

Tracking consumption of unhealthy commercial foods and beverages during the complementary feeding period

Findings from a longitudinal cohort study of 10–19 month-olds in rural/peri-urban Kandal Province, Cambodia

Key findings

- High consumption of unhealthy commercial foods and beverages (UCFB) began during infancy and tracked into early childhood.
- High consumers of UCFB at 10–14 months had nearly five times the odds of being high consumers of UCFB at 15–19 months.
- The majority of children either maintained or developed an unhealthy consumption pattern. Few children maintained or transitioned into a healthy consumption pattern.
- As children grew older, not only did the frequency of UCFB consumption increase but also the variety of UCFB categories consumed.
- Healthy eating habits are developed early in life, making it important to avoid feeding infants and young children UCFB.

Background

The types of foods fed to infants and young children during the complementary feeding period (ages 6–23 months) are critical to ensure their nutrient requirements are met. This period is also important for setting taste preferences and attitudes towards foods, and there is evidence to suggest nutritional habits formed in infancy track into childhood and beyond.^{1,2}

Globally, there has been an increase in the production and availability of commercially produced ultra-processed foods and beverages in recent decades,^{3,4,5} resulting in dietary pattern shifts towards substantial consumption of these products in low- and middle-income countries (LMIC).^{6,7,8} While widespread consumption of unhealthy commercial foods and beverages (UCFB) among infants and young children has been observed in LMIC, there is limited evidence regarding whether such food consumption patterns track over time. To fill this evidence gap, Helen Keller International conducted a study to track UCFB consumption of children living in rural/peri-urban Kandal province, Cambodia during the complementary feeding period and assess UCFB consumption patterns of these children.

Methods

A longitudinal survey was conducted in Khsach Kandal district, Kandal province, Cambodia with interviews conducted by telephone to ensure the safety of staff and participants during the COVID-19 pandemic.

A total of 567 caregivers of children aged 10–14 months were enrolled and interviewed (timepoint 1). Caregivers were interviewed again each month when children were 11–15 months (timepoint 2), 12–16 months (timepoint 3), 13–17 months (timepoint 4), 14–18 months (timepoint 5) and 15–19 months (timepoint 6). Every month for six months, we collected data on caregiver and household characteristics and administered a food frequency questionnaire (FFQ) to ask caregivers about their child’s consumption of UCFB in the previous week and the number of days of consumption. The FFQ consisted of nine categories of UCFB (listed in Box 1) based on sentinel unhealthy foods and beverages noted in the 2021 WHO infant and young child feeding indicators,⁹ and which prior research has identified as commonly consumed by Cambodian infants and young children.¹⁰

Box 1:

Categories of unhealthy commercial foods and beverages include:

1. Sweet biscuits/crackers
2. Savory crisps/crackers
3. Bakery items (cake, doughnuts, sponge cake)
4. Confectionery items (candy, sweets, chocolate)
5. Soft drinks
6. Sweet milks
7. Juice drinks
8. Malt/chocolate drinks
9. Instant noodles

To track UCFB consumption across the complementary feeding period, each child’s consumption of UCFB was calculated at each of the six timepoints. Consumption of UCFB was calculated based on the frequency of consumption of UCFB in the week prior to interview. From the weekly FFQ, a score was generated based on how many of the seven days in the prior week each of the nine categories of UCFB was consumed. From these scores, terciles were created to identify low, moderate and high frequency consumers of UCFB at each timepoint. Additionally, based on UCFB score at each timepoint and changes in these scores overtime, we grouped children into one of three consumption patterns (shown below):



Figure 1: Maintaining/transitioning into a healthy consumption pattern. These children held a consistently low UCFB score or moved from a high to low UCFB score over the six months.

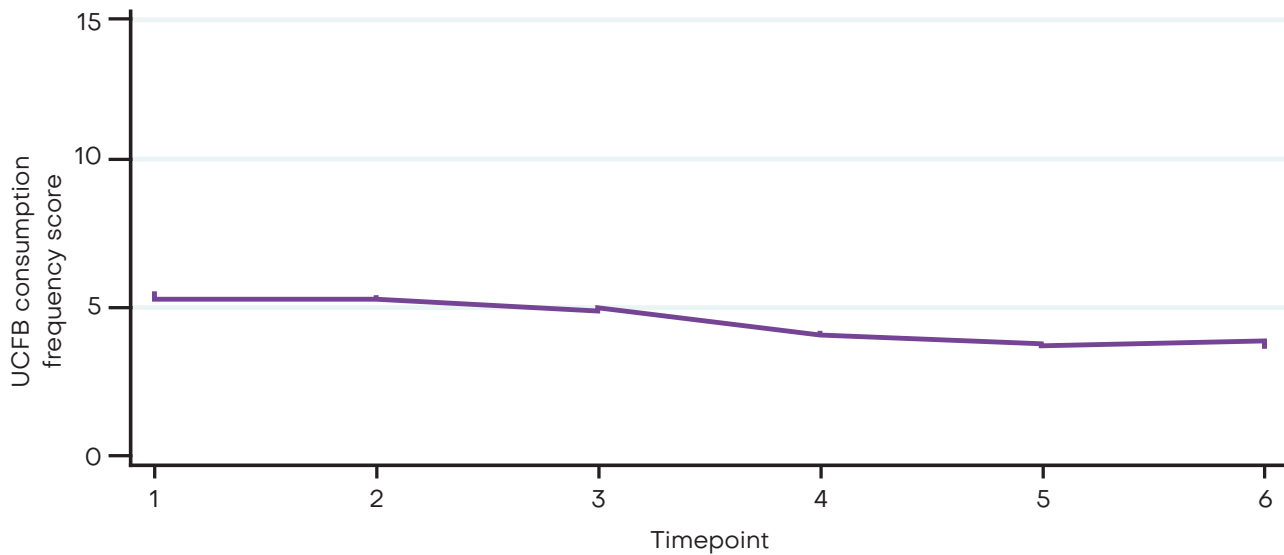


Figure 2: Developing an unhealthy consumption pattern. These children moved from a low to high UCFB score over the six months.

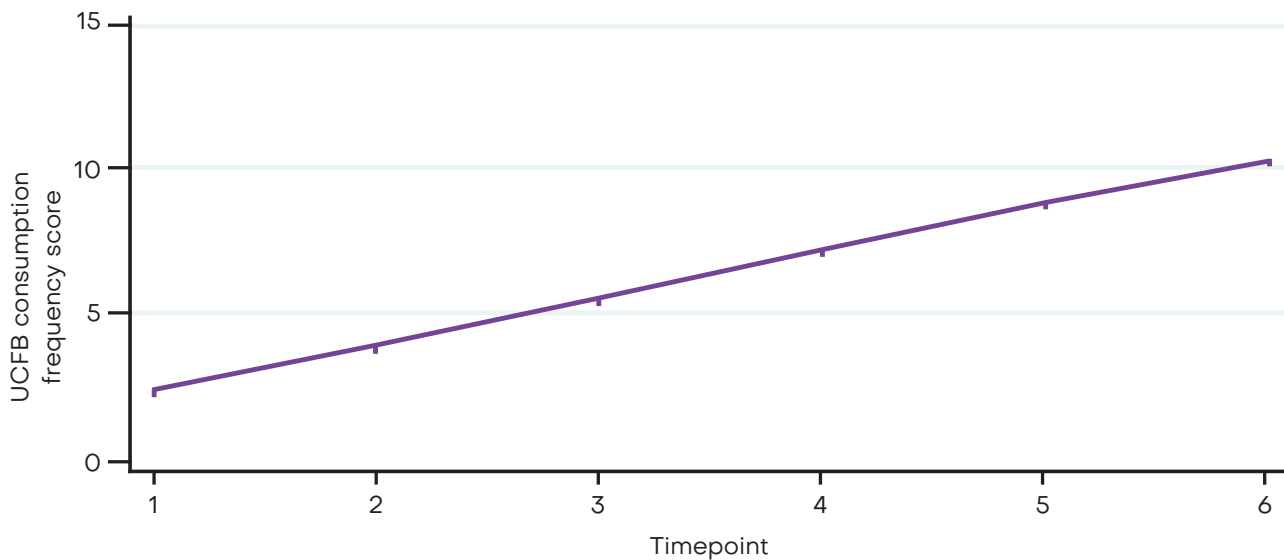
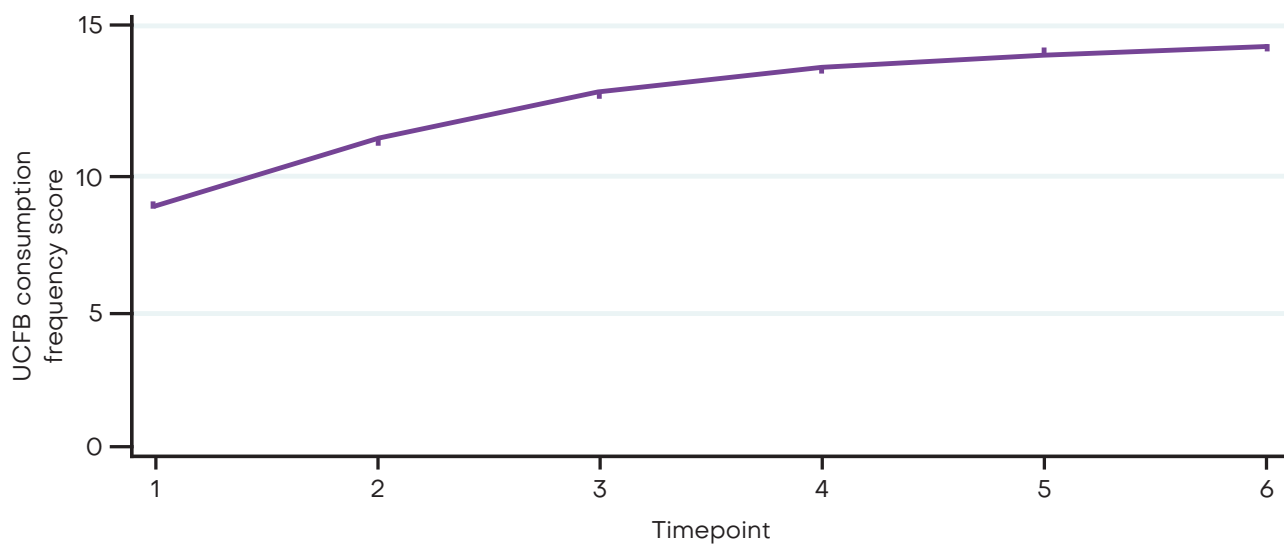


Figure 3: Maintaining an unhealthy consumption pattern. These children held a consistently high UCFB score over the six months.



Results:

Over the course of the 6-month follow-up period, 29 (5.1%) participants dropped out of the study, and between 3.2% and 5.6%, depending on the timepoint, could not be reached.

The majority of children either maintained (45.7%, n=246) or developed (43.5%, n=234) an unhealthy consumption pattern and only 10.8% (n=58) of children maintained/transitioned to a healthy consumption pattern.

Children's consumption of UCFB across the 6 timepoints are detailed in Table 1. The proportion of children who consumed any UCFB in the previous week increased steadily from 81.7% (n=463) at timepoint 1 to 97.4% (n=488) at timepoint 6. In addition, the median UCFB score in the previous week increased from 4 at timepoint 1 to 11 at timepoint 6 and the median number of UCFB categories consumed in the previous week increased from 2 at timepoint 1 to 4 at timepoint 6, indicating that not only did the frequency of consumption increase but also the variety of UCFB categories consumed. The most common UCFB category consumed across all age groups was sweet milk, which increased from 3 days per week at timepoint 1 to 7 days per week at timepoint 6.

High consumers of UCFB at timepoint 1 had 4.7 times the odds of being high consumers of UCFB at timepoint 6 ($p < 0.001$), indicating that UCFB consumption did track during the complementary feeding period.

Table 1: Children's frequency of consumption of UCFB across the 6 timepoints

	Timepoint 1 (n=567)	Timepoint 2 (n=549)	Timepoint 3 (n=539)	Timepoint 4 (n=527)	Timepoint 5 (n=523)	Timepoint 6 (n=501)
Age in months, mean	11.9	12.8	13.9	15	16	17.4
Proportion of children who consumed UCFB in the previous week, % (n)	81.7 (463)	86.3 (474)	89.4 (482)	90.7 (478)	94.1 (492)	97.4 (488)
UCFB score in previous week, median	4	7	8	10	10	11
UCFB categories consumed in previous week, median	2	2	3	3	3	4
Days consumed in previous week						
Sweet biscuits/crackers	2	3	3	3	3	3
Savory crisps/crackers	2	3	3	3	3	3
Bakery items	1	2	2	2	1	1
Confectionery items	1	2	2	2	2	2
Soft drinks	1	2	2	2	2	2
Sweet milks	3	5	7	7	7	7
Malt/chocolate drinks	1	2	2	1	1	3
Juice drinks	1	2	2	2	2	1
Instant noodles	1	1	1	1	1	1



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Caregiver characteristics associated with consumption patterns

Caregivers were 34.5 years old on average; the majority of them were mothers of the children (74.2%) and 15.4% were grandmothers. Nearly half of caregivers (48.0%) attended at least a secondary school level of education.

We identified one factor that was significantly associated with children's UCFB consumption patterns. A significantly higher proportion of caregivers of children maintaining/transiting into a healthy consumption pattern attended at least a secondary level of education compared with caregivers of children maintaining an unhealthy consumption pattern (63.8% vs 43.1%; $p=0.016$).

Key recommendations:

Our findings reveal that high consumption of unhealthy commercial foods and beverages begins early – consumption of these products starts during infancy and tracks into early childhood. What is first consumed early on can influence what children prefer and what caregivers feed for months or years after. It is therefore vital to intervene early with caregivers to safeguard child diets. Healthy eating habits are developed early in life,¹¹ making it important to avoid feeding infants and young children UCFB, especially in contexts where micronutrient gaps exist in the diets of infants and young children.¹²

- To reduce UCFB consumption among infants and young children, caregivers' awareness of the nutritional quality of these products needs to be increased. Our study also found that children with unhealthy consumption patterns were more likely to have a caregiver with a lower level of education. Efforts to improve diet quality among older infants and young children in LMIC contexts require a more in-depth understanding of reasons caregivers feed their children UCFB. We must equip caregivers with knowledge and skills to enable optimal complementary feeding.
- We urge the Cambodian government to invest in communications strategies that highlight the risks of introducing unhealthy foods that are high in added sugar and salt to children early in life. Caregivers, particularly mothers and grandmothers, should be encouraged to feed locally available nutrient-rich foods as snacks during the complementary feeding period to improve child health, growth and development and reduce risks of obesity later in life. Such action aligns well with the strategic plan to expand 1,000 days health counseling and services for mothers and children below 2 years of age under the 'healthy diets for all' priority in Cambodia's Roadmap for Foods Systems for Sustainable Development 2030.¹³
- Drivers of feeding practices need to be better understood, and interventions developed and implemented that enable healthier diets of infants and young children in Cambodia.

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