



## Effects of Microenterprise Development on Caregivers' Economic Contribution and Household Consumption of Animal Source Foods

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*Low income levels and lack of knowledge have been identified as key constraints to the use of animal source foods (ASF) in the diets of Ghanaian children. The ENAM project sought to increase ASF levels in children's diets by combining nutrition education with microenterprise development (i.e., microfinance and entrepreneurial development education) for caregivers of preschool-aged children. This study assessed effects of the intervention on participants' contribution to key household and child-related expenses as well as household purchases and consumption of ASF. Microenterprise development coupled with nutrition education given to caregivers was effective in increasing both caregivers' contribution towards household expenses and ASF consumption at the household level. Participants of the ENAM project, for example, spent on average 1.98, 0.40, and 0.85 Ghana Cedis (GH¢) per week more on household food, health care of children, and children's clothing and footwear, respectively, than did non-participants. Similarly, participants spent on average 1.20, 0.22, and 0.32 GH¢ per week more on livestock meat, shellfish and milk, respectively, than did non-participants. The results suggest that nutrition education must be included in interventions to improve the quality of children's diets among poor rural households.*

### Background

Typical diets of Ghanaian children contain low levels of animal source foods (ASF). Low income and inadequate caregiver knowledge of the importance and use of ASF, among other factors, have been identified as key constraints to the use of ASF in the diets of young children in Ghana. The Enhancing Child Nutrition through Animal Source Food Management (ENAM) project, a collaborative effort between Iowa State University, University of Ghana, and McGill University, introduced a microenterprise development program that included microfinance services as well as entrepreneurial and nutrition education to improve caregivers' income-generation activities so as to enable them to purchase more ASF for their households and children. The project was active in three agro-ecological zones of Ghana. Similar interventions have been used to reduce malnutrition among infants and young children; however, the effectiveness of such interventions has depended on the location and approach used.

Cross-sectional data were available from caregivers who participated in the ENAM project and non-participating caregivers with similar income-generation activities and wealth rank. These data afforded the opportunity to compare the effects of participation on caregiver's enterprise performance, their contribution to key household expenses, and the amount of household ASF purchases and consumption. This analysis used data from 160 caregivers from eight intervention (n=80) and

control (n=80) communities in two of the three ENAM locations, the coastal savannah and transitional zones. Measurements of caregivers' contribution to household purchases, ASF purchases and ASF consumption were made in monetary units (i.e., Ghana Cedi (GH¢)). The Student's t-test and the Mann Whitney test for non-parametric data were used to test the difference in variables between participants and non-participants. The generalized linear model was used to analyze the effect of caregiver income level and ASF education on the amount of ASF consumed in the household.

### Major Findings

*Caregiver's contribution to household and child-related expenses.* Participants of the ENAM project contributed more (in monetary units) towards household food purchases, children's medical expenses, and clothing and footwear than the non-participant control caregivers (Table 1). Participants had a significantly higher percentage contribution towards the household expenses, including household food (p<0.05), medicine and healthcare (p<0.05), children school expenses (p<0.01), clothing and footwear (p<0.01) compared to non-participants (Figure 1).

Household ASF consumption. Participant households spent more (in monetary units) than non-participant households in their purchases of livestock meat (p<0.05),

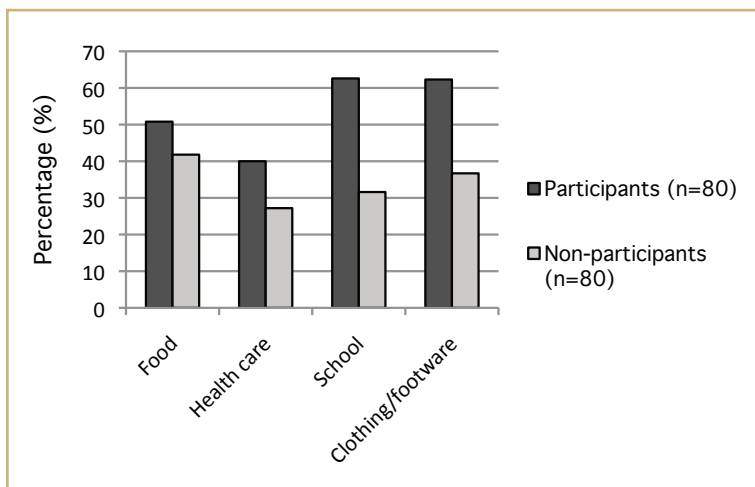
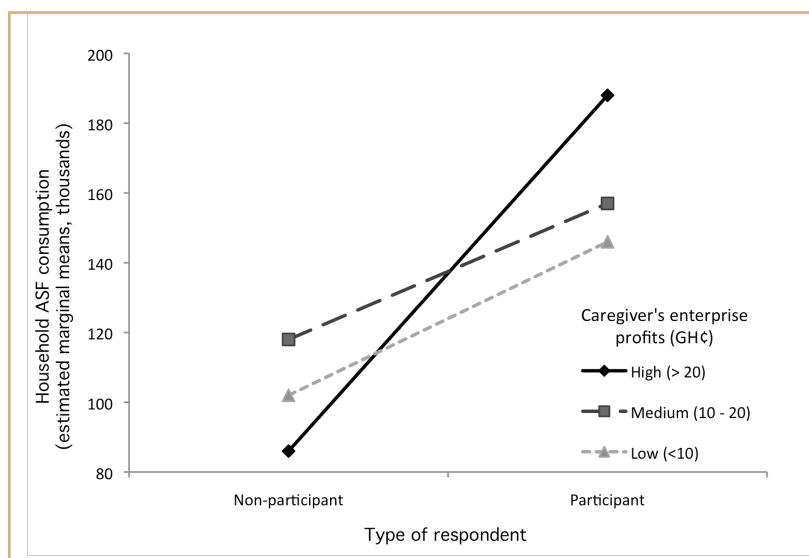


Figure 1. Mean percentage contribution of caregiver to household and child-related expenses by participation in 2007. Significant group differences for health care ( $p < 0.05$ ), school and clothing/footwear ( $< 0.001$ ); group difference for food did not reach significance ( $p = 0.06$ ).

Figure 2. Effects of caregiver's participation in ENAM project on household ASF consumption by profit level of enterprise.



shellfish ( $p < 0.01$ ), snail ( $p < 0.01$ ) milk ( $p < 0.01$ ) and 'other' ASF ( $p < 0.01$ ) (Table 2). Households of participants tended to purchase more total ASF ( $p < 0.10$ ) and consumed (acquired through purchase, gifts, home-raising, or other means) more in total ASF ( $p = 0.001$ ) than non-participant households. However, when corrected for the number of individuals in the household the group difference in the total amount of ASF consumed per capita did not reach significance (difference = GH¢0.67;  $p = 0.16$ ).

Effect of ENAM intervention on caregiver's household: Figure 2 graphically presents the effect of caregiver's participation in nutrition education and her enterprise profit on total household consumption of ASF. Among the participants, the higher the profit a caregiver received from her enterprise, the higher the amount of ASF her household consumed per week. Households of high profit ENAM caregivers consumed the most amount of ASF; however, households of non-participant high profit caregivers consumed the least amount of ASF. This suggests that the

provision of nutrition education in addition to income is critical to ASF consumption at the household level.

## Practical Implications

The research has confirmed that when poor rural women receive microenterprise development services (micro credit and savings, better business practices education), their incomes are improved and their contribution towards household and child-related expenses is enhanced. Though improvement in caregivers' profits from income-generation activities can be related to greater amounts of ASF consumption at the household level, it is not guaranteed. The effect of increased profit is enhanced when the caregiver is educated on the importance of nutrition and use of ASF in children's diets. Programs that are targeted to improving diets and nutritional status of poor households need to be multifaceted and address the economic and knowledge barriers that families face. Together, increased income and nutrition knowledge can improve lives.



*Fish is by far the most common animal source food (ASF) consumed in Ghana. This picture shows dried fish being pounded into fish powder, a nutritious ingredient that is often added to local soups and stews. The ENAM project uses microenterprise development along with entrepreneurial and nutrition education to enable and encourage caregivers to include ASF in the household's diet, particularly for the young children. Photo by Kimberly Harding.*

*Table 1. Summary of caregiver contributions (in Ghana Cedis (GH¢)) to household and children related expenses by participants and non-participants in 2007. USD \$1= GH¢0.92 at time of fieldwork. <sup>1</sup>Significance associated with Student's t-test for normally distributed continuous variable and Mann Whitney test for non-parametric data.*

	Participants (n=80)	Non-participants (n=80)	p-value <sup>1</sup>
<b>Characteristic</b>	<b>GH¢, mean (SE)</b>		
<b>Household food</b>	5.96 (0.83)	3.98 (0.52)	.043
<b>Health care of children</b>	2.14 (0.48)	1.74 (0.38)	.809
<b>Children's clothing and footwear</b>	13.27 (3.21)	12.42 (4.83)	.482

*Table 2. Summary of amount of money (in Ghana Cedis (GH¢)) spent on animal source foods (ASF) consumed by households of participants and non- participants within a week in 2007. USD \$1= GH¢0.92 at time of fieldwork. <sup>1</sup>Significance associated with Student's t-test for continuous variable. <sup>2</sup>Amount of ASF non-purchased given by caregivers of the current market value of ASF consumed by the household but not purchased.*

	Participants (n=80)	Non-participants (n=80)	p-value <sup>1</sup>
<b>ASF type</b>	<b>GH¢, mean (SE)</b>		
Livestock meat	2.88 (0.56)	1.68 (0.29)	.015
Organ meat	0.72 (0.20)	0.47 (0.12)	.389
Bush meat	1.11 (0.120)	0.47 (0.12)	.179
Whole fish	3.72 (0.07)	3.35 (0.40)	.235
Powdered fish	0.99 (0.65)	0.44 (0.09)	.229
Shell fish	0.38 (.06)	0.16 (0.10)	.004
Snail	0.25 (0.11)	0.10 (0.04)	.008
Poultry	3.02 (0.51)	2.15 (0.26)	.153
Egg	0.79 (0.24)	0.34 (0.07)	.186
Milk	0.66 (0.12)	0.34 (0.06)	.008
Other ASF	0.15 (0.07)	0.02 (0.01)	.001
<b>Total ASF</b>			
Purchased	11.03 (3.51)	6.45 (0.78)	.067
Value of non-purchased <sup>2</sup>	5.88 (0.73)	4.90 (0.66)	.648
Value of household consumed	16.10 (1.59)	10.49 (0.72)	.001
Value of per capita consumed	2.75 (0.33)	2.08 (0.27)	.162

## Further Reading

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The GL-CRSP Enhancing Child Nutrition through Animal Source Food Management (ENAM) project was established in 2003 and, through research, training and outreach, monitors the multiple pathways that might increase availability, accessibility and utilization of animal source foods in the targeted communities of Ghana. The project is led by Dr. Grace Marquis, Iowa State University and McGill University. Email: grace.marquis@mcgill.ca.



The Global Livestock CRSP is comprised of multidisciplinary, collaborative projects focused on human nutrition, economic growth, environment and policy related to animal agriculture and linked by a global theme of risk in a changing environment. The program is active in East and West Africa, Central Asia and Latin America.

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