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Perceived stress and psychological distress among chinese physicians

The mediating role of coping style

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Abstract

Although the association between perceived stress and psychological distress has been demonstrated, the mechanism behind the association is not well understood in physicians. The purpose of this study was to examine how coping styles (positive and negative) mediated the association between perceived stress and psychological distress among Chinese physicians.

A cross-sectional survey was conducted in Liaoning Province, China, between October and December 2017. Self-administered questionnaires, including the General Health Questionnaire to assess psychological distress, the Stress Reaction Questionnaire to assess perceived stress, and the Trait Coping Style Questionnaire to assess coping style, as well as surveys of demographic and occupational characteristics, were distributed to 1120 physicians employed in large general hospitals. The final sample consisted of 1051 participants. Asymptotic and resampling strategies were used to examine how coping style mediated the association between perceived stress and psychological distress.

Perceived stress was significantly and positively associated with psychological distress among physicians. Both positive and negative coping significantly mediated the association between perceived stress and psychological distress. For psychological distress and its 3 dimensions (depression, anxiety, and reduced self-affirmation), the proportions of mediating roles of coping styles were 26.1%, 29.9%, 24.8%, and 22.7%, respectively.

Perceived stress had positive effects on psychological distress, and coping style was a mediator in this relationship among Chinese physicians. In addition to reducing stress in clinical practice, appropriate coping styles should be adopted in psychological distress prevention and treatment strategies.

Abbreviations: ANOVA = analysis of variance, GHQ-20 = General Health Questionnaire, SPSS = Statistical Package for the Social Sciences, SRQ = Stress Reaction Questionnaire, TCSQ = Chinese Trait Coping Style Questionnaire.

Keywords: chinese physicians, coping style, mediating role, psychological distress, stress

1. Introduction

Psychological distress (eg, depression and anxiety) has become a major workplace mental health problem around the globe that could be associated with several symptoms and possible consequences among various professions. For instance, depression could result in low productivity, absenteeism, job turnover, and economic costs,[1,2] whereas anxiety, when it becomes excessive and persistent, is frequently accompanied by physiological symptoms such as headache, sweating, fatigue, or exhaustion.[3] Additionally, psychological distress among health care personnel impairs not only their own health, but also imperils the health and safety of their patients.[4]

By directly confronting suffering and death, physicians are usually exposed to a higher level of stress than the general population and other occupational groups.[5,6] Stress in physicians can be triggered by a variety of issues, including work overload, time pressures, role conflicts, and effort–reward imbalance.[6,7] Furthermore, the low ratio of doctors to the general population (1:735), which is considerably lower than that in western countries (1:280–1:640),[8] and unsatisfactory doctor–patient relationships[9] are 2 types of special stressors among Chinese physicians. These factors might lead Chinese physicians to take on many exhausting and stressful tasks, and thus they are at high risk of psychological distress. Therefore, exploring the correlative factors of physicians' psychological distress is important to improve physicians' health and the quality of health care services in China.

Unsurprisingly, physicians do not invariably react to all the different stressors in hospitals, with some physicians developing more psychological symptoms than others,[10,11] indicating an association between the stress response to a stressor (ie, perceived stress) and psychological distress. Moreover, this association has been typically modest in Chinese physicians,[12,13] suggesting that psychological distress is not solely the results of stress reactions, but is also determined to a large extent by individual dispositions,[14,15] coping styles, and other personal and social

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resources.[12,13] Among empirical studies, self-efficacy and psychological capital have been found to significantly mediate the relationship between stress (occupational stress and perceived stress) and psychological distress (depressive symptoms and burnout),[12,14,15] indicating that perceived stress not only exerts a direct effect but also has an indirect effect on psychological distress by triggering specific mediators. This study focuses on the mediating effect of coping style on the association between perceived stress and psychological distress.

Coping is defined as the cognitive and behavioral strategies used by an individual to manage the internal and external demands of stressful events.[16] Positive coping and negative coping are diametrically opposed coping styles. Individuals who apply a positive coping style (eg, active coping, humor, and reframing) take constructive actions and create opportunities for growth in response to stress.[17] In the work setting, positive coping can generate positive emotions and behaviors that lead to improved outcomes.[16,18] In contrast, negative coping is characterized by a more emotion-focused coping style that could minimize distress through negative ways as focusing on negative thoughts (eg, rumination) and attempts to escape stressful situations (eg, avoidance and denial).[19] Several studies have indicated that coping style has a significant correlation with psychological distress,[19,20] quality of life,[21] and cortisol secretion.[22] In addition, coping style was found to mediate positive emotions and mental health among postdoctoral research fellows.[20] Ding et al[19] reported that coping style mediated the relation between psychological capital and burnout among Chinese nurses. To our knowledge, whether coping style mediates the association between perceived stress and psychological distress has not been confirmed among health care personnel. It is important to understand the effect of coping style on this association to effectively prevent and treat psychological distress.

In light of the above concerns, the goals of the present study are to examine the association between perceived stress and coping style, determine the association between coping style and psychological distress, and investigate whether the association between perceived stress and psychological distress among Chinese physicians is mediated by coping style.

2. Materials and methods

2.1. Ethical considerations

The study was approved by the Committee on Human Experimentation of China Medical University, and the study procedures were in accordance with ethical standards. Our study adheres to the Helsinki Declaration by the WMA.

2.2. Study design and sample

Between October and December 2017, a cross-sectional survey was conducted in Liaoning Province in northeastern China, which comprises 3 metropolitan cities with populations of ≥1,000,000 population, 7 medium-sized cities with 500,000 to 1,000,000 inhabitants, and 4 small cities with populations of 200,000 to 500,000. Eight cities (2 metropolitan cities, 4 medium-sized cities, and 2 small cities) were randomly selected for the study. Two large general hospitals (>500 beds) were randomly selected if the sampling city was a metropolitan city or medium-sized city; otherwise; 1 large general hospital was randomly selected from each city. In total, 14 large general hospitals were selected from 8 cities. We randomly sampled 50% of the physicians from each hospital. Self-administered questionnaires were directly distributed to 1570 physicians after obtaining written informed consent. Complete responses were obtained from 1051 individuals (response rate: 66.9%).

2.3. Measurement of psychological distress

The General Health Questionnaire (GHQ-20) was developed by Goldberg to measure mental health in the past few weeks.[23] The Chinese version of GHQ-20 was translated and provided by Li Hong and Mei Jinrong.[24] This scale consists of 20 items, and it is composed of 3 subscales: reduced self-affirmation, depression, and anxiety. The scale adopts a yes-no scoring method (1 = yes, 0 = no). The sum of scores for the 3 subscales reflects the overall level of psychological distress. The GHQ-20 has been extensively validated in Chinese occupational groups.[24,25] In the present study, the value of Cronbach alpha for the total scale was 0.831, and the Cronbach alphas of the 3 subscales were 0.757, 0.705, and 0.830, respectively.

2.4. Measurement of perceived stress

To measure physicians' perception of stress, we adopted the 28-item Stress Reaction Questionnaire (SRQ) developed by the Department of Medical Psychology at Zhejiang University.[26] Respondents were asked to report their experienced stress level on a 5-point Likert scale from 1 (not at all) to 5 (to a very large extent). The SRQ consists of 3 subscales: emotional reaction (12 items), physical reaction (8 items), and behavior reaction (6 items). The sum of scores for the 3 subscales plus items 2 and 16 was calculated to obtain a composite stress value for this study, with higher scores indicating greater perceived stress. The Cronbach alphas of the total scale and three subscales were 0.971, 0.955, 0.920, and 0.854, respectively.

2.5. Measurement of coping style

The Chinese Trait Coping Style Questionnaire (TCSQ) was used to measure coping style, which includes 2 dimensions: positive coping and negative coping.[27] Each factor comprised 10 items ranked on a 5-point Likert-type scale, ranging from 1 (absolutely no) to 5 (absolutely yes). The higher the score on a given subscale, the more an individual tends to adopt of the respective coping style. The validity and reliability of the TCSQ for health care personnel have been established.[19,28] In this study, the Cronbach alpha coefficients of the positive coping and negative coping were 0.790 and 0.776, respectively.

2.6. Demographic and occupational characteristics

Demographics included age, sex, education, and marital status. Age was classified as <36, 36 to 45, or >45 years. The education classification was based on the physicians' educational qualifications before they started work and comprised 2 categories: *graduates with bachelors' degree or below* and *postgraduates*. Marital status was categorized as married (including cohabitation) or single (including unmarried, divorced, separated, or widowed). Occupational characteristics included work age, monthly income, professional title, and hospital department. Work age was classified as <5, 5 to 15, or >15 years. Monthly

income was categorized as <4000 RMB (≈470 dollars), 4000 to 5000 and >5000 RMB (≈588 dollars). Professional titles fell into 3 categories: resident physician, physician, and associate chief physician or above. Hospital departments were internal medicine, surgery, and others.

2.7. Statistical analysis

The Statistical Package for the Social Sciences (version 13.0; SPSS Inc, Chicago, IL) was used to perform the statistical analyses, with a 2-tailed probability value of <0.05 considered statistically significant. The scores of study variables were transformed to *z*-scores in regression models and mediating analysis.

Inspection of histograms and analysis of skewness and kurtosis values for study variables revealed that data were approximately normally distributed, which allows for the related main analysis. The distributions of psychological distress in demographic-occupational characteristics were tested by an independent sample *t* test and one-way analysis of variance (ANOVA). When one-way ANOVA was found to be significant, the least-significant-difference test was conducted to perform multiple comparisons, and significance was set at $P \leq .05$ for this analysis. The significant demographic-occupational characteristics were then entered in the regression models. Hierarchical linear regression analysis was performed to explore the effects of groups of independent variables on psychological distress. In Step 1, work age, monthly income, and professional title were added. Perceived stress was added in Step 2, and coping styles were entered in Step 3.

Asymptotic and resampling strategies were used to examine the mediating roles (a × b product) of coping styles on the association between perceived stress and psychological distress.[29] In these equations, perceived stress was modeled as the independent variable, and GHQ-20 and its 3 subscales score as the dependent variable, coping styles as the mediators, and work age, monthly income, and professional title as covariates. The bootstrap estimate was based on 5000 bootstrap samples. Then, the bias-corrected and accelerated 95% confidence interval (BCa 95% CI) for each a × b product was investigated, and a BCa 95% CI not including 0 indicated a significant mediating role. All study variables were centralized before analysis to account for differences in scale scores. Moreover, tolerance and variance inflation factors were used to check for multicollinearity.

3. Results

Demographic-occupational characteristics of subjects and distributions of GHQ-20 and its 3 dimensions in the categorical items are shown in Table 1. The mean GHQ-20 scores differed across age, work age, monthly income, and professional title groups ($P < .05$). Mean self-affirmation scores ($P < .05$) differed across work age and professional title groups, and the mean anxiety score ($P < .05$) differed across the monthly income and professional title groups.

Table 1

Demographic-occupational characteristics and differences in psychological distress.

Variable	N (%)	GHQ-20 Mean (SD)	Self-affirmation Mean (SD)	Depression Mean (SD)	Anxiety Mean (SD)
Age, year		0.034	0.104	0.136	0.096
<36	621 (59.1)	25.52 (4.26)[a]	11.49 (2.27)	7.39 (1.63)	6.63 (1.77)
36–45	241 (22.9)	24.89 (4.17)[b]	11.34 (2.33)	7.17 (1.37)	6.38 (1.71)
>45	189 (18)	24.77 (3.96)[b]	11.09 (2.22)	7.25 (1.37)	6.41 (1.75)
Sex		0.624	0.655	0.393	0.879
Male	423 (40.2)	25.32 (4.11)	11.42 (2.27)	7.36 (1.56)	6.52 (1.74)
Female	628 (59.8)	25.19 (4.26)	11.36 (2.28)	7.28 (1.50)	6.54 (1.76)
Marital status		0.122	0.237	0.217	0.315
Single/widowed/divorced	287 (27.3)	25.57 (4.23)	11.52 (2.25)	7.41 (1.69)	6.62 (1.72)
Married/living with a partner	764 (72.7)	25.12 (4.17)	11.33 (2.29)	7.27 (1.46)	6.51 (1.77)
Education		0.609	0.510	0.791	0.892
Undergraduate or under	572 (54.4)	25.31 (4.09)	11.43 (2.27)	7.32 (1.53)	6.54 (1.77)
Graduate or above	479 (45.6)	25.17 (4.31)	11.33 (2.29)	7.30 (1.53)	6.53 (1.74)
Work age, y		0.006	0.049	0.068	0.053
<5	390 (37.1)	25.69 (4.32)[a]	11.57 (2.35)[a]	7.44 (1.65)	6.68 (1.77)
5–15	365 (34.7)	25.22 (4.23)	11.39 (2.25)	7.29 (1.51)	6.53 (1.75)
>15	296 (28.2)	24.66 (3.91)[b]	11.14 (2.19)[b]	7.17 (1.36)	6.35 (1.73)
Monthly Income, yuan		0.004	0.066	0.075	0.009
<4000	472 (44.9)	25.59 (4.37)[a]	11.50 (2.28)	7.42 (1.63)	6.67 (1.79)[a]
4000–5000	263 (25.0)	25.39 (4.19)[a]	11.49 (2.39)	7.31 (1.48)	6.58 (1.76)[a]
>5000	316 (30.1)	24.59 (3.85)[b]	11.13 (2.16)	7.16 (1.38)	6.29 (1.67)[b]
Professional title		0.015	0.027	0.244	0.032
Resident physician	452 (43)	25.61 (4.26)[a]	11.61 (2.36)[a]	7.38 (1.61)	6.62 (1.72)[a]
Physician	299 (28.4)	25.22 (4.28)	11.25 (2.16)	7.33 (1.55)	6.63 (1.85)[a]
Associate chief physician or above	300 (28.5)	24.70 (3.95)[b]	11.19 (2.25)[b]	7.19 (1.37)	6.31 (1.70)[b]
Department		0.179	0.296	0.212	0.653
Internal medicine	325 (30.9)	25.58 (4.48)	11.53 (2.43)	7.44 (1.63)	6.61 (1.80)
Surgery	280 (26.6)	24.98 (4.01)	11.24 (2.17)	7.24 (1.48)	6.49 (1.72)
Others	446 (42.4)	25.15 (4.08)	11.37 (2.23)	7.27 (1.47)	6.51 (1.75)

GHQ-20 = General Health Questionnaire, SD = standard deviation. [a,b] Calculated by least-significant-difference, mean scores for depression, anxiety and PTSD with unequal superscripts differ significantly at the $P < .05$ level. Independent sample *t* test and 1-way analysis of variance were used.

Table 2

Means, standard deviation and zero-order correlations (Pearson *r*) among study variables.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9
1.SRQ	49.60	22.43	1								
2. Emotional	16.46	8.44	0.957*	1							
3. Physical	17.17	8.08	0.956*	0.864*	1						
4. Behavior	12.32	5.63	0.933*	0.848*	0.863*	1					
5. Positive coping	32.47	8.68	−0.260*	−0.270*	−0.247*	−0.226*	1				
6. Negative coping	24.86	7.92	0.526*	0.527*	0.497*	0.476*	−0.104*	1			
7. GHQ-20	25.24	4.19	0.666*	0.662*	0.631*	0.609*	−0.378*	0.501*	1		
8. Self-affirmation	11.38	2.28	0.486*	0.478*	0.457*	0.452*	−0.397*	0.338*	0.735*	1	
9. Depression	7.31	1.52	0.476*	0.508*	0.413*	0.434*	−0.213*	0.373*	0.765*	0.262*	1
10. Anxiety	6.53	1.75	0.545*	0.517*	0.553*	0.490*	−0.201*	0.431*	0.768*	0.228*	0.616*

GHQ-20 = General Health Questionnaire, SD = standard deviation, SRQ = Stress Reaction Questionnaire.
* Correlation is significant at the 0.01 level (2-tailed).

The results of Pearson correlation analysis are shown in Table 2. Perceived stress and negative coping had a significantly positive relationship with GHQ-20 and its 3 dimensions (r = 0.338–0.666; $P < .01$). Positive coping was significantly related to GHQ-20 and its three dimensions ($P < .01$).

Table 3 indicates the results of the hierarchical regression analyses of GHQ-20 and its 3 dimensions, adjusting for covariates found in univariate analyses. Perceived stress and coping styles together accounted for an additional variance in GHQ-20 (51%), self-affirmation (32.5%), depression (32.6%), and anxiety (32.4%). Perceived stress was significantly and positively associated with GHQ-20 and its 3 dimensions in Step 2. In Step 3, perceived stress and coping styles were significantly associated with GHQ-20 and its 3 dimensions. In addition, the effect of perceived stress on GHQ-20 and its 3 dimensions in Step 3 was reduced compared with that in Step 2, as indicated by smaller β coefficients. Tolerance (range: 0.241–0.931) and variance inflation (range: 1.074–4.142) did not indicate an obvious multicollinearity problem.

Path coefficients a (between perceived stress and mediators) and b (between mediators and GHQ-20), a × b products, and BCa 95% CI for these products are presented in Table 4. Perceived stress was significantly associated with coping styles (positive and negative). Consistent with the results of hierarchical regression, coping styles were significantly associated with GHQ-20 and its 3 dimensions after controlling for covariates and perceived stress. Thus, significant mediating roles of coping styles on the association between perceived stress and GHQ-20 and its 3 dimensions were revealed among Chinese physicians.

The proportion of the total effect of perceived stress on GHQ-20 and its 3 dimensions made up by the mediator role was calculated with the formula "(a × b)/total effect." For GHQ-20 and its 3 dimensions of reduced self-affirmation, depression, and anxiety, the proportions of the mediating roles of coping styles were 26.1%, 29.9%, 24.8%, and 22.7%, respectively.

4. Discussion

Based on the results of univariate analysis, physicians with higher levels of work age, monthly income, and professional title obtained lower scores for psychological distress than other groups, which is in line with previous studies evaluating psychological distress in Chinese doctors.[13,30] High income could be regarded as an external support for physicians that might strengthen engagement in their working and relieve their psychological distress. In addition, the pressure of upgrading

Table 3

Results from the hierarchical regression analyses.

	Psychological distress (β)			Self-affirmation (β)			Depression (β)			Anxiety (β)		
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Work age 1	0.074	0.057	0.034	0.038	0.014	0.003	—	—	—	—	—	—
Work age 2	0.037	0.030	0.012	0.048	0.037	0.022	—	—	—	—	—	—
Monthly income 1	0.078	0.002	−0.008	—	—	—	—	—	—	0.042	−0.014	−0.028
Monthly income 2	0.072*	−0.001	−0.003	—	—	—	—	—	—	0.062	0.008	0.000
Professional title 1	0.018	−0.018	0.012	−0.060	0.021	0.047	—	—	—	0.076	0.041	0.065
Professional title 2	0.015	−0.026	−0.026	−0.014	−0.052	−0.056	—	—	—	0.003	−0.030	−0.039
Perceived stress		0.663**	0.491**		0.484**	0.339**		0.486**	0.341**		0.485**	0.339**
Positive coping			−0.233**			−0.303**			−0.295**			−0.304**
Negative coping			0.215**			0.126**			0.128**			0.126**
R^2	0.015	0.445	0.525	0.008	0.240	0.333	—	0.236	0.326	0.010	0.239	0.334
Adj.R^2	0.009	0.442	0.521	0.004	0.236	0.329	—	0.235	0.324	0.006	0.236	0.329
ΔR^2	0.015	0.431	0.080	0.008	0.232	0.093	—	0.236	0.090	0.010	0.230	0.094

Work age 1: 5 years vs 15 years; Work age 2: 5–15 years vs 15 years; Monthly income 1: 4000 yuan vs 5000yuan; Monthly income 2: 4000–5000 yuan vs. 5000yuan; Professional title 1: resident physician vs associate chief physician or above; Professional title 2: physician vs. associate chief physician or above.
β = standardized regression coefficient.
* $P < .01$.
** $P < .001$.

Table 4

Multiple mediation of the indirect effects of perceived stress on psychological distress through changes in the coping styles (5000 bootstrap resamples).

						BCa9 5% CI			BCa 95% CI			
Independent variable X	Mediators M	Dependent variable Y	Effect of X on M (a)	Effect of M on Y (b)	Indirect effect (a × b)	LL	UL	Total indirect effect (a × b)	LL	UL	Direct effect (c')	Total effect (c)
Perceived stress	Positive coping	Psychological distress	−0.262*	−0.233*	0.061	0.045	0.080	0.173	0.139	0.208	0.491*	0.664*
	Negative coping		0.521*	0.215*	0.112	0.081	0.143					
Perceived stress	Positive coping	Self-affirmation	−0.265*	−0.303*	0.080	0.059	0.105	0.145	0.109	0.186	0.339*	0.484*
	Negative coping		0.512*	0.126*	0.065	0.035	0.099					
Perceived stress	Positive coping	Depression	−0.260*	−0.102*	0.026	0.012	0.046	0.118	0.078	0.165	0.358*	0.476*
	Negative coping		0.526*	0.174*	0.091	0.049	0.136					
Perceived stress	Positive coping	Anxiety	−0.261*	−0.071**	0.018	0.004	0.035	0.123	0.087	0.166	0.417*	0.541*
	Negative coping		0.522*	0.202*	0.105	0.068	0.146					

All the coefficients are standardized regression coefficients and adjusted for covariates. BCa = Bias corrected and accelerated bootstrapping confidence intervals that include corrections for both median bias and skew. BCa 95%Confidence intervals (BCa 95%CI) containing 0 is interpreted as not significant.

* $P < .001$.

** $P < .01$.

one's professional title had an effect on the psychological and behavioral aspects of being a resident physician. Moreover, work age might have a positive association with monthly income and professional title, and thus work ages >15 years had lower scores on psychological distress than those with work ages of <5 years.

Regarding the relationship between perceived stress and psychological distress, the scores on the SRQ were found to be positively correlated to scores on the GHQ-20 and all three of its dimensions among Chinese physicians. As a special occupational group, physicians experience more severe occupational stressors than most other professional groups.[31,32] In this study, physicians' reactions to stress in their clinical practice could lead to psychological distress. Additionally, in the regression model, perceived stress accounted for a moderate-to-large proportion of variance in psychological distress (43.1%), self-affirmation (23.2%), depression (23.6%), and anxiety (23%). Therefore, stress reduction should be included in interventions for psychological distress prevention and treatment targeted at Chinese physicians.

To develop effective interventions, the roles of predictors and mediators should be explored to clarify the mechanism behind the association between perceived stress and psychological distress. The major findings of the study are directly relevant to the possible roles of coping styles as mediators in the stress-distress relationship. The present results extend past findings on the roles of coping styles in the stress–distress process from non-Chinese settings to Chinese physicians.

In this study, through the bootstrap method and the use of Baron-Kenny's technique in the mediating model,[33] perceived stress has been shown to have not only a direct but an indirect effect on psychological distress. Both positive coping and negative coping were mediators in the relationship between perceived stress and psychological distress. Positive coping was found to partially mediate the relationship between perceived stress and psychological distress, indicating that physicians with higher scores on the SRQ might have low positive coping, which in turn would lead to higher levels of psychological distress and its three dimensions (depression, anxiety, and reduced self-affirmation). Negative coping also partially mediated this stress–distress relationship. Physicians with higher scores on the SRQ might have high negative coping, which in turn would lead to higher levels of psychological distress on each of its 3 dimensions. As a result, in addition to relieving perceived stress, appropriate coping styles should be further adopted to correctly handle stressful events and effectively alleviate psychological distress in Chinese physicians.[19]

At present, financial capital still receives close attention from Chinese hospital managers, who care more about advanced medical technologies and greater funding than about the individual resources of their health care personnel as part of their efforts to improve organizational performance.[34] Interventions designed to influence coping styles have been introduced in previous studies and confirmed to be effective among medical students and veterans.[35,36] Therefore, strategies to enhance Chinese physicians' coping should be developed at the earliest.

Several limitations of the present study have to be mentioned. First, this study has a cross-sectional design, so causal conclusions could not be drawn. All findings obtained in the present study should be confirmed by a longitudinal study. Second, we conducted this study in large general hospitals, given that physicians in these hospitals were more likely to experience stress than those in community hospitals. Therefore, research on physicians from community hospitals should be undertaken in the future. Finally, all data were self-reported, which can introduce bias. Participants may have overestimated the relationship between perceived stress and psychological distress.

5. Conclusion

Our findings revealed that perceived stress was positively related with psychological distress among Chinese physicians. Coping style mediated the effects of perceived stress on psychological distress and its three dimensions (depression, anxiety, and reduced self-affirmation). Physicians who had high perceived stress adopted more negative and less positive coping styles, which in turn led to higher levels of psychological distress. Hence, our findings should serve to prompt the administrators of hospitals to be aware of the significance of stress and coping styles and regard them as an important part of clinical professional development. Interventions to decrease Chinese physicians' stress and to develop appropriate coping styles in them should be developed in the future.

Author contributions

Conceptualization: Ping Wang.
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Investigation: Yan Wang.
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