Constraints of Bean Consumption by the Base of Pyramid (BoP) Consumers in Urban and Peri-urban Nairobi, Kenya

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Introduction

• Malnutrition is one of the main public health challenges globally

• 795 million people globally are undernourished and the vast majority (98%), live in developing countries (FAO, 2015)

• In Kenya, 26% of children under five years are stunted:

• Prevalence is particularly high in urban slums at more than 40%.

• The world is urbanizing;

• Improving dietary quality of urban people and particularly BoP consumers is therefore vital in reducing malnutrition in developing countries
Introduction...

• Increased consumption of beans and bean-based products could play an important role in reducing malnutrition

• Beans are rich in protein, dietary fiber, calcium, iron and vitamins such as folate, and have a very low fat content

• Bean not highly consumed in urban/peri-urban of Kenya

• Understanding factors that limit bean consumption would assist stakeholders in bean sector and policy makers to address those constraints hence increasing bean consumption

• Limited studies exist regarding factors that limit bean consumption especially by the BoP consumers in urban and peri-urban areas
  – This study seeks to contribute to this literature
Study objectives

• **Main objective:**
  • Increase knowledge base on bean consumption by BoP consumers in urban and peri-urban of Nairobi

• **Specific objectives:**
  • Assess factors that limit consumption of beans in the study sites
  • Evaluate the association between household wealth status and the different factors limiting bean consumption
Study sites and data collection

• Consumer household survey was conducted in urban and peri-urban of Nairobi between Oct-Nov 2015

• Cross-sectional data were collected from 354 households of different social-economic status, in:
  • Kibera, Dandora, Imara daima, Athi river, and Juja
Results
**Bean consumption and sources**

- Beans are highly consumed in the study sites.
- The beans consumed are mainly sourced from markets.

### Bean consumption in the study sites

- **99%** Consume beans
- **1%** Do not consume beans

### Main sources of beans consumed

- **89%** Bought from the market
- **2%** Own production
- **2%** Both own production and the Market
- **7%** Other sources
Frequency of beans consumption: By Sites

- Beans are mainly consumed one or two days a week
Since 1967 / Science to cultivate change

Frequency of beans consumption: Wealth

- Beans are mainly consumed one or two days a week
Factors limiting beans consumption:
By study site and overall

- **Overall:** top limiting factors across sites are
  - High fuel/energy cost (28%); Long cooking time (23%); High flatulence (21%); High bean cost (19%)
Factors limiting beans consumption: by wealth status

Table 2: Pairwise comparison of bean consumption constraints by wealth status

<table>
<thead>
<tr>
<th></th>
<th>Wealth status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Long cooking time</td>
<td>0.22**</td>
</tr>
<tr>
<td>High water requirement</td>
<td>0.02*</td>
</tr>
<tr>
<td>Limited bean availability</td>
<td>0.02</td>
</tr>
<tr>
<td>High flatulence</td>
<td>0.17</td>
</tr>
<tr>
<td>High bean cost</td>
<td>0.21***</td>
</tr>
<tr>
<td>Not tasty</td>
<td>0.01</td>
</tr>
<tr>
<td>High cost of cooking fuel</td>
<td>0.15***</td>
</tr>
<tr>
<td>Limited bean recipes</td>
<td>0.02</td>
</tr>
<tr>
<td>Short supply from garden</td>
<td>0.01</td>
</tr>
<tr>
<td>Allergic reactions</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Notes: * p < 0.10, ** p < 0.05, *** p < 0.01

- Low wealth status households are keen on cooking time, water use, cost of beans and cost of fuel used to cook beans
Constraints of bean consumption: Multinomial logit regression

Table 3: Regression analysis of factors limiting quantity of beans consumed

<table>
<thead>
<tr>
<th></th>
<th>Quantity of beans consumption</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Cost of beans/kg</td>
<td>(0.021^{**}(0.001))</td>
<td>0.001</td>
<td>-0.003** (0.001)</td>
<td></td>
</tr>
<tr>
<td>Long cooking time</td>
<td>0.017 (0.074)</td>
<td>0.162* (0.099)</td>
<td>-0.179* (0.098)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.058 (0.045)</td>
<td>0.141* (0.081)</td>
<td>-0.083 (0.073)</td>
<td></td>
</tr>
<tr>
<td>Low wealth status</td>
<td>(0.101^*(0.056))</td>
<td>-0.066 (0.091)</td>
<td>-0.035 (0.090)</td>
<td></td>
</tr>
<tr>
<td>Kibera</td>
<td>-1.589*** (0.196)</td>
<td>0.873*** (0.203)</td>
<td>0.715*** (0.196)</td>
<td></td>
</tr>
<tr>
<td>Low wealth x Kibera</td>
<td>(1.470^{***}(0.201))</td>
<td>-0.991*** (0.209)</td>
<td>-0.479** (0.198)</td>
<td></td>
</tr>
<tr>
<td>Dandora</td>
<td>0.036 (0.065)</td>
<td>-0.237* (0.124)</td>
<td>0.201 (0.128)</td>
<td></td>
</tr>
<tr>
<td>Imara_daima</td>
<td>-0.066 (0.067)</td>
<td>-0.051 (0.118)</td>
<td>0.117 (0.127)</td>
<td></td>
</tr>
<tr>
<td>Athi-river</td>
<td>-0.167** (0.080)</td>
<td>-0.164 (0.124)</td>
<td>0.332*** (0.127)</td>
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</tr>
<tr>
<td>Observations</td>
<td>318</td>
<td>318</td>
<td>318</td>
<td></td>
</tr>
</tbody>
</table>

Notes: * \(p < 0.10\), ** \(p < 0.05\), *** \(p < 0.01\); Dependent variable is quantity of beans consumed (grams) per meal per capita; Other factors were controlled for in this model, e.g. Cost of fuel, complaint on flatulence, age of the head.

- **If cost of beans is high,** households will consume low quantity of beans, and less likely to consume high quantity of beans.
- **Long cooking time:** Households will consume medium bean quantities.
Conclusion and recommendations

• Beans are widely consumed, but there is need to increase frequency and/or quantity of beans consumed in the households

• To increase consumption of beans by the BoP consumers, it will be vital to address the following:
  • Time it takes to cook beans,
  • Cost of beans
  • Flatulence after bean consumption

• Having affordable bean or bean product that take a short time to cook hence saving on fuel cost and time would possibly increase consumption of beans by BoP consumers

• This would contribute in fighting malnutrition in developing countries, especially amongst the BoP consumers
CultiAF and VCN projects in Kenya & Uganda

• Linking with private sector to develop **Precooked beans** (CultiAf project)
• Linking with private sector to develop quick-to-cook nutritious **porridge** (VCN)
Acknowledgement

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