

# Factor associated with anxiety disorder during covid-19 pandemic among college students

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## Abstract

Coronavirus Disease-2019 (COVID-19) is a novel illness not previously identified in humans. Its unprecedented emergence has resulted in many effects on individuals, including the onset of anxiety. Therefore, this study aimed to identify factors associated with an anxiety disorder during the COVID-19 pandemic among college students. Using a snowball sampling technique, a quantitative design was employed to select 453 participants. The instruments used were the 7-point Generalized Anxiety Disorder scale and the Multidimensional Scale of Perceived Social Support. Furthermore, data analysis was carried out using the Chi-Square test and Pearson's correlation. Several factors related to anxiety disorder include gender ( $p=0.001$ ), year of study ( $p=0.001$ ), teaching delivery method ( $p=0.049$ ), sources of information about COVID-19 ( $p=0.009$ ), family member affected ( $p=0.009$ ) and social support ( $p=0.001$ ). The results showed that social support had a negative correlation with anxiety disorder, support from family ( $r=-0.33$ ,  $p=0.001$ ), friends ( $r=-0.31$ ,  $p=0.001$ ), and significant others ( $r=-0.23$ ,  $p=0.001$ ). Therefore, factors associated with anxiety disorder during the pandemic were gender, study year, teaching delivery method, sources of information, affected family members, and social support.

## Keywords

Anxiety disorder, college students, covid-19, social support, teaching delivery method

## Introduction

COVID-19 has become a social concern worldwide and is spreading rapidly in some countries (Ding et al., 2020). The pandemic affects all healthcare systems, such as healthcare and its providers, the economy, politics, and education. Therefore, all aspects of the world must cooperate in combating pandemic (Bourion-Bédès et al., 2021; Khoshaim et al., 2020).

Outbreaks of COVID-19 affect deaths and illnesses from severe acute respiratory coronavirus 2 (SARCOV2) infections but also encourage learning through continued epidemics of community tightening and quarantine measures. It causes psychological distress and delays behavioral activities, including learning in schools, colleges, and universities (Cao et al., 2020). In many countries, governments have announced policies to prevent the rapid spread of COVID-19 by breaking the chain of infections and closing schools, universities, and other educational institutions while forcing people to study online (Bourion-Bédès et al., 2021; Camacho et al., 2021).

The pandemic has changed the entire educational system, following the government's requirement that most undergraduate students continue their studies with online learning (Guo et al., 2021). The learning system transformed from an offline to an online format facilitated by the internet. This transition allows students and teachers to engage with one another irrespective of their physical locations, eliminating the limitations imposed by the loss of social activities and face-to-face connections. However, it is worth noting that the shift to online learning has resulted in specific

challenges. Specifically, it has decreased interest levels, a lack of motivation, reduced two-way communication and interaction between students and lecturers, and a diminished understanding of the course material (Bourion-Bédès et al., 2021; Fathiyah & Mardhiyah, 2023). Students may be willing to adapt to online learning methods during a pandemic. This situation causes feelings of isolation felt by students. It impacts socio-emotional such as uncertainty, worry, sadness, confusion, nervousness, unhappiness, and other mental health condition such as depression, anxiety, and stress (Bourion-Bédès et al., 2021; Fathiyah & Mardhiyah, 2023; Guo et al., 2021). Challenges experienced were related to social interaction, such as a change in students' friendships, strict social isolation, and delay in starting studies (Fathiyah & Mardhiyah, 2023).

The COVID-19 pandemic would substantially impact the mental health of university students. Many students have been grappling with negative emotional responses and psychological distress, including depression and anxiety (Fathiyah & Mardhiyah, 2023; Garvey et al., 2021). According

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to the study by Garvey et al. (2021), which focused on a Spanish university, many students experienced anxiety within a month or two after the COVID-19 pandemic. Specifically, over 89% of students reported experiencing anxiety, with 18.7% of them indicating a severe level (Garvey et al., 2021). A study by Bourion-Bédès et al. (2021) showed 36%, 15.2%, and 9.8% mild, moderate, and severe anxiety among French students (Bourion-Bédès et al., 2021). They were based on a study by Kartini et al. (2021), about 15.7% of Haluoleo University students had an anxiety disorder during the outbreak (Kartini et al., 2021).

Several factors have been identified as contributing to psychological distress, specifically anxiety disorder. The study has shown that place of residence plays a significant role, with students living with their parents or family experiencing lower levels of anxiety disorder. On the other hand, family members being infected is considered a risk factor for anxiety among students. This may be attributed to the high transmission rate of the new disease within the family setting (Cao et al., 2020). Several information about the pandemic on social media may have increased. The role of social media in disseminating information during the COVID-19 pandemic cannot be overstated. It has provided a platform for people to access reliable and trustworthy information sources, such as the World Health Organization, the Centers for Disease Control and Prevention, reputable journals, and other healthcare organizations (American Psychological Association, 2023; Merchant et al., 2020). Social support has been identified as a significant risk factor for anxiety disorder among college students during the lockdown period. Tensions at home, difficulties with isolation, and lack of direct outdoor access are contributing factors. However, support from friends, family, and significant others is a protective factor against anxiety, indicating that social support can effectively alleviate and decrease stress (Li et al., 2021).

This study examines several factors associated with an anxiety disorder during the COVID-19 pandemic among college students at the Faculty of Health Science and Technology at Jenderal Achmad Yani University. The result hypothesizes that years of study, living with parents/family, teaching delivery method, source of information about COVID-19, family members affected, and social support from family, friends, and significant others are associated with anxiety disorder in college students.

## Method

### Participants

This study focused on undergraduate students pursuing degrees in various programs at the Faculty of Health Science and Technology, Jenderal Achmad Yani University. The participants included students enrolled in the Midwifery, Nursing, Medical Laboratory Technology, and Public Health study programs. The sample size comprised 453 undergraduates, with 47, 190, 135, and 81 in their first, second, third, and fourth years of study.

The data collection process with an online questionnaire was conducted over two months, between 18 October - 15 December 2021. The participants recruited snowball sampling techniques by WhatsApp groups and asked the participants to share the link with the other students. The

anxiety disorder of these students during the pandemic was assessed using structured questionnaires. The data collection process involved the distribution of a questionnaire to 453 undergraduates, with 406 and 47 female and male students. The results of the screening examination showed that 209 (46.1%), 190 (41.9%), and 54 (11.9%) exhibited severe, moderate, and mild anxiety.

### Instruments

Independent variables consisted of gender, year of study, living with parents or family, teaching delivery method, sources of information, family members affected, and social support. The dependent variable included anxiety disorder.

Anxiety disorder symptoms were assessed using the 7-point Generalized Anxiety Disorder (GAD-7) scale, translated into Indonesian. The GAD-7 questionnaire was an effective and efficient tool for screening anxiety disorder among the participants. The questionnaire consisted of seven (7) items that assessed the severity of anxiety symptoms experienced by the participants over the past two weeks. This questionnaire was created by asking patients how often they suffer from each sign. Articles were rated on the Likert scale and scored from 0 for "nothing at all" to 3 for "almost every day" (Bourion-Bédès et al., 2021; Spitzer et al., 2006). The GAD-7 instruments were categorized as mild, moderate, and severe when the score was 5-9, 10-14, and 15-21 for level 1. The internal consistency was excellent with Cronbach's  $\alpha = 0.92$ , and the reliability index was also good with intraclass correlation = 0.83 (Spitzer et al., 2006).

The variable of social support was assessed using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS) questionnaire, which was translated into Indonesian language. The MSPSS was used to measure an individual's perception of outside social support from three sources, namely social support from family, friends, and significant others (Guo et al., 2021; Wongpakaran et al., 2011; Zimet et al., 1988). Respondents were asked about their level of agreement for each item of the MSPSS with a Likert Scale ranging from a score of 1 for "very strongly disagree" to a score of 7 for "very strongly agree. This measurement was calculated by total score answering, and categorized as low, moderate, and high support when the total score was > 36, between 36-60 and > 60 (Guo et al., 2021; Zimet et al., 1988). Furthermore, the internal consistency and reliability of the scale were good, with Cronbach's  $\alpha = 0.91$  and subscale for family 0.91, support from friends 0.83, and support from significant others 0.86 (Wongpakaran et al., 2011). The questionnaires employed in this study were distributed online.

### Data Analysis Technique

This study used a quantitative design with a cross-sectional study, an investigator measuring the outcome and exposure of the participant. The frequency distribution of each variable was analyzed using univariate analysis, while the relationships between variables were identified using bivariate analysis, specifically the chi-square test. The magnitude of the risk factor for anxiety disorder was measured using the Odds Ratio (OR) and 95% Confidence Interval. Pearson's correlation coefficient was used to estimate the strength of the association between GAD-7 and MSPSS scores. The p-value was

used as a significant test, with a significance level of 95% ( $\alpha=0.05$ ).

### Ethical Considerations

This study received ethical approval from the Ethics Committee in the Faculty of Health Science and Technology Jenderal Achmad Yani University with number registration: 53/KEPK/IX/2021.

### Result

According to a study conducted at the Faculty of Health Science and Technology, Jenderal Achmad Yani University, a significant proportion of students, specifically 209 individuals (46.1%), experienced severe anxiety during the pandemic. The study also indicated that 281 students (62%) resided with their parents or family members throughout the COVID-19 pandemic. In terms of the educational landscape, a majority of college students, accounting for 45.9%, engaged in a Blended learning approach. Furthermore, it was discovered that 155 individuals (34.2%) had family members diagnosed with confirmed cases during this challenging period. As for the primary source of information, social media played a prominent role, with 72% of students relying on it for updates and news. Additionally, the study highlighted that a significant portion of students, specifically 275 individuals (60.7%), reported having moderate support from their family, friends, and significant others, as shown in Table 1.

As shown in Table 1, the severe anxiety level experienced was greater in females (49,5%) than males (21,7%), while the moderate anxiety level was more in males (57.4%) than females (40.1%). This study found that gender was significantly a statistic with an anxiety disorder during the pandemic with  $p$ -value=0.001. Based on an OR of 4.8 (95% CI=2.18-10.5), the risk factor for anxiety disorder among students is significant. The findings indicate that females are 4.8 times more likely to experience severe anxiety disorder than males, as shown in Table 1. According to the study, most students who participated in severe anxiety disorder were in their third year of study, with 73 individuals (54.1%) affected. The results indicated that the year of study was a significant factor associated with anxiety disorder among college students ( $p$ -value=0.001), with OR=1.5 (95% CI=1.29-1.84). Among students who lived with their parents or family, 129 individuals (45.9%) experienced severe anxiety. However, the study did not show a statistically significant association between living with parents/family and anxiety disorder among students ( $p$ -value=0.86); OR=1.02 (95% CI= 0.7-1.5).

Teaching delivery method was significant with anxiety disorder ( $p$ -value=0.049), with OR 1.2 (95% CI=1.01-1.45), meaning online learning was 1.2 times experiencing moderate anxiety among college students. Most students rely on social media as their primary source of information regarding COVID-19, leading to a significant number of individuals experiencing severe anxiety. Specifically, 163 students, comprising 50% of the sample, reported experiencing anxiety. This connection between the source of COVID-19 information and anxiety disorder holds statistical significance, with a  $p$ -value of 0.009 and OR of 1.8 (95% CI=1.18-2.78). Therefore, the head of information about the pandemic from

friends and social media was 1.8 times more experiencing severe anxiety.

A significant proportion, specifically 55.5%, of individuals who had family members diagnosed with confirmed cases of COVID-19 experienced severe anxiety. This association between COVID-19 diagnosis among family members and anxiety disorder among students was statistically significant, with a  $p$ -value of 0.009. Additionally, the magnitude of the risk factor for experiencing anxiety disorder was 1.8 (95% CI=1.2-2.63), where individuals with family members diagnosed with COVID-19 were 1.8 times more likely to experience severe anxiety. Social support was significantly associated with an anxiety disorder ( $p$ -value=0.001), with OR=3.03 (95% CI=1.99-4.6); therefore, students with limited social license were at a higher risk of developing anxiety disorder and were three times more likely to experience severe anxiety.

As shown in Table 2, social support was negatively correlated with anxiety ( $r = -0.35$ ,  $p$ -value = 0.001). Therefore, respondents with low social support were likely to have severe anxiety. Support from the family had negative correlations with anxiety level ( $r = -0.33$ ,  $p$ -value = 0.001), while help from friends and significant others had negative correlations with the variable ( $r=-0.31$ ,  $p$ -value=0.001;  $r=-0.23$ ,  $p$ -value=0.001).

### Discussion

In this study, most students had psychological distress, such as anxiety and stress, due to the impact of the COVID-19 pandemic. Psychological distress can appear in pressure, inability to relax or concentrate, decreased interest in attending studies and social relationships, worries, fears, and physical disorder without medical causes (Fathiyah & Mardhiyah, 2023). According to a survey by Puspitaningrum & Pudjiati (2021), adolescents have had a high incidence of psychological distress. The study indicates that risk factors associated with psychological distress during the pandemic include fear of infection among family and friends, frustration, exposure to misinformation about COVID-19, social isolation, and a lack of opportunities to interact and communicate with peers and others (Puspitaningrum & Pudjiati, 2021). The study of Nugrohowati et al. (2019) indicates that the majority of students (53.3%) experienced stress during the pandemic (Nugrohowati et al., 2019).

The typical study duration for undergraduate students is three and four years for an associate's and Bachelor's Degree program. Most of these students are between 18 and 23 and are characterized by high mobility with a need for social interaction. However, the outbreak has created an unprecedentedly challenging situation, leading to significant educational system changes. Therefore, most of the college instruction has shifted to online platforms. This shift has presented many problems for students, including a lack of discipline, learning materials not optimized for remote learning environments, and difficulty maintaining focus due to self-isolating family members. Consequently, COVID-19 has contributed to various psychologThencluding anxiety syndrome. Given these challenges, paying special attention to students' mental health during the pandemic (Guo et al., 2021) is crucial.

COVID-19 and public health emergencies are detrimental to students learning, hence causing psychological distress and

**Table 1.** Factors associated with anxiety-disorder during covid-19 pandemic among college students

Variables	Frequency	Anxiety Level			p	OR (95%CI)
		Severe	Moderate	Mild		
Gender						
Female	406 (89.6%)	201 (49.5%)	163 (40.1%)	42 (10.3%)	0.001	4.80 (2.18-10.50)
Male	47 (10.4%)	8 (21.7%)	27 (57.4%)	12 (25.5%)		
Year of study						
Year 1	47 (10.4%)	10 (21.3%)	29 (61.7%)	8 (17.0%)	0.001	1.50 (1.29-1.84)
Year 2	190 (41.9%)	94 (49.5%)	79 (41.6%)	17 (8.9%)		
Year 3	135 (29.8%)	73 (54.1%)	49 (36.3%)	13 (9.6%)		
Year 4	81 (17.9%)	32 (39.5%)	33 (40.7%)	16 (29.8%)		
Living with parent/family						
No	172 (38.0%)	80 (46.5%)	70 (40.7%)	22 (12.8%)	0.860	1.02 (0.70-1.50)
Yes	281 (62.0%)	129 (45.9%)	120 (42.7%)	32 (11.4%)		
Teaching delivery method						
Online learning	130 (28.7%)	50 (38.5%)	58 (44.6%)	22 (16.9%)	0.049	1.20 (1.01-1.45)
Blended learning	208 (45.9%)	95 (45.7%)	90 (43.3%)	23 (11.1%)		
Hybrid learning	115 (25.4%)	64 (55.7%)	42 (36.5%)	9 (7.8%)		
Source of information about COVID-19						
Friend	6 (1.3%)	3 (50.0%)	3 (50.0%)	0 (0.0%)	0.009	1.80 (1.18-2.78)
Social media	326 (72.0%)	163 (50.0%)	133 (40.8%)	30 (9.2%)		
Media mass	121 (25.4%)	43 (35.5%)	54 (44.6%)	24 (19.8%)		
Family member got COVID-19						
Yes	155 (34.2%)	86 (55.5%)	57 (36.8%)	11 (7.7%)	0.009	1.80 (1.20-2.63)
No	289 (63.80%)	123 (41.3%)	133 (44.6%)	42 (14.1%)		
Social support						
Low support	25 (5.5%)	16 (64.0%)	7 (28.0%)	2 (8.0%)	0.001	3.03 (1.99-4.60)
Moderate support	275 (60.7%)	149 (54.2%)	97 (35.3%)	29 (10.5%)		
High support	153 (33.8%)	44 (28.8%)	86 (56.2%)	23 (15.0%)		
Total	453 (100%)	209 (46.1%)	190 (41.9%)	54 (11.9%)		

**Table 2.** Correlation coefficient social support with anxiety disorder among students

Social support	Mean	R	p
Family	19.5	-0.33	0.001
Friend	17.4	-0.31	0.001
Significant others	18.7	-0.23	0.001
Total social support	55.5	-0.34	0.001

mental problems such as anxiety disorder and stress. Anxiety disorder is a subjective condition of fear and apprehension and causes physiological stimulation such as rapid heart rate, hyperventilation, and sweating (Camacho et al., 2021). Several studies in various countries have been conducted regarding the psychological impact of the pandemic on anxiety disorder in students. Guo et al. (2021) showed that 11.8% of undergraduate students in Shaanxi province have moderate-to-severe anxiety levels (Guo et al., 2021). The study conducted by Cao et al. (2020) showed that among students undergraduates at Changzhi Medical College in China, 21.3%, 2.7%, and 0.9% experienced mild, moderate, and severe anxiety, respectively (Cao et al., 2020). Bourion-Bédès et al. (2021) showed that 9.8% of students in French had severe anxiety during a pandemic. According to Khoshaim et al. (2020), 8.8% and 13% of students in Saudi Arabia experienced severe and extreme severe anxiety (Khoshaim et al., 2020). Christianto et al. (2020) reported 25.2% of students with severe anxiety (Christianto et al., 2020). According to Ilahi et al. (2021), 26%, 7%, and 1% students at

Muhammadiyah Surakarta University had moderate, severe, and severe anxiety (Ilahi et al., 2021).

Gender was a significant factor associated with anxiety levels in students; hence, females and younger individuals were more likely to experience higher levels of psychological distress, such as depression and anxiety. Studies indicated that young individuals and females tended to be more sociable and were more likely to be employed in essential jobs, making them particularly vulnerable to experiencing severe anxiety during the initial stages of social quarantine and strict lockdown measures (Chen & Lucock, 2022). According to Khoshaim et al. (2020), the variable of gender was significantly associated with high anxiety levels (p-value=0.012, OR=1.96, 95%CI=1.16-3.32). Hence, female students had higher anxiety levels than males (Khoshaim et al., 2020). According to Bourion-Bédès et al. (2021), females were a risk factor for anxiety in students in the French region (p-value=0.0001, OR=2.2, 95% CI=1.8-2.7) (Bourion-Bédès et al., 2021). At Spanish University, students with severe anxiety levels were higher among females (21.8%), compared with males (12.31%) (Garvey et al., 2021). Therefore, females were more vulnerable to disaster and experienced higher anxiety levels than males (Khoshaim et al., 2020).

The year of study was found to be a significant factor associated with anxiety levels, with students in their third and fifth years of study experiencing the most severe anxiety during a pandemic. A survey by Khoshaim et al. (2020) on students in Saudi Arabia showed that those in their fourth year of study had higher levels of stress compared

to the fifth year ( $p$ -value=0.020, OR=2.44, 95% CI=1.15-5.17). This was largely due to concerns about the impact of a pandemic on their academic progress and the potential for any consequences to be permanent and irreversible. Interestingly, living with parents was not associated with anxiety disorder, even though the majority of students (94.2%) were living at home during the pandemic. This was also observed in a study of Spanish university students, where 94.4% were found to be living with their parents or family (Garvey et al., 2021).

The teaching delivery method was significant for anxiety disorder among college students. Anxiety disorder negatively impacted the learning process and was often associated with decreased academic motivation. Furthermore, the shift from offline to online teaching delivery methods exacerbated this issue. Camacho et al. (2021) found that transitioning to distance learning through the Internet decreased students' motivation. Online learning presented numerous challenges, including teaching, assessment, and examination systems changes, resulting in delays in completing their studies (Hamza et al., 2021).

The source of information was significant for anxiety disorder among college students. Social media, such as Facebook, Twitter, YouTube, and WhatsApp, have become a conduit for spreading misinformation to increase anxiety. People obtained reliable and trusted sources related to COVID-19, such as from WHO, CDC, journals, and other healthcare organizations. Social media platforms like Facebook were used to direct users to access information on the World Health Organization (WHO) websites and local health authorities (Fahmi & Utama, 2022; Merchant et al., 2020). According to a study by Olaimat et al. (2020), most students obtained information about COVID-19 from the Internet (77.1%). This included electronic news websites and social media platforms such as Twitter, Facebook, YouTube, Instagram, Snapchat, and WhatsApp. Mass media sources such as TV, newspapers, magazines, radio, websites, and articles were also commonly used (67.6%), while information from family and friends was a smaller proportion (7%). These findings suggested that the Internet and social media platforms significantly shaped the knowledge and perceptions of public health issues such as the COVID-19 pandemic (Olaimat et al., 2020).

The presence of family members who contracted COVID-19 was found to be significantly associated with anxiety disorder among students. A study conducted at a Spanish university showed that students experienced mental health issues such as anxiety disorder during a pandemic, caused by financial problems, academic-related issues, and concerns about the health of family members confirmed to have COVID-19. The study indicated that 29.3% of students had someone or a family member at home who contracted the pandemic (Garvey et al., 2021).

In this study, social support was associated with students' anxiety levels. Therefore, students with low social support have severe anxiety levels (Guo et al., 2021). During the home quarantine period, many students experienced insufficient social support, a lack of adaptive relationships among friends and family, and a lack of physical contact with friends or classmates, which caused frustration and triggered problems within their families (Li et al., 2021). Social support is crucial in helping students cope with anxiety, safeguarding their psychological well-being, and maintaining academic

motivation. Establishing strong relationships with parents, family members, friends, teachers, classmates, and significant others was vital in building students' resilience during the pandemic (Camacho et al., 2021). According to the study from Guo et al. (2021), support was negatively correlated with anxiety ( $p$ -value<0.001, OR=0.096,  $r$ =-0.249) (Guo et al., 2021). Cao et al. (2020) found that there was a negative association between anxiety symptoms in students and social support ( $p$ -value<0.001,  $r$ =-0.151) (Cao et al., 2020). Individuals who received social support from everyone believed that they were loved, cared for, valued the most, felt more connected to their friends, and had a safe place when experiencing psychological or difficult situations (Yanto et al., 2022).

Several interventions were recommended for reducing mental disorders, such as delivering information about the pandemic, decreasing and increasing negative and positive behaviors, learning about stress management techniques during studies, improving family relationships, and adjusting expectations related to academic activities (Browning et al., 2021). Spiritual religion with e-counseling platform approaches, including a behavioristic system, should also effectively reduce mental problems such as anxiety (Widiyanto et al., 2021).

The study identified several limitations; firstly, the data was collected only from a relatively homogeneous group of Jenderal Achmad Yani University undergraduate students. Secondly, the data collection process was conducted through an online survey using a Google Form questionnaire, where each participant had no direct interaction during data collection. Therefore, information bias and participation bias might have occurred.

## Conclusion and Implications

Several factors associated with anxiety during the COVID-19 pandemic are the year of study, teaching delivery method, and family members affected. Social support from parents, family, friends, teachers, classmates, and significant others is important to build the resilience psychology of students during a pandemic. To alleviate anxiety disorder, individuals may explore new learning environments amidst the pandemic, concentrating more during lectures and classes and engaging in positive activities with classmates, friends, and family. This study contributes to the existing body of evidence indicating that the GAD-7 instrument is useful for screening and evaluating the psychometric symptoms of GAD in college students susceptible to experiencing anxiety. Further studies can use another factor to identify a greater relationship with anxiety disorder. Furthermore, expanding the study scope by evaluating anxiety disorder across multiple universities and examining the variations among students at different educational levels is beneficial. Utilizing the GAD-7 instrument can aid in the early diagnosis and treatment of psychological distress among college students, facilitating the implementation of necessary and timely interventions for this disorder.

## Declaration

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### Author contributions

Conceptualization, DKN; methodology, NEM; validation, AES, BML; format analysis, NEM; investigation, DKN; data curation, AES; writing-preparation of the original draft, DKN, and AES, writing-review, and editing, DKN; visualization, BML; supervision, NEM, BML; project administration, NEM; All authors have read and agree to the published version of the manuscript.

### Conflict of interest

The authors declare there is no conflict of interest

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