

Research Article

Psychosocial Metrics and Students Academic Performance in Biology in Secondary Schools in Nsit Atai Local Government Area, Akwa Ibom State, Nigeria

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Abstract

The study examined psychosocial metrics and students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. The study was guided by two research questions and two research hypotheses. A correlational research design was adopted for the study. The population of the study consisted 2635 Senior Secondary Two (SS II) Biology students in public secondary schools in Nsit Atai Local Government Area. A sample size of 328 Biology SS II students obtained using Taro Yamane's formula was used for the study. A simple random sampling technique was used in selecting the sample size for the study. Two researcher developed instruments were used in collecting data for the study. The instruments were tagged "Psychosocial Metrics Questionnaire (PMQ) and Biology Performance Test (BPT)". The instruments were duly validated by three experts in Faculty of Education, University of Uyo, Akwa Ibom State. After which Cronbach Alpha statistics was used in obtaining reliability coefficients of 0.82 and 0.84 for the PMQ and BPT respectively. Pearson Product Moment Correlation Statistics was used in answering the research questions and in testing the hypotheses at 0.05 level of significance. The findings of the study revealed that peer pressure and anxiety significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. Recommendations made among others included; Biology teachers should adopt instructional approaches, such as practical activities, real-life applications and instructional technologies to improve students' academic performance. Also, schools should adopt supportive teaching strategies and provide effective guidance services to help reduce students' academic anxiety in Biology.

Keywords

Psychosocial Metrics, Students' Academic Performance, Peer Pressure, Anxiety, Biology, Nsit Atai, Akwa Ibom State

1. Introduction

Students' academic performance in Biology has remained a major concern for educators, policymakers, and researchers across many educational systems worldwide. Biology, as a

core science subject, provides foundational knowledge for careers in medicine, agriculture, environmental science, and biotechnology. Despite its importance, reports from examination bodies such as the West African Examinations Council

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and the National Examination Council consistently reveal fluctuating achievement levels among secondary school students. These trends suggest that a significant proportion of learners struggle to attain proficiency in key biological concepts. The abstract nature of topics such as genetics, cell division, and ecology often poses comprehension challenges for students [6]. In many classrooms, traditional lecture-based teaching methods continue to dominate instructional practice. Such approaches may limit students' engagement, critical thinking, and practical understanding of biological processes. Additionally, inadequate laboratory facilities and limited access to instructional materials further constrain effective learning experiences.

Learners' attitudes toward Biology, including their interest, motivation, and self-efficacy, significantly affect their academic performance [4]. Studies indicate that students who perceive Biology as difficult or irrelevant are less likely to invest effort in mastering the subject matter. Assessment practices that focus primarily on rote memorization rather than conceptual understanding may further hinder meaningful learning. Moreover, large class sizes and limited teacher-student interaction can reduce opportunities for individualized support. Gender differences in performance have also been reported in some contexts, raising concerns about equity in science education. The integration of innovative strategies such as inquiry-based learning and technology-enhanced instruction has been proposed as a means of improving achievement. Posited that so many factors influence the academic performance of students but the outstanding one is influence of psychosocial metrics [2].

Psychosocial variables are the psychological and social factors that influence an individual's thoughts, emotions, behaviours and general functioning. Opined that psychosocial variables represent the interaction between internal mental processes and the external social environment [13]. These variables include attitudes, beliefs, personality traits, motivation and emotional states. Psychosocial variables also involve social influences such as family background, peer relationships, culture and socioeconomic status. Asserted that psychosocial variables play a critical role in shaping how individuals perceive situations and respond to challenges [10]. These variables influence decision-making, coping strategies and interpersonal relationships. In educational and sports settings, psychosocial variables affect learning, performance, teamwork and discipline. In furtherance, positive psychosocial variables can enhance confidence, resilience and satisfaction. Furthermore, negative psychosocial variables may result in stress, anxiety, poor performance, or maladaptive behaviour. Asserted that although many psychosocial variables can enhance students' academic performance, the most outstanding ones are Self-esteem, motivation, peer pressure and anxiety [8].

Peer pressure refers to the influence that individuals or groups of similar age or status exert on a person's attitudes, behaviours and decisions. It occurs when an individual feels encouraged or compelled to conform to peers' expectations or

actions. Maintained that peer pressure can be direct, such as verbal persuasion or coercion [5]. It can also be indirect, arising from the desire to gain acceptance or avoid rejection. Peer pressure plays a significant role during adolescence and young adulthood. It can have positive effects, such as encouraging healthy habits, academic effort, or teamwork. However, it can also result in negative behaviours like substance abuse, risky activities, or poor decision-making [11]. Also, peer pressure affects self-esteem and confidence, particularly in individuals seeking social approval. The effect of peer pressure on students' academic performance in any subject depends on personal values, self-control and social support [12]. In furtherance, when peers are not negatively influenced by peers, this would reduce anxiety in writing examination to enhance academic performance.

Anxiety is a psychological and emotional state marked by feelings of tension, worry and apprehension about potential or perceived threats. It often arises in response to stress, uncertainty, or challenging situations. Stated that anxiety involves both mental and physical components, including excessive fear, restlessness, increased heart rate and muscle tension [3]. It can be a normal and adaptive response that helps individuals remain alert and prepared for danger. However, when anxiety becomes excessive or persistent, it can interfere with students' daily functioning and vitality, thereby directly or indirectly influencing academic performance [1]. Anxiety affects thinking by increasing negative thoughts and reducing concentration and decision-making ability. It also influences behaviour by leading to avoidance of certain situations or activities. Also, in performance settings such as sports or academics, anxiety can either enhance or impair performance depending on its intensity. Moderate levels of anxiety may improve focus and motivation, while high levels often reduce efficiency and confidence. Opined that anxiety always influence students' academic performance [9].

It is based on the roles of psychosocial variables such as peer pressure and anxiety in determining students' academic performance that the researcher is motivated to conduct the present study on psychosocial metrics and students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area of Akwa Ibom State.

1.1. Statement of the Problem

Strong academic performance in Biology equips students with in-depth scientific knowledge and critical-thinking abilities that support success across Science, Technology, Engineering and Mathematics (STEM) disciplines. These skills open pathways to competitive and high-demand professions such as medicine, engineering, biotechnology and other science-related careers. In spite of these advantages, the education sector continues to grapple with the persistent challenge of poor student achievement in Biology. Low performance in the subject is frequently linked to a range of psychosocial difficulties. These include low self-esteem, academic anxiety and

decreased motivation to learn. Students may also develop negative attitudes toward science and experience feelings of shame or embarrassment about their performance. In some cases, this may lead to social withdrawal and increased susceptibility to peer pressure. Behavioural problems and learned helplessness can further compound the situation. Many affected students experience heightened stress levels and diminished aspirations for the future. Poor achievement may also contribute to identity confusion and a weakened academic self-concept. Collectively, these factors often result in reduced participation and engagement in school-related activities.

Many scholars have investigated a wide range of factors, including instructional strategies and parental involvement, in efforts to address students' poor academic performance in Biology. Despite these interventions, the persistence of the problem suggests that previous approaches have not yielded consistently dependable results. This continuing trend prompts further inquiry into other possible determinants of students' underachievement in the subject. It raises concern as to whether psychosocial variables may significantly contribute to poor academic outcomes in Biology. Psychosocial factors are widely recognized as influential in shaping students' learning experiences and overall academic performance across subjects. Psychosocial impact may extend to students' attitudes, motivation, emotional stability and self-perception in relation to learning. Given the critical role these variables can play, it becomes necessary to examine their specific influence on performance in Biology. Consequently, the researcher is motivated to undertake this study to explore the predictive capacity of psychosocial metrics on students' academic achievement in Biology. The study specifically focuses on secondary schools in Nsit Atai Local Government Area of Akwa Ibom State. Through this investigation, the researcher seeks to provide empirical evidence that may contribute to more effective strategies for improving students' performance in Biology.

1.2. Purpose of the Study

The main purpose of the study is to determine the extent to which psychosocial metrics predict academic performance in Biology in secondary schools in Nsit Atai Local Government Area. Specifically, the study sought to determine;

- 1) The extent to which peer pressure predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.
- 2) The extent to which anxiety predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

1.3. Significance of the Study

This study on psychosocial metrics and students' academic performance in Biology would be of immense benefit to the

students, teachers, school administrators, parents, Federal/State/Local Government Areas, curriculum planners in education, educational psychologist and researchers.

The students would benefit from the findings of the study as it would enable them to better understand how their mindset, motivation and social environment affect their academic performance in Biology.

The findings of the study would be beneficial to the teachers as it would enhance adjusting teaching methods and classroom environments to foster positive psychosocial conditions for learning.

The findings of the study would be useful to school administrators as it would boost developing policies and support systems that improve student academic performance.

To the parents, the findings of the study would be essential, as it would provide better emotional and academic support at home

The findings of the study would be beneficial to the Federal/State/Local Government Areas as it would enhance developing targeted interventions to improve students' academic performance by addressing factors like motivation, self-esteem and classroom environment.

Curriculum planners in education would benefit from the findings of the study as it would enable them to design Biology curricula that integrate student-centered and psychologically supportive approaches.

Educational psychologists would benefit from the findings of the study as it would enable them to tailor interventions that address emotional and social factors influencing learning.

To the researchers' the findings of the study would be useful to them as it would provide literature and reference point in this area of the study and other related areas.

1.4. Research Questions

The following research questions were formulated to guide the study

- 1) To what extent does peer pressure predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?
- 2) To what extent does anxiety predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

1.5. Research Hypotheses

The following research hypotheses were formulated to guide the study;

- 1) Peer pressure does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.
- 2) Anxiety does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area.

2. Literature Review

This section reviews relevant theoretical and empirical literature on psychosocial variables and students' academic performance in Biology. It is organized under the following sub-headings: concept of academic performance in Biology, psychosocial variables and learning, peer pressure and academic performance, anxiety and academic performance, and empirical studies.

2.1. Concept of Academic Performance in Biology

Academic performance refers to the level of achievement attained by students in their educational pursuits, usually measured through tests, examinations, and other assessment tools. In Biology, academic performance goes beyond mere recall of facts to include understanding of concepts, application of knowledge, and development of scientific skills such as observation, experimentation, and analysis.

Scholars have consistently reported that students' performance in Biology remains unstable and often unsatisfactory, particularly in secondary schools [6]. This trend has been attributed to the abstract nature of many biological concepts such as genetics, ecology, and cell processes, which require higher-order thinking skills. In addition, the continued use of teacher-centered instructional methods limits students' active participation and reduces opportunities for experiential learning.

Studies also indicate that environmental factors such as inadequate laboratory facilities, large class sizes, and insufficient instructional materials negatively affect students' understanding of Biology. These constraints hinder practical engagement, which is essential for effective science learning. Consequently, students may develop negative attitudes toward Biology, thereby affecting their performance.

2.2. Psychosocial Variables and Learning

Psychosocial variables refer to the combination of psychological and social factors that influence an individual's behaviour, emotions, and overall functioning. These variables emerge from the interaction between internal cognitive processes and external social environments [13]. They include factors such as motivation, self-esteem, peer influence, anxiety, attitudes, and socioeconomic background.

Emphasized that psychosocial variables significantly shape how learners perceive academic tasks, respond to challenges, and regulate their learning behaviours [10]. Positive psychosocial conditions, such as supportive peer relationships and emotional stability, enhance students' confidence and academic engagement. In contrast, negative psychosocial conditions may lead to stress, low self-worth, and poor academic outcomes.

In the context of education, psychosocial variables are critical because they influence students' interest in learning, persistence, and ability to cope with academic challenges. Identified peer pressure and anxiety as particularly influential variables during adolescence, a stage characterized by increased social interaction and emotional sensitivity [8].

2.3. Peer Pressure and Academic Performance

Peer pressure refers to the influence exerted by individuals of similar age or social group on a person's attitudes, values, and behaviours. During adolescence, peers become an important reference group, often shaping students' academic and social decisions.

Explained that peer pressure can be either positive or negative [5]. Positive peer influence encourages students to adopt productive study habits, participate actively in classroom activities, and strive for academic excellence. For instance, students who associate with academically oriented peers are more likely to develop interest in learning and improve their academic performance.

On the other hand, negative peer pressure can lead to behaviours that undermine academic success, such as truancy, lack of concentration, and disengagement from school activities [11]. Students who seek acceptance from peers may conform to behaviours that are not academically beneficial, thereby affecting their performance in subjects like Biology.

Further noted that the impact of peer pressure on academic performance depends on individual characteristics such as self-control, personal values, and family support [12]. Students with strong self-regulation skills are better able to resist negative peer influence and maintain focus on their academic goals.

Empirical studies have shown that peer influence significantly predicts students' academic performance. Positive peer interactions foster collaboration, knowledge sharing, and healthy competition, all of which contribute to improved learning outcomes. Conversely, negative peer environments can diminish motivation and lead to poor academic achievement.

2.4. Anxiety and Academic Performance

Anxiety is a psychological state characterized by feelings of tension, worry, and apprehension, often arising in response to perceived threats or challenging situations. In academic settings, anxiety is commonly associated with examinations, classroom participation, and performance expectations.

Described anxiety as involving both cognitive and physiological components, including excessive worry, restlessness, and increased heart rate [3]. While moderate levels of anxiety can enhance alertness and motivation, excessive anxiety can impair cognitive functioning and hinder academic performance.

Observed that high levels of anxiety reduce students' ability

to concentrate, process information, and recall learned material [1]. This is particularly detrimental in subjects like Biology, which require critical thinking and conceptual understanding. Anxiety can also lead to avoidance behaviours such as skipping classes or procrastinating on assignments.

Asserted that anxiety consistently influences students' academic performance, often negatively when it becomes excessive [9]. Students experiencing high anxiety may develop low self-efficacy and fear of failure, which further limits their academic engagement.

In addition, anxiety affects students' emotional well-being and can lead to decreased interest in learning. In Biology classrooms, anxious students may struggle with laboratory activities, fear making mistakes, and avoid participating in discussions, all of which contribute to lower academic achievement.

2.5. Empirical Studies on Psychosocial Variables and Academic Performance

A number of empirical studies have examined the relationship between psychosocial variables and students' academic performance. Findings generally indicate that psychosocial factors are strong predictors of academic outcomes.

For instance, studies have shown that peer pressure significantly influences students' academic performance, with positive peer relationships enhancing achievement and negative influences leading to poor outcomes [12]. Similarly, research on anxiety has revealed that it has a significant effect on students' academic performance, particularly when it interferes with cognitive processes and emotional stability [7].

Other related studies have emphasized that psychosocial variables do not operate in isolation but interact to influence students' academic experiences. For example, students exposed to negative peer pressure may also experience increased anxiety, which further affects their academic performance. Conversely, supportive peer environments can reduce anxiety and promote better learning outcomes.

Despite these findings, there is still limited research focusing specifically on the predictive capacity of peer pressure and anxiety on students' academic performance in Biology within specific local contexts such as Nsit Atai Local Government Area of Akwa Ibom State. This gap underscores the need for further investigation.

2.6. Summary of Literature

The reviewed literature indicates that while considerable attention has been given to factors affecting students' academic performance, much emphasis has been placed on instructional and cognitive variables. Psychosocial variables, particularly peer pressure and anxiety, have not been sufficiently explored in relation to Biology performance in many local contexts.

Moreover, existing studies often examine these variables independently rather than as predictive factors within a unified

framework. There is therefore a need for empirical studies that investigate the extent to which psychosocial metrics predict students' academic performance in Biology.

The present study seeks to fill this gap by examining the predictive influence of peer pressure and anxiety on students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area of Akwa Ibom State.

3. Methodology

A correlational research design was adopted for this study. This design was considered appropriate because it enables the identification of patterns and relationships among variables, thereby allowing predictions to be made based on observed correlations. In this study, the extent to which psychosocial variables of anxiety and peer pressure predict students' academic performance in Biology is examined. The study was conducted in Nsit Atai Local Government Area of Akwa Ibom State. Nsit Atai Local Government Area is one of the thirty-one Local Government Areas in Akwa Ibom State and lies between latitudes 4°25'N and 5°32'N of the equator and longitude 7°29'E of the Greenwich Meridian. The area was chosen for the study due to the observed poor academic performance of students in Biology.

The population of the study comprised 736 Senior Secondary Two (SS II) students in public secondary schools in Nsit Atai Local Government Area. A sample size of 259 SS II students, determined using Taro Yamane's formula, was used for the study. A simple random sampling technique was employed in selecting the sample. Two researcher-developed instruments were used for data collection, namely the Psychosocial Metrics Questionnaire (PMQ) and Biology Performance Test (BPT). The instruments were validated by three experts from the Faculty of Education, University of Uyo, Uyo. Thereafter, Cronbach Alpha was used to obtain the reliability coefficients, yielding values of 0.82 for the PMQ and 0.84 for the BPT. Pearson Product Moment Correlation statistics was used in answer the research questions and in testing the hypotheses at the 0.05 level of significance. The findings shown that self-esteem and peer pressure significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area. Akwa Ibom State.

4. Results

4.1. Method of Data Analysis

The data collected is statistically analysed using Pearson Product Moment Correlation Statistics in answering the research questions and in testing the hypotheses at 0.05 level of significance.

4.2. Data Analysis and Results

Answers to research questions and hypotheses testing are done in this section:

4.2.1. Research Questions

Research Question 1: To what extent does peer pressure predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

Table 1. Summary of Regression Analysis of the extent to which Peer Pressure Predict Students' Academic performance in Biology (N=259).

Variables	R	R ²	Adjusted R ²
Peer Pressure (X)			
Students' Academic Performance (Y)	.819	.671	.671

Source: Field Work (2025)

Table 1 shows the extent to which peer pressure predict students' academic performance in Biology. The coefficient of correlation (R) of .819 shows that peer pressure predicts students' academic performance in Biology to a very high extent. Also, the coefficient of determination (R²) value of .819 indicates that peer pressure predict up to 81.9 percent variation in students' academic performance in Biology. This result shows that peer pressure predict students' academic performance in

Table 3. Regression Analysis of the prediction of Students Academic Performance in Biology by Peer Pressure (N=259).

Models	Sum of Square	DF	Mean Square	F	Sig	Remarks
Regression	552.182	1	552.182	3.1029	.003	Significant
Residual	45734.532	257	177.955			
Total	46286.714	258				

*= Significant at .05 alpha level. Source: Field Work (2025)

The results of Table 3 shows that the p-value of .003 is less than .05 at 1 and 257 degrees of freedom and at .05 level of significance. Therefore the null hypothesis which stated that peer pressure does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area is rejected. Therefore, the researcher concludes that peer pressure significantly predicts

Biology to a very high extent.

Research Question 2: To what anxiety predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area?

Table 2. Summary of Regression Analysis of the extent to which Anxiety Predict Students' Academic performance in Biology (N=259).

Variables	R	R ²	Adjusted R ²
Anxiety (X)			
Students' Academic Performance (Y)	.729	.531	.530

Source: Field Work (2025)

Table 2 shows the extent to which anxiety predict students' academic performance in Biology. The coefficient of correlation (R) of .729 shows that anxiety predict students' academic performance in Biology to a high extent. Also, the coefficient of determination (R²) value of .531 indicates that anxiety predicts up to 53.1 percent variation in students' academic performance in Biology. This result shows that anxiety predicts students' academic performance in Biology to a high extent.

4.2.2. Hypotheses Testing

H₀₁: Peer pressure does not significantly predict students' academic performance in Nsit Atai in secondary schools in Nsit Atai Local Government Area of Akwa Ibom State.

students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State.

H₀₂: Anxiety does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area of Akwa Ibom State.

Table 4. Regression Analysis of the prediction of Students Academic Performance in Biology by Anxiety (N=259).

Models	Sum of Square	df	Mean Square	F	Sig	Remarks
Regression	518.752	1	518.752	3.19	.001	Significant
Residual	41726.718	257	162.361			
Total	42245.47	258				

*= Significant at .05 alpha level. Source: Field Work (2025)

The results of Table 4 shows that the p-value of .001 is less than .05 at 1 and 257 degrees of freedom and at .05 level of significance. Therefore the null hypothesis which stated that anxiety does not significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area of Akwa Ibom State is rejected. Therefore the researcher concludes that anxiety significantly predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State.

4.3. Findings of the Study

From the Findings, it was observed that peer pressure significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area. Anxiety significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area of Akwa Ibom State.

4.4. Discussion of Findings

The result of the first research hypothesis shown that peer pressure significantly predicts students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. This achievable because peers strongly influence learning behaviours and attitudes. When students interact with motivated and high-achieving peers, they often adopt similar study habits and positive attitudes toward Biology. Such influence can encourage collaboration, healthy competition, and the exchange of academic ideas. Peers who value success in chemistry can create a learning culture that promotes persistence and discipline. Positive peer pressure often motivates students to attend classes regularly and participate actively in laboratory activities. Conversely, negative peer pressure can lead to distractions and reduced focus on academic goals. Students who associate with peers uninterested in chemistry may lose motivation and perform poorly. The findings of the study is in lined with the submission made that peer pressure influences students' academic performance [12].

The result of the second research hypothesis shown that anxiety significantly predicts students' academic performance

in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State. This attainable directly affects their cognitive, emotional, and behavioural functioning during learning and assessment. When students experience high levels of anxiety, their ability to concentrate, recall information, and process complex chemical concepts diminishes, leading to poor academic outcomes. Anxiety triggers physiological responses such as increased heart rate and tension, which can distract students from effectively engaging in problem-solving and laboratory activities. In Biology, a subject that requires logical reasoning and conceptual understanding, anxiety can lower self-efficacy and confidence, making students doubt their abilities. This emotional distress often results in avoidance behaviours, such as skipping classes or procrastinating on assignments, further hindering performance. The findings of the study is in agreement with the submission made that anxiety significantly predicts academic performance of students [7].

5. Conclusion

Based on the data collected, it could be concluded that self-esteem, motivation, peer pressure and anxiety significantly predict students' academic performance in Biology in secondary schools in Nsit Atai Local Government Area, Akwa Ibom State.

6. Recommendations

Schools should promote positive peer interactions through cooperative learning, group projects, and peer mentoring programs that encourage academic engagement in Biology. Guidance counsellors should educate students on resisting negative peer influence and making independent academic decisions.

Parents should be encouraged to actively participate in their children's academic activities by monitoring homework, providing learning materials, and offering emotional support. Schools should strengthen home, school collaboration through regular communication and involvement of parents in academic programs related to Biology.

Abbreviations

PMQ	Psychosocial Metrics Questionnaire
SS II	Senior Secondary Two
BPT	Biology Performance Test

Author Contributions

Rosemary Ekpenyoung Asuquo: Conceptualization, Data curation, Funding acquisition, Investigation, Resources, Validation, Writing – original draft, Writing – review & editing

Luqman Ayanlola Atanda: Data curation, Formal analysis, Methodology, Project administration, Software, Supervision, Visualization, Writing – review & editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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