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Anxiety and depression in relation to chronic low back pain in patients over 18 years of age in the traumatology outpatient clinic

Abstract

Background: Low back pain is a condition that frequently causes functional limitations, closely related to mental disorders such as anxiety and depression, which have been shown to increase the perception of intensity of chronic pain in patients, hence its importance of study.

Objective: To evaluate the relationship between anxiety and depression with chronic low back pain in patients over 18 years of age at HGZMF No. 2.

Material and methods: Descriptive cross-sectional study carried out between January and June 2024, at General Hospital of Zone No. 2, to patients over 18 years of age with low back pain. The Goldberg Scale was applied to identify anxiety and depression. Descriptive statistics and the Chi2 test were used to determine associations between categorical variables, with a p value <0.05, using SPSS v.23.

Results: 103 patients were analyzed: 81 (78.6%) with chronic low back pain and 22 (21.4%) acute. Anxiety affected 74 (71.8%), especially women (44.7%), employed (28.2%), married (59.2%), overweight (13.6%) and inactive (50.5%). Depression affected 59 (57.3%), mainly women (35.0%) and housewives (25.2%). No relationship was found between anxiety and chronic low back pain (p = 0.500), but there was a relationship with depression (p = 0.006).

Conclusion: Depression is associated with chronic low back pain, increasing the perception of pain in those with these mental disorders, so a multidisciplinary approach is required to treat both the physical and mental health of patients.

Keywords: anxiety, depression, low back pain, chronic pain

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Introduction

Low back pain, or lumbago, is one of the most common musculoskeletal conditions, with a significant prevalence in adults of all ages, especially in middle-aged and elderly people.[1] It is estimated that between 49.0% and 90.0% of the population in developed countries experience low back pain at some time in their lives, and this condition occupies one of the first places in the causes of disability.[2,3] Low back pain can be classified according to the duration of symptoms as: acute (less than 4 weeks), subacute (from 4 to 12 weeks) and chronic (more than 12 weeks).[4]

Currently, low back pain is a public health problem, with a significant impact on the lives of those who suffer from it, as it usually generates limitations in the ability to perform daily activities, affecting both physical and emotional well-being.[1]Patients with chronic low back pain, for example, face a deterioration in their physical function, which often contributes to a decrease in the quality of life, with a higher incidence of depressive symptoms and stress, further worsening the situation.[5]

Among the risk factors for developing low back pain are advanced age, psychological factors such as anxiety and depression, as well as unhealthy lifestyles, such as tobacco and alcohol consumption.[6,7] Obesity, which is increasing every day, caused by a sedentary lifestyle, is also considered an important factor, forming a vicious circle in which the lack of physical activity worsens the pain.[8,9]

It is now known that there is a strong relationship between emotional disorders such as anxiety or depression with the onset and persistence of chronic musculoskeletal pain, as well as with the results of rehabilitation programs and surgical procedures.[8]

Zarean, et al,[10] in a study of patients with anxiety and depression, found that severe anxiety (34.7%), presented a strong relationship with pain of unknown origin. Likewise, Villar, et al,[11] in a study carried out in Mexico, found a prevalence of anxiety in workers with low back pain of 75.3%.[11]

With the above described, it can be determined that the impact of low back pain in the life of patients is considerable, seriously affecting the ability of people to carry out their daily life activities, which leads to a deterioration in their physical, mental and social health.[12]

Therefore, the objective of this study is to determine the relationship between anxiety and depression in patients with chronic low back pain in the outpatient trauma clinic, with the purpose of early identification of risk factors such as lack of physical exercise, obesity and psychological problems, thus helping to create preventive strategies to avoid chronic pain and improve the quality of life of the patients.

Materials and methods

Descriptive cross-sectional study, carried out in the outpatient area of traumatology of the Hospital General de Zona con Medicina Familiar No.2, in the period from January to June 2024.

Men and women over 18 years of age, with a diagnosis of low back pain, who agreed to participate in the study and signed the informed consent form, and who were assigned to that hospital unit, were

invited to participate. Those with cognitive deterioration and difficulty in answering the questionnaire were excluded, as well as those with a dialect different from that of the interviewer or who were receiving antidepressant or anxiolytic pharmacological treatment. Patients with incomplete questionnaires or who did not wish to continue with the study were eliminated.

Sociodemographic variables such as age, sex, occupation and marital status were collected, as well as clinical variables such as drug addictions, presence of polypharmacy, name of non-steroidal anti-inflammatory drugs taken, time of evolution of low back pain and whether or not the patient is physically active.

To determine the intensity of pain, the EN (Verbal Numerical Scale) was used, which consists of a horizontal line of 10 centimeters, at the ends of which are the extreme expressions of pain. On the left side, the absence or lower intensity is located and on the right side the higher intensity, for which the patient is asked to mark on the line the point that indicates the intensity of the pain he/she considers to have and it is measured with a millimeter ruler. The intensity is expressed in centimeters or millimeters. It is mild up to 4cm, moderate from 5-7 cm and severe if it is greater than 7cm.[13]

To determine the Body Mass Index (BMI), the following measurements were taken: Body weight (kg) on scale with stadiometer with clothes on and shoes off. Height measurement (m) in an upright position, with heels together and feet separated at a 60° angle, with the head in a horizontal Frankfurt plane (imaginary line that joins the upper edge of the ear canal with the orbit), arms free at the sides and palms towards the hips.[14]

Body mass index (BMI) was calculated, using the Quetelet equation (weight/height).[2] BMI was categorized according to WHO as underweight <18.5 kg/m^2, normal weight 18.6-24.99 kg/m^2, overweight 25-29.99 kg/m^2.[2,15]

The Goldberg Anxiety and Depression Scale (EADG) was applied, with a Cronbach's alpha of 0.860 for depression and 0.840 for anxiety, which evaluates whether or not the patient suffers from anxiety and/or depression, consisting of 18 items, with dichotomous YES/NO responses, giving a score of 1 point for each affirmative response of the patient, to know if the patient has anxiety, the total score of items 1-9 was added, a score of 4 or more affirmative responses is considered affirmative. To determine whether or not the patient suffers from depression, items 10-18 were evaluated, which likewise consist of dichotomous YES/NO responses, giving a score of 1 point for each affirmative response of the patient, the total score in these items was added, a score of 2 or more affirmative responses is considered diagnostic.[16,17]

The sample size was calculated by applying the finite population formula with a total population of 141 subjects with a diagnosis of low back pain. A confidence level of 95% and a margin of error of 5% was used, as well as an expected proportion of 50%, determining a sufficient sample size with 103 subjects to survey.

This project was authorized by the Local Health Research and Ethics Committee 1603, with registration number R-2023-1603-027. The research was classified as minimal risk, given that the procedures performed were noninvasive and consisted of the application of questionnaires and the collection of routine clinical data.

Statistical analysis

Descriptive statistics were performed. The Kolmogorov-Smirnov (K-S) test was used to estimate the normality of the data distribution Continuous numerical data were expressed as mean ± standard deviation. Categorical data were reported in frequencies and percentages (%). The nonparametric test statistic Chi$^{(2)}$ (X^2) was used to determine the association between categorical variables. Statistically significant difference was established with p value <0.05.

The data collected were entered into a database in Excel and subsequently analyzed in SPSS version 23.0 for Windows. Contingency tables and bar graphs were presented.

Results

A total of 103 male and female patients were surveyed, with a mean age of 55.78±15.98; 95% CI: 21-95 years, with a higher predominance of housewives and employees, as well as married marital status (Table 1).

Table 1 Sociodemographic characteristics of the patients with low back pain in the outpatient trauma clinic of HGZ/MF No. 2 (n=103)

Variable	X ± SD	(RIC)
Age (years)	**55.78 ± 15.98**	**(21-95)**
	F	**(%)**
Sex		
Male	42	(40.8)
Female	61	(59.2)
Occupation		
Student	1	(1.0)
Employee	38	(36.9)
Study and work	2	(1.9)
Housewife	37	(35.9)
Merchant	7	(6.8)
Retired/pensioned	13	(12.6)
None	5	(4.9)
Marital status		
Single	4	(3.9)
Married	78	(75.7)
Free Union	8	(7.8)
Divorced	2	(1.9)
Separated	3	(2.9)
Widower	8	(7.8)

Note: X, mean; SD, standard deviation; IQR, interquartile range; F, frequency; %, percentage.

Regarding clinical characteristics, there was a greater prevalence of patients with overweight BMI, without smoking, without polypharmacy, without physical activity, with intense pain and chronic low back pain (Table 2).

Table 2 Clinical characteristics of the patients with low back pain in the outpatient trauma clinic assigned to HGZ/MF No.2 (n=103)

	F	(%)
BMI		
Underweight	1	(1.0)
Normal weight	22	(21.3)
Overweight	47	(45.6)
Obesity grade I	17	(16.5)
Obesity grade II	5	(4.9)
Obesity grade III	11	(10.7)
Smoking		

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Table 2 Continued...

Smoke or smoked in the past	37	(35.9)
Non-smoker	66	(64.1)
Polypharmacy		
Yes	46	(44.7)
No	57	(55.3)
Physical activity		
Yes	29	(28.2)
No	74	(71.8)
Pain intensity		
Mild	4	(3.9)
Moderate	25	(24.3)
Intense	74	(71.8)
Chronic low back pain		
Yes	81	(78.6)
No	22	(21.4)

F (%) = Frequency (Percentage).

Anxiety was present in 74 (71.8%) of the patients studied, while depression was present in 59 (57.3%).

Figure 1 & 2 shows that there is a greater frequency of patients with anxiety and depression in those with chronic low back pain.

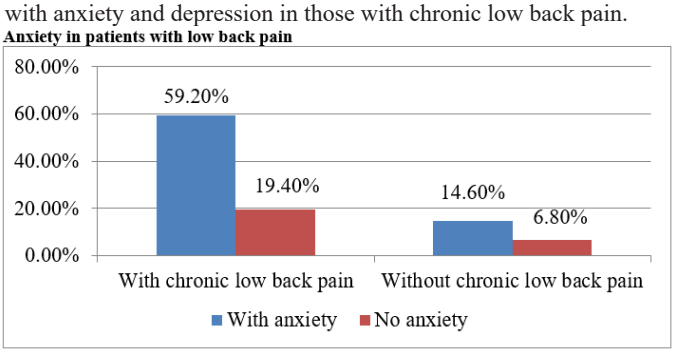

Figure 1 Frequency of patients with anxiety based on the time of evolution of low back pain (n=103).

Note: Anxiety = *Chi² 0.454, gl 1, p =0.500; *Statistically significant* figure (p <0.05).

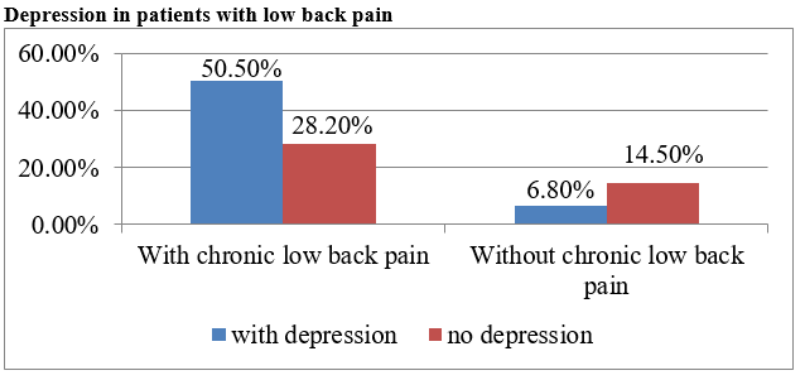

Figure 2 Frequency of patients with depression based on the time of evolution of low back pain (n=103).

Note: *Depression = Chi² 7.413, gl 1, p =.0.006*; *Statistically significant* figure (p <0.05).

Anxiety and depression were more frequent in patients with chronic low back pain who were female, housewives and married (Table 3).

Table 3 Sociodemographic characteristics of patients with chronic low back pain presenting with anxiety and depression from the outpatient trauma clinic of the HGZ/MF NO.2 (n=81)

	Anxiety		p-value	Depression		p-value
	Yes	No		Yes	No	
	F (%)	F (%)		F (%)	F (%)	
Sex						
Male	23(28.4)	9(11.1)	0.562	18(22.2)	14(17.3)	0.228
Female	38(46.9)	11(13.6)		34(42.0)	15(18.5)	
Occupation						
Employee	20(24.7)	7(8.6)	0.511	14(17.3)	13(16.0)	0.107
Housewife	26(32.1)	7(8.6)		24(29.6)	9(11.1)	
Merchant	5(6.1)	1(1.3)		6(7.5)	-	
Retired/pensioned	9(11.1)	3(3.7)		7(8.6)	5(6.2)	
None	1(1.3)	2(2.5)		1(1.2)	2(2.5)	
Marital status						
Single	1(1.2)	1(1.2)	0.405	-	2(2.5)	0.069
Married	49(60.5)	13(16.0)		40(49.4)	22(27.2)	
Free Union	4(4.9)	1(1.2)		2(2.5)	3(3.7)	
Divorced	-	1(1.2)		-	1(1.2)	
Separated	2(2.5)	1(1.2)		3(3.7)	-	
Widower	5(6.2)	3(3.7)		7(8.6)	1(1.2)	

Chi(2) ;*Statistically significant figure (p <0.05); F (%) = Frequency (Percent).

According to the clinical variables, both anxiety and depression occurred more frequently in overweight patients, with no physical activity and with severe pain; note the increased intake of NSAIDs for pain control and smoking in patients with anxiety and depression (Table 4).

Table 4 Anxiety and depression based on the clinical characteristics of patients with chronic low back pain in the outpatient trauma clinic of the HGZ/MF NO.2 (n=81)

	Anxiety			Depression		p-value
	Yes	No		Yes	No	
	F (%)	F (%)		F (%)	F (%)	
BMI						
Low weight	-	1(1.2)		1(1.2)	-	
Normal weight	12(14.8)	2(2.5)		9(11.1)	5(6.2)	
Overweight	27(33.3)	10(12.4)	0.387	23(28.4)	14(17.3)	0.53
Obesity I	12(14.8)	4(4.9)		10(12.4)	6(7.4)	
Obesity II	3(3.7)	2(2.5)		5(6.2)	-	
Obesity III	7(8.7)	1(1.2)		4(4.9)	4(4.9)	
Smoking						
Smoke	18(22.2)	8(9.9)	0.383	16(19.8)	10(12.3)	0.731
Non-smoker	43(53.1)	12(14.8)		36(44.4)	19(23.5)	
Physical activity						
Yes	19(23.5)	3(3.7)	0.159	14(17.3)	8(9.9)	0.949
No	42(51.8)	17(21.0)		38(46.9)	21(25.9)	
Pain intensity						
Soft	4(5.0)	-	0.004*	3(3.7)	1(1.2)	0.516
Moderate	9(11.1)	10(12.3)		14(17.3)	5(6.2)	
Intense	48(59.3)	10(12.3)		35(43.2)	23(28.4)	
No. NSAIDs ingested						
0	9(11.1)	1(1.2)		6(7.4)	4(5.0)	
1	10(12.3)	9(11.1)	0.025*	12(14.8)	7(8.7)	0.798
2	28(34.6)	5(6.2)		23(28.4)	10(12.3)	
3	14(17.3)	4(5.0)		10(12.3)	8(9.9)	
4	-	1(1.2)		1(1.2)	-	

Chi$^{(2)}$;*Statistically significant figure (p <0.05); F (%) = Frequency (Percent).

Among the most consumed drugs for pain control by patients with low back pain, it was determined that tramadol-paracetamol was the most consumed, followed by COX-2 inhibitors and diclofenac (Figure 3).

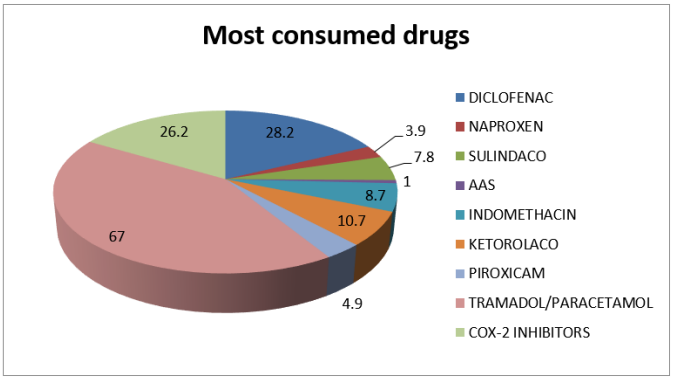

Figure 3 Frequency of consumption of drugs for pain control in patients with chronic low back pain in the trauma outpatient clinic (n=103).

Discussion

Chronic low back pain, defined as persistent low back pain for more than three months, represents a significant challenge for the physical and mental health of those who suffer from it. This condition not only affects the functional capacity and quality of life of patients, but can also be a triggering factor for emotional disorders such as anxiety and depression.

The interaction between chronic pain and psychological disorders is complex and bidirectional. On the one hand, chronic low back pain can induce or exacerbate feelings of anxiety and depression due to the negative impact on daily life, while the presence of anxiety and depression can intensify the perception of pain, creating a vicious cycle in which psychological symptoms worsen the experience of pain and vice versa. This is why effectively addressing both the physical aspects of pain and the emotional components of anxiety and depression is crucial to improving the patient's overall well-being.

In the present study, which was carried out on patients with low back pain in the outpatient trauma clinic of an IMSS hospital in Zacapu, Michoacán, men and women, with a mean age of 55.78±15.98 years, predominantly those with the occupation of housewives and employees, married, overweight, where the majority reported intense low back pain, without smoking, polypharmacy or physical activity. An overall prevalence of anxiety of 73.8% and for depression of 57.3% was determined, both presenting more frequently in those patients with chronic low back pain, where anxiety was reported in 59.2% and depression in 50.5%, finding an association between depression and

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chronic low back pain. The Goldberg Anxiety and Depression Scale (EADG) was used.

There are authors who have documented an association between anxiety and chronic low back pain, as established by Villar AD, et al.,[11] in a study carried out in Baja California, who found a prevalence of anxiety of 75.3%; however, it was a study carried out on workers in a family medicine unit, which may justify the higher prevalence of anxiety in this study group. While Santiago C, et al.,[18] shows a prevalence of minimal to moderate anxiety in 11.8% of their population and for depression of 14.5%, finding an association only with anxiety, however it is a study conducted on police officers, with a lower age than the mean of the present study and where a different evaluation instrument was used.

With respect to depression, Soca-Saavedra L.,[19] in a study carried out on patients with chronic low back pain who attended rehabilitation for the first time, reports that 66.9% of the patients presented depression, finding an association between depression and pain intensity, results that are partially similar to those of Castromán P., et al.,[20] in which they refer a prevalence of 64.0% for anxiety and 28.0% for depression, however they may vary with respect to the results found, due to the characteristics of the study population and the evaluation instruments used such as the Hospital Anxiety and Depression Scale (EADH).

In this study sociodemographic and clinical characteristics of the patients with chronic low back pain who presented anxiety and/or depression were identified, finding both for depression and anxiety, a greater frequency in the female sex, housewives, with married marital status, overweight and without physical activity, increasing the prevalence of these comorbidities in those patients with smoking and with severe low back pain, as well as the number of NSAIDs they ingested for pain control. Other authors such as Igwesi-Chidobe CN, et al.,[21] in a study carried out in Nigeria in 2021, report a moderate association between anxiety and the intensity of low back pain, and the association of anxiety with specific pain disability, being more frequent in female patients and with married marital status, results similar to those found in this investigation when finding the same association between the intensity of pain and low back pain, although they used the test (The Hospital Anxiety and Depression Scale HADS).

Wang, et al.,[22] also found an association between depression and days of disability due to low back pain, with chronic low back pain being more frequent in women, married, employed and with an average age of 46 years, concluding that the older the patient, the greater the risk of presenting depression, in addition to finding an association between patients with major depression and anxiety, which induces functional disability and delay in reintegration into work.

While, with respect to BMI, it has been identified that the increase in BMI increases the probabilities of suffering severe low back pain, as mentioned by Matta et al.,[23] who even refers that it increases even more in the case of being a man over 50 years of age. This effect is inversely proportional to that observed between physical activity and low back pain, because although sedentary lifestyles are also considered a risk factor for developing low back pain or increasing the intensity of the pain, it has also been observed that patients who perform some type of physical activity benefit in the improvement of their pain, as mentioned by Guevara, et al.,[24] who concluded that therapeutic exercise reduces chronic low back pain from the first session and shows better results in multiple therapies. Hence the importance of caring for this group of patients in the different Social Security Centers of the Mexican Social Security Institute, established in various regions of the country, in which there are endorsed therapeutic exercise programs for the care of patients with low back pain, thus reducing the intensity of their symptoms and helping them to return to a working and functional life earlier, reducing absenteeism from work.

Ramos-Villegas,[25] mentions that not only overweight/obesity and sedentary lifestyle have been documented as risk factors for chronic low back pain, but also smoking, due to the disc degeneration generated by nicotine, hence the importance of treating all modifiable risk factors for chronic low back pain, taking into consideration the high absenteeism from work and the low quality of life due to its frequent association with anxiety and depression and a greater consumption of NSAIDs that in the future may cause important comorbidities as side effects.

Among the most frequently used drugs for the control of low back pain, the use of paracetamol with tramadol was found with the greatest frequency in 67.0%, followed by diclofenac 28.2% and selective COX-2 inhibitors in 26%. In this regard, Gaspar et al.,[26] in their study carried out in 2020 in Zaragoza, Spain, in which they evaluated the use of NSAIDs, divided the study population into continuous, moderate and sporadic consumers according to the consumption of doses per year, where the group of sporadic consumers used ibuprofen most frequently, followed by dexketoprofen and diclofenac, while moderate consumers used ibuprofen most frequently and continuous consumers used eterocoxib, These results are partially similar to ours despite the fact that in Mexico there is a basic scheme in the Mexican Institute of Social Security, different from that used in the Spanish Health Sector. Likewise, their study was focused on the study of musculoskeletal pathologies in general, unlike the present investigation carried out on patients with low back pain.

Results similar to those found by other authors such as Cando V, et al.,[27] who identified as the most frequent NSAID prescriptions the use of paracetamol (56.6%), ketorolac (26.9%), ibuprofen (10.1%) and diclofenac (5.9%); however, it was a study carried out on patients in the different hospitalization areas of a public hospital in Ecuador, who have a basic scheme similar to that used in Mexico, and did not analyze the intake of NSAIDs with oral administration, unlike the present study.

With the above, it is established that there is a clear association between anxiety and depression with chronic low back pain, becoming a vicious circle, a condition that is essential to address due to the high suicide rates that have been reported in states such as Yucatan, Tabasco, Quintana Roo and Campeche, while Michoacan occupies an intermediate place by presenting a suicide rate of 8.28 (min 4.7- max 15.3; 8.75).[28]

According to the INE, suicide was listed as the leading cause of external death in 2021, with an increase of 1-6% with respect to 2020, being related to social determinants such as isolation, problems derived from the COVID19 pandemic and some articles even mention the relationship with diseases that cause chronic pain, with suicidal ideation being at least the most observed in these patients.[29] Taking the above into account, we consider it fundamental to study these mental disorders as well as their relationship with chronic low back pain, since they are comorbidities that can be treated in a timely manner with psychological or even pharmacological therapy at the first level of care, in the hope of reducing morbidity and mortality, disability, work absenteeism and above all suicidal ideation due to the multiple complications that it entails.

Among the limitations is the small sample size, as well as the lack of identification of the time of evolution of anxiety or depression, in order to know the onset of these mental disorders in relation to low back pain. Similarly, the veracity of the data could be considered a bias, since they were self-evaluation surveys on the part of the patient.

Conclusion

The prevalence of anxiety and depression in patients with chronic low back pain is high, finding that there is a relationship between depression and chronic low back pain. Both are more frequent in female patients, housewives, and married, overweight, with no physical activity and with intense pain.

It was also determined that there is a greater increase in smoking and in the number of NSAIDs taken in those patients with anxiety and depression, as well as the association between anxiety and pain intensity and the number of NSAIDs taken by the patient.

Therefore, it is important to take these results into account in order to encourage physical activity, weight reduction, as well as working together with the multidisciplinary team such as the social security centers in which there are special physical activity programs for patients with low back pain and mental health care by the psychology or psychiatry team, since patients with anxiety and depression more frequently present more intense low back pain and a higher intake of NSAIDs.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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