Original Article

Burnout Syndrome and Associated Factors among Residents and Fellows at Vajira Hospital, an Urban Medical School

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Objective: The present study aimed to survey the burnout rate and its associated factors among residents and fellows at Vajira Hospital, an urban medical school.

Materials and Methods: This was a cross-sectional, questionnaire-based study. The questionnaire about personal and work-related data was constructed based on previous relevant literature. This survey used a Thai version of the Maslach Burnout Inventory-Human Services Survey as a tool to measure burnout. The personal and work-related data were assessed in descriptive statistics. Multiple logistic regression analysis was used to determine associations.

Results: The total of 142 participants completed the surveys. Overall, high burnout syndrome was reported by 12.0% of responders. While only 6.3% reported low burnout in all aspects. A high burnout in all 3 aspects had statistically significant association with first year of training [odds ratio (OR) 3.03, 95% CI 1.03 to 8.94] and perceived high workload (OR 3.61, 95% CI 1.23 to 10.63). While factors associated with low burnout in all 3 aspects were a low perceived amount of paperwork (OR 0.16, 95% CI 0.03 to 0.86) and adequate sleep (OR 0.15, 95% CI 0.03 to 0.79).

Conclusion: Burnout rate among residents and fellows in Vajira Hospital is skewed towards the high zone. First year of training and perceived high workload were correlated with high burnout syndrome. In contrast, a low perceived amount of paperwork and adequate sleep were associated with low burnout. These findings can provide knowledge to design burnout prevention and alleviation methods.

Keywords: Residents, Burnout, Associated factors

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Burnout syndrome is a symptomatic cluster of physical, mental and emotional fatigue, which is a reaction to chronic stress[1,2]. These symptoms are common in service careers and jobs that require direct emotional contact with customers or clients, such as medical services[3]. Burnout is significantly associated with reduced standards of care[4]. Maslach has divided burnout symptoms into three main aspects. First, emotional exhaustion (EE), this is the most easily noticeable aspect. The second aspect is depersonalization (DP), which refers to having uncaring or unsympathetic attitudes towards others. The third aspect is reduced personal accomplishment (RPA). Medical doctors are prone to burnout[5]. A recent survey found that 45.8 percent of US physicians have at least 1 aspect of burnout[6]. Similarly, studies reported that the level of stress during residency and fellowship training is exceptionally high[7,8]. Given the overwhelming pressure during training[9], such as long working hours, heavy workload and lack of sense of control[7], residents and fellows can easily develop burnout syndrome. A review of the literature about burnout in residents concluded that residents had a high level of burnout, which was also associated with depression[7]. Burnout can attenuate learning ability, which consequently has a further negative impact on quality of work after graduation, as well as patient safety[10]. A substantial number of studies found that the prevalence of a high level of burnout among residents usually ranged between 27 to 75 percent[11,12]. Therefore, the issue of burnout among residents and fellows has continually received attention worldwide.

There are several predictive factors that can influence the level of burnout. These factors can be divided into 2 categories: personal factors and work-related factors[13]. Past studies indicated that personal factors associated with at least one aspect of burnout in residents include a desire to exercise[14], pessimism, perfectionism, poor stress coping ability and bad personal habits (e.g., alcohol or drug use)[15], while some personal factors still remain controversial, such as, gender, age, marital status and number of children[12,16-19]. A number of work-related factors have been found to correlate with burnout in residents, including the number of working hours[20,21], satisfaction with balance between work and

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personal life[17], amount of patients, practice without staff supervision[19], first year of residency[17], conflict with colleagues and a large amount of paperwork[15].

In Thailand, research has shown different results in terms of prevalence. Only 5.63 percent of residents at Chulalongkorn Hospital experienced a high burnout level[23], also, no pediatric residents at Ramathibodi Hospital reported high levels of burnout[24]. Both of these medical schools are located in Bangkok, hence, it can be assumed that the cost of living and culture are comparable. However, as the population and training system in each center are different, the previous results might not be representative of resident burnout rates in every urban medical school. Accordingly, the present study aimed to evaluate the magnitude of burnout among residents and fellows in Vajira Hospital. This training hospital is another urban medical school with some contrast from the training centers in earlier studies, as this center is smaller in both number of patients and physician trainees[25]. Furthermore, this study does not focus only on burnout rate, but also its associated factors, both predisposing and protective factors.

Materials and Methods

This was a cross-sectional, questionnaire-based study. The questionnaire comprised 5 parts: 1) consent form, 2) personal data, 3) work-related data, 4) Thai version of Maslach Burnout Inventory-Human Services Survey (MBI-HSS)[13], and 5) Suggestions. The series of questions in the parts of personal and work-related data were based on previous relevant literature. The Thai version of MBI-HSS was used with permission. MBI-HSS consists of 22 items, which were designed to assess all 3 aspects of burnout.

After receiving approval from the Vajira Institutional Review Board (COA 19/2561), the authors asked for permission from each department to arrange meetings and explain the research details to the participants. Confidentiality was emphasized. The participants were all residents and fellows under training in Vajira Hospital in academic year 2017, who agreed to participate.

Given that getting honest answers is one of the major keys of a questionnaire-based study, it is possible that they might not give a genuine evaluation of the program or may be afraid to expose themselves too much. The researchers took this into account by attaching importance to the process of collecting questionnaires. Each department was asked for permission and cooperation to create an extra session after each department conference. Then, the research team gave direct orientation about the survey, with emphasis on confidentiality. The process of handing out and collecting questionnaires was carried out by the research team without involvement from any departmental personnel. Even though the questionnaires were unlabeled, bypassing departmental personnel assured the residents and fellows that their information would not be leaked. Furthermore, no department got individual feedback.

Statistical analysis

In order to attain a standard, statistically significant level at 0.05 of burnout rate and associated analysis, the minimal calculated sample size was 136. All data were analyzed with SPSS version 22.0.

The personal and work-related data were assessed and presented in descriptive statistics: frequency and percentage were used for qualitative variables (i.e. gender, marital status, year of training), while mean and standard deviation were used for quantitative variables (i.e. age, income, working hours). Burnout score and burnout level were also assessed and presented as descriptive statistics.

To determine the association with each burnout aspect, univariate analysis was performed for every variable. After that, in order to adjust confounding factors, any variables from univariate analysis with p-value <0.100 were then included to calculate multiple logistic regression analysis, using the method of backward stepwise: likelihood ratio. The results of multiple logistic regression analysis are presented with odds ratio (OR) and 95% confidence interval (95% CI).

Results

From the total pool of 224 physicians under training (188 residents and 36 fellows), 142 (131 residents and 11 fellows) completed the surveys. The overall response rate was 63.4%. The personal characteristics of the sample are presented in Table 1. The majority of responders were male (52.1%), unmarried (90.1%) and had no children (97.9%). Mean age of the responders was 29 years old with approximately 5 years of work experience after graduation. The work related data of the responders are presented in Table 2. The questionnaires were completed by doctors from eight departments: ear nose and throat (ENT), emergency medicine, ophthalmology, internal medicine, obstetrics/gynecology, orthopedics, pediatrics and surgery.

As reported in Table 3, 74 (52.1%) physicians under training met high EE, 35 (24.6%) met high DP and 61 (43.0%) met high level of RPA. Overall, a high level of burnout in all 3 aspects was reported by 17 (12.0%) responders, while only 9 (6.3%) reported low burnout in all aspects. Furthermore, raw data also showed that 100 (70.4%) responders had high burnout in at least 1 aspect and 133 (94.7%) responders had the minimum moderate degree of burnout in at least 1 aspect.

In Table 4, univariate analysis was performed. Many factors were significantly associated with both high EE and DP, including first year of training, perceived high work load, perceived excessive paperwork, inadequate staff supervision, inadequate peer support and lack of consultants when encountering work-related problems. In contrast, underlying psychiatric disorders, sleep deprivation, insufficient time for personal life, and unpleasant physical hospital environment were found only to be associated with high EE. Drinking alcohol, or a history of drinking alcohol, was solely associated with high DP. Yet, none of the factors was associated with high RPA at a statistically significant level. However, after conducting multiple logistic regression analysis, the factors which had a significant association with

Table 1. Personal data of the responders

Factors	n (%)
Sex	
Male	74 (52.1)
Age (years)	29.10±2.37
Marital status	
Unmarried	128 (90.1)
Married	13 (9.2)
Divorced	1 (0.7)
Number of children	
None	139 (97.9)
One	3 (2.1)
More than one	0 (0)
Religion	
Buddhism	136 (95.8)
Christianity	4 (2.8)
Islam	1 (0.7)
Others	1 (0.7)
Work experience (years)	4.96±1.96
Income (baht/month)	35,319.37±12,258.56
Financial status	
Income >spending	64 (45.1)
Income = spending	69 (48.6)
Income <spending	9 (6.3)
Family providing	
Low burden	82 (57.7)
Moderate burden	50 (35.2)
High burden	10 (7)
Underlying medical illness	
Present	24 (16.9)
Current use of psychiatric medication	
Present	12 (8.5)
Underlying psychiatric disorder	
Present	14 (9.9)
Previous suicidal ideation	
Present	7 (4.9)
Smoking status	
Never	132 (93.0)
Currently smoking	6 (4.2)
Used to smoke	4 (2.8)
Alcohol drinking habit	
Frequently	2 (1.4)
Occasionally	88 (62.0)
Used to drink	6 (4.2)
Never	46 (32.4)
Exercise frequency	
Frequently	18 (12.7)
Occasionally	97 (68.3)
Never	27 (19.0)
Not enough time	12 (44.4)
Dislike	5 (18.5)
Too lazy	15 (55.6)
Exhausted from work	2 (7.4)

high EE were underlying psychiatric disorders (OR 13.23, 95% CI 1.32 to 132.66), first year of training (OR 2.87, 95% CI 1.19 to 6.88) and contemplation of resignation (OR 6.03, 95% CI 2.56 to 14.23). Alcohol drinking habit (OR 6.02, 95% CI 1.84 to 19.72) and lack of an adviser when encountering work-related problems (OR 2.82, 95% CI 1.16

Table 2. Work related data of the responders

Factors	n (%)	Mean ± SD
Training program		
Residency	131 (92.3)	
Fellowship	11 (7.7)	
Year of training		
1	58 (40.8)	
2 to 4	84 (59.2)	
Department		
Internal medicine	38 (26.7)	
Pediatrics	22 (15.5)	
Orthopedics	20 (14.1)	
Obstetrics/gynecology	18 (12.7)	
Surgery	17 (12.0)	
Emergency medicine	16 (11.3)	
Otolaryngology	7 (4.9)	
Ophthalmology	4 (2.8)	
Private practice		
No	71 (50.0)	
Yes	71 (50.0)	
Working time; office hour(hours/week)		
Outpatients unit		13.07±14.63
Inpatients unit		28.23±21.64
Emergency room		6.16±13.11
On-call time; after office hour (hours/week)		
Consultation		35.77±31.66
Emergency room		14.58±21.57
Others		15.28±17.85
Perception of workload		
Less than expected	1 (0.7)	
Appropriate	88 (62.0)	
Too much	53 (37.3)	
Perception of paperwork		
Appropriate	47 (33.1)	
Too much	95 (66.9)	
Staff supervision		
Satisfied	73 (51.4)	
Unsatisfied	69 (48.6)	
Peer support		
Satisfied	128 (90.1)	
Unsatisfied	14 (9.9)	
Consultant when encountering work related problems		
Satisfied	86 (60.6)	
Unsatisfied	56 (39.4)	
Sleep time		
Satisfied	45 (31.7)	
Unsatisfied	97 (68.3)	
Personal life		
Satisfied	48 (33.8)	
Unsatisfied	94 (66.2)	
Physical environment of the hospital		
Satisfied	69 (48.6)	
Unsatisfied	73 (51.4)	
Career choice satisfaction		
Satisfied	133 (93.7)	
Unsatisfied	9 (6.3)	
Training satisfaction		
Satisfied	96 (67.6)	
Unsatisfied	46 (32.4)	
Contemplation of resignation		
Present	74 (52.1)	

Table 3. Results of burnout assessment (n = 142)

Burnout aspect	Score mean ± SD	Level, n (%)		
		Low	Moderate	High
Emotional exhaustion	26.84±11.58	35 (24.6)	33 (23.2)	74 (52.1)
Depersonalization	6.85±5.55	68 (47.9)	39 (27.5)	35 (24.6)
Reduced personal accomplishment	34.30±7.37	38 (26.8)	43 (30.2)	61 (43.0)

to 6.88) were associated with high DP. Training dissatisfaction was related to both high EE (OR 5.05, 95% CI 1.80 to 14.18) and high DP (OR 4.14, 95% CI 1.69 to 10.15).

In Table 5-1, high burnout in all 3 aspects was significantly associated with first year of training (OR 3.03, 95% CI 1.03 to 8.94) and perceived high workload (OR 3.61, 95% CI 1.23 to 10.63). While factors associated with low burnout in all 3 aspects were low perceived amount of paperwork (OR 0.16, 95% CI 0.03 to 0.86) and adequate sleep (OR 0.15, 95% CI 0.03 to 0.79), as shown in Table 5-2.

Discussion

In the present study, almost three quarters of the responders (70.4%) met the criteria for high burnout in at least 1 aspect, and 12.0% reached high burnout syndrome. In reference to a previous review[10], this rate is relatively high. Furthermore, in comparison to another study in Thailand[23], the result of this study reported higher rate of high burnout in each aspect, as well as combined. Possible explanations for these apparent differences are that the sample population in Vajira Hospital had higher family burdens, more private practice, lower rate of staff supervision, fewer consultants when encountering work-related problems, or were less satisfied with the physical environment of the hospital. Also, physician trainees in this survey had a lower rate of training satisfaction and higher prevalence of thoughts of resigning. It is quite evident that the majority of the variables centered around the training atmosphere. These findings are consistent with an earlier study, which concluded that perceived quality of learning environment is significantly associated with burnout in residents[26]. Nevertheless, there are numbers of personal factors that have not yet been thoroughly explored, such as emotional intelligence, grade point average (GPA), score in standardized examinations, study habits and medical school attended, which were somewhat correlated with performance during residency[27,28], as well as burnout[29]. Therefore, these unreviewed personal factors might be able to provide more backup information about the differences in rate of burnout between these 2 studies.

According to the results of multiple logistic regression analysis, the first year of training was significantly associated with high burnout, especially in the aspect of emotional exhaustion. Transitioning from intern to resident or resident to fellow generally requires a great deal of adaptation. In most cases, before pursuing training, they were general practitioners in rural hospitals. Accordingly, once entering specialty training, the pressure that the trainees had to encounter included adjusting to urban hospital practice, abrupt change of balance between work and personal life, pressure to develop specialty knowledge and skills in a short time, and building new relationships with attending physicians and colleagues[30]. This finding was parallel with previous research that found first-year residents have a higher chance to develop burnout[17] and desire to resign[31]. Hence, this study's results underscore the importance of assisting first-year trainee physicians in encountering and overcoming these challenges.

Another related burnout factor was perception of workload. Perceived high workload was associated with high burnout. Although duty hours and patient load might have demonstrated their impact on resident burnout[7,9,19-21], perceived workload has also been proven to be one of the mediators between actual workload and burnout level[32]. On this account, attitude and expectation towards amount of workload should not be overlooked. Furthermore, special attention should also be paid to perception of paperwork. The data analysis has shown that a perception of less paperwork was correlated with low level of burnout in all aspects and perceived excessive paperwork was associated with high EE. As a substantial amount of physician time is consumed by desk work rather than at the bedside[33], working time distribution between paper and patient should be enhanced.

Physician trainees with underlying psychiatric diseases and alcohol drinking habits were found to have significant associations with high EE and high DP respectively. Thus, screening for these underlying conditions at the beginning might be warranted, so that extra care can be given early and in time. Moreover, other human related issues also require some spotlights. Inadequate staff supervision, lack of peer support and adviser were correlated with high EE and/or high DP. Since encountering either work-related or personal problems during busy years can be devastating, having s consultant is tremendously helpful. This notion is also supported by an earlier study in medical students at this center, Vajira Hospital, which concluded that having personal consultants is correlated with higher levels of empathy[34]. A lack of empathy is usually exhibited in persons with high DP[4]. In order to prevent and attenuate burnout problems, it is beneficial if the training program promotes practical means to tackle these human-related difficulties, especially for first-

Table 4. Factors associated with each aspect of burnout (n = 142)

Factors		High EE						High DP						Reduced PA					
		Univariable analysis			Multivariable analysis			Univariable analysis			Multivariable analysis			Univariable analysis			Multivariable analysis		
		OR	95% CI	*p*-value	OR_{adj}	95% CI	*p*-value	OR	95% CI	*p*-value	OR_{adj}	95% CI	*p*-value	OR	95% CI	*p*-value	OR_{adj}	95% CI	*p*-value
Underlying psychiatric disorder	no	1.00			1.00			1.00						1.00					
	yes	14.28	(1.81 to 112.4)	0.012	13.23	(1.32 to 132.66)	0.028	0.48	(0.10 to 2.26)	0.353				1.00	(0.33 to 3.04)	0.994			
Alcohol drinking habit	never	1.00						1.00			1.00			1.00					
	current/ used to	1.67	(0.82 to 3.40)	0.155				5.01	(1.65 to 15.21)	0.004	6.02	(1.84 to 19.72)	0.003	1.11	(0.54 to 2.25)	0.783			
Year of training	2 to 4	1.00			1.00			1.00						1.00					
	1	2.87	(1.43 to 5.78)	0.003	2.87	(1.19 to 6.88)	0.018	2.42	(1.11 to 5.27)	0.026				1.28	(0.65 to 2.52)	0.473			
Perception of workload	appropriate	1.00						1.00						1.00					
	too much	2.84	(1.39 to 5.80)	0.004				3.52	(1.59 to 7.77)	0.002				0.80	(0.40 to 1.60)	0.536			
Perception of paperwork	appropriate	1.00						1.00						1.00					
	too much	4.69	(2.19 to 10.08)	<0.001				3.00	(1.15 to 7.85)	0.025				1.52	(0.74 to 3.12)	0.252			
Staff supervision	satisfied	1.00						1.00						1.00					
	unsatisfied	3.64	(1.82 to 7.29)	<0.001				3.58	(1.56 to 8.20)	0.003				1.47	(0.76 to 2.87)	0.255			
Peer support	satisfied	1.00						1.00						1.00					
	unsatisfied	6.39	(1.37 to 29.69)	0.018				4.99	(1.59 to 15.6)	0.006				0.71	(0.23 to 2.25)	0.566			
Consultant when encountering work related problem	satisfied	1.00						1.00			1.00			1.00					
	unsatisfied	2.58	(1.28 to 5.19)	0.008				3.63	(1.64 to 8.07)	0.002	2.82	(1.16 to 6.88)	0.022	1.61	(0.81 to 3.17	0.172			
Sleep time	satisfied	1.00						1.00						1.00					
	unsatisfied	2.70	(1.30 to 5.61)	0.008				1.78	(0.74 to 4.32)	0.199				0.80	(0.39 to 1.63)	0.543			
Personal life	satisfied	1.00						1.00						1.00					
	unsatisfied	2.81	(1.37 to 5.78)	0.005				2.02	(0.84 to 4.86)	0.119				0.95	(0.47 to 1.92)	0.892			
Physical environment of hospital	satisfied	1.00						1.00						1.00					
	unsatisfied	3.59	(1.80 to 7.18)	<0.001				1.86	(0.85 to 4.07)	0.121				1.52	(0.78 to 2.98)	0.218			
Training satisfaction	satisfied	1.00			1.00			1.00			1.00			1.00					
	unsatisfied	9.71	(3.93 to 24.02)	<0.001	5.05	(1.80 to 14.18)	0.002	4.92	(2.19 to 11.07)	< 0.001	4.14	(1.69 to 10.15)	0.002	1.74	(0.86 to 3.54)	0.126			
Contemplation of resignation	no	1.00			1.00			1.00						1.00					
	yes	10.06	(4.65 to 21.75)	<0.001	6.03	(2.56 to 14.23)	<0.001	2.96	(1.30 to 6.76)	0.010				1.15	(0.59 to 2.24)	0.681			

Table 5-1. Factors associated with high burnout (n = 142)

Factors	High Burnout					
	Univariable analysis			Multivariable analysis		
	OR	95% CI	*p*-value	OR_{adj}	95% CI	*p*-value
Income (baht/month)						
>30,000	1.00					
≤30,000	2.72	(0.84 to 8.82)	0.094			
Alcohol drinking						
Current/used to	1.00					
Never	4.07	(0.89 to 18.64)	0.070			
Training year						
2 to 4	1.00			1.00		
1	3.04	(1.06 to 8.77)	0.039	3.03	(1.03 to 8.94)	0.044
Perception of workload						
Appropriate	1.00			1.00		
Too much	3.62	(1.25 to 10.48)	0.017	3.61	(1.23 to 10.63)	0.020
Sleep time						
satisfied	1.00					
unsatisfied	3.93	(0.86 to 18.00)	0.078			
Physical environment of hospital						
Satisfied	1.00					
Unsatisfied	2.52	(0.84 to 7.57)	0.100			
Training satisfaction						
Satisfied	1.00					
Unsatisfied	3.53	(1.25 to 10.00)	0.017			

Table 5-2. Factors associated with low burnout

Factors	Low burnout					
	Univariable analysis			Multivariable analysis		
	OR	95% CI	*p*-value	OR_{adj}	95% CI	*p*-value
Training program						
Residency	1.00					
Fellowship	7.81	(1.64 to 37.16)	0.230			
Perception of paperwork						
Too much	1.00			1.00		
appropriate	8.14	(1.62 to 40.90)	0.006	6.10	(1.17 to 31.89)	0.032
Sleep time						
Unsatisfied	1.00			1.00		
Satisfied	8.75	(1.74 to 44.03)	0.005	6.64	(1.27 to 34.65)	0.025
Physical environment of hospital						
Unsatisfied	1.00					
Satisfied	9.44	(1.15 to 77.62)	0.015			
Contemplation of resignation						
Yes	1.00					
No	9.73	(1.18 to 80.02)	0.140			

year trainees. Examples of promising approaches include group support[35] and non-judgmental staff supervision[36].

In terms of implications, a multi-dimensional approach is recommended to fight against burnout. With emphasis on first-year training, in depth details about training programs should be communicated to the trainees in advance, including expected work schedule, amount of work and paperwork, as well as useful survival techniques towards achieving effective work-life balance. It might also be helpful to survey trainees about the expected amount of workload

and paperwork they have prepared to face. Together, the programs should offer adequate support throughout the trainees' journey, whether from peers, seniors, staff or other colleges. Moreover, rotation schedule can be designed to accommodate healthier quality of life, such as sleep restoration during less intensive rotations[37]. However, as medical staff can experience burnout as well[38], every voice matters in constructing a practical and durable program structure.

According to the findings that trainees' perception of workload and paperwork plays a big part in determining level of burnout, a future Thai study should explore factors that may influence these perceptions. Also, more research about related factors might also provide a clearer understanding of predispositions, precipitators, and perpetuators as well as protective factors of burnout. Above all, prospective studies should be conducted to demonstrate more solid evidence of the effectiveness of implemented approaches.

The limitations of this study were small sample size and limited generalizability. The sample size might have been adequate in terms of minimal calculated sample size; however, this number was referenced only from a previous study in Thailand[23]. Furthermore, as there were not enough fellows to analyze separately, the researchers used combined data. Moreover, due to the fact that this was a cross sectional single center study, the results of the present study might only provide an accurate reflection of the academic year of 2017 in Vajira Hospital.

Conclusion

Burnout rate among residents and fellows in Vajira Hospital is skewed towards the high zone. Important related factors include having underlying psychiatric disorders, alcohol drinking habit, lack of adviser when encountering work-related problems, and particularly, first year of training and perceived high workload, as the last two factors were correlated with high burnout syndrome. In contrast, low perceived amount of paperwork and adequate sleep were found to be associated with low burnout. Thus far, these findings can further be used as a means to design burnout prevention and alleviation methods.

What is already known on this topic?

Although the issue of resident burnout has been spotlighted for quite some time, the problem still persists. In Thailand, only 2 studies have surveyed burnout in physician trainees. The results showed a relatively low rate of high burnout syndrome among residents in Chulalongkorn Hospital and among pediatric residents in Ramathibodi Hospital. The factors associated with burnout include first year of residency, paperwork, inadequate sleep and family burden.

What this study adds?

Apart from researching the rate of burnout in Vajira Hospital, which is smaller that the centers in two previous studies, the current study also looked for factors associated with both high and low burnout syndrome.

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Potential conflicts of interest

The authors declare no conflict of interest.

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