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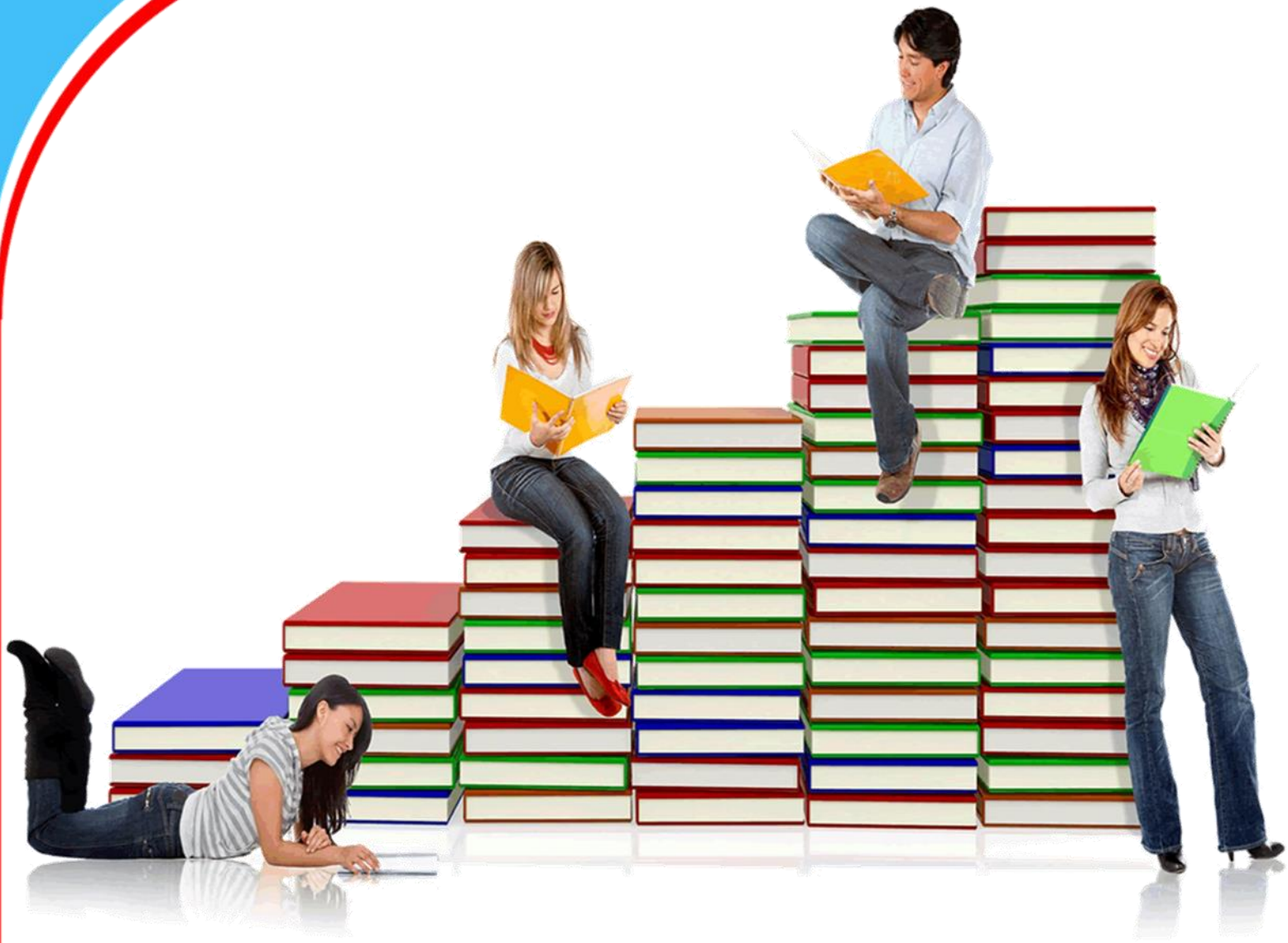

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Effect of Family Background on Female Students' Mathematics Performance

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Abstract

Purpose: The study investigates the effect of family background on female students' mathematics performance in Ghana's Tamale Metropolis.

Materials and Methods: The study was in line with the positivist assumption where a quantitative approach using descriptive design was used to collect the data. The sample was 488 respondents selected from form two (2) female senior high school students from the study area. The Pearson Product-Moment Correlation Coefficient, frequency, percentages, mean, and standard deviation was used to analyze the data.

Findings: The study pointed out that family backgrounds (parental educational background, parents' financial status, gendered cultural norms, and parents' religious beliefs) influence female students' performance in mathematics.

Implications to Theory, Practice and Policy: It was recommended that non-governmental organizations should include female students in financial empowerment programs such as CAMFED and others.

Keywords: *Gendered Cultural Norms, Family Background, Female Students, Mathematics Performance, Senior High School*

1.0 INTRODUCTION

There is evidence suggesting that mathematics has fundamental ties to human activity, notably in the period of advanced science and technology. Mathematics is therefore a crucial element of the academic curriculum of all formal school systems across the globe (Mahanta & Islam, 2012). According to Aithal and Aithal (2019), mathematics is a way of thinking, a way of life, and a language that is accepted globally and thus considered an important part of life in a rapidly changing world; it is a major component of society, individuals, the scientific research community, and technological advancement. For this purpose, Tourangeau et al. (2015) asserted that mathematics is a crucial topic both on its own and in light of its important connections to other subjects such as natural science, social science, engineering, and medicine, among others. Usman et al. (2021), using the same logic, believe that mathematics is a problem that pervades all facets of human endeavour and is regarded as the lifeblood of various fields. Walshaw (2010), adds to the conversation by recognizing mathematics as a crucial international curricular subject that has a significant impact on all aspects of life in the private, social, and urban sectors. That is, mathematics education is fundamental to practically all subjects or areas of study or life. As a result, mathematics is a universal area of study that plays a key role in all countries' school curricula, especially in the early stages.

Students' mathematical knowledge, skills, and values are heavily influenced by their parents' education. Parents who engage in educational activities at home benefit their children's educational success. Studies have shown that parental influence has a big effect on children's vocabulary, which is important for doing well in math and for other linguistic and social skills (Idris et al., 2020). The communication of educated parents at home, which includes clear pronunciation, good mathematics vocabulary, good mathematical skills, and logical arguments in the discussion, influences children's language development and the development of mathematical concepts. Because they have already gone through the educational process and are aware of the benefits and drawbacks of various educational options, educated parents can provide their children with appropriate guidance (Riccomini et al., 2015). They can also tell their kids about educational experiences that really get them excited to learn.

These experiences help the individual change their behaviour and correctly adapt to the situation, resulting in a successful and educated life. All of these interactions at home, including parental guidance, mathematical games, mutual communication, assistance in making educational decisions, and sharing educational experiences with children, have a significant positive impact on student's academic achievement. Idris et al. (2020) says that parents' decisions about how to set up their homes are also affected by how well they understand how education affects students' mathematics grades

Both internal and exogenous factors, such as the educational attainment of the parents, have an impact on the type of family history, which in turn affects the personality and mathematics abilities of female students (Mutodi & Ngirande, 2014). Partnership studies demonstrate that students perform well in school, particularly in core mathematics performance in SHS when they have support from educated parents. Cerinsek et al. (2013) say that children's responses to real-world situations and their perceptions of how good they are at math are mostly shaped by their parents' socialization. Parents who are educated and come from respectable families place a high emphasis on their daughters' education and academic achievement (LaRocque et al., 2011). Similarly, Mandl and Shaw (2010) state that the most educated parents understand that they are responsible for their

children's well-being at school, regardless of gender or age. The purpose was to find out the effect of family background on female students' mathematics performance in Ghana's Tamale Metropolis.

2.0 LITERATURE REVIEW

Parental Educational Backgrounds

According to Manwa (2014), educated parents or family members are more likely to encourage education and, for most cases, rapidly adapt to the needs of the student. It is reasonable to expect female students from educated families to perform well in school. In most cases, educated parents can collaborate with teachers to improve their daughters' academic performance. Parents who are well-educated take into account how much time their female children spend performing home duties and are conscious of the negative effects this has on their math performance (Ikkatai et al., 2020). To ensure that their children complete their homework and have enough time to study, such parents may also hire a domestic helper. This significantly lengthens their window of opportunity for library use, group activities, and reading or study time (LaRocque et al., 2011). The current study sought to determine whether female high school students had similar experiences.

Parents with a high level of education, or what social constructivists call the more knowledgeable other, typically establish a parent-teacher relationship that can provide additional adult reinforcement to support female students' academic achievement. A child's performance in mathematics up to the tertiary level has been regularly found to be positively associated with parents who have high levels of education since they are typically very involved in their child's early education (Topor et al., 2010). In classroom behaviour, academic performance, and relationships with teachers and parents, children's attitudes toward education are influenced by their parents' educational backgrounds (Baker et al., 2012). The goal of the current study was to determine how the family background of female SHS students' mathematics performance.

The family's culture and background influence the standards and values that the family upholds (Kao & Caldwell, 2017). The family prioritizes the principles that it considers to be most important. Possessions, knowledge, behaviour, relationships, their past, and names they wish to keep or retain are examples of values (Frey et al., 2019). A kid may exhibit deviant behaviour if their family has norms and beliefs that promote self-centeredness and encourage individuals to disregard the needs of the entire community (Ronel, 2011). Such aberrant behaviour could be troublesome since the student might not get along with other students, which could have a detrimental impact on the student's academic achievement (Tus, 2020). The focus of this study is on the student's unfavorable tendencies when it comes to doing schoolwork when the family does not place a high priority on education because this affects mathematics achievement. The current study sought to discover how gendered values and cultural norms influenced female students' high school performance.

Parents' Religious Belief

Researchers are interested in how religious beliefs affect students' performance in mathematics. Barrett (2010) questioned whether a student's participation in religious activities had any bearing on their academic success in mathematics. He discovered a positive correlation between engaging in religious activities and academic performance in mathematics and reading, suggesting that the answer to this question is yes. In his study, he also considered variables such as race, gender, and the socioeconomic status of the family, which have been linked to academic success in other studies.

But there was a strong link (Barrett, 2010) between taking part in religious activities and doing well in math class.

Jeynes (2012) also looked at how students' attendance at religious schools affected their academic performance. Students who attend religious schools outperform those who attend public, non-religious schools, according to his findings. In his research, he considered both racial and socioeconomic factors. He could also demonstrate the benefits of attending a religious school for Black, Hispanic, and low-socioeconomic-status students because they outperform their peers who do not attend religious schools. This refutes the claim that white students attending religious schools have higher socioeconomic status and, as a result, perform better academically (Jeynes, 2012). Many factors, including the school climate, racial harmony, the degree of school discipline, the prevalence of school violence, and the number of homework teachers assign, have been cited as reasons for students in religious schools to perform better academically. Even after controlling for these variables, students in religious schools outperform those in non-religious schools (Jeynes, 2012).

The larger society and religion have an impact on the family's customs and values (Lövheim, 2017). According to Adekola (2012), religious experiences provided by parents, particularly those associated with books and reading, influence the mathematics performance of Nigerian female secondary school students in addition to cultural factors. The study by Adekola also demonstrated that children in female secondary schools can perform well academically with the support of their belief systems. As a foundation for achieving good academic success through the deity's involvement, family belief systems may be utilized. Any given family's norms and values are shaped by a larger society and religion (Lövheim, 2017). The prevailing study sought to ascertain whether this is true of female SHS students in Ghana.

Parental Financial Status

According to some researchers, the achievement gap in education has a long history and can be seen even before students enter the classroom. Differences in parental financial situations can undoubtedly have an impact on a student's academic success in mathematics. These factors include a person's mobility and financial resources, as well as their health and nutrition (Lasode & Ogunsola, 2019; Matthews et al., 2010). "Parents always have the responsibility of raising their children" (Lasode & Ogunsola, 2019). Their financial situation is influenced by their parent's educational background, occupation, and line of work. The educational attainment, competitiveness, and performance in mathematics of their children are significantly influenced by the family's income (Kapinga, 2014). You are compared to a metaphorical thief when you give away what you don't have. When a woman's nutritional status improves, her young children's nutrition also does (Lasode & Ogunsola, 2019).

According to Martin and Collie (2019), the parent-teacher relationship is built on family values that are sound and good. These values also lead to positive teacher-student relationships, which are associated with positive academic and social outcomes in school. The social constructivist theory that drives this study, which claims that complex interactions between members of a family and those outside of it are mirrored in how well their children perform in school, is congruent with Martin and Collie study. According to Martin and Collie (2019) research on parent-teacher relationships, a student's cognitive ability is related to their achievement test scores, and the strength of their student-teacher bond has a significant impact on their academic performance in mathematics, as determined

by both their classroom behaviour and their performance on standardized achievement tests (Redding, 2019).

The socioeconomic level of the family has an impact on the child's self-esteem, according to Sekiwu et al. (2020) study on the factors influencing learning attainment in Uganda. A student's ability to focus and perform well in arithmetic may both be impacted by the worry that results from the structure of a poor home. Similarly, among all students, poor female SHS students are the most vulnerable in mathematics (Hagan et al., 2020). Similarly, Misty and Laura (2011) discovered that students from persistently impoverished families performed poorly due to the influence of poverty on their emotional and physical well-being. Consistent poverty may result in stress, anxiety, and worry, which may push a female student into prostitution, which would then have an impact on her academic performance. Low-income households frequently deprive their children of the stimulation and socialization necessary to prepare them for school (Crosnoe et al., 2016). The socioeconomic status of the student's family may be responsible for their lack of stimulation, which has a substantial impact on their academic performance (Adamu & Dikko, 2017; Abdul-Razak, et al. 2022). The goal of the current study is to determine whether female SHS students in Ghana had the same issues

Gendered Cultural Norms

Over the last few decades, the gender gap in educational outcomes has narrowed or even reversed in favour of women, but gender differences in performance in specific subjects appear to be more persistent, with boys consistently outperforming girls in math around the world. These gender gaps in math are frequently linked to other gender inequalities, such as women's underrepresentation in STEM fields and scientific and technical professions (Wang & Degol, 2017). However, there are significant regional differences in the magnitude of the gender gap in mathematics. The search for biological explanations for this global variation in the gender gap in mathematics performance has been replaced by the search for social explanations, particularly the relevance of culturally dominant gender norms and women's status in society (Penner et al., 2010). Gender norms that are common in a culture show up in students' social lives and are taught to them by their close friends and partners.

Not all gender differences in educational outcomes are the result of students' (rational) choices; rather, they can be the result of more nuanced factors associated with gender-specific mathematics achievement. Parents' and teachers' expectations may be influenced by widespread cultural beliefs that men are superior mathematicians, which may result in less support for girls in mathematics and other related fields (Abdul-Razak, et al. 2022; Wang & Degol, 2017). Girls may have a skewed view of their math skills because they get less praise, which makes them less interested in math.

Gender stereotypes have been proven to negatively affect female SHS students' academic performance, particularly in mathematics, according to studies like those (Arhin & Koryoe, 2015). Female senior high school students are impacted by their gender roles different manner than male students because women frequently fill the majority of positions at home. The majority of married women's societal roles are those of mothers who look after their children and husbands in numerous civilizations around the world (Kimmel, 2017). These gendered roles are thought to be factors in academic performance since they disproportionately affect female Senior High School pupils and cause them great hardship. The literature on the impact of gender-specific cultural norms on female pupils' mathematics ability is reviewed in this section.

In light of the situation facing female children in Zimbabwe, Mamvuto (2019) examined gender equity in schooling. Statistics from the Mamvuto study showed that due to gender-specific norms ingrained in Zimbabwean culture, female students perform worse academically than male students in terms of enrolment rates. The poll examined performance gaps between boys and females without considering the factors that contributed to these gaps. Typically, surveys do not include specific information about people's experiences (Manwa et al., 2020). The mixed-design methodology was used in this study to disclose specific information about gender codes as a factor in female senior high school students' academic achievement in mathematics.

3.0 METHODOLOGY

Study Design and Population

Positivist philosophical assumptions that fit with a quantitative approach were the basis for a study. The researchers purposefully selected second-year female SHS students from the Tamale metropolis for study. There are eight (8) SHS in the Tamale Metropolis. For a fair representation of respondents in the study, the researchers selected 20% of female second-year students from each SHS visited. The sample collected from the SHSs consisted of 488 female SHS students.

Study Tool and Data Collection

A thorough review of the literature was used to create a questionnaire that was used to collect data and find research gaps. The pilot testing of the instrument was done in the Sagnarigu municipal. The area for the pilot testing has similar characteristics to the study area. The purpose of the pilot testing is to help the researchers check for ambiguity in the questions before the actual data collection begins. The researchers spent eight (8) weeks on the data collection, which was done between September and October 2022.

Analysis of Data

The data analysis was done in two phases. The researchers used descriptive inferential statistics to analyse the data. The descriptive analysis was done using frequency, percentage, mean, and standard deviations, while the Pearson correlation coefficient was used to analyse the influential data.

4.0 FINDINGS

The result of the study was presented in tables where the analysis was done using frequency, percentage, mean, standard deviation and Pearson correlation coefficient.

Table 1: Influence of Parents' Educational Background on Students' Mathematical Performance

STATEMENT	SD N (%)	D N (%)	A N (%)	SA N (%)	M	StD
I am compelled to do my homework on my own without any Assistance from parents.	35(7.2)	103(21.1)	211(43.2)	139(28.5)	2.93	0.8
My parent's motivation and encouragement give me the "wee feeling" and "spirit of commitment" to have an interest in mathematics.	83(17)	173(35.5)	147(30.1)	8(17.4)	2.48	0.97
My parents don't care how well I perform in math; all they worry about is that my school expenses are met.	160(33.6)	129(26.4)	123(25.2)	76(15.6)	2.24	1.07
My parents support or assist in my studies by providing a private teacher who assists me at home.	164(33.6)	174(35.7)	95(19.5)	55(11.3)	2.08	0.99
My parents were not educated which caused my low interest in mathematics.	229(46.9)	137(28.1)	48(9.8)	74(15.2)	1.93	1.08
Average Mean and Standard Deviation					**2.33**	**0.99**

The overall mean scores for Table 1 were (M=2.33, and SD=0.99), which demonstrate that parents' educational backgrounds influence students' mathematics performance. The mean representing this statement “I am compelled to do my schoolwork on my own without any assistance from parents” was 2.93 (SD=0.88), indicating that students moderately agreed that their parents do not offer them essential assistance with their homework and academics. Concerning whether “my parent’s motivation and encouragement give me the “wee feeling” and “spirit of commitment” to have an interest in mathematics,” a mean of 2.48 (SD=0.97) was recorded, indicating that parental educational backgrounds do indeed affect students' performance in mathematics in Tamale Metropolis senior high schools.

Table 1 shows that “My parents do not care how well I perform in mathematics; all they care about is that my school expenses are covered,” with a mean score of 2.24 and a standard deviation of 1.07. The fourth most common influence of parental educational backgrounds on students’ mathematics performance was how “my parents support or assist in my studies by providing a private teacher who assists me at home.” This theme was captured (M=2.08, SD=0.98). My parents were also uneducated, which contributed to my lack of interest in mathematics, resulting in a mean score of 1.93 and a standard deviation value of 1.08. Finally, the results of Table 1 show that test values between 2.00 and 2.99 had a greater impact on SHS students’ mathematics performance in the Tamale Metropolis than values between 1.00 and 1.99. This suggests that parental educational backgrounds influence female students’ mathematical performance.

Table 2: Correlations Coefficients Result between Parental Educational Background (PEB) and Female Students' Performance in Mathematics (SPM)

Correlated variable	Analysis	Mean	StD.	PEB	SPM
PEB	Pearson Correlation	2.23	0.416	1	.180***
	Sig. (2-tailed)				.000***
	N			488	488
SPM	Pearson Correlation	2.23	0.416	.180***	1
	Sig. (2-tailed)				.000***
	N			488	488

***. Correlation is significant at the 0.05 level (2-tailed) (n= 488)

Table 2 shows a substantial but very low positive connection between parental educational backgrounds and students' mathematical performance in the Ghanaian environment. The results are as follows: r =.180**, M=2.82, SD=.492, sig. =0. 000**, $p < 0.05$, n=488. The two variables (parental educational backgrounds and student performance) have a variance of .180 (18%). This suggests that the variables predict themselves at 18%. The findings essentially suggest that parental educational backgrounds at SHSs positively predict or influence female students' mathematics performance. In other words, the higher the parent's educational background, the higher the students' achievement in mathematics, and vice versa.

The Impact of Parental Financial Status on Students' Mathematics Performance

This section studies how parental financial status impacts students' mathematics achievement. Financial assistance from parents is an essential factor in students' academic performance, particularly in mathematical studies, which need a lot of resources. In general, the section emphasizes how parental financial status influences students' achievement in mathematical learning. Table 3 summarizes the data about the impact of parents' financial position on students' performance.

Table 3: Impact of Parents' Financial Status on Students' Mathematics Performance

STATEMENT	SD N (%)	D N (%)	A N (%)	SA N (%)	M	StD
My low performance in mathematics is a result of the late payment of fees and lack of textbooks to support my mathematical interest.	40(8.2)	112(23)	168(34.4)	95(19.5)	2.95	0.95
A supportive environment for my interest in mathematics is created by my parents' financial support.	117(24)	161(33)	163(33.4)	47(9.6)	2.29	0.94
My parents are financially secure, and they provide me with enough math school materials	138(28.3)	186(38.2)	115(23.6)	48(9.8)	2.15	0.95
My parents have enough money to support my quest to studied mathematics to the highest level.	141(28.9)	216(44.3)	91(18.6)	40(8.2)	2.06	0.90
Since my parents are not wealthy, the house where we reside does not have enough room for me to study mathematics.	202(41.4)	165(33.8)	95(19.5)	26(5.3)	1.89	0.90
Average Mean and Standard Deviation					**2.27**	**0.93**

The overall mean in Table 3 is (M=2.27, SD = 0.93), indicating that respondents generally agree that parental financial status has an impact on mathematics performance. The findings showed that the

most frequent impact of parental financial status on students' performance in mathematics was identified as "My low performance in mathematics is as a result of the late payment of fees and lack of textbooks to support my mathematical interest," with a score value of (M = 2.97, SD = 0.94). My parents' financial support creates a conducive environment for my interest in mathematics, according to the second most frequently mentioned statement by respondents the impact of parental financial status on students' achievement in mathematics (M = 2.29, SD = 0.97). Table 3 demonstrates that my parents are financially secure and provide me with adequate math educational materials. To back up this claim, the statement recorded (M=2.15, SD=0.95), indicated that students were challenge with their mathematics courses. (M=2.06, SD=0.90) on the problem of "My parents have enough money to support my quest to study mathematics to the highest level." Finally, the results of Table 3 show that test scores between 2.00 and 2.99 had a greater influence on SHS students' mathematics performance in the Tamale Metropolis than values between 1.00 and 1.99. This suggests that parental financial status influences female students' mathematics performance.

Table 4: Correlations Coefficients Results between Parental Financial Status (PFS) and Students' Performance in Mathematics (SPM)

Correlated variable	Analysis	Mean	StD	PFS	SPM
PFS	Pearson Correlation	2.27	0.493	1	.185***
	Sig. (2-tailed)				.000***
	N			488	488
SPM	Pearson Correlation	2.27	0.493	.185***	1
	Sig. (2-tailed)				.000***
	N			488	488

***. Correlation is significant at the 0.05 level (2-tailed) (n= 488)

Table 4 shows a very low significant and positive association between parent financial level and student achievement in the Ghanaian context. r =.185**, M=2.27, SD=.493, sig. =.000** p<0.05, n=488, 2-tailed. The variation between the two variables (parent financial status and student achievement) is .185. It is translated as 18.5% in percentage terms. This suggests that the factors predict themselves at 18.5%, which effectively explains why parent financial status at the senior high level is likely to influence students' mathematics performance. In other words, a rise in parental financial status may have an impact on a student's mathematics performance.

Gendered Cultural Norms and Student Achievement in Mathematics

The purpose of this part was to investigate the impact of broad gendered cultural norms on students' mathematical performance. However, respondents were given a set of assertions about what they believe affects their performance in mathematics in gendered cultural norms in SHSs.

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Table 5: Effects of Gendered Cultural Norms on Students' Mathematical Performance

STATEMENT	SD N (%)	D N (%)	A N (%)	SA N (%)	M	StD
My household responsibilities like meal preparation, serving, cleaning, and housekeeping are activities that impact my mathematical performance.	70(18.2)	145(29.7)	164(33.6)	109(22.3)	2.64	0.98
My parents do not associate anything related to my education in mathematics with culture.	103(21.1)	139(28.5)	176(36.1)	70(14.3)	2.44	0.98
I come from a religious family, thus nothing my family does is influenced by society.	89(18.2)	180(36.9)	156(32)	63(12.9)	2.40	0.93
My learning and performance in mathematics are impacted by the fact that my parents are culture-minded individuals who frequently combine what I study in school with cultural lessons at home.	95(19.5)	225(46.1)	85(17.4)	83(17.0)	2.32	0.97
As a result of my parents' strong belief in cultural superstitions, they forbid me from freely interacting with my classmates and teachers at school, which hurts my ability to study mathematics.	122(25.1)	209(42.9)	86(17.5)	71(14.6)	2.22	0.98
Average Mean and Standard Deviation					**2.40**	**0.97**

Table 5 shows how gendered cultural norms affect students' mathematical performance. According to the findings, the majority of respondents (M=2.40, SD=0.97) believed that gendered cultural norms influence students' performance in mathematics. The consequence of their theory is that parents gendered cultural norms influence students' mathematics achievement, as evidenced by the aggregate mean of means (M= 2.40, SD= 0.97). Furthermore, the majority of respondents (M=2.64, SD=0.98) agreed that "due to family obligations such as meal preparation, serving, cleaning, and housekeeping activities, students do not receive enough time for their studies, which influences my mathematics performance." Aside that, respondents claimed that "my parents do not correlate anything related to my mathematics education with culture," with a mean score of 2.44 (SD=0.98). Furthermore, other respondents stated in Table 5 that "I come from a religious family, so nothing my family does is influenced by society," with a mean score of 2.40 (SD=0.93).

Other respondents, on the other hand, remark that "my learning and performance in mathematics are influenced by the fact that my parents are culture-minded individuals who frequently combine what I study in school with cultural lessons at home," resulting in text value (M=2.32, SD=0.97). Respondents stated once more that "as a result of my parents' strong belief in cultural superstitions, they restrict me from freely associating with my classmates and teachers at school, which impairs my ability to study mathematics" (M=2.22, SD=0.98). In conclusion, the findings in Table 5 suggest that gendered cultural norms have a detrimental effect on students' mathematics performance.

Table 6: Correlations Coefficient of Gendered Cultural Norms (GCN) and Students' Performance in Mathematics (SPM)

Correlated variable	Analysis	Mean	StD	GCN	SPM
GCN	Pearson Correlation	2.40	0.484	1	.105***
	Sig. (2-tailed)				.021***
	N			488	488
SPM	Pearson Correlation	2.40	0.484	.105***	1
	Sig. (2-tailed)				.021***
	N			488	488

***. Correlation is significant at the 0.05 level (2-tailed) (n= 488)

As shown in Table 6, the findings indicated a significant and low positive connection between gendered cultural norms and students' mathematics performance in the Ghanaian environment. The findings were as follows: r =.105**, M=2.40, SD=.484, sig. =.021** $p < 0.05$, n=488, 2-tailed. The variance of the two correlated variables (gendered cultural norms and students' mathematical achievement) is .105. In percentage terms, this means that the variables predict themselves 10.5% of the time. The findings imply that gendered cultural norms at the Senior High level are likely to affect or influence students' mathematics performance.

Effects of Parental Religious Belief on Students' Mathematics Performance

This section analyses how parental religious beliefs influenced students' mathematics performance. It is proposed that parents abandon their religious convictions to make mathematics learning effective and practical for their children. In this regard, the researcher investigated the effects of parental religious belief on students' mathematical performance in Ghana, and the results are shown in Table 7.

Table 7: Effects of Parents' Religious Belief on Students' Mathematics Performance

STATEMENT	SD N (%)	D N (%)	A N (%)	SA N (%)	M	StD
My religious belief takes a large portion of time without concentrating on my books.	78(16)	154(31.6)	99(20.3)	157(32.2)	2.76	1.08
Since my parents' religious beliefs occupy a significant portion of their time, they were unable to help me with my mathematics homework or other problem-solving tasks, which discouraged my interest in mathematics.	47(9.6)	180(36.9)	177(36.9)	84(17.2)	2.66	0.88
My parent's religious beliefs do not interfere with my studies.	87(17.8)	124(25.4)	204(41.8)	73(15)	2.58	0.96
My parents' deeply held religious conviction that female students perform poorly in mathematics, negatively impacts my academic performance.	109(22.3)	128(26.2)	151(30.9)	100(20.5)	2.54	1.05
My parents believe that the career opportunities for female math students are limited, which deters me from studying the subject.	67(13.7)	187(38.2)	144(29.5)	90(18.4)	2.53	0.95
Average Mean and Standard Deviation					**2.40**	**0.97**

Table 7 demonstrates that respondents in Tamale Metropolis reported that their parents' religious beliefs had a moderate effect on their achievement in mathematics in senior high school. The score (M=2.76, SD=1.08) indicates that "my religious beliefs take a large portion of my time while I am not concentrating on my books." However, "since my parents' religious beliefs occupied a substantial deal of their time, they were unable to help me with my mathematics homework or other problem-solving tasks, which discouraged my interest in mathematics" (M=2.66, SD=0.88) was recorded. The number of replies to the item "My parents' religious beliefs do not interfere with my studies" was (M=2.58, SD=0.96).

However, Table 7, on the other hand, shows that "my parents' deeply held religious conviction that female students perform poorly in mathematics, negatively impacts my academic performance" and "my parents believe that career opportunities for female mathematics students are limited, which discourages me from studying the subject" recorded (M=2.54, SD=1.05) and (M=2.53, SD=0.95), respectively. The means scores in Table 7 were greater than 2.00, indicating that parental religious belief affects students' mathematics performance.

Table 8: Correlations Coefficient of Parents' Religious Belief (PRB) and Students' Performance in Mathematics (SPM)

Correlated variable	Analysis	Mean	StD	PRB	SPM
PRB	Pearson Correlation	2.61	0.604	1	.222***
	Sig. (2-tailed)				.000***
	N			488	488
SPM	Pearson Correlation	2.61	0.604	.222***	1
	Sig. (2-tailed)				.000***
	N			488	488

***. Correlation is significant at the 0.05 level (2-tailed) (n= 488)

According to the findings in Table 8, there is a significant low positive link between parents' religious beliefs and students' mathematical achievement in Ghanaian senior high schools. The final results are as follows: r =.222**, M=2.61, SD=.604, sig. =.000** P< 0.05, n=488, 2-tailed. The research shows that the two associated variables (parents' religious beliefs and students' mathematics achievement) have a variance of .222. In percentage terms, it means that the variables predict themselves at 22.2%. According to the findings, parents' religious beliefs at the Senior High level are likely to influence students' performance.

5.0 DISCUSSION

Family Backgrounds of Students on Performance in Mathematics

The study's findings offered considerable evidence that parental educational backgrounds influenced female students' mathematics performance in Ghanaian high schools. The study delivers significantly better results indicating that parents' educational backgrounds influence students' mathematics performance as the students' replied to the statement, I am compelled to do my schoolwork on my own without any assistance from parents indicating that students moderately agreed that their parents do not offer them with the essential assistance with their homework and academics. Concerning whether my parent's motivation and encouragement give me the "wee feeling" and "spirit of commitment to have an interest in mathematics, the students indicated that

parental educational backgrounds do indeed affect their performance in mathematics in Tamale Metropolis senior high schools.

The study revealed that educated family members were supportive of the education of female students compared to uneducated family members. The present finding confirms Manwa's (2014) observation that educated parents or family members are likely to support education and, in most cases, quickly adjust to the needs of the student. It may be expected that female students coming from educated family backgrounds normally perform well at school. Educated parents, in most cases, can work together with teachers to improve the academic performance of their daughters. In the same vein, Mandl and Shaw (2010) say that most educated parents know that they are responsible for the well-being of their children at school, regardless of sex and age. This implies that a high level of support encourages female students to work harder and also to choose courses that are more rewarding.

The result of the hypothesis one is as follows: r =.180**, M=2.82, SD=.492, sig. =0. 000**, p < 0.05, n=488. The two variables (parental educational backgrounds and student performance) have a variance of .180 (18%). This suggests that the variables predict themselves at 18%. This suggests that the variables predict themselves at 18%. The findings essentially suggest that parental educational backgrounds at SHSs positively predict or influence female students' mathematics performance. In other words, the higher the parent's educational background, the higher the students' achievement in mathematics, and vice versa. The current findings support previous research that has shown that parental educational backgrounds have a significant impact on children's vocabulary, which is essential for academic success in mathematics as well as other linguistic and social abilities (Idris et al., 2020).

The Impact of Parental Financial Status on Students' Mathematics Performance

The findings showed that the most frequent impact of parental financial status on students' performance in mathematics was identified as "My low performance in mathematics is as a result of the late payment of fees and lack of textbooks to support my mathematical interest," which constitute 64.8% of respondents strongly agreed (agreed) and to statement that their parent does not support them enough on their school's fees and textbooks. My parents' financial support creates a conducive environment for my interest in mathematics, according to the second statement that respondents recorded 57% strongly disagreed (disagreed) identify it as the most frequent impact of parental financial status on students' achievement in mathematics.

The current study found that the parental financial status of the family has a significant impact on the academic performance of female students in a variety of ways, as education is a commodity that requires financial resources. According to Manwa (2014), financial constraints generate emotional tension and worry, which have a poor impact on academic performance. Similarly, Misty and Laura (2011) discovered that students from persistently impoverished families performed poorly due to the influence of poverty on their emotional and physical well-being. Such female students may be forced to quit school in search of opportunities to obtain funds for their educational materials, thereby missing out. They often take longer to complete their studies since they take study breaks while looking for ways to acquire money for their necessities. The study found that parental financial status had a positive relationship with female students' mathematics performance.

The result shows low significant and positive association between parent financial level and student achievement in the Ghanaian context. r =.185**, M=2.27, SD=.493, sig. =.000** p < 0.05, n=488,

2-tailed. The variation between the two variables (parent financial status and student achievement) is .185. It is translated as 18.5% in percentage terms. This suggests that the factors predict themselves at 18.5%, which effectively explains why parent financial status at the Senior High level is likely to influence students' mathematics performance. The current findings confirm that a family's income has a significant influence on their children's educational attainment, competitiveness, and mathematical performance (Kapinga, 2014).

Gendered Cultural Norms and Student Achievement in Mathematics

Female students were found to have insufficient time for their studies as a result of family chores such as meal preparation, serving, cleaning, and housekeeping activities, which influenced their mathematical performance with the representation of 55.9% of students strongly agreed or agreed with trust statement while 44.1% strongly disagreed or disagreed. This assertion from the respondents is supported by the study of Muzindutsi and Masango (2015) concluded that there are a variety of reasons for female students' poor academic performance in their study of the impact of socialization with gender roles on the academic achievements of girls in secondary schools in Kenya. Domestic duties and prejudiced upbringings that present boys as superior to girls are examples of gendered roles. This runs counter to one of the three beliefs that guide this study, the ideology of feminism, which supports equal rights and treatment for all genders.

The findings of the study by Muzindutsi and Masango (2015) also showed a correlation between female students' involvement in household tasks and their low attendance in class, which hurts their academic performance. Similar to this, a study on South Asian girls by Huang et al. (2010) found that throughout puberty, girls go through a socialization process that prepares them to be good mothers, which severely limits their ability to attend school. According to the study, the girls who participate in the initiation miss school for a while, which has an impact on their academic performance the same holds for India.

The study discovered that gender norms had a considerable impact on the academic achievement of female students. All participants in the current study agreed that gender norms such as domestic chores and social attitudes have a strong influence on female students' academic performance, as evidenced by comments on the five scales in which more than 50% of respondents agreed gendered cultural norms have an impact on them. This is validated by Muzindutsi and Masango (2015) discovered a correlation between female students' engagement in lessons and their poor academic achievement as well as their involvement in home responsibilities. This means that female students' involvement in household tasks diminishes their participation during teaching and, as a result, jeopardizes their academic achievement.

There was a substantial low positive association between gendered cultural norms and female students' performance in the Ghanaian environment, according to the hypothesis data. r =.105**, M =.40**, SD =.484, sig =.021, p< 0.05, n = 488, 2-tailed. The variance of the two correlated variables (gendered cultural norms and mathematics achievement of students) is .105. This suggests that the variables correctly forecast themselves 10.5% of the time. The data suggest that gendered cultural norms in senior high school affect or influence students' mathematics performance. This validated the findings that widespread gendered cultural beliefs that men are superior mathematicians may influence parents' and teachers' expectations, resulting in less support for girls' performance in mathematics and other related fields (Wang & Degol, 2017)

Effect of Parental Religious Belief in Students' Mathematical Performance

The study discovered that the students' mathematical performance was impacted by their parent's religious beliefs, which prevented them from completing the majority of their math homework or other problem-solving tasks. According to the hypothesis, there was a significant but weakly positive link between parents' religious beliefs and their daughters' mathematics performance in senior high schools in Ghana. According to Barrett (2010) questioned whether a student's participation in religious activities had any bearing on their academic success in mathematics. He discovered a positive correlation between engaging in religious activities and academic performance in mathematics and reading, suggesting that the answer to this question is yes. The following statistics are provided for the outcome: r =.222**, M=2.61, SD=.604, sig. =.000**, p< 0.05, n=488, 2-tailed.

This study stands in stark contrast to Manwa's (2014a) research, which focused on Zimbabwean beliefs that place a high value on the marriage because they believe that it is a necessary and God-created connection. It may be difficult for highly educated women to find husbands since the notion that a strong woman can control her husband is linked to the issue of how important marriage is. This bias may induce female students to undervalue their education and perform badly. The study found that belief systems typically contribute to female students' feelings of inferiority, low self-esteem, and insecurity. Manwa (2014) found in a prior study done in Zimbabwe that female students usually perform below average due to negative self-perceptions implanted in them by African culture, which thinks that women lack logic and are sluggish to grasp concepts. Similar to this, Doey et al. (2014) assert that girls exhibit less confidence in their academic achievement as a result of socialization. The data suggest that parents' religious beliefs in senior high school affect or influence students' mathematics performance.

6.0 CONCLUSION AND RECOMMENDATIONS

Conclusion

It was discovered that family backgrounds (parental educational background, parent financial status, gendered cultural norms, and parent religious beliefs), class size, and teachers' attitudes and competencies are determinants of female students' performance in mathematics in senior high schools in Ghana. The study shows that parental educational background, parental financial status, gendered cultural norms, and parental religious beliefs are all positively correlated with female students' performance in mathematics in Ghanaian SHSs, and that each variable predicts female students' performance in mathematics at a certain variation or percentage.

Recommendations

The study recommends that relevant institutions should develop programmes or activities that build positive parental attitudes towards female students' mathematics education. Also, Ghana education service and non-governmental organization should incorporate female students in financial empowerment programmes such as CamFEd and others. Moreover, Ghana education service and non-governmental organization should create policies that support gender-neutral roles in SHSs. Finally, policymakers should implement regulations that will eliminate religious beliefs that inhibit female students from excelling in mathematics.

Limitations

The results of this study are like those of other studies done in Ghana to help improve the performance of female students in the country's educational system. Another type of constraint encountered by the researcher was the respondents' lack of willingness to divulge information, which resulted in a delay in the data collection procedure. Also, when they got the questionnaire back with only some of the questions answered, the researcher helped them answer some of the questions. Given these constraints, the researcher may come to the conclusion that the descriptive survey design was ideal for the study. Obtaining answers to Chapter One's main research questions and hypotheses allowed us to investigate the factors that influence how well female students in the Tamale metropolis perform in mathematics.

Ethical Statements

Before the questionnaires were given to the pupils, the administration of each school's authorities' approval was requested. The authorities frequently provided the introductory letter, which was taken from the Department of Mathematics and Science Education, before data collection. Participants were informed that they could withdraw from the study at any time during the research period and that their participation was entirely voluntary. Prior to beginning the data collection process, the following ethical considerations and their relevance to the study were discussed: Respondent Permission, Anonymity, Informed Consent, and Confidentiality.

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Conflict of Interest

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Authorship Contribution Statement

Kiss-Abrokwah, A. Karim and Bornaa: Conceptualization and Design

A. Karim, Owusu, Gabina, Apoenchir, S. Karim: Data acquisition and statistical analysis/interpretation

Kwakye and Kissi-Abrokwah: Draft manuscript

A. Karim, Bornaa, Kissi-Abrokwah, Mohammed, Apoenchir, S. Karim, Susuoroka and Kwakye: Critical revision of manuscript

A. Karim, Bornaa, Kissi-Abrokwah, Mohammed, Apoenchir, S. Karim, Susuoroka, Kwakye: Final approval

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