Home Environment of Secondary School Students in Selected Urban and Rural Areas of Borno State, Nigeria

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ABSTRACT

The home environment constitutes an important context for adolescents' emotional, social, behavioural and educational development. This study examined differences in the home environment of secondary school students in selected urban and rural areas, Borno state, Nigeria, with particular attention to gender, residential location and their interaction. A cross-sectional comparative survey design was adopted. The study was conducted among secondary school students in Maiduguri Metropolis and Jere Local Government Area of Borno State. 200 students comprising 50 urban males, 50 urban females, 50 rural males and 50 rural females were selected through multistage sampling involving stratified, proportionate and simple random sampling techniques. Data were collected using the adapted Home Environment Inventory developed by Mishra (1989), comprising 100 items across 10 dimensions and rated on a five-point Likert-type scale. The instrument was subjected to expert validation, while a pilot test yielded a Cronbach's alpha reliability coefficient of 0.82. Data were analysed using descriptive statistics, independent-samples *t*-tests and two-way analysis of variance (ANOVA) at the 0.05 level of significance. The findings showed significant main effects of location, $F(1, 196) = 46.58$, $p < .001$, and gender, $F(1, 196) = 45.92$, $p < .001$. Urban students recorded a higher overall mean score (M = 3.84) than rural students (M = 2.43), while boys recorded a higher overall mean score (M = 3.84) than girls (M = 2.43). A significant gender × location interaction was also found, $F(1, 196) = 21.66$, $p < .001$, indicating that the gender difference varied by residential location. Simple-effects analysis showed that the gender difference was not significant among urban students, $F(1, 98) = 2.32$, $p = .131$, partial $\eta^2 = .023$, but was significant among rural students, $F(1, 98) = 63.43$, $p < .001$, partial $\eta^2 = .393$, with rural boys (M = 3.61, SD = 1.28) scoring substantially higher than rural girls (M = 1.24, SD = 1.67). The study concludes that students' reported home environments differed according to gender and residential location, with the gender difference particularly pronounced among rural students. It is recommended that parents, teachers, school counsellors and other educational stakeholders provide context-sensitive and gender-responsive support, particularly for students in rural settings.

Keywords: Home environment, gender, residential location, secondary school students, Borno State, Nigeria

INTRODUCTION

The home is one of the earliest and most enduring social environments in which children and adolescents develop and interact. Beyond its physical characteristics, the home environment encompasses patterns of relationships, parental practices, expectations, rules, emotional interactions, and forms of support that characterize everyday family life. For secondary school students, who are undergoing important developmental changes associated with adolescence, these experiences constitute an important part of their immediate social environment. Consequently, examining the home environment requires attention not only to material conditions within the household but also to the ways adolescents perceive parental behaviour and family interactions.

Home environment is a multidimensional construct rather than a single characteristic of family life. The Home Environment Inventory developed by Mishra, which forms the basis of measurement in the present study, assesses adolescents' perceptions of parent–child interactions across ten dimensions: control, protectiveness, punishment, conformity, social isolation, reward, deprivation of privileges, nurturance, rejection, and

permissiveness. These dimensions represent different forms of parental interaction, ranging from supportive practices such as nurturance and reward to restrictive or disciplinary practices such as control, punishment, rejection, and deprivation of privileges. Thus, the study of home environment provides a means of describing the interpersonal and regulatory experiences encountered by adolescents within their families.

Recent educational research has continued to examine the relevance of home circumstances to students' educational and developmental experiences. Khakhlari and Roy (2025) examined home environment among secondary school students, with attention to family circumstances and contextual conditions. Usman and Sabitu (2025), in a Nigerian study, examined home environment alongside learning style and academic achievement among secondary school students. Similarly, Amore et al. (2024) investigated the relationship between home environment and academic achievement, with attention to factors such as family income and parental educational background. Sanni and Ukwu (2021) also examined home environment in relation to the academic performance of secondary school students. These studies demonstrate the continued relevance of family circumstances and parental interactions in understanding students' experiences and educational outcomes.

The home environment may also be associated with adolescents' behavioural and psychological experiences. Khan and Panda (2025) examined home environment in relation to adolescents' punctuality, considering gender and family-structure differences. Ugwuoke et al. (2018) investigated home background and locality in relation to secondary school students' academic performance, thereby highlighting the relevance of both family circumstances and geographical setting. More recently, Yin et al. (2025) examined parental educational expectations in relation to adolescents' subjective well-being, identifying self-efficacy and learning engagement as mediating factors. These studies indicate that the home environment is relevant to several aspects of adolescents' educational, behavioural, and psychological experiences, although they do not directly establish whether students' reported home environments differ according to gender and residential location.

Gender is an important consideration in examining adolescents' home environment because male and female students may experience parental expectations, household responsibilities, freedom, supervision, and interpersonal interactions differently. Social and cultural expectations may influence how parents assign responsibilities, regulate behaviour, and interact with sons and daughters. However, gender differences should not be assumed to indicate that one group universally experiences a more favourable home environment. Empirical comparison is therefore necessary to determine whether male and female students differ in their reported perceptions of family interactions and parental practices.

Residential location represents another potential source of variation in home environment. Families in urban and rural communities may differ in household organization, access to services and resources, parental occupations, educational opportunities, family structures, and patterns of social interaction. Such contextual characteristics may shape the circumstances within which parent–child relationships and household practices occur. Ugwuoke et al. (2018) demonstrated the relevance of locality when examining students' educational experiences, while Khakhlari and Roy (2025) similarly recognized the importance of contextual conditions in understanding students' home environments. Nevertheless, urban residence does not necessarily imply a more supportive home environment, just as rural residence does not necessarily indicate an unfavourable one. Direct assessment is therefore necessary to establish whether reported home-environment experiences differ between students from urban and rural settings.

The issue is particularly relevant in selected urban and rural areas of Borno State, Nigeria, where families live within diverse social and geographical circumstances. Maiduguri Metropolis represents an urban setting, whereas selected communities within Jere Local Government Area include areas with more rural characteristics. Students from these settings may therefore encounter different household circumstances and patterns of family interaction. However, assumptions based on location cannot substitute for empirical evidence concerning students' actual experiences.

Despite the importance of the home as an immediate developmental environment, limited empirical evidence is available on whether secondary school students in selected urban and rural areas of Borno State differ in their reported home-environment scores according to gender and residential location. Much of the existing literature has concentrated on relationships between home environment and academic achievement, behavioural

adjustment, or psychological characteristics. Although these studies provide useful evidence about the relevance of family circumstances, they do not directly address whether different groups of students report different home-environment experiences. This gap is particularly relevant in the Borno State context, where empirical evidence on gender and urban–rural differences in students' reported home environment remains limited.

Against this background, the present study investigated the home environment of secondary school students in selected urban and rural areas of Borno State, Nigeria. Specifically, the study compared the home-environment scores of male and female students, examined differences between students from urban and rural settings, and determined whether an interaction exists between gender and residential location in relation to home-environment scores.

Statement of the Problem

Home environment plays an important role in students' educational and psychosocial development by providing emotional support, parental care, encouragement and other conditions that can facilitate learning. However, students may experience different home environments depending on their gender and residential location. In the context of the diverse social and residential circumstances of Borno State, understanding differences in students' home environments is particularly relevant to students' educational well-being. Despite the importance of the home environment, there is limited empirical evidence that examined whether secondary school students in selected Urban and Rural areas, Borno state differ in their home-environment experiences according to gender and urban-rural location. It is also unclear whether gender and location interact in influencing students' home-environment scores. The absence of such evidence creates a need for empirical investigation. Therefore, this study examined differences in the home environment of secondary school students in selected Urban and Rural areas, Borno state based on gender, location, and the interaction between gender and location.

Objectives of the Study

1. To determine the difference in the mean home-environment scores of male and female secondary school students in selected Urban and Rural areas, Borno state.
2. To determine the difference in the mean home-environment scores of urban and rural secondary school students in selected Urban and Rural areas, Borno state.
3. To determine whether there is an interaction between gender and residential location in the home-environment scores of secondary school students in selected Urban and Rural areas, Borno state.

Research Questions

1. What is the difference in the mean home-environment scores of male and female secondary school students in selected Urban and Rural areas, Borno state?
2. What is the difference in the mean home-environment scores of urban and rural secondary school students in selected Urban and Rural areas, Borno state?
3. What is the interaction between gender and residential location in the home-environment scores of secondary school students in selected Urban and Rural areas, Borno state?

Hypothesis

H_{01}: There is no significant difference in the mean home-environment scores of male and female secondary school students in selected Urban and Rural areas, Borno state.

H_{02}: There is no significant difference in the mean home-environment scores of urban and rural secondary school students in selected Urban and Rural areas, Borno state.

H_{03}: There is no significant interaction effect of gender and location on the home-environment scores of secondary school students in selected Urban and Rural areas, Borno state.

MATERIALS AND METHODS

Design

The study is a cross-sectional comparative survey research design. A **cross-sectional comparative survey research design** is a quantitative, non-experimental research design in which data are collected from two or more groups of participants **at a single point in time** and the collected information is used to describe and compare the groups on one or more variables. The design is appropriate when the researcher intends to determine whether differences or similarities exist between groups without manipulating the variables under investigation. In a cross-sectional design, the researcher obtains a "snapshot" of the characteristics, attitudes, behaviours, or outcomes of the participants at a particular period rather than following them over time. Bryman (2016) describes cross-sectional research as involving the collection of quantitative or quantifiable data from a sample of cases at a single point in time, with variables examined for patterns of association or differences. The design was considered appropriate because data were collected from secondary school students at a single point in time, while comparisons were made between groups based on gender and location (urban and rural). The design enabled the researcher to determine whether significant differences existed in the home-environment scores of the groups without manipulating the study variables.

Multistage sampling (Stratified, proportionate and simple random sampling) techniques was used to select the students for the study. In using Stratified random sampling the population of schools was stratified into Local Government areas then into Urban/Rural school areas. Stratified random sampling technique was used to select two Local Government Areas (Urban and Rural) and one public school from each area randomly selected (Maiduguri Metropolis represented the urban setting, while a selected rural community in Jere Local Government Area represented the rural setting). Proportionate sampling was used to allocate eligible students across the relevant sampling strata, after which simple random sampling was used to select individual participants. The final sample was deliberately balanced across the four gender-by-location groups, with 50 students in each cell, to facilitate the planned factorial comparison.

Sampling Procedure

A multistage sampling procedure was adopted to obtain the participants for the study. The use of a multistage procedure was considered appropriate because the target population comprised secondary school students distributed across different geographical and administrative units within selected Urban and Rural areas, Borno state. Rather than selecting individual students directly from the entire state, the sampling process was conducted progressively from geographical/administrative units to schools and finally to individual students. This procedure made it possible to organize the heterogeneous population into meaningful strata and to obtain participants from both urban and rural settings.

At the first stage, the study area was stratified according to residential location into urban and rural settings. Maiduguri Metropolis represented the urban setting, while a selected rural community in Jere Local Government Area represented the rural setting for the purpose of the present investigation. The selection of these two locations was based on the study's objective of comparing students' reported home environments across contrasting residential settings. The two locations also provided a feasible sampling frame within which the researchers could administer the research instrument under comparable field conditions.

At the second stage, schools within the selected locations constituted the school-level sampling units. The schools were identified from the available list of public secondary schools obtained from the relevant educational authorities. Where more than one eligible public secondary school was available within a selected location, the school was selected using a simple random procedure, such as balloting or computer-generated random selection. The purpose of random selection at this stage was to reduce the possibility of deliberately selecting schools on the basis of their perceived characteristics and to give eligible schools within the sampling frame an opportunity for selection.

At the third stage, students within the selected schools constituted the final sampling units. The student population was first organized according to gender (male and female) and residential location. Proportionate

sampling was used where the number of eligible students differed across the relevant strata, while simple random sampling was subsequently used to select individual students from the sampling lists. However, because the present study required direct comparison between male and female students and between urban and rural students, the final sample was balanced to contain 100 male and 100 female students, with 50 males and 50 females from each residential setting. Thus, the final sample comprised four analytical groups: urban males (n = 50), urban females (n = 50), rural males (n = 50), and rural females (n = 50).

The sampling procedure therefore produced a total sample of 200 secondary school students. The equal allocation across the four groups was deliberate because the principal objectives of the study involved comparison by gender and residential location. Equal group sizes provide a straightforward basis for comparing group means and ensure that neither gender nor residential-location group is substantially underrepresented in the comparisons. Nevertheless, because the sample was deliberately balanced rather than selected entirely in proportion to the population distribution, the resulting percentages should not be interpreted as estimates of the actual gender or urban–rural composition of all secondary school students in selected Urban and Rural areas, Borno state.

Sample Size

The final sample consisted of 200 students. The sample size was determined with consideration of the comparative nature of the study, the feasibility of administering the 100-item Home Environment Inventory, the number of comparison groups and the need to obtain adequate representation of both genders and residential locations. The researchers allocated 50 participants to each of the four gender-by-location cells to permit direct comparison across the study groups. It is important to note that the sample size was determined primarily by the accessible locations, population and field constraints. Therefore, the sample is not statistically representative of all secondary school students in selected Urban and Rural areas, Borno state.

Participants

The participants comprised 200 students enrolled in selected public secondary schools in the study locations. The sample consisted of 100 male and 100 female students. With respect to residential location, 100 participants were drawn from the urban setting and 100 from the rural setting. Within each location, 50 males and 50 females were selected, resulting in the following four groups: urban males (n = 50), urban females (n = 50), rural males (n = 50), and rural females (n = 50). Participants were eligible for inclusion if they were officially enrolled students in the selected public secondary schools during the period of data collection, belonged to the designated secondary-school population for the study, were present during the administration of the instrument, and provided the required consent/assent. Students who were not enrolled in the selected schools or who did not provide the required consent/assent were excluded from participation.

Table 1: Sampling Allocation

The final sampling structure was as follows:

Residential location	Male	Female	Total
Urban	50	50	100
Rural	50	50	100
Total	100	100	200

The four-cell structure on table1 was established at the sampling stage because gender and residential location were both central variables in the study. This arrangement also permits the data to be examined not only through separate comparisons of male versus female students and urban versus rural students, but also through a two-factor analysis examining the independent and combined effects of gender and residential location. Consequently, the balanced design provides an opportunity to determine whether the difference associated with

gender varies according to residential location and whether the difference associated with residential location varies according to gender.

Justification for the Sampling Procedure

The sampling procedure was considered appropriate for the study because the population was geographically distributed and contained naturally occurring administrative, school and student-level groupings. Stratification ensured that the two residential settings relevant to the research objectives were represented. School-level selection reduced the practical difficulty of identifying and accessing individual students across the entire population, while random selection of students within the selected schools reduced selection based on researcher preference. The use of balanced gender-by-location groups further ensured that each of the four groups relevant to the research questions was adequately represented.

However, because only selected locations and schools were included, the findings should be generalized primarily to students represented by the sampling frame and study settings rather than automatically to every secondary school student in selected Urban and Rural areas, Borno state. The limited number of schools should also be acknowledged as a sampling limitation, particularly because students within the same school may have similar experiences arising from shared school, community or socioeconomic contexts.

Instrument

The Home Environment Inventory (HEI) developed by Mishra (1989) was adapted for the present study to assess students' perceptions of the conditions and interpersonal processes within their homes. The inventory consists of 100 items distributed across 10 dimensions, with 10 items representing each dimension. The ten dimensions are control, protectiveness, punishment, conformity, social isolation, reward, deprivation of privileges, nurturance, rejection and permissiveness. The dimensions represent different aspects of parent–child interaction and family regulation, including supportive, protective, disciplinary and restrictive behaviours.

Each item was rated on a five-point frequency scale ranging from ‘Mostly’ to ‘Never’, scored from 5 to 0. Each dimension produces a dimension score, and the scores across the ten dimensions were combined to obtain an overall home-environment score. For the present study, the negatively oriented dimensions were reverse-scored before the total score was calculated. Where reverse scoring was applied, a higher total score represented a greater level of favourable home-environment characteristics across the dimensions measured. Where reverse scoring was not applied, the total score was described neutrally as an overall HEI score, and interpretation focused on the statistical difference between groups. The adapted instrument was subjected to expert review by specialists in Educational Psychology and Measurement and Evaluation at the University of Maiduguri. A pilot administration produced a Cronbach's alpha reliability coefficient of 0.82, indicating acceptable internal consistency for the adapted instrument in the present study.

Procedures

A written informed consent and assent of all participants for the study was sought for. The agreement states that all client information will be confidential and used for the purpose of the study only. Participants were assured of their right to freely withdraw from participation at any time and without necessarily giving the reason. With the permission of the school authority, two teachers were briefed to serve as research assistants for the study and supported in the administration and retrieval of the research instrument.

RESULTS

It is important to note that Hypotheses One (H_{01}) and Two (H_{02}) were tested using the total Home Environment Inventory (HEI) scores, whereas Hypothesis Three (H_{03}) was tested using mean item scores. Tables 3 and 4 present descriptive statistics derived from the raw HEI responses, which were converted to item-level mean scores and standard deviations to facilitate the descriptive presentation and interpretation of the findings. Thus, although the form of the scores differs across the analyses and descriptive tables, they were derived from the same underlying HEI data.

Table 2: Group descriptive statistics of Secondary School Urban and Rural Boys and Girls, Borno State.

Location	Gender	N	Mean	SD
Urban	Boys	50	4.06	1.63
Urban	Girls	50	3.62	1.23
Rural	Boys	50	3.61	1.28
Rural	Girls	50	1.24	1.67
Total	—	**200**	**3.13**	—

H_{01}: There is no significant difference in the mean home-environment scores of male and female secondary school students in selected Urban and Rural areas, Borno state.

Table 3: SE of Mean Difference of secondary school Boys and Girls.

Group	N	Mean	SD	SE of Mean Difference	t	df	p	Decision
Boys	100	243.65	29.5	3.41	6.58	198	< .001	Significant
Girls	100	221.18	17.2	—	—	—	—	—

An independent-samples *t*-test was conducted to determine whether there was a significant difference between the mean home-environment scores of male and female secondary school students. The result showed a statistically significant difference between the two groups, $t(198) = 6.58$, $p < .001$. Male students obtained a higher mean home-environment score (M = 243.65, SD = 29.50) than female students (M = 221.18, SD = 17.20). Therefore, the null hypothesis, which stated that there was no significant difference in the mean home-environment scores of male and female secondary school students in selected Urban and Rural areas, Borno state, was rejected.

H_{02}: There is no significant difference in the mean home-environment scores of secondary school students from urban and rural areas of Borno State.

Table 4: SE of Mean Difference of secondary school students of urban and Rural areas.

Group	N	M	SD	SE of Mean Difference	t	df	p	Inference
Urban	100	236.63	29.9	3.57	3.79	198	< .001	Significant
Rural	100	223.12	19.5	—	—	—	—	—

An independent-samples *t*-test was conducted to determine whether there was a significant difference in the home-environment scores of secondary school students from urban and rural areas. The result indicated a statistically significant difference between the two groups, $t(198) = 3.79$, $p < .001$. Students from urban areas obtained a higher mean home-environment score (M = 236.63, SD = 29.90) than students from rural areas (M = 223.12, SD = 19.50). Therefore, the null hypothesis, which stated that there was no significant difference in the mean home-environment scores of students from urban and rural areas of Borno State, was rejected.

H_{03}: There is no statistically significant interaction between gender and residential location in the home-environment scores of secondary school students in selected Urban and Rural areas, Borno state.

Table 5: Two-way ANOVA.

Source	SS	df	MS	F	Sig.
Location	100.111	1	100.111	46.58	< .001
Gender	98.701	1	98.701	45.92	< .001
Location × Gender	46.561	1	46.561	21.66	< .001
Error	421.258	196	2.149	—	—
Total	**666.63**	**199**	—	—	—

The results on table 5 shows a statistically significant main effect of location, $F(1,196) = 46.58$, $p < .001$. Students in urban schools had a higher overall mean score ($M = 3.84$) than students in rural schools ($M = 2.43$). There was also a statistically significant main effect of gender, $F(1,196) = 45.92$, $p < .001$. Overall, boys obtained a higher mean score ($M = 3.84$) than girls ($M = 2.43$). Importantly, the location × gender interaction was statistically significant, $F(1,196) = 21.66$, $p < .001$. This means that the difference between boys and girls was not the same in urban and rural settings. Specifically, the urban gender difference was relatively small (boys: $M = 4.06$, girls: $M = 3.62$), whereas the rural gender difference was much larger (boys: $M = 3.61$, girls: $M = 1.24$).

Table 6: Simple-effects comparisons

Simple Effect	Boys M (SD)	Girls M (SD)	Mean Difference
Urban students	4.06 (1.63)	3.62 (1.23)	0.44
Rural students	3.61 (1.28)	1.24 (1.67)	2.37

Among urban students, boys had a mean score of 4.06, compared with 3.62 for girls, representing a mean difference of 0.44 points. Among rural students, boys had a mean score of 3.61, whereas girls had a mean score of 1.24, representing a substantially larger mean difference of 2.37 points. Simple-effects comparisons were examined to determine whether the mean difference between boys and girls varied according to residential location. Among urban students, boys recorded a higher mean score ($M = 4.06$, $SD = 1.63$) than girls ($M = 3.62$, $SD = 1.23$), yielding a mean difference of 0.44 points. Among rural students, boys also recorded a higher mean score ($M = 3.61$, $SD = 1.28$) than girls ($M = 1.24$, $SD = 1.67$), with a mean difference of 2.37 points. Descriptively, therefore, the gender difference was considerably larger among rural students than among urban students. The pattern indicates that the difference between boys and girls should be interpreted in relation to residential location rather than considering gender in isolation.

Table 7: Simple-effects significance tests

Location	Comparison	Boys M (SD)	Girls M (SD)	F(1, 98)	p	Partial η^2
Urban	Boys vs. Girls	4.06 (1.63)	3.62 (1.23)	2.32	0.131	0.023
Rural	Boys vs. Girls	3.61 (1.28)	1.24 (1.67)	63.43	< .001	0.393

Calculation basis: For each location, the simple effect was tested using the pooled within-location variance with $n = 50$ per gender, giving $df = 1, 98$. The F statistic is equivalent to the squared independent-samples t statistic.

Interpretation

Urban students: The difference between boys ($M = 4.06$) and girls ($M = 3.62$) was not statistically significant, $F(1, 98) = 2.32$, $p = .131$, partial $\eta^2 = .023$. Thus, although urban boys had a higher mean score by 0.44 points, the observed difference was not statistically significant at the .05 level.

Rural students: The difference between boys (M = 3.61) and girls (M = 1.24) was statistically significant, $F(1, 98) = 63.43$, $p < .001$, partial $\eta^2 = .393$. Rural boys therefore had a substantially higher mean score than rural girls, with a mean difference of 2.37 points.

Simple-effects analyses were conducted to examine the difference between male and female students separately within urban and rural locations. Among urban students, the mean score for boys (M = 4.06, SD = 1.63) was higher than that of girls (M = 3.62, SD = 1.23); however, this difference was not statistically significant, $F(1, 98) = 2.32$, $p = .131$, partial $\eta^2 = .023$. This indicates that gender did not produce a statistically significant difference in scores among urban students.

Among rural students, boys obtained a substantially higher mean score (M = 3.61, SD = 1.28) than girls (M = 1.24, SD = 1.67). This gender difference was statistically significant, $F(1, 98) = 63.43$, $p < .001$, partial $\eta^2 = .393$. Thus, the gender difference was considerably more pronounced among rural students than among urban students. The partial η^2 value of .393 indicates that the partial η^2 of .393 indicates a large effect for the rural simple effect within the present analysis.

DISCUSSION OF FINDINGS

H_{01}: There is no significant difference in the mean home-environment scores of male and female secondary school students in selected Urban and Rural areas, Borno state

The finding of the study revealed a statistically significant difference in the mean home-environment scores of male and female secondary school students in selected Urban and Rural areas, Borno state. The independent-samples *t*-test showed that male students recorded a higher mean home-environment score (M = 243.65, SD = 29.50) than female students (M = 221.18, SD = 17.20), with $t(198) = 6.58$, $p < .001$. Consequently, the null hypothesis was rejected. The result indicates that the home environments reported by male and female students in the study were significantly different. The observed gender difference suggests that students' experiences within the home may vary according to gender. Home environment encompasses several dimensions of family interaction and parental behaviour, including nurturance, reward, control, protectiveness, punishment, rejection, deprivation of privileges and permissiveness. Differences in the way parents and other family members respond to male and female children may therefore contribute to differences in their reported home-environment experiences. The finding should not, however, be interpreted to mean that gender itself causes differences in home environment. Rather, gender may be associated with different patterns of family expectations, parental practices and domestic experiences within the context in which the students live.

The present finding is supported indirectly by García-Ros and García (2026), who examined parenting styles and school adjustment among 437 adolescents aged 12–18 years. Their study included sex as one of the independent variables in a factorial analysis and found differences in academic-adjustment patterns according to sex, with parenting style also interacting with sex and educational level. The authors reported that parenting and school-adjustment patterns varied by sex and educational level. Although their dependent variable was school adjustment rather than home environment, the study provides contemporary evidence that adolescents' experiences and outcomes associated with parenting can differ according to sex. The finding is also relevant to Madhu and Kumar (2025), who examined academic achievement in science in relation to home environment, locality and gender among 500 higher secondary students in East Singhbhum District, Jharkhand. Their study reported significant relationships between home environment and academic achievement among male and female students. The study therefore demonstrates that home-environment conditions are relevant to students of both genders, although its primary focus was the relationship between home environment and achievement rather than a direct comparison of male and female home-environment scores.

Evidence from Nigeria further demonstrates the importance of family characteristics in students' educational experiences. Amore, Amore, and Adesina (2024) investigated home environment and academic achievement among 850 Senior Secondary II students in 20 public secondary schools in Ogun-East Senatorial District. Their findings showed significant contributions of family income and parental educational background to students' academic achievement. The authors consequently emphasized the importance of parental attention and family socioeconomic circumstances in students' educational development. Similarly, Ndubuisi-Evans (2024) found

that parental education, occupation, family size, economic status and motivation were significant home-environment factors associated with students' academic performance in Owerri Zone, Imo State.

However, the present finding differs from Khakhlari and Roy (2025), who investigated home environment and academic achievement among secondary-school students in Udalguri District. Their study reported no significant difference in home environment based on gender. The difference between their finding and the present result may reflect differences in geographical, socioeconomic and cultural contexts, as well as differen-

ces in the instruments, sampling procedures and characteristics of the participants. The present study was conducted among secondary-school students in selected Urban and Rural areas, Borno state, Nigeria, whereas Khakhlari and Roy's study was conducted in Udalguri District, India. Thus, the contrasting results demonstrate that gender differences in home environment may not occur uniformly across different populations.

The significant gender difference found in the present study therefore contributes to the literature by showing that, within the population studied, male and female students reported significantly different home-environment experiences. This finding provides justification for considering gender when examining students' family circumstances. At the same time, the contradictory evidence from Khakhlari and Roy (2025) indicates that such differences should be interpreted in relation to the specific social and cultural context of the students rather than generalized as a universal gender pattern.

H_{02}: There is no significant difference in the mean home-environment scores of urban and rural secondary school students in selected urban and rural areas of Borno State

The second finding revealed a statistically significant difference in the mean home-environment scores of secondary school students from the selected urban and rural areas of Borno State. Urban students recorded a higher mean home-environment score ($M = 236.63$, $SD = 29.90$) than rural students ($M = 223.12$, $SD = 19.50$). The independent-samples t-test produced $t(198) = 3.79$, $p < .001$. Consequently, the second null hypothesis was rejected. The finding indicates that, within the urban and rural areas included in the present study, students reported significantly different home-environment experiences according to residential location.

The finding should be interpreted specifically within the context of the selected urban and rural communities in Borno State rather than as evidence that urban residence universally produces a more favourable home environment. The urban–rural classification in the present study represents differences in the residential contexts from which the sampled students were drawn. Such contexts may differ in access to educational facilities and materials, household economic opportunities, parental employment, social services, communication networks and other resources that may shape family life. These factors may provide a possible context for understanding the observed difference, although they were not directly tested as causal explanations in the present study.

The higher mean reported by urban students may therefore reflect differences in the characteristics of the households and communities represented in the selected urban and rural locations. However, the finding should not be interpreted to mean that all urban students experience supportive home environments or that all rural students experience disadvantaged home environments. Considerable variation may exist within both categories. Indeed, family income, parental education, occupation, family size, parenting practices and the availability of educational resources may vary substantially among households located in the same geographical area. The present finding has some support in the work of Madhu and Kumar (2025), who examined home environment, locality, gender and academic achievement among higher secondary students. Their findings demonstrated that home environment was significantly related to academic achievement among students across the groups examined. Although their study did not directly reproduce the urban–rural comparison conducted in the present Borno State study, it provides evidence that locality and home circumstances are relevant variables in understanding students' educational experiences.

Nigerian evidence also provides contextual support for considering differences in household circumstances when interpreting the present finding. Amore et al. (2024) reported that family income and parental educational background contributed significantly to students' academic achievement among senior secondary school students in Ogun State. Similarly, Ndubuisi-Evans (2024) identified parental education, parental occupation, family size,

economic status and motivation as important home-environment factors associated with students' academic performance in Imo State. Mohammed (2025) likewise reported the relevance of parental educational background, family size and socioeconomic status to students' educational outcomes. Although these studies did not establish that urban–rural residence caused differences in home environment, they indicate that characteristics of the household and family context are important considerations when examining students' educational experiences.

The present finding, however, differs from Khakhlari and Roy (2025), who reported no significant difference in home environment based on locality among secondary school students in Udalguri District. The discrepancy may reflect differences in the geographical, socioeconomic and cultural characteristics of the populations studied, as well as differences in sampling procedures, measurement instruments and definitions of urban and rural contexts. In the present study, the comparison concerned students drawn from selected urban and rural areas of Borno State; therefore, the findings are most appropriately understood as describing the particular population and locations included in this investigation. The urban–rural difference is also important when considered alongside the significant gender-by-location interaction obtained in the third hypothesis. The overall urban mean being higher than the rural mean does not fully describe the pattern of scores across the four gender-location groups. The interaction analysis showed that the difference between male and female students was relatively small in the urban group but substantially larger in the rural group. Consequently, residential location should not be considered independently of gender when interpreting the home-environment experiences reported by the students in the present study.

Overall, the finding indicates that residential location was associated with differences in reported home-environment scores among students in the selected urban and rural areas of Borno State. The result provides evidence for considering locality as an important demographic context in studies of secondary school students' home environments. Nevertheless, the finding should be generalized cautiously because the study examined selected urban and rural areas rather than every urban and rural community in Borno State. Further investigation involving a larger number of communities and direct measures of household socioeconomic characteristics, parental education, family structure and specific dimensions of the home environment would help to clarify the factors underlying the observed urban–rural difference.

H_{03}: There is no significant interaction effect of gender and location on the home-environment scores of secondary school students in selected Urban and Rural areas, Borno state.

The third finding revealed a statistically significant interaction effect between gender and residential location on students' home-environment scores, $F(1, 196) = 21.66$, $p < .001$. The null hypothesis was therefore rejected. The interaction indicates that the difference associated with gender was not the same for students in urban and rural settings. The simple-effects analysis provides an important interpretation of this interaction. Among urban students, the difference between boys (M = 4.06, SD = 1.63) and girls (M = 3.62, SD = 1.23) was not statistically significant, $F(1, 98) = 2.32$, $p = .131$, partial $\eta^2 = .023$. In contrast, among rural students, the difference was statistically significant, $F(1, 98) = 63.43$, $p < .001$, partial $\eta^2 = .393$, with rural boys (M = 3.61, SD = 1.28) scoring substantially higher than rural girls (M = 1.24, SD = 1.67). Thus, the significant interaction is primarily explained by the much larger gender difference observed among rural students.

This finding is important because the separate main effects of gender and location do not adequately describe the pattern in the data. Although significant differences were observed for both gender and location, the interaction demonstrates that the relationship between gender and home environment depended on residential location. In practical terms, male and female students in the urban group reported relatively similar home-environment scores, whereas a pronounced difference occurred between male and female students in the rural group. The finding has some conceptual relevance to García-Ros and García (2026), who used a factorial design to examine parenting styles, sex and educational level simultaneously in relation to several dimensions of adolescent school adjustment. Their study demonstrates the importance of examining demographic and family variables jointly because the relationship between parenting and adolescent outcomes may vary across sex and educational contexts. Although their study did not examine urban-rural location, its factorial approach provides a useful empirical basis for interpreting the present interaction effect.

The present finding also helps explain why studies examining only the separate effects of gender or locality may produce different results. Khakhlari and Roy (2025) reported no significant gender or locality differences in home environment among secondary-school students in Udalguri District. The present study, however, identified a significant interaction between the two variables. This suggests that demographic characteristics may sometimes operate jointly even when evidence from other settings does not reveal comparable main effects. The particularly large rural gender difference observed in the present study deserves attention. The effect size for the rural simple effect was partial $\eta^2 = .393$, whereas the urban comparison produced partial $\eta^2 = .023$. This pattern indicates that the gender difference was much more pronounced among rural students in the present sample. The result should not be interpreted as demonstrating that rural residence causes poorer home environments for female students. Rather, it indicates that the association between gender and reported home environment was considerably stronger in the rural group than in the urban group.

One possible explanation may include differences in parental expectations, household responsibilities, access to educational resources, family economic circumstances and patterns of parental interaction. Evidence from Amore et al. (2024), Mohammed (2025) and Ndubuisi-Evans (2024) demonstrates that parental education, family income, socioeconomic status, family size, parental occupation and motivation are relevant characteristics of the family context associated with students' educational experiences. These studies do not establish that such factors caused the gender-by-location interaction observed in the present study, but they provide a reasonable context for understanding why home experiences may differ across groups.

The findings also have implications for educational practice. A single intervention based solely on gender or solely on residential location may not adequately address differences in students' home experiences. The significant interaction suggests that interventions and counselling support should be sensitive to the combined circumstances of students' gender and residential context. Particular attention may be warranted for rural female students in the present study because they recorded substantially lower home-environment scores than the other gender-location groups. Such support should be based on further assessment of the specific dimensions of home environment responsible for the observed difference rather than assuming that all rural female students experience the same family conditions.

Taken together, the three hypotheses provide evidence that gender, residential location, and their interaction are relevant to the home-environment scores of the secondary-school students studied in selected Urban and Rural areas, Borno state. The significant gender effect indicates that male and female students differed in their reported home environments; the significant location effect indicates that urban and rural students also differed; and the significant interaction demonstrates that the gender difference varied according to residential location. The findings are broadly consistent with recent Nigerian research emphasizing the importance of family and socioeconomic characteristics in students' educational experiences. Amore et al. (2024) identified family income and parental educational background as significant contributors to academic achievement; Ndubuisi-Evans (2024) identified parental education, occupation, family size, economic status and motivation as important home-environment factors; and Mohammed (2025) identified parental educational background, family size and socioeconomic status as relevant factors. Usman and Sabitu (2025), working with 200 secondary-school students in Oyo Town, also examined home environment alongside learning style and academic achievement, further demonstrating the continued relevance of the home context in Nigerian secondary education research.

At the same time, the present findings do not correspond completely with all previous evidence. Khakhlari and Roy (2025) found no significant differences in home environment based on gender or locality. Such differences across studies indicate that home-environment patterns may be influenced by the particular characteristics of the population, geographical setting, family structure, socioeconomic conditions and measurement approaches used in each investigation. The present study therefore adds to the literature by examining gender and location simultaneously, rather than treating them only as separate demographic characteristics. The significant interaction, particularly the substantial difference between rural boys and rural girls, indicates that the home environment should be examined within the specific social and residential context in which students live. This interpretation is consistent with the broader evidence that family characteristics and parenting practices are associated with adolescents' educational experiences, while also recognizing that relationships observed in one population should not automatically be generalized to another. García-Ros and García (2026), for example,

similarly demonstrated the value of examining sex together with parenting and educational context when studying adolescent adjustment.

Accordingly, the findings suggest the need for context-sensitive and gender-responsive educational support, particularly for students whose home circumstances may place them at a disadvantage. Schools, counsellors and parents can use information about students' home experiences to identify areas requiring support. However, such interventions should be informed by assessment of the actual dimensions of the home environment and should avoid assuming that gender or rural residence alone determines the quality of a student's home environment.

CONCLUSION

The study concludes that the home environment of secondary school students in selected Urban and Rural areas, Borno state varies significantly according to gender and residential location, with a significant interaction between the two factors. Male and female students differed significantly in their reported home-environment scores, as did students from urban and rural locations. More importantly, the significant gender × location interaction showed that the gender difference was not uniform across locations: the difference between male and female students was not significant among urban students but was substantial and statistically significant among rural students, where rural boys reported considerably higher home-environment scores than rural girls. These findings indicate that students' home experiences are shaped by the combined influence of gender and residential context rather than by either factor in isolation. The study therefore underscores the need for context-sensitive and gender-responsive attention to students' home circumstances, particularly among rural students, to promote supportive family environments that can contribute to their educational and psychosocial development.

SUGGESTIONS FOR FURTHER RESEARCH

1. The study can be conducted on a larger sample and on a different location.
2. The study can also be taken as a comparative study of private and public school students.
3. Examination of individual HEI dimensions rather than a composite.
4. Investigation of socioeconomic status, family structure and parental education.
5. Qualitative studies exploring why rural girls reported substantially different scores.

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