INITIATIVE ON
Transforming Agrifood Systems in South Asia

What are people eating in Banke, Nepal?

Food consumption, food security, food sources, and food perceptions

Data Note 6 December 2023

ABOUT THIS DATA NOTE |

The Transforming Agrifood Systems in South Asia (TAFSSA) district agrifood systems assessment aims to provide a reliable, accessible, and integrated evidence base that links farm production, market access, dietary patterns, climate risk responses, and natural resource management with gender as a cross-cutting issue in rural areas of Bangladesh, India, and Nepal. It is designed to be a district-level multi-year assessment. Using data collected in March-April 2023, this data note describes what people are eating, where they get their food, household food insecurity, and perceptions about food. This is one of a set of data notes that, together, provide a holistic picture of the agrifood system in the district.

Figure 1. District location in Nepal

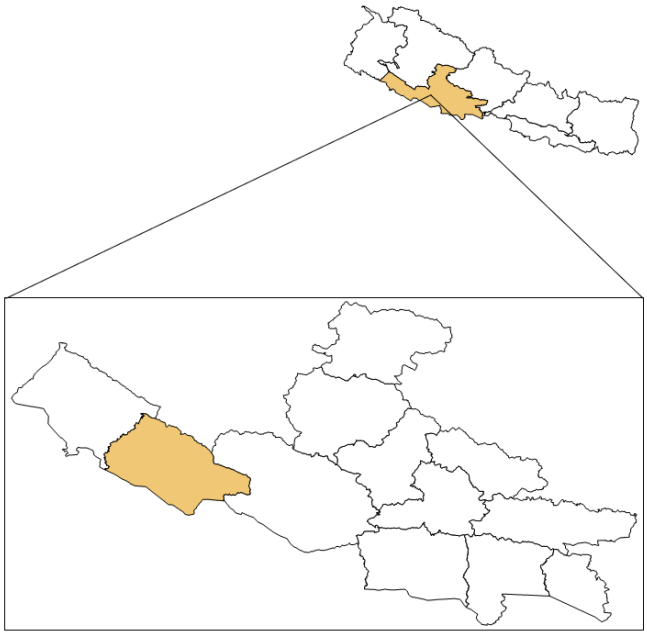

Figure 2. Highlights from this data note

20% & 27%
Adult men and women with diverse diets

7%
Adult men who consumed fruit on previous day

57%
Of households purchased rather than produced foods

3.1 & 3.2
Number of times per day adult men & women ate food

73%
Adolescents consumed biscuits or sweets multiple times a week

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OVERVIEW OF CONTENTS

TAFSSA's district agrifood systems assessment aimed to interview three respondents per household: a female adult (aged 20+ years), a male adult (aged 20+ years), and an adolescent (aged 10-19 years). Information on the household and respondent sampling strategy is provided at the end of this data note.

In this data note, you will first find information on background characteristics of the households and individuals who were interviewed. This is followed by information on *what* people are eating, which was captured using several measurement methods. Respondents were asked about the foods they ate the day before the interview (24-hour recall) and about how often they ate certain foods in the past week (food frequency questionnaire). The 24-hour recall was conducted using the Global Diet Quality Score (GDQS) application, which also captured when (at what eating occasion such as breakfast, a snack between lunch and dinner, etc.) people ate each food item.

In addition to what people eat, you will find information in this data note on *where* they get their food and, if they buy it, what types of markets or shops they buy it from.

Finally, you will learn *why* people choose to eat certain healthy and unhealthy foods. Respondents were asked about availability, accessibility, taste, and other factors that may influence their decisions to consume certain foods. More details about the measurement methods are found on the following pages.

List of figures and tables

Table 1. Household and individual characteristics

Household characteristics	
Number	500
Female-headed, %	39
Education of head, years	5
Average household size, members	5
Involved in agriculture, %	95
Has improved toilet, %	94
Drinking water source	
Tube well or borehole, %	77
Piped into yard or plot, %	6
Main source of income	
Remittance, %	27
Crop cultivation, %	18
Salary, %	18
Type of fuel used for cooking	
Wood, %	91
LPG/natural gas, %	79
Dung, %	6

Individual characteristics

	Adult female	*Adult male*	*Adolescent*
Number	500	232	500
Age, yrs. mean (range)	37 (20-79)	46 (21-78)	15 (10-19)
Education, yrs. mean (range)	4 (0-17.5)	5 (0-17.5)	7 (0-11.5)
Married, %	95	97	4
Employed, %	32	68	4
Primary occupation			
Unpaid household work, %	42	2	8
Farming, %	43	36	3
Casual non-farm labour (paid), %	4	22	2
Student, %	0	0	86

Measuring household food insecurity

Household food insecurity was measured using the Food and Agriculture Organization's Food Insecurity Experience Scale (FIES). Respondents were asked 8 questions about their household's experiences with food in the past 30 days. Categories of food security (none, mild, moderate, severe) were generated based on the number of questions with a positive response.

Fig 3A. Level of household food insecurity

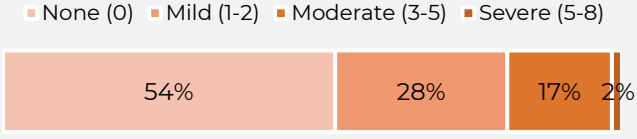


Fig 3B. Individual FIES items

FINDINGS

✓ Only one-fourth of the households reported experiencing moderate or severe food insecurity.

MEASURING WHAT PEOPLE EAT

Diets were measured by asking people about everything they ate or drank on the previous day, from the time they woke up until the time they went to bed and didn't eat or drink anything more. This includes all snacks and foods and drinks consumed at home and outside the home.

To capture this information, we used the Global Diet Quality Score (GDQS) application (Bromage et al. 2021). The GDQS allows us to understand diet quality, which is associated with the risk of disease. We report the percentage of individuals with at least minimum dietary diversity (FAO and FHI 360, 2016) (**Figure 4A**), that is those who consume at least 5 of the following 10 food groups daily: 1) grains, white roots and tubers, and plantains, 2) pulses (beans, peas, and lentils), 3) nuts and seeds, 4) dairy, 5) meat, poultry, and fish, 6) eggs, 7) dark green leafy vegetables, 8) other vitamin A-rich fruits and vegetables, 9) other vegetables, and 10) other fruits.

We also computed metrics that indicate how healthy or unhealthy diets are (**Figure 4B**). Higher GDQS- and GDQS+ scores indicate better diet quality. We then grouped GDQS scores into 3 categories to indicate diet related noncommunicable disease risk (**Figure 4C**).

On the following pages, we show the percentage of individuals who consume various food groups (**Figure 5**), the consumption quantity by food group (**Figure 6**), the most commonly consumed foods (**Figure 7**), how many times per day people eat (**Figure 8**), who eats at various eating occasions (**Figure 9**).

Diet quality scores

Fig 4A. Minimum dietary diversity

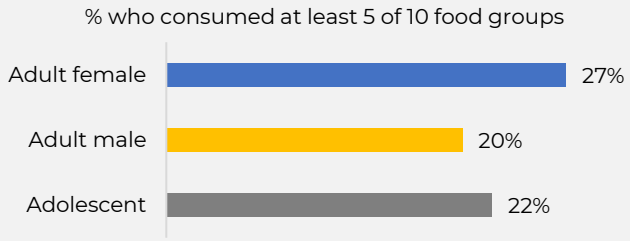
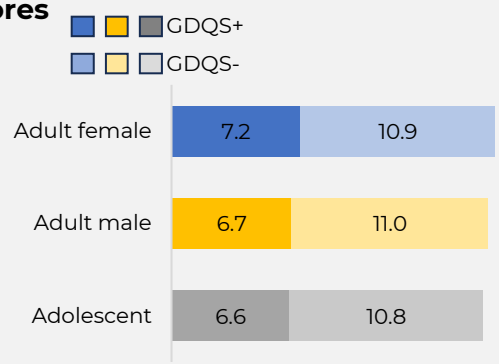
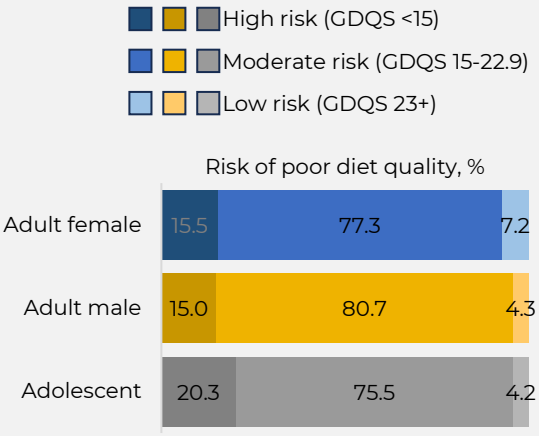


Fig 4B. Global diet quality positive (healthy) and negative (unhealthy) scores



Note: The GDQS+ and GDQS- can be summed to give the total GDQS score, with a higher total GDQS score indicating better diet quality.

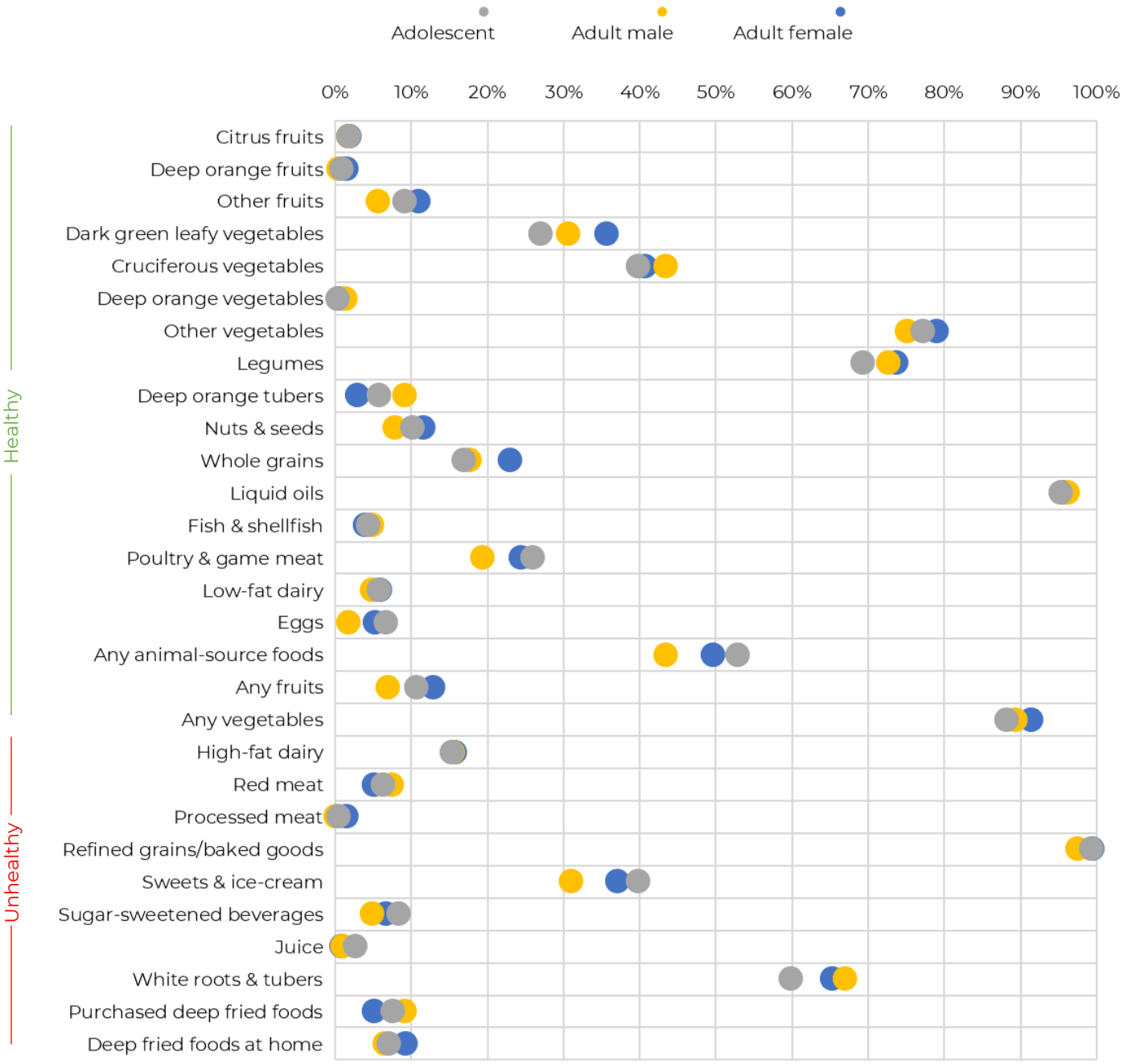
Fig 4C. Diet related NCD risk



FINDINGS

- ✓ Dietary diversity was higher among adult females than adult males or adolescents.
- ✓ Adolescents were at slightly higher diet related NCD risk compared to adults.

Figure 5. Consumption of food groups on previous day



FINDINGS

- ✓ Consumption of fruits was <15% for all respondent types, and adolescents were slightly less likely to consume dark green leafy vegetables than adults.
- ✓ Poultry & game meat were the most commonly consumed animal-source food, and around 53% of individuals consumed animal-source foods on the previous day.
- ✓ Adolescents were the most likely to consume sweets & ice-cream

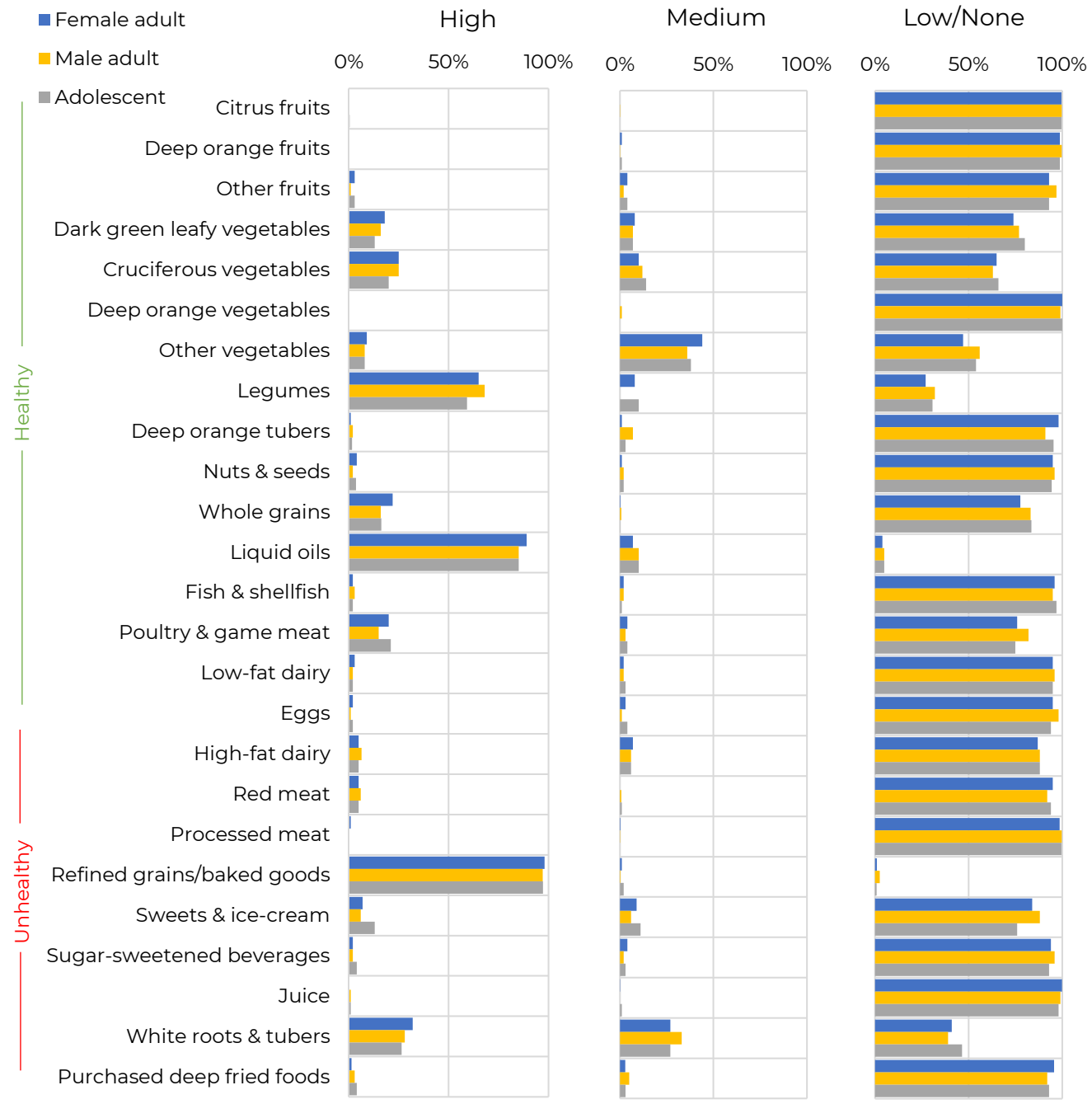
Note:. High-fat dairy and red meat are considered unhealthy when consumed in high quantities.

Animal-source foods

5% of adult women and 2% of adult men consumed eggs on the day before the survey

Photo credit: Abdul Momin

Figure 6. Consumption quantity[1] by GDQS food group



FINDINGS

- ✓ Few individuals consumed "high" quantities of healthy foods except legumes and liquid oils; in contrast, few individuals consumed "low/none" quantities of unhealthy foods.
- ✓ To reduce the risk of developing noncommunicable diseases, consumption of healthy foods such as fruits and whole grains should increase and consumption of unhealthy foods such as refined grains/baked goods, sweets & ice-cream, and white roots & tubers should decrease.

[1] "Low", "medium", and "high" describe consumption levels that predict noncommunicable disease risk in studies from Africa, Asia, and the Americas (Bromage et al. 2021). Disease risk is minimized when healthy foods are consumed in "high" quantities and unhealthy foods are consumed in "low" quantities.

Figure 7. Most commonly consumed foods in each food group (adult male, adult female, and adolescent combined)

			Top 3 foods consumed in each food group		
		% who consumed food group	*1st most common*	*2nd most common*	*3rd most common*
Healthy	Citrus fruits	2	N/A[1]	N/A[1]	N/A[1]
	Deep orange fruits	1	N/A[1]	N/A[1]	N/A[1]
	Other fruits	9	Grapes	Banana	Apple
	Dark green leafy vegetables	31	Coriander leaves	Saag	Amaranth greens
	Cruciferous vegetables	41	Cabbage	Gundruk	Mustard greens
	Deep orange vegetables	0	N/A[1]	N/A[1]	N/A[1]
	Other vegetables	77	Tomato	Onion	White onion
	Legumes	72	Dal	Masoor ko dal	Maas ko dal
	Deep orange tubers	5	Potatoes (OFSP[2])	Carrots	N/A[1]
	Nuts & seeds	10	Sesame paste	Almonds	N/A[1]
	Whole grains	19	Roti	Puri	N/A[1]
	Liquid oils	96	N/A[3]	N/A[3]	N/A[3]
	Fish & shellfish	4	N/A[1]	N/A[1]	N/A[1]
	Poultry & game meat	24	Chicken	Poultry	N/A[1]
	Low fat dairy	6	Yogurt	N/A[1]	N/A[1]
	Eggs	5	Eggs	N/A[1]	N/A[1]
	High fat dairy	15	Milk	Yogurt	Water buffalo milk
	Red meat	6	Mutton	Pork	Buffalo
	Processed meat	1	N/A[1]	N/A[1]	N/A[1]
	Refined grains/baked goods	99	Rice	Roti	Wai Wai instant noodles
Unhealthy	Sweets & ice-cream	37	Sugar	Biscuit	Chocolate
	Sugar-sweetened beverages	7	Coca Cola	Mountain Dew	N/A[1]
	Juice	2	N/A[1]	N/A[1]	N/A[1]
	White roots and tubers	63	Potatoes	N/A[1]	N/A[1]
	Purchased deep fried foods	7	Potatoes	Cabbage	N/A[1]
	Deep fried foods at home	8	Puri	N/A[1]	N/A[1]

Figure 8. Number of eating occasions per day (mean)

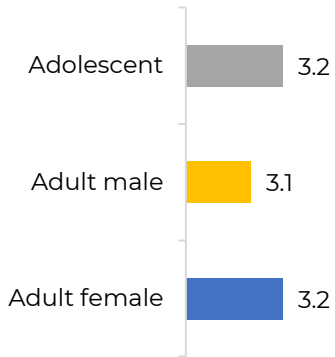
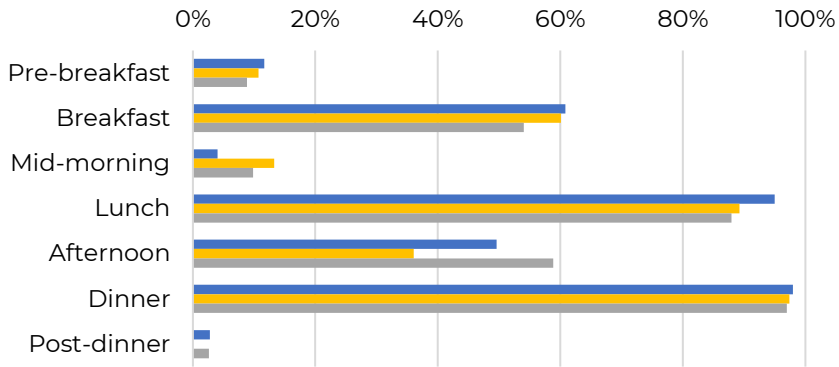


Figure 9. Who eats at different eating occasions



FINDINGS

- ✓ Adolescents, adult males, and adult females had a similar number of eating occasions per day.
- ✓ More than 90% of respondents ate lunch and dinner, whereas 60% of adults and 54% of adolescents consumed breakfast.
- ✓ Adolescents often consumed food in the afternoon between lunch and dinner.

[1]Not applicable (N/A): Foods consumed by less that 2% of the respondents have not been displayed.
[2]OFSP refers to orange fleshed sweet potato.
[3]Not available: Respondents were not able to specify the type of oil consumed.

SENTINEL FOODS | In addition to the GDQS, which provided information about all foods consumed in the previous 24 hours, we selected a set of 25 "sentinel foods" to better understand how frequently these foods are consumed, food sources, where people buy food, and their perceptions about food.

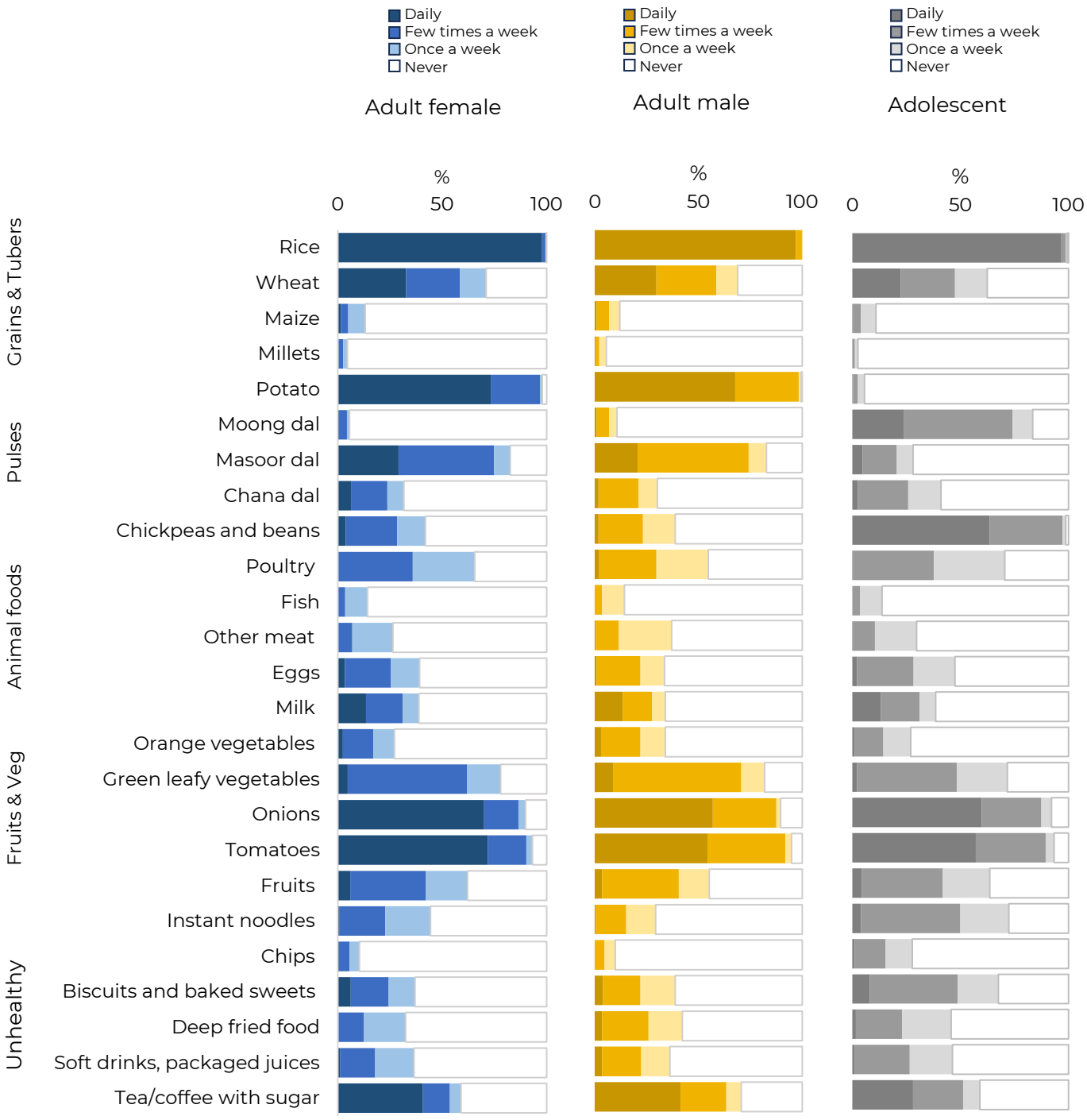
Respondents were asked how frequently they consumed these foods in the past 7 days (**Figure 10**). They were also asked about where their household gets each food (purchased from outside, own production, received from others, received from government, gather/forage) (**Figure 11**). If they said their household purchases the food, we asked them where it is purchased (haat, retail shop, farm, government ration shop, or other market type) (**Figure 12**).

For a few foods, we dug deeper to understand people's food perceptions, or what they think about the foods. This included whether they know of a vendor who sells the food, if the food is safe to eat, easy to acquire near where they spend most of their time, is not too expensive, is fast and easy to prepare, tastes good, fills their stomach, is nutritious, and if their family enjoys eating it (**Figure 13**). Understanding these perceptions provides insights into drivers or barriers of consumption of healthy and unhealthy foods.

Sentinel food list

1. Rice
2. Wheat
3. Maize
4. Millets
5. Moong dal
6. Masoor dal
7. Chana dal
8. Chickpeas and beans
9. Potato
10. Poultry (chicken, ducks, pigeons, etc.)
11. Fish
12. Other meat (e.g., mutton)
13. Eggs
14. Milk (e.g., cow, buffalo, goat)
15. Orange vegetables (e.g., pumpkin, carrots)
16. Green leafy veg. (e.g., spinach, mustard, taro, pumpkin leaves, red amaranth leaves)
17. Onions
18. Tomatoes
19. Fruits (e.g., guava, banana, apple, mango)
20. Instant noodles (e.g., Maggi, Wai Wai)
21. Chips (e.g., Lays, Kurkure)
22. Biscuits and baked sweets (e.g., cakes and cookies, mithai)
23. Deep fried food (e.g., samosa, pakora)
24. Soda/soft drinks and packaged juices (e.g., Coke, Sprite, Fanta, Maaza)
25. Tea/coffee with sugar

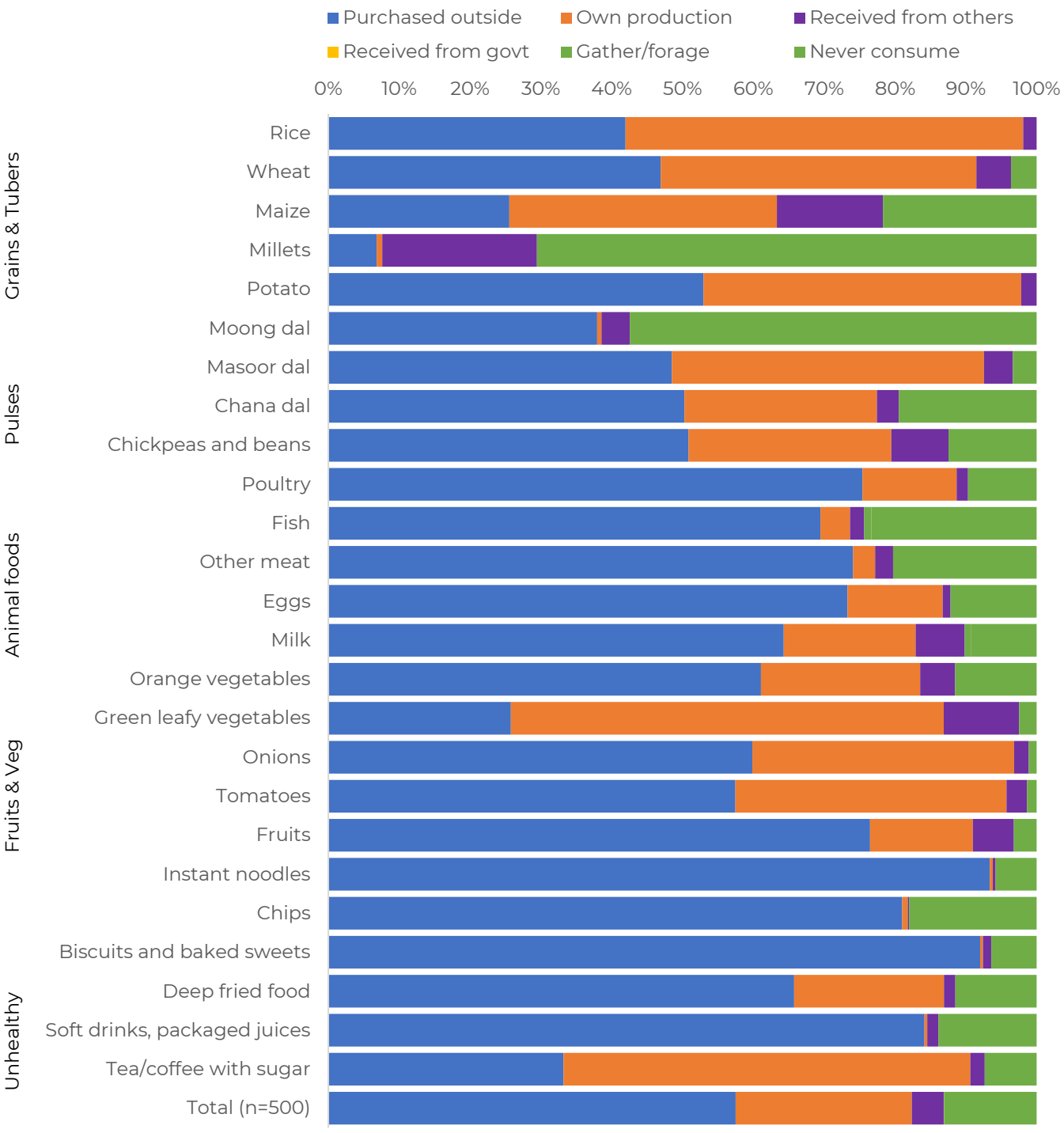
Figure 10. Frequency of consumption of sentinel foods in previous 7 days



FINDINGS

- ✓ Rice, potatoes, onions, and tomatoes were consumed daily by nearly all respondents.
- ✓ Animal-source foods were typically consumed a once a week or never consumed.
- ✓ Adult women consumed unhealthy foods less frequently than adult men or adolescents.

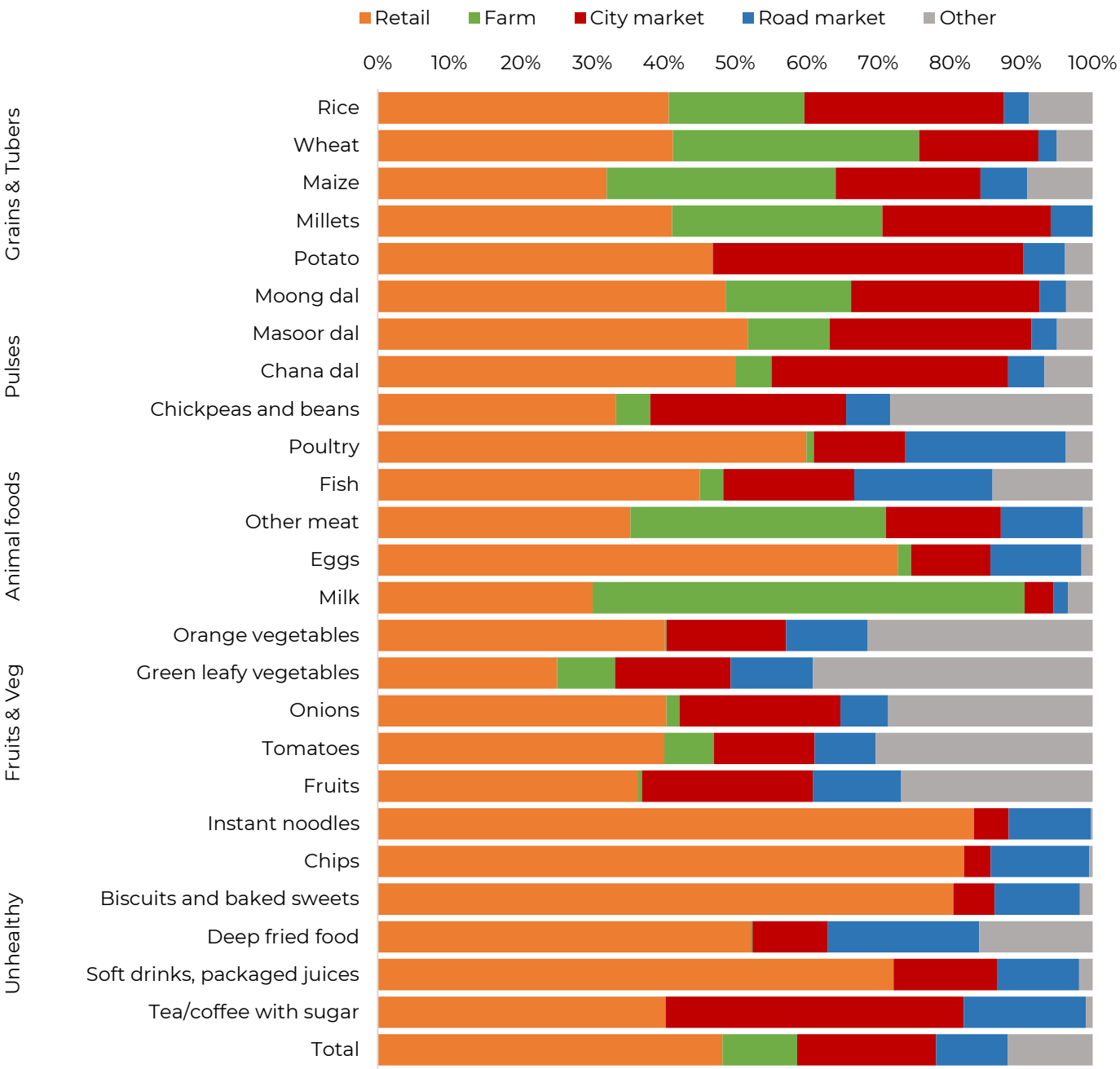
Figure 11. Food sources



FINDINGS

- ✓ Most households purchased their food rather than producing it themselves.
- ✓ About half of the households consumed rice and wheat from their own production; 79% of households consumed green leafy vegetables from their own production.
- ✓ Receiving food from the government or gathering/foraging food was not a common food source.

Figure 12. Where food is purchased

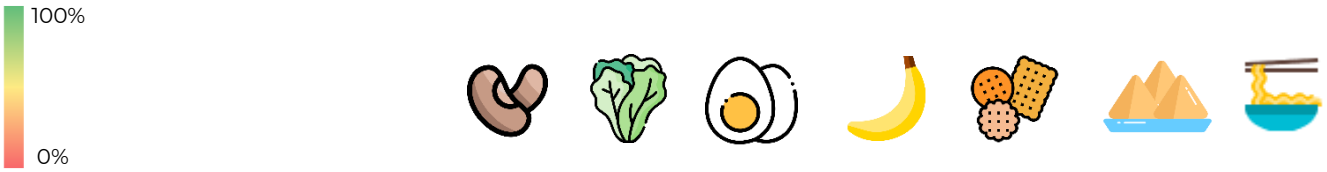


FINDINGS

- ✓ Food was predominantly purchased from retail shops and city markets.
- ✓ Milk was often directly purchased from the farmer/producer rather than through a market.
- ✓ Unhealthy foods were purchased mostly from retail shops.

Note: Data shown are for the subset of households who purchase the food from outside (Figure 11). “Others” includes weekly markets, haats, wholesale markets, mobile vendors, government shops and any other purchase source. Haats are wholesale markets where foods are sold in bulk directly by manufacturers/ farmers/ artisans at a fair price, in permanent or semi-permanent infrastructure. Retail shops means fixed or mobile individual shops where foods are sold directly to the consumers, including local grocery stores, specialized shops, vegetable/fruit shops, restaurants, and tea stalls.

Figure 13. Food perceptions (% who agree with each statement)



		Dal	GLV	Eggs	Banana	Biscuits	Deep fried food	Noodles
Know of shop that sells	Adult female (F)	96	96	96	97	99	96	99
	Adult male (M)	98	91	97	94	100	95	100
	Adolescent (A)	91	85	98	92	100	97	100
Safe to eat	F	98	99	84	96	43	37	32
	M	99	98	75	97	46	25	27
	A	97	99	89	96	45	39	26
Easy to acquire	F	90	83	89	73	99	76	97
	M	91	82	90	78	98	74	97
	A	85	79	92	68	97	80	97
Affordable	F	11	39	19	26	56	25	39
	M	16	47	23	23	64	25	53
	A	19	50	37	31	75	39	64
Easy to prepare	F	82	91	88	96	96	64	96
	M	90	99	84	89	91	74	89
	A	72	82	89	91	91	69	91
Tastes good	F	91	97	84	95	63	76	69
	M	97	97	70	97	66	64	53
	A	87	81	87	92	76	86	85
Fills stomach	F	64	64	49	74	44	64	59
	M	62	57	34	71	34	52	41
	A	63	54	49	67	48	74	67
Is nutritious	F	96	99	91	96	44	37	32
	M	99	98	84	98	40	28	23
	A	95	96	92	94	44	42	30
Family enjoys	F	93	92	89	96	78	87	85
	M	96	96	82	97	72	71	68
	A	93	94	84	92	64	79	64

FINDINGS

- ✓ Nearly all respondents knew a shop that sold the different foods.
- ✓ Green leafy vegetables were perceived as more affordable than dal.
- ✓ Bananas were the least easy to acquire of the foods.
- ✓ Few respondents considered fried foods and noodles safe to eat or nutritious.

Note: GLV = green leafy vegetables.

KEY TAKEAWAYS

1. There is room for improvement in diet quality.
    - Consumption of healthy food groups such as whole grains, nuts & seeds, animal-source foods, fruits, and deep orange vegetables is low.
    - Consumption of unhealthy food groups such as refined grains/baked goods, biscuits, is high.
    - Consumption of starchy foods with low nutrient density (rice, potatoes) is high.
    - Compared to adults, adolescents are more likely to be at “high” diet related NCDs risk
2. Most households purchase food from retail stores/markets rather than producing it themselves.
3. Food purchases are typically from retail shops, followed by city markets.

KEY QUESTIONS FOR ACTION

1. What are the key barriers to improving diet quality in the district?
2. What are a few potential solutions to overcome these barriers? What is needed from decision-makers and from program teams to implement these solutions?
3. How can understanding eating patterns throughout the day and perceptions about healthy and unhealthy foods help inform strategies to influence consumption of these foods?
4. What additional information is needed to facilitate actions to improve diets in the district?

Photo credit: Abdul Momin

SURVEY METHODOLOGY

Ward and household sampling

We selected 25 wards in the district with a probability proportional to the number of households that reside in each ward. Within each ward, we conducted a household listing to identify eligible households, that is, those with adolescents (10-19 years old). From the households with adolescents, we randomly invited 20 households to participate in the survey. If a household refused, we replaced that household with another randomly selected eligible household, to retain a total of 500 households in the district. Thus, the findings reported in this data note are representative of rural households from this district that include an adolescent.

Respondent selection

Within households, one adult female aged 20+ years, one adult male aged 20+ years, and one adolescent aged 10-19 years were selected as the respondents for the survey. When multiple adolescents were living in a household, the oldest adolescent was selected. In some households, an adult male was not available (often due to migration for work). In such households, the female was the only adult respondent (see Table 1 for respondent sample sizes). At the beginning of the interview, the adult in the household primarily involved in agriculture (either male or female) and the adult primarily responsible for food purchasing (either male or female) were identified as the primary respondents.

INDICATOR DEFINITIONS

Indicator	Definition
GDQS+	The Global Diet Quality Score positive sub-metric is composed of the summed score of the 16 healthy food groups and ranges from 0-32 points, with a higher score indicating higher diet quality.
GDQS-	The Global Diet Quality Score negative sub-metric is composed of the summed score of the 7 unhealthy food groups and the 2 food groups that are unhealthy when consumed in excess amounts (high-fat dairy and red meat), with a higher score indicating lower diet quality. The GDQS negative score has a possible range of 0-17.

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ABOUT TAFSSA

TAFSSA (*Transforming Agrifood Systems in South Asia)* is a CGIAR Regional Integrated Initiative to support actions that improve equitable access to sustainable healthy diets, improve farmers' livelihoods and resilience, and conserve land, air, and water resources in South Asia.

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CGIAR is a global research partnership for a food secure future. Visit https://www.cgiar.org/research/cgiar-portfolio to learn more about the initiatives in the CGIAR research portfolio

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