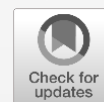*Original Research*

Anxiety among student nurses in the Philippines: A gender and year-level analysis and its contributing factors in the COVID-19 context

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Abstract

Background: The shift to online learning during the COVID-19 pandemic has raised concerns and heightened anxiety levels, especially among student nurses adapting to academic and clinical challenges.

Objective: This study aimed to assess the anxiety levels of student nurses during the COVID-19 pandemic, examining gender and year-level differences and identifying contributing factors.

Methods: A quantitative descriptive research design was employed, involving 305 student nurses from Levels 1 to 4, selected using proportionate stratified and systematic random sampling at a Philippine nursing school. Data were collected in March 2022 using the Beck Anxiety Inventory (BAI) and a self-made questionnaire. Descriptive and inferential statistics, including frequencies, percentages, means, Independent *t*-tests, and ANOVA, were utilized with a significance level of 0.05.

Results: The mean anxiety level among student nurses was 1.61, significantly differing by year level and gender ($p < 0.05$). The most contributing factor of

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anxiety was 'the adjustments to make with the sudden change of face-to-face classes to online or distance learning mode' (90.16%), while the least factor was 'lack of financial sources' (46.23%).

Conclusion: Student nurses had moderate anxiety levels, with gender and year level as significant contributing factors. Female student nurses experienced higher anxiety levels than males, and lower-level students experienced greater anxiety than their higher-level counterparts. Various factors, including academic, social, financial, and perceived health risk-related factors, affected student nurses' anxiety levels, with academic-related factors having the most significant impact and financial-related factors having the least impact.

Keywords

COVID-19; anxiety; student nurses; pandemics; male; female; year level; contributing factors

Background

As the COVID-19 outbreak came to an end and healthcare protocols were lifted, the transition to online learning among college students has raised concerns about their overall educational progress and significantly increased their anxiety levels (Dewart et al., 2020). Student nurses have had to adapt to the challenges of meeting academic requirements and clinical demands, resulting in heightened anxiety levels. Videbeck (2011) categorized anxiety into four levels: mild, moderate, severe, and panic, with each level causing both physiological and emotional changes in individuals. A study by Savitsky et al. (2020) revealed that during the COVID-19 lockdown, more than half of student nurses experienced moderate to severe anxiety.

Anxiety symptoms were connected with concerns about unpredictable changes in families' financial situations (Dickler, 2020). Implementing health protocols, such as quarantine and social distancing, led to decreased social support and reduced person-to-person interactions, negatively impacting the mental health of many students (Sundarasen et al., 2020). News and reports about COVID-19 affected students' perceived health risks (Sayeed et al., 2020). Dhar et al. (2020) also reported that an increased level of anxiety is associated with the fear of family members becoming infected with COVID-19. Literature has observed an association between students' gender, year level, and anxiety.

Mental health problems are prevalent among student nurses (Bartlett et al., 2016). However, no published study addresses the factors influencing anxiety levels among student nurses during the COVID-19 pandemic in the Philippines. Previous studies have identified various factors that could potentially increase

students' anxiety levels, but inconsistencies in findings have affected their reliability.

The study adopted a theoretical framework that explains Beck's Cognitive Theory. According to Beck et al. (1985), anxiety disorders can be seen as a preoccupation with or fixation on the concept of danger, coupled with an undervaluation of an individual's coping abilities. Currently, the Philippines is grappling with the COVID-19 pandemic, and as a result, student nurses have been particularly affected due to the shift to online-based learning. Therefore, our objective was to assess whether these factors are perceived as dangerous by student nurses and whether they have the potential to impact their anxiety levels.

Regarding gender, our study aimed to investigate whether there are differences in how males and females perceive the factors as dangerous and how they handle anxiety. Additionally, our study sought to determine whether the year level of student nurses affects their anxiety levels, as brain development is associated with age. We aimed to uncover whether well-experienced student nurses are more susceptible to experiencing anxiety or if they can better cope with potential episodes of anxiety.

The study aimed to identify the factors influencing anxiety levels among student nurses during the COVID-19 pandemic. More specifically, the study addressed the following questions: 1) What is the level of anxiety during the COVID-19 pandemic among student nurses? 2) Is there a significant difference in the level of anxiety during the COVID-19 pandemic among student nurses according to year level and gender? 3) What factors contributed to anxiety levels during the COVID-19 pandemic among student nurses?

Methods

Study Design
The study used a quantitative descriptive research design from a survey.

Samples/Participants
The study was conducted at Saint Louis University (SLU) - School of Nursing Baguio City. The number of students for each year level was as follows: Level 1 = 264, Level 2 = 299, Level 3 = 284, and Level 4 = 413. Using Yamane's formula (Yamane, 1973), the calculated sample size was 305 respondents. Proportionate stratified sampling was employed due to variations in the total number of students at each year level. Systematic random sampling was utilized when selecting respondents from each year level, involving the selection of SLU student nurses' emails every third count. The inclusion criteria comprised student nurses aged 18 and above who could read and comprehend English.

Exclusion criteria involved individuals aged 17 and below, those diagnosed with anxiety or any psychiatric disorder, and those currently taking psychiatric medication.

Instruments

The data collection instrument used was the Beck Anxiety Inventory (BAI), which was fully adopted from its creator, Aaron T. Beck. This standardized tool is employed to assess the level of anxiety. The tool demonstrated strong internal consistency with a Cronbach's α value of 0.92, and its test-retest reliability over one week was 0.75 (Beck et al., 1988). It also possessed a CVI value of 0.92. An additional questionnaire was developed based on various readings to identify factors associated with students' anxiety, and it had a CVI value of 0.89. A test-retest was conducted with ten student nurses who shared the same characteristics, resulting in a reliability score of 1.0 after ten days. These ten students were subsequently excluded from the actual study.

Data Collection

Following study approval, SLU emails were randomly selected using systematic random sampling, with emails chosen every third count. These selected emails were then provided to the research promoter, who had exclusive access. Subsequently, the research promoter invited the respondents to join their year-level Google Classrooms. Each year level had its Google Classroom, except for Level 4, due to the larger number of samples from that group. A Google Form containing information about the study's nature, purpose, procedure, and the estimated time required for survey completion (approximately 5 minutes) was uploaded to the Google Classroom.

In cases where a specific respondent declined or was found to be ineligible, a new SLU email address was selected. Data collection was done in March 2022, and respondents were granted seven days to complete the questionnaire via Google Forms, using either a cellphone or computer, to minimize the risk of COVID-19 transmission. Respondents had the option to revisit and provide additional answers to the survey questions using the same account. However, once the questionnaire was submitted, respondents could no longer provide further responses. After the data collection, the responses were categorized into four groups: Level 1, Level 2, Level 3, and Level 4, and were recorded for subsequent statistical analysis.

Data Analysis

We employed descriptive and inferential statistics, specifically the Independent *t*-test and ANOVA, to address the objectives of this study. The levels of anxiety and the factors influencing the anxiety levels of student nurses during the COVID-19 pandemic were presented using frequencies, percentages, and means. For the interpretation scale, we used the following parameters: minimal anxiety (0-0.75), mild anxiety (0.76-1.50), moderate anxiety (1.51-2.25), and severe anxiety (2.26-3.0). The F-test (ANOVA) was employed to determine any significant differences in anxiety levels during the COVID-19 pandemic among student nurses based on their year level. Additionally, the Independent *t*-test was utilized to assess any significant differences in anxiety levels during the COVID-19 pandemic among student nurses based on gender.

Ethical Considerations

The study was approved by the Research Ethics Committee of Saint Louis University (approval number SLU-REC-UG-2022-052). The Dean also approved access to the SLU emails provided by the department heads of levels 1, 2, 3, and 4. Online informed consent, consisting of all information and full disclosure of the study, has been obtained from the respondents before data collection.

Results

Profile of Participants

Table 1 shows that among the 305 respondents, there is a higher proportion of females, comprising 209 (68.52%), compared to males, totaling 96 (31.48%), categorized by gender. Regarding year level, Level 4 has the largest representation, with 100 (32.79%) students, as they constitute the highest population, whereas the smallest number of respondents comes from Level 1, consisting of 64 (20.98%) student nurses.

Table 1 The profile of the respondents (N = 305)

Characteristics	f	%
Gender		
Male	96	31.48
Female	209	68.52
Year Level		
Level 1	64	20.98
Level 2	72	23.61
Level 3	69	22.62
Level 4	100	32.79

Anxiety Level During COVID-19 Pandemic Among Student Nurses

Table 2 shows the levels of anxiety experienced by student nurses in year levels 1, 2, 3, and 4 during the COVID-19 pandemic. The most common classification among student nurses is moderate anxiety, comprising 94 responses (30.82%) out of 305 respondents. This is followed by mild anxiety, with 84 student nurses (27.54%), and severe anxiety, affecting 70 students (22.95%). The least prevalent classification is minimal anxiety, with 57 responses (18.69%). Furthermore, the overall mean anxiety level across all year levels is 1.615, falling within the category of moderate anxiety.

Table 2 Anxiety level during COVID-19 pandemic among student nurses (N = 305)

Anxiety Level	Year Level 1	Year Level 2	Year Level 3	Year Level 4
Minimal	12	7	11	27
Mild	12	13	27	32
Moderate	26	18	19	31
Severe	14	34	12	10
Mean per year level	1.66 (Moderate)	2.10 (Moderate)	1.46 (Mild)	1.24 (Mild)
Mean for all year levels	1.61 (Moderate)			

Anxiety During the COVID-19 Pandemic According to Year Level

Table 3 displays the anxiety levels experienced by student nurses during the COVID-19 pandemic, categorized by year level. The findings indicate that level 2 students had a moderate level of anxiety, with the highest mean score of 2.10. For level 1, anxiety levels were also moderate, with a mean score of 1.66. Level 3 students reported mild anxiety, with a mean score of 1.46, while level 4 students had the lowest mean score of 1.24, indicating mild anxiety as well. These results highlight a significant difference in anxiety levels among student nurses based on their year level, with a p-value of 0.0035 (<0.05).

Table 3 Anxiety level during COVID-19 pandemic among student nurses according to year level (N = 305)

Anxiety Level	Year Level 1	Year Level 2	Year Level 3	Year Level 4	p-value
	Mean	Mean	Mean	Mean	
	1.66 (Moderate)	2.10 (Moderate)	1.46 (Mild)	1.24 (Mild)	0.0035

Anxiety During COVID-19 Pandemic According to Gender

Table 4 shows the anxiety levels experienced by student nurses during the COVID-19 pandemic, categorized by gender. The findings revealed that male student nurses had a mild level of anxiety, with the lowest mean score recorded at 1.11. In contrast, female student nurses reported a moderate level of anxiety, with the highest mean score reaching 1.79. There was a significant difference in anxiety levels between male and female student nurses during the COVID-19 pandemic, with a p-value of 0.0017 (<0.05).

Table 4 Anxiety level during COVID-19 pandemic among student nurses according to gender (N = 305)

Anxiety Level	Male	Female	p-value
	Mean	Mean	
	1.11 (Mild)	1.79 (Moderate)	0.00177

Factors Contributing to Anxiety During COVID-19 Pandemic Among Student Nurses

Table 5 shows that the factor contributing to anxiety levels the most was the adjustment required to transition from face-to-face classes to online or distance learning mode, affecting 255 respondents (83.61%). In contrast, factors with lower scores included prolonged social isolation due to outdoor activity restrictions, which involved 191 respondents (62.62%), followed by the lack of in-person interaction with family and friends, impacting 184 respondents (60.33%). The factor with the least influence on the anxiety levels of student nurses was the lack of financial resources, affecting only 141 respondents (46.23%).

Table 5 Factors contributing to anxiety during COVID-19 pandemic among student nurses (N = 305)

Factors	f	%
Adjustments to make with the sudden change of face-to-face classes to online or distance learning mode	275	90.16
Perception of an increase in academic workload	262	85.90
Having my family at risk of contracting the COVID-19 virus and its variants	255	83.61
Inability to concentrate when studying leading to dissatisfaction and poor academic performances	251	82.3
Worries about unpredictable changes in the financial situation	232	76.07
Perception of having a risk of contracting COVID-19 and its variants	229	75.08
Prolonged social isolation due to restriction of outdoor activities	191	62.62
Lack of person-to-person interaction with my family and friends	184	60.33
Lack of financial resources during the COVID-19 pandemic	141	46.23

Discussion

Anxiety Level During COVID-19 Pandemic Among Student Nurses

The results of our study indicate that student nurses experience a moderate level of anxiety. This finding is supported by Kokturk Dalcali et al. (2021), who noted that anxiety levels among student nurses during the COVID-19 pandemic tend to be moderate due to a high prevalence of anxiety and posttraumatic stress disorder symptoms among students. Temiz (2020) also suggested that student nurses experience moderate anxiety, partly attributed to a negative relationship between their self-confident approach, seeking social support, and anxiety levels. In the Philippines, compliance with health protocols to prevent COVID-19 transmission has also contributed to student nurses experiencing moderate levels of anxiety (Oducado, 2021).

According to Schultz and Videbeck (2005), a moderate level of anxiety is characterized by a troubling sense that something is wrong, leading to nervousness or agitation. At this level of anxiety, individuals may face challenges in concentrating independently but still possess the capacity to analyze information, find solutions to problems, and acquire new knowledge with the assistance of others.

During the COVID-19 pandemic, our results suggest that a greater number of student nurses experience high anxiety levels than those with lower anxiety levels. This aligns with the findings of Savitsky et al. (2020), who reported a significant increase in anxiety levels among student nurses during the pandemic. The sociable nature of students, disrupted by the pandemic's restrictions, has contributed to their moderate level of anxiety. This implies that during the COVID-19 pandemic, student nurses' anxiety levels are influenced by heightened symptoms of worry, fear, restlessness, and apprehension about adverse outcomes. Qualitative research by Temiz (2020) also identified students' concerns and fears during the pandemic, further confirming increased anxiety levels.

The framework used in our study, Cognitive Theory, aligns with these findings, suggesting that an individual's perception of danger affects their emotional state. These emotional states can manifest physically as nervousness, restlessness, or tension, potentially impacting physical health. While student nurses may perceive the factors mentioned in our study differently during the pandemic, these perceptions collectively contribute to their moderate level of anxiety. Recognizing the level of anxiety among student nurses and clinical instructors is crucial, as it enables them to address their current situation and identify factors that may be mitigated to manage their anxiety effectively.

Anxiety During the COVID-19 Pandemic According to Year Level

Furthermore, Rondinelli et al. (2015) support the present study by indicating that sophomore students had statistically significantly higher anxiety levels than junior and senior nursing students. This difference in anxiety levels is attributed to the lack of familiarity with clinical settings, course expectations, and the format of application-based test questions. However, as students gain more experience and training, their anxiety levels tend to decrease. Alici and Copur (2022)also support this observation by noting that first-year students experience more severe anxiety than students in other year levels. First-year students face various challenges in the learning process, such as limited knowledge, absence of familiarity with instructors, stress, anxiety, and inadequate peer support. The added stressors of the COVID-19 pandemic have exacerbated their anxiety levels.

Furthermore, it is observed that as students progress to higher year levels, their knowledge increases, and they become less susceptible to anxiety. Fourth-year students in Central Luzon, Philippines, demonstrated improved coping skills, a better understanding of situational emergencies like the COVID-19 pandemic (Falguera et al., 2023), and an enhanced ability to apply nursing school principles and concepts. Fourth-year students are generally more mature and experienced in handling challenging situations. On the contrary, Onieva-Zafra et al. (2020) argued that student nurses with prior clinical experience had higher anxiety levels than Level 1 and Level 2 students, likely due to their increased expectations of competencies and skills. Fourth-year students often experience severe anxiety because of concerns about canceling graduation ceremonies and job hunting. Li et al. (2021) noted that sophomores, juniors, and seniors are more prone to develop anxiety than first-year students, primarily because they are not yet required to undertake clinical practicums, which could alleviate anxiety.

These results align with Cognitive Theory, which posits that a fixation on danger characterizes anxiety. The study identified variations in the perception of danger and, consequently, anxiety levels among different year levels of student nurses. These variations are attributed to differences in the brain development of the student nurses. Levels 1 and 2 showed higher anxiety levels due to their less developed brains and the increased anxiety stemming from limited clinical experience and interaction with peers and clinical instructors. In contrast, Levels 3 and 4 displayed lower anxiety levels, attributed to more advanced brain development and the opportunity to delve deeper into topics before the pandemic.

Anxiety During COVID-19 Pandemic According to Gender

The findings are consistent with Masha'al et al. (2022), who indicated that female students tend to have significantly higher anxiety levels due to being emotionally fragile and more sensitive than men. Similarly, a study by Oducado (2021) in the Philippines revealed that female student nurses reported higher anxiety levels than their male counterparts. His research findings suggest that during the COVID-19 pandemic, women were generally more cautious and worried than men. Women believed that being more careful and concerned could help reduce the risk of being significantly affected by COVID-19 (Galasso et al., 2020). However, it's worth noting that studies conducted by Ji et al. (2020) and Thahir et al. (2021) contradicted the findings of the present study. They argued that there was no significant gender difference in anxiety levels among college students. Thahir et al. (2021) mentioned that although their findings showed that females tend to have higher anxiety levels than males, these differences were not

statistically significant, suggesting that gender did not significantly influence emotional reactivity, such as anxiety. They further asserted that such gender-related differences would only manifest if environmental influences hindered the activities of both male and female students. They claimed that, due to the COVID-19 pandemic, male and female students experienced similar physical and emotional distress, contributing equally to their anxiety levels. Factors such as academic demands, activity restrictions, and safety concerns affected both genders similarly, indicating that male students could experience the same level of anxiety as females during the COVID-19 pandemic.

Although some studies contradict the findings of the present study, we have confirmed the existence of a significant gender difference in anxiety levels among student nurses. These results align with Cognitive Theory, which posits that anxiety involves a fixation on danger. In the present study, variations in the perception of threat and, consequently, anxiety levels were observed between genders. This difference in interpretation may be attributed to the influence of hormonal changes.

Females, due to the experience of menstruation, often undergo more pronounced hormonal fluctuations compared to males. These hormonal changes can affect their anxiety levels. Furthermore, males and females tend to employ different coping mechanisms. Females often ruminate on their issues, which can exacerbate their anxiety, whereas males tend to engage in more passive, problem-focused coping strategies. These variations in coping mechanisms contribute to differences in how male and female student nurses perceive problems such as physical restrictions, academic-related matters, and emotional distress, ultimately influencing their anxiety levels.

Factors Contributing to Anxiety During COVID-19 Pandemic Among Student Nurses

The present study highlights that the abrupt shift to online or distance learning disrupted the typical learning patterns of student nurses, leading to difficulties in adaptation and an increased level of anxiety. This finding is supported by Fawaz and Samaha (2021), who noted that the sudden change during the pandemic hindered student nurses from acquiring adequate practical or clinical knowledge, as these aspects of health sciences specialties are challenging to deliver online. Furthermore, the rapid adjustment to distance learning proved highly stressful for student nurses, contributing to heightened anxiety symptoms.

These results suggest that the change in learning mode significantly impacted student nurses. The School of Nursing (SON) curriculum traditionally involves

face-to-face learning, incorporating activities such as return demonstrations, hospital duties, and community duties. However, as this learning mode was disrupted, the acquisition of essential skills and hands-on experiences required by student nurses was compromised, leading to increased anxiety levels.

The present study also reveals that the perception of an increased academic workload impacts the anxiety levels of student nurses. Shafiei Sarvestani et al. (2019) noted that students often express concerns about the overwhelming workload, as the usual engaging learning experiences they were accustomed to have been replaced by an excessive number of module activities. Similarly, Sundarasen et al. (2020) observed that students were experiencing stress due to the high volume of tasks, which significantly influenced their anxiety levels. Consequently, these results suggest that the shift from face-to-face classes has resulted in limited lectures and an increased reliance on self-directed learning for student nurses. This shift has posed challenges in comprehending the material, leading to heightened anxiety levels. In contrast to the pre-pandemic period, when most topics were taught through unrestricted student-teacher interactions, the pandemic-induced changes have brought about difficulties in understanding the lessons, thus contributing to increased anxiety levels.

Another factor that influenced the anxiety levels of student nurses is their concern about a family member contracting the COVID-19 virus and its variants. This finding is supported by the study conducted by Lee et al. (2021), which suggested that worries about the health of loved ones can significantly impact students' anxiety levels. The present study observed that student nurses were more preoccupied with the well-being of their families being at risk of infection rather than their chances of contracting the virus. Schiff et al. (2021) argued that students might be less concerned because they perceive themselves as at lower risk than their older family members with comorbidities. Additionally, the study by Taghrir et al. (2020) indicated that medical students have a high level of knowledge about COVID-19 and practice preventive measures. Therefore, the present study implies that student nurses comprehensively understand COVID-19 transmission, as infection prevention measures are part of the School of Nursing's curriculum. This knowledge may contribute to their reduced anxiety about contracting the virus.

Furthermore, the present study demonstrates that social-related factors, such as the absence of in-person interactions and prolonged social isolation, also influence the anxiety levels of student nurses. This aligns with Fancourt et al. (2021), who stated that experiencing loneliness and prolonged social isolation during lockdowns can negatively affect mental well-being, leading to anxiety. However, the present study's results suggest that social-related factors

contribute less to anxiety than other factors. This could be attributed to the availability of social media platforms, enabling distance communication. Juvonen et al. (2021) argued that electronic connections with loved ones alleviate loneliness and emotional distress during the COVID-19 pandemic. Despite the SON curriculum's emphasis on in-person interactions, the lack of face-to-face contact has influenced the anxiety levels of student nurses. Nevertheless, the availability of platforms facilitating peer communication may explain why social-related factors contribute less to anxiety than others.

Moreover, the present study reveals that student nurses perceive the lack of financial resources as the least significant factor affecting their anxiety levels. This contrasts with many previous studies, which assert that financial insufficiency is the primary contributor to students' anxiety (Chen & Lucock, 2022; Islam et al., 2020; Sundarasen et al., 2020). The present study's results may suggest that most student nurses enrolled in the university come from families with a stable financial status, as supported by Li et al. (2021), who found that student nurses from financially secure families have a lower risk of experiencing anxiety than those from financially disadvantaged backgrounds. This implies that student nurses may not be overly concerned about financial issues. The burden of financial problems might rest more on their parents, aligning with Erik Erikson's theory of stages of development, which posits that adults focus on employment and income generation to provide for their children's needs (Mcleod, 2023).

The present study demonstrates that student nurses' anxiety levels are influenced by various academic, economic, social, and health-related factors brought about by the COVID-19 pandemic. These factors represent perceived threats to student nurses. This aligns with the cognitive theory employed in the study, which suggests that how student nurses perceive these threats during the pandemic impacts their anxiety levels. The results reveal that student nurses' perceptions of these factors have indeed influenced their anxiety levels, resulting in a moderate level of anxiety.

Limitations

The present study has several limitations. One of these limitations pertains to the exclusion criteria. Some students invited to participate in the study were excluded because they currently have diagnosed mental health conditions and are undergoing medication treatment. Consequently, the research promoter had to substitute some participants to meet the required population for conducting the study. Additionally, there were students who were invited to join the Google Classroom for data collection but chose not to participate. The specific reasons for their non-participation remain unknown. Furthermore, the study was

conducted during the later phase of the pandemic, approximately two years after its onset. During this period, COVID-19 cases had decreased, and certain health protocols had been lifted. These factors may have influenced the responses of student nurses when answering the questionnaires. Lastly, the study had an imbalance in gender representation among the respondents. Female respondents accounted for 68.52% of the sample, while males comprised only 31.48%, resulting in a less representative male presence.

Conclusion

Student nurses had varying levels of anxiety, with gender and year level emerging as significant factors of anxiety among them. These anxiety levels are influenced by various factors, including academic, social, financial, and perceived health risk-related aspects. To address these findings, it is recommended that the existing academic counseling services in the School of Nursing, led by recognized counselors, be promoted more extensively to students and other professionals. This can be achieved by disseminating educational materials such as brochures, pamphlets, or flyers to raise awareness about mental health and equip individuals with effective strategies for coping with anxiety. Additionally, introducing psychiatric concepts in lower year levels could prove beneficial for facilitating anxiety management. Furthermore, organizing webinars and seminars with the participation of experts can encourage student nurses and professionals to engage in discussions centered on adaptation and appropriate coping mechanisms in the context of the current pandemic.

Authors' Contributions
FLP is a Lead Person in this study who constructed and checked all the contents of the study output as well as drafted and revised the manuscript. Other authors contributed to the study design, data collection, analysis, and manuscript writing. All authors were accountable for the study and approved the final version of the article to be published.

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Data Availability Statement

Data were available upon request to the corresponding author.

Declaration of the Use of AI in Scientific Writing

The article was subjected to Plagscan and Grammarly before it was submitted for publication.

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