ORIGINAL RESEARCH

Explaining Job Satisfaction Among Residents in Standardized Residency Training Programs: A Serial Multiple Mediation Model

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Background: Despite a flood of research on job satisfaction, few studies have examined how and why social support influences job satisfaction. This study aimed to explore how social support has an indirect effect on job satisfaction by examining its impact on emotional exhaustion and anxiety symptoms among residents of the physicians standardized residency training program in China.

Methods: This cross-sectional study adopted questionnaires to collect data from residents in the standardized residency training program in China. The PROCESS macro for SPSS based on ordinary least-squares regression and the bootstrap method was used. The indirect effect of social support was examined using bootstrapping procedures. A serial multiple mediation model was examined in which social support was associated with job satisfaction via emotional exhaustion and anxiety symptoms.

Results: There were 269 residents who provided usable data for the analysis. The mean age of residents was 25.98 years old. Close to half (52%) of the participants were female. The total indirect effect of social support on job satisfaction was significant (ab=0.21, SE=0.05, CI=0.12 to 0.32). The specific indirect effect 1 (social support→emotional exhaustion→job satisfaction) was significant ($a1b1$=0.12, SE=0.04, CI=0.05 to 0.19). The specific indirect effect 2 (social support→anxiety symptoms→job satisfaction) was significant ($a2b2$=0.07, SE=0.03, CI=0.02 to 0.13).The specific indirect effect 3 (social support→emotional exhaustion→anxiety symptoms→job satisfaction) was also found to be significant through both optimism and work engagement ($a1a3b2$=0.03, SE=0.01, CI=0.01 to 0.05).

Conclusion: It seems critical for hospital management to develop a supportive work environment to improve the effects of emotional exhaustion and anxiety symptoms and to provide sufficient support to improve job satisfaction among residents in standardized residency training programs.

Keywords: residents, social support, emotional exhaustion, job satisfaction, anxiety symptoms, standardized residency training programs

Introduction

The first Chinese residency program started in 1988.[1] However, the diverse trainer population and the different residency training programs have had a negative impact on the quality of residency programs. As a result, a system of national standardized medical residency training programs was formally established in 2014 in China.[1] This three-year training program is key to improving the quality of resident physicians and aims to train residents to become experts in professionalism, communication, teamwork, and other key aspects of medicine.[2] Consequently,

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the availability of and equitable access to quality care can be ensured. This is also one of the key purposes of China's latest round of health care reform.[1,3]

However, the low income, increased workload, and the challenges of frequently rotating from one specialty to the next while experiencing uncertainty concerning their future careers can lead to lower job satisfaction among residents in the standardized residency training program (SRTP).[4] Job satisfaction refers to the extent to which individuals are satisfied with their jobs.[5] Previous research suggested that lower job satisfaction was positively related to stress and intention to leave.[6] These issues can have a damaging impact on the service capacity of medical institutions and the quality of health care that is provided at these institutions. Consequently, testing the factors that determine job satisfaction among residents in the SRTP is vital because higher job satisfaction can reduce stress and the intention to leave, thus improving the success of health care organizations.

Social support refers to the interactions between individuals and their networks when they seek behavioral or emotional help.[7] Generally, social support includes received social support and perceived social support.[8] The impact of social support has been well studied over the last few decades. Researchers found that social support can affect long-term psychological and organizational outcomes. For example, according to a recent systematic review, social support was found to be strongly related to job satisfaction among health care workers.[6] People with social support will feel things are predictable and stable in their daily lives, and they are more capable of managing crises due to the recognition of self-worth and personal control.[9]

Emotional exhaustion refers to "feelings of being emotionally overextended and depleted of one's emotional resources" and is the core element of burnout.[10] Young physicians are usually exposed to stress in the workplace, which leads to mental health disorders and burnout, as they commonly feel mentally and physically exhausted because of work pressures.[11] Kelly et al found that residents reported experiencing burnout due to stress in the workplace.[12] In hospitals, SRTP residents face work-related risk factors, such as career uncertainty, low salaries, and heavy workloads, due to China's large population. Consequently, they are more likely to experience a high level of emotional exhaustion.

It is now well established from a variety of studies that higher emotional exhaustion is related to lower job satisfaction, which is an important consequence of burnout.[13] For example, Kader et al suggested that increased emotional exhaustion was associated with low levels of job satisfaction.[14] As emotional exhaustion is regarded as a relevant organizational topic, more studies are needed to identify its antecedents in the underlying mechanism. In the organizational context, the antecedents of emotional exhaustion include the lack of resources. Social support is regarded as one of the most important resources in preventing such emotional exhaustion.[15] During the loss of resources, social support ultimately affects job satisfaction. Since emotional exhaustion is the outcome of an appraisal process by which individuals evaluate their resources, this form of emotional strain could have an impact on their psychological well-being and job satisfaction.[15] Additionally, empirical results have supported the mediating effects of emotional exhaustion among health care workers. For example, Zhang et al found that emotional exhaustion is a mediator in the correlation of work-family conflict and anxiety symptoms.[16] However, no study to date has examined the indirect effect of social support on job satisfaction via emotional exhaustion.

Unsupportive work environments, insufficient human resources, and heavy workloads may decrease mental well-being among SRTP residents. Anxiety is one of the most common mental disorders among medical professionals.[17] This mental state adversely affects professional performance and job satisfaction.[18] A growing body of research has also focused on factors that may explain anxiety symptoms. It has been suggested that social support can promote health, regardless of the presence of stress or the magnitude of stressors.[9] In other words, lower levels of social support are correlated with more mental problems.[19,20] Additionally, several studies have identified a mediating effect of anxiety symptoms. For example, anxiety symptoms were found to mediate the link between ineffective leadership and job satisfaction.[21] However, the mediating role of anxiety symptoms in the relationship between social support and job satisfaction has not been tested.

Existing evidence has suggested that emotional exhaustion is positively related to anxiety and depression.[17] Given that emotional exhaustion can be viewed as a predictor for anxiety symptoms and plays a mediating role, there may be a serial mediating effect of emotional exhaustion and anxiety symptoms in the link between social support and job satisfaction. To the best of our knowledge, no previous research has predicted the serial

mediation of emotional exhaustion and anxiety symptoms between social support and job satisfaction.

Despite a flood of research on job satisfaction, how social support has an indirect effect on job satisfaction and why social support influences job satisfaction remain unclear. Therefore, this study aimed to explore the relationships of social support, emotional exhaustion, anxiety symptoms, and job satisfaction among SRTP residents (Figure 1). Hypotheses were as follows:

- Emotional exhaustion will independently mediate the relationship between social support and job satisfaction.
- Anxiety symptoms will independently mediate the relationship between social support and job satisfaction.
- Emotional exhaustion and anxiety symptoms, in sequence, will mediate the relationship between social support and job satisfaction.

Methods
Participants and Procedures
This cross-sectional study used convenience sampling to recruit participants in August 2019 and was conducted among SRTP residents in Guizhou Provincial People's Hospital. The inclusion criteria were as follows: (1) participants were residents in the SRTP; and (2) residents agreed to participate. Researchers contacted ward

managers first, and then the number of residents in the SRTP was provided. Paper questionnaires were used. The researcher explained the aims of the study to each invited resident, and the residents decided whether they would participate in this study. A statement of study objectives and a guarantee of anonymity and confidentiality warranty were provided in the informed consent and questionnaire. Investigators explained that information collected from the questionnaire would be anonymous and that no identifying information would emanate from the research. The collected data were fully encrypted to ensure the privacy of the participants. Participants were asked to read these statements before proceeding to answer the questionnaire.

Measures
Social Support
The current study used the social support rating scale (SSRS) to measure social support.[22] This scale includes ten items and three dimensions (objective support, subjective support, and the usage of support). Participants were asked to answer with a score on a 4-point scale that ranged from 12 to 66. Higher scores indicated higher levels of emotional exhaustion. Example items include "If risk situations have been identified, you can receive financial, material, or emotional support from your family members, your close friends, or your colleagues", "How many close friends do you have?" and "Do you participate in formal or informal activities?" The Cronbach's alpha for SSRS was 0.74.
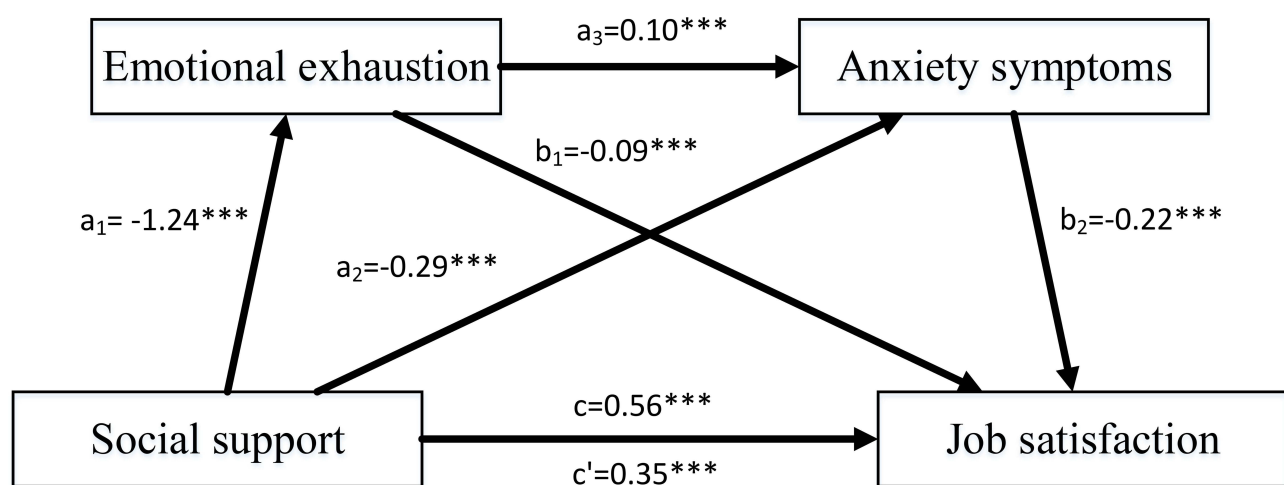

Figure 1 The serial multiple mediation model.
Note: $a1$ =direct effect of social support on emotional exhaustion; $a2$ =direct effect of social support on anxiety symptoms; $a3$ =direct effect of emotional exhaustion on anxiety symptoms; $b1$ =direct effect of emotional exhaustion on job satisfaction; $b2$ =direct effect of anxiety symptoms on job satisfaction; c=total effect of social support on job satisfaction, without accounting for emotional exhaustion and anxiety symptoms; c'=direct effect of social support on job satisfaction when accounting for emotional exhaustion and anxiety symptoms; ***$p<0.001$.

Emotional Exhaustion

There are 3 components of burnout: emotional exhaustion, depersonalization, and reduced personal accomplishment.[23] Depersonalization is defined as "a negative or excessively detached response toward people who are the recipients of one's service or care".[23] Reduced personal accomplishment means that individuals believe they are not capable of finishing jobs, resulting in poor competence and achievement at work and reduced professional self-esteem. Emotional exhaustion is defined as a state of being emotionally drained by one's work, and it is the most important dimension of burnout. Five items from the emotional exhaustion subscale of the Chinese Burnout Inventory were used to measure emotional exhaustion in this study.[24] One of the example items is "I feel emotionally drained from my work". Higher scores indicated higher levels of emotional exhaustion. Each item was scored on a 7-point Likert scale, and the scores ranged from 0–30. The Cronbach's alpha was 0.95.

Anxiety Symptoms

The Zung self-rating anxiety scale (SAS) was employed to measure anxiety symptoms.[25] The SAS has 20 items, and each item is scored on a 4-point Likert scale (1 to 4). One of the example items is "I feel afraid for no reason at all". The total scores range from 20 to 80. A higher score reflects a higher level of anxiety symptoms. The Cronbach's alpha was 0.89.

Job Satisfaction

Job satisfaction was assessed by using the Minnesota satisfaction questionnaire short scale (MSQ-SS).[26] It includes two dimensions (intrinsic satisfaction and external satisfaction) and 20 items. All items were measured on a 5-point Likert-type scale. The total scores range from 20 to 100. Higher scores indicated higher levels of job satisfaction. Example items included "being able to keep busy all the time" and "the chance to work alone on the job". The Cronbach's coefficient for the MSQ-SS was 0.88.

Statistical Analysis

We used SPSS (version 24) to calculate the descriptive information, Cronbach's alpha, average variance extracted, and correlation matrix. Model 6 of the PROCESS macro for SPSS was based on ordinary least-squares regression, and the bootstrap method was used.[27] A mediation model refers to a set of two or more causal events chained together in the sequential form X→Mi→Y. As shown in Figure 1, the product of regression coefficients a and b can be seen as the indirect effect.[28] The significance of $a1b1$, $a2b2$, and $a1a3b2$ can support the serial multiple mediation model, including indirect effect 1 (social support→emotional exhaustion→job satisfaction), indirect effect 2 (social support→anxiety symptoms→job satisfaction), and indirect effect 3 (social support→emotional exhaustion→anxiety symptoms→job satisfaction).

The bootstrapping technique is regarded as the most appropriate method to assess indirect effects, as it can disregard the assumptions of the sampling distribution. The indirect effect of social support was examined using bootstrapping procedures. A bootstrap confidence interval of the indirect effects is constructed by randomly resampling cases from the data.[27] In this study, 95% bootstrap (5000) confidence intervals do not include zero, supporting a claim of mediation.

Results
Residents' Characteristics

We invited 285 SRTP residents to participate, and 274 residents accessed the survey (96.1% response rate). Finally, 269 residents provided usable data for the analysis. The mean age of residents was 25.98 years old. More than half (52%) of the participants were female. Detailed information is provided in Table 1.

Table I Residents' Characteristics (n = 269)

Characteristics	N/Mean	%/(SD)
Age (years)	25.98	2.0
Gender		
Male	129	48
Female	140	52
Education		
Postgraduate	63	23.4
Bachelor's	206	76.6
Marital status		
Married	43	16
Never married	226	84
Years of SRTP	9	1.2
The first year of SRTP	104	38.7
The second year of SRTP	106	39.4
The third year of SRTP	59	21.9

Abbreviation: SRTP, The Standardized Residency Training Program.

Table 2 Correlation Coefficient, Mean, Standard Deviation, and AVE (N=269)

Variables	M	SD	AVE	Cronbach's a	I	2	3	4
1SS	2.45	0.53	0.53	0.74	**0.73**			
2EE	2.54	1.55	0.87	0.95	−0.42**	**0.93**		
3AS	1.80	0.56	0.65	0.89	−0.39**	0.38**	**0.80**	
4JS	3.45	0.61	0.69	0.88	0.48**	−0.45**	−0.42**	**0.83**

Note: **Significant at the 0.01 level; the square of root of AVE values are bolded.
Abbreviations: SS, social support; EE, emotional exhaustion; JS, job satisfaction; AVE, average variance extracted; AS, anxiety symptoms.

Preliminary Analyses

Descriptive statistics, Cronbach's alpha, AVE, and correlation matrix for all variables are reported in Table 2. Social support was positively associated with job satisfaction (r=0.48, p< 0.01), while social support was negatively associated with anxiety symptoms and emotional exhaustion (r=−0.39 and −0.42, respectively). Job satisfaction was negatively associated with emotional exhaustion and anxiety symptoms (r=−0.45 and −0.42, respectively). Convergent validity was satisfactory because each AVE exceeded 0.50. The discriminant validity was satisfactory, as the square root of AVE values for social support (0.73), emotional exhaustion (0.93), anxiety symptoms (0.80), and job satisfaction (0.83) exceeded the related construct correlation values.

Serial Mediation Analyses

The aim of this study was tested using Model 6 of Hayes's (2013) PROCESS macro. Table 3 and Figure 1 present the results. The total indirect effect of social support on job satisfaction was significant (ab= 0.21, SE=0.05, CI=0.12 to 0.32). The specific indirect effect 1 (social support→emotional exhaustion→job satisfaction) was significant ($a1b1$=0.12, SE=0.04, CI=0.05 to 0.19).The specific indirect effect 2 (social support →anxiety symptoms →job satisfaction) was significant ($a2b2$=0.07, SE=0.03, CI=0.02 to 0.13).The specific indirect effect 3 (social support →emotional exhaustion →anxiety symptoms →job satisfaction) was also found to be significant through both optimism and work engagement ($a1a3b2$=0.03, SE=0.01, CI=0.01 to 0.05).All specific indirect effects were contrasted to determine whether one specific indirect effect is different from another (Table 3). Only one pair of contrasting findings was found to be statistically significant (effect=0.09, SE=0.04, CI=0.02 to 0.16). The results indicated that the specific effect was larger via emotional exhaustion alone than through both emotional exhaustion and anxiety symptoms.

Table 3 Serial Mediation Analyses

Effect	b	se	BootLLCI	BootULCI
ab	0.21	0.05	0.12	0.32
$a_1 b_1$	0.12	0.04	0.05	0.19
$a_2 b_2$	0.07	0.03	0.02	0.13
$a_1 a_3 b_2$	0.03	0.01	0.01	0.05
Contrasts				
$a_1 b_1$ minus $a_2 b_2$	0.05	0.05	−0.04	0.14
$a_1 b_1$ minus $a_1 a_3 b_2$	0.09	0.04	0.02	0.16
$a_2 b_2$ minus $a_1 a_3 b_2$	0.04	0.03	0	0.1

Note: Bootstrap sample size = 5000. Unstandardized regression coefficients were used: $a1$ =direct effect of social support on emotional exhaustion; $a2$ =direct effect of social support on anxiety symptoms; $a3$ =direct effect of emotional exhaustion on anxiety symptoms; $b1$ =direct effect of emotional exhaustion on job satisfaction; $b2$ =direct effect of anxiety symptoms on job satisfaction; ab=total indirect effect; a_1b_1 = the specific indirect effect 1 (social support→emotional exhaustion→job satisfaction); a_2b_2 = the specific indirect effect 2 (social support→anxiety symptoms→job satisfaction); $a_1a_3b_2$ = the specific indirect effect 3 (social support→emotional exhaustion→anxiety symptoms→job satisfaction);
Abbreviations: ULCI, Upper Limit of Confidence Interval; LLCI, Lower Limit of Confidence Interval.

Discussion

Resident physicians are equipped with excellent skills and comprehensive development through the standardized residency training program in China. However, during residency training, junior physicians experience a highly demanding workload, low income, poor work-life balance, and adverse working conditions.[29] This may exacerbate job dissatisfaction, leading to intentions of leaving clinical practice. It is important to uncover the mechanism of increasing job satisfaction to improve the quality of residency training.

The present research explores, for the first time, the indirect effect of social support on job satisfaction through the mediators of emotional exhaustion and anxiety symptoms among residents in the SRTP. These research findings are of particular significance to hospital management systems since insight into how organizations can create and improve the work environment and recognition of the potential impact of the work environment on employees are vital for promoting the wellbeing of SRTP residents.

We found that social support as a crucial resource can positively affect job satisfaction. Past research supports this finding. For example, Duan et al found that a high level of social support was correlated with a high level of job satisfaction.[30] This is because social support can make individuals feel more confident about their abilities. This may be the case when, for example, people with more resources are less vulnerable to resource loss and feel more capable of fulfilling their jobs. In such cases, individuals are more likely to successfully accomplish their role-related goals and meet expectations in the workplace, leading to job satisfaction.

Findings indicated that emotional exhaustion can be a mediator in the relationship between social support and job satisfaction. Previous practical research has suggested that the mediating effect of emotional exhaustion was confirmed in the association between job satisfaction and appraisals of resources (eg, optimism and social skills).[31] It is suggested that reduced resources play a crucial role in predicting emotional exhaustion, and consequently, individuals realize that they have fewer resources to maintain their work performances, which leads to negative work-related outcomes (eg, lower job satisfaction).[32] In other words, people with reduced social support are more likely to suffer emotional exhaustion leading to lower job satisfaction.

The present study found that anxiety symptoms mediated the link between social support and job satisfaction. This result is consistent with previous research. For example, a prior study indicated that anxiety mediated the link between ineffective leadership and employee job satisfaction.[21] Another study suggested that anxiety played a mediating role in the association between workplace bullying and employee satisfaction.[33] In our study, social support may help residents deal with mental stressors more effectively. Individuals in a better social network can search for resources (eg, advice, aid), which may increase their sense of belonging, security, and self-worth, so if an individual cannot be provided with various forms of support and resources from family, friends, and colleagues, he or she is more likely to experience anxiety.[9] Negative emotions of anxiety lead to job dissatisfaction, intention to leave, and poor performance. In other words, when an employee experiences anxiety in the workplace, he or she finds it difficult to maintain appropriate appearances in the workplace, and the struggle potentially builds toward job dissatisfaction.

The findings of this study also supported the serial multiple mediation model. It was suggested that emotional exhaustion and anxiety symptoms may contribute to the association between social support and job satisfaction. Emotion exhaustion mediated the relationship between social support and anxiety symptoms, while anxiety symptoms mediated the relationship between emotional exhaustion and job satisfaction. This is the first study to reveal the serial multiple mediating effects in the relationship between emotional exhaustion, anxiety symptoms, social support, and job satisfaction. This is because resources are the most effective at improving job performance.[32] When individuals have little social support, the impact of work stressors becomes detrimental. Social support is viewed as a robust type of resource that enables individuals to manage the demands of their jobs while achieving personal goals. The loss of social support can cause emotional exhaustion. When residents are in a state of chronic exhaustion, a negative psychological state (ie, anxiety) could occur in the workplace.[34] Because of unreleased anxiety and depression, employees suffer from low job satisfaction, poor performance, and eventually intention to quit.

Practical Implications

These research findings have some practical implications for improving job satisfaction among residents in the SRTP. First, it is necessary to enhance social support among SRTP residents. Organization and ward managers should develop interventions to help residents obtain emotional support, instrumental aid, and necessary information, in addition to appraisals from their colleagues, supervisors, and family members. Moreover, residents should become involved in prosocial group behaviors and team building to enhance and expand their social networks. In traditional Chinese culture, as the family is highly valued, several generations may live together and form a large family system in which spouses, parents, and relatives support each other. Policymakers should enable SRTP residents the time to enjoy family life and seek tangible or intangible support (eg, reassurance, a feeling of belonging, or material aid) from family members.

As emotional exhaustion is an important mediator, interventions related to emotional exhaustion could also improve job satisfaction among SRTP residents. Since excessive job demands are positively associated with emotional exhaustion, a positive and supportive work environment can play an important role in reducing job demands. Organizations should reduce work pressure by implementing flexible

work hours, manageable workloads, sufficient human resources, opportunities for career development, and satisfying salaries. Additionally, other interventions should also be considered to alleviate the level of emotional exhaustion experienced by residents. For example, by using a cognitive-behavioral approach, stress management programs can help individuals reduce stress reactions effectively, resulting in reduced emotional exhaustion. Recovery training (eg, relaxation techniques and mindfulness) is also recommended for individuals, as the skills learned can be applied to different activities to help them recover from their job demands.[23]

The results also demonstrated that emotional exhaustion and anxiety symptoms, independently and in sequence, mediated the link between social support and job satisfaction. In other words, anxiety symptoms also play an important role in the relationship between social support, emotional exhaustion, and job satisfaction. Several strategies need to be adopted to address anxiety symptoms. According to a systematic review, individual-level interventions were found to be capable of reducing average symptom severity.[17] These interventions include cognitive behavioral therapy, mindfulness principles, and coping mechanisms.[17] Additionally, organizational-level interventions have been highlighted among physicians. Organizational-level methods, such as rescheduling work hours, reducing workloads, and providing a positive work environment, can also result in reductions in cases of burnout and work-related stress by alleviating anxiety symptoms. This is because these interventions have the advantage of directly solving workplace risk factors. Hospital management and policymakers should emphasize both individual and organizational interventions to build a mentally healthy workplace.

Overall, these effective interventions can reduce residents' sense of emotional exhaustion and anxiety symptoms and increase their personal sense of accomplishment, thereby enhancing job satisfaction and reducing their intention to leave.

Study Limitations

This study presents some limitations worth considering. First, readers should bear in mind that the study is based on a cross-sectional design, so we cannot draw valid conclusions about causal inferences and directionality. A longitudinal study is recommended for future research on this topic. Additionally, future research should explore trajectories of social support, emotional exhaustion, anxiety symptoms, and job satisfaction over time to better understand their interrelation. Another potential limitation is that we only consider job satisfaction

as one aspect of job performance; we recommend that future studies include different aspects of job performance. Finally, this study was conducted with a limited number of participants; future studies should be based on large sample sizes to draw a meaningful conclusion.

Conclusion

This study highlights the importance of social support and how it affects job satisfaction. We found that a lack of social support was a significant stressor causing emotional exhaustion, anxiety symptoms, and reduced job satisfaction. These results demonstrated that emotional exhaustion served as the first mediator and that anxiety symptoms served as the second mediator in the relationship between social support and job satisfaction. It seems to be critical for hospital management to develop a supportive work environment and provide sufficient support to improve job satisfaction.

Ethics Approval and Informed Consent

This study was approved by the ethics committee of Guizhou Provincial People's Hospital ([2019]-30). Written informed consent was obtained from all participants. This study was conducted in accordance with the Declaration of Helsinki.

Author Contributions

All authors made substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit it to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work. Hui Zhang and Dandan Chen contributed equally to this study and share equal first authorship.

Disclosure

The authors have no conflicts of interest.

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