

School Feeding Program in Ghana: Factors Affecting Academic Performance among Public Primary School Pupils in Garu-Tempene District

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ABSTRACT: The study used a district-level data from 2008-2012 to examine socio-economic factors affecting academic performance of pupils in food insecure district of Garu-Tempene, Upper East Region. The study explored the possible correlation between selected factors like age (years), type of marriage, religion, number of dependent, type of residence/domicile, type of dwelling, occupation and highest qualification of parent/guardian as independent variables and academic performance as dependent variable. A quasi-experimental design was used in selecting 360 pupils both from participating and non-participating public primary schools with similar socio-economic characteristics in Garu-Tempene District. The study revealed a causal link between school feeding program and academic performance as the participating schools' pupils had an improved academic performance. Again, Pearson Product Moment Correlation coefficients for socio-economic variables and academic performance results showed positive significant correlations ($p < 0.05$) with type of marriage, ($r = 0.69$), number of dependent, ($r = 0.193$) and type of residence/domicile, ($r = 0.188$). The study therefore recommended that the school feeding programs' sustainability should be well-targeted not only on the basis of food insecurity but through a more rigorous in-depth socio-economic survey and vulnerability mapping with a view to scaling-up of the program in food deficit areas to incorporate more schools.

KEYWORDS: Socio-economic Factors, Academic Performance, School Feeding Program, Ghana

1 INTRODUCTION

Primary education is not only a human right; it is also becoming a social necessity. The share of poverty decreases with the rise in educational levels. Hence, the main reason for spending public money on primary education is to invest in human capital that would promote and accelerate the economic, social, cultural and political development of a country. To stem the tide in poor academic performance in public primary schools among poor vulnerable children in food insecure areas, the Ghana School Feeding Program (GSFP) was introduced as a pilot project in September, 2005. This pilot phase was initiated in 10 selected schools across the 10 Regions in Ghana. By 2008, it has incorporated 170 districts and by 2011 it had covered 713,590 children in targeted schools across the entire country (GoG, 2006). The program is a Comprehensive Africa Agricultural Development Program (CAADP) Pillar-3 of NEPAD which aims at enhancing food security and reducing hunger in line with the UN-MDGs on hunger, poverty and universal primary education.

Geographically, Ghana is a small country of 24.6 million people (GSS, 2012). Formal education remains the core pillar of human development with 18,579 primary schools nationwide (GoG, 2010). Following the introduction of Free Compulsory and Universal Basic Education (FCUBE) and the Capitation Grant to promote and increase enrolments in all basic schools in the country, these have culminated into a dramatic increase in the number of kindergartens and primary schools across the country to accommodate the increasing numbers without corresponding attention to quality (GoG, 2008). Addo-Adeku *et al.*, Okyerefo *et al.* (2011) citing GoG (2008) reported that, there has been evidence of significant drop in the academic performance of pupils during the Basic Education Certificate Examinations (BECE) in public schools between 2001 and 2010. In the 2007 BECE results, about 39 per cent of the candidates who sat for the examination had aggregate 31-60 and the overall pass rate was 63 percent. Again, Sarah *et al.*, (2010) indicated that the academic performance of pupils in Upper East Region particularly Garu-Tempene District has even worsened despite the numerous efforts to improve the quality of basic education. Moreover, the socio-economic backgrounds of parents have also resulted in the differences of academic performance of pupils which are factors affecting the implementation of a policy intervention.

Enrolling children in school is one thing, but keeping them in school and making sure that they learn is another (Adamu-Issah *et al.*, 2007). Access and quality of education are interventions aimed at making sure the UN-MDGs on hunger, poverty and universal primary education are achieved. One of the several interventions used in addressing the UN-MDGs is the School Feeding Program. The Ghana School Feeding Program which aimed at providing one nutritious meal per day for pupils in public primary schools has ran since 2005-2012 has not been assessed to ascertain the factors affecting academic performance of targeted beneficiaries.

2 PURPOSE OF THE STUDY

The purpose of the study was to assess the socio-economic factors affecting academic performance of participating pupils in Guru-Tempene District in relation to the Ghana School Feeding Program. Specifically, the objectives are to:

- describe the pupil's/parent's/guardian's socio-economic characteristics;
- describe school teachers' characteristics;
- ascertain the academic performance of pupils in participating and non-participating schools in core subjects of English Language, Mathematics and Integrated Science by sex in public primary schools;
- determine the socio-economic factors influencing academic performance of pupils in public primary schools

3 RESEARCH QUESTIONS

The following research questions were raised to guide the study:

- What are the pupil's/parent's/guardian's socio-economic characteristics?
- What are the school teachers' characteristics?
- Does the school feeding promote changes in pupil's academic performance in schools?
- What specific socio-economic variables affect academic performance of pupils in schools?

4 METHODOLOGY

4.1 RESEARCH DESIGN

The study used a quasi-experimental design which was acceptable in the circumstance due to the absence of baseline data on the program which had ran for seven years. According to Duflo (2004), randomized design could be appropriate in order to obtain credible and transparent estimates of program impact that overcome the problems often encountered when using other evaluation practices. The critical objective of any evaluation of this nature was to establish that a non-participating group, who in the absence of the school feeding intervention would have had outcomes similar to the participants. In support of this assertion, Oloruntoba (2000) posited that the comparison group (non-participants) gives us an idea of what would have happened to the participating group if it had not been exposed, and thus allows us to obtain an estimate of the average effect on the treatment group (participants).

4.2 POPULATION, SAMPLING PROCEDURE AND SAMPLE SIZE

The study population (N) comprised of all pupils, parents and headteachers / class teachers in all public basic schools across Garu-Tempene District. Classes four, five and six Pupils were purposively selected as samples for the study due to the

fact that these pupils were more matured and would be able to respond to the questionnaire. Moreover, these pupils would be most likely to have participated in the school feeding program for at least three years. Therefore, a total sample size (n) of 360 pupils, made up of (180 participants and 180 non-participants) with the same socio-economic characteristics was selected for the study based on Krejcie and Morgan Table (1970) for determining sample sizes. The study employed simple random, stratified and purposive sampling techniques in selecting the sample for the study.

In each school (participating schools and non-participating schools), lists of classes four, five and six were obtained from the Class Registers' to constitute the pupils' sample frame. Simple random sampling technique was used to select 10 pupils each from a class. Headteachers / Class Teachers from each school (participating schools and non-participating schools) were also purposively selected for the study. However, parents of each index pupil provided data on parent/guardian socio-economic characteristics.

4.3 METHOD OF DATA COLLECTION AND ANALYSIS

Both primary and secondary data were used for the study. Primary data was obtained using questionnaire to solicit data from the respondents while secondary data was obtained from the GSFP District Secretariat, Ghana Education Service and Ghana Health Service. The instruments were subjected to face and content validity by experts in rural extension. For reliability of the instrument, a test-retest method was used on similar respondents at an interval of two weeks at a location outside the study area. A high Cronbach Alpha Coefficient ($r=0.72$) was obtained which indicated that the instrument was reliable enough to be used. The instrument was administered on respondents in various schools during lunch. Data collected was sorted, coded and analyzed using SPSS version 16.0 Special Edition for Windows for both descriptive statistics and Pearson Product Moment Correlation (PPMC) analyses with decision taken *a priori* at 5% level of significant.

5 RESULTS

Pupils/parents/guardians were major stakeholders in primary education; hence, their socio-economic characteristics were important as presented in Table 1.

5.1 SEX OF PUPILS

Findings show that more than half of the participants and non-participants are boys (55.6 % and 51. 7% respectively) and less than half are girls (44.4% and 48.3% respectively). This male-dominance was noted by UNESCO (2012) which affirmed that gender disparity still exist among pupils despite the effort to bridge the gap between boys and girls in access to primary schooling in Northern Ghana.

Table 1: Distribution of pupils/parents/guardians demographic characteristics (Participating and Non-Participating Schools)

Variables	Participating Schools						Non-Participating Schools					
	Girls			Boys			Girls			Boys		
	Freq	%	Mean	Freq	%	Mean	Freq	%	Mean	Freq	%	Mean
Sex:	79	44.4		99	55.6		87	48.3		93	51.7	
Total	79			99			87			93		
Age (Years):												
< 10	10	12.7		6	6.1		12	12.9		5	5.7	
11-15	63	79.7	12.8	74	74.7	13.4	75	80.6	12.7	64	73.6	13.6
16-20	6	7.6		19	19.2		6	6.5		18	20.7	
Total	79	100.0		99	100.0		93	100.0		87	100.0	
Religion of pupil's parent/guardian:												
Muslim	47	59.5		54	54.5		53	57.0		46	52.9	
Christianity	27	34.2		35	35.4		27	29.0		31	35.6	
African Traditional Religion	5	6.3		10	10.1		13	14.0		10	11.5	
Total	79	100.0		99	100.0		93	100.0		87	100.0	
Type of marriage by parent/guardian:												
Parent is/was monogamous	24	30.4		30	30.3		34	36.6		31	35.6	
Parent is/was polygamous	53	67.1		67	67.7		59	63.6		55	63.2	
Single parent	2	2.5		2	2.0		0	0.0		1	1.1	
Total	79	100.0		99	100.0		93	100.0		87	100.0	
Type of domicile/residence:												
Rural	58	73.4		77	77.8		76	81.7		75	86.2	
Peri-urban	13	16.5		16	16.2		16	17.2		12	13.8	
Urban	8	10.1		6	6.1		1	1.1		0	0.0	
Total	79	100.0		99	100.0		93	100.0		87	100.0	
Type of Dwelling												
Mud with thatched roof	25	31.6		33	33.3		25	26.9		25	28.7	
Mud with zinc roof	44	55.7		59	59.6		60	64.5		60	69.0	
Block house with zinc roof	10	12.7		7	7.1		8	8.6		2	2.3	
Total	79	100.0		99	100.0		93	100.0		87	100.0	
Variables	Freq	%		Freq	%		Freq	%		Freq	%	
Occupation of parent/guardian:												
Parents in paid employment	12	15.2		11	11.1		8	8.6		5	5.7	
Crop Farmers	59	74.7		83	83.8		67	72.0		69	79.3	
Non-farm	6	7.6		4	4.0		9	9.7		8	9.3	
Cattle rearers	2	2.5		1	1.0		9	9.7		5	5.7	
Total	79	100.0		99	100.0		93	100.0		87	100.0	
Educational Attainment of parent/guardian:												
Basic education	10	12.7		10	10.1		11	11.8		11	12.6	
Secondary	2	2.5		5	5.0		8	8.6		9	10.4	
Tertiary	9	11.4		7	7.1		3	3.2		3	3.4	
Quranic	10	12.7		12	12.1		12	12.9		10	11.5	
No education	48	60.8		65	65.7		59	63.4		54	62.1	
Total	79	100.0		99	100.0		93	100.0		87	100.0	

5.2 AGE

According to GoG (2010), the general schooling age for pupils was 4 -14 years. Findings revealed that for participating schools, the mean age by sex was 12.8 for girls and 13.4 for boys. The age range was 11-15 years. For non-participating schools, the mean age by sex was 12.7 for girls and 13.6 for boys. The age range was also 11-15 years.

5.3 RELIGION / TYPE OF MARRIAGE OF PARENTS/GUARDIANS

In most part of Northern Ghana, Muslim religion pre-dominates. Findings showed that for participating pupils by sex, more than half of the parents/guardians (59.5% girls 54.5% boys) and non-participants (57.0% girls and 52.9% boys) are Muslims. By extension, the parents/guardians religion automatically becomes that of the pupils. This signifies the presence of Islam in the study area.

In terms of marriage, findings by sex of pupils also reveal that polygamy was still being practiced by most of the parents/guardians. Parents/guardians of pupils in participating schools (67.1% girls and 67.7% boys) and non-participating (63.6% girls and 63.2% boys) were polygamous.

5.4 TYPE OF DOMICILE / DWELLING.

The findings also showed that majority of the pupils' parents/guardians (73.4% and 77.8% participants, and 81.7% and 86.2% non-participants) reside in the rural communities. Using the pattern of housing as a proxy for the indication of poverty, one-third of pupils (31.6% girls and 33.3% boys) participants, and (26.9% girls and 28.7% boys) non-participants resided in dwelling constructed with mud and thatched roof, while more than half (55.7% girls and 59.6% boys) participants, and (64.5% girls and 69.0% boys) non-participants resided in dwellings constructed with mud and zinc roof. The implication of this finding signifies the presence of poverty among the parents/guardians. Empirical evidence shows that despite the significant decline in poverty at the national level, the northern regions still have the highest poverty rates, particularly in the rural areas (GoG and UNDP, 2010, and World Bank, 2004).

5.5 OCCUPATION AND EDUCATIONAL LEVELS OF PARENTS/GUARDIANS

Findings show that farming is the main occupation of the parents/guardians. Majority of parents/guardians (74.7% girls and 83.8% boys) participants, and (72.0% girls and 79.3% boys) non-participants) are farmers. The implication is that pupils were likely to be absent from school to work on the farms.

Generally, the literacy level of parents/guardians is low. Findings show that most parents/guardians (60.8% girls and 65.7% boys) participants, and (63.4% girls and 62.1% boys) non-participants) have no education. This confirms the assertion made by *de Lange*, (2007) that the high level of illiteracy among parents/guardians was due to the deliberate policy of building a crop of labor force in the north as migrant farmers in the south by colonial masters.

5.6 SCHOOL TEACHERS' CHARACTERISTICS

Table 2 shows that majority of teachers (71.1% 89.5%) in participating and non-participating schools respectively were males, aged 21 and 30 years (55.3% participants and 50.0% non-participants), had teaching experience of less than five years (71.1% participants and 68.4% non-participants) and were mostly Christians (63.2% participants and 63.2% non-participants). In term of qualifications, more than half (57.9% participating and 52.6% non-participating schools) possessed Diploma meaning that they possess capacity to pursue further studies. This implies that they are young teachers requiring motivation and incentives to remain in the rural area.

Table 2. School Teachers' Characteristics

Information	Participating School		Non-Participating School	
	Frequency	Percent	Frequency	Percent
Sex:				
Female	11	28.9	4	10.5
Male	27	71.1	34	89.5
Total	38	100.0	38	100.0
Age:				
< 20 years	2	5.3	9	25.0
21-30 years	21	55.3	18	50.0
31-40 years	8	21.1	4	11.1
41-50 years	5	13.2	5	13.9
> 50 years	2	5.3	0	0.0
Total	38	100.0	36	100.0
Religion:				
Muslim	9	23.7	12	31.6
Christianity	24	63.2	24	63.2
African Traditional Religion	5	13.2	2	5.3
Total	38	100.0	38	100.0
Teachers' Qualification:				
B.Ed, B.A, B.Sc.	2	5.3	2	5.3
Diploma	22	57.9	20	52.6
Teachers' Certificate 'A'	6	15.8	4	10.5
SSSCE/WASSCE	6	15.8	12	31.6
BECE	2	5.2	0	0.0
Total	38	100.0	38	100.0
Teaching Experience:				
< 5 years	27	71.1	26	68.4
5 - 10 years	3	7.9	6	15.8
11- 20 years	4	10.5	1	2.6
> 20 years	4	10.5	5	13.2
Total	38	100.0	38	100.0

5.7 ACADEMIC PERFORMANCE OF PUPILS IN PARTICIPATING AND NON-PARTICIPATING SCHOOLS IN CORE SUBJECTS (ENGLISH LANGUAGE, MATHEMATICS AND INTEGRATED SCIENCE)

Table 3 presents the academic performance of pupils in core subjects. Findings show that most girls and boys in English Language (63.3% and 63.6%), Mathematics (62.0% and 69.7%) and Integrated Science (68.4% and 66.6%) respectively in participating schools scored above 70% in core subjects of English Language, Mathematics and Integrated Science. The GSFP has succeeded in improving the academic performance of pupils. This assertion is supported by that of Kazianga *et al.* (2012), Cecilia and María (2011), Belot and James (2010), Kristjansson *et al.* (2009), Singh (2008), Vermeerch and Kremer (2004) and Ahmed (2004) who all found evidences linking the difference between the academic performance (English Language, Mathematics and Integrated Science) of pupils in participating and non-participating schools which agrees with the finding. Comparatively, in the non-participating schools, more than half of pupils (Girls and Boys) (English Language (55.9% and 55.2%), Mathematics (57.0% and 56.3%) and Integrated Science (59.1% and 56.1%) respectively) scored below 70% in core subjects of English Language, Mathematics and Integrated Science.

On the contrary to this findings, Swartz (2009) carried out an evaluation of school feeding program as a service delivery mechanism to improve academic performance of needy learners in Bonteheuwel, South Africa, The findings revealed that, the school feeding program was not effective and that more should be done to improve its delivery. In Argentina, Cecilia and María (2011) through randomized pairing of participants and non-participants of disadvantaged school pupils showed significant positive result. The presence of the school meal services improved the academic performance of the pupils in Language Test Scores by 3.5 per cent of the mean or by 14.8 per cent of the standard deviation of the distribution of Language test scores. Though, that could not be said of Mathematics.

In Kenya, Vermeersch (2003) examined the effects of subsidized school meals on school participation, educational achievement, and school finance in a developing country setting. The findings revealed a 30 per cent higher participation of children in the treatment group than in the comparison group leading to higher test scores (0.4 of a standard deviation) only in schools where teachers were relatively well trained prior to the program and larger class sizes. For progression rates to primary schools, treatment and comparison schools were similar. Another finding was high teacher absenteeism of up to 30 per cent despite the attention and resources devoted to them on both treatment and comparison group.

In general, Kamlongera (2009) after assessing works of others on school feeding and equitable access to education in Malawi, revealed that, schools with school feeding program had higher enrolment, improved student's performance in class, a gender ratio of more than one in favor of girls, reduced absenteeism and parents encouraged to send their kids to schools than schools that were not enjoying from the program under the same circumstance.

Table 3. Academic performance of pupils in participating and non-participating schools in core subjects (English Language, Mathematics and Integrated Science) in last term (2011/2012) examination by gender in public primary school

Core Subjects	Participating School				Non- Participating School			
	Girls		Boys		Girls		Boys	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
English Language:								
Excellent	50	63.3	63	63.6	22	23.7	30	34.5
Average	24	30.4	30	30.3	52	55.9	48	55.2
Poor	5	6.3	6	6.1	19	20.4	9	10.3
Total	79	100.0	99	100.0	93	100.0	87	100.0
Mathematics:								
Excellent	49	62.0	69	69.7	23	24.7	24	27.6
Average	23	29.1	26	26.3	53	57.0	49	56.3
Poor	7	8.9	4	4.0	17	18.3	14	16.1
Total	79	100.0	99	100.0	93	100.0	87	100.0
Integrated Science:								
Excellent	54	68.4	66	66.6	20	21.5	26	29.9
Average	14	17.7	26	26.3	55	59.1	49	56.3
Poor	11	13.9	7	7.1	18	19.4	12	13.8
Total	79	100.0	99	100.0	93	100.0	87	100.0

*Excellent (70-100), Average (40-69), Poor (< 40)

5.8 CORRELATION BETWEEN SOCIO-ECONOMIC CHARACTERISTICS AND ACADEMIC PERFORMANCE

Correlation coefficients for socio-economic variables and academic performance are presented in Table 4 using PPMC. Academic performance (AP) showed positive significant correlations ($p < 0.05$) with type of marriage TM, ($r = 0.69$), number of dependent ND, ($r = 0.193$) and type of residence/domicile TR, ($r = 0.188$). The implication was that pupils' with few family sizes would probably do performed better than those with large family. Stephanie (2012) reported that we are in a world in which pre-determined household characteristics affect a child's educational access and success at birth.

Table 4: Correlation Coefficients between Socio-economic Characteristics and Pupils Academic Performance

Variables	AP	AG	TM	RP	ND	TR	TD	OP	HQ
AP	-								
AG	0.066	-							
TM	0.153*	0.056	-						
RP	0.069	0.064	0.023	-					
ND	0.193*	0.280**	0.049	0.169*	-				
TR	0.188*	-0.007	0.136	-0.192*	-0.176*	-			
TD	0.103	-0.105	0.076	-0.135	-0.036	0.392**	-		
OP	-0.122	0.005	0.005	-0.125	-0.039	-0.133	-0.005	-	
HQ	-0.026	0.095	-0.041	0.086	-0.002	-0.220**	-0.049	0.221**	-

*Significant @ 0.05 level, **Significant @ 0.01 level.

Legend:

AP: Academic Performance

AG: Age (years)

TM: Type of marriage

RP: Religion of parent/guardian

ND: Number of dependent

TR: Type of residence/domicile

TD: Type of dwelling

OP: Occupation of parent/guardian

HQ: Highest qualification of parent/guardian

6 CONCLUSION AND RECOMMENDATIONS

The study concluded that the adoption of the program was high among the targeted public primary schools, which was one of the yardsticks used by policymakers interested in the impact on the beneficiaries, hence, the GSFP could well be said to be well-implemented. There seems to be a causal link between SFP and academic performance in core subjects of English Language, Mathematics and Integrated Science. The impact of the program suggested generally positive effect of the intervention on school children in targeted primary schools. The study also found evidence linking improved academic performance to parent/guardian socio-economic characteristics. It is therefore recommended that the school feeding programs' sustainability should be well-targeted not only on the basis of food insecurity but through a more rigorous in-depth socio-economic survey and vulnerability mapping with a view to scaling-up of the program in food deficit areas to incorporate more schools. To further build teachers capacity, it is recommended that Distant Learning program should be introduced among teachers to encourage them remain in their duty post to teach and with commensurate enhancement to remuneration

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