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Delivering for Nutrition in South Asia

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THE AGA KHAN UNIVERSITY
INSTITUTE FOR GLOBAL HEALTH
AND DEVELOPMENT



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INDIAN COUNCIL OF
MEDICAL RESEARCH

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Learning Lab 1A

USE OF 24-HOUR DIETARY RECALL TO MEASURE FOOD AND NUTRIENT INTAKES

WAYAMBA UNIVERSITY OF SRI LANKA

Aim

- To describe the procedures used to collect dietary intake data using a 24-hour dietary recall method.

Learning outcomes

At the end of this session, trainees will be able to:

- Describe the procedures and purpose of the 24-hour dietary recall
- Describe the passes in a multiple-pass 24-hour recall
- Conduct a 24 h recall using correct procedure
- Use food composition data to analyse dietary intake data

Workshop Programme

- **Session 1:** Introduction to the 24-hour dietary recall & Review of protocol (10 minutes)
- **Session 2:** 24-hour recall form (5 minutes)
- **Session 3:** Multiple Pass 24 h recall (15 minutes)
- **Activity:** Practice in pairs – followed by Q &A (40 minutes)
- **Session 4:** Conversion of portion sizes to weights (5 minutes)
- **Session 5:** Use of food composition data to estimate the energy and nutrient intakes (10 minutes)



SESSION 1

INTRODUCTION

- The various methods of dietary assessment are essentially asking:
 - What was eaten?
 - How much was eaten?
 - How often is this eaten?

DIETARY ASSESSMENT

- **Nutritional intake of humans is assessed by five different methods. These are:**

- **24 hours dietary recall**
- **Food frequency questionnaire**
- **Dietary history since early life**
- **Food diary technique**
- **Observed food consumption**
- **Duplicate method**



24 Hours Dietary Recall



A trained interviewer asks the subject to recall all food & drink taken in the previous 24 hours.



Based on foods and amounts actually consumed by an individual on one or more specific days



It is quick, easy, & depends on short-term memory, but may not be truly representative of the person's usual intake

Data collection methods for 24-h recall

An in-depth interview conducted by a trained dietary interviewer

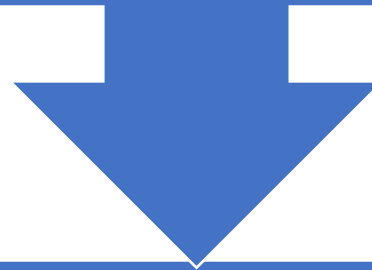
Interviewees—subjects, parent, caretaker

The dietary interviewer solicits detailed information about everything the subject had to eat and drink from midnight to midnight of the previous day or over the 24-hour period, either backward or forward

The importance of a skilled interviewer

Dependent on short term memory and cooperation

Food preparation methods, recipe ingredients, brand name of commercial products, use of dietary supplements

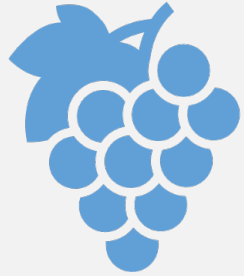


Interviewer (important factors in obtaining complete and accurate information)

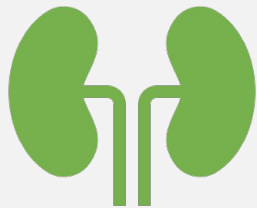
Use open-ended questions

Nonjudgmental manner/a neutral attitude /avoid asking questions in a manner that might influence the subject's responses

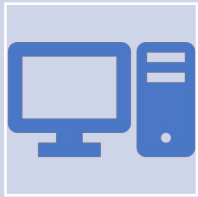
Use key questions and memory aids



A single 24-hour recall is not considered to be representative of habitual diet at an individual level but is adequate for surveying intake in a large group and estimating group mean intakes.

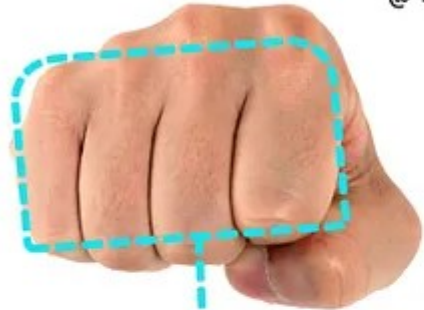


Repeat 24-hour recalls can be employed to assess a typical diet at an individual level; these are also known as multiple recalls.



VISUAL HAND GUIDE TO PORTION SIZES

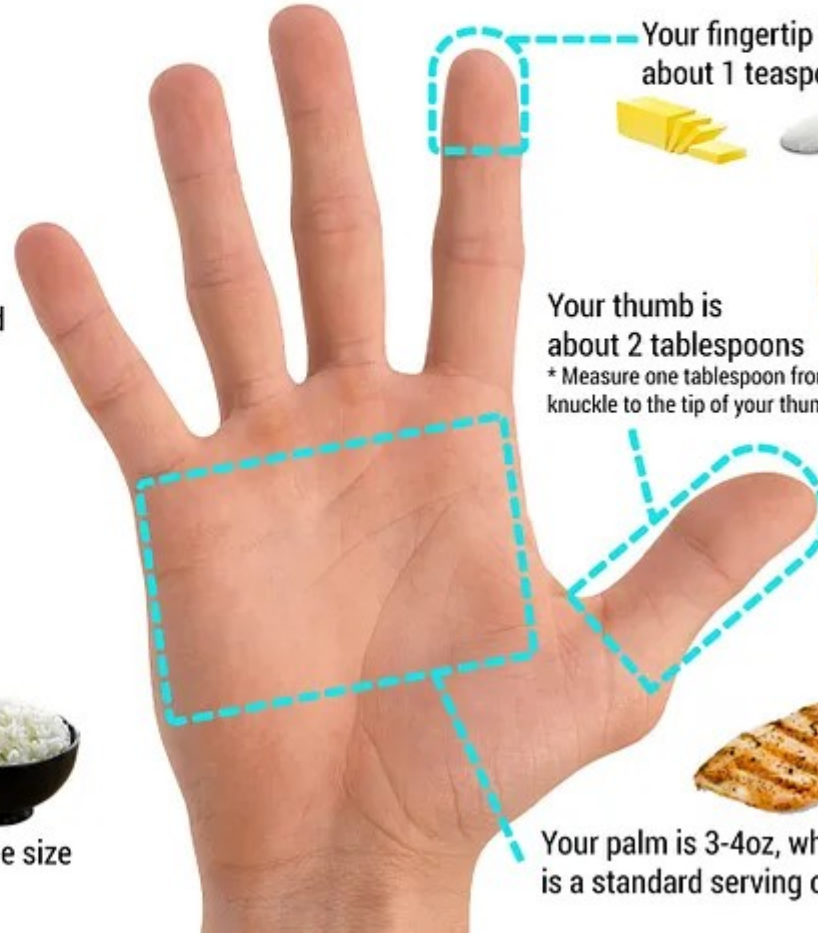
@THEFLEXIBLEDIETINGLIFESTYLE



The front of your closed fist is about 1/2 cup



A clenched fist is the size of a 1 cup serving



Your fingertip is about 1 teaspoon



Your thumb is about 2 tablespoons

* Measure one tablespoon from your knuckle to the tip of your thumb



Your palm is 3-4oz, which is a standard serving of meat



ing time
fect



Small



Medium



Large



Extra large



Small



Medium



Large



Extra large

4.1



4.2



4.3





Session 2:

24-hour recall form

24 hour recall form

Reference No: _____

Date: _____

Collected by: _____

Supervised by: _____

Name:

Age / Date of Birth:

Gender: Male / Female

Time	Place	Food item	Method of preparation	Amount eaten (spoons, cups etc)	Remarks (eg Left overs, Brand etc)	Amount in grams / ml <i>(Later use only)</i>
Breakfast						
Morning snack						
Lunch						

Evening snack						
Dinner						
Other						

Is today a usual day for you? Yes / No

Did you have any supplements (eg vitamins, minerals, fish oil etc) – please specify

.....

.....



Session 3:

Multiple pass 24hr recall

The interview is conducted in 4 steps (passes):

Pass 1: The subject quickly lists all the foods they remember consuming during the previous 24 hrs

Pass 2: The interviewer collects detailed information on each food consumed

Pass 3: Portion sizes

Pass 4: The interviewer reviews the foods reported as consumed and double checks no items have been missed

Pass 1

- **A quick list of foods eaten or drunk**

Respondents are asked to report everything that they had to eat or drink (e.g. on the previous day between midnight and midnight) in an uninterrupted free flowing list.

24-HOUR RECALL, PASS 1:

- I would like to ask you some questions about the foods that you ate or drank yesterday during the whole day and night. I would like to know about all of the foods or drinks you had, whether at home or someplace else. Starting from the time you woke up yesterday until that same time this morning, please tell me about everything you had to eat or drink yesterday, including meals, drinks and snacks.

Enumerator: Use prompts such as the following to aid the respondent in recalling all foods or drinks consumed yesterday.

- What time did you wake up yesterday? What was the first thing you had to eat or drink after you woke up?
- - Did you have anything else at that time?
- - What did you do after that? Please think about the next time you ate or drank anything and what you had at that time. Anything else?
- - Please think through what you did throughout the day to recall any times you had something to eat or drink.
- - Did you go anywhere else yesterday where you had something to eat or drink?
- - Did you wake up during the night? Did you eat or drink anything at that time? Anything else?

Pass 2

- **Collection of detailed information**

For each item of food or drink in the quick list, respondents are asked to provide additional detail:

- **The time** at which the food or drink was consumed
- **A full description** of the food or drink, including brand name where available
- Any foods likely to be eaten in **combination** e.g. milk in coffee
- **Recipes** and other combinations of foods e.g. Sandwiches

- Now I would like you to describe each of the foods and drinks you had in more detail

Pass 3

The quantity consumed - household measures, photographs of different portion sizes of foods, or actual weights from labels or packets

Any leftovers or second helpings

- **Enumerator:** Ask the respondent to first indicate the serving size of each food, then ask them to estimate the quantity of any leftovers or plate waste separately. If the respondent ate two or more helpings of a food in the same meal, please add these together and enter into the initial serving field.
- Please tell me how many [spoons/slices] of [food] that you had for [breakfast/lunch/dinner].
- Was there any left over or plate waste of [food]?

Pass 4

- **A recall review**

The interviewer **reviews all of the food eaten and drunk in chronological order**

- **Prompting** for any additional eating or drinking occasions and foods or drinks consumed, and **clarifying any ambiguities** regarding the type of food or drink consumed and portion size.

- I would now like to go through all the foods and drinks you have told me about, to check that I have the most accurate information.
- Enumerator: Review data to check for any errors or missing details.
- Is this information correct?

- Brief food/drink description:
- Meal:
- Specific food description:
- Serving:
- Leftovers:
- Condiments:

Now I would like to ask you a few additional questions.

- What type of cooking oil does your household usually use?
 - Did you feel ill yesterday?
 - Was your appetite or what you ate unusual yesterday?
 - Finally, I would like to ask you about any vitamins or supplements you might have taken recently.
-
- Have you taken any vitamins or supplements in the past week (7 days)?
 - What type of vitamins or supplements did you take?



ACTIVITY

Practice Session

Now you are going to work in pairs and get a 24h recall from your partner



Pass 1:
Quick list



Pass 2:
Detailed
descriptions



Pass 3:
Portion
sizes



Pass 4:
Review
&
Additional
questions



Q & A



Session 4:

Conversion of portion sizes to weights

Item No	Food item											
		Full			Biscuits		Tea spoon		Table spoon		Cup	Coconut
		Small	Medium	Large	pack et	one	Full	Normal	Full	Normal	Full	
17	Bread	100g (1/4	22g (01 slice)									
18	Bun (Chocolate)		34g									
19	Bun(Cream)		34g									
34	Noodles (Instant) Magi								14g		130g	
35	Noodles (Instant) Magi Rathu Kekulu										135g	
36	Noodles (Pan piti)										133g	
46	Rice (Sudu Kekulu)								11g		135	91g
47	Rice (Boiled)						6g		12g		135	93g
48	Rice (Nivudu)								11g		135	90g
49	Rice (Ratu Kekulu)										135	92g
50	Rice vegetable								16g		104g	

Item No	Food item	Portion Size (g/ml)								
		Spoon				Slice			Cup	
		Tea spoon		Table spoon						
		Full	Normal	Full	Normal	Small	Medium	Large	Full	Half
13	Brinjal (kirata)	9g		19g						
14	Brinjal (Moju)	4g		13g						
15	Brinjal (temperd)			15g						
16	Cabbage (kirata)			18g						
17	Capsicum kirata +1 slice			25g						
18	Carrot (amu)					35g	64g			
19	Carrot (boiled)					20g	52g			
20	Carrot (boiled) slice					11g				
21	carrot (kirata) +gravy	8g		15g						
22	Carrot +beans (kirata)			15g						
23	Carrot (sambola)	5g		12g						
24	Cashew	9g		19g						
25	Chilli (fried)					2g				
28	Cowpea (boiled)	7g		15g					110g	
29	Cowpea (wayanjana)			24g						
30	Cowpea curry +gravy	9g								
31	Cucumber (raw)					9g				
32	Cucumber pipinna salada			17g						
33	cucumber pipinna kirata			13g						
68	Ladies fingers (temperd)			17g						
69	Leeks (kirata) with gravy	9g		23g						
70	Leeks(temperd)			10g						
71	Leeks+potato (temperd)	8g		18g						
72	Lettuce (salada kola)					2g	3g			



Session 5:

Use of food composition data to estimate the energy and nutrient intakes

Sri Lanka Food Composition Tables



Department of Nutrition
Medical Research Institute
2021



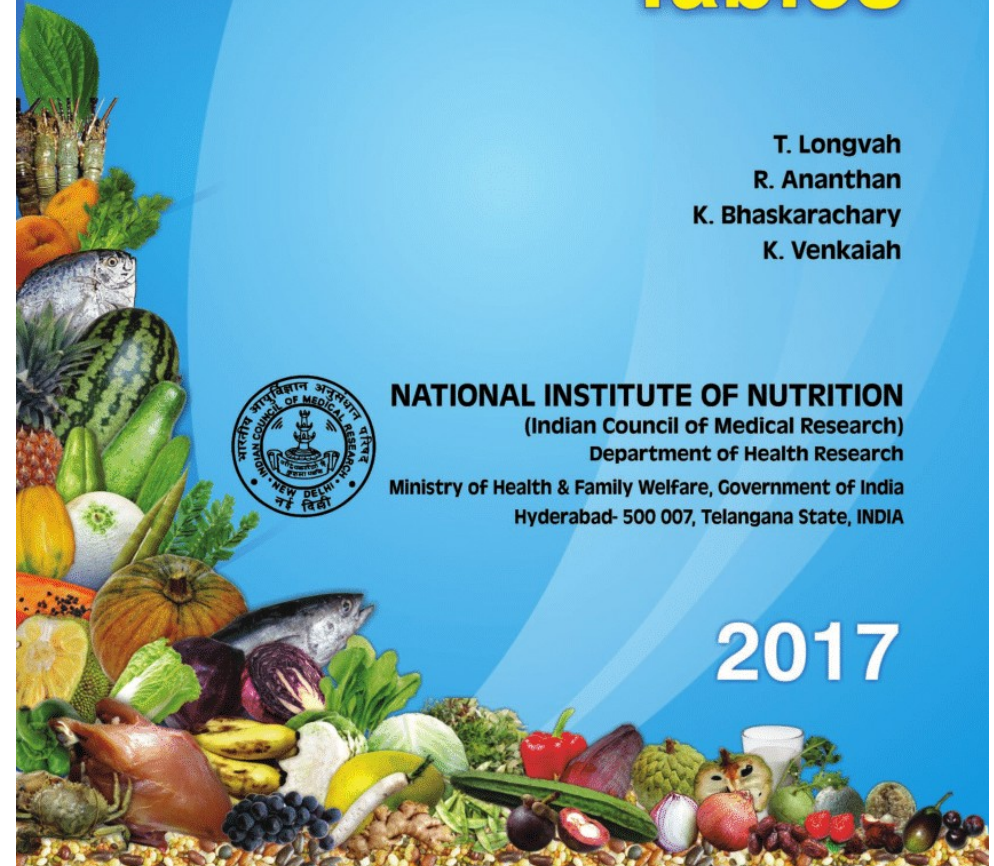
Indian Food Composition Tables

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2017



Food code	Food Name	No. of Regions	Moisture	Protein	Ash	Total Fat	Dietary Fibre			Carbohydrate	Energy
							Total	Insoluble	Soluble		
							← g →				
			WATER	PROTCNT	ASH	FATCE	FIBTG	FIBINS	FIBSOL	CHOAVLDF	ENERC
B014	Lentil whole, brown (<i>Lens culinaris</i>)	6	9.20±0.77	22.49±0.58	2.39±0.35	0.64±0.02	16.82±1.30	14.16±1.33	2.66±0.42	48.47±1.12	1251±23
B015	Lentil whole, yellowish (<i>Lens culinaris</i>)	2	9.75	22.87	2.20	0.61	16.66	14.15	2.51	47.91	1246
B016	Moth bean (<i>Vigna aconitifolia</i>)	6	8.14±0.49	19.75±0.38	3.14±0.18	1.76±0.09	15.12±0.49	14.50±0.44	0.62±0.10	52.09±0.96	1291±16
B017	Peas, dry (<i>Pisum sativum</i>)	6	9.33±0.61	20.43±0.79	2.41±0.09	1.89±0.08	17.01±0.63	14.55±0.73	2.47±0.17	48.93±0.45	1269±13
B018	Rajmah, black (<i>Phaseolus vulgaris</i>)	2	8.69	19.01	3.35	1.62	17.74	15.16	2.58	49.59	1247
B019	Rajmah, brown (<i>Phaseolus vulgaris</i>)	6	9.68±0.79	19.50±0.84	3.36±0.19	1.68±0.07	16.95±0.27	14.33±0.19	2.62±0.16	48.83±0.59	1245±12
B020	Rajmah, red (<i>Phaseolus vulgaris</i>)	3	9.87±0.30	19.91±1.44	3.28±0.21	1.77±0.04	16.57±0.63	13.86±0.43	2.70±0.20	48.61±0.65	1252±14
B021	Red gram, dal (<i>Cajanus cajan</i>)	6	9.20±0.61	21.70±0.50	3.26±0.03	1.56±0.03	9.06±0.30	6.67±0.23	2.39±0.15	55.23±0.83	1384±10
B022	Red gram, whole (<i>Cajanus cajan</i>)	6	9.30±0.45	20.47±0.72	3.53±0.03	1.38±0.08	22.84±0.43	19.69±0.30	3.15±0.34	42.48±0.77	1146±10
B023	Ricebean (<i>Vigna umbellata</i>)	1	11.12	19.97	3.54	0.74	13.37	10.04	3.33	51.26	1265
B024	Soybean, brown (<i>Glycine max</i>)	6	5.51±0.13	35.58±0.66	4.74±0.31	19.82±0.26	21.55±0.66	16.56±0.30	5.00±0.52	12.79±0.97	1596±11
B025	Soybean, white (<i>Glycine max</i>)	1	5.47	37.80	4.52	19.42	22.63	17.04	5.59	10.16	1579

C GREEN LEAFY VEGETABLES

C001	Agathi leaves (<i>Sesbania grandiflora</i>)	1	74.43	8.01	2.42	1.35	8.60	6.00	2.60	5.21	295
C002	Amaranth leaves, green (<i>Amaranthus gangeticus</i>)	6	86.85±1.21	3.29±0.57	2.52±0.32	0.65±0.07	4.41±0.10	3.21±0.08	1.20±0.09	2.28±0.62	128±17
C003	Amaranth leaves, red (<i>Amaranthus gangeticus</i>)	1	85.56	3.93	2.61	0.63	4.91	3.72	1.19	2.37	140
C004	Amaranth leaves, red and green mix (<i>Amaranthus gangeticus</i>)	4	86.37±0.38	3.09±0.14	2.55±0.20	0.53±0.03	4.60±0.36	3.23±0.18	1.37±0.23	2.87±0.35	132±6
C005	Amaranth spined, leaves, green (<i>Amaranthus spinosus</i>)	4	86.46±0.48	3.54±0.31	2.94±0.21	0.36±0.02	5.10±0.32	3.89±0.26	1.20±0.07	1.61±0.40	110±5
C006	Amaranth spined, leaves, red and green mix (<i>Amaranthus spinosus</i>)	2	86.64	2.80	3.20	0.34	5.57	3.82	1.75	1.45	99
C007	Basella leaves (<i>Basella alba</i>)	2	92.68	1.57	1.09	0.45	2.21	1.64	0.57	2.01	82

Pros

Respondent burden is relatively low

Procedure does not alter food intake patterns

Literacy not required

Interview relatively quick (e.g. 20-30 minutes)

Web based applications vastly reduce administration cost but more research is required to ascertain accuracy and reliability

Cons



Single 24 hour recall **not representative of habitual intake** but may be useful for group means



Method dependent on **respondent's ability to recall** intake accurately



Possibility of **recall bias** where the individual may selectively recall food items, as with all self-report methods



Expensive to administer due to high interviewer burden but telephone 24-hour recalls can reduce cost



Repeat 24-hour recalls increase **time and cost of analysis**

Resources required

1. Trained interviewer

- Interviewers should have **knowledge of local foods**
- It is useful for the interviewer to be **familiar with the food coding system** to be used.
- The interviewer must have **good inter-personnel skills** and should remain non judgemental in both verbal and non-verbal cues throughout the interview.
- Questions **must not lead or be directive**.
- Judicial use of probing questions must be made.
- Regular **reviews of the quality of the data** collected (ideally by those responsible for coding the 24-hour recalls) allows feedback to be given to the interviewers and helps maintain the quality of data collected.

2. Resources to code data and convert to nutrients

The process of coding and conversion of data to nutrients is time consuming and labour intensive and requires trained diet coders and a nutrient database and analysis program.

3. Portion estimation aids

The estimation of portion size in the 24-hour recall usually requires the use of aids such as food photographs, household measures or food models.

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