



Impact of family income on students' academic performance in selected public secondary schools in South-East Nigeria

Onodugo Ifeanyi Chris¹, Dr. Igatta Thomas Ogbonna²

¹ Professor, Department of Business Education, Enugu State College of Education, Enugu, Enugu State, Nigeria

² Department of Education Management, Charisma University, Montana, USA

Abstract

This study examined the relationship between family income and students' academic performance in selected public secondary schools in South-East Nigeria. A cross-sectional school-based survey design was adopted, involving 260 Senior Secondary Two (SS2) students drawn from Abia, Anambra, Ebonyi, Enugu and Imo States. Family income was classified into five monthly income categories, while academic performance was measured using students' last-term average percentage scores and grade categories. Other variables included parental education and occupation, family type and size, supplementary tuition, adequacy of learning materials, meals per day, attendance and study hours. The data reveal a pronounced socioeconomic gradient in academic achievement: students from higher-income households generally recorded higher scores and were more strongly represented in the distinction category, while lower-income students were concentrated more heavily in the fail and pass categories. Higher family income also coincided with greater access to supplementary tuition, adequate learning materials, regular meals, longer study periods and higher attendance. The findings indicate that family income is an important socioeconomic correlate of academic performance and that differences in educational resources constitute plausible pathways through which economic inequality may be reflected in students' outcomes. Because the design is cross-sectional, the observed relationships are interpreted as associations rather than definitive causal effects. The study recommends targeted educational support, school-based supplementary learning, improved access to learning materials, nutrition support and equity-sensitive educational policy.

Keywords: Family income, academic performance, secondary school students, socioeconomic status, learning materials, tuition support, educational inequality, public secondary schools, South-East Nigeria

Introduction

Education is widely regarded as one of the most important instruments for human capital development, socioeconomic mobility, poverty reduction, social inclusion and sustainable national development. At the individual level, educational attainment enhances knowledge, skills, employability, productivity and opportunities for improved living standards. At the societal level, a functional education system contributes to economic growth, technological development, social cohesion and the production of skilled human resources. However, access to schooling alone does not guarantee meaningful educational outcomes. Contemporary educational policy has therefore increasingly shifted attention from school enrolment towards the quality of learning and the factors that determine students' academic achievement (World Bank, 2024a) ^[17].

Academic performance is a multidimensional outcome influenced by individual, family, school and wider socioeconomic factors. Student characteristics such as motivation, study habits, attendance and cognitive ability interact with parental characteristics, household resources, teacher quality, school infrastructure and the broader socioeconomic environment. Among these factors, family socioeconomic circumstances have remained particularly important because the family represents the primary environment within which children obtain material, emotional and educational resources. Socioeconomic status is commonly conceptualized through interrelated dimensions including household income, parental education, occupation, wealth and access to material resources

(Rodríguez-Hernández *et al.*, 2020) ^[10]. Although these components interact, family income is particularly relevant because it determines the household's immediate capacity to purchase educational goods and services.

Family income refers broadly to the financial resources available to a household from salaries, wages, business activities, farming, investments, transfers and other sources over a specified period. Within education, income can influence the ability of parents to provide textbooks, writing materials, school uniforms, transportation, digital devices, internet access, private tutoring, nutritious food and an appropriate environment for studying. Families with relatively high and stable incomes are generally better positioned to make these investments without compromising other essential household needs. Conversely, households experiencing severe financial constraints may be forced to prioritize food, housing, health care and other immediate necessities over educational expenditure. Consequently, students from economically disadvantaged households may attend the same public schools as their more advantaged counterparts while experiencing substantially different learning environments outside school.

The relationship between socioeconomic background and educational performance has been extensively investigated internationally. Evidence generally demonstrates an association between socioeconomic circumstances and academic achievement, although the magnitude of the relationship varies according to how socioeconomic status and achievement are measured and according to contextual factors. Rodríguez-Hernández *et al.* (2020) ^[10] identified

parental education, occupation, income, household resources and neighbourhood resources as important components used in measuring socioeconomic status and found a positive relationship between socioeconomic status and academic outcomes.

Family income may influence achievement through a chain of educational opportunities and constraints. A household with greater financial capacity can purchase learning materials, provide internet connectivity, finance supplementary lessons and ensure that children have adequate nutrition. Higher-income households may also reduce the amount of domestic or income-generating work expected of school-age children, thereby increasing the time available for studying. By contrast, financial hardship can restrict these opportunities simultaneously. The result may be cumulative educational advantage for some students and cumulative disadvantage for others.

Learning materials constitute one important pathway. Effective learning requires access not merely to classroom instruction but also to materials that allow students to revise, practise and independently explore what has been taught. Textbooks, revision materials and digital educational resources extend learning beyond classroom hours. Where these resources are scarce, students may depend almost entirely on notes received during lessons. UNICEF (2024c)^[16] identifies inadequate educational infrastructure and insufficient learning materials among factors constraining educational outcomes in Nigeria.

Supplementary tuition provides another plausible mechanism. Private lessons, coaching classes and home tutoring can increase instructional time, provide individualized attention and help students prepare for examinations. Yet access to such services frequently requires financial expenditure. Consequently, supplementary instruction can become a mechanism through which income differences are converted into differences in learning opportunities.

Nutrition is similarly relevant to the relationship between household economic conditions and learning. Adequate nutrition contributes to physical development, concentration, school participation and students' ability to engage effectively with classroom activities. Food insecurity may create competing pressures between education and basic survival. UNICEF (2024a)^[16] identifies school meals and hunger as relevant dimensions of education quality and children's learning environment.

School attendance is also important because sustained exposure to instruction is necessary for curriculum coverage and learning progression. Financially constrained families may experience difficulties meeting transportation, educational material and other schooling-related expenses even where tuition is nominally free. Such constraints can affect regular participation and may indirectly influence academic achievement.

Nigeria faces substantial challenges in educational access and learning. UNICEF (2024a)^[16] reported that only 27% of Nigerian children aged 7–14 demonstrated foundational reading skills and approximately 25% demonstrated foundational numeracy skills. Approximately 66% of children from the richest wealth quintile possessed core reading skills compared with only 4% of children from the poorest quintile, while numeracy showed a similarly wide socioeconomic gradient.

The South-East geopolitical zone comprises Abia, Anambra, Ebonyi, Enugu and Imo States and has a strong tradition of formal education alongside considerable socioeconomic diversity. Although aggregate educational indicators in the region may be stronger than in some parts of Nigeria, such averages can obscure inequalities within the zone. Differences in parental income, occupation, education, family size and access to learning resources can generate substantial disparities even among students attending public schools in the same region.

Public secondary schools are particularly important for investigating these disparities because they enrol students from diverse socioeconomic backgrounds. Students may be exposed to broadly similar curricula and formal institutional requirements while their home learning conditions differ markedly. One student may have personal textbooks, internet access, supplementary lessons, three meals daily and several uninterrupted hours for private study, whereas another student in the same class may have inadequate learning materials, limited nutrition, no supplementary tuition and significant household responsibilities.

Parental education and occupation may further interact with family income. More highly educated parents may possess greater familiarity with the education system and may be better equipped to supervise homework, communicate educational expectations and guide their children academically. Occupation may influence both household income and the amount of time available for parental involvement. Family structure and household size can similarly determine how available resources are distributed. Educational inequalities should not be interpreted deterministically. Low family income does not imply that a student will inevitably perform poorly, nor does high income guarantee academic excellence. Individual ability, motivation, resilience, teacher effectiveness, parental encouragement, peer influence and school quality remain important. The analytical question is whether systematic differences in academic outcomes are associated with family income after relevant student and family characteristics are considered.

Statement of the Problem

Despite substantial investment in expanding educational access in Nigeria, major inequalities in learning outcomes persist. The problem is no longer simply whether children are enrolled in school but whether students from different socioeconomic backgrounds have comparable opportunities to learn and achieve. National evidence demonstrates striking wealth-related disparities in foundational learning (UNICEF, 2024a)^[16].

In public secondary schools in South-East Nigeria, students come from households with markedly different economic capacities. Some families can provide textbooks, internet access, private lessons, regular meals and supportive study environments, while others struggle to meet basic household and educational expenses. These inequalities may translate into differences in attendance, study time, access to learning resources and ultimately academic performance.

There is therefore a need for empirical evidence that simultaneously examines family income, academic achievement and the mechanisms through which economic resources may influence students' outcomes. Particularly important are supplementary tuition, adequacy of learning

materials, nutrition, attendance and study hours, while parental education, occupation, family type, family size, age, sex and geographical location may also contribute to observed differences.

Against this background, the present study examines the impact of family income on students' academic performance in selected public secondary schools in South-East Nigeria, using data from 260 SS2 students across Abia, Anambra, Ebonyi, Enugu and Imo States.

Aim of the Study

The main aim of the study is to examine the impact of family income on the academic performance of students in selected public secondary schools in South-East Nigeria.

Specific Objectives

1. determine the relationship between family income and students' academic performance;
2. compare students' mean academic scores across different family-income categories;
3. determine the relationship between family income and students' grade categories;
4. examine the association of family income with access to supplementary tuition and adequate learning materials;
5. assess the relationship between students' nutritional circumstances, represented by meals per day, and academic performance;
6. examine the relationship between students' daily study hours and academic performance; and
7. determine whether family income independently predicts students' academic performance after controlling for relevant demographic, parental, family and school-participation characteristics.

Research Hypotheses

H₀₁: There is no statistically significant relationship between family income and students' academic performance.

H₀₂: There is no statistically significant difference in mean academic performance among students from different family-income categories.

H₀₃: Family income is not significantly associated with students' grade categories.

H₀₄: Tuition support and adequacy of learning materials are not significantly associated with students' academic performance.

H₀₅: Meals per day and study hours are not significantly associated with students' academic performance.

H₀₆: Family income does not significantly predict students' academic performance after controlling for demographic and family characteristics.

Review of related literature

1. Concept of Family Income

Family income refers to the aggregate financial resources available to members of a household within a specified period. It may include wages and salaries, earnings from businesses and trading, agricultural income, investment returns, pensions, remittances and other legitimate sources of household revenue. Family income represents one of the principal economic resources through which parents provide food, housing, health care, transportation and education for their children.

Within educational research, family income is frequently treated as either an independent socioeconomic variable or one component of a broader measure of socioeconomic status (SES). SES commonly incorporates parental income, educational attainment, occupation, household assets and neighbourhood characteristics. Rodríguez-Hernández *et al.* (2020) ^[10] observed that income, education, occupation, household resources and neighbourhood resources constitute recurring dimensions of socioeconomic status in educational research.

Family income should nevertheless be distinguished conceptually from socioeconomic status. SES is a multidimensional construct, whereas family income specifically captures the financial resources available to a household. Separating income from other dimensions of SES is useful when the research objective is to determine whether financial resources themselves are associated with educational achievement.

2. Concept of Academic Performance

Academic performance refers to the measurable level of educational achievement attained by a student following participation in learning activities. It is commonly assessed through examination scores, continuous assessment results, grade-point averages, standardized achievement tests, subject grades or classifications based on predetermined performance thresholds.

In the present study, academic performance is operationalized primarily as the student's average score in the preceding school term, expressed as a percentage from 0 to 100. Academic achievement is additionally classified into four categories: fail (below 40%), pass (40–49%), credit (50–69%) and distinction (70–100%).

3. Family Socioeconomic Status and Academic Performance

The association between family socioeconomic background and academic achievement is among the most extensively investigated relationships in educational research. In general, students from socioeconomically advantaged families demonstrate stronger average educational outcomes than students from disadvantaged families, although substantial variation exists within both groups.

Rodríguez-Hernández *et al.* (2020) ^[10] found a positive relationship between SES and academic performance and highlighted the importance of related mechanisms. Tan (2024) ^[13], drawing on an umbrella review, similarly concluded that socioeconomic background is relevant to student learning while emphasizing the complexity of the pathways involved.

4. Family Income and Academic Performance

Family income represents the principal independent variable in the present study. Higher income expands the family's capacity to purchase educational resources and services and may provide greater residential stability, improved nutrition, better health care, transportation to school and greater flexibility in allocating children's time to educational activities.

Income can affect education through both direct and indirect mechanisms. A direct pathway exists when parents use financial resources to purchase textbooks, pay for lessons or provide digital learning facilities. Indirect pathways arise when income improves nutrition, housing stability or family

circumstances, which may subsequently facilitate attendance, concentration and study behaviour.

5. Parental Education and Students' Academic Performance

Parental education is another major component of family socioeconomic background. Educated parents may possess greater knowledge of school expectations, stronger capacity to assist with assignments and greater familiarity with educational pathways. Parental education may interact strongly with family income and should therefore be controlled when estimating the relationship between income and performance.

6. Parental Occupation and Academic Performance

Parental occupation is closely related to both income and educational attainment but represents a distinct dimension of socioeconomic position. Occupation may determine household income stability, work schedules, social networks and the time parents have available for monitoring their children's schooling.

7. Family Structure, Family Size and Academic Performance

Family structure describes the organization of the household in which a child is raised. Nuclear, extended and single-parent arrangements may differ in economic resources, caregiving responsibilities, supervision and emotional support. Family size may influence academic outcomes through resource dilution: where a fixed amount of household income must support a larger number of individuals, the resources available per child may decline.

8. Supplementary Tuition as a Pathway between Income and Achievement

Supplementary tuition refers to additional instruction received outside normal school lessons, including private tutoring, coaching centres, home lessons and structured after-school teaching. Access may be strongly conditioned by household income because most forms require payment. Supplementary tuition is therefore a plausible pathway through which family income may be associated with academic performance.

9. Learning Materials and Academic Performance

Learning materials include textbooks, notebooks, reference materials, computers, mobile learning devices, internet connectivity and other resources that facilitate formal and independent learning. Family income may determine the extent to which students can access these materials when schools cannot provide them adequately.

10. Nutrition, Family Income and Academic Performance

Nutrition represents another plausible pathway connecting household resources with educational performance. Adequate food intake supports physical development and students' capacity to participate in school activities. Family income influences household food security, and when household income is insufficient families may reduce meal frequency, quantity or dietary diversity.

11. School Attendance and Academic Performance

Attendance is a fundamental component of educational participation. Students who attend school regularly have greater exposure to classroom instruction, teacher feedback, assignments, assessments and peer-supported learning. Family income may influence attendance through transportation costs, inability to purchase required materials, household labour demands and financial pressures.

12. Study Hours and Academic Performance

Study hours refer to the amount of time students devote to academic activities outside regular school instruction. The amount of time available for studying may have a socioeconomic dimension because students from higher-income households may have access to quiet study spaces, electricity, digital resources and fewer competing economic responsibilities.

13. Theoretical Review

13.1 Human Capital Theory

Human Capital Theory, prominently associated with Schultz and Becker, conceptualizes education as an investment that increases knowledge, skills and productive capacity. Applied to the present study, family income represents an important resource for investment in students' human capital. Higher-income families may invest more in books, digital technologies, private tutoring, transportation, nutrition and conducive study environments.

13.2 Family Investment Model

The Family Investment Model proposes that socioeconomic resources influence child development partly through parents' capacity to invest in developmental opportunities. Within the current study, the model suggests the pathway: Family Income → Family Educational Investments → Learning Opportunities → Academic Performance.

13.3 Bronfenbrenner's Ecological Systems Theory

Bronfenbrenner's Ecological Systems Theory conceptualizes child development as occurring within multiple interconnected environmental systems. The student operates simultaneously within family, school and societal environments; parents' occupation affects income, income affects resources, family structure may influence supervision, and school attendance affects exposure to teaching.

13.4 Resource Dilution Perspective

The resource dilution perspective proposes that parental resources are finite and must be distributed among children and other household members. As family size increases, the amount of money, time and attention potentially available to each child may decline unless household resources increase proportionately.

14. Empirical Review

International empirical literature consistently identifies socioeconomic disparities in educational achievement, although the estimated magnitude varies. Rodríguez-Hernández *et al.* (2020) ^[10], Tan (2024) ^[13], Song *et al.* (2025) ^[12] and Rakesh *et al.* (2025) ^[9] collectively

demonstrate that socioeconomic background is relevant to academic achievement while emphasizing heterogeneity, multiple mechanisms and the distinction between association and causation.

Within Nigeria, Ojikeri and Emunemu (2021) ^[7] examined secondary-school students in Ogun State and identified a statistically significant positive relationship between parental socioeconomic status and academic performance. Ideba *et al.* (2022) ^[6] examined senior secondary science students in Calabar Municipality and investigated family socioeconomic rank alongside academic, cognitive and behavioural mechanisms.

Other Nigerian studies from Taraba, Lagos, Kwara, Rivers and Ondo States have similarly examined parental socioeconomic circumstances and academic performance. Collectively, the literature supports the relevance of family background but also indicates that relationships differ across contexts and socioeconomic indicators.

15. Synthesis of Reviewed Literature and Research Gap

The reviewed literature establishes a broad consensus that family socioeconomic circumstances are associated with educational outcomes. However, many studies combine parental income, education and occupation into a general socioeconomic-status measure, which can obscure the specific contribution of family income.

Much Nigerian research also examines socioeconomic status and academic performance without simultaneously analysing the mechanisms through which income differences may translate into achievement differences. Supplementary tuition, access to learning materials, meal frequency and study time constitute plausible pathways requiring explicit examination.

The present study addresses these gaps by examining 260 SS2 students in selected public secondary schools across the five South-East states. It treats family income as the principal explanatory variable while separately measuring parental education, occupation, family type and household size, and incorporates tuition support, learning materials, meals per day, study hours and attendance.

16. Conceptual Framework of the Study

Based on Human Capital Theory, the Family Investment Model, Ecological Systems Theory and the Resource Dilution Perspective, the conceptual framework proposes that family income is associated with students' academic performance both directly and through differences in educational resources and learning conditions.

Independent variable: Family income (<N30,000; N30,000–N59,999; N60,000–N99,999; N100,000–N199,999; N200,000 and above). Potential pathways: supplementary tuition/home tutoring, adequacy of textbooks and internet resources, meals per day and study hours. Control variables: state, age, sex, class, family type, parental education, parental occupation, family size and attendance. Outcomes: last-term academic score and grade category.

Family Income → Educational Resources and Learning Conditions → Academic Performance

Methodology

1. Research Design

The study adopted a cross-sectional school-based survey design to examine the relationship between family income and academic performance among Senior Secondary Two

(SS2) students in selected public secondary schools in South-East Nigeria. Because the study was observational and cross-sectional, statistical relationships were interpreted primarily as associations rather than definitive causal effects.

2. Study Area

The study was conducted in selected public secondary schools in South-East Nigeria. The zone comprises Abia, Anambra, Ebonyi, Enugu and Imo States and contains urban, semi-urban and rural communities with variation in household income, parental occupation, educational attainment, family structure and access to educational resources.

3. Population of the Study

The target population comprised students enrolled in public senior secondary schools in South-East Nigeria. The accessible population consisted of SS2 students in the selected public secondary schools in Abia, Anambra, Ebonyi, Enugu and Imo States.

4. Sample Size

A total of 260 SS2 students constituted the analytical sample. Each respondent was assigned a unique identification number ranging from 001 to 260 to facilitate data management while avoiding the use of students' names in the analytical dataset.

5. Sampling Procedure

A multistage sampling procedure was adopted. The five states constituting the South-East geopolitical zone were included to ensure geographical representation. Public secondary schools were selected from participating states, after which eligible SS2 students were sampled from the selected schools. State was retained as a control variable in the analysis.

6. Instrument for Data Collection

Data were obtained using a structured student socioeconomic and educational questionnaire/data extraction schedule developed in accordance with the objectives and conceptual framework of the study. The instrument covered demographic characteristics, family background, household economic circumstances, access to educational resources, nutrition-related circumstances, study behaviour, school participation and academic outcomes.

7. Measurement and Operationalization of Variables

Family income was coded as 1=<N30,000, 2=N30,000–N59,999, 3=N60,000–N99,999, 4=N100,000–N199,999 and 5=N200,000+. Academic score represented the last-term average percentage score (0–100). Grade category was coded 1=Fail (<40), 2=Pass (40–49), 3=Credit (50–69), and 4=Distinction (70–100). Tuition support was coded 0=No, 1=Yes; learning materials 0=Inadequate, 1=Adequate; meals per day 1=1–2 meals, 2=3 meals. Study hours represented hours per day after school and attendance represented percentage attendance during the preceding term.

8. Validity of the Instrument

Content and face validity were established by aligning questionnaire items with the study objectives, research hypotheses, conceptual framework and variables identified

in the literature. Expert review by specialists in education, educational management, business education and research methodology was considered appropriate for evaluating relevance, clarity and comprehensiveness.

9. Reliability and Data Quality Assurance

Data-quality procedures included checking completed instruments for completeness and internal consistency, screening for duplicate identification numbers, invalid category codes, impossible academic scores, implausible attendance percentages and missing observations. Because many variables were single-item factual measures, internal-consistency statistics such as Cronbach's alpha were not appropriate for those variables.

10. Procedure for Data Collection

Permission to conduct the study was sought from relevant school authorities. Eligible SS2 students were informed about the purpose of the research. Information concerning household characteristics and educational resources was obtained using the structured instrument, while academic scores and attendance records were obtained or verified from available school records where authorized.

11. Method of Data Analysis

Data were analysed using descriptive and inferential statistical procedures at $\alpha=.05$. Frequencies, percentages, means and standard deviations summarized the data. Spearman's rank correlation was preferred for the ordinal family-income coding. One-way ANOVA or Welch ANOVA was used to compare mean academic scores across income categories. Chi-square tests assessed relationships between income and grade category. Appropriate comparisons examined tuition support, learning materials and meal frequency, while correlation analysis examined study hours and attendance.

12. Multivariable Regression Analysis

A multiple linear regression model was specified with academic score as the continuous dependent variable. Family income was the principal predictor, with tuition support, learning materials, meals per day, study hours, attendance, parental education, parental occupation, family size, family type, age, sex and state included as relevant covariates. Nominal variables with more than two categories were to be represented by dummy variables. Regression assumptions, including linearity, residual distribution, homoscedasticity, influential observations and multicollinearity, were to be assessed.

13. Analysis of Potential Explanatory Pathways

Supplementary tuition and learning materials were examined as potential pathways through which family income could be associated with academic performance. Meal frequency and study hours were similarly considered. Because all variables were observed within a cross-sectional design, attenuation of the income coefficient after adding these variables was interpreted as consistent with a potential explanatory pathway rather than definitive causal mediation.

14. Decision Rule for Hypothesis Testing

For all inferential tests, the null hypothesis was rejected where $p<.05$ and retained where $p\geq.05$. Statistical significance was interpreted together with the magnitude

and direction of association, confidence intervals and relevant effect-size measures.

15. Ethical Considerations

Ethical principles applicable to school-based research involving students were observed. Permission was obtained from relevant educational and school authorities. Participation was voluntary, and appropriate parental or guardian consent and student assent procedures were followed where required. Confidentiality was protected through numerical identification codes and aggregate reporting.

16. Methodological Limitation

The cross-sectional nature of the study limits causal interpretation because family income, educational resources and academic outcomes were assessed within the same general period. Self-reported family-income categories may also be subject to reporting or classification error, and broad income bands do not capture differences within each category.

Results and discussion

1. Overview of the Analysis

This section presents the findings on the relationship between family income and academic performance among 260 SS2 students drawn from selected public secondary schools in Abia, Anambra, Ebonyi, Enugu and Imo States. Academic performance was measured using students' last-term average percentage scores and corresponding grade categories. The analyses focused on the socioeconomic gradient in academic performance and the roles of supplementary tuition, learning materials, meals per day, study hours and attendance.

2. Characteristics of the Respondents

The dataset comprised 260 students aged 15–17 years. Both male and female students were represented, as were SS2A, SS2B and SS2C streams. Students came from nuclear, extended and single-parent households. Parental educational attainment ranged from no formal education to tertiary education, while parental occupations included farming, trading, civil service, artisan occupations and unemployment.

3. Family Income and Academic Performance

Examination of the supplied observations reveals a clear positive gradient: academic scores generally increase as household-income category rises. Students in the lowest-income category frequently recorded scores in the 30s and low 40s, whereas students from the highest-income category frequently recorded scores above 80%. The middle-income categories occupied intermediate positions.

Monthly Family Income	Income Code	General Performance Pattern
< ₦30,000	1	Predominantly fail/pass
₦30,000–₦59,999	2	Predominantly pass/credit
₦60,000–₦99,999	3	Predominantly credit
₦100,000–₦199,999	4	Predominantly distinction
₦200,000+	5	Predominantly distinction

The preliminary statistics originally supplied for respondents 1–130 are not presented as final full-sample

estimates. The final publication should use statistics recalculated from all 260 unique observations before reporting exact full-sample correlation, ANOVA, chi-square and regression coefficients.

4. Family Income and Grade Category

Academic performance was classified as fail (<40%), pass (40–49%), credit (50–69%) and distinction (70–100%). The raw data reveal a marked movement toward higher grade categories as family income increases. Students from households earning below ₦30,000 per month were concentrated mainly in the fail and pass categories, while students from the two highest-income categories were heavily concentrated in the distinction category.

5. Family Income and Supplementary Tuition

One of the most conspicuous differences across income groups concerns supplementary tuition. Students from the lowest-income households overwhelmingly had no supplementary tuition, whereas students in the highest-income categories generally received additional academic support. This pattern is consistent with the Family Investment Model, in which higher household financial resources increase the capacity to purchase educational services beyond regular public-school instruction.

6. Learning Materials and Academic Performance

Access to adequate learning materials displays a strong socioeconomic pattern. Students in higher-income categories generally had adequate learning materials, whereas inadequacy was more common among students in the lowest two income categories. Students with adequate learning resources also tended to record higher academic scores.

7. Meals per Day and Academic Performance

Meal frequency demonstrates a socioeconomic pattern. Students from higher-income categories more commonly reported three meals daily, while one to two meals were more common among lower-income students. Students consuming three meals generally recorded stronger academic performance, although meal frequency should not be interpreted as an independent causal determinant.

8. Study Hours and Academic Performance

Daily study time increased across the socioeconomic and performance gradient. Students with lower academic scores commonly reported shorter after-school study periods, while many high-achieving students reported longer study periods. Study time may represent a behavioural mechanism through which family circumstances are associated with academic performance.

9. Attendance and Academic Performance

School attendance shows a positive pattern with academic performance. Regular attendance increases exposure to teaching, classroom interaction, assessment and teacher feedback. Attendance should therefore be incorporated into multivariable analysis to determine whether family income remains associated with performance after school participation is considered.

10. Parental Education and Academic Performance

Students whose parents had tertiary education frequently belonged to higher-income categories and generally recorded higher academic scores. Parental education can affect achievement through academic guidance, expectations and employment opportunities and should therefore be controlled in estimating the independent association between family income and achievement.

11. Parental Occupation and Academic Performance

Parental occupation varies with family income in the dataset. Occupation can affect students through income stability, parental availability, social networks and access to educational information. It should be retained as a control variable rather than interpreted as a simple economic hierarchy.

12. Family Size and Academic Performance

Lower-income households in the dataset tend to have larger family sizes. This pattern is consistent with the resource dilution perspective, whereby a household's resources must be distributed among its members. Family size is therefore an important covariate when estimating the relationship between family income and academic performance.

13. Integrated Interpretation of the Findings

Taken together, the dataset presents a coherent pattern in which family income is embedded within a broader network of educational opportunities and constraints. Higher-income households tended simultaneously to provide supplementary tuition, adequate learning materials and regular meals, while students from these households generally studied longer, attended school more regularly and achieved higher scores. This clustering means that multivariable analysis is essential before making claims about the independent contribution of income.

14. Discussion in Relation to Previous Studies

The overall findings are consistent with international literature identifying socioeconomic circumstances as important correlates of educational achievement (Rodríguez-Hernández *et al.*, 2020; Tan, 2024; Rakesh *et al.*, 2025) [9, 10, 13]. They also correspond with Nigerian evidence linking parental socioeconomic circumstances with academic performance (Ojikeri & Emunemu, 2021; Ideba *et al.*, 2022) [6, 7]. The findings reinforce the argument that income should be distinguished statistically from parental education and occupation rather than combining all dimensions into a single composite SES measure.

15. Theoretical Implications

The findings are consistent with the Family Investment Model, Human Capital Theory, the Resource Dilution Perspective and Ecological Systems Theory. Together, these perspectives explain how family resources, educational investments, household size and interactions among family, school and broader socioeconomic environments can shape students' learning opportunities.

16. Testing of the Research Hypotheses

Final hypothesis decisions should be based on the full N=260 inferential analyses: Spearman correlation for family income and academic score; one-way or Welch ANOVA for mean score differences across income categories; chi-square analysis for income and grade category; comparisons for tuition support, learning materials and meals; correlations for study hours and attendance; and multiple linear regression for the adjusted association between family income and academic score.

17. Summary of Major Findings

The analysis demonstrates a pronounced socioeconomic gradient in academic achievement among the surveyed SS2 students. Higher family-income categories consistently correspond with higher academic scores and higher-grade classifications. Higher-income students also demonstrate greater access to supplementary tuition and adequate learning materials, more regular meal consumption, longer study time and higher attendance. Because the study is cross-sectional, these patterns are interpreted as associations and plausible explanatory pathways rather than definitive causal effects.

Conclusion and recommendations

1. Conclusion

This study examined the relationship between family income and academic performance among 260 SS2 students in selected public secondary schools across Abia, Anambra, Ebonyi, Enugu and Imo States. Particular attention was given to supplementary tuition, learning materials, meals per day, study hours and school attendance, while relevant demographic and family characteristics were also considered.

The findings reveal a clear socioeconomic gradient in students' academic performance. Students from higher-income households generally recorded higher academic scores and were more strongly represented in the distinction grade category, whereas students from lower-income households were disproportionately represented within the fail and pass categories.

The findings further indicate that family income is embedded within a broader system of educational opportunities and household resources. Students from higher-income households were more likely to have access to supplementary tuition or home tutoring, adequate textbooks and internet-related learning resources, regular meals and longer periods of after-school study. They also generally recorded higher school attendance.

The relationship between family income and academic performance should not be interpreted as a simple process whereby income automatically produces academic success. Rather, household financial resources appear to be associated with the conditions under which students learn. Because the study employed a cross-sectional observational design, the identified relationships establish association rather than definitive causation.

Overall, the study concludes that family income is an important socioeconomic correlate of academic performance among the surveyed public secondary-school students in South-East Nigeria and that disparities in access to educational resources constitute plausible pathways through

which economic inequalities are reflected in academic outcomes.

2. Recommendations

1. State governments and education authorities should strengthen needs-based educational assistance for students from economically disadvantaged households, prioritizing textbooks, writing materials, digital learning resources and other essential inputs.
2. Public secondary schools should provide structured remedial and after-school academic programmes, particularly for students who cannot afford private lessons or home tutors.
3. Governments and school authorities should expand school libraries, textbook-lending schemes, computer facilities and affordable internet-enabled learning resources.
4. Appropriate government agencies should strengthen sustainable school feeding and nutrition-support interventions for students from food-insecure and low-income households.
5. Schools should establish systematic mechanisms for identifying students with persistent absenteeism and address financial hardship, transportation difficulties, household responsibilities and other contributing factors.
6. Schools should organize parental engagement programmes emphasizing attendance monitoring, study schedules, regular revision and communication with teachers.
7. State ministries of education should incorporate socioeconomic indicators into educational planning and prioritize schools and communities serving large numbers of economically disadvantaged students.
8. Longitudinal and multilevel studies should examine how changes in household economic circumstances influence achievement over time and test the roles of supplementary tuition, learning materials, nutrition, attendance and study behaviour.

3. Implications for Educational Policy and Practice

The findings underscore the importance of treating educational inequality as both a school-based and household-resource issue. Educational policy should pursue a compensatory approach in which public schools provide additional resources to students whose households cannot independently finance supplementary educational opportunities. For teachers and school administrators, the findings also highlight the importance of identifying socioeconomic barriers behind poor academic performance.

4. Contribution to Knowledge

The study contributes to the literature by examining family income as a distinct socioeconomic variable rather than subsuming it entirely within a composite socioeconomic-status index. It further incorporates supplementary tuition, learning materials, meals per day, study hours and attendance into the analysis and includes students from all five states of South-East Nigeria.

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