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ORIGINAL RESEARCH

Exploring the Impact of Workplace Violence on the Mental Health of Chinese Correctional Officers: A JD-R Model Approach

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Background: Correctional officers face widespread workplace violence and the resulting overwork that can profoundly damage their physical and mental health.

Purpose: This study aims to investigate the mediating role of overwork in the relationship between workplace violence and the manifestation of physical and mental health issues among correctional officers.

Methods: This study enlisted 472 eligible participants. Cross-sectional data were obtained using the Chinese version of the Workplace Violence Scale (WVS), while the physical and mental health of correctional officers was evaluated through relevant scales. Analysis involved descriptive statistics, correlation analyses, and tests for mediation models.

Results: The study found significant correlations between workplace violence, overwork, and various mental health variables (depression, anxiety, stress, suicidal ideation, and insomnia), with correlations ranging from 0.135 to 0.822 ($p < 0.01$). Mediation analysis revealed that workplace violence directly impacts correctional officers' physical and mental health ($p < 0.001$) and also has an indirect effect through overwork ($p < 0.023$). These findings underscore the substantial impact of workplace violence on the health of correctional officers, both directly and indirectly.

Conclusion: Workplace violence and overwork significantly contribute to the physical and mental health challenges faced by correctional officers. Overwork acts as a mediator in the relationship between workplace violence and these health issues. The study suggests addressing workplace violence and mental health issues among correctional officers by increasing their numbers, improving the work environment, and implementing enhanced welfare policies.

Keywords: correctional officers, workplace violence, overwork, physical and mental health

Introduction

Workplace violence is an escalating concern, necessitating attention due to its profound impact on the physical and mental well-being of workers and broader socio-economic implications. The term encompasses acts like assault (involving physical, psychological, or economic harm) and bullying (persistent malicious behavior).[1] Notably, individuals exposed to workplace violence often experience elevated rates of depression, anxiety, and sleep disorders,[2] with an associated increased risk of suicide.[3] This underscores the urgency in addressing the issue comprehensively. Furthermore, workplace violence has been linked to diminished productivity,[4] amplifying its societal and public significance.[5] The interplay between the mental health effects and reduced productivity underscores the complex nature of this challenge, demanding a multifaceted response.

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Workplace violence is a pervasive issue among public safety personnel,[6] a group of first responders tasked with maintaining public safety during emergencies or critical situations.[7] Statistics reveal that between 57% and 93% of public safety personnel have encountered at least one incident of workplace violence.[8] Specific to correctional officers, who play a crucial role in upholding order and security within correctional facilities, the risk of exposure to violent incidents, threats, or assaults by inmates is heightened.[9] These officers contend with various challenges such as unsupportive peers, understaffing, suboptimal prison conditions, and shift work, collectively contributing to an increased incidence of workplace violence.[10] These factors create a highly stressful and dangerous work environment for correctional officers. A study conducted in Minnesota revealed that over a nine-month period, 16.19% of correctional officers encountered direct workplace violence, while 24.51% experienced indirect workplace violence.[11] In an Australian study, there were 208 violent incidents against correctional officers reported over a three-year period in correctional institutions.[12] Additionally, a study in French prisons found that over 87% of correctional officers had been subjected to verbal, physical, or armed assaults.[13] Notably, research indicates a substantial 76% likelihood of correctional officers experiencing workplace violence within three months.[14] This heightened risk is due to the confined and coercive nature of their workplaces, where daily interactions with inmates expose them to a variety of complex challenges and threats. As a result, correctional officers are more prone to workplace violence than other public safety personnel.[15] Consequently, urgent attention is required to address the pressing issue of workplace violence among correctional officers.

The JD-R model offers a framework to grasp challenges encountered by correctional officers. It helps analyze demands they face and resources aiding them in navigating their professional roles. Central to the JD-R model are job demands, necessitating an investment of effort or cost to meet obligations, and job resources, including intrinsic role elements and personal attributes facilitating coping mechanisms.[16] Excessive work demands, such as workplace violence and prolonged overtime, may compromise both physical and mental health outcomes when lacking sufficient supportive work resources.[17] Friis et al[18] found that those exposed to workplace violence had higher rates of both physical and mental health issues. Specifically, individuals exposed to workplace violence were approximately twice as likely to experience depression and anxiety compared to non-exposed counterparts.[2] Individuals encountering workplace violence are up to four times more likely to develop sleep disorders[19] and have a 1.3 times higher risk of suicide death or attempted suicide.[3] Notably, the mental health impact on correctional officers subjected to workplace violence (54.6%)(8) exceeded that experienced by public safety officers overall (44.5%).[20] These findings underscore the pressing need for preventive measures and support systems to mitigate the mental health risks associated with workplace violence.

Overtime, frequently a result of elevated job demands, represent a prevalent coping strategy for managing substantial workloads within regular working hours.[21] Confronted with workplace violence, correctional officers may grapple with challenges such as managing emergencies, upholding internal prison safety and order, addressing staffing shortages, and heightening vigilance against potential threats. Consequently, this may necessitate overtime work to ensure both prison safety and seamless operations.[22] Research shows that excessive work demands (eg, poor working conditions, workplace violence) not only directly affect overwork, but also lead to work-family conflict and indirectly contribute to overwork.[23] Correctional officers confronted with workplace violence may necessitate additional exertion, contributing to overwork and further compromising their mental health. Previous studies have established a correlation between overwork and the occurrence of workplace violence.[24] This study aims to investigate the mediating role of overwork in the relationship between workplace violence and the occurrence of mental and physical health issues among correctional officers, utilizing the JD-R model as a framework. The hypothesis posits that overwork acts as a mediating factor in the correlation between workplace violence and the mental and physical health outcomes of correctional officers (See Figure 1). Addressing this matter is vital for enhancing the overall well-being of correctional officers and fostering a safer work environment.

Materials and Methods

Participants and Procedures

The study conducted between October 2021 and January 2022 via the Questionnaire Star Platform (https://www.wjx.cn), employed the snowball sampling method. Initially, 10 randomly selected correctional officers with substantial expertise

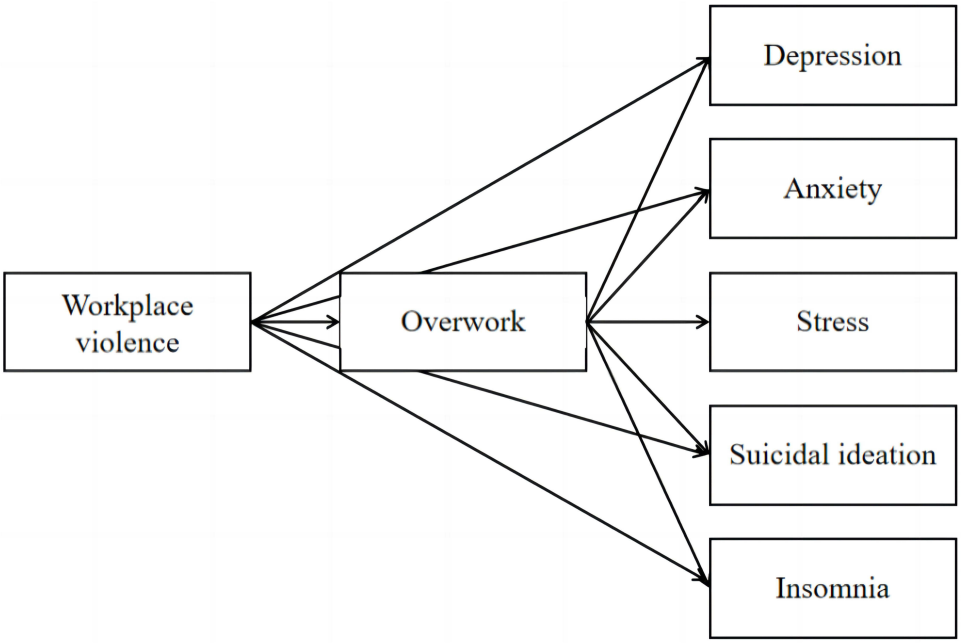

Figure 1 Mediation analysis hypothesis graph.

were surveyed. These authoritative figures then distributed questionnaire links to peers with similar professional backgrounds through platforms like WeChat and Weibo. Subsequently, these recipients facilitated the recruitment of the third wave of survey participants, and so forth. In snowball sampling, ensure only correctional officers fill out the questionnaire by initially targeting known officers, setting clear screening criteria, verifying participant credentials, instructing referrals accurately, and monitoring responses closely for eligibility throughout data collection. The study focused on collecting anonymous data related to participants' work and mental well-being, ensuring the privacy of staff members. The online questionnaire provided participants with detailed informed consent and confidentiality assurances. Those who agreed proceeded to participate in the research.

Measurements

Sociodemographic Data

This study gathered data on variables including gender, age, height, weight, marital status, educational level, daily working hours, smoking status, alcohol consumption, and other relevant factors.

Workplace Violence

The Chinese version of the Workplace Violence Scale consists of five dimensions: physical assault, emotional abuse, threats, verbal harassment, and sexual assault. The questionnaire uses a 4-point Likert scale, with scores ranging from 0 to 3 based on frequency. The total score ranges from 0 to 15, with higher scores indicating a higher frequency of experiencing workplace violence. The scale is widely used in Chinese. The reliability of this scale is 0.820.

Overwork

We assessed individual overwork using two measures. Firstly, we inquired about weekly working hours, with hours beyond the standard 44 designated as overtime. Then, using the formula (365÷12÷7=4.34), the excess hours were multiplied by 4.34 to obtain monthly overtime. Secondly, respondents reported the number of night shifts per month. To account for the additional compensation mandated by the Labor Law (150% of wages), we multiplied the night shifts by 8*(150–100) %. The sum of these measures yielded the total overtime hours for regulated workplace personnel. Notably, this data serves as a comprehensive indicator of overwork rather than an exact representation of correctional officers' actual overworking hours.

Depression, Anxiety, and Stress

The present study utilized the Depression Anxiety Stress Scales-21 items (DASS-21) to assess individuals' levels of depression, anxiety, and stress. The Chinese version of DASS-21 consists of 21 items, covering three factors: depression,[25] anxiety, and stress. Each item is scored on a scale from 0 (no symptoms) to 3 (severe symptoms), allowing for the evaluation of the severity of an individual's depression, anxiety, and stress. DASS-21 has been widely used in research and clinical practice, with many studies assessing symptoms in different populations, including community members, individuals with mental disorders, and healthcare professionals. The reliability of the three factors is 0.952.

Suicidal Ideation

In this study, the four items closest to suicidal ideation were selected for measurement in Chinese Version of the Suicide Intent Scale and scored using the Likert 7 point.[26] The 4 items are respectively:

(1) From never to always, have you ever considered or attempted suicide? (2) In the past year, how many times have you considered suicide? (3) Have you ever told anyone about your thoughts of intending or possibly committing suicide? (4) How likely are you to attempt suicide in the future? The scores from these four items are summed, with higher scores indicating a stronger presence of suicidal ideation in individuals, with a reliability of 0.740.

Insomnia

The Athens Insomnia Scale (AIS) was employed in this study to assess the severity of individuals' insomnia.[27] AIS includes 8 items to evaluate symptoms such as difficulty falling asleep, nighttime awakenings, early morning awakenings, and sleep quality. Each item is scored on a scale from 0 (no symptoms) to 3 (severe symptoms). AIS has been widely used in research and clinical practice, with a reliability of 0.894.

Statistical Analyses

First, data encoding and cleaning were conducted using SPSS 22.0. Subsequently, principal component analysis, descriptive statistics, correlation analysis, and mediation analysis were performed using JASP 0.16.0. Principal component analysis was used to test for common method bias, ensuring the absence of multicollinearity issues. Age, gender, marital status, education level, smoking, alcohol consumption, and betel nut usage (which is a plant-based food associated with the occurrence of oral and esophageal cancers) were included as covariates in correlation and mediation analyses. Mediation analysis was based on 1000 bootstrap samples with a 95% confidence interval, using Bias-corrected percentile for category selection and default settings for other parameters. To ensure clarity and readability, covariate and path data were not included in the mediation analysis diagram, but will be presented in tables.

Results

Common Method Bias Tests

Through principal component analysis, we identified four factors, with the largest variance explained being 24.66%. According to general standards in psychometrics, factor variance in research studies should typically be less than 40%. Based on this context, we can conclude that the data from this study are acceptable.

Demographic Characteristics

In the section on demographic variables, we report the relevant characteristics of the participants (See Table 1). A total of 472 individuals participated in this study, with 322 males and 150 females, accounting for 31.8% of the total sample. The average age was 37.65±8.15 years. Among them, 379 individuals were married (80.3%), and 408 individuals had a bachelor's degree or higher (86.4%). Smoking and drinking behaviors were reported by 34.3% and 73.1% of the participants, respectively. Additionally, considering that the snowball sampling originated in Hunan Province, China, we also included information on the use of betel nut products. It was found that 26.5% of the participants had used betel nut products.

Table 1 Demographic Information of Participants (N=472)

	Sample Size (n)	Percentage (%)
Gender		
Men	322	68.2
Women	150	31.8
Marital status		
Married	379	80.3
Unmarried	71	15.0
Divorced	22	4.7
Educational level		
Below Bachelor degree	64	13.6
Bachelor's degree or above	408	86.4
Smoke		
Yes	162	34.3
No	310	65.7
Drinking		
Yes	345	73.1
No	127	26.9
Betel		
Yes	125	26.5
No	347	73.5

Notes: n represents the number of people, % represents the percentage.

Descriptive Statistics and Correlation Analysis

Table 2 presents the means, standard deviations, and correlation coefficients among all variables in the study. The correlations between workplace violence and other variables range from 0.135 to 0.316 ($p < 0.01$), while the correlations between overwork and other variables range from 0.135 to 0.275 ($p < 0.01$). The correlations among depression, anxiety, stress, suicidal ideation, and insomnia range from 0.332 to 0.822 ($p < 0.001$).

Mediation Analysis

To further explore the mechanisms through which workplace violence affects the physical and mental health of correctional officers, we employed the mediation analysis method. Workplace violence was treated as the independent variable, overwork as the mediating variable, and depression, anxiety, stress, suicidal ideation, and insomnia as the dependent variables. In the Table 3, we present the direct effects, indirect effects, and total effects. The results indicate that workplace violence has a significant direct impact on the physical and mental health of correctional officers ($p< 0.001$) and can also indirectly affect them through the pathway of overwork ($p< 0.023$).

Table 2 Descriptive Statistics and Correlation Analysis Table (N=472)

	M	SD	1	2	3	4	5	6
1. WVS	5.911	2.119						
2. OW	282.208	90.232	0.135**	—				
3. D	27.691	9.601	0.264***	0.246***	—			
4. A	12.106	8.272	0.316***	0.218***	0.724***	—		
5. S	14.987	9.295	0.244***	0.263***	0.822***	0.831***	—	
6. SI	5.994	2.674	0.272***	0.212***	0.419***	0.367***	0.367***	—
7. I	15.809	4.771	0.264***	0.275***	0.556***	0.617***	0.624***	0.332***

Notes: WVS represents workplace violence, OW represents overwork, D represents depression, A represents anxiety, S represents stress, SI represents suicidal ideation, and I represents insomnia. The abbreviations will be consistently used as stated. *p* indicates the significance of the result, and <0.05 indicates that there is a significant difference. **$p < 0.01$, ***$p < 0.001$.

Table 3 Path Analysis (N=472)

Path	Estimate	SE	Z	*p*	95% CI	
					Lower	Upper
Direct effects						
WVS→D	1.04	0.203	5.126	**< 0.001**	0.642	1.438
WVS→A	1.182	0.173	6.839	**< 0.001**	0.843	1.52
WVS→S	0.925	0.197	4.699	**< 0.001**	0.539	1.31
WVS→SI	0.349	0.055	6.294	**< 0.001**	0.24	0.458
WVS→I	0.503	0.1	5.054	**< 0.001**	0.308	0.699
Indirect effects						
WVS→OW→D	0.122	0.051	2.403	**0.016**	0.022	0.221
WVS→OW→A	0.087	0.038	2.277	**0.023**	0.012	0.161
WVS→OW→S	0.125	0.051	2.438	**0.015**	0.024	0.225
WVS→OW→SI	0.033	0.014	2.407	**0.016**	0.006	0.061
WVS→OW→I	0.075	0.03	2.529	**0.011**	0.017	0.133
Total effects						
WVS→D	1.161	0.206	5.643	**< 0.001**	0.758	1.565
WVS→A	1.268	0.174	7.283	**< 0.001**	0.927	1.61
WVS→S	1.049	0.2	5.243	**< 0.001**	0.657	1.442
WVS→SI	0.383	0.056	6.795	**<0.001**	0.272	0.493
WVS→I	0.579	0.102	5.651	**<0.001**	0.378	0.779

Notes: Delta method standard errors, normal theory confidence intervals, ML estimator. Estimate refers to the estimated value of the relationship between the independent variable and the dependent variable. SE (Standard Error) represents the standard deviation of the estimate, indicating the reliability and precision of the estimated value. Bolded *p* indicates the significance of the result, and <0.05 indicates that there is a significant difference.

Discussion

This study investigates the mediating role of overwork in the relationship between the physical and mental health of correctional officers and the occurrence of workplace violence. The study reveals that individuals exposed to workplace violence often manifest heightened severity in both physical and mental health conditions, encompassing depression, anxiety, stress, insomnia, and an increased risk of suicide. Moreover, the inquiry discerns that workplace violence influences physical and mental health via the mediating factor of overwork.

In this study, correctional officers experienced workplace violence at a rate of 27.11%, which aligns with findings from a similar study conducted among public safety personnel where 2079 individuals reported a 56.43% incidence of workplace violence.[28] The challenges faced by correctional officers include risks such as inmates with communicable diseases or mental illnesses, gang activity, and disruptive behaviors. Additionally, institutional challenges, including role ambiguity or conflict, insufficient resources, and issues with leadership or trust, further complicate their work environment. Mental health hazards add an additional layer of risk, encompassing both physical and psychological issues.[9] Correctional officers operate within environments constantly fraught with direct threats of violence and various forms of workplace aggression.[29] This exposure exceeds that experienced by other public safety personnel, amplifying the inherent stressors of their routine duties.[30] Consequently, the frequent occurrence of such violent incidents often leads to adverse consequences, including an excessive workload and compromised physical and mental well-being. The JD-R Model provides a classical yet innovative framework for understanding the interconnection between workplace violence and mental health among correctional officers.

In this study, it was found that correctional officers, following exposure to workplace violence, experienced consequential effects on their physical and mental health. Through the analysis of the JD-R Model, when there is a lack of adequate job resources, correctional officers are exposed to workplace violence and face a highly demanding work environment, which may lead to the depletion of the psychological resources of correctional officers, which are originally used for self-regulatory behaviors in terms of social adjustment and physiological health, and ultimately have a certain impact on their physical and mental health.[31] A psychological health survey concerning correctional officers in two penal institutions revealed that 57%[32] and

95%[33] of participants exhibited psychological issues warranting intervention. Cross-country studies indicate that the prevalence of anxiety disorders among corrections personnel ranged from 23.6% in Canada[7] to 25% in France,[34] and the prevalence of depression ranged from 24% to 59.7%,[35] significantly higher than the national prevalence of 4.2% to 5.9% in these countries.[36] In addition, the most common problem among workers exposed to workplace violence is sleep problems, which may result from chronic exposure to workplace violence through hormonal responses such as cortisol or activation of the hypothalamic-pituitary-adrenal axis.[37] One cohort study reported a 1.3-fold increase in the risk of dying by suicide or attempting suicide after workers experienced workplace violence.[3] The study's findings align with prior research, confirming that correctional officers experiencing workplace violence face notable increases in mental and physical health problems. These issues encompass depression, stress, anxiety, sleep disorders, and the alarming concerns of suicide and suicidal ideation. The reasons for the physical and mental health problems of correctional personnel caused by workplace violence may involve a variety of factors, such as increased psychological burden,[38] impaired social relationships,[39] and physiological reactions.[37] The high incidence of workplace violence among corrections personnel contributes significantly to their disease burden. Solving this issue demands collaboration among professionals from diverse fields. Effective policies and measures need to be developed and implemented for comprehensive support. A broad, concerted effort is essential to address the complexity of this challenge.

This study also found that workplace violence can have an impact on physical and mental health through the mediating factor of overwork. The emergence of workplace violence often forces employees to devote more energy and time to unproductive matters, typically such as maintaining interpersonal relationships.[38] In this situation, employees' time and energy resources encounter the limitations of finiteness. Due to the inevitable need to devote part of their time to unproductive matters, employees will inevitably face two mutually constraining choices: on the one hand, they may choose to work overtime to make up for the loss of time due to the handling of these matters;[40] on the other hand, they will look for a balance between maintaining the necessary work efficiency.[41] The trade-off between the two will force employees to make difficult choices about the allocation of their working time, which may result in reduced productivity or overwork.[25] Empirical investigations in the field of epidemiology have shown significant correlations between chronic occupational overwork and adverse health outcomes.[42,43] In addition, prospective surveys have reported that workers who work more than 34–55 hours per week are more likely to suffer from depression and anxiety.[44,45] The above studies are consistent with the findings of this study, this may be due to the impact that overtime has on hormone levels in the body, such as elevated adrenaline, as well as the exhaustion effect. This leads to difficulties in fully recovering from overexertion after overwork, even with increased rest periods, negatively affecting the physical and mental health of correctional officers.[46] The aforementioned empirical evidence highlights that the reliance of organizations and their workforce on extended working hours is not a sustainable resolution in the aftermath of exposure to workplace violence.

Police officers, especially correctional officers, face significant work pressure and various forms of workplace violence. To effectively address these challenges, coordinated efforts are required at all levels. At the individual level, correctional officers should prioritize self-care and seek support when facing workplace challenges.[47] Research indicates that mindfulness and exercise aid in stress management, while counseling and peer support can mitigate the mental health impacts of workplace violence.[48] Institutions must recognize that adding cumbersome requirements to work processes can lead to complications and increase workplace violence, negatively affecting workers' physical and mental health.[49] Simplifying work procedures, strengthening staffing, and providing comprehensive conflict resolution can create safer and more efficient correctional environments. Additionally, enhancing violence recognition training can improve employee response capabilities and reduce resource wastage. Research demonstrates that early identification training in large healthcare systems significantly boosts employee vigilance and awareness of workplace violence risks.[50] At the national level, enacting legislation to ensure safe working conditions for correctional officers is crucial. Investing in research on the impact and prevention of workplace violence, promoting international cooperation, and developing global standards are essential steps to protect the health and safety of correctional officers worldwide.

Limitations

Several limitations are inherent in this study. Firstly, the cross-sectional nature of the investigation precludes the establishment of causal relationships between workplace violence, overwork, and mental health outcomes. Future research endeavors should employ longitudinal designs to elucidate the temporal dynamics of these associations. Second, the snowball sampling method

used in this study and the reliance on self-reported data from correctional officers may be subject to sampling bias, information bias, sample size limitations, and representativeness issues, which may affect the accuracy of the correlations between the research variables. Thirdly, the intricate nature of factors influencing mental health is acknowledged, with this study concentrating solely on socio-demographic variables, job characteristics, and psychological status, omitting consideration of other potential contributors. Additionally, the inability to confirm mental health diagnoses by a physician is a limitation. Future research should consider increasing the sample size to enhance the generalizability of the findings and include physician-confirmed diagnoses to improve diagnostic accuracy. Subsequent investigations are encouraged to incorporate a broader range of influencing factors, such as organizational culture, support systems, and personal coping mechanisms, to provide a more comprehensive understanding of the determinants of mental health among correctional officers.

Conclusions

Our research suggests that workplace violence is associated with the physical and mental health of correctional officers, and that overwork mediates and, to some extent, exacerbates the physical and mental health problems of correctional officers. This provides support for elucidating the external mechanisms of the relationship between workplace violence and mental health and provides an effective way to improve the mental health of our correctional officers, as well as providing interventions for relevant government departments to improve the health of correctional officers.

Data Sharing Statement

The data generated or analysed in this study are included in this manuscript.

Ethics Approval and Consent to Participate

This study is consistent with the Declaration of Helsinki. The study protocol was approved by the Human Ethics Committee of the Second Xiangya Hospital of Central South University. All methods were performed in accordance with the study protocol and ethical guidelines and regulations. *Electronic* informed consent was obtained from all participants.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that there are no conflicts of interest in this work.

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