

Background

- Consumption of Sugar Sweetened Beverages (SSBs) continues to rise worldwide, a trend that has been linked to a parallel increase in diet-related non-communicable diseases (NCDs), including heart disease, cancer and diabetes (1).
- Like many low income countries, Uganda is not immune to these trends (2), witnessing marked shifts in local diets, including a growing demand for ultra-processed foods and SSBs.

Objective

To determine the extent to which SSBs are incorporated in rural Ugandan diets by exploring their role in household budget shares and expenditure patterns.

Methods

- The analysis draws on household data from a longitudinal cohort (n=5000) on pregnant women and their infants in Southwest and Northern Uganda.
- The data utilized in this analysis include weekly recall of household food and non-food expenditures with details on food and beverage consumption within and away from home. SSBs included tea, coffee, juice, other soft drinks and soda.
- SSB budget share was defined as SSB expenditure per capita per week divided by weekly income
- SSB expenditure share was defined as expenditure on SSBs per capita per week divided by total food expenditure.
- Generalized linear models were employed for regression estimates. All analyses were conducted in SAS v 9.4.

Results

- Across the sample, 56% of households reported consuming SSBs. Median expenditure on SSBs per capita per week was estimated at 5% of the total food expenditure at household level or 4% of the total budget share (Table 02).
- This puts spending on SSBs on par with expenditure on water (3%) and medicines and hospital charges (5%).

Table 01: Descriptive Statistics

Variable	Median	IQR	Mean	Minimum	Maximum
Food expenditure per capita per week (USD)	1.69	1.93	2.23	0.01	66.44
SSB expenditure per capita per week (USD)	0.14	0.17	0.20	0.00	14.11
Woman's schooling (yrs)	6.00	4.00	5.34	0.00	17.00
Household size	4.00	3.00	4.63	1.00	19.00
SSB expenditure by Socio economic status (SES) in USD					
Poorest	0.12	0.14	0.19	0.00	10.28
Poorer	0.11	0.16	0.16	0.00	1.42
Middle	0.14	0.17	0.19	0.00	2.80
Richer	0.14	0.17	0.21	0.00	2.22
Richest	0.17	0.22	0.26	0.00	14.11
SSB expenditure by woman's schooling (USD)					
12+	0.20	0.19	0.40	0.019	14.11
6-11yrs	0.16	0.19	0.24	0.003	10.28
<6yrs	0.10	0.14	0.15	0.003	1.81

- Adjusting for wealth, a percentage increase in log food expenditure per capita per week is associated with a 28% increase in SSB expenditure (p<0.0001).
- SSB expenditure decreases with increasing household size ($\beta = 0.08$, p value < 0.0001).
- Wealthiest households spend US\$0.17 per capita per week on SSBs and are associated with a 3.8% increase in SSB expenditure compared to the poorest households.
- Poor households spend the least on SSBs in absolute terms, however, their SSB spending represents a much larger budget share than for the wealthiest households (p < 0.4447), which has important implications for both diet quality and food security in these poor rural households (Table 03).

Table 02: SSB SSB Expenditure and Budget Share

	Percent
Households consuming SSBs	56%
SSB expenditure share	5%
SSB budget share	4%

Conclusion

- SSB consumption in rural Uganda is widespread. Higher socioeconomic status and increased level of education are significantly associated with increased SSB consumption, but the poorest households spend a larger food budget share on SSBs than their wealthier counterparts.
- Higher level of maternal education was inversely related to an increased SSB budget share, controlling for wealth, which may be a reflection of higher nutrition knowledge.
- This suggests the need for urgent investment in a) active monitoring of trends and patterns in dietary choices across low income countries like Uganda, b) attention to the relative prices of nutrient-rich foods and beverages relative to products known to carry significant health risks, c) enhanced nutrition and health education in schools and clinics, especially in poorer rural areas, and d) more detailed consideration of the rise of processed packaged foods and beverages –items not traditionally monitored in the food expenditure bundles of food insecure households.



Table 03: Determinants of SSB expenditure and Budget share

	SSB expenditure-log	Budget share of SSBs-log
Per capita food expenditure-log (PFE) SES	0.28(0.07)***	0.25(0.10)**
Poorer	-0.13(0.07)***	0.11(0.14)
Middle	-0.09(0.08)	0.15(0.16)
Richer	-0.11(0.08)	-0.35(0.16)***
Richest	0.04(0.08)	-0.36(0.15)***
Poorest	0	0
PFE*SES Interaction		
PFE*Poorer	-0.06(0.07)	-0.39(0.15)***
PFE*Middle	0.16(0.08)***	-0.14(0.15)
PFE*Richer	0.22(0.08)***	0.20(0.15)
PFE*Richest	0.13(0.07)***	-0.001(0.13)
PFE*Poorest	0	0
Mother's years of schooling	0.08(0.01)***	-0.01(0.01)
Household size	-0.07(0.01)***	-0.15(0.02)***
R ²	0.25	0.07

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References

- Kostova D, Chaloupka FJ, Frieden TR, Henning K, Paul J, Osewe PL, et al. Noncommunicable Disease Risk Factors in Developing Countries: Policy Perspectives. *Prev Med.* 2017 Dec;105:S1–3.
- Kiiza Mondo C, Otim MA, Musoke R, Akol G, Orem J. The prevalence and distribution of non-communicable diseases and their risk factors in Kasese district, Uganda. *Cardiovasc J Afr.* 2013 Apr;24(3):52–7.
- Blecher E. Global Trends in the Affordability of Sugar-Sweetened Beverages, 1990–2016. *Prev Chronic Dis [Internet].* 2017 [cited 2018 Jul 13];14. Available from: https://www.cdc.gov/pcd/issues/2017/16_0406.htm