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Home Gardens Network Meeting
Dessalegn Hotel, Addis Ababa
Presentation outlines

• Introduction
• Methodology
• Result and discussion
• Conclusion
• Recommendation
• Acknowledgement
Introduction

• Dietary diversification is considered as the most sustainable and affordable strategy to combat malnutrition.

• It can be achieved through implementation of home gardens (Schipani et al., 2002).
• Home gardens have been related with

  – Improved fruit and vegetable consumption and vitamin A intake (Faber et al., 2001).

  – Improved dietary diversity, child health and nutritional status (Cabalda et al., 2011)

  – Improved household food security and income (Bushamuka et al., 2005).
Objectives

- To compare dietary diversity, vitamin-A intake and nutritional status of children aged 6-23 months between gardening and non-gardening households in Melga Wereda, Sidama Zone, Southern Ethiopia.
Methodology

Study area

– Melga Wereda, Sidama Zone, Southern, Ethiopia.

Study period – September 20 to October 10, 2014.

Study Design

– A community based comparative cross sectional study.
Sample Size

• Calculated using G* Power statistical power analysis software version 3.1.5 (Faul et al., 2007).

• $\alpha$ (the level of significance) = 0.05 ($Z_{\alpha/2} = 1.96$)

• Power efficiency (1-$\beta$) 100% is = 90%

• Medium effect size = 0.5 with allocation ratio of 1:1.

• Further 10% none response rate was considered.

\[ n = 190 \; (n_1 = n_2 = 95). \]
Sampling Technique

Malg wereda (23 kebeles)

Non-gardening (19)  
- Kocho (442 HHs)
  - Garden 20
  - No garden 422

- Berana (500 HHs)
  - Garden 18
  - No garden 482

- Watern (160 HHs)
  - Garden 25
  - No garden 135

- Korena (168 HHs)
  - Garden 32
  - No garden 136

All of them were included (95)

Assignment of 95 samples to four kebeles using proportional to size allocation:
- 34
- 39
- 11
- 11

The assigned sample form each kebele was selected using Systematic RS method.
# Study Variables

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent variable</th>
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</thead>
<tbody>
<tr>
<td>Dietary diversity</td>
<td>Ownership of home garden</td>
</tr>
<tr>
<td>Vitamin-A intake</td>
<td>Potential confounders</td>
</tr>
<tr>
<td>Nutritional status</td>
<td>Wealth status</td>
</tr>
<tr>
<td></td>
<td>Child’s age</td>
</tr>
<tr>
<td></td>
<td>Birth order</td>
</tr>
<tr>
<td></td>
<td>Age of mother</td>
</tr>
<tr>
<td></td>
<td>Maternal educational status</td>
</tr>
<tr>
<td></td>
<td>Father’s educational status</td>
</tr>
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<td></td>
<td>Health status of the child</td>
</tr>
</tbody>
</table>
Data Collection Methods

• Structured questionnaire was used to collect socio-demographic and economic data.

• DD was assessed using 24 hours recall method.

• Vitamin-A intake was assessed using HKI FFQ.

• Anthropometric measurements were done.
Data Quality Control

- Three day training was given to data collectors and supervisor by principal investigator.
- Pre-test was undertaken
- The principal investigator performed all the anthropometric measurements.
Data Processing and Analysis

– Data were entered in to Epi Info version 3.5.1 and exported to SPSS version 20.0 for analysis.

– Independent sample t-test and chi-square test were used to compare the two groups.

– Linear regression was used to control possible confounders.

– Anthropometric indices were generated using WHO Anthro1.0.2.

– P-value less than 0.05 was considered as statistically significant.
Result

• The two groups were statistically comparable in key variables including
  – parents’ educational status,
  – husbands’ occupation,
  – mean family size,
  – sex and age of the child.

• Nevertheless, significant variation observed in wealth status and size of the agricultural land.
## 1. Characteristics of Home garden in gardening households

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kale</td>
<td>91</td>
<td>95.8</td>
</tr>
<tr>
<td>Cabbage</td>
<td>71</td>
<td>74.7</td>
</tr>
<tr>
<td>Carrot</td>
<td>80</td>
<td>84.2</td>
</tr>
<tr>
<td>Beetroot</td>
<td>75</td>
<td>78.9</td>
</tr>
<tr>
<td>Spinach</td>
<td>54</td>
<td>56.8</td>
</tr>
<tr>
<td>Avocado</td>
<td>58</td>
<td>61.1</td>
</tr>
<tr>
<td>Banana</td>
<td>39</td>
<td>41.1</td>
</tr>
<tr>
<td>Guava</td>
<td>26</td>
<td>27.4</td>
</tr>
<tr>
<td>Mango</td>
<td>6</td>
<td>6.3</td>
</tr>
<tr>
<td>Apple</td>
<td>10</td>
<td>10.5</td>
</tr>
</tbody>
</table>
## 2. Dietary diversity of study subjects

<table>
<thead>
<tr>
<th>Food groups</th>
<th>Gardening No. (%)</th>
<th>Non-gardening No. (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains, Roots and Tubers</td>
<td>83 (87.4)</td>
<td>85 (89.5)</td>
<td>0.650</td>
</tr>
<tr>
<td>Legumes and Nuts</td>
<td>29 (30.5)</td>
<td>34 (35.8)</td>
<td>0.441</td>
</tr>
<tr>
<td>Dairy Products</td>
<td>63 (66.3)</td>
<td>61 (64.2)</td>
<td>0.761</td>
</tr>
<tr>
<td>Eggs</td>
<td>17 (17.9)</td>
<td>14 (14.7)</td>
<td>0.556</td>
</tr>
<tr>
<td>Vitamin A rich foods</td>
<td>62 (65.3)</td>
<td>22 (23.2)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Other fruits &amp; Vegetables</td>
<td>55 (57.9)</td>
<td>17 (17.9)</td>
<td>&lt;0.001*</td>
</tr>
</tbody>
</table>
cont’d

• The mean (±SD) DDS of children from households with and without gardening was 3.3±1.1 and 2.5 ±0.9, respectively.

• 46.3% and 11.6% of children from HHs with & without gardens had optimal DDS, respectively.

• The DDS was significantly increased by 0.6 (95% CI: 0.4 to 0.9) score in children from households with home garden.
This study was supported by the finding of

- Selepe (2010), Cabalda et al. (2011) and Talukder et al. (2010), which showed that children from households with gardens had higher dietary diversity scores.
3. Vitamin-A intake of study subjects

- A significant difference was observed on the consumption of plant source of vitamin-A rich foods among children of home gardening and non-gardening households at p-value <0.001

- The current finding agreed with a study by:-
  - Talukder et al. (2000), Faber et al. (2002) and Selepe (2010) showing home gardening significantly improved the vitamin-A status of children
4. Nutritional status of study subjects

<table>
<thead>
<tr>
<th></th>
<th>Gardening Mean± SD</th>
<th>Non-gardening Mean± SD</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length-for-age Z score</td>
<td>-1.92±1.15</td>
<td>-2.13±1.21</td>
<td>0.222</td>
</tr>
<tr>
<td>Weight-for-length Z score</td>
<td>0.34±1.27</td>
<td>0.13±1.21</td>
<td>0.185</td>
</tr>
<tr>
<td>Weight-for-age Z score</td>
<td>-0.74±1.04</td>
<td>-0.99±1.08</td>
<td>0.415</td>
</tr>
</tbody>
</table>
• Similar findings were found in Ethiopia by Mulugeta et al. (2005), in Thailand by Schipani et al. (2002) and in South Africa by Faber et al. (2002).

• The current finding was in contrast to a study done in South Africa by Selepe (2010).

• Plausible reasons for such observation could be:

  – The frequency of consumption of all food groups – apart from fruits and vegetables – was the same in the two groups being compared.

  – Short implementation period of home garden.
Conclusion

• Home gardening brought a significant difference on child’s dietary diversity and frequency of consumption of plant based vitamin-A rich foods when other possible confounders were controlled.

• No significant effect on nutritional status of children was observed.
Recommendation

- Provide sustained nutrition education programs to mothers
- Integrate home gardening with household animal production interventions.
- Establish year-round low cost community water irrigation system.
- Further investigation should be conducted.
Acknowledgements

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THANK YOU!