Fruit and Vegetable Intake: Knowledge, Attitude and Practices among Rural School-aged Children in East Africa

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Interview with a school-aged child in Mtwara
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Interview with a mother in Taita Taveta
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Interview with a school-aged child in Kayunga
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Introduction

Fruit and vegetable (FV) intakes are very low in Sub-Saharan Africa, leading to different forms of malnutrition. As there is only little data on FV consumption of **school-aged children**, the "Fruits and Vegetables for all seasons" (in short: FruVaSe) project, measured FV intakes, and the knowledge, attitudes, and practices of school-aged children on the **processing and consumption of FVs** in rural households in East Africa.

Methodology

- Data was collected from households in **six study sites** - three vegetable production areas (Jinja, Morogoro and Kitui) and three fruit production areas (Kayunga, Mtwara and Taita Taveta) – in Kenya, Tanzania and Uganda, respectively.
- Children between 6-13 years were interviewed applying a **24-hour dietary recall** and **7-day FV recall** during two seasons (the off- and on-season for the target crops of the FruVaSe project). Furthermore, the knowledge, attitude and practices of FV intake were assessed.
- A **knowledge-score** was created based on 8 different variables (Table 1) with a minimum of 0 points and a maximum of 10 points.

Questions about knowledge towards FVs intake	Scoring
Why do you consume FVs in general?	1 for an answer 0 for otherwise
Mention three FVs that you know	1 = One FV 2 = Two FVs 3 = Three FVs 0 = No answer
Mention any product made from FVs	1 for a correct answer 0 for otherwise
One benefit of FVs intake to the body	1 for a correct answer 0 for otherwise
Taught school lesson about FVs	1 for an answer 0 for otherwise
Fresh FVs are good for the body	1 = agree/strongly agree 0 = disagree/strongly disagree
Minimally processed FVs are not good for the body	1 = disagree/strongly disagree 0 = agree/strongly agree
Highly processed FVs are not good for the body	1 = agree/strongly agree 0 = disagree/strongly disagree

Table 1: Variables used for the knowledge-score.

- From the mothers or caregivers of the children the **demographics and socio-economic status** were recorded.
- ➢ In total **227 children and mothers**, 161 from the vegetable and 66 from the fruit areas were considered for the analysis in SPSS.

Results – Knowledge, Attitude and Practices

- 97.5% of children from the vegetable areas consumed vegetables in general and 98.1% liked to eat them. From the fruit areas all children reported that they consume fruits and like to eat them.
- The **most known vegetables** in the vegetable areas are shown in Figure 5. The top three known vegetables were also the **most favourite** ones of the children, with 56.5% liking cabbage, 50.3% liking kales and 34.2% liking cowpea leaves.

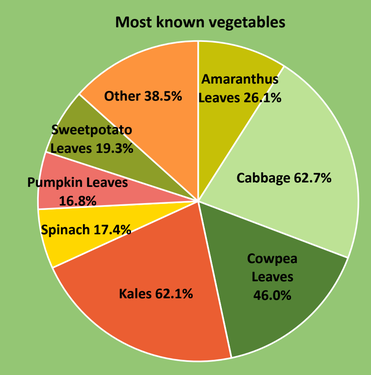

Figure 5: Children's most known vegetables; N = 161

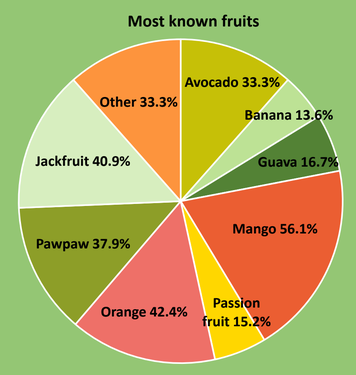

Figure 6: Children's most known fruits; N = 66

- The **most known fruits** in the fruit areas are shown in Figure 6. The top three known fruits were also the **most favourite** ones of the children, with 50.0% liking mango, 39.4% liking jackfruit and 36.4% liking orange.

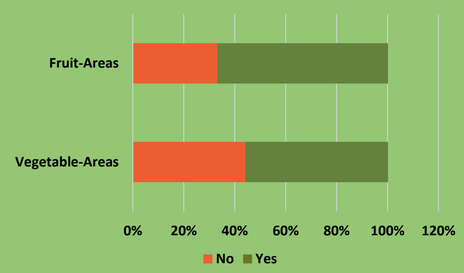

Figure 7: Percentages of inability to eat FVs year-round; N Vegetable-Areas = 160 , N Fruit-Areas = 66

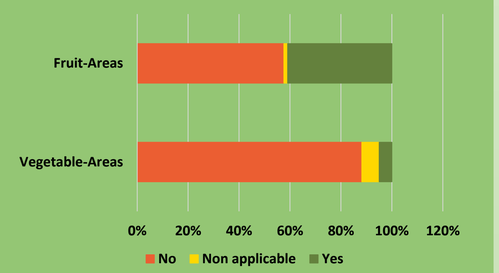

Figure 8: Percentages of children eating FVs while in school; N Vegetable-Areas = 161, N Fruit-Areas = 66

- Almost half of the children stated that they are **unable to eat fruits or vegetables year-round** (Figure 7).
- Only 40.9% of the school children eat fruits and only 5.0% eat vegetables **while in school** (Figure 8). Children from the fruit areas answered that the fruits are mainly provided by friends/other students or that they **pick them from trees at the school-yard**, while the vegetable in the vegetable areas is mainly provided by the school.

Results - Consumption

- The mean **vegetable consumption is slightly higher** than the mean fruit consumption during the last day (Figure 1, Figure 2).

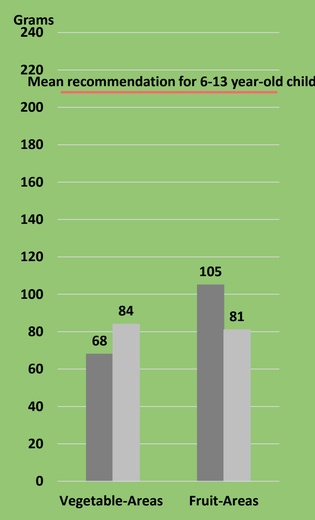

Figure 1: **Mean** vegetable consumption during **previous day**; N = 161

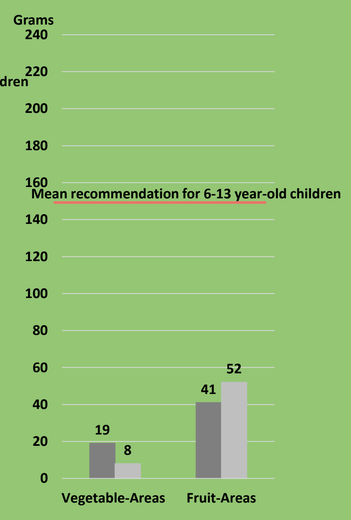

Figure 2: **Mean** fruit consumption during **previous day**; N = 66

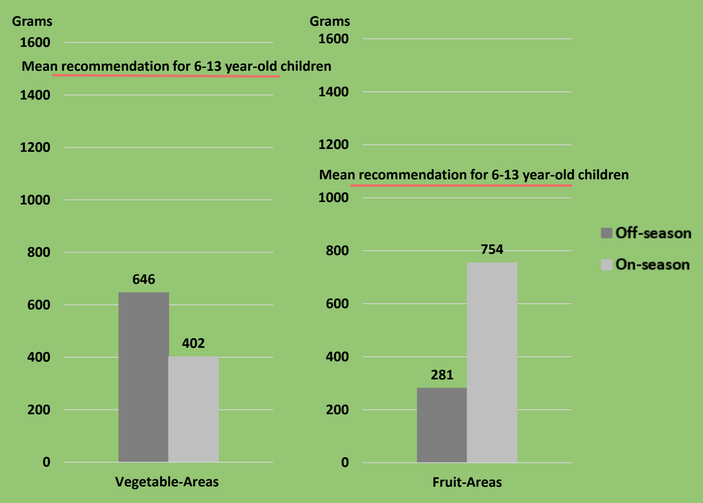

Figure 3: **Mean** vegetable consumption during **previous 7 days**; N = 161

Figure 4: **Mean** fruit consumption during **previous 7 days**; N = 66

- The mean amount of vegetables consumed during the previous 7 days is **higher in the off-season** than in the on-season (Figure 3). The 7-day mean fruit amount is, as expected, much **higher in the on-season** than in the off-season (Figure 4).
- **None** of the FV intakes reach the mean **recommendation** for 6-13-year-old children.
- Correlations between the consumption and socio-demographic indicators from the mothers show that **the older the mother** the less FVs were consumed during the off-season (Table 2).
- The **household size** can have a positive effect on FVs consumption in the fruit areas.
- A higher **wealth status** has a negative effect on fruit consumption of school-children – children who cannot afford to buy fruits may rather rely on own produced or collected fruits.

Variables	24-hour consumption (g/day)								7-day consumption (g/week)			
	Vegetable-Areas				Fruit-Areas				Vegetable-Areas		Fruit-Areas	
	Vegetables		Fruits		Vegetables		Fruits		Vegetables		Fruit	
	Off-season	On-season	Off-season	On-season	Off-season	On-season	Off-season	On-season	Off-season	On-season	Off-season	On-season
Age Mother	n.s.	n.s.	n.s.	n.s.	-.255*	n.s.	-.379**	n.s.	-.169*	n.s.	n.s.	n.s.
Household size	n.s.	n.s.	n.s.	n.s.	.338**	.367**	.464**	n.s.	n.s.	n.s.	n.s.	n.s.
Education Mother (in years)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	.172*	n.s.	n.s.	n.s.
Wealth index	.236**	n.s.	-.195*	-.293**	n.s.	n.s.	n.s.	n.s.	.192*	n.s.	n.s.	n.s.
N	161				66				161		66	

Table 2: Correlation between the FV consumption and socio-demographic indicators; Spearman correlation method; n.s. = not significant; *, ** represents statistical significance of $p < 0.05$, $p < 0.01$, respectively

Results – Knowledge-Score

- From the vegetable areas 89.4% of the children and from the fruit areas 87.9% of the children reached **at least 6 points** in the knowledge-score (Figure 9).

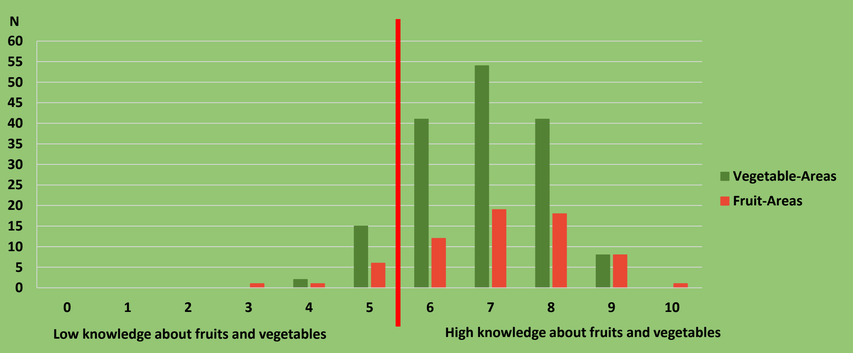

Figure 9: Knowledge-score about FVs; N Vegetable-Areas = 161, N Fruit-Areas = 66

- The **knowledge-score and the 7-day fruit consumption** are positively correlated (.306* for $p < 0.05$) during the off-season in the fruit areas. This means that a higher knowledge about fruits might contribute to the fact that more fruits are eaten within a week even during off-season.

Conclusions

- ➢ FV consumption among school-aged children is **completely insufficient** regardless of the season or the area, although seasonal differences are visible. However, the **child's home environment** can have an influence on consumption, depending on the season.
- ➢ Knowledge, attitude and practices show that **diversity** of most known and preferred FVs is **limited to few mainly exotic species** and that only few children eat FVs **while in school**. However, most children have a high knowledge about FVs.
- ➢ Consequently, **seasonality** needs to be considered in any intervention improving FV consumption of school children in East Africa.

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