



# Characterization of Nutrition Knowledge Attitudes and Practices Among Agricultural Extension Agents and their Beneficiaries in Rural Honduras

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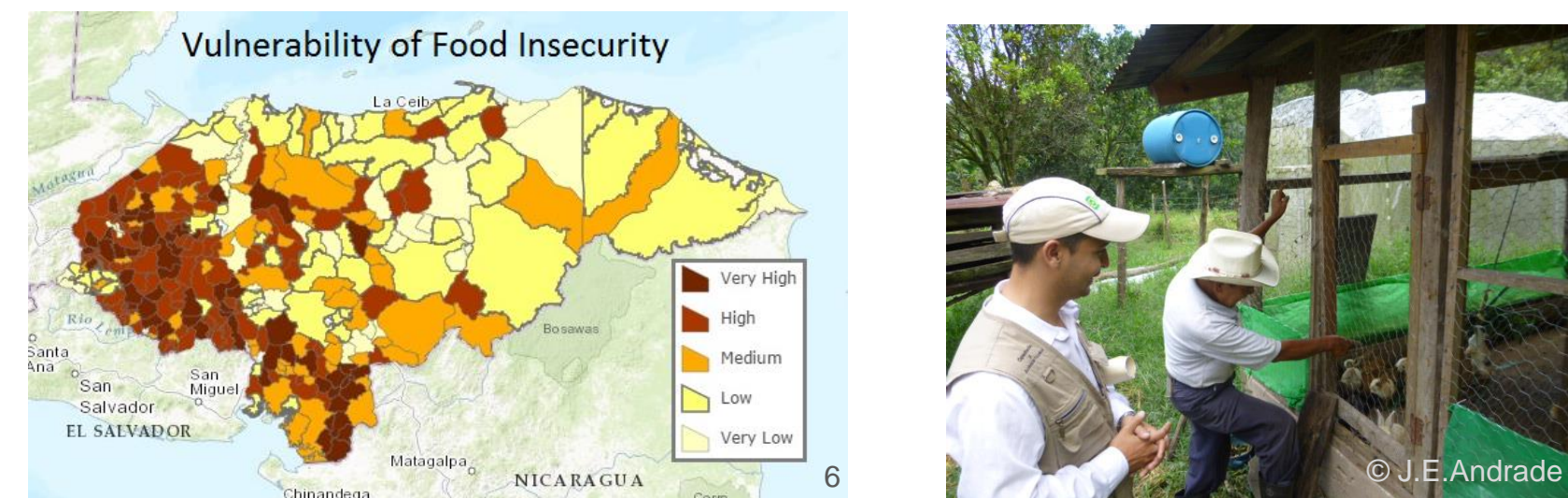
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## Background

66% of Hondurans live in poverty and 12% suffer from undernutrition. This disproportionately affects rural inhabitants, with an estimated 48.5% of Southwest Dry Corridor residents suffering from undernutrition. Malnutrition and undernutrition are associated with poor health outcomes, increased mortality rates, stunting in children, poor cognitive development, and, ultimately, poor economic outcomes. Multi-dimensional factors contribute to poor nutritional outcomes, including: poverty, poor sanitation practices or infrastructure, poor access to health care services, and lack of education. Due to the complexity of this problem, multi-dimensional solutions have been proposed, including the integration of nutrition education into agricultural education.<sup>2,4,5</sup>

Agricultural extension agents are lifelines for rural farming communities, offering knowledge and resources to support agricultural productivity. The pre-existing bond that extension agents have with their beneficiaries yields a natural avenue to promote well-being beyond improved agricultural practices and incomes. Therefore, strengthening the capacity of agents to integrate related disciplines (i.e. nutrition) into agricultural services is of critical interest.



## Objective

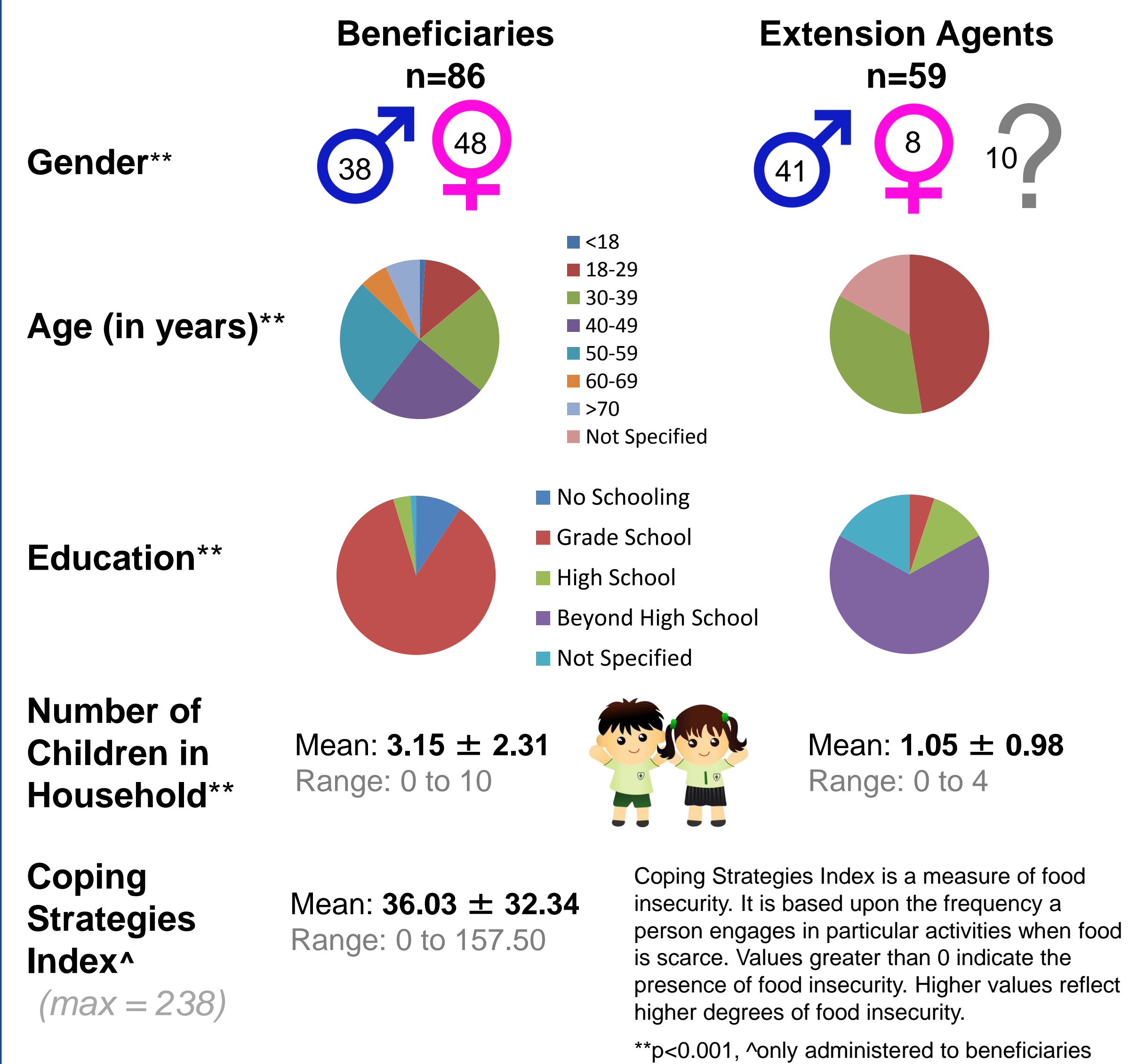
The purpose of this study was to characterize the nutrition-related knowledge, attitudes, and practices (KAP) and dietary diversity amongst employees of Agricultural Extension Service organizations and their beneficiaries in the Dry Corridor of Honduras.

## Methods

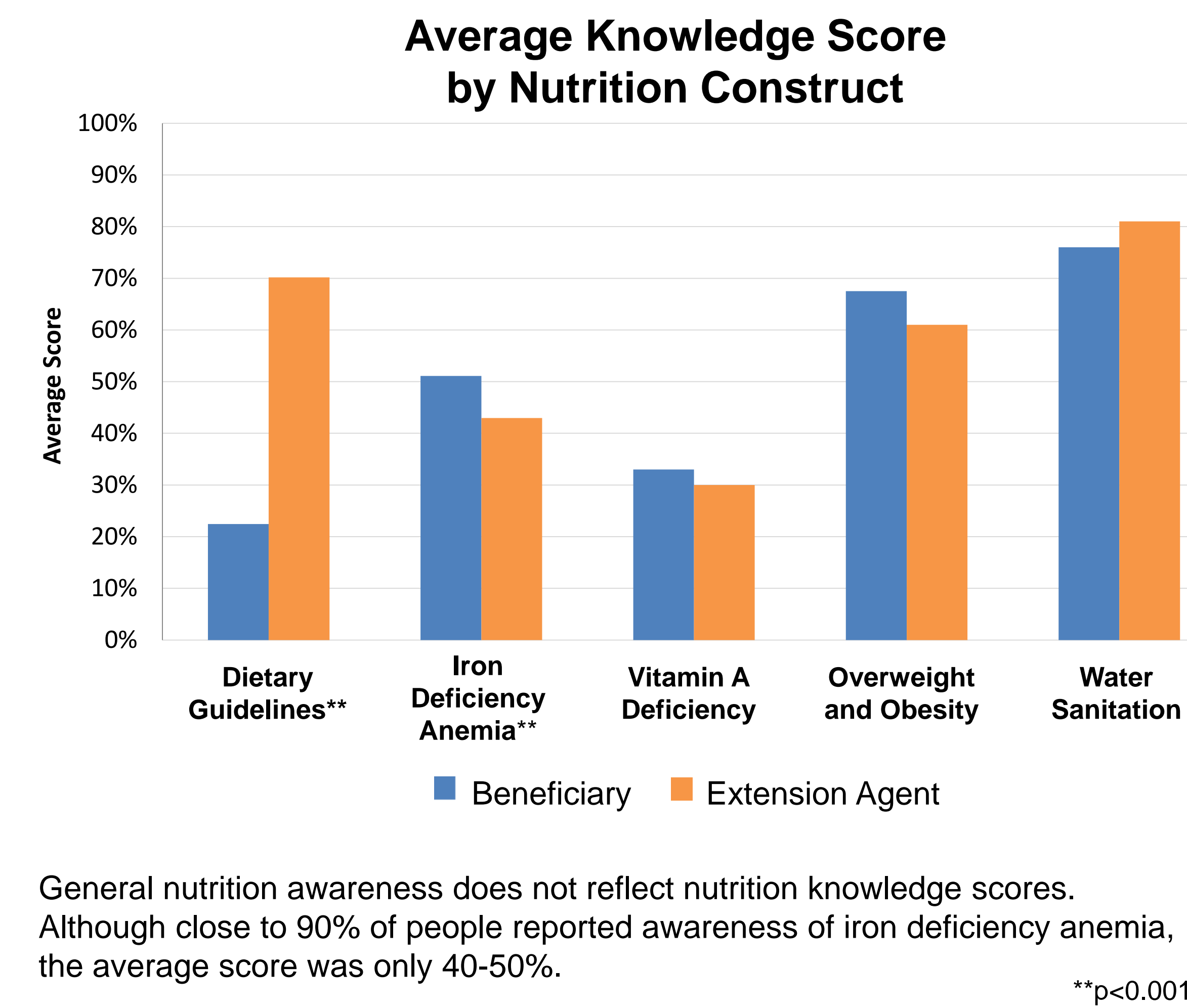
- The IRB at UIUC approved all protocols with human subjects.
- A convenience sample of agricultural extension beneficiaries were surveyed in-person, in-home in rural Honduras.
- A convenience sample of agricultural extension agents self-selected to complete surveys via online Qualtrics platform or written format.
- Surveys included: nutrition KAP (constructs: dietary guidelines, iron deficiency anemia, vitamin A deficiency, water sanitation), household dietary diversity, coping strategies index<sup>^</sup> and demographics.
- Data were entered into Microsoft Excel. All data entry was double checked. Statistics were conducted with IBM SPSS Statistics 24. Multiple imputation was used to fill missing data points. KAP surveys were coded and indexed, with higher scores reflecting better nutrition KAP. Descriptives (mean, standard deviation, range, frequency), Chi square, Pearson correlation, and Mann-Whitney U-test were conducted as appropriate.

<sup>^</sup>only administered to beneficiary group

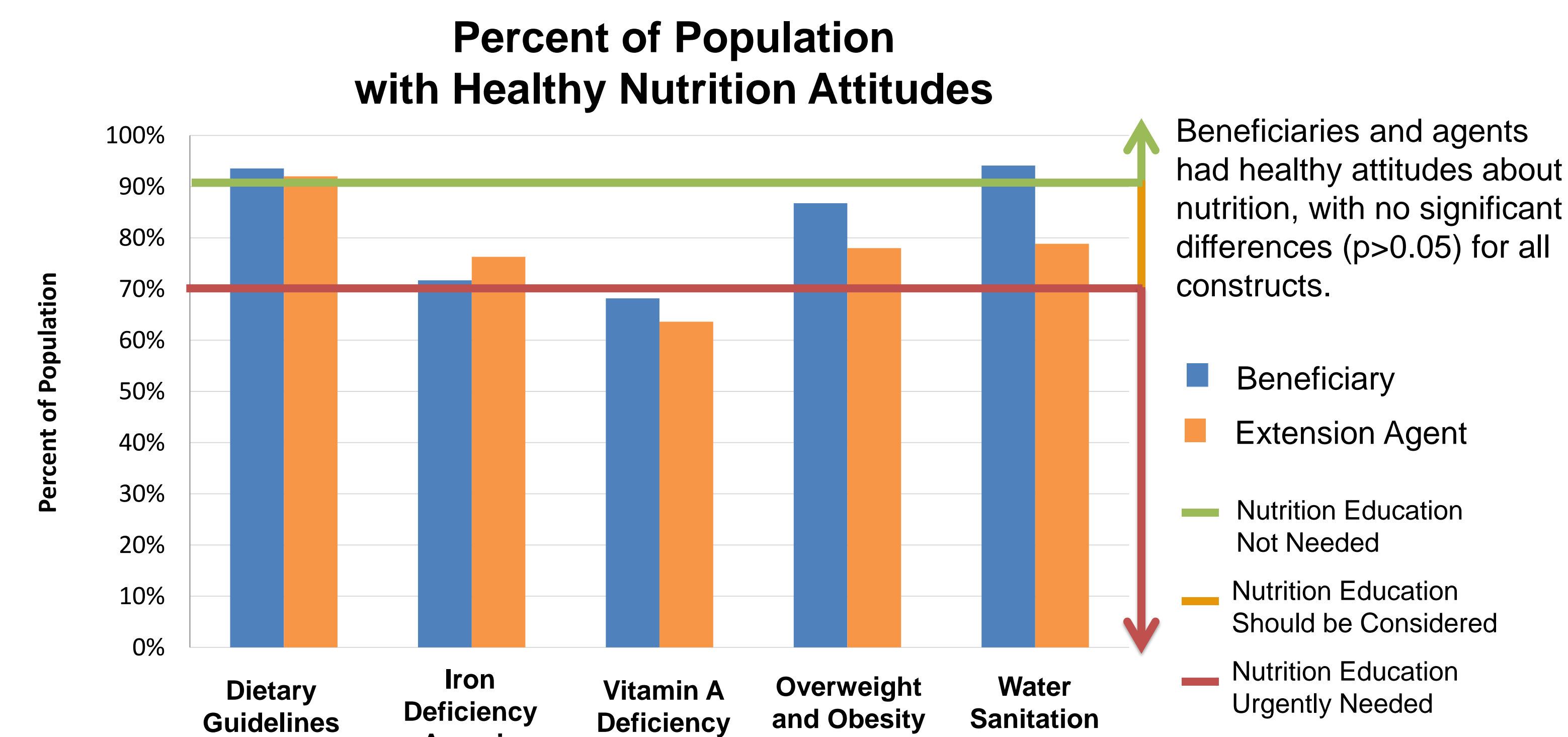
## Demographics



## Results: Knowledge



## Results: Attitudes

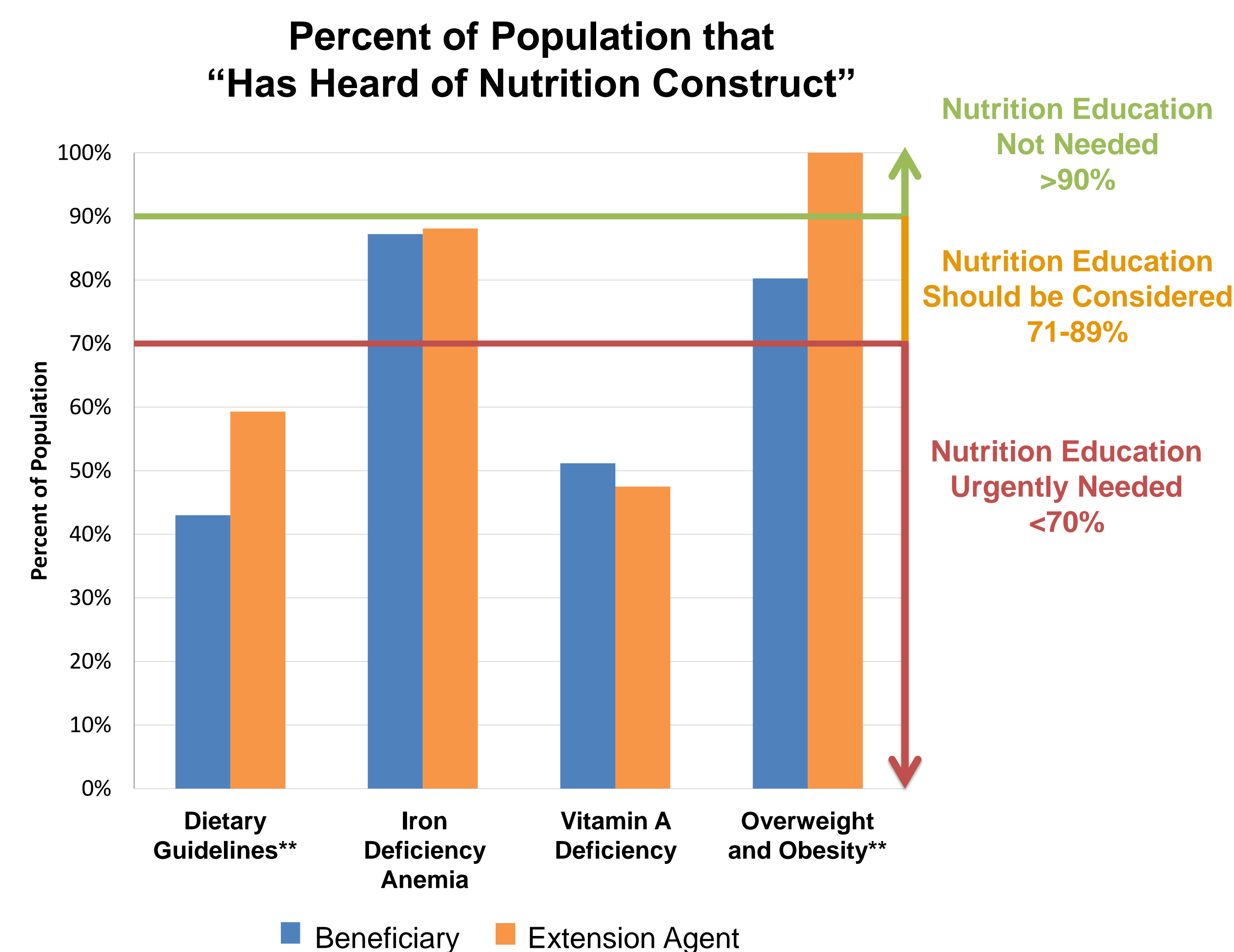


## Results: Practices

	Beneficiaries	Extension Agents
<b>Dietary Diversity**</b> (max = 12 food groups)	Mean: 8.64 ± 1.85 Range: 4 to 12	Mean: 10.37 ± 1.13 Range: 5 to 12
<b>Iron Foods*</b> (reported consumption)	85%	100%
<b>Vitamin A Foods</b> (reported consumption)	77%	78%
<b>Meets Physical Activity Recommendation**</b>	63%	95%

\*p<0.01, \*\*p<0.001

## Results: Nutrition Awareness



According to the Food and Agriculture Organization (FAO) of the United Nations, "gaps in people's knowledge [attitudes, and practices] are identified by comparing the percentage of people who gave the correct [or optimal] answer to a question with that of people who did not." Above thresholds for nutrition education intervention criteria were outlined by the FAO KAP manual.<sup>1</sup>

\*\*p<0.001

## Abstract

In Honduras, 66% of the population lives in poverty and 12.2% suffer from undernutrition. Undernutrition disproportionately affects children and rural inhabitants. Organizations that provide agriculture extension services (AES) are often well positioned to bring the most up to date information to farming communities at the different information transfer points associated with the agricultural food supply chain (e.g., production, marketing, processing, and finance). Nonetheless, AES has traditionally focused on productivity aspects for basic staples (e.g., corn and beans), rather than the well-being of farmers beyond improved incomes. Therefore, there is strong interest in developing or strengthening the capacity of AES organizations to improve nutrition. The purpose of this study was to characterize the nutrition-related knowledge, attitudes, and practices (KAP) and household dietary diversity (HDD) amongst employees of AES organizations (EAES) and their beneficiaries (BAES) in the Dry Corridor of Honduras. A convenience sample of BAES households (n=51) located in Copan and Ocotepeque was interviewed. Male and female heads of household were interviewed whenever possible (n=86 total; 56% female). In-home, in-person interviews were conducted to complete surveys: nutrition KAP (constructs include: dietary guidelines, iron deficiency anemia, vitamin A deficiency, overweight/obesity, water safety/sanitation), HDD, coping strategies index (CSI), and demographics. A convenience sample of EAES (n=59 total; 69% male) self-selected to complete KAP, HDD, and demographic questionnaires via online Qualtrics platform or written format. A large proportion of BAES (86%) reported primary school as their highest level of education, 78% of EAES earned at least a high school diploma. Average composite nutrition knowledge scores between BAES and EAES differed (48.3% vs. 54.7%; p<0.001). Average percent of population with healthy nutrition attitudes were similar across groups (p>0.05). Overall, knowledge and healthy attitudes toward nutrition were not associated across groups (r=0.05, p>0.05). Knowledge scores varied by construct and differed between groups. On average, BAES and EAES knowledge scores were 23% vs. 70% in dietary guidelines (p<0.001), 51% vs. 43% in iron deficiency anemia (p<0.001), 33% vs. 30% in vitamin A deficiency (p>0.05), 68% vs. 61% in overweight/obesity (p>0.05), and 76% vs. 81% in water safety/sanitation (p>0.05). Total nutrition knowledge scores were correlated to HDD scores (r=0.286; p<0.001). Education level correlated with HDD scores (r=0.493; p<0.001). Dietary diversity scores were higher in EAES than in BAES (10.37 ± 1.13 vs. 8.64 ± 1.85; p<0.001). On average, foods from animal sources contributed more to the dietary diversity of EAES than BAES (p<0.01). BAES CSI scores were indicative of food insecurity (36.03 ± 32.34; range=0-157.5). CSI was associated with HDD (r=0.222; p<0.05). Most BAES coped with food insecurity by reducing portion sizes or buying food on credit. Considering BAES relationship to EAES, there is an urgent need for nutrition education interventions sensitive to both BAES and EAES demands, particularly pertaining to dietary guidelines for Honduras, iron deficiency anemia, and vitamin A deficiency.

## Results: Correlations

- Nutrition knowledge positively correlates with dietary diversity (r= 0.286; p=0.001).
- Nutrition knowledge does not correlate with healthy nutrition attitudes (r= 0.05; p>0.05).
- Education positively correlates with nutrition knowledge (r= 0.314; p<0.001) and dietary diversity (r= 0.493; p<0.001).
- Number of children in household negatively correlates with dietary diversity (r= -0.230; p<0.01) and education. (r= -0.437; p<0.001).
- Coping strategies index negatively correlates with dietary diversity for beneficiaries (r= -0.222; p<0.05).

## Summary and Recommendations

- Characterization of nutrition knowledge, attitudes, and practices of agricultural extension agents and their beneficiaries in the Dry Corridor of Honduras reveals an overall lack of nutrition knowledge, generally healthy attitudes, and low dietary diversity.
- According to the FAO, nutrition education intervention is considered urgent if the percent of population displaying nutrition knowledge, healthy attitudes, or optimal nutrition practices is <70%. This standard calls for urgent intervention for the Dietary Guidelines of Honduras, iron deficiency anemia, and vitamin A deficiency in these populations.
- Prioritizing targeted nutrition education workshops for extension agents will potentiate their capacity to disseminate this information to beneficiaries in the future.
- Integration of nutrition education into Agricultural Extension Services could tackle facets of undernutrition and dietary diversity simultaneously.
- Complimentary education relating crops and nutrition could improve food security through a circuit of: increased consumption of nutritious foods/improved health/increased physical work abilities/increased incomes/increased access to nutritious foods.

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