 (58.2)	370 (54.7)			495 (73.2)			135 (20.0)			292 (43.2)		
Separated	104 (9.0)	47 (45.2)			85 (81.7)			11 (10.6)			50 (48.1)		
Widowed	61 (5.3)	35 (57.4)			39 (63.9)			14 (23.0)			30 (49.2)		
Divorced and others	19 (1.6)	11 (57.9)			8 (42.1)			8 (42.1)			7 (36.8)		
Monthly income (CNY)			25.912	<0.001		11.582	0.041		10.105	0.072		6.615	0.251
<3,000	56 (4.8)	18 (32.1)			39 (69.6)			11 (19.6)			25 (44.6)		
3,000–4,999	363 (31.3)	183 (50.4)			246 (67.8)			87 (24.0)			146 (40.2)		
5,000–6,999	398 (34.3)	200 (50.3)			286 (71.9)			80 (20.1)			185 (46.5)		
7,000–9,000	214 (18.4)	135 (63.1)			169 (79.0)			32 (15.0)			101 (47.2)		
9,000–10,999	86 (7.4)	56 (65.1)			66 (76.7)			12 (14.0)			31 (36.0)		
≥11,000	44 (3.8)	22 (50.0)			36 (81.8)			6 (13.6)			17 (38.6)		

TABLE 1. (Continued)

Characteristic	Total, *n* (%)	Occupational stress			Positive coping style			Negative coping style			Poor well-being		
		n (%)	χ^2	*P*	*n* (%)	χ^2	*P*	*n* (%)	χ^2	*P*	*n* (%)	χ^2	*P*
Working age (years)			19.551	<0.001		13.018	0.005		11.573	0.009		7.047	0.070
1–5	564 (48.6)	286 (50.7)			395 (70.0)			115 (20.4)			250 (44.3)		
6–10	227 (19.6)	141 (62.1)			163 (71.8)			47 (20.7)			103 (45.4)		
11–15	172 (14.8)	102 (59.3)			120 (69.8)			43 (25.0)			82 (47.7)		
>15	198 (17.1)	85 (42.9)			164 (82.8)			23 (11.6)			70 (35.4)		
Smoking			13.903	<0.001		8.049	0.017		8.876	0.012		5.254	0.072
No	488 (42.0)	234 (48.0)			371 (76.0)			85 (17.4)			197 (40.4)		
Yes	551 (47.5)	323 (58.6)			378 (68.6)			127 (23.0)			259 (47.0)		
Quit smoking	122 (10.5)	57 (46.7)			93 (76.2)			16 (13.1)			49 (40.2)		
Alcohol drinking			8.639	0.003		18.994	<0.001		20.425	<0.001		0.765	0.382
No	414 (35.7)	195 (47.1)			332 (80.2)			52 (12.6)			173 (41.8)		
Yes	747 (64.3)	419 (56.1)			510 (68.3)			176 (23.6)			332 (44.4)		
Physical exercise			0.492	0.483		1.377	0.241		1.122	0.290		0.762	0.092
Lack of exercise	622 (53.6)	323 (51.9)			460 (74.0)			115 (18.5)			268 (43.1)		
Often exercise	539 (46.4)	291 (54.0)			382 (70.9)			113 (21.0)			237 (44.0)		
Working hour (per week)			0.233	0.629		0.011	0.918		0.053	0.817		23.416	<0.001
≤40	122 (10.5)	62 (50.8)			88 (72.1)			23 (18.9)			28 (23.0)		
>40	1,039 (89.5)	552 (53.1)			754 (72.6)			205 (19.7)			477 (45.9)		
Shiftwork status			0.053	0.871		21.112	<0.001		24.442	<0.001		0.168	0.682
No	758 (65.3)	399 (52.6)			583 (76.9)			117 (15.4)			333 (43.9)		
Yes	403 (34.7)	215 (53.3)			259 (64.3)			111 (27.5)			172 (42.7)		

Note: The three cities were Ningbo, Jiaxing, and Taizhou.
Abbreviation: CNY=Chinese Yuan.

TABLE 2. Correlation analysis of occupational stress, coping styles, and well-being among couriers in three cities in Zhejiang Province, China, 2021.

Variables	Occupational stress	Positive coping style	Negative coping style	Well-being
Occupational stress	1.000			
Positive coping style	−0.163**	1.000		
Negative coping style	0.092**	−0.449**	1.000	
Well-being	−0.142**	0.059*	0.011	1.000

Note: The three cities were Ningbo, Jiaxing, and Taizhou.
* P<0.05.
** P<0.01.

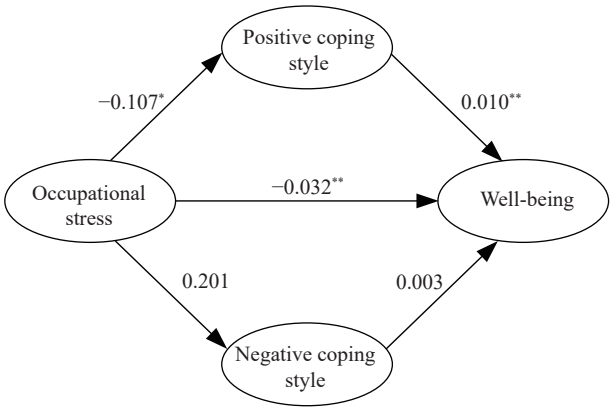

FIGURE 1. Standardized path analysis illustrating the relationships among occupational stress, coping styles, and well-being among couriers in three cities in Zhejiang Province, China, 2021.
Note: The three cities included in the study were Ningbo, Jiaxing, and Taizhou. The fit indices for the structural model were as follows: χ^2=37.576; df=11; χ^2/df=3.416; P<0.001; CFI=0.981, GFI=0.991, AGFI=0.976; NFI=0.986; RMSEA=0.046. A model is considered to have a good fit if it meets the following criteria: RMSEA<0.08, CFI>0.90, and NFI>0.90. Based on these results, the structural model demonstrated a good fit with the data in this study.
Abbreviation: CFI=comparative fit index; GFI=goodness-of-fit index; AGFI=adjusted goodness-of-fit index; NFI=normed fit index; RMSEA=root-mean-square error of approximation.
* P<0.05.
** P<0.001.

active coping strategies. This study provides evidence on how to implement effective interventions in promoting mental health among couriers during their working hours.

The study was subject to several limitations. First, due to the cross-sectional design, the causal relationship between occupational stress, coping strategies, and well-being could not be established. Second, the use of self-administered questionnaires to collect data might have introduced recall bias, potentially impacting the findings. Last, the investigation was conducted in only three cities in Zhejiang Province, thereby not offering a comprehensive representation of the courier industry within the province. Therefore, future research is warranted to expand the scope of the study.

The results of this study indicate that addressing occupational stress and coping strategies may serve as interventions to enhance the well-being of couriers. To foster the healthy development of the express industry, future policies could be enacted at the government level, focusing on refining laws and regulations related to occupational health protection for couriers and establishing a multi-tiered protection system. Professional occupational health prevention and treatment institutions should consider couriers as an emerging occupational group, guiding enterprises to enhance their occupational health management systems and implementing mental health interventions such as providing stress-reduction coping skills and techniques.

Enterprises can potentially mitigate couriers' occupational stress by improving their work environment and modifying their work organization, including advocating for workload adjustments based on employees' capabilities and clearly delineating job roles and responsibilities, ultimately bolstering the well-being of couriers. Additionally, considering the difficulty in achieving drastic improvements in their working conditions and work pressure in a short period, mental health interventions can effectively regulate the couriers' mental state, thereby enhancing their well-being in the foreseeable future.

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Corresponding author: Hua Zou, hzou@cdc.zj.cn.

[1] Institute of Occupational Health and Radiation Protection, Zhejiang Provincial Center for Disease Control and Prevention, Hangzhou City, Zhejiang Province, China; [2] Department of Public Health, Hangzhou Normal University, Hangzhou City, Zhejiang Province, China; [3] National Institute of Occupational Health and Poison Control, Chinese Center for Disease Control and Prevention, Beijing, China.

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REFERENCES

1. Nazari H, Jariani M, Beiranvand S, Saki M, Aghajeri N, Ebrahimzadeh F. The prevalence of job stress and its relationship with burnout syndrome among the academic members of Lorestan University of Medical Sciences. J Caring Sci 2016;5(1):75 – 84. http://dx.doi.org/10.15171/jcs.2016.008.
2. Khalid I, Khalid TJ, Qabajah MR, Barnard AG, Qushmaq IA. Healthcare workers emotions, perceived stressors and coping strategies during a MERS-CoV outbreak. Clin Med Res 2016;14(1):7 – 14. http://dx.doi.org/10.3121/cmr.2016.1303.
3. Li L, Ai H, Gao L, Zhou H, Liu XY, Zhang Z, et al. Moderating effects of coping on work stress and job performance for nurses in tertiary hospitals: a cross-sectional survey in China. BMC Health Serv Res 2017;17(1):401. http://dx.doi.org/10.1186/s12913-017-2348-3.
4. Suleman Q, Hussain I, Shehzad S, Syed MA, Raja SA. Relationship between perceived occupational stress and psychological well-being among secondary school heads in Khyber Pakhtunkhwa, Pakistan. PLoS One 2018;13(12):e0208143. http://dx.doi.org/10.1371/journal.pone.0208143.
5. Wang J, Zhang QY, Chen HQ, Sun DY, Wang C, Liu XM, et al. Development of the core occupational stress scale for occupational populations in China. Chin J Prev Med 2020;54(11):1184 – 9. http://dx.doi.org/10.3760/cma.j.cn112150-20200319-00383. (In Chinese).
6. Ryu GW, Yang YS, Choi M. Mediating role of coping style on the relationship between job stress and subjective well-being among Korean police officers. BMC Public Health 2020;20(1):470. http://dx.doi.org/10.1186/s12889-020-08546-3.
7. Jang MH, Gu SY, Jeong YM. Role of coping styles in the relationship between nurses' work stress and well-being across career. J Nurs Scholarsh 2019;51(6):699 – 707. http://dx.doi.org/10.1111/jnu.12523.
8. Serafin LI, Fukowska M, Zyskowska D, Olechowska J, Czarkowska-Pączek B. Impact of stress and coping strategies on insomnia among Polish novice nurses who are employed in their field while continuing their education: a cross-sectional study. BMJ Open 2021;11(12):e049787. http://dx.doi.org/10.1136/bmjopen-2021-049787.
9. Ding YQ, Yang YJ, Yang XX, Zhang TH, Qiu XH, He X, et al. The mediating role of coping style in the relationship between psychological capital and burnout among Chinese nurses. PLoS One 2015;10(4):e0122128. http://dx.doi.org/10.1371/journal.pone.0122128.

SUPPLEMENTARY TABLE S1. Characteristics and the distributions of well-being, occupational stress and coping styles of participants.

Variables	Total	Well-being		Positive coping style		Negative coping style		Occupational stress	
	n (%)	M±SD	*P*	M±SD	*P*	M±SD	*P*	M±SD	*P*
Gender			0.086		0.168		<0.001		0.002
Male	835 (71.9)	13.04±4.54		31.15±7.74		24.20±8.18		50.08±5.6	
Female	326 (28.1)	13.54±4.48		31.89±8.49		26.79±9.81		48.92±5.55	
Age (years)			0.093		0.396		0.214		<0.001
18–25	206 (17.7)	13.42±4.72		30.52±7.19		23.69±6.86		49.36±6.17	
26–30	297 (25.6)	12.84±4.23		31.11±8.78		25.23±9.52		50.51±5.6	
31–40	428 (36.9)	13.00±4.31		31.81±8.14		25.30±9.32		50.36±5.32	
41–50	191 (16.5)	13.60±4.61		31.55±7.49		25.14±8.44		47.96±5.22	
>50	39 (3.4)	14.44±3.91		31.67±4.69		24.03±5.46		48.28±5.31	
Education level			0.026		0.031		<0.001		<0.001
≤Middle school	265 (22.8)	13.68±4.27		30.69±7.71		24.12±7.66		47.34±5.19	
High school	506 (43.6)	12.77±4.54		31.15±7.92		23.83±8.26		50.37±5.86	
College	241 (20.8)	13.09±4.32		31.36±7.85		25.94±9.22		50.54±5.31	
University	129 (11.1)	13.86±4.32		33.35±8.16		27.87±9.94		50.78±4.53	
≥Graduate school	20 (1.7)	13.65±3.70		32.40±10.78		32.25±11.31		50.2±5.47	
Marital status			0.52		0.002		<0.001		0.261
Unmarried	301 (25.9)	13.24±4.52		30.05±7.30		23.58±6.77		49.7±5.86	
Married	676 (58.2)	13.29±4.43		32.04±7.80		25.34±9.16		49.91±5.56	
Separated	104 (9.0)	12.50±4.06		30.72±7.63		23.77±7.34		48.63±5.31	
Widowed	61 (5.3)	12.95±4.34		30.44±10.70		26.15±11.25		49.92±5.53	
Divorced and others	19 (1.6)	12.84±4.37		34.11±11.77		33.89±12.35		50.68±4.85	
Monthly income (CNY)			0.229		0.024		0.116		<0.001
<3,000	56 (4.8)	13.21±4.16		32.09±7.84		27.46±9.54		47.64±4.87	
3,000–4,999	363 (31.3)	13.60±4.46		30.66±8.21		25.40±8.90		48.86±5.67	
5,000–6,999	398 (34.3)	13.13±4.45		31.25±7.83		24.61±8.68		49.88±5.96	
7,000–9,000	214 (18.4)	12.63±4.58		31.66±7.60		24.30±8.31		51.12±4.86	
9,000–10,999	86 (7.4)	13.12±3.52		33.92±7.37		25.14±9.08		50.85±4.4	
≥11,000	44 (3.8)	12.91±4.61		30.68±9.23		23.39±7.84		49.98±6.33	
Working age			0.082		0.801		0.003		0.001
0–5	564 (48.6)	13.20±4.54		31.35±8.10		25.55±8.75		49.46±5.78	
6–10	227 (19.6)	12.94±4.48		31.73±8.46		25.40±10.04		50.57±5.36	
11–15	172 (14.8)	12.71±4.18		30.92±8.30		24.55±9.07		50.67±5.33	
>15	198 (17.1)	13.81±4.11		31.33±6.59		22.93±6.21		48.85±5.43	
Smoking			0.167		0.001		<0.001		0.167
No	488 (42.0)	13.46±4.50		30.51±7.13		23.36±7.01		49.04±5.68	
Yes	551 (47.5)	12.95±4.33		32.30±8.73		26.73±10.10		50.45±5.41	
Quit smoking	122 (10.5)	13.12±4.42		30.47±6.97		23.07±6.50		49.5±5.89	
Drinking alcohol			0.091		0.059		<0.001		0.007
No	414 (35.7)	12.95±4.34		30.79±7.13		23.07±6.75		49.16±5.83	
Yes	747 (64.3)	13.48±4.49		31.67±8.38		25.96±9.52		50.09±5.46	
Physical exercise			0.697		0.105		<0.001		0.160
Lack of exercise	622 (53.6)	13.02±4.36		31.00±7.45		24.06±7.68		49.54±5.82	
Often exercise	539 (46.4)	13.14±4.54		31.77±8.50		25.93±9.73		50.00±5.34	
Weekly working hours			<0.001		0.078		0.249		0.027
≤40	122 (10.5)	15.55±4.30		30.16±7.79		24.07±7.69		48.70±6.04	
>40	1,039 (34.7)	12.90±4.34		31.50±7.97		25.03±8.85		49.88±5.55	
Shiftwork status			0.412		<0.001		<0.001		0.289
No	758 (65.3)	13.10±4.42		30.53±7.25		23.11±6.97		49.88±5.51	
Yes	403 (34.7)	13.33±4.40		32.91±8.96		28.34±10.54		49.52±5.79	

Abbreviation: CNY=Chinese Yuan; M±SD=mean±standard deviation.