Annexures

NUTRITION EDUCATION PROGRAMME

FOR FEMALE SESOTHO CAREGIVERS OF CHILDREN (5-15years of age)

ANNEXURE A

ETHICAL CLEARANCE (R14/49)

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Oldewage-Theron

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER M070126**
PROJECT	Multi-Micronutrient Supplementation to Address Malnutrition amongst the Elderly Attending the Sharpeville Care of theAged
INVESTIGATORS	Prof W Oldewage-Theron
DEPARTMENT	Inst. of Sustainable Livelihoods
DATE CONSIDERED	07.01.26
DECISION OF THE COMMITTEE*	Approved Unconditionally (The Committee suggest- delay the quality of life information to the end of the study so that it does not confound findings

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 07.01.30 **CHAIRPERSON** .....
(Professors PE Cleaton-Jones, A Dhai, M Vorster, C Feldman, A Woodiwiss)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Prof W O-Theron

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

ANNEXURE B

CERTIFICATE: PROOF OF EDITING

28 Van Wouw Street

Groenkloof

Pretoria

7 August 2016

TO WHOM IT MAY CONCERN

I hereby confirm that I have language edited a thesis entitled **The implementation and evaluation of a nutrition education programme developed for caregivers** by Catharina Elizabeth Ochse (student number 207051844), to be submitted in fulfilment of the requirements for the degree Doctor Technologiae in Food Service Management in the Department of Hospitality, Tourism and PR Management, Faculty of Human Sciences, Vaal University of Technology.

Ingrid Swanepoel

Ingrid Swanepoel, N Dip: A&D, B Tech: Language Practice, BA

Cell: 082 577 5044

ANNEXURE C

LETTER OF CONSENT

Letter of Consent

Informed consent: DEVELOPMENT OF A NUTRITION EDUCATION PROGRAMME

I, the undersigned..... (Full names in print) have read the details of the project, or have just listened to the oral explanation thereof, and I declare that I understand it. I have had the opportunity to discuss relevant aspects with Prof Wilna Oldewage –Theron and/or the fieldworkers and declare that I VOLUNTARILY participate in the project. I hereby give consent to participate in the project to help develop a NUTITION EDUCATION PROGRAMME and learn about nutrition.

I hereby indemnify the Vaal University of Technology (VUT) or any employee of the VUT, against any liability that may originate during my participation in this research project. I further undertake that I will not lay any claim against the VUT or any VUT employee from damage or personal disadvantages that I may suffer as a result of this research.

.....

Signature/mark/thumb print of volunteer participant.

Signed at:.....on.....

I, ...herewith confirm that the above participant has been fully informed about the nature, conduct and risk of the above study.

STUDY DOCTOR:

Printed name SIGNATURE Date and time

TRANSLATOR/FIELDWORKER/OTHER PERSON EXPLANING INFORMED CONSENT

..... (DESIGNATION):

Printed name SIGNATURE Date and time

Witnesses

Name..... Name.....

Signature..... Signature.....

Signed at..... On.....

ANNEXURE D

REQUEST FOR PERMISSION OF PROJECT AND USE OF FACILITIES

REQUEST FOR PERMISSION OF PROJECT AND USE OF FACILITIES

Vaal University of Technology

Institute of Sustainable Livelihood

Vaal University of Technology

Dear Minister/ Pastor,,

.....Church,

Boipatong.

30th September 2011

Research Project: Caregivers and Nutrition Education

Ms Faith Holeni (for her M. Tech studies) had been doing research on a group of caregivers in your community in the recent past at the Boipatong Care Centre as part of the Sharpeville Care of the Aged project. Results indicated that there is a gap of nutritional knowledge amongst some of the caregivers. We kindly request permission to investigate the possibility of taking the nutrition education project further by means of the Interdenominational Women's Prayer Group, of which your church form part of.

Ms Rina Ochse would like to develop and implement a nutrition education programme as part of her Doctoral studies that addresses specific issues to help improve the health and well-being of the caregivers. Through this we expect a sustainable impact within households regarding food, with a longer term view of improving children's nutritional status.

We would appreciate it very much if we can make use of the church facilities. Can you also assist us in inviting caregivers to attend an initial discussion session on Thursday, the 13th October 2011, at 09:30?

We need about 80 Caregivers during the first session, and after that we need 40 of them to attend weekly sessions for a period of six weeks on a day and time that will suit the caregivers best. We shall discuss this detail with them during the first day that we see the caregivers.

Kind regards

.....

Prof W. Oldewage-Theron

Director Institute of Sustainable Livelihood
Vaal University of Technology
Tel 016 950 7922

ANNEXURE E

SOCIO-DEMOGRAPHIC QUESTIONNAIRE

Vaal University of Technology
(Formerly Vaal Triangle Technikon)

SOCIO-DEMOGRAPHIC QUESTIONNAIRE

This questionnaire must be completed by the parents and/or guardians of the HIV/AIDS affected children and covers certain aspects of your life, including work and personal details, health and illness, lifestyle and social life that is relevant to health. The answers to these questions will be kept strictly confidential and the information will not be identifiable from any reports or publications.

GENERAL INFORMATION

Date : .....
Participant Study ID Number: .....

Please answer all questions by marking the correct answer with **X,** except where otherwise indicated.
Example: In what town do you live?

Johannesburg X	Bloemfontein	Cape Town	Vanderbijlpark	Durban

PERSONAL INFORMATION

Your role in the family

Grandmother	Grandfather	Parent	Guardian	Other, specify.....

2.2 When were you born? _____

2.3 Are you?

Single	Married	Widowed	Divorced	Other.....

3. ACCOMMODATION AND FAMILY COMPOSITION

3.1. Where do you live?

Alexandra	Boipatong	Sharpeville	Other, specify.....

3.2.1 Do other people live in your house?

Yes
No

3.2.2. How many people are living in your house?

1	2	3	4	5	6	7	8	9	10	10+

3.3. Are all members permanent residents in this house?

Yes	No

3.4 If yes, how long have you been staying permanent in this house?

< 1 year	1-5 years	>5 years

3.5. In what type of house are you staying?

Brick	Clay	Grass	Zinc/shack	Other, specify.....

3.6. Indicate the number of rooms in your house.

≤ 2 rooms	3-4 rooms	> 4 rooms

3.7. Do you have the following facilities at home?

3.7.1 Water

Tap in the house	
Tap outside the house (in yard)	
Borehole	
Spring / river / dam water	
Fetch water from elsewhere	

3.7.2 Toilet facilities

None	
Pit latrine	
Flush / sewage	
Bucket system	
Other, specify.....	

3.7.3	Waste removal	Yes	No

3.7.4	Tarred road in front of house	Yes	No
	Gravel road in front of house	Yes	No

3.8. Do you have problems with the following?

Mice / Rats	Cockroaches	Ants	Other pests, specify.....

WORK STATUS AND INCOME

4.1 Are you currently employed?

Yes	No

If YES, go to question 4.5.

4.2 If NO, how would you describe your current status?

Unemployed	Retired	Housewife	Other, specify.....

4.3. If UNEMPLOYED, are you actively looking for employment at the moment?

Yes	No

4.4 If RETIRED, how long have you been on pension?

< 6 months	6-12 months	1-3 years	> 3 years

4.5. Is your spouse (partner) in paid employment at present?

Yes, full time, permanent	
Yes, part-time, permanent (< 25 hours p w)	
No, unemployed	
No, retired	
No, other, specify.....	

4.6 What is the total income in the household per month?

<	R501-R1000	R1001-R1500	R1501-	R2001-R2500	> R2500

4.7 How often does it happen that you do not have enough money to buy food or clothing for you or your family?

Always	Often	Sometimes	Seldom	Never

4.8 How many people e.g. partner, relatives & others (including yourself) contributed to your household income from any source, (including wages/salary from paid employment, money from second or odd jobs income from savings investments, pension, rent or property, benefits and or maintenance etc.) in the last 12 months?

People:

0	1	2	3	4	5	6	7	8	9

4.9 How often do you buy food?

Every day	Once a week	Once a month	Other, specify .....

4.10 Where do you buy food?

Spaza shop	Street vendor	Supermarket	Other, specify.....

4.11 How much money is spent on food PER WEEK? (Tick only one box)

R 0 –	R 51 –	R 101 –	R 151 –	R 201 –	R 251 –	> R 300	I do not know

R 50	R 100	R 150	R 200	R 250	R 300		

5 EDUCATION AND LANGUAGE

5.1. What is the highest education you have?

None	Primary School	Secondary school	College	Other post school

5.2 What language is spoken mostly in the house?

Sotho	Xhosa	Zulu	Pedi	Other, specify.....

5.3 How many children are in the household?

1	2	3	4	≥5

5.4 How many children are attending school?

1	2	3	4	≥5

5.5 How do the children get to school?

Lift	Walk	Bus	Taxi	Other, specify.....

6 ASSETS

Tick one block for every question:	Father	Mother	Child	Grandma	Grandpa	Other
6.1 Who is mainly responsible for food preparation in the house?						
6.2. Who decides on what types of food are bought for the household?						
6.3. Who is mainly responsible for feeding/serving the child?						
6.4. Who is the head of this household?						
6.5 Who decides how much is spent on food?						

6.6 How many meals do you eat at per day?

0	1	2	3	> 3

6.7. Where do you eat most of your meals?

Home	Friends	Work	Buy	Other, specify.....

6.8. Where do your children eat most of their meals?

Home	Friends	School	Buy	Other, specify.....

6.9. What type of fuel do you usually use for food preparation?

Fire	Paraffin	Electricity	Gas	Coal	Other, specify.....

6.10 What type/s of pots do you use for cooking your food? (tick all relevant options)

Aluminum	Cast iron	Clay	Stainless Steel	Other, specify.....

6.11. Does your home have the following and how many?

	Yes	**No**	**Quantity**
Electrical stove			
Electrical iron			
Electrical kettle			
Gas stove			
Primus or paraffin stove			
Microwave			
Hot plate			
Radio			
Television			
Refrigerator			
Freezer			
Bed with mattress			
Mattress only			
Lounge suite			
Dining room suite			
Electrical iron			
Kettle, electrical			

Thank you very much for your co-operation.

Wilna Oldewage-Theron (Prof)
Director: Institute of Sustainable Livelihoods
Tel: 016 950 9722
Fax: 086 612 8573

ANNEXURE F

HEALTH, MEDICAL AND WELL-BEING QUESTIONNAIRE

HEALTH, MEDICAL AND WELL-BEING QUESTIONNAIRE

NUTRITION EDUCATION PROJECT: Baseline study

Section A:

1.

Participant study ID number	
Gender	Male ❑ Female ❑

Section B:

HEALTH QUESTIONNAIRE:

2.

ARE YOU SUFFERING OR HAVE YOU SUFFERED FROM	YES	NO	IF ANY ANSWER IS YES, GIVE DETAILS OF THE NATURE, SEVERITY AND DURATION OF ILLNESS
1. Any skin disease?			
2. Any affection of the skeleton and/or joints?			
3. Any affection of the eyes, ears, nose or teeth?			
4. Any affection of the heart or circulatory system?			
5. Any affection of the chest or respiratory system?			
6. Any affection of the digestive system?			
7. Any affection of the urinary system and/or genital organs?			
8. Any nervous affection or mental abnormality?			
9. Any headaches			
10. Any other illness?			

3.

	YES	NO
Have you lost weight during the past month?		
Have you had a recent change in appetite?		
Do you have problems with the following:		
* chewing?		
* swallowing?		
* nausea?		
* diarrhea?		
* vomiting?		
* constipation?		
Do you follow a special diet?		
If yes, specify.....		
Are you allergic to any foods?		
If yes, specify		

4.

Would you say your usual level of physical activity is:	Tick the correct block
1. Heavy/ rigorous (running, playing tennis, swimming, doing heavy gardening, etc., at least three times per week)	
2. Moderate (Taking rigorous exercise once or twice a week, or steady walking, or other moderate activities at least three times per week)	
3. Light (playing golf, taking a stroll, or doing none rigorous activities occasionally)	
4. None (No exercise whatsoever)	

5.

How often do you get tired?	Always	Sometimes	Never

6.

	YES	NO
1. Do you suffer from any defect of hearing, speech or sight?		
2. Are you physically disabled and do you use artificial limbs?		
GIVE DETAILS OF THE NATURE AND SEVERITY OF THE DISABILITY		

7.

Do you smoke at this moment?	Tick the correct block
1. Yes	
2. No (Never smoked	
3. No (Stopped)	

8. If yes in question 7, answer question 8.

What do you smoke and how many per day?	YES	NO	NUMBER per DAY
Cigarettes, home made			
Cigarettes, bought			
Cigarettes, bought, light			
Cigars			
Pipe			
Other, specify			

9.

Do you make use of snuff at this moment?	Tick the correct block
1. Yes	
2. No (Never used)	
3. No (Stopped)	

10.

Do you use alcohol on a regular basis?	Tick the correct block
1. Yes	
2. No	
3. Not applicable	

12.

If you use alcohol, How often?	Tick the correct block
1. Every day	
2. Once a week	
3. Occasionally	

13.

What type of alcoholic drinks do you drink?	Tick the correct block
1. Commercial beer / cider	
2. Home brewed beer	
3. Strong liquor ex. Whiskey, brandy, Vodka etc.	
4. Wine	

14.

	YES	NO
Have you undergone any operations during the past year?		
GIVE DETAILS OF THE NATURE AND DATE OF THE OPERATION/S		

Section C:

MEDICATION AND HEALTH FACILITY QUESTIONNAIRE:

1.

1. Do you use any medication or drugs?	YES	NO
2. If no, go to the next block.		
3. If yes, what?		

2.

Do you take any nutrient supplements?	YES	NO

3. If yes in previous question.

Specify the type	Vitamins, specify.....	Minerals, specify.....	Multivitamin	Other, specify..... ....

4.

Which health facility is commonly used by you?	Tick the correct block
1. Private Doctor	
2. Clinic	
3. Hospital	
4. Traditional Healer	
5. Other (please state)	

5.

How do you travel to the health facility?	Tick the correct block
1. On foot	
2. Taxi	
3. Bus	
4. Own transport	
5. Other (please state)	

6. When was the last time you visited your health practitioner (doctor/clinic/etc)?

.....

7. What was the reason for this visit?

.....

Section D:

FAACT QUESTIONNAIRE:

Please complete the following section by ticking the appropriate questions.

Physical wellbeing

	Never	Seldom	Sometimes	Often	Always
1. I have a lack of energy					
2. I suffer from nausea					
3. I have pain					
4. I experience side-effects of my treatment					
5. I feel ill					
6. I am forced to stay in bed					

Social/family wellbeing

	Never	Seldom	Sometimes	Often	Always
1. I feel close to my friends					
2. I get emotional support from my family					
3. I get support from my friends					
4. I am satisfied with family communication about my illness					
5. I feel close to my parent/guardian					

Emotional wellbeing

	Never	Seldom	Sometimes	Often	Always
1. I feel sad					
2. I am satisfied with how I am coping with my illness					
3. I am losing hope in the fight against my illness					
4. I feel nervous					
5. I worry about dying					
6. I worry that my condition will get worse					

Functional wellbeing

	Never	Seldom	Sometimes	Often	Always
1. I am able to perform all my tasks					
2. My life is fulfilling					

3. I am able to enjoy life					
4. I have accepted my illness					
5. I am sleeping well					
6. I am enjoying the things I usually do for fun					
7. I am content with my quality of life right now					

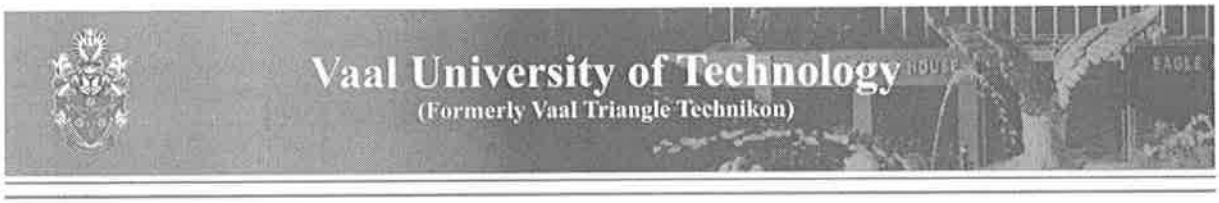
Thank you very much for your co-operation.

Wilna Oldewage-Theron (Prof)
Activity Leader: Sharpeville Integrated Nutrition Project

Tel: 016 950 9722
Fax: 086 612 8573

ANNEXURE G

24-HOUR RECALL



24-HOUR RECALL

BOIPATONG CHILD CAREGIVERS

Subject ID number : _____ Gender: Male/Female: _____

Interviewer: _____ Date: _____ / _____ / 20.....

Tick what the day was yesterday:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday

Would you describe the food that you ate yesterday as typical of your habitual food intake?

Yes	No

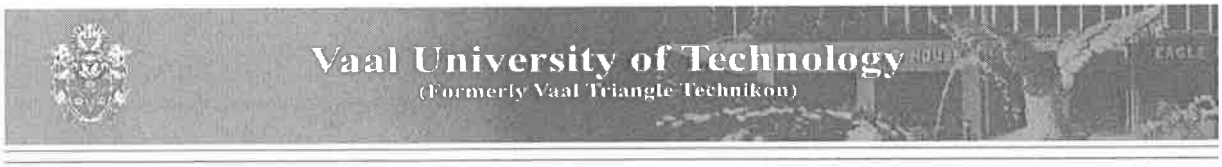
If not, why? _____

I want to find out about everything you ate or drank yesterday, including food you bought. Please tell me everything you ate from the time you woke up to the time you went to sleep. I will also ask you where you ate the food and how much you ate.

Time (approximately)	Place	Description of food	Amount	Amount in g	Code (office use only)
From waking up to going to work, or starting day's activities					
During the morning (after breakfast)					
Middle of the day (Lunch time)					

Time (approximately)	Place	Description of food	Amount	Amount in g	Code (office use only)
During the afternoon					
At night (dinner time)					
After dinner, before going to sleep					
* Do you take any vitamins (tablets or syrup)		Yes		No	
Give the brand name and dose of the vitamin/tonic:					

ANNEXURE H



DIETARY DIVERSITY QUESTIONNAIRE (DDQ)

DIETARY DIVERSITY QUESTIONNAIRE (DDQ)

Validated for Sesotho Caregivers of Children (5-15 years of age) in the Boipatong area.

GROUP 1: Flesh foods (meat, poultry, fish) diversity			
1	Beef		
2	Pork		
3	Mutton		
4	Tinned fish (pilchards)		
5	Fish (fresh / whole)		
6	Tinned fish (tuna)		
7	Lekgotlwane (finely chopped, cooked meat)		
8	Chicken, boiled, roasted		
9	Chicken runners & heads		
10	Chicken livers		
11	Goat (meat)		
12	Mogudu & malana		
13	Dried meat (biltong)		
14	Viennas		
15	Russians		
16	Sausage (wors)		
17	Steak		
GROUP 2: Eggs diversity			
18	Eggs		
GROUP 3: Dairy products diversity			
19	Milk, unpasteurized (cow)		
20	Evaporated milk unsweetened		
21	Maas / inkomasi		
22	Powdered milk		
23	Skim or low-fat milk (pasteurized)		
24	Full cream milk (pasteurized)		
25	Cheese		
26	Custard		
27	Ice cream		
28	Yoghurt		
29	Ultra-Mel		
30	Yogi sip		

GROUP 4: Cereals, roots & tubers diversity			
31	Rice		
32	Pap		
33	Macaroni / pasta / spaghetti		
34	Maize rice (mealie rice)		
35	Samp		
36	Bread (white or brown)		
37	Whole wheat bread		
38	Dumpling		
39	Fat cakes		
40	Scones		
41	Biscuits		
42	Buns		
43	Mabela (soft porridge)		
44	Maize meal porridge		
45	Corn flakes		
46	Oats		
47	Wheat bix		
48	Mageu		
49	Potatoes		
50	Sweet potatoes		
51	Umqombothi		
52	Traditional beer		
GROUP 5: Legumes and nuts			
53	Sugar beans		
54	Peas (dried)		
55	Cow peas		
59	Jugo beans		
57	Peanut butter		
58	Peacan nut		
59	Peanut		

GROUP 6: Vitamin A rich fruits and vegetables diversity			
60	Pumpkin		
61	Carrots		
62	Wild leafy vegetables (morogo) fresh and dried		
63	Spinach		
64	Butternut		
65	Apricots		
66	Peach (yellow cling)		
67	Mango		
GROUP 7: Other fruits (and juices) diversity			
	Deciduous fruits		
68	Apple		
69	Peaches		
70	Pears		
71	Grapes (black / green)		
72	Plum		
	Sub-tropical fruit		
73	Lemon		
74	Orange		
75	Naartjie		
76	Banana		
77	Pine apple		
78	Avocado		
79	Blue berry		
80	Cherry		
81	Kiwi fruit		
82	Raspberry		
83	Watermelon		
84	Wild watermelon (tsamma)		
85	Guava		
86	Juices		
87	Juice (100% pure juice e.g Ceres / Liqui fruit)		

GROUP 8: Other vegetables diversity			
88	Onions		
89	Cabbage		
90	Beetroot		
91	Rhubarb		
92	Turnips		
93	Gem-squash		
94	Tomatoes		
95	Green beans (fresh)		
96	Peas (fresh - green)		
97	Cauliflower		
98	Chili (red / green)		
99	Lettuce		
100	Mushroom		
101	Baby marrow		
102	Green pepper		
103	Sweet-corn (baby)		
104	Corn-on-the-cob (white)		
105	Garlic		
GROUP 9: Oils and fats diversity			
106	Butter		
107	Sunflower oil		
108	Margarine		
109	Lard		
110	Salad oil		

ANNEXURE I

NUTRITION KNOWLEDGE QUESTIONNAIRE

(NKQ situational analysis)

NUTRITION KNOWLEDGE QUESTIONNAIRE

Situational analysis

INSTRUCTIONS

Office Only

THE FOLLOWING QUESTIONNAIRE CONTAINS TWO TYPES OF QUESTIONS,

MULTIPLE CHOICE AND TRUE/ FALSE

1. MULTIPLE CHOICE: CHOOSE **ONE** THAT YOU THINK IS THE CORRECT ANSWER AND TICK THE CORRESPONDING NUMBER THAT IS NEXT TO THE ANSWER

2. TRUE/ FALSE: CHOOSE THE **TRUE** OR THE **FALSE** AND TICK THE ONE THAT YOU THINK IS THE CORRECT ANSWER

THE QUESTIONS REFER TO A HEALTHY PERSON WHO IS NOT ON ANY MEDICATION OR SPECIAL DIET

Please answer all the questions before moving on to the next ones.

Do not page back!

	YY	MM	DD
DATE			
SUBJECT NUMBER			

AGE	
DATE OF BIRTH	
GENDER	Male / Female
SCHOOL/ INSTITUTION or workplace	

PLEASE ANSWER ALL THE QUESTIONS

1 You should eat a lot of sugar to have enough energy

1	2		
TRUE	FALSE	11A	2

2 Cooked meat/ fish/ chicken sold on the street may not always be safe to eat because

It may have been undercooked	1		
The cook may not have used fresh meat	2		
It may have been kept for a long time before being cooked	3		
All of the above	4	6D	4

3 You should not have starches at most meals because

They are not important for your health	1		
Even eating small amounts can cause weight gain	2		
They cause diseases	3		
None of the above	4	3B	4

4 How much water should you drink a day

You don't have to drink water everyday	1		
1 to 3 glasses	2		
4 to 6 glasses	3		
7 to 9 glasses	4	9A	3

5 What is a portion of cooked vegetables?

I Tablespoon	1		
Half a cup	2		
I Cup	3		
2 Cups	4	4A	4

6 Which of the following is a low fat snack

"Simba" Chips	1		
Popcorn	2		
Fried chips	3		
"Niknaks"	4	7A	2

7 From which group of foods should you eat the most every day?

Bread, samp, rice, porridge	1		
Apples, bananas, spinach, carrots	2		
Milk, yogurt, cheese	3		
Chicken, fish, beans, eggs	4	3A	1

8 Drinking a lot of wine, beer, cider can cause weight gain

TRUE	FALSE	10B	1

9 People who are overweight should not be physically active

TRUE	FALSE	2B	2

10 It is usually not necessary to wash vegetables before you cook them

TRUE	FALSE	4D	2

11 The key to a healthy way of eating is to

Eat many different kinds of foods	1		
Eat some foods more than other foods	2		
Eat certain kinds of foods in moderate or small amounts	3		
All of the above	4	1A	1

12 The following foods must not be eaten at all when one is trying to lose weight

Bread and rice	1		
Meat and fish	2		
Margarine	3		
None of the above	4	1A	4

13 Which foods contain a lot of calcium?

Chicken and eggs	1		
Milk, yoghurt	2		
Pilchards	3		
2 and 3	4	6C	4

14 To which of the following foods has iodine been added?

Bread	1		
Maize meal	2		
Table salt	3		3
Powdered milk	4	8C	

15 If you were trying to increase the amount of fiber in your diet, which one of the following foods should you eat more of?

Cakes and biscuits	1		
Apples and carrots	2		
Chips and pies	3		
Chicken and fresh fish	4	4C	2

16 Being physically active means

Going to the gym	1		
Walking a lot	2		
Playing sports like soccer or netball	3		
All of the above	4	2A	4

17 Which of the following choice of foods prevent certain diseases

Fish, Chicken without skin, and lean meat	1		
Beef sausage, bacon, and lean mince	2		
Fried fish, fried chicken, and regular mince	3		
All of the above	4	6A	1

18 Which foods contain a lot of fibre?

Oats, apples, beans	1
Milk, yogurt, cheese	2
Beef, chicken, mutton	3
Butter, margarine	4

1C [1]

19 How many fruits and vegetables should be eaten

1 fruit and vegetable a day	1
3-4 fruits and vegetables a day	2
5 or more fruits and vegetables everyday	3
There is no need to eat fruits and vegetables daily	4

4A [2]

20 If you are eating a healthy diet there is no need for you to be physically active

TRUE | FALSE 2A [2]

21 Drinking boiled water is a good way to lose weight

TRUE | FALSE 9B [1]

22 If one wants to lose weight there is no need to be physically active, it is better that one simply diets

TRUE | FALSE 2B [2]

23 All water is safe to drink

TRUE | FALSE 9A [2]

24 You can drink as much wine, beer, ciders as you want provided you have eaten first

TRUE | FALSE 10A [2]

25 A little sugar can be eaten when one is trying to lose weight

TRUE | FALSE 11B [1]

26 How much milk or maas should you have a day?

None	1
Half a cup	2
One cup	3
Two cups	4

6A [4]

27 Your body only needs a little bit of salt to be healthy

TRUE | FALSE 8A [1]

28 A well- balanced diet

Consists mostly of meat, with smaller amounts of starch, fruits, vegetables, and dairy products	1
Consists mostly of vegetables, and smaller amounts of meat and dairy products	2
Consists mostly of starches, vegetables and fruits, with smaller amounts of meat and dairy products	3
None of the above	4

3A [3]

29 Eating a lot of different kinds of foods is healthier than eating only a few kinds foods

TRUE	FALSE

1A [1]

30 It is impossible to get all the vitamins and minerals you need from food, you need to take a vitamin and mineral pill

TRUE	FALSE

1A [2]

31 Dried beans, peas and lentils can be included in many dishes such as meat, vegetables and samp

TRUE	FALSE

5A [1]

32 Which one of the following groups of nutrients are found in large amounts in fruits and vegetables?

Fibre, Vitamin A	1
Starches, fat, Vitamin D	2
Fats, Iron, Calcium	3
None of the above	4

4C [1]

33 Which of the following breakfast menus contain little fat

Whole-wheat toast with thinly spread margarine	1
Weet-Bix with 2% fat milk	2
Bacon and egg	3
1 and 2	4

7A [1]

34 Which food has the most fibre?

White rolls	1
Brown bread	2
White bread	3
Whole wheat bread	4

3C [4]

35 The best place to defrost meat from a frozen state is to

leave it at room temperature	1
leave it in the fridge	2
leave it in sunlight	3
meat should never be defrosted	4

6D [2]

36 Starchy foods should not be eaten when one is trying to lose weight

TRUE	FALSE	3B	2

37 To make sure that you stay healthy you should eat

Lean meat, fruits and vegetables, low fat dairy products, and breads and cereals	1
Fruit and vegetables only	2
Bread, cereals, fruit and vegetables only	3
Low fat dairy products and lean meat only	4

7A 1

38 Eating bread always causes weight gain

TRUE	FALSE	3B	2

39 Which of the following foods are the lowest in fat:

Corn flakes and full cream milk	1
Grilled lean steak and boiled carrots	2
Pizza and milkshake	3
Fried lamb chops and creamed spinach	4

7A 2

40 To protect yourself from disease you should avoid eating many different kinds of foods

TRUE	FALSE	1B	2

41 It is healthy to snack on foods that contain a lot of sugar

TRUE	FALSE	11B	2

42 Dry beans, peas, and lentils should be eaten often

TRUE	FALSE	5A	1

43 Soya mince is as healthy as meat

TRUE	FALSE	5A	1

44 You can eat as much meat as you want everyday

TRUE	FALSE	5A	2

45 Which group of foods has the most Vitamin A?

Oats, whole wheat bread, rice	1
Carrots, spinach, sweet potatoes	2
Pies, cakes, pudding	3
None of the above	4

4C 2

46 Dry beans, peas, lentils are a healthy choice to eat in place of meat

TRUE	FALSE	5A	1

47 Meat/ fish/ chicken will not spoil if you store them

In the cupboard for a few days	1
In the fridge for 2 days only	2
In the freezer for 3-4 months	3
In 2 and 3 above	4

6D 3

48 The reason why beans, peas and lentils are good for you is that

They contain only small amounts of fat	1		
They contain a lot of fibre	2		
They can protect you from some diseases	3		
All of the above	4	5B,C	4

49 If you eat dried beans, peas and lentils regularly, would you eat it

every day	1		
once a week	2		
twice a week	3		
once a month	4	5A	3

50 Your body only needs a little bit of salt to be healthy

TRUE	FALSE		
		8A	1

SELECT YES OR NO FOR ALL THE CHOICES

1. From where do you get your information about nutrition?

		YES	NO	
1.1	Work			
1.2	Children's' School/ Caretaking unit	1	2	13F
1.3	Peers/ Friends	1	2	13F
1.4	Family	1	2	13F
1.5	Radio/ TV/ Magazines	1	2	13F
1.6	Other (Specify)			
		1	2	13F

SELECT 1 OR 2 OR 3 OR 4 FOR ALL THE CHOICES THAT YOU CHOSE YES TO IN QUESTION 1

2. Of the choices you have selected above, how would you rate them as sources of information:
1= very unreliable 3= reliable
2= unreliable 4= very reliable

		very unreliable	unreliabl e	reliabl e	very reliable	
2.1	Work					
2.2	Children's' school/caretaking unit	1	2	3	4	13G
2.3	Peers/ Friends	1	2	3	4	13G
2.4	Family	1	2	3	4	13G
2.5	Radio/ TV/ Magazines	1	2	3	4	13G
2.6	Other (Specify)					
		1	2	3	4	13G

3 Do you think there is a need for nutrition education?

Yes	
No	

4 What tool(s) do you think would be effective in communicating nutrition information?

Please indicate how would you rate them as sources of information:

		Poor idea	Somewhat good	Good idea	Excellent idea
4.1	Card games	1	2	3	4
4.2	Calendars	1	2	3	4
4.3	Role playing	1	2	3	4
4.4	Fridge magnets	1	2	3	4
4.5	Comic books	1	2	3	4
4.6	Videos	1	2	3	4
4.7	Lectures	1	2	3	4
4.8	Pamphlets	1	2	3	4
4.9	Puzzles	1	2	3	4
4.10	Cross word puzzles/word searches	1	2	3	4
4.11	Other (specify)	1	2	3	4

5 Which of the following colours would you find more entertaining for nutrition education tools?
Tick applicable options

Black and white	
Bright colours (red, green, blue, etc.)	
Pastel colours (softer colours)	

6 In your opinion, what do you think adults would find more understandable when showed food items?

6.1	Photo's	
6.2	Colour drawings	
6.3	Cartoons	

7 Indicate which language.....

7.1	Home language	
7.2	English	
7.3	Both	

8 Do you think making use of nutrition educational tools will enhance nutrition learning?

8.1	Yes	
8.2	No	

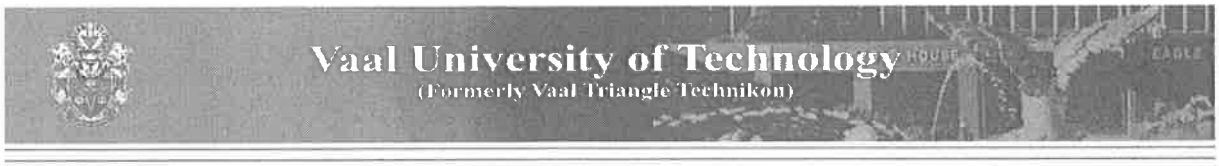
9 My weight today is: _____ Kg

10 My length is: _____ m _____ cm

Thank you very much for your help!!

The Nutrition team

ANNEXURE J-1



TESTING OF EXISTING NUTRITION EDUCATIONAL MATERIAL

CENTRE FOR SUSTAINABLE LIVELIHOODS
NUTRITION EDUCATION PROGRAMME FOR CHILD CAREGIVERS

TESTING OF EXISTING NUTRITION EDUCATIONAL MATERIAL

This questionnaire must be completed by the Female Caregivers of Boipatong day Care Centre and will test the current nutrition knowledge, healthy eating habits and the understanding of the existing SA(FBDGs). The answers to these questions will be kept strictly confidential and the information will not be identifiable from any reports or publications.

GENERAL INFORMATION

Date.....

Participant name.....

Gender.....

Age.....

Date of birth.....

1. Mark one answer that best describe your opinion with an X

1.1 In general, would you say your current nutrition knowledge is

Excellent	Very good	Good	Fair	Poor / Bad

1.2 In general would you say your school reading skills is

Excellent	Very good	Good	Fair	Poor / Bad

1.3 In general would you say your current eating habits are:

Excellent	Very Good	Good	Fair	Poor / Bad

1.4 What does eating regularly mean?

Good source of protein	Very good for teeth	Very fatty	They make our bowel not to function properly	Good source of vitamin A

1.5 Why it is very important to eat dry beans, split peas, lentils and soya regularly?

Once a week	Once a month	At least 3 times a week	Twice a month	Once after 3 months

2. Please circle the correct answer

2.1 Before cooking the dry beans, split peas, lentils and soya we have to do the following:

a) Wash the beans and soak them overnight in clean water to soften them

b) Soak the beans inside a solution

c) Fry the beans in cooking oil first L

2.2 What does enjoy variety of food mean?

a) It means to eat more than one type of food

b) It means you have to eat food that is very expensive

c) It means you have to eat vegetables only V

2.3 Why do we have to eat chicken, fish, meat, milk and eggs?

a) To build muscles, bones, skin and also necessary for growth

b) Gives energy

c) Protects against fever M

2.4 The good thing about beans, split peas, lentils and soya

a) We can eat them instead of meat and still be very health

b) They contain lot of fat

c) They are very difficult to cook L

2.5 What does the word healthy mean?

a) It means to be well and free form illness

b) It means to be clean

c) To protect our bodies from illness V

3. Answer Yes or No to the following statements

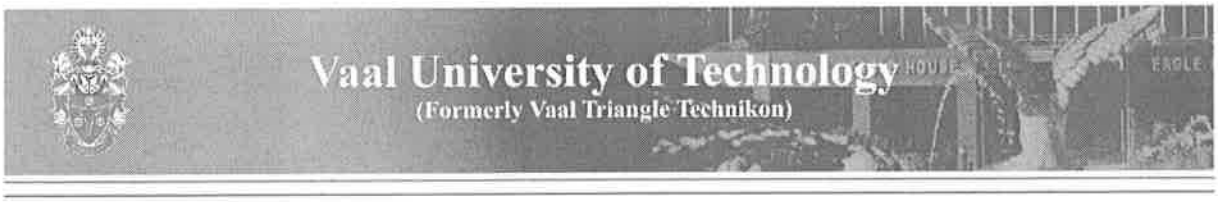
These questions relate to the pamphlets provided

		Yes	No
3.1	Can you easily read and understand what is written on the pamphlets?		
3.2	Do you clearly understand the pictures on the pamphlets?		
3.3	Can you easily explain the meaning of the pictures on the pamphlets?		
3.4	Can you easily follow the instructions of the recipes on the pamphlets?		
3.5	Would you prefer the pamphlets to be written in English?		
3.6	Would you prefer the pamphlets to be written in your home language?		
3.7	What is your home language?		

Thank you for your time and assistance in completing this form

ANNEXURE J-2

QUESTIONNAIRE TO TEST DESIGN AND LAYOUT OF EXISTING NE MATERIAL



NUTRITION EDUCATION PROGRAMME FOR SESOTHO CAREGIVERS

QUESTIONNAIRE TO TEST DESIGN AND LAYOUT OF EXISTING NE MATERIAL

This questionnaire must be completed by the female caregivers of Boipatong Day Care Centre and will test the current nutrition knowledge, healthy eating habits and the understanding of the existing South African (FBDGs). The answers to these questions will be kept strictly confidential and the information will not be identifiable from any reports or publications.

GENERAL INFORMATION

Date.....

Participant name.....

Gender..... **Age**.....

Date of birth.....

1. Mark one answer that best describe your opinion with an X

1.1 Where do you get nutrition information from

TV Programmes	Magazines	Family members	Clinic Sister	Other specify

1.2 In general would you say your current eating habits are

Excellent	Very Good	Good	Fair	Poor / Bad

2. Would you prefer to learn more about nutrition? YES / NO

3. If YES to question 2, what type of nutritional message would you prefer?

Pamphlets/ Booklets	TV adverts/ programmes	Radio programmes	Videos/ DVDs	Magazine articles	Other, Specify

4. The following questions relate to the pamphlets provided, look at the pamphlet and answer the following question by ticking your own suitable answer

4.1 Would you prefer the pamphlet to be written in the following language

Southern Sotho	English	Zulu	Tswana	Northern Sotho	Other, Specify

4.2 Does the pamphlet look

Very Colourful	Very dull	Very attractive	Very confusing	Too many colours	Other, Specify

4.3 Is the information on the pamphlet

Enough	Too little	Too much	Too easy	Confusing	Other, Specify

4.4 Are the messages on the pamphlets

Too much	Too difficult	Easy to understand	Confusing	Too little	Other, Specify

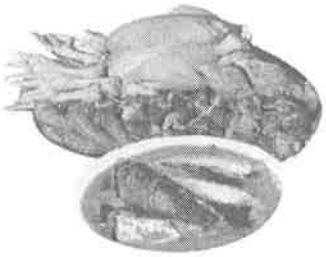
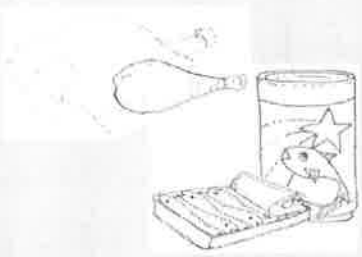
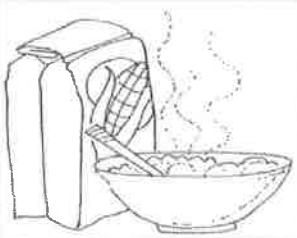
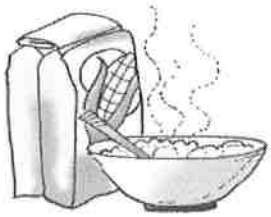
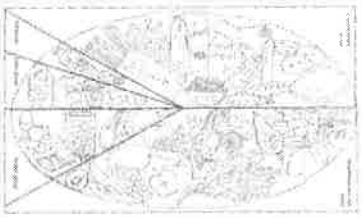
4.5 Are the pictures on the pamphlet (tick all the relevant options)

Colourful	Very dull	Attractive	Very clearly understood	Too many	Other, Specify

4.6 The recipes on the pamphlets are they

Easy to follow	Too difficult to follow	Too much information	Confusing	Too little information	Other, Specify

5. Which of the following do you prefer? A, B or C?

A	B	C
		
		
 On this plate is one type of food		
		
		

ANNEXURE K

TRAINING OF FIELDWORKERS

TRAINING OF FIELDWORKERS

B. Tech Students for Boipatong Caregivers Research Project

Ten tips for data collection

Rolf J. Gaede

1. Ensure all paperwork and/or administrative arrangements are in order before the data collection session begins (do not ask the respondent for a pen, for example)

2. Opening and closing the data collection session with some degree of small talk usually establishes a positive, conversational atmosphere. Guard against excessive small talk though.

3. Ensure that the respondent understands and/or accepts that participation is voluntary. Explain if needed that there are no negative consequences for not participating.

4. The respondent is entitled to change his/her mind about participating at any point.

5. The data collection process should take place in a language that the respondent feels comfortable using. Do not assist the respondent in formulating answers. Record what was said in a neutral manner and as accurately as possible.

6. Watch your body language throughout. Ensure a comfortable distance between yourself and the respondent and avoid slouching, frowning, the folding of arms, looking away, and/or touching your face excessively. Leaning forward slightly is recommended in most situations.

7. Avoid wasting the respondent's time in any way. For example, simply tick 'Male' or 'Female' on the questionnaire rather than asking the question out loud.

8. The respondent is entitled to access the results if interested. If the respondent requests this, record contact details for this purpose.

9. Do not allow the respondent to distract you from your task. Find gentle, creative ways to keep the focus of the interaction on the data collection.

10. Do not answer questions you are not in a position to answer. Record the question and/or issue on the back of the questionnaire for follow-up.

ANNEXURE L-1

NUTRITION KNOWLEDGE QUESTIONNAIRE: ENJOY A VARIETY OF FOODS

(NKQ implementation Phase)

Vaal University of Technology
(Formerly Vaal Triangle Technikon)

CENTER FOR SUSTAINABLE LIVELIHOOD

NUTRITION KNOWLEDGE QUESTIONAIRE

ENJOY A VARIETY OF FOODS

DATE	YY	MM	DD
	2012	4	26

NAME .....

INSTRUCTIONS
Please answer all the questions before moving on to the next ones.

Do not page back!

1	One of the keys to a healthy way of eating is to eat many different kinds of food	TRUE	FALSE

2	One of the keys to a healthy way of eating is to eat some foods more than other foods	TRUE	FALSE

3 Choose one option: From which group of foods should you eat the **MOST** every day?

Bread, samp, rice, porridge	1
Apples, bananas, spinach, carrots	2
Milk, yogurt, cheese	3
Chicken, fish, beans, eggs	4

4 Choose one option: You should eat how many vegetables and fruit every day

1 fruit and vegetable a day	1
3-4 fruits and vegetables a day	2
5 or more fruits and vegetables	3
There is no need to eat fruits and	4

5 Choose one option How much milk or maas should you have a day?

None	1
Half a cup	2
One cup	3
Two cups	4

6	One of the keys to a healthy way of eating is to eat certain kinds of foods in moderate or small amounts	TRUE	FALSE
7	Chicken and eggs contain a lot of calcium.	TRUE	FALSE
8	Milk and yoghurt contain a lot of calcium.	TRUE	FALSE
9	Pilchards contain a lot of calcium.	TRUE	FALSE

10	If you are eating a healthy diet there is no need for you to be physically active	TRUE	FALSE
11	A well balanced diet consists mostly of meat, with smaller amounts of starch, fruits, vegetables, and	TRUE	FALSE
12	A well balanced diet consists mostly of vegetables, and smaller amounts of meat and dairy products	TRUE	FALSE
13	A well balanced diet consists mostly of starches, vegetables and fruits, with smaller amounts of meat and dairy products	TRUE	FALSE
14	Eating a lot of different kinds of foods is healthier than eating only a foods	TRUE	FALSE
15	It is impossible to get all the vitamins and minerals you need from a vitamin and mineral pill	TRUE	FALSE

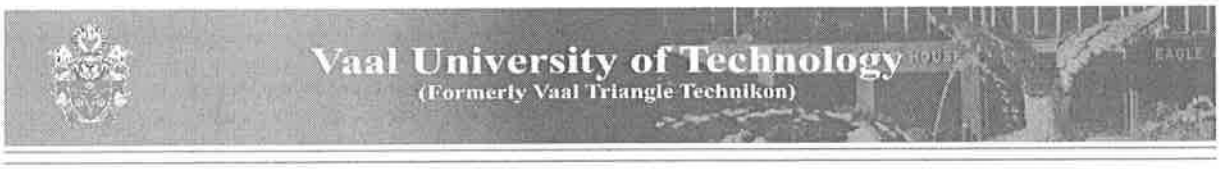
16 Choose only one option: To make sure that you stay healthy you should eat

Lean meat, fruits and vegetables, low fat dairy products, and breads and cereals	1
Fruit and vegetables only	2
Bread, cereals, fruit and vegetables only	3
Low fat dairy products and lean meat only	4

17	Eating bread always causes weight gain	TRUE	FALSE
18	To protect yourself from disease you should avoid eating many foods	TRUE	FALSE
19	Dry beans, peas, and lentils should be eaten often	TRUE	FALSE
20	Soya mince is as healthy as meat	TRUE	FALSE
21	You can eat as much meat as you want everyday	TRUE	FALSE
22	Dry beans, peas, lentils are a healthy choice to eat in place of meat	TRUE	FALSE

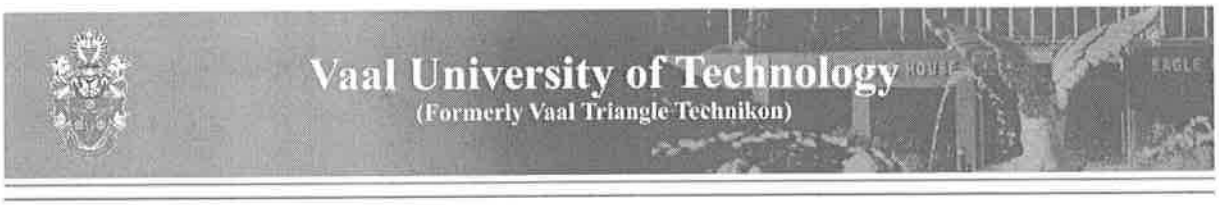
Thank you very much for your help!!

ANNEXURE L-2



NUTRITION KNOWLEDGE QUESTIONNAIRE: PLANT PROTEIN

(NKQ implementation phase)



NKQ FORMULATION PHASE: DRY BEANS SPLIT PEAS LENTILS & SOYA

Boipatong Interdenominational Women's' Prayer Group

DATE ☐

NAME ☐

AGE ☐

SCHOOL attended
Highest GRADE/ qualification_____

How many children smaller than 12 years are living in your household? ☐

INSTRUCTIONS

Please answer all the questions before moving on to the next one.

Do not page back!

1 The reason why beans, peas and lentils are good for you is that they contain only small amounts of fat

TRUE	FALSE	

2 The reason why beans, peas and lentils are good for you is that they contain a lot of fibre

TRUE	FALSE	

3. The reason why beans, peas and lentils are good for you is that they can protect you from some diseases

TRUE	FALSE	

4 Dry beans, peas, lentils and soya can be eaten with starchy foods such as bread and pap

TRUE	FALSE	

5 Dry beans, peas, lentils and soya can be eaten with vegetables such as morog or pumpkin

TRUE	FALSE	

6 Dry beans, peas, lentils and soya can be eaten with milk and cheese

TRUE	FALSE	

7 Dry beans, peas, lentils and soya can be eaten with starchy foods and vegetables and milk or cheese

TRUE	FALSE	

8 Lentils and dry peas should be soaked before cooking them

TRUE	FALSE	

9 Dry beans, peas, and lentils should be eaten often

TRUE	FALSE	

10 Soya mince is as healthy as meat

TRUE	FALSE	

11 Dry beans, peas, lentils are a healthy choice to eat in place of meat

TRUE	FALSE	

12 Dry beans can cause discomfort by causing gas in some people

TRUE	FALSE	

13 Dry beans peas lentils and soya take a long time to prepare

TRUE	FALSE	

14 Soya is cheaper than meat, fish and chicken

TRUE	FALSE	

15 How often should you eat dry beans, peas, lentils and soya? (choose one option)

Once a week, or	
Once a month, or	
Two to three times a week, or	
Two to three times a month, or	
Never	

Thank you for answering the questions!

ANNEXURE L-3

NUTRITION KNOWLEDGE QUESTIONNAIRE: ANIMAL PROTEIN

(NKQ implementation phase)

Vaal University of Technology
(Formerly Vaal Triangle Technikon)

NKQ FORMULATION PHASE: ANIMAL PROTEIN

Boipatong Interdenominational Women's' Prayer Group

INSTRUCTIONS

Please answer all the questions before moving on to the next ones.

Do not page back!

	YY	MM	DD
DATE	2012		

NAME & SURNAME.....

Section A

Choose the correct option and circle A, B, C or D

1 Cooked meat/ fish/ chicken sold on the street may not always be safe to eat because

1.1	It may have been undercooked	TRUE	FALSE	T
1.2	The cook may not have used fresh meat	TRUE	FALSE	T
1.3	It may have been kept for a long time before being cooked	TRUE	FALSE	T
1.4	All of the above	TRUE	FALSE	T

2 From which group of foods should you eat the **most** every day?

2.1	Bread, samp, rice, porridge	TRUE	FALSE	T
2.2	Apples, bananas, spinach, carrots	TRUE	FALSE	F
2.3	Milk, yogurt, cheese	TRUE	FALSE	F
2.4	Chicken, fish, beans, eggs	TRUE	FALSE	F

3 Which foods contain a lot of calcium?

3.1	Chicken and eggs	TRUE	FALSE	
3.2	Milk, yoghurt	TRUE	FALSE	T
3.3	Pilchards	TRUE	FALSE	T
3.4	Milk, Yogurt and pilchards	TRUE	FALSE	T

4 Which of the following choice of foods prevent certain diseases

4.1	Fish, Chicken without skin, and lean meat	TRUE	FALSE	T
4.2	Beef sausage, bacon, and lean mince	TRUE	FALSE	F
4.3	Fried fish, fried chicken, and regular mince	TRUE	FALSE	F
4.4	All of the above	TRUE	FALSE	F

5 The best place to defrost meat from a frozen state is to

5.1	leave it at room temperature	TRUE	FALSE	F
5.2	leave it in the fridge	TRUE	FALSE	T
5.3	leave it in sunlight	TRUE	FALSE	F
5.4	Meat should never be defrosted	TRUE	FALSE	F

6 To make sure that you stay healthy you should eat

6.1	Lean meat, fruits and vegetables, low fat dairy products, and breads and cereals	TRUE	FALSE	T
6.2	Fruit and vegetables only	TRUE	FALSE	F
6.3	Bread, cereals, fruit and vegetables only	TRUE	FALSE	F

6.4	Low fat dairy products and lean meat only	TRUE	FALSE	F

7 Meat/ fish/ chicken will not spoil if you store them

7.1	In the cupboard for a few days	TRUE	FALSE	F
7.2	In the fridge for 2 days only	TRUE	FALSE	T
7.3	In the freezer for 3-4 months	TRUE	FALSE	T
7.4	In the fridge for 2 days only, or in the freezer for 3-4 months?	TRUE	FALSE	T

SECTION B

8	Eggs are part of the animal product group	TRUE	FALSE	T
9	Red meat include beef, mutton, goat, and pork	TRUE	FALSE	T
10	Organ meats like liver and kidneys are high in iron	TRUE	FALSE	T
11	You can eat as much meat as you want everyday	TRUE	FALSE	F
12	Dry beans, peas, lentils are a healthy choice to eat in place of meat	TRUE	FALSE	T

SECTION C

Please give your opinion

1 Do you think there is a need for nutrition education?

Yes	
No	

2 In your opinion, what do you think adults would find more understandable when showed food items?

Photo's	
Colour drawings	
Cartoons	

3 Indicate which language should the nutrition education material be in your:

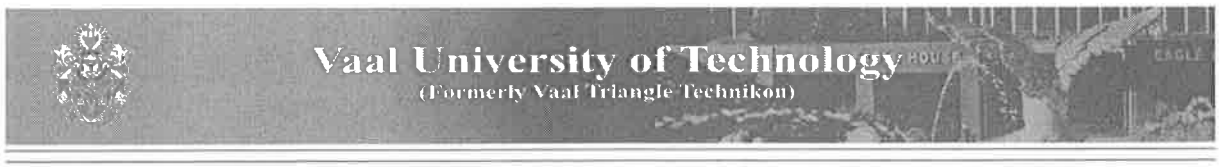
Home language	.....
English	
Both	

4 Do you think making use of nutrition educational materials such as pamphlets will enhance nutrition learning?

Yes	
No	

Thank you very much for your help!!

ANNEXURE M



NUTRITION KNOWLEDGE QUESTIONNAIRE: EXPERIMENTAL AND CONTROL GROUP

(NKQ Evaluation phase)

NKQ IMPLEMENTATION PHASE: EXPERIMENTAL AND CONTROL (BEFORE AND AFTER INTERVENTION)

Boipatong Women's Interdenominational Prayer Group
Questionnaire Before and After Intervention

Vaal University of Technology

DATE 2012 | 9 | 12

Knowledge Retention

ID number ..... Age

OFFICE USE

Highest Qualification .....

Gr 1-8	Gr 8-10	Gr 10-12	Higher Qualification

INSTRUCTIONS
Please answer all the questions before moving on to the next ones.

Do not page back!

SECTION A Choose one option only

1 From which group of foods should you eat the **MOST** every day?

Bread, samp, rice, porridge	a
Spinach, pumpkin, carrots	b
Milk, yogurt, cheese	c
Chicken, fish, beans, eggs	d

2 You should eat how many vegetables and fruit every day

1 fruit and vegetable a day	a
3-4 fruits and vegetables a day	b
5 or more fruits and vegetables everyday	c
There is no need to eat fruits and vegetables	d

3 How much milk or maas should you have a day?

None	a
Half a cup	b
One cup	c
Two cups	d

SECTION B Choose TRUE or FALSE by making an X across your answer

4	One of the keys to a healthy way of eating is to eat certain kinds of foods in moderate or small amounts	TRUE	FALSE
5	Chicken and eggs contain a lot of calcium.	TRUE	FALSE
6	Milk and yoghurt contain a lot of calcium.	TRUE	FALSE
7	Pilchards contain a lot of calcium.	TRUE	FALSE
8	If you are eating a healthy diet there is no need for you to be physically active	TRUE	FALSE
9	One of the keys to a healthy way of eating is to eat many different kinds of food	TRUE	FALSE

10	A well balanced diet consists mostly of meat, with smaller amounts of starch, fruits, vegetables, and dairy products	TRUE	FALSE	
11	A well balanced diet consists mostly of vegetables, and smaller amounts of meat and dairy products	TRUE	FALSE	
12	A well balanced diet consists mostly of starches, vegetables and fruits, with smaller amounts of meat and dairy products	TRUE	FALSE	
13	Eating a lot of different kinds of foods is healthier than eating only a few kinds of food	TRUE	FALSE	
14	It is impossible to get all the vitamins and minerals you need from food, you need to take a vitamin and mineral pill	TRUE	FALSE	
15	Eating bread always causes weight gain	TRUE	FALSE	
16	To make sure that you stay healthy you should eat lean meat, vegetables and fruit, low fat dairy products and starchy foods	TRUE	FALSE	
17	To protect yourself from disease you should avoid eating many different kinds of foods	TRUE	FALSE	
18	Dry beans, peas, and lentils should be eaten often	TRUE	FALSE	
19	Soya mince is as healthy as meat	TRUE	FALSE	
20	You can eat as much meat as you want everyday	TRUE	FALSE	
21	Dry beans, peas, lentils are a healthy choice to eat in place of meat	TRUE	FALSE	
22	The reason why beans, peas and lentils are good for you is that they contain only small amounts of fat	TRUE	FALSE	
23	The reason why beans, peas and lentils are good for you is that they can protect you from some diseases	TRUE	FALSE	
24	Dry beans, peas, lentils and soya can be eaten with starchy foods such as rice and pap	TRUE	FALSE	
25	Dry beans, peas, lentils and soya can be eaten with vegetables such as morog or pumpkin	TRUE	FALSE	
26	Dry beans, peas, lentils and soya can be eaten with fish, chicken and meat	TRUE	FALSE	
27	Lentils and dry peas should be soaked before cooking them	TRUE	FALSE	
28	Dry beans, peas, and lentils should be eaten once or twice a week	TRUE	FALSE	
29	Soya mince is as healthy as meat	TRUE	FALSE	
30	Dry beans, peas, lentils are a healthy choice to eat in place of meat	TRUE	FALSE	

31	Dry beans can cause discomfort by causing gas in some people	TRUE	FALSE	
32	Dry beans peas lentils and soya take a long time to prepare	TRUE	FALSE	
33	Soya is cheaper than meat, fish and chicken	TRUE	FALSE	
34	Eggs are part of the animal product group	TRUE	FALSE	
35	Red meat include beef, mutton, goat, and pork	TRUE	FALSE	
36	Organ meats like liver and kidneys are high in iron	TRUE	FALSE	
37	You can eat as much meat as you want everyday	TRUE	FALSE	
38	Dry beans, peas, lentils are a healthy choice to eat in place of meat	TRUE	FALSE	
39	Cooked meat/ fish/ chicken sold on the street may not always be safe to eat because it may be undercooked	TRUE	FALSE	
40	Cooked meat/ fish/ chicken sold on the street may not always be safe to eat because it may have been kept a long time before being cooked or sold	TRUE	FALSE	

Choose one of the two options. Mark your choice with an X

41	Which foods contain a lot of calcium?	Chicken and eggs		
	OR	Milk, yogurt and pilchards		
42	Which of the following choice of foods prevent certain diseases	Fish, Chicken without skin, and lean meat		
	OR	Fried fish, fried chicken, and regular mince		
43	The best place to defrost meat from a frozen state is to	leave it at room temperature		
	OR	leave it in the fridge		
44	Meat/ fish/ chicken will not spoil if you store them	In the cupboard for a few days		
	OR	in the freezer for 3-4 months?		
45	If you were trying to increase the amount of fibre in your diet, which one of the following will you eat?	Apples and carrots		
	OR	Chicken and fresh fish		
46	A well- balanced diet	Consists mostly of meat, with smaller amounts of starch, fruits, vegetables, and dairy products OR		
		Consists mostly of starches, vegetables and fruits, with smaller amounts of meat and dairy products		
47	Which food has the most fibre?	Brown bread		
	OR	Whole wheat bread		

48	Starchy foods should not be eaten when one is trying to lose weight	TRUE	FALSE	
49	Eating bread always causes weight gain	TRUE	FALSE	

50 How often should you eat dry beans, peas, lentils and soya? (choose one option)

Once a week, or	a	
Once a month, or	b	
Two to three times a week, or	c	
Two to three times a month, or	d	
Never	e	

SECTION C

1 Do you think there is a need for nutrition education?

Yes	
No	

2 In your opinion, what do you think adults would find more understandable when showed food items?

Photo's	
Colour drawings	
Cartoons	

3 Should the nutrition education material be in your:

Home language		Indicate which language.....
English		
Both		

4 Do you think making use of nutrition educational materials such as pamphlets will enhance nutrition learning?

Yes	
No	

SELECT YES OR NO FOR ALL THE CHOICES

5 From where do you get your information about nutrition?

	YES	NO
Work		
Children's' School/ Caretaking unit	1	2
Peers/ Friends	1	2
Family	1	2
Radio/ TV/ Magazines	1	2
Other (Specify)		

Thank you very much for your help!!

ANNEXURE N-1

TESTING OF ILLUSTRATIONS AND POSSIBLE BEHAVIOUR CHANGES

Vaal University of Technology
(Formerly Vaal Triangle Technikon)

CENTER FOR SUSTAINABLE LIVELIHOODS
NUTRITION EDUCATION PROGRAMME BOIPATONG

TESTING OF ILLUSTRATIONS:FORMULATION PHASE

This questionnaire is to be completed by the participants of the Boipatong Interdenominational Women's' Prayer group. The answers to these questions will be kept strictly confidential for research purposes only.

Fieldworker signature.....

GENERAL INFORMATION **Date... 24 May 2012**

Participant name.....

Date of birth..... **Age**.....

Mark one answer that *best describes* your opinion with an X

1. What does "enjoy a variety of foods" mean?

It means to eat food that is very expensive.	It means to eat more than one type of food in a meal	It means to eat lots of foods	It means to eat frequently

2. What do you think this picture wants to tell you?

3. **Have you eaten dried beans, peas, lentils or legumes during the last week?**

Yes	No

4. **Have you talked about or shared the information/ pamphlets with your family and children?**

Yes	No

5. **Did you enjoy the previous discussions? (if applicable)**

Very much	Some what	Not at all

6. **Have you learned something about healthy eating?**

A lot	A little	Nothing

ANNEXURE N-2

TESTING OF MORE ILLUSTRATIONS

Vaal University of Technology
(Formerly Vaal Triangle Technikon)

Questionnaire number:

Questionnaire More Images

Section A

A.1. Orientation

2-3 minutes. Explain that we aim to produce clear, easily comprehensible educational material acceptable to the community and that we would like to improve on what we have at the moment if needed. This applies especially to the drawings and pictures. Participation is voluntary and responses are anonymous. The field worker completes the questionnaire in the presence of the respondent. The process normally takes 5-8 minutes per participant.

A.2. Administrative notes

Date of data collection	24 May 2012
Field worker	
Site/venue	Boipatong

A.3. Respondent profile

Home language	
Age (years)	
Male/Female	

Section B

B.1. Would you prefer the information about the Food-based Dietary Guidelines as... (Please mark the appropriate option)

	A one-page pamphlet (A4 size, i.e. the size of this sheet of paper)
	A small book (A5 size, i.e. half the size of this sheet of paper)
	A book (A4 size)
	Other

Comments:

B.2. In which language or languages should the information about the Food-based Dietary Guidelines be? (Please mark as many options as appropriate)

	Sesotho
	English
	Afrikaans
	Other

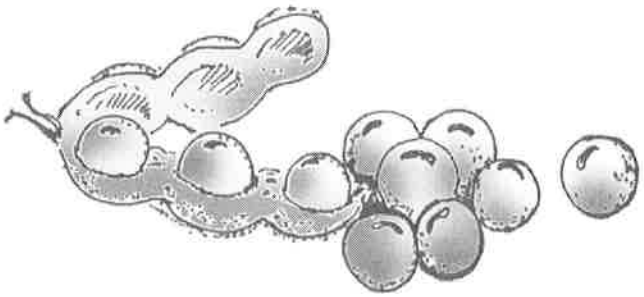
Comments:

B.3. Would you prefer the information about the Food-based Dietary Guidelines in... (Please mark the appropriate option)

	Colour
	Black and white
	Both (no choice)
	Other

Comments:

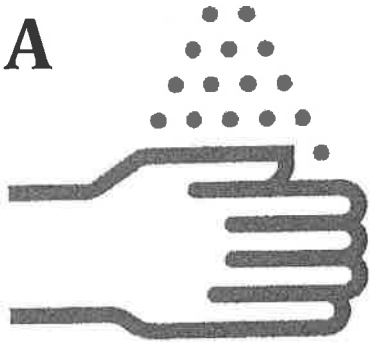
B.4. What does the following picture show?



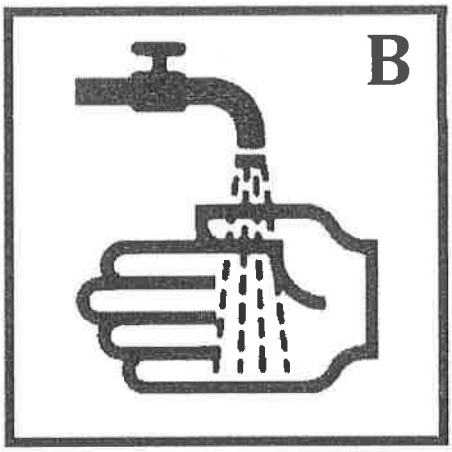
Please write down the answer:

B.5. The visual style of the following three pictures is different. Please indicate which ONE of the visual styles you prefer.

A



B



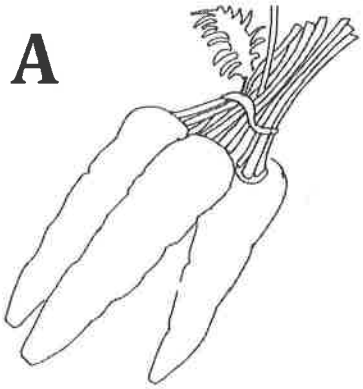
C

	Picture A
	Picture B
	Picture C

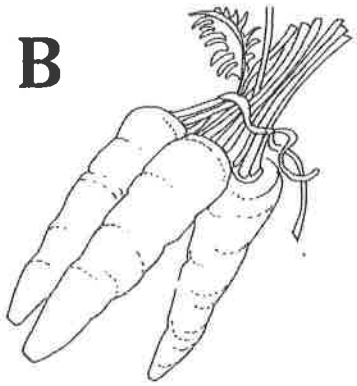
Comments:

B. 6 Which ONE of the following two drawings of carrots do you prefer? (Note: These images are meant to be colored in by children).

A



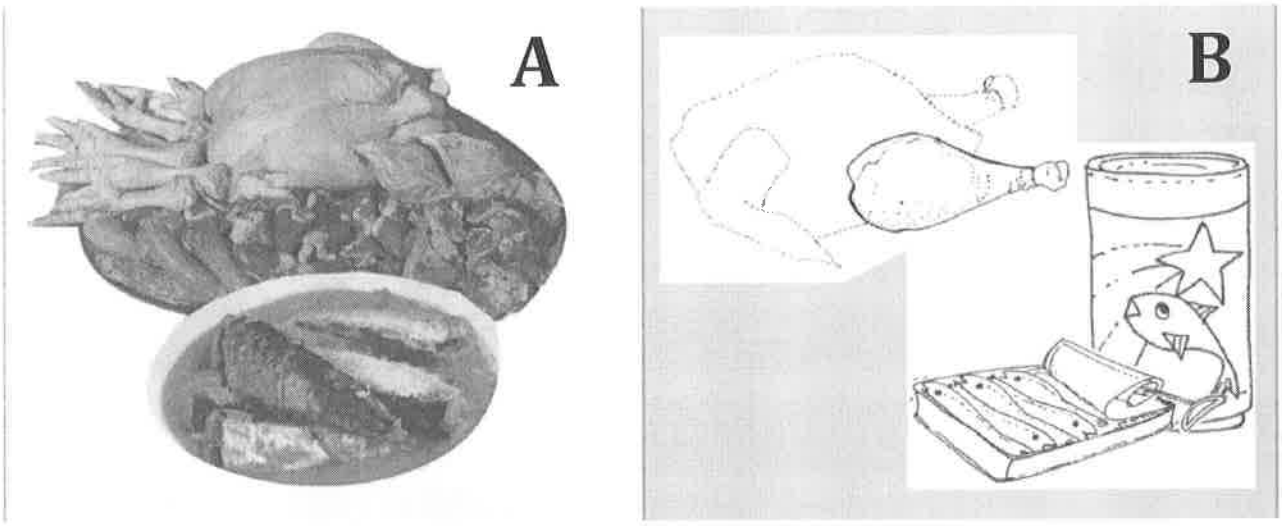
B



	Drawing A
	Drawing B

Comments:

B.7. The visual style of the following two pictures is different. Please indicate which ONE you prefer.



	Picture A
	Picture B

B.8. Any general comments?

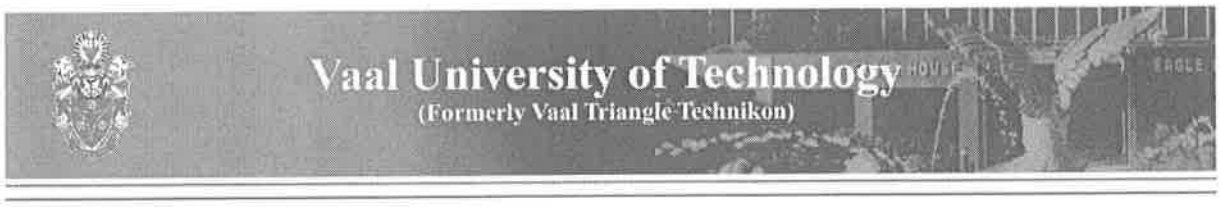
Comments:

Section C

Closure - Thank the respondent for participating.

ANNEXURE O

GUIDELINES FOR GRAPHICAL DESIGNER OF BOOKLET



GUIDELINES TO GRAPHICAL DESIGNER OF BOOKLET FOR THE NEP

Nutrition Education Booklet

A booklet in A4 format is to be designed as an educational tool for elderly female caregiver with average reading and writing skills (LSM4-6). This booklet will be utilised in a nutrition education programme. The booklets are first to be designed in English. Thereafter the translated Sesotho text is to be drawn in from the translated pamphlets to finalise a Sesotho booklet.

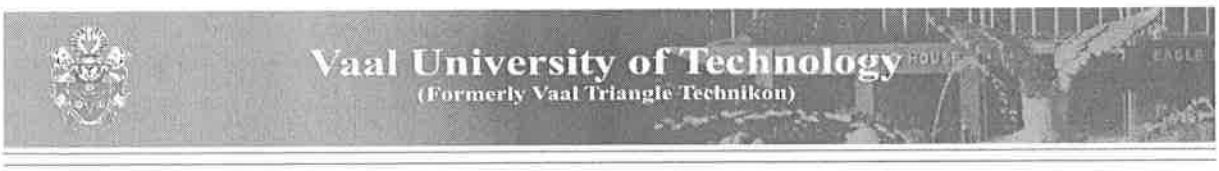
Design considerations:

- Simple headings
- Narrower columns for easier reading
- A large simple font should be used throughout (a minimum of 12-14 pt. throughout)
- Short paragraphs
- Bullets where appropriate
- Adequate empty space
- All illustrations are to contribute to a better understanding of the message.
- Only simple pictures/ illustrations are to be used. Readers find it more difficult to understand compound illustrations.
- The pictures should be in colour. No brand name to be visible on food items
- The captions and pictures must match closely, and the pictures must primarily help the members of the community to understand the text, rather than to beautify, or raise the visual appeal, of the educational material. Pictures require a subscript, indicating what is meant by the picture/ drawing
- A book with hard cover or solid binding is preferred, i.e. not pamphlets

General recommendations for design

- Consider practicality for reproduction of pictures/ drawings and text; also when making black and white copies.
- Booklet preferably to be distributed in pdf format - to be easily printed on ordinary PC printers, but still produce good quality printing.
- Print text in black on white paper. Use coloured ink sparingly.
- The booklet should have an attractive appearance, appealing the caregivers and their household to read the booklet
- Cover page to be developed
- Back page to contain contact information.
- Readability of text should fit the caregivers' average reading skills, ± grade 8 level.
- Engaging activities as provided are to be included at the end of each FBDG to encourage participation by household members.

ANNEXURE P



MODERATORS GUIDE FOR FOCUS GROUPS

MODERATORS GUIDE FOR FOCUS GROUPS

Boipatong Interdenominational Women's Prayer Group

Primary document C

Moderator: Tshina Nyathela **Chairpersons: Group 1 - Mrs Molefe / Group 2 - Mrs Khubule, Mirriam**

Objective: to learn more about the contribution / role of pictures towards understanding the messages

Q1.1 Will the pictures help to understand the meaning of the messages?
Can the group mention examples?

Q1.2 Will the pictures help with remembering the messages?
Can the group mention examples?

Q1.3. Do the pictures increase the appeal of the educational material, i.e. make it look more attractive and appealing?

Q1.4 Can the group mention examples?

Objective: to learn more about the font and layout of the booklet

Q2.1. Is the language used easy to read and understand?
Are there any difficult words that they do not like?
Can the group remember the main messages in the booklet?

Q2.2. Is the text easy to read?/ Can the group see the letters easy?
Is the lettering big enough to read easily? Or too big?

Q2.3. Does the pages look attractive and appealing?
Are there any pages that are too squashed or too large white openings?

Objective: how is the total booklet perceived?

Q3.1. Do the group like the booklet in the new format/ compared to the loose pamphlets used in the lectures?
Will the group keep this booklet for reading later?

Q3.2. Will the group's family be entices/ attracted to read the booklet?
Does it look attractive?

Q3.3 Do the group like the content of the booklet
Can they remember what is included, (e.g. information about the message, hints, recipes, pictures, etc.)

Objective: to learn whether the messages can be implemented

Q4.1. Will the group be able to use the information in their household to eat healthily?
Can they give examples?

ANNEXURE Q-1

FOCUS GROUPS: ANALYSIS AND RESULTS

FOCUS GROUPS – ANALYSIS AND RESULTS

Analysis of the focus group data – Boipatong Caregivers

Prof Rolf J. Gaede, VUT Department of Visual Art and Design

September 2012

Two focus group sessions conducted with the same moderator were audio recorded and then transcribed. The analysis is thus based on two primary documents: Primary Document A and Primary Document B. Each Primary Document was further divided into sections (see below).

Primary Document A

Number of participants: 7

Date: 24 July 2012

Venue: Presbyterian Church, Boipatong, Gauteng

Speaker	Sesotho	English	Section
Moderator	Rea leboha he, akere le se le e shebile buka? Le bone hore e jwang? Le ditshwantsho tseo hore di jwang akere?	Thank you, now have you seen the book? Have you seen how it is, even it pictures?	A1
Moderator	Ho na le ntho e nngwe yeo ke e lebetseng, ka metsotsonyana, ke kopa hore re time diselefouno, di be ho silent, re tle re kgone ho bua hantle.	There's something I have forgotten, just for a short time, could you please switch off your cell phones or set them to be silent so that we can talk without disturbances.	A2
Moderator	Ntho yeo re tl'o e etsang, re tla bua, akere ntho ena e ne e ntse re	What we're going to do is, since we are recording, one person will speak at the time, and then the next will follow. So that we don't speak all at once. [NOT CLEAR] You may start discussing this book, and I'll keep doing my staff here. Talk about how you feel about this book, the way it is.	A3
Participant	Re qale?	Can we start?	A4
Moderator	E!	Yes.	A5
Participant	Ooh!	Okay!	A6
Participant	Buka ena rea e thabela, rea e rata. E re ruta ho pheha, ena le dirasepe. Dijo tse mona ke tse hahang mmele, e re ruta le hore re tshwanetse re fe bana ba rona lebese. Dijo tse ka mona ke tse hahang, ntho, masapo, mesifa. E re ruta haholo hore re kgone ho boloka tjhelete.	We enjoy this book and love it. It teaches us how to and it has recipes. The food strengthen the body, and it teaches us that we must give our children milk. The food in here also build the bones and muscles. It also teaches us mainly how to save money.	A7
Participant	Buka ena ha re ntse re e bala re fumana hore e tsamaellana le thuto yeo mme a ileng a re ruta yona dikgweding tse fetileng. Jwale re fumana hore dijo tse nang le phepo ke tsona tse kang	As we read this book, we find that it harmonizes with the lesson the lady taught us some months ago. It shows that healthy food include among others dried beans, peas, milk, fish, eggs, chicken, . . . and also we have to eat starch, we should raise our kids, give them healthy food so that they can learn at school, be	A8

	bodinawa tse omisitsweng, dierekisi, lebese, tlhapi, mahe, nama ya kgoho, re je le setatjhe, re hodise le bana ba rona hore, re ba fe dijo tse nang le phepo e ntle hore ba kgone ho ruteha sekolong, ba kgone ho ba . . . ba kgone ho ithuta kahobane re ba file diahammele. Ba hole hantle.	able to . . . be able to learn sa they were given proteins. And they will grow up very well.	
Participant	Buka ena batswadi re e ratile haholoholoholo, hoba e fa le rona batswadi kelello, hore re kgone hore haeba re na le baimana, re ba fe dijo tse matla. Dijo tse almonono, di na le iron, ke hore di na le phepo e ntle haholo ka ho fetisisa, ebile dia kgona ho re bolokela tjhelete. Re ka fepa bana ba rona tse ka reng setampo, ke hore setatjhe se sengata. Re kgone ho fepa bana dierekisi, kaha ke tsona tse lokisang bana, tse fang bana kelello. Kahoo, rea leboha.	As parents, we liked this book very, very, very much, as it help us as parents to be wise, in that when we have pregnant women, we can give them food that will strengthen them. The food of [NOT CLEAR], contain iron, so they are very healthy and they can help us safe money. We can feed our kids food like samp, since it has a lot of starch. It helps us to feed kids peas, as they help kids a lot, they make them wise. In that note, thank you very much.	A9
Participant	Buka ena e re etsa bomme ba sebele malapeng a rona.	This book helps us to be real mothers in our households.	A10
Participant (Zulu)	Mina ngikhuluma isiZulu. Angisiyazi iSesotho.	I speak Zulu, I don't know Sesotho.	A11
Group of ladies	Mmm, ok mama.	Okay, it's fine mama.	A12
Participant (Zulu)	[TRANSLATOR UNDERSTANDS ZULU, BUT CAN'T WRITE IT. SO THE FOLLOWING WILL BE ONLY IN ENGLISH]	I liked this book very much. It teaches us good work. Especially in eating fatty food, and as for myself, it liked it very much. I did not know that it's not good. It teaches us all thing, including how to save money. We should give us kids and our grand children milk. I truly love it. It taught me a lot, that I should drink water, a lot of water so that my body can always be in good shape. I'm done!	A13
Participant	E nngwe yeo re neng re sa e tsebe, yeo re neng re nahana hore mohlomong e jewa ke batho ba hlokang, soya mince re ne re sa e rate, le keretjhe re ne re na le dicomplain hangata ha bomedemo ba phehela bana soya mince, re re ba bolaisa bana soya mince. Ke hona re qadileng ho ithuta bukeng ena hore soya mince e healthy, haholo hobane re ne re lwantsha bo-mistress re re ba fa bana dijo tse seng right, ba bolaisa bana ba rona tlala, athe . . .	One of the things we did not not, we thought it's food for the poor people, it's soya mince, and we did not like it. Even at daycare centers we used to complain to the teachers that they cook soya mince for our kids, that our kids are suffering because of soya mince. Now we have learned from this book that soya mince is healthy, as we would fight with the teachers that they are feeding our kids the food that is not good, our kids are starving at school, but . . .	A14
Participant	Buka ena re e thabetse haholo, ho ya kamoo Mme a buileng dintho tse re ruisang kateng . . . a re ruta dijo tse hahang mmele, tse hahang masapo, le hore re kgone ho nwa metsi haholo mmeleng ya rona, ka nako e nngwe mmele ya rona e hloka metsi . . . re je le meroho, se se	We like this book very much, according to the benefits the Lady has narratted, she taught us about the food that build our bodies, that build our bones, and that we should be able to drink a lot of water, as our bodies sometimes need a lot of water, and eat vegetables, and that we should not eat meat everytime, we should eat fish, chicken, eggs, among other things. You see, I don't like eggs that much, but since we were taught about these things, I realized	A15

	ke ra be re sa le re shebile nama, re je tjhapi, re je kgoho, bomahe, ntho tse kang tseo, ka nako tse ding akere mahe ha ke a ratisisise, mare haesale ke rutwa ka yona, ka bona hore hanngwe feela bekeng kapa habedi nke ke a je, ke tle ke kgone ho ba le matlanyana a itseng. Kahoo buka ena re e thabetse haholo. E re file tswelopele.	that once a week or twice, I should eat eggs so that I can have some strength. So, we enjoyed this book a lot. It helped us to progress.	
Participant	Buka ena ke e thabetse haholo bomme. E re fa matla. Dijo tsena tse ngotsweng mona ke dijo tse matlafatsang methapo le madi a motho. Ntho yeo ke e thabelang haholo ke ha ho thwe re nwe metsi, nna mokgwa ka ke tlwaetse ho nwa metsi a phehilweng, ke pheha metsi ebe ke nwa metsi a boiliweng, nako e kgolo le e nyenyane, ke kahoo ke kgonang ho tsamaya moo ke ratang teng, leha ke tsamaya ka 4X4, mar I walk! Kea leboha.	Ladies, I enjoyed this book very much. It gives us power. The food written here improves blood circulation. What I like most is that, it says we should drink water. I normally drink boiled water, ke boil it time and again, and drink it, that's why I'm able to walk wherever I want, even though I drive 4X4, but I walk a lot! Thank you.	A16
Participant	Zulu	I too liked this book. It says we should eat fruits everyday. It says we should eat a lot of vegetables. We should eat yoguht and drink milk daily, and drink masi. I love it a lot.	A17
Participant	Hobane bomme ka dinako tse ding o ka fumana re sebedisa *treatment* ya tlelinki, empa ha re fole, ha re be betere, hobane re ja dijo ka tsela e wrong. O nka treatment high blood di ntse di phahame, ditswekere di ntse di phahame, athe re tse re ja dijo tse seng right, ke kahoo dihigh blood tsa rona ditswekere di sa theoheng. Now ke hona re hlokometseng hore re ne re ntse re sa je right.	Because sometimes you find that we take medication from the clinic, but we don't get better, because we eat wrong food. You take the medication while your high blood and diabettes is still worse, only to find that you're not eating correctly, that's why our high blood and dibettes does not get better. Now we know that we were not eating healthy food.	A18
Participant	Nna ke na le potso yeo ke batlang ho e bona hona jwale, didoctor hangata ha re ya doctheng, kaha re na le di-high blood, ba re se ke ra ja nama ya kgomo haholo, ba re o ka e ja mohlomong hanngwe ka beke. Jwale ke ne ke batla ho utlwa hore na, nama ya kgomo e ya kudisa kapa e causa siki e nngwe mmeleng wa motho.	I have a question that I'd like to ask now. Normally doctors tell us that, since we have high blood, we should not eat beef a lot, maybe we can eat it once a week. Now I want to know whether beef causes sicknesses in people or what?	A19
Moderator	Nama ya kgomo akere le kile la utlwa ka lefu le bitswang gaut	About beef, have you heard of the desease called gout?	A20
Group	E!	Yes!	A21
Moderator	Ho thwe bo bakwa ke eng?	What causes it?	A22
Group	Ke nama ya kgomo.	Beef.	A23
Moderator	Ke nama ya kgomo akere? Nama ya kgomo e lokile, empa ha o e ja haholo ya kudisa. Ba ne ba tshaba o tlo kula wona malwetse	Yes, it's beef. Beef is fine, but if you eat a lot of it, it can make you sick. They feared that it will cause those deseases. And when you're sick, and you eat it a lot, your illness can get worse. It has certain things	A24

	ao. Mme ha o ka thola hore o se o kula, ke hore ha o e ja haholo, o ekeletsa bolwetse boo. Hobane e na le dintho tse itseng tseo o sa tshwanelang hore o di je haholo.	that we should not eat a lot.	
Participant	Empa o ka e ja, o ka e tjhakela akere?	But you can eat, sometimes, isn't it?	A25
Moderator	E, o ka e tjhakela.	Yes, sometimes.	A26
Participant	Le ya kolobe.	And pork.	A27
Moderator	E, le ya kolobe o wa di tjhakela tseo.	Yes, even pork, we can eat sometimes.	A28
Participant		It taught us that when we use cooking oil, it should use the one from plants, and I'm sure that sunflower oil. But when we get to the shop, we buy a cheap one, so we can see that it's not good. We have to buy sunflower oil to care for our bodies.	A29
Participant		Honestly, i'm happy, because this book is going to help us to be real mothers, we'll be mother able to raise kids, we truly appreciate it. We could see but we did not understand, now we understand clearly. Even these soya, like Mrs Manyokane said, we did not care about them. Now we understood clearly how we should treat the matter of health in regard to our bodies and families. Thank you very much. We got the point.	A30
Moderator	Jwale buka yee, ha le e shebile, le nahana hore e lokile?	Now when you look at this book, do you think it's good?	A31
Group	Haholo!	It's very good!	A32
Moderator		What about the words?	A33
Group		Very good! That's why we're so happy.	A34
Moderator	Ba e ngotse hantle?	Is it written well?	A35
Group	Hamonate!	Very nice!	A36
Moderator	Le kgona ho e bala?	Are you able to read it?	A37
Group	Hantle! E! Ebile rea e utlwisisa.	Fluently! Yes! We even understand it.	A38
Moderator	Ditshwantsho tsona? Le nahana jwang ka tsona? Na dia bonahala?	What about pictures? What do you think about them? Are they clear?	A39
Participant	Ke tsona tsena tsa dinawa, tsa disoya, dierekisi, dilenthisi, dry beans.	Here are pictures of beans, soya, peas, lentils, and dry beans.	A40
Participant	Ditshwantsho ke tsona, di tsamaellana le mongolo oo re qetang ho di bala mona. Kahoo re thabela le ho bona ditshwantsho tsena, di tla re thusa haholo ho bona hore na ha re reka re reka eng? Re boloka tjhelete jwang? Ntle le tshenyo ya tjhelete	Pictures are good, they match the text we've just read here. So, we're happy to see these picture. They will help us a lot to know what we should buy. They also show us how to save money. Without wasting money.	A41
Moderator	Kahoo ditshwantsho tseo le ka thabela hore di ngolwe hodimo moo jwalokaha di ngotswe, hore na ena ke eng, kapa leha di ntse di ngotswe moo le tla bona hore na ena ke eng	So those picture, would you like them to be here on top, showing what it is, or as they are you can see them clearly?	A42
Participant	E, rea bona. Hobane di na le mongolo.	Yes, we can see them. Because they have a caption. [they read English foods as they flip pages]	A43
Moderator	Le nahana hore, akere bohlokwa ba hore ba le rute nutrition ena, diahammele ke hore le rute malapa akere, bana ka malapeng, bontate, bonkgono, hore ho jewa jwang. Na le tla	Since the main goal of teaching you about nutrition, food that build the body is to help you teach people like kids at home, father, grandmoms, the best way of eating, will this book help you to teach them these things?	A44

	kgona hore ka buka ee, le ba thuse, le ba rute ka tsona dintho tsee?		
Group	Re tla ba ruta,	We will teach them	A45
Participant	Hobane hona jwale, nna, ke bua ka nna jwale, ke ne ke sa kgone ho matha, ke se ke utlwa mmele ona wa ka o le boima, haesale ke sebedisa mofuta ona wa dijo, ke kgona ho matha ka setediumo ka mane, ke khona le ho raha bolo. Ke nkgono ya bapalang bolo.	Because, I'll talk about my experience now, I was not able to run, my body was heavy, but since I eat this way, I'm able to run in the stadium, I'm able to play soccer. I'm a granny who plays soccer.	A46
Participant	Haesale mme a qadile ho recruitter, re ile ra leka, nna ke active	Since you started to recruit us, we tried and I'm now active.	A47
Moderator		Are there things that you'd like them to be added in this book, like the colour, to have another colour or a large print? Is there anything as you look at this book that you think would help?	A48
Participant		Only the colour	A49
Moderator		Speak your mind Mama.	A50
Participant (Zulu)		I'd be happy if the font could be enlarged. And I will be very happy if it can be written in my language. This is Sesotho, sometimes I understand, sometimes I don't. I'll be very happy. Nowadays I can't see well.	A51
Participant		We can see because of the glasses, so for us the font is clear.	A52
Participant		We grannies who are given the government grant, we could not spend a month with that money, since you came and taught us how to buy inexpensive food, we're able to spend the whole month with the grand we get. We no longer buy expensive things.	A53
Moderator		I have one question for you, what do you think is the purpose of having pictures in this book?	A54
Participant		According to me, it's to help one to see for instance, what kind of grains are lentils. Because they're all grains, but they help you to know the difference that the lentils and the soya beans are not the same as the dry beans and split peas.	A55
Moderator		Is there someone who wants to add on how the pictures help you?	A56
Participant		They show you what you have to do. There's a big difference. Because even if you've forgotten what to do, you can look at the book and see what to do as it shows what you have to eat.	A57
Participant		They are important, because even if your are going to buy grocery, you can just take this pamphlet and tick the the things that you need. When you enter Checkers Hyper or Pick'n Pay, you have you pamphlet written the things your need because you took them from this book.	A58
Moderator		What about others?	A59
Participant		I enjoyed it a lot. There are also recipes. There's a recipe that the lady used to cook rice and mixed it with other things. It's not expensive. And you can serve more people, it's appetising and tasty. You see, kid want like tasty food. Those recipes are tasty and inexpensive. We enjoyed them a lot.	A60
Moderator		Is there any more comments?	A61
Participant		We haven't gone through all the book. The question that I asked about red meat, is answered on the page about red meat. I'm happy to see that red meat can	A62

		make you sick if you eat a lot of it. You shouldn't eat it too much. You can eat a little bit of it.	
Moderator		If we can remove the pictures in this book, can there be a difference?	A63
Participant		Yes, there will be a difference. These pictures are helpful, they make it easy to understand the book. They help us to see the light.	A64
Moderator		Did you want to add something to the discussion?	A65
Participant		Let her go first.	A66
Moderator		Are you done?	A67
Participant		Yes	A68
Moderator		You've finished discussing?	A69
Participant		Yeah	A70
Moderator		The things you were thinking about this book, it's pictures, you're done in discussing them? And you're happy?	A71
Participant		Yes!	A72
Moderator		You said the only thing you'd like to see in this book is that, since the grannies can't read well, you'd be happy if the font could be increased? Others would like to get the Zulu edition? Also the colour to the pictures	A73
Group		Yes!	A74
Moderator		Is there an additional point you'd like to add?	A75
Group		No.	A76
Moderator		You'll be able to use it at home. Because as you know this book it's objective is that you be able to use it at home, be able to use it together at home, and use it daily. So that you don't take it, read and forget about it.	A77
Participant		We're going to study the recipes	A78
Participant		Since it's only one, will we share it in pairs? Or how do we do it?	A79
Moderator		No, since we still discussing it together, we will take the points you tell us and implement them. Each one will get her complete book.	A80
Group		Okay,	A81
Participant		So that people can get used to the way we cook.	A82
Moderator		That's why we feel it's important for you to tell us how you feel about the things written in this book, what you want, because it's yours. We don't know what you want. That's why we ask you what should be included, what should be removed, and which points seem irrelevent.	A83
Moderator		Thank you very much, now I'll switch off the device.	A84

ANNEXURE Q-2

FOCUS GROUP: NUTRITION EDUCATION MATERIAL (SESOTHO BOOKLET)

Primary Document B

Number of participants: 8 Date: 24 July 2012

Venue: Presbyterian Church, Boipatong, Gauteng

Speaker	Sesotho	English	Section
Moderator	Le e bone buka akere?	Have you seen the book?	B1
Group	M-m	Yes	B2
Moderator	Jwale le ka nna la ntjetsa hore na le nahanang ka yona.	Now may you tell me what you think about it.	B3
Participant	Nna ke nahana hore e ka hatiswa e be buka e feletseng. Re tle re tsebe ho bala re be le tsebo e fetang mona.	I think it should be published into a complete book. So that we can study more, and be equiped with more knowledge.	B4
Moderator	E be buka e feletseng?	You mean a complete book?	B5
Participant	E, e be buka e feletseng, eseng maqephe. E hatiswe ebe buka e feletseng hantle.	Yes, a complete book, not pamphlets. It should be published, and be complete book.	B6
Moderator	O tjho moo mahareng.	You mean here in the middle [audio was not clear]?	B7
Participant	E,	Yes,	B8
Participant	Buka ena kamoo ba e fetoletseng kateng, ke bona ba e fetoletse hantle, hobane kannete buka ena re ne re ntse re tsamaya ka yona, re e shebile. Pele hwane ha e ne e sa ngolwa ka Sesotho, e ngotswe ka Sekgowa, empa, hona jwale e ngotswe ka mokgwa o nepahetseng.	I think the translation of this book is a good one, because honestly we are able to follow step by step with the book. At first, before it could be written in Sesotho, when it was in English . . . but now, it is written in a correct way.	B9
Participant	Mme, nna ke thabetse hobane e ngotswe ka puo yeo mang le mang a kgonang ho e utlwisisa. Hangata ha ho buuwa ka puo ya Seyeng, ke hore English kapa Afrikaans kapa puo leha e le efe, hase ba bangata ba utlwisisang, leha ho na le tokolo, ho ntse ho na le moo toloko e etsang hore batho ba se ke ba utlwisisa. Kahoo ke thabetse hore e ngotswe ka puo yeo mang le mang . . . haholoholo kaha bonkgono ke rona ba sa rutehang, mme hase bonkgono bohle ba ileng sekolong. Kahoo, ke bona e le buka ya bohlokwa haholo. Bonyane le nkgono ha a tlile ka diborene tsa hae, o tla kgona hore a ipalle a utlwisise.	Madam, I'm happy because it was written in a language that anyone can understand. Normally when it's in a foreign language, I mean English or Afrikaans or any other language, the majority of us don't understand, even if there's an interpreter, somewhere he may make it difficult to understand. So, I'm happy that it was written in a language that anyone understands, more especially since we grannies are not educated, and not all grannies went to school. So I think it's a very important book. At least, even grannies will take their reading glasses and read with understanding.	B10
Participant	Nna ke bona hore buka ena e re thusa haholo hore re be le tsebo ya hore na re je dijo tse jwang, re phehe dijo tse jwang. Re kgethe dijo tseo re tla di ja. E eketsa tsebo ya rona.	I think this book is helpful because it equips us with knowledge of what kind of food we should eat, what kind of food we should cook, and the kind of food we should choose. It increases our knowledge.	B11
Participant	E molemo haholo ho rona batho ba hodisang bana, ba tshwereng lelapa. Re tseba hore re ka	It is very good for us as we raise children, and manage our households. We know how to give our families variety of food.	B12

	fetofetola dijo tsa lelapa la rona ka mokgwa ofe.		
Participant	Haholoholo kea e rata nna buka ena, ka lebaka la hore e na le dithuto tse monate tsa hore o itlhokomele bakeng sa bolwetse ba hao, le hore sekala sa hao sa boima se kgone ho theoha. Hobane ha o ntse o bala, e ya o eletsa buka ena. E na le dikeletso tse ngata, e na le maele a mangata, e na le thuto, re utlwisisitse.	I like this book because it has good lessons on how to care for ourselves, especially in regard to our illnesses, and it helps us control body weight. Because as you read, the book gives you advices. It has many advices, tips and a lessons. We understood it.	B13
Participant	Nna ke bona e re fa tsebo, hore re kgone ho tseba tse hantle le tse seng hantle. Re kgone ho di kgomarela, re bone hore na tsela ya phepo yeo re tlamehang ho ja ka yona, mokgwa oo re tlamehileng re je ka wona, hore re tlamehile re je dijo tse jwang.	I think it helps us to know what is good food and what is not good. To stick to good food, to see what is the healthy way of eating, and the healthy food we should eat.	B14
Participant	Nna ke e ratela le hore e re o ke ke wa reka feela dijo tse hahang mmele, leha dijo tse tlaase o kgona ho etsetsa bana ba hao dijo. E re ruta hore re phehe jwang.	I also like it because it says, you don't have to buy high protein foods only, but even those that are not that high in proteins, can be used to cook for kids. It teaches us how to cook.	B15
Participant	Se ke bile ke hlokometse ka lapeng ka mane. Tlhapi e ne e le ntho yeo re neng re sa e tsotelle. Empa ka baka la hore haesale ke nka maele a buka ena, ke na le bashanyana ba ka, ha ke ile ka pheha tamati ena le eiye, ka be ke se ke kenya tlhapi, ka be ke kenya le sopho ena, u tla utlwa ba re, re kopa o re phete hape, 'some more,' ba rata tlhapi ena, le dinawa tsena ba di rata haholo. Hobane ke dijo tse nang le matla tse bileng di kgorisang.	I've noticed that at home, you see we did not like fish, but since I used the tips from this book, I have boys, and if I fried tomato and onion, and mix it with fish and soup. They keep saying, 'please give us somemore.' They like fish and beans a lot, because they are strengthening and filling foods.	B16
Participant	E re bontsha hape le bohlokwa ba lebese. Hore re tlamehile re dule re nwa lebese ka matsatsi wohle. Hobane lebese ke lona le fanang ka diminirale le divithamine mmeleng. E kgothalletsa le lebese haholo hore re nwe lebese ka letsatsi. Leha o sa nwe lebese, ebe mafi kapa yokate	It also shows the importance of milk. That we must drink milk daily because milk is a source of minerals and vitamins. It encourages drinking milk daily, if not milk at least, masi or yogurt.	B17
Participant	Buka ena ha e re kgothalletse nama e kgubedu. E re kgothalletsa tlhapi, le kgoho, le dinawa	This book discourages red meat. It encourages fish, chicken and beans.	B18
Participant	Ntho e nngwe hape, ho na le dirasepe mona. Tseo ke kgolwang hore re kile ra di thola ha e ntse e le diphamphlets feela. Dia re thusa hore bonyane o etse varietynyana ya dijo ka dirasepe tse mona bukeng.	Another thing, it has recipes that I believe we got them while they we still on pamphlets. Those recipes from this book help us to have a variety of food.	B19

Participant	Le yona ntho ena, hana ke eng, yona kase, akere kase e tshwanetse e nne e be teng mmeleng hore e thuse mmele wa hao. E thusa haholo le mading a hao le matla	Even cheese, one should have eat it so that it can help the body. It helps the blood and gives energy.	B20
Moderator	Ha le ntse le e bala buka ena, le bona eka ho na le ho hong ho ka lokiswang?	As you go through the book, did you see something else that should be corrected?	B21
Participant	E, mona ntho ena, leqepheng la 12, e re "ditataiso tsena di bolela hore na mona Afrika Borwa re ka latela tsela efe ya ho ja le ho lwantsha tlala le kgaello ya phepo," jwale mona ba itse 'kgallo,' wa bona! Ke 'kgaello,' wa bona ke ena. Ha ba tshwanetse ba re 'kgaello,' ba re 'kgallo.'	Yes, here on page 12, it say, *"ditataiso tsena di bolela hore na mona Afrika Borwa re ka latela tsela efe ya ho ja le ho lwantsha tlala le kgaello ya phepo,"* now they said '*kgallo*,' you see! It should be '*kgaello,*" they had to say '*kgaello,"* not '*kgallo.*'	B22
Participant	Le qalang, lena.	The one at the beginning.	B23
Participant	Ke bona hape buka ena e thusa batho ba nang le mafu a itseng. E ya ba tataisa hore ba kgone ho ja dijo tse jwang ho qoba mafu ao ba nang le wona, e ba thusa mafung ao a se ke a ba le pressure.	I realized that this book helps people with certain deseases. It guides them about the kind of food they should eat so that they can avoid those diseases, and it helps them so that those deseases do not get worse.	B24
Moderator	Ho na le ho hong hape?	Any other comments?	B25
Participant	Ke spelling se fosahetseng. Oo, kgalla. Ba ne ba batla hore 'kgaello.'	That's wrong spelling, "*kgalla.*" They wanted to say, "*kgaello.*"	B26
Moderator	Ho na le ho hong hape hoo le nahanang hore ho ka lokiswa teng?	Is there anything else that you think should be corrected?	B27
Participant	M-m.	No.	B28
Moderator	Mongolo wa teng o hantle?	How is the font?	B29
Group	O hantle.	It's fine.	B30
Moderator	Dintho tsee kaofela di hantle?	Is everything fine?	B31
Group	Ee,	Yes	B32
Participant	E kgothalletsa hore ho jewe le ditholwana akere? Le ditholwana re tshwanetse re di je, re se ke ra ja dijo tse nang le setatjhe haholo, akere, hore re kgone ho phela hantle?	It encourages us to eat fruits, if I'm right. We should also eat fruits, not too much starchy foods, so that we can live healthy lives.	B33
Participant	Nna ke bona e le hantle, hobane re ilo ruta le bana ba rona hae. Hobane ha o se o tshwere buka ena, ho se ho tsebahala hore na dijo tse hantle le tse seng hantle ke difeng. Ho monate ka hobane ba tla kgona ho bala. Ke bona e le hantle haholo buka ena.	I thinks is good because we teach our children at home. Now when you have this book, it is easy to see which foods are good and which ones are not good. It nice because they can read it. I think this book is very good.	B34
Participant	E ya bontsha hore na o ka sebedisang bo eng, o se ke wa sebedisa nama haholo. Bo ditjhu tsa dinawa ho replasa nama, ho ena le hore re je nama mehlaena le mehlaena, ya lekanyetsa hore ka beke o ka ja nama e kae e kgubedu.	It shows us what should you use, that we should not eat meat too much. Things like beans stew to replace red meat, so that we don't eat meat each and every day. It strikes a balance that one should limit the amount of red meat they eat each week.	B35
Lady 22	Nna ke rata meroho haholo,	I like vegetables a lot, like cabbage and	B36

	jwaloka bokhabetjhe le ditamati nna kea di rata.	tomatoes.	
Moderator	Na le nahana hore hae ba tla thabela hore ba e bale?	Now, do you think at home they will enjoy reading it?	B37
Group	Haholo.	Very much.	B38
Group	. . . Ba tla e thabela.	It's a very interesting book, this one. They will enjoy it.	B39
Participant	Re ilo ruta bana hae ka yona. Ba tlo bona, hobane e ngotswe ka Sesotho. Ba tlo kgothala, etlare ha o ntse o tshela letswai le lengata, ba re, "e e, o se ke wa tshela letswai le lengata, o bone hore bukeng ho ngotsweng?' Kannete e bohlokwa.	We're going to teach kid at home using this book. They'll see it as it's written in Sesotho. It will encourage them, if one uses a lot of salt, they will say, 'not so much salt, did you see what the book said?' It is really vital.	B40
Participant	Haholoholo dinawa tsena, ke pheko hape. Wa tseba dinawa ha o di ja, ke pheko kaekae, ka dinako tse ding mpa ya hao e tlalellane. Empa ha o di ja dinawa tsena o tla bohla	Especially the beans, they act like a medicine. When you eat the beans, that's somehow like a medicine. Because when you are bloated, and you eat them, you still start burping and you get indigestion relief.	B41
Participant	Di na le matla haholo. Ke pheko hapehape.	They give you a lot of energy, and they make you feel well.	B42
Participant	E bohlale haholo buka ena. E re rutile mahlale a mangata.	This book gives a lot of wisdom. It taught us many wise lessons.	B43
Moderator	Ditshwantsho tsona le nahana eng ka tsona?	What do you think about the pictures?	B44
Participant	Oo, tsena tse bontshang dintho . . . lenthisi	Okay, these ones that show the lentils?	B45
Participant	Nna ke nahana hore ditshwantsho tsena haeba o sa tsebe hore na dilenthisi ke tse jwang, o se o ntse o bona hore na ke thaepe e jwang, disoya beans, split peas, dry beans, o se o ntse o bona hore ke tse jwang.	I think these pictures... if you don't know which ones are lentils, you can identify that type. You can see which ones are soya beans, split peas, dry beans.	B46
Participant	Mme mona e tshwanetse e be e le soya ba kenye 'a.'	Here this should be 'soya,' not 'soy,' they should insert 'a.'	B47
Moderator	Akere ke lona ba buang, nna kea mamela.	You see you are discussing it, and I'm just listening.	B48
Participant	E lokela e be "soya beans," eseng 'soy,'	It should be "soya beans," not "soy,"	B49
Moderator	Na le bona ho le bohlokwa hore buka yee e be le ditshwantsho tsona tsee tseo le di shebileng hona bukeng yeo? Akere ditshwantsho tsena di ilo kenngwa bukeng? Le bona hore ho bohlokwa?	Do you think it's vital to have pictures in this book, the very same picture? Remember that these pictures will be included in the book. Do you think it's vital?	B50
Participant	E. Re nahana hore ho bohlokwa hobane ka nako e nngwe motho ha a re soya beans, ha o tsebe hore na ke mofuta o jwang, empa ha o shebile, leha o fihla mane khaontareng, o kgona ho bona hore di tjena.	Yes, we think it's vital because sometimes you don't know what soya beans are, but when looking at this pictures, even at the counter, you're able to identify them.	B51
Participant	Empa nna ke kopa ho botsa, ha ba ngotse dinawa tse omisitsweng, ba bolela dinawa kaofela, ebang ke tse sootho, tse tshweu, kapa *sugar beans?*	But I'd like to ask, when they say dry beans, do they mean all kinds, whether they are brown, white or sugar beans?	B52

Moderator	Akere ke tsee tse ommeng, akere re na le tsee tse tse ka dithining, tse foreshitse, ba di bitsa *dry?*	Dry beans are in the cans and those not yet cooked, we call them 'dry beans.'	B53
Participant	Ba di bitsa dry kaofela ha tsona, ekaba tse sootho, tse tshweu	All of them are called dry beans whether brown or white, it doesn't matter.	B54
Participant	Re ka thaba haholo, haeba di ka ba le dinepe dibuka tsena, ho tseba le ho ntshetsa pele dikelello tsa rona.	We can be very happy if the pictures could be retained in this books, so that they can increase our knowledge.	B55
Participant	Re kgona le ho eletsa banababo rona, ba sa kgoneng ho iphe kelello ka taba ya dijo, ho ba eletsa hore dijo tsena ha o di phehile, o bile o kgaola le boholo ba tjhelete. Re na le bana, re na le ditloholo, le banababo rona ba se seng ba se na batswadi ka dinako tse ding. Re kgona ho ba eletsa, 'ka dinako tse ding, ha re na eng,' e-e, nka dinawa ke tsena, o etse sopho bana ba kgone ho ja, 'nka tlhapi ke ena' o etsetse bana, bana ba kgone ho ja, akere? ba kgone ho thola dikelello le bona re ka nna ra ba fa dibuka tsena hore ba kgone ho ba le kelello yeo.	We're able to advise our sisters, who don't know this things about food, that when you cook food, you cut the expenses. We have our children, our grandchildren and our sisters who sometimes are orphans. We'll be able to advise them, because sometimes they say, 'we don't have this and that,' now we can tell them, 'no take beans and make a soup for kids,' or 'take fish,' and cook something for kids so that they can eat something. They will get more knowledge and we can give them these books so that they know what to do.	B56
Participant	Le tlo e etsa e le buka e jwang, e le buka e nang le hard cover, hobane ha e le tjena bana wa utlwa baa e nka baa e senya ebe ba bapala ka yona, ha e na le hard cover ke nahana hore e tla ba safe ho feta ha e le tjena.	How are you going to bind this book? Will it be on hard cover? You see kids can take the book, play with it and then distroy it. So I think it's safe on hard cover than when it's like this.	B57
Participant	E re kgothalletsa le ho nwa metsi a mangata a hlwekileng. Batho ba bangata ha ba nwe metsi ho hang, o tla fumana ba ang ba nwa boditerinki, bomme ba nwa boditee, sepaise sane sa metsi ha se sa le yo jwale.	It encourages us to drink a lot of clean water. Many don't drink water at all, they like drinks, and mothers like tea, and now there's no space for water.	B58
Participant	Le mefuta ya mafura, e re kgothalletsa hore re sebedise mafura a tswang dimeleng, eseng a tswang dintho tse ding, seka fish oil yee e ya sunflower, ke yona e right	Even on the type of oil, it encourages us to use the fat from the plants, not from other things, like sunflower cooking oil, that's the right one.	B59
Moderator	Ha re ka ntsha ditshwantsho moo dibukeng, bothata bo tla ba hokae?	If we can remove the pictures, will the be a problem?	B60
Participant	Ha le ka la ntsha ditshwantsho bukeng, ha ke tatile, ke batla sheba, hore na ntho ena e tulong efe, athe ha o na le setshwantsho ke potlaka ho fumana hore na taba tse tjena di tulong e itseng, mona setshwantsho ke sena ke se ke kgona ho fumana kapele. Se ntlhokomedisa kapelenyana hore setshwantsho sena se sebakeng sefe. Ha re re ke batla ho pheha kapa ho etsa eng, ke	If you remove the pictures from the book, say I'm in a hurry, I want to take a look and read, and wonder where it is. But if there are pictures, I quickly locate it, because here is the picture. The picture quickly help me to locate the location of the text. Say I want to cook or do anything, I'm in a hurry and I want to turn the pages, but I'm struggling, but with the pictures I'll quickly locate it.	B61

	tataile ke batla ho bula, jwale ke ntse ke sokola, jwale ha ho na le setshwantsho sena, ke se ke kopana le yona feela taba yeo feela hona mona.		
Moderator	Ho na le e mong ya batlang ho bua hape? Le feletswe? Ke nako ya lona ena.	Is there any other thing you want to add? Is it all? This is your time.	B62
Moderator	Le nahana hore buka ena e ngotswe hantle?	Do you think this book was well written?	B63
Group	Yes	Yes	B64
Moderator	E ngotswe hantle, ha le e bala le kgona ho e bona?	It's well written, when you read it, you're able to see it clearly?	B65
Participant	Rea e utlwisisa ebile.	We even understand it.	B66
Moderator	Ha ho na ho hong moo le bonang hore le tla ba le bothata ba ho e bala?	Is there anywhere you think you'll have a problem when reading it?	B67
Group	Che kannete.	Not at all!	B68
Participant	E ngotswe hantle, hoba le rona bonkgono bao re sa kenang sekolo re kgona ho e bala.	It was written very well, because even we grannies who are not educated, we're able to read it.	B69
Participant	Hape buka ena, ho na le moo e bontshang hore ha o ja dijo tse tshwanelehang, o tla dieha ho ya ngakeng, o tla tloha pela ngaka, ke hore o ja dijo tse hantle, o tla phela hantle. Re seifa tjhelete ya doctor. Ha o ka hopola feela hore o je dijo tse right.	And somewhere, this book explains that if we eat healthy food, we will not quickly go to the doctor, you'll get away from the doctor. Just eat healthy food, you'll live. We will safe the money we give to doctors. Just bear in mind that to eat healthy food.	B70
Moderator	Ha re se re fihlile qetellong, re tla kwala he, akere le buile ntho e nngwe le e nngwe yeo le neng le batla ho e bua?	We'are about to conclude, I hope you've said everything you want to say, am I right?	B71
Group	Ee	Yes	B72
Moderator	Rea kwala he, mme rea leboha ka thuto yeo le re fihleng yona.	We will now conclude, and are very grateful for the lessons you gave us.	B73
Participant	Ke rona ba lebohang haholo	It's our pleasure.	B74

The analysis occurred in two phases. The first phase involved a top-down approach where a list of codes was compiled and the primary documents were scanned for quotations which link with the items on the list (code-by-list codes). The second phase comprised a bottom up approach where quotations in the primary document were linked to additional codes (In vivo codes). Both types of codes where then linked to themes.

The code-by-list codes were based on the moderator's schedule (Addendum 1). The list covered:

- Role of pictures – positive aspects

ANNEXURE Q-3

DRAFT NEW NUTRITION EDUCATION MATERIAL: understanding of Sesotho text

FOCUS GROUP: NE MATERIAL (SESOTHO BOOKLET)

Role of pictures – negative aspects

- Language issues
- Booklet design issues
- Role of the booklet – positive aspects
- Role of the booklet – negative aspects

Quotation	Reference	Analysis phase 1: Code-by-list code	Analysis phase 2: In vivo code	Theme
We enjoy this book and love it. It teaches us how to and it has recipes. ...It also teaches us mainly how to save money.	A7	Role of the booklet – positive aspects		I
We enjoy this book and love it. It teaches us how to and it has recipes. ...It also teaches us mainly how to save money.	A7		How to save money	II
As parents, we liked this book very, very, very much, as it help us as parents to be wise, in that when we have pregnant women, we can give them food that will strengthen them.	A9	Role of the booklet – positive aspects		I
I liked this book very much. It teaches us good work. Especially in eating fatty food, and as for myself, it liked it very much. I did not know that it's not good. It teaches us all things, including how to save money.	A13	Role of the booklet – positive aspects		I
It teaches us all things, including how to save money.	A13		How to save money	II
One of the things we did not not, we thought it's food for the poor people, it's soya mince, and we did not like it. Even at daycare centers we used to complain to the teachers that they cook soya mince for our kids, that our kids are suffering because of soya mince. Now we have learned from this book that soya mince is healthy, as we would fight with the teachers that they are feeding our kids the food that is not good, our kids are starving at school, but . . .	A14		Change in attitude due to new information	I
You see, I don't like eggs that much, but since we were taught about these things, I realized that once a week or twice, I should eat eggs so that I can have some strength. So, we enjoyed this book a lot. It helped us to progress.	A15	Role of the booklet – positive aspects		I
You see, I don't like eggs that much, but since we were taught about these things, I realized that once a week or twice, I should eat eggs so that I can have some strength.	A15		Change in attitude due to new information	I
Because sometimes you find that we take medication from the clinic, but we don't get better, because we eat wrong food. You take the medication while your high blood and	A18	Role of the booklet – positive aspects		I

diabettes is still worse, only to find that you're not eating correctly, that's why our high blood and dibettes does not get better. Now we know that we were not eating healthy food.				
Honestly, i'm happy, because this book is going to help us to be real mothers, we'll be mother able to raise kids, we truly appreciate it. We could see but we did not understand, now we understand clearly. Even these soya, like Mrs Manyokane said, we did not care about them. Now we understood clearly how we should treat the matter of health in regard to our bodies and families. Thank you very much. We got the point.	A30	Role of the booklet – positive aspects		I
Pictures are good, they match the text we've just read here. So, we're happy to see these pictures. They will help us a lot to know what we should buy. They also show us how to save money.	A41	Role of pictures – positive aspects		III
Pictures are good, they match the text we've just read here. So, we're happy to see these pictures. They will help us a lot to know what we should buy. They also show us how to save money.	A41		How to save money	II
Pictures are good, they match the text we've just read here. So, we're happy to see these pictures. They will help us a lot to know what we should buy. They also show us how to save money.	A41		Pictures and text must match closely	III
Pictures are good, they match the text we've just read here. So, we're happy to see these pictures. They will help us a lot to know what we should buy. They also show us how to save money.	A41		Knowing what to buy	II
Are there things that you'd like them to be added in this book, like the colour, to have another colour or a large print? Is there anything as you look at this book that you think would help? Only the colour... Speak your mind Mama. I'd be happy if the font could be enlarged. And I will be very happy if it can be written in my language. This is Sesotho, sometimes I understand, sometimes I don't. I'll be very happy. Nowadays I can't see well.	A48-51	Role of pictures – negative aspects		III
Are there things that you'd like them to be added in this book, like the colour, to have another colour or a large print? Is there anything as you look at this book that you think would help? Only the colour... Speak your mind Mama. I'd be happy if the font could be enlarged. And I will be very happy if it can be written in my language. This is Sesotho, sometimes I understand, sometimes I don't. I'll be very happy. Nowadays I can't see well.	A48-51	Booklet design issues Language issues		III
We grannies who are given the government grant, we could not spend a month with that money, since you came and taught us how	A53		How to save money	II

to buy inexpensive food, we're able to spend the whole month with the grand we get. We no longer buy expensive things.				
According to me, it's to help one to see for instance, what kind of grains are lentils. Because they're all grains, but they help you to know the difference that the lentils and the soya beans are not the same as the dry beans and split peas.	A55	Role of pictures – positive aspects		III
According to me, it's to help one to see for instance, what kind of grains are lentils. Because they're all grains, but they help you to know the difference that the lentils and the soya beans are not the same as the dry beans and split peas.	A55		Pictures assist with purchasing of foods	III
They are important, because even if your are going to buy grocery, you can just take this pamphlet and tick the the things that you need. When you enter Checkers Hyper or Pick'n Pay, you have you pamphlet written the things your need because you took them from this book.	A58	Role of pictures – positive aspects		III
They are important, because even if your are going to buy grocery, you can just take this pamphlet and tick the the things that you need. When you enter Checkers Hyper or Pick'n Pay, you have you pamphlet written the things your need because you took them from this book.	A58		Pictures assist with purchasing of foods	III
Yes, there will be a difference. These pictures are helpful, they make it easy to understand the book. They help us to see the light.	A64	Role of pictures – positive aspects		III
Yes, there will be a difference. These pictures are helpful, they make it easy to understand the book. They help us to see the light.	A64		Pictures assist with understanding of the text	III
Yes, a complete book, not pamphlets. It should be published, and be complete book.	B6	Booklet design issues		III
I think the translation of this book is a good one, because honestly we are able to follow step by step with the book. At first, before it could be written in Sesotho, when it was in English . . . but now, it is written in a correct way.	B9	Language issues		III
Madam, I'm happy because it was written in a language that anyone can understand. Normally when it's in a foreign language, I mean English or Afrikaans or any other language, the majority of us don't understand, even if there's an interpreter, somewhere he may make it difficult to understand. So, I'm happy that it was written in a language that anyone understands, more especially since we grannies are not educated, and not all grannies went to school. So I think it's a very important book. At least, even grannies will take their reading glasses and read with understanding.	B10	Language issues		III
I think this book is helpful because it equips us with knowledge of what kind of food we	B11	Role of the booklet – positive aspects		I

should eat, what kind of food we should cook, and the kind of food we should choose. It increases our knowledge.				
I like this book because it has good lessons on how to care for ourselves, especially in regard to our illnesses, and it helps us control body weight. Because as you read, the book gives you advices. It has many advices, tips and a lessons. We understood it.	B13	Role of the booklet – positive aspects		I
I also like it because it says, you don't have to buy high protein foods only, but even those that are not that high in proteins, can be used to cook for kids. It teaches us how to cook.	B15	Role of the booklet – positive aspects		I
I also like it because it says, you don't have to buy high protein foods only, but even those that are not that high in proteins, can be used to cook for kids. It teaches us how to cook.	B15		Knowing what to buy	II
I thinks is good because we teach our children at home. Now when you have this book, it is easy to see which foods are good and which ones are not good. It nice because they can read it. I think this book is very good.	B34	Role of the booklet – positive aspects		I
I think these pictures... if you don't know which ones are lentils, you can identify that type. You can see which ones are soya beans, split peas, dry beans.	B46	Role of pictures – positive aspects		III
I think these pictures... if you don't know which ones are lentils, you can identify that type. You can see which ones are soya beans, split peas, dry beans.	B46		Pictures and text must match closely	III
Yes, we think it's vital [to include images] because sometimes you don't know what soya beans are, but when looking at this pictures, even at the counter, you're able to identify them.	B51	Role of pictures – positive aspects		III
Yes, we think it's vital [to include images] because sometimes you don't know what soya beans are, but when looking at this pictures, even at the counter, you're able to identify them.	B51		Knowing what to buy	II
We can be very happy if the pictures could be retained in this books, so that they can increase our knowledge.	B55	Role of pictures – positive aspects		III
How are you going to bind this book? Will it be on hard cover? You see kids can take the book, play with it and then distroy it. So I think it's safe on hard cover than when it's like this.	B57	Booklet design issues		III
If you remove the pictures from the book, say I'm in a hurry, I want to take a look and read, and wonder where it is. But if there are pictures, I quickly locate it, because here is the picture. The picture quickly help me to locate the location of the text. Say I want to cook or do anything, I'm in a hurry and I want to turn the pages, but I'm struggling, but with the pictures I'll quickly locate it.	B61	Role of pictures – positive aspects		III
If you remove the pictures from the book,	B61		Pictures and text	III

say I'm in a hurry, I want to take a look and read, and wonder where it is. But if there are pictures, I quickly locate it, because here is the picture. The picture quickly help me to locate the location of the text. Say I want to cook or do anything, I'm in a hurry and I want to turn the pages, but I'm struggling, but with the pictures I'll quickly locate it.			must match closely	
It was written very well, because even we grannies who are not educated, we're able to read it.	B69	Language issues		III

The quotations and codes contain the following core themes (see above):

I. Benefits of health education (e.g. changes in attitude)

II. Purchasing behaviour (e.g. saving money and knowing what to buy)

III. Guidelines for the design of the educational material (pictures, language issues, layout etc.)

Recommendations

Based on the above analysis, it is clear that the nutrition education material plays a very important role and that the benefits of health education are well recognised. According to the participants, the design of the educational material should conform to the following:

- The participants require information that helps them to know what to buy and how to save money, and these aspects should be prominent in the final version of the health education materials. The pictures should also help with knowing what to buy.
- A large font should be used throughout (a minimum of 12-14 pt. throughout)
- The home language of participants should be used, i.e. Sesotho and perhaps Zulu as well
- The pictures should be in colour
- The captions and pictures must match closely, and the pictures must primarily help the members of the community to understand the text, rather than to beautify, or raise the visual appeal, of the educational material.
- A book with hard cover or solid binding is preferred, i.e. not pamphlets.

DRAFT NE MATERIAL: Verification understanding of new Sesotho text in a pilot setting

Name: .....

Highest Qualification: .....

Home language: .....

Required of participants:

1. Please translate each paragraph roughly into English as to your understanding of the content thereof.

.....
.....
.....

2. Please indicate any difficult word that you encounter in the text that in your opinion would not be easily understood by the general public.

.....
.....

3. Please make suggestions for replacing the above word(s) by another easier to understand word.

.....

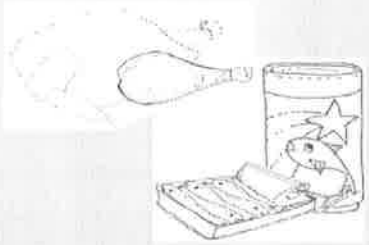
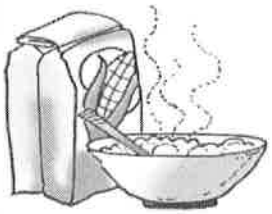
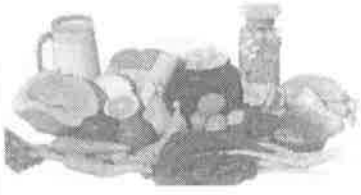
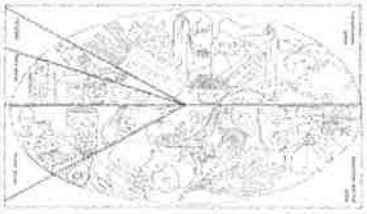
.....

4. Any other suggestions regarding foods to be included, commonly used by Sesotho families?

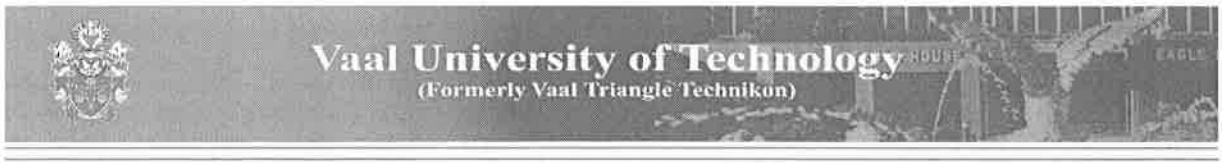
.....

.....

Which of the following do you prefer? A, B or C?

A	B	C
		
		
 On this plate is one type of food		
		
		

ANNEXURE R-1



EXISTING PAMPHLETS: DOH (2004) 'ENJOY A VARIETY OF FOOD'

Enjoy a variety of foods

Did you know, that to be healthy we need to eat healthily?

When we eat healthily, we

- won't get sick easily,
- will be able to do our work well,
- won't get tired easily,
- will stay healthy much longer, and
- will ensure that our children will grow into strong teenagers and adults.

We eat healthy when we eat and enjoy a variety of foods.

Meaning of words

Healthy
To be well and free from illness

Variety
Different, several

Fortified foods
Foods that are strengthened with vitamins and minerals

Poaching
Cook food gently in boiling liquid for example, poach an egg.

Minerals
Nutrients which our bodies need to work properly.

Vitamins
Nutrients that are found in foods that protect our bodies

What does it mean to enjoy a variety of foods?

It means to eat more than one type of food. If we eat one type of food every day, our bodies will not get all the nutrients that they need to stay healthy. All people need a variety of foods to stay healthy. Children need a variety of foods to grow.

On this plate is one type of food

On this plate is a variety of foods.

Remember

Several good, mixed meals daily are important. This means that to stay healthy, we need to try to eat many different kinds of food at each meal. An example of a main meal is maize meal porridge, chicken, pumpkin and spinach. It is always good to eat breakfast before going to school or work.

Eat healthy for less

Eating a variety of foods does not need to cost more.
Instead of buying a 'vetkoek' every day, buy an orange or nuts to add variety.
Try to buy fresh vegetables and fruit in season. For example, buy oranges in winter when they are cheaper.
Buy fresh food grown in your area or grow them in your own garden.
In South Africa, all bread baked from white and brown bread flour and maize meal are fortified, making them healthier.
Choose different foods for every meal.

Make cooking fun

The same food cooked the same way all the time becomes boring.

- Try new recipes to prepare food differently.
- Try out vegetables and fruit that you haven't used before. Ask the shopkeeper how to prepare them if you don't know.
- Make your meals interesting by adding variety.
- Vegetables need not always be cooked. For example, you can eat carrots and cabbage fresh - use them in a salad.

Use the following ideas for preparing food in the place of frying in fat or oil:

- Baking or roasting in oven.
- Grilling in oven, or in pan or over coals.
- Steaming.
- Poaching.

Be creative with food

Think of all the things you can do with an apple to add variety

- **Eat as is.**
- **Peel, cut in blocks, dip in lemon juice and use in salad.**
- **Use it when baking apple tart or apple pie.**
- **Use in chutney.**

Can you think of more uses of apples?
Think of all the uses of other fruit and vegetables.
Try them out, have fun and stay healthy.

Enjoy your food

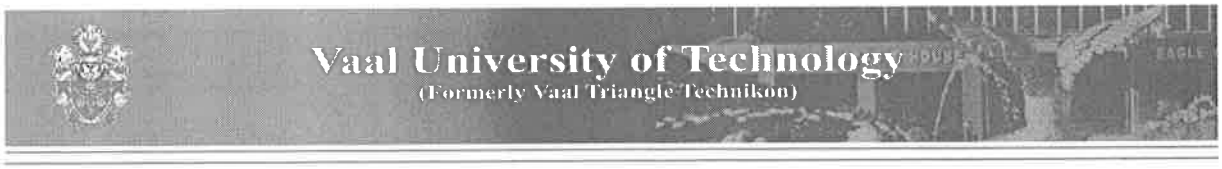
To eat is something you should enjoy. Eating with friends and family should be a happy event. Make it enjoyable by adding variety to your meals. By adding variety, you and your loved ones will also stay healthy.

How much do you know?

- What does the word enjoy mean to you?
- What does the word variety mean to you?
- Do you and your family enjoy a variety of food?
- Mention a few examples of how you bring variety into your meals.

For more information, contact:
The Department of Health,
Directorate Nutrition,
Private Bag x828, Pretoria, 0001
Tel 012 312 0000, Fax 012 312 3112.
Photographs: UNICEF/Giacomo Pirozzi and J de Klerk

ANNEXURE R-2



EXISTING PAMPHLETS: DOH (2004) 'EAT DRY BEANS, PEAS, LENTILS AND SOYA REGULARLY'

Eat dry beans, split peas, lentils and soya regularly

To stay healthy, we should try to eat healthy. We should eat a variety of foods so that our bodies get everything they need. Dry beans, split peas, lentils and soya are rich sources of protein and can be eaten with other foods such as starchy foods and vegetables.

What is good about dry beans, split peas, lentils and soya?

- We can eat them instead of meat and still be healthy.
- We can use them to make your meat go further.
- They are much cheaper than meat.
- They help prevent diseases such as heart disease and cancer.
- They help to make our bowels work properly (helps us to go to the toilet regularly).
- They contain very little fat, which is healthy for us.

Photo: UNICEF/Giacomo Pirozzi

Did you know?

Lentils are popular in every Indian home. It is usually eaten with cooked rice. Lentils can also be eaten with whole grains, such as fortified coarse maize meal.

What does eating regularly mean?

Regularly means at least three times a week.
If you never eat meat, fish, chicken, eggs or milk, you should try to eat dry beans or split peas or lentils or soya every day.
Eat them on the days that you don't eat meat.

Don't dry beans or split peas or lentils or soya give gas?

Yes, they do, especially if you are not used to eating them. If you never eat these foods, don't start eating them every day straight away. First eat them once a week, then twice a week and then three times a week. The gas will then stop. Your body gets used to these dry foods.

Recipe

Bean and fish cakes
(4 portions)
1 cup cooked or 1 tin (410g) brown beans
1tin (410g) pilchards
½ cup cake flour
1 small onion, grated
1 egg beaten
Salt and pepper to taste
2 tablespoons parsley
2 teaspoons Worcester sauce
2 to 3 tablespoons of sunflower oil for shallow frying.

Method:
Mash the beans and the pilchards
Mix the beans and pilchards with the flour and the onion
Mix the rest of the ingredients, into the beans mixture
Form flat fish cakes
Fry in heated oil until golden brown and done.
Drain fish cakes on brown paper
Serve together with starchy foods and vegetables.

Dry beans, lentils and peas should be cooked very well before eating. Once cooked, beans can be kept in a covered container in the refrigerator for up to five (5) days. If you don't have a refrigerator, don't keep them longer than one (1) day.

How to cook dry beans, split peas, and lentils?

Before cooking, pick through the beans and remove any stones and broken beans.
Soak overnight in water to soften the beans.
or
Put the beans in a large pot and cover with fresh water. Water should be three to six times the amount of beans.
Bring water to the boil and then turn off the heat. Leave the beans for one to two hours or until you want to cook them.
When starting to cook, don't add salt. It will make the beans dry. Only add a little salt when the beans are soft.
Simmer beans slowly. If they cook too fast the skins will break.
Lentils and black-eyed beans can be cooked straight from the packet.

Make dry beans, split peas, lentils and soya tasty to eat

Try beans in a salad.
Include beans, peas and lentils in soups or pasta dishes or rice dishes.
Beans absorb the flavour of spices and herbs, making them fun and tasty to eat.
Beans need a little salt to bring out their true flavour.
Eat beans with chakalaka or with samp.
Use soya mince and dry beans to make mince meat and mince stews go further.
Mix different kinds of dry beans to make a bean salad.

Tip

To save on electricity or fuel when cooking dry beans and lentils, use a hay box.

Make your own hay box.
Take a big cardboard box and fill it with balls of newspaper.
After the beans have cooked for 30 minutes, take the pot with lid from the stove, wrap in a thick towel and place in the hay box.

Pack balls of newspaper around and on top of the pot. You can also use cushions or blankets instead of just newspaper. Leave the pot in the box for about four hours.

How much do you know?

How often do you and your family eat dry beans, split peas, lentils or soya?
Which other foods do you eat with eat dry beans, split peas, lentils or soya?
What does 'eating regularly' mean to you?
What do you think the message of this pamphlet is?

For more information, contact:
The Department of Health; Directorate Nutrition; Private bag x828; Pretoria, 0001
Tel 012 312 0000; Fax 012 312 3112

ANNEXURE R-3

EXISTING PAMPHLETS: DOH (2004) 'CHICKEN, FISH, MEAT, MILK OR EGGS COULD BE EATEN DAILY'

Chicken, fish, meat, milk or eggs could be eaten daily

The above foods are good sources of many nutrients. These include protein and minerals to build our muscles, our bones, our teeth and our blood.

Must we eat chicken, fish, meat, milk, and eggs daily?

No, you don't have to. If you can afford it, you may eat these every day. But, it is important to eat small portions, such as a chicken thigh or a fish fillet. These foods all have fat in them. Therefore you should only eat small portions. You can also eat dry beans, lentils, soya or split peas instead of meat.

What do the words mean

Calcium
A mineral that our bodies use to build bone and teeth. Calcium is found in milk and the soft bones of fish.

Healthy
To be well and free from illness

Minerals
Nutrients which our bodies need to work properly.

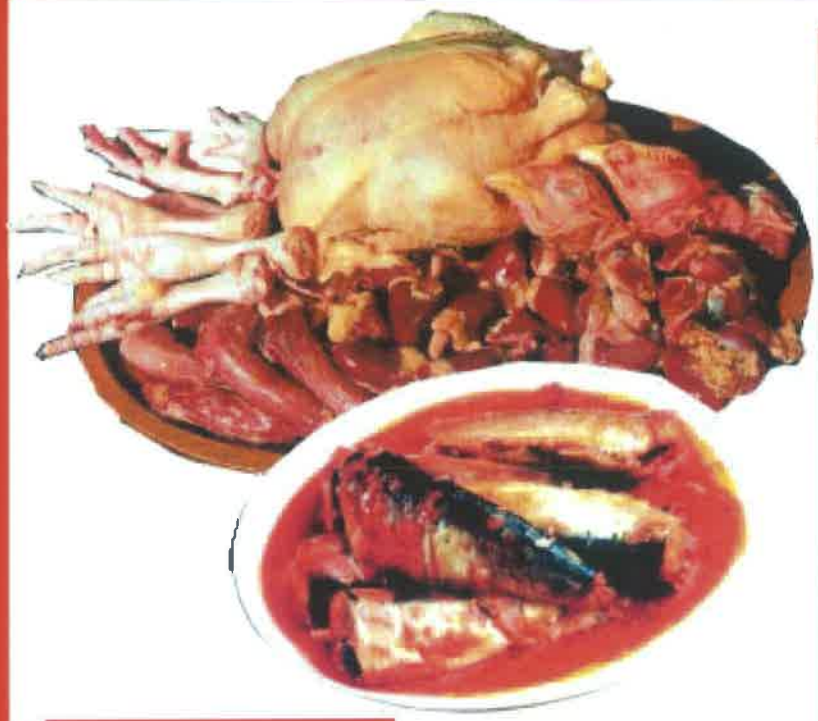
Protein
An important substance in food that builds the body

Vitamins
Nutrients that are found in foods that protect our bodies

Why are chicken, fish, meat, milk and eggs needed by the body?

- To build muscles, bones, skin and blood. They are especially necessary for growth in children and for pregnant and breastfeeding women.
- Milk, sour milk or maas, cheese and yoghurt and the soft bones from fish (sardines and pilchards), build our bones and teeth. They contain calcium which builds bones when we are growing up. They also keep our bones strong and protect us from broken bones later in life.
- Meat, chicken and fish contain a mineral called iron. Iron protects our bodies against tiredness and certain illnesses. Red meat (beef or lamb or mutton) and especially organ meat such as liver contain the most iron.

Photographs: UNICEF/Giacomo Pirozzi and Department of Health



Some of these foods are expensive - what should you do?

- You need not eat these foods every day.
- Buy and eat small amounts of these foods.
- Choose cheaper, lean cuts of meat with little bone to use in stews.
- Eggs are good value for money. Eat about three to four eggs per week to replace red meat or chicken.
- Meat can also be replaced with dry beans, lentils or split peas.
- Offal is usually cheaper and you can eat small portions of this instead of meat.
- Tinned fish is also healthy and is usually cheaper than fresh fish.

Some tips

- Cook meat or chicken at home. It is cheaper and healthier than a take away.
- Prepare meat, chicken and fish without frying. Rather boil, stew, grill or braai.
- Make small portions of lean meat go further in stews and minced meat dishes by adding extra vegetables, dry beans, split peas or lentils, soya, pasta or noodles.
- Try to eat fish at least twice a week. Fish has a good type of fat that protects the body against heart disease.
- Remember that mopani worms, locusts or other insects are also good sources of protein and low in fat.

Keep viennas, polonies, sausages and frankfurters for special occasions. They have a lot of fat and salt, which is not healthy.

Important to remember

Chicken, fish, meat, milk and eggs have fats in them. Eating too much of these foods is not healthy.

Cut off all the visible fat from meat before cooking. Don't eat this fat.

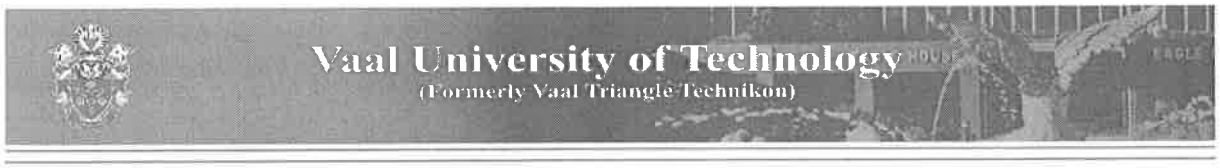
Always eat chicken, fish, meat, milk and eggs with other food. It is important to eat a variety of foods so add starchy food and lots of vegetables.

How much do you know?

Why are chicken, fish, meat, milk, and eggs good for you?
Which of these foods do you eat and how often?
What do the words 'could be eaten daily' mean to you?
Which other foods do you eat with chicken, fish, milk, meat and eggs?

For more information, contact:
The Department of Health, Directorate Nutrition; Private bag x828, Pretoria, 0001
Tel 012 312 0000, Fax 012 312 3112

ANNEXURE S-1

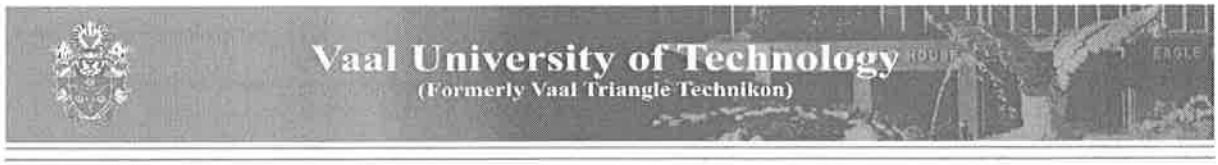


LESSON PLAN: 'ENJOY A VARIETY OF FOOD'

LESSON PLAN: 'ENJOY A VARIETY OF FOOD'

Action	Application	
Gain attention	**Instructions:** Tell participants that you want to honour the life experiences and wisdom that the participants bring to your nutrition learning sessions. Ask the participants to pair up and share with each other a memory they have about family dinner, or their favourite food, or an experience with being introduced to a food they did not like and changing their mind about that food item. **Share:** After sharing in pairs ask for volunteers to share with the entire group. The facilitator can use the stories to develop the nutrition theme that comes out of the stories.	
Present new information	What	Discuss: What does it mean to enjoy a mixed meal? How can we bring variety to the meal?
	Why important	Ask the question: Why can we not only eat bread or pap; or only meat?
	Barriers	Possible barriers include: variety not available, transportation problems, price, etc.
	Solutions	Let us now think and discuss for five minutes of ways how to bring variety to our meals.
Practical activity	Building the plate puzzle as developed by the ISL, VUT	
Closure	Thanking participants for their attention and participation.	
Refreshments	Peanut butter and jam sandwiches. . Each participant to receive a fridge magnet with an image of one of the FBDGs as developed by the CSL-VUT	

ANNEXURE S-2

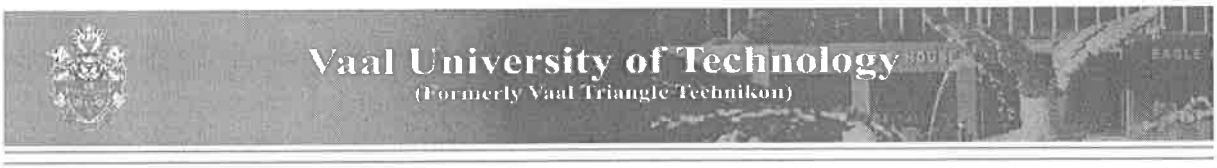


LESSON PLAN: 'EAT DRY BEANS SPLIT PEAS, LENTILS AND SOY REGULARLY'

LESSON PLAN: EAT DRY BEANS SPLIT PEAS, LENTILS AND SOYA REGULARLY.

Action	Application	
Gain attention	Ask the audience if they know where lentils are first mentioned in the bible.	
Present new information	What	Name food items that you know that would be part of this group of foods. Show samples of these items to the group.
	Why important	What is good about dry beans split peas, lentils and soya?
	Barriers	Do you experience gas after eating a lot of dry beans?
	Solutions	How do we include dry beans split peas, lentils and soya into our meals?
Practical activity	Compiling a 'hay box'	
Closure	Thanking participants for their attention and participation. Reminding them of the next session. Ask them to bring the booklet with to the next discussion group[1]	
Refreshments	Dry beans soup and brown bread sandwiches. Each participant was given a packet of either dry beans, or lentils or soya to test at home. Each participant to receive a copy of the Sesotho booklet and. A recipe card of the dry bean soup (annexure T) was given to each member.	

ANNEXURE S-3

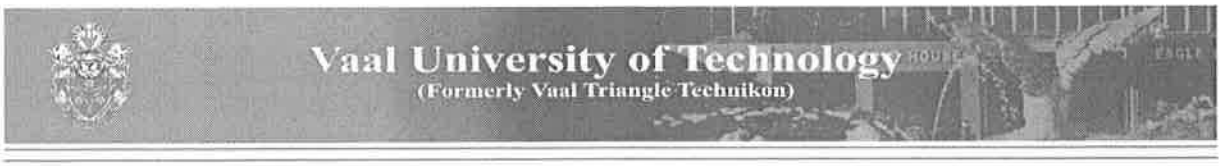


LESSON PLAN: 'FISH, CHICKEN, LEAN MEAT AND EGGS CAN BE EATEN EVERY DAY'

LESSON PLAN: FISH, CHICKEN, LEAN MEAT AND EGGS CAN BE EATEN EVERY DAY

Action	Application	
Gain attention	Put six types of candy bars in a bag and let each participant take one from the bag as they enter. Ask participants to find the others that have the same type of candy bar and let them sit together in groups. This is an easy way to already form groups for the practical activity without disturbing the large group later.	
Present new information	What	Name food items that you know that would be part of this group of foods. Show samples of these items to the group.
	Why important	Why are Chicken, fish, milk, meat and eggs healthy?
	Barriers	These foods are expensive, what should we do?
	Solutions	Can we use some of the food items that we discussed in the previous session to replace meat, fish or chicken? Meat is expensive, so what can we do? Do we need to eat meat every day?
Practical activity	Groups were given samples of various items from this FBDG and had to sort them into those lower and higher in fat.	
Closure	Thanking participants for their attention and participation. Reminding them of the next session. Remind them to bring the booklets again to the next discussion group.	
Refreshments	Baked chicken and rice dish and each participant to receive a recipe card of the baked chicken and rice dish.	

ANNEXURE S-4



LESSON PLAN: 'MILK, MAAS AND YOGHURT CAN BE EATEN EVERY DAY'

LESSON PLAN: MILK, MAAS AND YOGHURT CAN BE EATEN EVERY DAY

Action	Application	
Gain attention (meet and greet activity)	1. Walk forward without bumping into people. 2. High five as many people as you can. 3. Walk in a circle milling around for 30 seconds and shake hands with as many people as you can, saying your name to each. Feel free to make up any new direction that gets people moving and interacting.	
Present new information	What	Name different kinds of milk. Show samples of these items to the group.
	Why important	Do you use/ drink milk? Do we need milk? Why?
	Barriers	Ask those that indicated that they do not drink milk, why they do not.
	Solutions	Ask the group to give advice to those that do not like milk
Practical activity	What to do with empty milk jugs – demonstration $	
Closure	Thanking participants for their attention and participation. Reminding them of the next session.	
Refreshments	Maas, milk and sandwiches.	

Figure 1 Paint holder

PHYSICAL ACTIVITY- MILK and MAAS

Examples to be used in demonstration

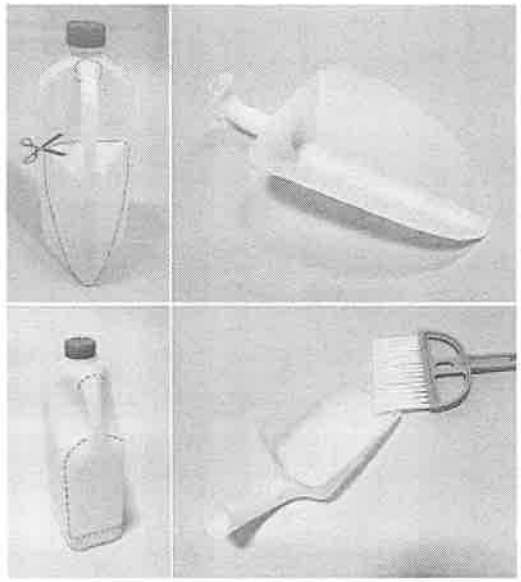
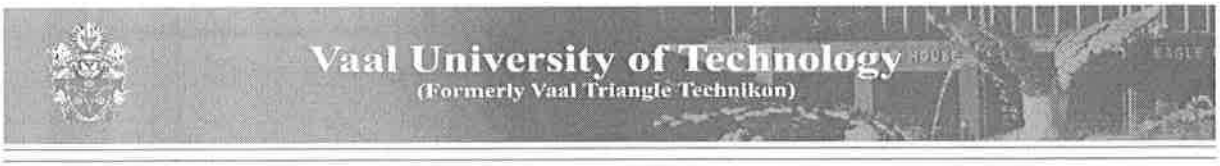


Figure 2 Garden or house tools

Figure 3 child play house

Figure 4 Watering bottle

ANNEXURE T



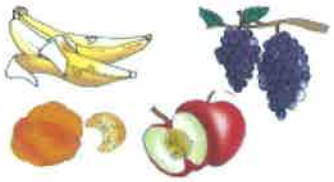
FRIDGE MAGNETS USED IN GROUP DISCUSSIONS (VUT CSL)

Good nutrition strengthens the body's immune system

Wash fruit and vegetables before preparing or eating

Eat meat, fish, poultry and eggs daily to support a healthy immune system

Make fruit and vegetables part of every meal to protect the body against infections



Eat fruit and vegetables raw if possible; cooking destroys vitamins

Buy fruit and vegetables fresh and always store in a cool place

Avoid alcohol as it causes the body to lose vitamins

Wash dishes and kitchen work surfaces with hot soapy water

Prevent cross contamination during food preparation by covering wounds and washing hands regularly

ANNEXURE U

RECIPE CARDS

RECIPE CARDS

Used in discussion group animal protein and plant protein.

Recipe: Savoury baked rice

(serves 4 people)

Ingredients

30ml (2 Tablespoons) sunflower oil
1 onion, chopped
1 green pepper, chopped
1 carrot, cut into small cubes
2 chicken breast fillets, cubed
250ml (1 cup) rice
500ml (2 cups) water
1 packet of Cream of Chicken Soup powder

Method

1. Heat oil. Fry onion, green pepper and carrot. Add chicken cubes and fry until lightly brown.
2. Add the rice, stir fry for 2 minutes, and then add the water and soup powder. Stir together.
3. Tip into a greased 20x20cm baking dish. Top with grated cheese.
4. Bake at 180 degrees Celsius for 30 minutes.

Preparation time: 20 minutes
Cooking time 30 minutes

Recipe: Bean soup

(serves 4 people)

Ingredients

10ml (2 teaspoons) sunflower oil
1 onion, sliced
420g (1 can) baked beans
1 beef stock cube
750ml (3 cups) water, boiling
60ml (4 Tablespoons) Oats

Parsley , chopped (optional

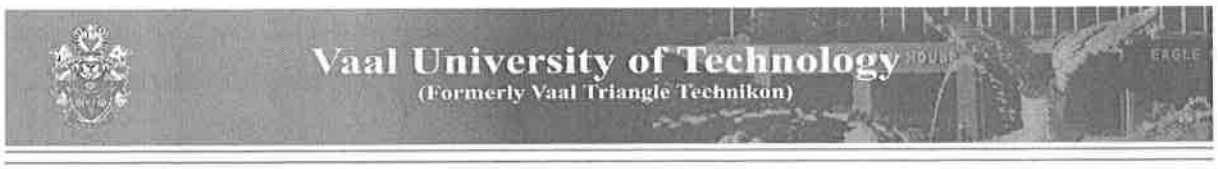
Method

5. Heat oil. Fry onion until lightly brown.
6. Add the baked beans and water. Cook slowly for 5 minutes.
7. Add the oats stir and cook for 10 minutes.
8. Stir and mush the beans with a spoon until it is to your liking.
9. Add the chopped parsley.
10. Serve hot.

Tip: if soup is too thick, water or milk can be added.

Preparation time: 10 minutes
Cooking time 20 minutes

ANNEXURE V



RESEARCH OUTPUT: PUBLISHED ARTICLE

Enjoy a variety of food

2 "Enjoy a variety of foods": as a food-based dietary guideline for South Africa

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Keywords: food-based dietary guidelines, FBDGs, variety, diversity, nutrient adequacy, food security

Abstract

Eating a diverse diet is an internationally accepted recommendation for a healthy diet. The food-based dietary guideline (FBDG) "Enjoy a variety of foods" aims to encourage people to consume mixed meals, to increase variety by eating different foods from various food groups, and to alter food preparation methods. This position paper suggests ways of measuring dietary variety, addresses the consequences of poor dietary variety in South Africa, and provides results pertaining to dietary variety in South African children and adults. The literature reveals that dietary diversity is best calculated by means of different food groups, which are based on the traditional eating patterns of the population under investigation. Ideally, the recall period should be three days. Two national surveys in South Africa have provided data on dietary diversity scores (DDS) in adults and children, of 4.02 and 3.6 respectively. It was shown that in children, DDS positively relates to weight-for-height z-scores, with a z-score above zero being achieved when DDS is > 4. However, an energy-dense diet is cheaper and lower in micronutrients and also positively associated with increased body mass index in women. Hence, dietary variety is essential in improving the micronutrient intake of the diet, and is also important in preventing obesity. Household food insecurity in South Africa remains a constraint on the implementation of this guideline. This FBDG should be used in conjunction with the other South African FBDGs, to ensure the sufficient intake of food that contains protective factors and the limited intake of food that is known to increase the risk of noncommunicable diseases.

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Introduction

The terms, "dietary diversity", "dietary variety", "dietary quality" and "nutrient adequacy" are frequently used to describe the diet of an individual or population. Dietary diversity refers to the number of food groups or foods which are consumed over a specific period. Dietary variety is also commonly used, and is regarded as being synonymous with diversity. Dietary quality generally refers to dietary adequacy, which, in turn, refers to a diet that meets all energy and nutrient requirements.[1,2]

Why variety is important

A healthy diet contains sufficient water, energy, macro-nutrients and micronutrients to meet requirements. When these conditions are sustainably met, the person can be considered to be food secure. This is demonstrated by Figure 1 from Kennedy,[2] based on the United Nations Children's Fund conceptual framework.[3] Household food security ensures an adequate individual dietary intake, which together with health status, influences nutritional status. Household food security itself is influenced by household dietary variety. If this is poor, then food security will be compromised. An individual needs many nutrients for optimal health. Unfortunately, no one food contains all of these nutrients, hence a variety of foods need to be consumed to guarantee the provision of nutrients. Conversely, a diet that is low in variety is likely to be deficient in some nutrients and may result in food insecurity and consequent malnutrition. When people follow a monotonous diet, it is frequently based on starchy food, with few animal products and fruit and vegetables.[4]

A USA study that evaluated the five Food Guide Pyramid (FGP) groups and 22 subgroups showed that dietary variety increased the adequacy of intake of 15 nutrients in adults (4 969 men and 4 800 women) based on 24-hour recall data. After adjusting for energy intake and the number of FGP food group servings, all types of dietary variety were positively associated with mean nutrient adequacy across these 15 nutrients. The strongest associations were for commodity-based variety and for 22 FGP subgroup consumption servings.[5,6] A national study on adults in Belgium (n = 3 245) that used 24-hour recall data also found a positive association between overall dietary diversity and dietary adequacy and balance.[7] Similarly, a study on the elderly in a rural community of Iowa found that dietary variety was positively associated with the intake of a number of nutrients, energy and fibre.[8] Data from the National Food Consumption Survey (NFCS) in South Africa showed that the dietary diversity and food variety of children were positively associated with dietary adequacy, as illustrated by the mean adequacy ratio of the diet.[9]

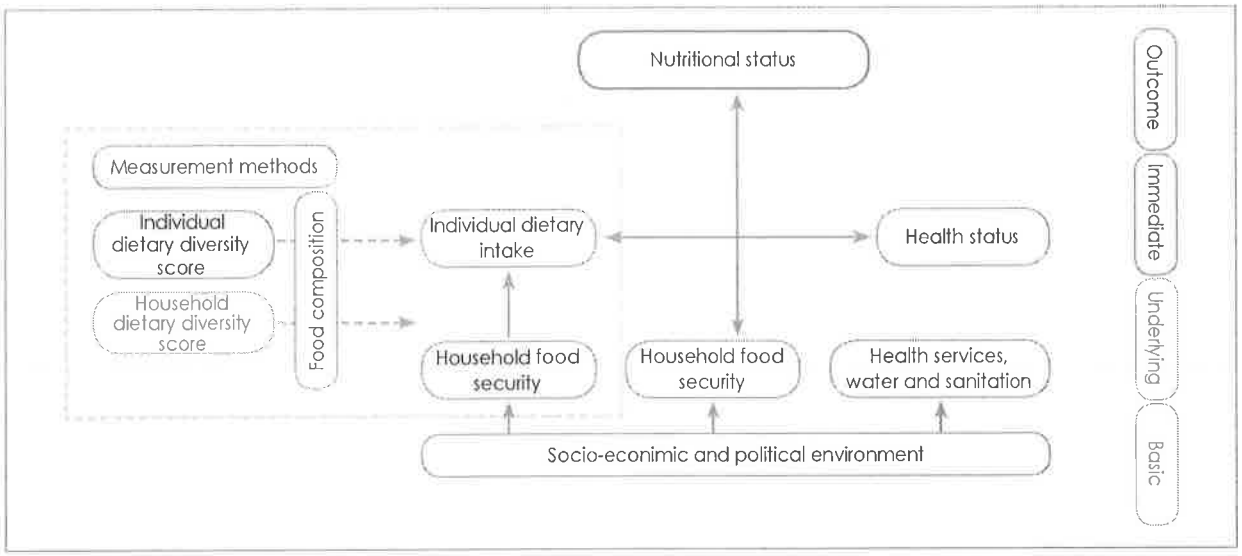


Figure 1: Adaptation of the conceptual framework of the causal model of nutritional status in order to show dietary diversity[4]

Measuring dietary variety

To date, there does not appear to be consensus on the optimal method of measuring dietary variety. Numerous systems have been tested over the years. This has made it difficult to compare studies that have used different systems.

The majority of researchers have used the total of different foods or food groups consumed over recall periods of 1-3 days, although seven days have also been used.[4] Drewnowski et al[10] used data from one 24-hour recall, together with 14 days of food records, to measure dietary variety. Some researchers have used a simple food variety count, which comprises the total of different food items eaten by the group of participants,[11] while others have scored the number of food groups consumed. These have varied between four and 12 groups.[10] Ruel reviewed the operationalisation of dietary diversity and made some important recommendations, namely that food group diversity is a better indicator than a count of individual foods.[4] She suggested that the number and type of food groups selected should be based on the dietary patterns of the specific population group being studied, in terms of age and culture. She further recommended that the recall period should be at least three days, since one day may underestimate the true variability of intake.[4]

Nutrients that are deficient in the South African population

Micronutrient deficiencies are still rife in South Africa, despite concentrated efforts by the Department of Health to curb them. The most serious of these are iron, vitamin A, iodine, folate and zinc deficiencies. The prevalence of iron deficiency anaemia was 28.9% in 2005 in children under five years of age. Iodine deficiency was 19.2%, zinc deficiency 45.3%, and vitamin A deficiency 63.6% in children aged 1-9 years.[12] The prevalence of iron deficiency anaemia was 28.9%, iodine deficiency 26.8%, and vitamin A deficiency 27.2% in adult women.[12] Numerous studies in adult women have shown the prevalence of folate deficiency in pregnant women.[13,14] Despite not having biochemical measurements, the 1999 NFCS showed that numerous additional micronutrients were deficient in the diet of South African children and, by supposition, deficiency may also be found in the diets of adults. This encompasses thiamine, riboflavin, niacin, vitamin B_6, folate, vitamin B_{12}, calcium and vitamin C.[15]

Through the Integrated Nutrition Programme, The Department of Health utilises three strategies to curb micronutrient deficiencies. These are micro-nutrient supplementation, food fortification and dietary diversification.[16,17] The risk of deficiency of the abovementioned micronutrients, with the exception of calcium and vitamin C, is addressed by supplementation and fortification programmes. In terms of micronutrient supplementation, iron supplements are provided to children under five years of age (in the presence of pallor) as part of the Nutrition in the Integrated Management of Childhood Illnesses programme.[17] Pregnant women with a blood haemoglobin level of < 10 mg/dl should take 200 mg ferrous sulphate and 5 mg folic acid per day during the first trimester of pregnancy as a precaution against the development of foetal neural tube defects. Haemoglobin assessment must take place at the first antenatal visit, and again at 28 and 36 weeks.[17]

Great progress has been made with regard to the fortification programme. Fortification of salt with iodine and bread flour and maize meal with vitamin A, thiamine, riboflavin, niacin, pyridoxine, folic acid, iron and zinc is mandatory in South Africa.[17] This has been successful in reducing the prevalence of iodine and folate deficiencies.

Fortification with folate has resulted in a reduction in the incidence of neural tube defects from 1.41 per 1 000 births to 0.98 per 1 000 births.[16] However, the results of

supplementation and fortification with other micronutrients are in need of long-term assessment.

There is a paucity of data on health promotion regarding dietary diversification at health facilities and in communities. South Africa developed and implemented its own food-based dietary guidelines (FBDGs) in May 2003, after extensive testing.[19] The FBDG, "Enjoy a variety of foods" was intended to promote dietary diversity. These guidelines were encapsulated in health promotion materials to be used in nutrition education opportunities linked to nutrition interventions taking place at healthcare facilities. They extended to growth monitoring and promotion, support for breastfeeding and infant feeding, and micronutrient supplementation.

However, the use and promotion of the FBDGs has not been tested in South Africa, and the level of implementation may depend on the degree of interest by the health educator. Fortunately, one of the government's priorities includes improved household food security to address malnutrition. Various government departments support the establishment of vegetable gardens, which contribute to increasing the consumption of micronutrient-rich foods at household and community level. Currently, there are numerous school gardens and more than 1 200 clinic gardens. The Department of Agriculture and Rural Development also supports the establishment of community gardens. However, the extent to which such gardens alleviate micronutrient deficiencies has not yet been evaluated (Moeng L, personal communication, June 8, 2011).

How diverse is the diet of South Africans?

A cross-sectional study, representative of adults (n = 3 287) from all provinces, geographic localities and socio-economic strata in South Africa, was undertaken in 2009 in order to test dietary variety.[20] Trained interviewers visited participants at their homes during the survey, and dietary data were collected by means of an unquantified 24-hour recall. A dietary diversity score (DDS) was calculated based on nine food groups. A DDS of < 4 was regarded as a reflection of poor dietary diversity and hence poor food security, while a score of 9 represented a very varied diet. Each food group was only counted once when calculating the DDS.

The nine groups used were:

1. Cereals, roots and tubers
2. Meat, poultry and fish
3. Dairy
4. Eggs
5. Vitamin A-rich fruit and vegetables
6. Legumes
7. Other fruit
8. Vegetables (other than legumes)
9. Fats and oils.

The results included calculation of the proportion of people who had consumed items from a food group at least once, and showed that, at national level, the mean DDS was 4.02 [confidence interval (95% CI): 3.96-4.07], and that there were significant provincial differences (Figure 2).[20] The four provinces with the highest prevalence of poor dietary diversity (DDS < 4) were the Eastern Cape (59.6%), KwaZulu-Natal (40.8%), North West (44.1%) and Limpopo (61.8%). Differences in DDS according to ethnicity indicated that the black ethnic group had the lowest mean DDS of 3.63 (CI: 3.55-3.71) and constituted the highest percentage (50%) of individuals with a DDS of < 4, which was significantly lower than that of all the other ethnic groups (p-value < 0.05). By contrast, the white ethnic group had the highest mean DDS of 4.96 (CI: 4.82-5.10) and constituted the lowest percentage (9%) of individuals with a DDS < 4 (p-value < 0.05).

A comparison of geographic areas showed that formal urban areas had the highest mean DDS of 4.42 (CI: 4.34-4.50), while tribal areas had the lowest mean score of 3.17 (CI: 3.05-3.29), which was significantly lower than that of any other group (p-value < 0.05). Just over one third of households nationally, and just under two thirds of households in tribal areas, had a DDS < 4. The most commonly consumed food groups, in terms of percentage of people consuming food at least once from each group per day, were cereals and roots, meat and fish, dairy, and vegetables (other than vitamin A-rich vegetables), while eggs, legumes and vitamin A-rich fruit and vegetables were the least consumed.[20]

The results of the preceding national study are similar to those reported by Drimi and McLachlan[21] who, in 2010, estimated that 40% of the South African population was characterised as being deficient (ate from 0-3 food groups), 50% as sufficient (ate from 4-6 groups) and only 10% as food diverse (ate from 7-9 groups).[21] Furthermore, an assessment of dietary diversity in women living in an informal settlement in the Vaal area showed that the mean DDS (out of six groups) was only 3.17 [standard deviation (SD) 1.21].[22] An elderly population in Sharpeville had a mean DDS of 3.41 (SD 1.34).[23]

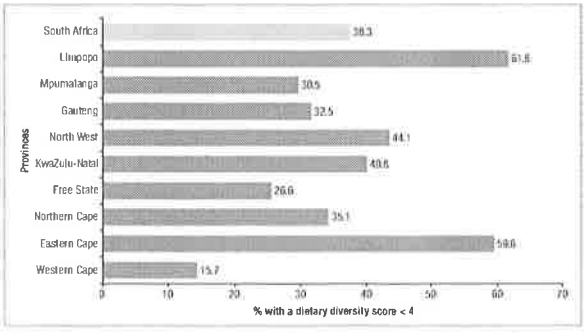
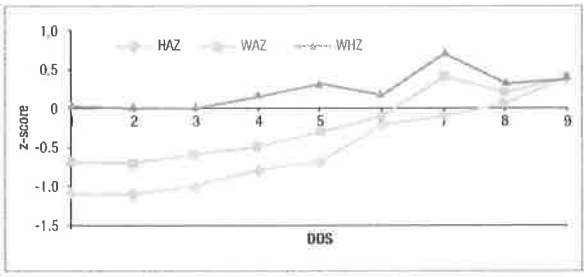


Figure 2: Percentage of population in each province having a dietary diversity score < 4[20]

The dietary diversity of children was also evaluated nationally in South Africa. The calculated DDSs were validated against the anthropometry of the same children.[9] Secondary data analyses were undertaken on the data of 1- to 8.9-year-old children (n = 2 200) studied in the NFCS in 1999. The average food variety score (FVS) (mean number of different food items consumed from all possible items eaten) and DDS (mean number of food groups out of nine possible groups) was calculated. The nutrient adequacy ratio (NAR) is the ratio of a subject's nutrient intake to the estimated average requirement of that nutrient calculated using the Food and Agriculture Organization of the United Nations/World Health Organization (2002) recommended nutrient intakes for children.[9] The mean adequacy ratio (MAR) was calculated as the sum of NARs for all evaluated nutrients, divided by the number of nutrients evaluated, expressed as a percentage. MAR was used as a composite indicator of micronutrient adequacy. The relationship between MAR and DDS, and between anthropometric z-scores and DDS, was evaluated.

The children had a mean FVS of 5.5 (SD 2.5) and a mean DDS of 3.6 (SD 1.4). The mean MAR (ideal is 100%) was 63.3% (SD 19.4), and was lowest (57.3%) (SD 25.2) in the 7- to 8-year-old group. The most frequently consumed items were from the cereal, roots and tuber group (99.6%). Items from the dairy group were consumed by 55.8% of subjects, from the meat group by 54.1%, from the fat group by 38.9%, from the vegetables other than those rich in vitamin A group by 30.8%, from the vitamin A-rich vegetable group by 23.8%, from the other fruit (not vitamin A-rich fruit) group by 22%, from the legumes and nuts group by 19.7%, and from the eggs group by 13.3%. There was a high correlation between MAR and both FVS (r = 0.726, p-value = 0.0001) and DDS (r = 0.657, p-value = 0.0001), indicating that either FVS or DDS could be used as an indicator of the micronutrient adequacy of the diet. Furthermore, MAR, DDS and FVS showed significant correlations with height-for-age and weight-for-age z-scores, indicating a strong relationship between dietary diversity and indicators of child growth. A DDS of 4 and an FVS of 6 were shown to be the best indicators of MAR < 50%, since they provided the best sensitivity and specificity (Figure 3).[9]



DDS: dietary diversity scores, HAZ: height for age, WAZ: weight for age, WHZ: weight for height

Figure 3: The relationship between the anthropometric z-scores of children in the National Food Consumption Survey (1999) and their dietary diversity scores[9]

The cost of a nutrient-dense diet

Energy-dense foods are relatively cheap sources of energy, but typically have low micronutrient density. Therefore, people with a low income may select a relatively less healthy diet because of the cheaper cost. A study based on the French national food consumption study estimated the cost of food consumed by adult participants.[24] Participants in the lowest quartile of energy cost had the highest energy intake (highest energy density) and the lowest daily intake of key micronutrients. On the other hand, those in the highest quartile of energy cost had the lowest energy intake and the highest intake of micronutrients. Micronutrient-dense diets were consequently associated with higher food costs. Lo et al[25] confirmed the fact that a higher DDS, in the range of 0-6, is synonymous with higher food cost. In nutritionally vulnerable elderly Taiwanese, it was found that the food expenditure of those with a DDS of 6 was 2.2 times greater than that of subjects with a DDS < 3 when mean national food prices were used. Similarly, a study that was undertaken in Cape Town found that a healthy diet was approximately 69% more costly than the cheaper, energy-dense one.[26]

A high energy-dense diet is also associated with obesity. This was shown using data from adults in the 1999-2002 National Health and Nutrition Examination Survey (NHANES).[27] Energy density was significantly associated with higher body mass index in women, and with a greater waist circumference in men and women. It was also independently associated with elevated fasting insulin and metabolic syndrome. Hence, a diet low in variety can have numerous consequences over and above deficiency in micronutrients.

Recommendations to overcome barriers to a diversified diet

This FBDG needs to be understood in the context of the other FBDGs, and to be applied with the assistance of appropriate food guides that have been developed for South Africa. Graphic formats to provide a consumer-friendly framework have to be developed, so that consumers can select a variety of foods without necessarily having specific knowledge of nutrients. Dietary diversity can be improved by choosing from a variety of foods within and across food groups that are displayed in a food guide.[28]

Food policies and food aid may push consumption patterns towards a diverse diet. The consumption of a variety of low energy-dense foods (at least 20-30 biologically distinct foods) per week, drawn from all food groups, should be encouraged.[29] A diverse diet can be promoted by utilising healthy traditional foods and dishes within provinces, as well as from cuisine from other provinces and countries. Dishes that are vegetable and legume based should be emphasised. Similarly, healthy modern and functional foods must be promoted as part of a diverse diet.[29] Consumer messages for this FBDG should

contain an explanation as to how to build a healthy meal through diversity, eating foods that give the right amount of energy, limiting the intake of sugars and fats to manage energy and prevent overweight and, when possible, enjoying meals together as a family or with friends.[30]

Unique use of the term "enjoy"

South Africa is one of a few countries that uses the term "enjoy" with regard to eating. This encourages families to share meals and to view meal times as occasions in which to interact and relax, which are all measures of coping with stress.[30] Another country that uses the word "enjoy" is Korea. Its FBDG is: "Enjoy our rice-based diet, and enjoy every meal, and do not skip breakfast".[31] Larson et al found that young adults enjoyed eating meals with others, but many did not find the time to sit down to a meal.[32] Eating dinner with others is associated with better markers of dietary intake.[32] Furthermore, enjoying meals is also associated with improved metabolic effects.[33] Regular eating is associated with a lower energy intake, greater postprandial thermogenesis and lower fasting total and low-density lipoprotein cholesterol levels. Regular eating has beneficial effects on fasting lipid and postprandial insulin profiles and thermogenesis in healthy obese women.[33]

Conclusion

Overall South Africans do not have sufficient variety in their diet. This has been shown by the high prevalence of certain micronutrient deficiencies. Hence, the FBDG "Enjoy a variety of food" is an important one, since it is hoped that it will sensitise and encourage people to select a more diverse diet.

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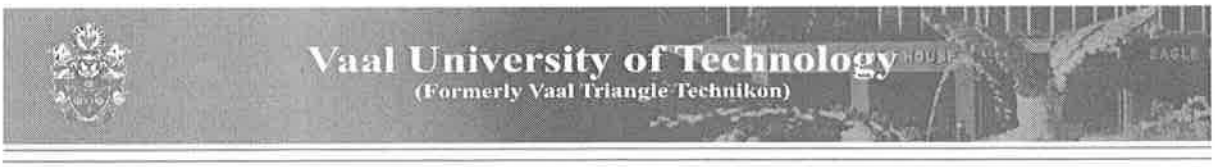
ANNEXURE W



RESEARCH OUTPUT: PUBLISHED ARTICLE

Plant protein

5 "Eat dry beans, split peas, lentils and soya regularly": a food-based dietary guideline

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Abstract

The objective of this paper is to review recent scientific evidence to support the food-based dietary guideline (FBDG): "Eat dry beans, split peas, lentils and soya regularly". In this review, legumes are synonymous with the term "pulses", while soy beans are classified as "oilseeds". The FBDG was originally introduced to address both under- and overnutrition in South Africa. The nutrient and non-nutrient content, results of recent epidemiological and intervention studies on health effects, recommended intakes and barriers to consumption are briefly reviewed. Legumes are rich and economical sources of good-quality protein, slow-release carbohydrates, dietary fibre (non-starch polysaccharides), various vitamins and minerals and non-nutritive components which may have several beneficial health effects. Pulses have a low energy, fat and sodium content. Therefore, legumes contribute to dietary adequacy, while protecting against noncommunicable diseases through many mechanisms. Evidence is presented that concerns about excessive flatulence from eating beans may be exaggerated, and that there is individual variation in response to different bean types. It is recommended that nutritionists should aggressively encourage consumers to consume more legumes. They should also be advised to evaluate different legume varieties to minimise undesirable symptoms. More research is needed to assess gastrointestinal responses between types of available and consumed legumes in South Africa. The FBDG should be tested in different population groups to determine how to maintain legumes as a traditional food. Increasing familiarity with legumes could help to increase the likelihood that they may be incorporated more regularly into the diet.

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Introduction

Legumes are plants with seed pods that split into two halves. These include alfalfa, clover, lupin, green beans, peas, peanuts, soy beans, dry beans, broad beans, chickpeas and lentils. According to the Food and Agriculture Organization of the United Nations,[1] pulses are a type of legume that are exclusively harvested for dry grain. Therefore, they exclude peanuts and soy beans, which are harvested for oil. Pulses are sometimes also referred to as grain legumes or pulse grains. The species *Phaseolus vulgaris* includes kidney, navy, haricot and pinto beans. While soy beans and peanuts are also leguminous plants, they differ from other legumes by having a much higher fat content, as well as from an agricultural perspective. Traditionally, they are seen as oilseed crops. Green beans and peas are also legumes, but are considered to be vegetable crops in agricultural terms.

Therefore, the legume family includes:

- Vegetable crops
- Oilseeds
- Sow crops (clover and alfalfa) and pulses (dry beans, split peas, chickpeas and lentils).[1]

Because the term "legume" was not well understood when the South African food-based dietary guidelines (FBDGs) were tested before publication in 2001, the formulated FBDG was "Eat dry beans, peas, lentils and soy regularly".[2] In this paper "legumes" refers to pulses and soy beans. The terms "soy" and "soy beans" are usually used in scientific literature, but consumers may be more familiar with "soya".

Background

This FBDG was introduced to improve the overall health of South Africans, as a result of the nutrient and non-nutrient content, to prevent malnutrition (including protein and micronutrient deficiencies), and noncommunicable lifestyle-related diseases (NCDs).[2] Pulses are economical sources of good-quality protein, and are rich in dietary fibre, generally low in fat and virtually free of saturated fatty acids. Soy beans provide significant levels of mono- and polyunsaturated fatty acids, including α-linolenic acid. Substituting dry beans, peas and lentils for food that is high in saturated fat or refined carbohydrates may lower the risk of type 2 diabetes and cardiovascular disease,[3,4] obesity[5] and cancer,[6-8] which are major NCDs in South Africa.[9] Dry beans elicit a low glycaemic response relative

to other high carbohydrate-containing foods, because of their high fibre and high resistant starch content. This may be a contributing factor in the prevention or treatment of these health problems.[10] It has been proposed that several non-nutritive phytochemicals, such as phytates, saponins, isoflavones and oligosaccharides, may also have a role to play in cancer prevention.[11]

Darmadi-Blackberry et al[12] reported, in a longitudinal study of older people from different cultures, that every 20 g increase in daily legume intake reduced the risk of death by 8%, concluding that higher legume intake is the most protective dietary predictor of longevity. The results from the Greek European Prospective Investigation into Cancer and Nutrition (EPIC) study, which found that the Mediterranean diet was associated with 14% lower mortality and that high legume consumption contributed to almost 10% of the protective effect, support this relationship.[13] Finally, a comparison of nutrient and food group intake of dry bean and pea consumers in the 1999-2002 National Health and Nutritional Examination Survey (NHANES) showed that daily consumption of half a cup of beans or peas resulted in higher intakes of fibre, protein, folate, zinc, iron and magnesium, with lower intakes of saturated fat and total fat, therefore improving diet quality.[14] All these results support an FBDG for legume intake for South Africans.

The aim of this paper is to motivate for the FBDG by summarising recent research results on the health effects of legumes and comparing figures for intakes by South Africans and other populations, with recommendations from health organisations, as well as speculating on general reasons for non-compliance with recommended legume intakes.

Nutrient profile of legumes

Some of the major nutrients provided by cooked legumes are shown in Table I.[15] The protein content of most beans (uncooked) averages 20-25% according to weight, whereas the protein content of soy beans is approximately 36% according to weight.[15] In general, legumes provide adequate amounts of lysine and isoleucine, but some are deficient in sulphur-containing amino acids (methionine and cystine) and others in tryptophan (cowpeas and lentils).[16] Grains such as maize and wheat contain limited amounts of lysine and a combination of legumes and maize, the staple food of many South Africans,[9] improves the protein quality of their diet.[16] With regard to some soy protein products, the protein digestibility-corrected amino acid score, adopted by the World Health Organization and the US Food and Drug Administration to evaluate protein quality, is close to 1. This is the same score as that of casein and egg protein.[17]

The fat content of dried beans averages only 1% according to weight, with unsaturated fatty acids predominating.[15] Soy beans are richer sources of fat (~18-20% according to weight) and contain saturated, monounsaturated and polyunsaturated fatty acids; 15%, 23% and 58% of total fat, respectively.[15] The polyunsaturated fatty acids in soy beans are linoleic acid (18:2 n-6, 51% of total fat) and α-linolenic acid (18:3 n-3, 7%).[18] Although soy foods are relatively high in fat, they may still be lower in total fat than the foods that they frequently replace, such as meat and cheese. However, soy foods are lower in saturated fat and, as with all plant foods, contain no cholesterol.

Dry beans consist of approximately 70% carbohydrate. Starch (43-45%), non-starch polysaccharides or fibre (16 - 20%), α-galactosides [also known as oligosaccharides (stachyose, verbascose and raffinose) 3-5%] and sucrose (3-5%) are the major types of carbohydrate. Beans are an excellent source of fibre, as can be seen in Table I. Bean and soy fibre is roughly one third soluble and two thirds insoluble. Soy fibre measurably lowers the postprandial increase in serum glucose concentrations, but has only a modest effect on serum cholesterol concentrations.[19] Many soy foods, such as soy beans, soy nuts, soy flour, textured soy protein and tempeh, are rich in fibre. However, isolated soy protein does not include dietary fibre.[19]

Table I: Nutrient composition of sugar beans, chick peas, lentils and soy beans, expressed per 100 g cooked weight[15]

Nutrient	Sugar beans	Chick peas	Lentils	Soy beans
Total fat (g)	0.5	2.6	0.2	9.0
Saturated fat (g)	0.08	0.27	-	1.30
Monounsaturated fat (g)	0.06	0.58	-	1.98
Polyunsaturated fat (g)	0.41	1.16	-	5.06
Protein (g)	7.1	8.9	8.6	16.6
Carbohydrate (g)	19.5	20.8	13.7	4.8
Calcium (mg)	8.2	6.6	7.0	5.1
Magnesium (mg)	32	49	27	102
Potassium (mg)	55	48	27	86
Iron (mg)	368	291	270	515
Zinc (mg)	2.1	2.9	2.3	5.1
Thiamine (mg)	1.06	1.53	-	1.15
Niacin (mg)	0.12	0.12	0.08	0.16
Folate (µg)	0.04	0.06	0.07	0.29

Dry beans and soy beans are low in sodium, but are excellent sources of minerals, including calcium, copper, iron, magnesium, phosphorus, potassium and zinc.[15] The content and bioavailability in dry beans and soy foods varies according to the processing methods and phytate content.[20]

Dry beans and soy beans are good sources of water-soluble vitamins, especially thiamine, riboflavin, niacin and folate, but poor sources of fat-soluble vitamins and vitamin C.[15] In terms of meeting the dietary reference intakes[21] for adults, a one-cup serving of cooked dry beans can provide 44% of the recommended folate, 33% of thiamine, 14-16% of vitamin B_6, 8-10% of niacin and 14-16% of riboflavin.

Non-nutrient profile of legumes

Legumes contain a number of compounds that have potential health benefits, as well as some that can reduce the bioavailability of nutrients. These compounds include saponins, phytic acid, plant sterols, phenolic compounds, enzyme inhibitors and lectins. Isoflavones are nutritionally relevant only in soy beans.[22]

Saponins

Saponins in legumes are poorly absorbed by humans.[23] Saponins are surfactants and were initially thought to be harmful because of their strong haemolytic activity in vitro. However, Hassan et al[24] recently reported that there is no haemolytic activity from soy bean saponin-rich extracts in the concentrations that were investigated. Saponins may have anti-cancer properties, as discussed by Gurfinkel and Rao[25] and Kerwin.[26]

Phytic acid

Phytic acid (myoinositol hexaphosphate) is the main storage form of phosphorous in dry beans. Different forms of phytic acid exist, depending on the pH and metal ions present. Phytate is the calcium salt and phytin is the calcium-magnesium salt.[27] The amount of phytic acid in legumes varies between 0.4% and 2.06%. The consumption of food that is high in phytate influences zinc, calcium and iron bioavailability by forming insoluble mineral phytate complexes in the intestine. These effects are of concern for vegetarians and in developing countries, where cereal and grain products are consumed in large quantities.[28] However, phytate has antioxidant effects and may lower the risk of colon cancer.[22]

Phytosterols

Beta-sitosterol, campesterol and stigmasterol are the most common types of phytosterols in beans. Plant sterols are structurally similar to cholesterol, but the absorption of phytosterols is low relative to cholesterol (20-50%). Only approximately 5% of phytosterols are absorbed, and the remainder is excreted from the colon.[29,30] Bean sterols reduce plasma cholesterol in humans, possibly because of a reduction in cholesterol solubilisation into bile salt micelles, resulting in a reduction of cholesterol absorption.[30] Phytosterols may also have anticarcinogenic effects.[31]

Phenolic compounds

Various phenolic compounds are present in beans, especially ferulic acid, quercitin and kaemphenol. Although polyphenolics are generally poorly absorbed, beneficial effects have been found in humans after consumption of plant phenolics.[22]

Enzyme inhibitors and lectins

Alpha-mylase inhibitors are present in a variety of plants, but are particularly high in common beans. Cooking destroys most, if not all, the α-amylase inhibitor activity.[32] Proper cooking methods (preferably moist heat) also eliminate lectin activity. Lectins are large glycoprotein molecules that bind to glycoconjugates on cell membranes, leading to agglutination of red blood cells in vitro.[22] The lectin, by virtue of its ability to bind to glycoprotein receptors on the epithelial cells lining the intestinal mucosa, inhibits growth by interfering with the absorption of nutrients.[22]

In the past, trypsin and chemotrypsin (protease) inhibitors in legumes were considered to be antinutritional, because of observations that feeding animals raw beans caused growth suppression and stimulated pancreatic hypertrophy.[22] However, commonly employed cooking methods reduce trypsin inhibitor activity in beans by 80-95%. Based on animal studies, only 55-69% of the trypsin inhibitor activity must be destroyed to reduce pancreatic hypertrophy in susceptible animals.[33] Protease inhibitors, especially those that inhibit chymotrypsin (Bowman-Birk inhibitor), have been investigated in several model systems for their ability to suppress carcinogenesis.[34]

Isoflavones

Isoflavones are another group of phytochemicals in beans, but the soy bean is the only nutritionally relevant source of these compounds. The primary isoflavones in soy beans are genistein and diadzein, and their respective β-glycosides, genistin and diadzin. Smaller amounts of glycitein and its glycoside glycitin are present.[35] The isoflavones, which are strikingly similar in chemical structure to mammalian oestrogens, can bind to both α and β isoforms of oestrogen receptors (ERs). However, their binding affinity to ERβ is approximately 20 times higher than that of ERα.[36] ERα and ERβ have opposite effects on regulating gene expression and physiological functions. For example, oestrogenic compounds stimulate the proliferation of human breast cancer cells through binding with ERα, but suppress proliferation via ERβ.[37] Soy

isoflavones have potent antioxidant properties[37] and are now being extracted and sold as supplements.

Public health problems addressed by the FBDG

From the discussion of the nutrient content of legumes, it is clear that their contribution of protein and micronutrients will help to address undernutrition. But the total composition of legumes also makes them an ideal food group to include in diets that aim to reduce the risk of chronic NCDs.

Atherosclerotic cardiovascular disease

Epidemiological studies have reported that legume consumption is significantly and inversely associated with cardiovascular disease risk.[3,38,39] In the NHANES 1 epidemiological follow-up study,[40] legume consumption of four times or more per week, compared to less than once a week, was associated with a 22% lower risk.

In the Japan Collaborative Cohort (JACC) study, the highest bean intake (4.5 servings a week) was associated with a 16% reduction in total cardiovascular disease risk and a 10% reduction in total mortality.[41] A meta-analysis of 23 trials, using soy isoflavones, revealed a low-density lipoprotein (LDL) cholesterol-lowering effect of 5%, independent of baseline cholesterol levels.[42] A more recent meta-analysis of 30 studies that contained 42 treatment arms (n = 2 913), with an average soy protein intake of 26.9 g in adults with normal or mild hypercholesterolaemia, resulted in lowering total and LDL cholesterol, equivalent to a 6% LDL reduction.[43]

Soy isoflavone extract supplements[44] and lupin kernel-enriched bread[45] also reduce systolic blood pressure. According to Jenkins et al,[46] the extrinsic potential of soy (e.g. displacing foods higher in saturated fat and cholesterol) and the intrinsic potential effect of soy in reducing LDL cholesterol are 3.6-6% and 4.3%, respectively. Therefore, the combined intrinsic and extrinsic effects of soy protein foods range from 7.9-10.3%. Anderson and Major[47] reported the results of a meta-analysis of 11 clinical intervention trials involving legumes other than soy beans. They found an overall 6.2% lowering of LDL cholesterol and a 22% lowering of triglycerides. Bazzano et al[48] also concluded that non-soy legume consumption has a significant beneficial effect on serum cholesterol levels. Despite the fact that, up to 2008, a food labelling health claim for soy proteins has been approved in nine countries, including South Africa,[49] since 1999, an assessment of 22 randomised trials by the Nutrition Committee of the American Heart Association, showed a slightly decreased LDL cholesterol (3%), but no effect on HDL cholesterol, triglycerides, lipoprotein(a) or blood pressure.[50] Therefore, some inconsistencies in the lipid-lowering functions of soy, especially the magnitude of the effects, still prevail. The contributing factors to these discrepancies are not fully understood, but the source of soy beans and processing procedures of the protein or isoflavones are believed to be important.[49]

In 2010, the Food Regulatory Issues Division of Agriculture and Agri-Food Canada commissioned a systematic literature review to assess the strength of evidence of a relationship between the consumption of pulses and cardiovascular disease.[51] A highly consistent effect on LDL cholesterol and total cholesterol was found, as well as a low consistency of effect on high-density lipoprotein (HDL) cholesterol and triglycerides. A moderate-strength association was reported, with changes in total cholesterol, and a low-strength association with other investigated parameters, including LDL cholesterol, HDL cholesterol, triglycerides, homocysteine and blood pressure.[51]

The proposed mechanisms for LDL cholesterol reduction by beans and soy beans have been reviewed by several authors.[3,38,52]The hypocholesterolaemic effects appear to relate, in estimated order of importance, to soluble dietary fibre, vegetable protein (amino acid composition or protein subunits or composite peptides), oligosaccharides, isoflavones, phospholipids, fatty acids and saponins. Furthermore, soy-based diets may have antioxidant and anti-inflammatory functions which contribute to the prevention of atherosclerosis.[39] The antioxidant properties of the polyphenol flavonoids have to be taken into consideration in cardiovascular health promotion. Small red beans, red kidney beans and pinto beans are in the United States Department of Agriculture (USDA) list of top antioxidant foods.[53]

Martin et al[54] reviewed the mechanisms of action and potential clinical applications of soy isoflavones in hypertension. Soy isoflavones relax vascular smooth muscle via a combination of mechanisms, including the potentiation of endothelial-dependent and endothelial-independent vasodilator systems and the inhibition of constrictor mechanisms.

Type 2 diabetes mellitus and blood glucose control

There is strong evidence to suggest that eating a variety of whole grain foods and legumes is beneficial in the prevention and management of diabetes.[55] However, most epidemiological studies do not separate the effect of wholegrain foods and legumes sufficiently, possibly because of the relatively low intake of leguminous foods in the studied populations. Legumes share several qualities with wholegrains, with the potential benefit of glycaemic control, including slow-release carbohydrate and high-fibre content. For example, the glycaemic index of kidney beans does not exceed 27 (glucose is 100), and those of

lentils and chickpeas, 28 and 33, respectively.[56] Legumes alone lower haemoglobin A_{1c} or fructosamine.[57] Finally, the Shanghai Women's Health study revealed significant inverse associations between legume intake and the incidence of type 2 diabetes. The relative risk associated with soy beans alone was 0.53, and with other non-soy legumes, 0.76.[58]

Generally, lifestyle interventions which combine diet and increased physical activity, leading to weight loss, reduce the risk of diabetes in subjects with impaired glucose tolerance. It seems as if weight loss is a major driving force in reducing the incidence of diabetes. However, in the randomised controlled studies of Salas-Salvado et al,[59,60] diabetes incidence reduced by 52% in the absence of significant changes in body weight or physical activity. Based on the evidence from several prospective observational studies and randomised trials, these authors concluded that a diet that might prevent diabetes in healthy subjects, and contribute to glycaemic control in patients with established disease, should contain abundant fibre from wholegrain foods and fruits and vegetables, including pulses and nuts.

Obesity

Compared with glycaemia and dyslipidaemia, the anti-obesity effects of pulse grains are scarce. However, epidemiological studies have consistently found a relationship between pulse consumption and reduced risk of obesity.[61] A recent review[5] presented evidence that indicated reduced hunger and increased satiety two to four hours after pulse consumption. These authors also presented results from observational studies on pulse consumption and weight status, which consistently showed that individuals with lower body mass index consumed a greater amount of pulses as part of their usual diet. Marinangeli and Jones suggest[62] that pulse-derived fibres, trypsin inhibitors and lectins may reduce food intake by inducing satiety via prolonging cholecystokinin secretion, and that arginine and glutamine (major components of pulse proteins) may produce thermogenic effects. It has further been reported that the protein component of yellow peas suppresses short-term food intake and glycaemia.[63] Results of these studies should be interpreted with caution, because pulse consumption may be part of an overall healthy lifestyle.

Cancer

Although legumes are rich in a number of compounds that could potentially reduce the risk of certain cancers, according to the panel of experts of the World Cancer Research Fund and American Institute for Cancer Research, the results of epidemiological studies are too inconsistent to draw any firm conclusions on legume intake and cancer risk in general.[6] However, fibre-containing foods were considered to be probable in reducing the risk of cancer in the colon and rectum, and since legumes are rich in fibre, it can be inferred that eating beans would probably reduce the risk of developing colon and rectal cancer. Data that link the consumption of legumes to a reduction of stomach and prostate cancer were considered to be limited, but suggestive. However, recent meta-analyses of epidemiological investigations suggest that soy consumption is associated with a reduction in prostate,[7] breast[64,65] and colorectal cancer risk in women, but not in men.[66] The expert panel did not include animal studies.[6] The Bean Institute[34] presents results from epidemiological investigations, as well as experimental studies, in animal models, to substantiate its opinion that eating beans may reduce cancer of the colon, prostate and breast, and possibly pancreas and oesophagus.

Actual legume intake compared to recommendations

Few health-related organisations make specific recommendations for legumes. The USDA MyPyramid includes legumes in the vegetable and "meat and beans" groups,[67] while the National Heart, Lung and Blood Institute's (NHLBI) Dietary Approaches to Stop Hypertension (DASH) eating plan,[68] Harvard's Healthy Eating Pyramid,[69] and Canada's Food Guide,[70] include legumes with the "meat and beans" groups. Downs and Willows[71] concluded that the grouping of animal products with legumes, nuts and seeds into a single category in Canada's Food Guide is a shortcoming. The Australian FBDGs classify legumes in the vegetables and fruit group, recommending five vegetable and legume servings per day, as well as two servings of fruit.[72] However, legumes and nuts are also included in the lean meat, poultry, fish and egg group.[72] Recently, the American Heart Association recommended at least four servings of nuts, legumes and seeds per week.[73]

Quantitative recommendations for legumes for 8 400-kJ diets are 50 g according to the NHLBI's DASH eating plan,[68] and 81 g one to three times per day according to the Harvard Healthy Eating Pyramid.[69] The USDA's MyPyramid[67] regards 60 ml of cooked, dry beans as the equivalent of 30 g of meat, poultry or fish, while the Australian FBDGs regard a serving of 120 ml of cooked beans to be the equivalent of one serving from the animal sources.[72]

Data from the most recent Spanish Food Consumption Survey showed that the consumption of legumes and pulses was 11.9 g per person per day.[74] Compared with respondents in Central England, those from a French Mediterranean region consumed beans and pulses significantly less frequently (48.8% once a week in the

French region versus 71.5% in the English region).[75] Compliance with the FBDGs of the Spanish Society of Community Nutrition revealed that 63% of the Catalan population did not meet the recommendation for pulses of 2-4 servings per week.[76] Data from the 1999-2000 NHANES showed that on any given day, only 7.9% of adult Americans consumed dry beans and peas[77] in quantities of 0.1-0.3 servings of legumes per day, which is one third or less than what is recommended.[77]

An investigation into food diversity in South Africa showed that legumes were one of the groups least consumed. The percentage of South Africans consuming legumes daily was reported to be 15.23%.[9] An average daily per capita pulse consumption of 35.66 g was estimated from secondary dietary data analyses.[78] The intake of nuts and oilseeds was reported separately (1.93 g per day). Therefore, the total legume intake, when adding oilseeds, was approximately 37 g per day.

In the Prospective Urban Rural Epidemiology (PURE) study, the daily intake of pulses was found to be 15.54 g for men and 12.36 g for women in the North West province, while consumption of soy bean products was 20.51 g and 21.40 g for men and women respectively (Wentzel-Viljoen, unpublished data). Furthermore, the mean daily intake of mixed dishes with beans, e.g. bean soup, was 22.81 g and 27.88 g for men and women, respectively. When adding the mean soy intake to the mean pulse intake, the average daily per capita consumption of legumes was approximately 34.91 g, excluding the mixed dishes with beans (Wentzel-Viljoen, unpublished data). This figure compares well with the estimated 37 g from secondary data analyses from previous South African studies,[78] suggesting that the legume intake of South Africans has remained constant over the past decade.

More recently, in a cross-sectional study on the diversity of the diet of the adult South African population, Labadarios et al[79] reported that 18% of all adults consumed legumes and nuts, and more in KwaZulu-Natal and the Eastern Cape than in Limpopo, where only 8% consumed legumes. More women than men, more tribal (23%) than urban formal (16%) respondents, more respondents in the older-age category than younger-age category, and more low living standards measure (LSM) (24%) than high LSM (15%) groups consumed legumes,[79] which is not surprising, given the low cost of pulse foods relative to animal protein sources.

The Food Habits in Later Life (FHILL) cohort study[12] identified the following mean daily intakes of legumes (pulses and soy) between 1988 and 1991: Japanese 85 ± 68 g, Swedes 21 ± 18 g, Anglo-Celts in Australia 14 ± 19 g, Greeks in Australia 86 ± 58 g and Greeks in Greece 63 ± 47 g.[12] The legume food group showed a 7-8% reduction in mortality hazard ratio for every 20 g increase in daily intake.[12] Much lower median legume intakes of 9.13 g (5.75-13.32) by Greek men and 6.66 g (3.62-10.52) by Greek women were observed in the Greek EPIC prospective cohort study between 1994 and 1997,[13] which may suggest that legume consumption is decreasing in Greece. Trends are very different from one country to another, as are traditional habits in terms of type of pulses consumed.[80] The USDA recommended that the amount of legume consumption[81] for most adults aged 19 years and older is three cups per week, with the exception of women aged 51 years and older, for whom the recommendation is 2.5 cups per week.[81] However, the weighted average legume intake in the USA, based on available studies up to 2009, was ~ 0.15 cups per day (36 ml).

Implementing the FBDG

Barriers to increased legume intake

Barriers to eating plant foods were investigated in an Australian study.[82] Taste, variety and environmental benefits were considered to be important. Main barriers included lack of knowledge and skills (not knowing how to prepare legumes), length of preparation time (soaking and cooking), flatulence, and lack of availability when eating out at work or in restaurant. Canned legumes were not considered to taste as good as dry legumes that are prepared at home.[82]

Flatulence

Most individuals can incorporate legumes into their diet, particularly if doing so is carried out gradually in order to lessen the discomfort of flatulence caused by the fermentation of the prebiotic oligosaccharides in the colon to short-chain fatty acids and gas.[83] This side-effect usually subsides when the beans become a regular part of the diet. Variety breeding and processing provide some opportunities to reduce α-galactosides, the major factor involved in flatulence, but the results of research have not yet provided sufficient satisfactory data.[83] Soaking cowpeas and yam beans for 12 hours and cooking for 30 minutes degrades malabsorbed oligosaccharides.[84] Furthermore, a recent randomised, double-blind, placebo-controlled, crossover study demonstrated that consumption of 100 g dry-weight Kabuli chickpeas, green Laird lentils and green peas for 28 consecutive days, compared with a potato control, were well tolerated, with negligible perceived changes in flatulence.[85] Windham and Hutchins[86] investigated the perception of increased flatulence in participants who consumed a half a cup of beans daily for eight weeks in randomised, controlled, crossover trials, with canned carrots as the control. Less than 50% reported increased flatulence from eating pinto or baked beans during the first week of each trial,

but only 19% had a flatulence increase with black-eyed peas. A small percentage reported increased flatulence across these studies, even on control diets. The authors concluded that people's concerns about excessive flatulence from eating beans may be exaggerated, and that there is individual variation in response to different bean types.[88] Additionally, commercial products such as Beano® (AkPharma, Pleasontville, New Jersey), a digestive aid that contains α-galactosidase, are available so that individuals can eat beans without discomfort. However, the beneficial effects associated with oligosaccharide consumption are then diminished.

Unfamiliarity

Another barrier to legume consumption may be unfamiliarity with regard to the health promotion aspects. Simply increasing familiarity with legumes could help to increase the likelihood that they may be incorporated into a diet more regularly.

Long cooking time

Raw dried beans, peas and soy must be soaked and cooked for hours, resulting in expensive fuel consumption. Solutions to these preparation barriers are to use tinned products or the haybox principle. Lentils can be cooked for a shorter period than the bean varieties.

Soy milk allergy and concerns about isoflavones (oestrogens)

Although all food proteins have the potential to be allergenic for some people, eight foods have been identified as the most frequent human food allergens and account for ~ 90% of food allergies. These foods include soy, according to the Food and Agricultural Organization of the United Nations.[87] However, soy has a long history of successful use in managing cow's milk allergies in infants. Halpern et al[88] compared allergy in cow's milk protein-based formula-fed infants with soy allergy in soy protein-based formula-fed infants, and reported that food allergy was reduced 3.6-fold with soy. A meta-analysis of allergen reactivity patterns in high-risk infants showed soy allergy occurring in 3-4% of subjects versus 25% in those consuming cow's milk.[89] Cordle[90] indicated that soy proteins tend to be less immunologically reactive than many other food proteins. Furthermore, according to the American Academy of Pediatrics,[91] there is no convincing evidence that the use of soy products in infant feeding has any effect on the development of atopic disease. In response to the concern about oestrogens in soy milk and the safety thereof in children, Willet[92] pointed out that regular cow's milk contains many hormones, including oestrogens, and because the long-term effects of these hormones are not yet known, moderation in the diet of children is recommended (one to two glasses of soy milk a day).

Practical applications of dry beans and soy beans

In an Australian study, the benefits perceived by participants were that dry beans and soy beans were tasty and could be stored for long periods of time. They also found canned legumes to be convenient.[82] If the benefits of change outweighed the barriers, it is mostly likely that behavioural change would occur. Taste and visual appeal should be stressed when promoting them, rather than predominantly focusing on health. A strong practical emphasis is required. In-store cooking demonstrations and recipe cards may be useful.[82] A soy recipe book with instructions for various interesting soy dishes for South Africans has been developed by researchers at the Centre of Sustainable Livelihoods at the Vaal University of Technology.[93]

A guide to using dry beans and soy foods in practical ways is provided by Anderson et al.[94] Most consumers will be able to find ways of incorporating legumes into their daily diets. The heath advantages far outweigh the slight inconvenience involved in changing shopping habits and eating patterns.

Sustainability of pulse supply

Unlike in South Africa, dry beans are a staple in many countries around the world. However, the fact that meat and other protein products have become comparatively expensive has resulted in greater market opportunities for pulse production in sub-Saharan Africa. According to Akibode,[95] the global demand for legumes is expected to grow by 10% by 2020 and 23% by 2030, with a higher expected growth rate in sub-Saharan Africa. In South Africa, three types of beans are mainly produced, namely red speckled beans, which are most popular for preparation at home, small white canning beans and large white kidney beans.[96] The domestic consumption of dry beans in South Africa, which is approximately 2.5 kg per head or 105 000-110 000 tons per annum in total, far exceeds the domestic production of between 42 000 and 92 000 tonnes.[96] Beans are imported from China mainly, at an average of 75 000 tonnes per annum, to meet the ever-increasing demand for dry beans. South Africa exports approximately 25 000 tons of dry beans annually to neighbouring African countries. According to the Dry Bean Producers Organisation, there is great potential to expand plantings in South Africa.[96]

Trytsman et al[97] and the Dry Beans Producers Organisation[96] confirm the considerable diversity of legumes that are indigenous to South Africa. The *Phaseoleae* tribe is well presented, with 22 genera and 180 species.[97] The diverse growth forms and distribution patterns are useful in selecting and breeding legumes for specific agricultural applications.[97]

Conclusion and recommendations

This paper presents strong scientific evidence that demonstrates the nutritional value of legumes, and supports the positive effect of eating legumes to prevent and manage NCDs. Legumes are a valuable source of lysine-rich protein, complementing maize as the staple food of most South Africans. Drewnowski[98] recently reported that beans are among the top five classes of food that have the highest micronutrient to price ratio. Legumes have a particularly low glycaemic index. Benefits include that they are affordable and can easily be stored over a long period. Furthermore, legumes may be the solution to current consumer concerns about personal health, food quality and safety, and environmentally friendly crop production.

It is recommended that dietary interventions for disease prevention, as well as educational programmes for the general public, should specifically target legume consumption. Simply increasing familiarity with legumes could help to increase the likelihood that they may be incorporated into a diet more regularly. Lentils can be cooked more rapidly, offer considerable possibilities for cooking a range of dishes, and do not have the military image of canned beans in tomato sauce. Nutrient claims should be used on product labels for pulses and pulse-containing foods to promote them as a source of vitamins, minerals and fibre, as well as advance the knowledge that they are low in fat, and particularly in saturated and trans fat.

Influencing eating behaviour requires more than addressing nutrition knowledge and perceptions about healthy eating. Utilising social marketing and the media to change social norms, as well as upstream strategies by means of public policies and regulatory measures (e.g. the use of legumes in school feeding) are required. Further research is needed to determine existing patterns of legume consumption in South Africans, the sustainability of effects over the long term, the minimum effective intake, beneficial constituents and the effects of different legumes.

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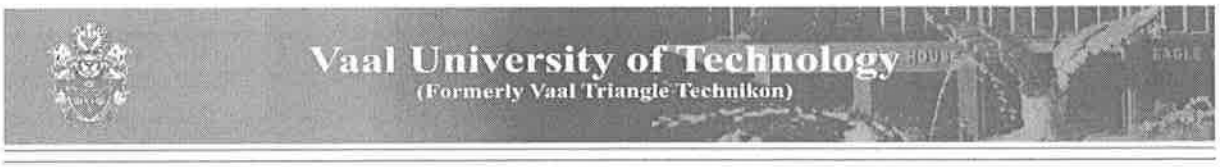
ANNEXURE X



RECORD OF QUALITATIVE NOTES

RECORD OF QUALITATIVE NOTES (Field notes)

Boipatong Session: "Enjoy a variety of food"

1. **Sorting a selection of food items into different groups according to the three FBDGs: "Make starchy foods the basis of most meals" "Dried beans, peas, lentils and soya should be eaten regularly" "Chicken, fish, meat and eggs could be eaten daily" and "Milk"**

Field notes:

As an introduction to the session, the FBDGs already discussed (Make starchy foods the basis of most meals, pilot study; Eat dry beans, peas, lentils and soya regularly; Chicken fish meat and egg could be eaten daily; milk and milk products) was listed on a flip chart by the facilitator with input from the participants. The importance of vegetables and fruit was briefly discussed and the FBDG added to the list.

The following food items were placed at random on a table in front of the women's group:

Three volunteers were requested to group the food items on display into food groups as indicated on the flip chart with input from the rest of the participants.

Observations:

2. **Groups utilising models developed for composing a plate of food from different food groups**

Plate 1:		**Plate 3:**	
Proteins	Dried beans & peas	Proteins	Boiled egg
Starch	Potatoes	Starch	Sweet Potato
Vegetable	Spinach	Vegetable	Cabbage
Vegetable/Fruit	Pear	Vegetable/Fruit	Grapes
Milk & milk products	Milk	Milk & milk products	Cheese
Fats	Oil	Fats	Margarine
Plate 2:		**Plate 4:**	
Proteins	Chicken	Proteins	Chicken
Starch	Rice	Starch	Rice
Vegetable	Spinach	Vegetable	Spinach
Vegetable/Fruit	Apple	Vegetable/Fruit	Pear
Milk & milk products	Cheese	Milk & milk products	Milk
Fats	Oil	Fats	Oil

Field notes:

Three volunteers of per group (4 groups) were asked to build the plate to represent intake of various types of food utilising the 'plate puzzles' developed at the ISL, VUT .

The four groups easily comprehended the importance of eating a variety of food. They were able to complete the puzzle within five minutes. The colour coding assisted in fitting the pieces of the puzzle correctly.

Two groups showed some insight into selecting food that could form an attractive and palatable plate of food (plate 2 & 4). These two groups only differed in their selection of a fruit (plate 2 an apple and plate 4, a pear) and the milk item (plate 2 cheese and plate 4, milk). The other two groups identified food groups correctly but did not pay attention to the larger picture of a meal, e.g. grouping dried beans, peas and potatoes together, or boiled egg combined with sweet potato.

Although the FBDG Eat vegetables and fruit regularly were not discussed, it was noticeable that all four groups selected a vegetable *and* a fruit. None selected two vegetables. It seems as if the participants did not know that two vegetables could compensate for a fruit.

Attention should be given to meal planning within the FBDG "Enjoy a variety of food."

3. Tool: The Plate Puzzle

This nutrition educational tool was developed by the ISL, VUT. When assessing the tool during planning the discussion for this session, it was felt that it could aid this study as well to convey the message "Enjoy a variety of food" in a practical way to the women upon completion of the discussion of this FBDG. The UK's visual food guide is based on the concept of a plate model (Stetyn & Temple, p 343). South Africa is currently in the process of designing its first visual food guide (Minutes Workgroup.....).

Plate puzzle consists of the following pieces:

Plate divided into proteins, milk & milk products, vegetables, vegetables or fruit, carbohydrates (starch), fats. The items included in each group are as follow:

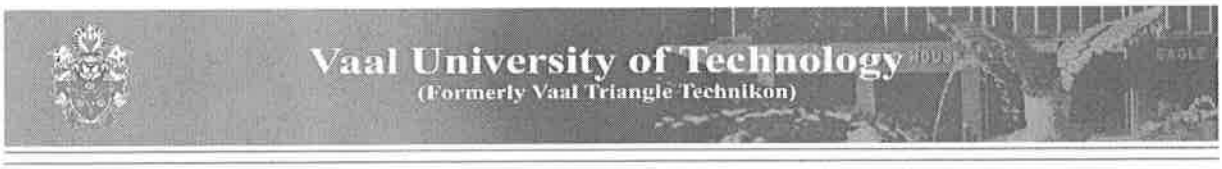
Carbohydrates (starches) Cereal/ porridge Bread Potatoes Sweet potatoes Rice Pasta	Proteins Fish & tinned fish Chicken Egg Legumes Red meat /chop Peanut butter	Milk & milk products Milk Maas Yoghurt Cheese
Vegetables Spinach Tomatoes Cabbage	Vegetables or fruit Pumpkin Beetroot Carrots Apple Orange Pear Banana Grapes Mango Pawpaw	Fats Oils Margarine Mayonnaise Avocado

In favour of the ISL plate puzzle is the inclusion of a milk group, in addition to the protein /meat group, in line with current thinking of the Working group, revising current South African FBDGs.

Although this exercise was not testing the plate model, some recommendations towards adapting the plate puzzle for utilising in conjunction with FBDGs are made:

1. FBDG messages could be printed on the plate instead of food group.
2. The word 'proteins' refers to nutrients and not foods. Some nutritionists would argue that peanuts and peanut butter should be included under the fat group.
3. According to the Working group on FDGBs, cheese should be moved to the protein group, as its fat content is nearer to that of meat. This is still under debate.
4. Although in terms of nutrients (energy & carbohydrate) the vegetables and vegetables/ fruit group is correct, for community nutrition these two groups could be merged to promote the overall consumption of the FBDG vegetables and fruit.
5. Legumes could be classified separately as a group.

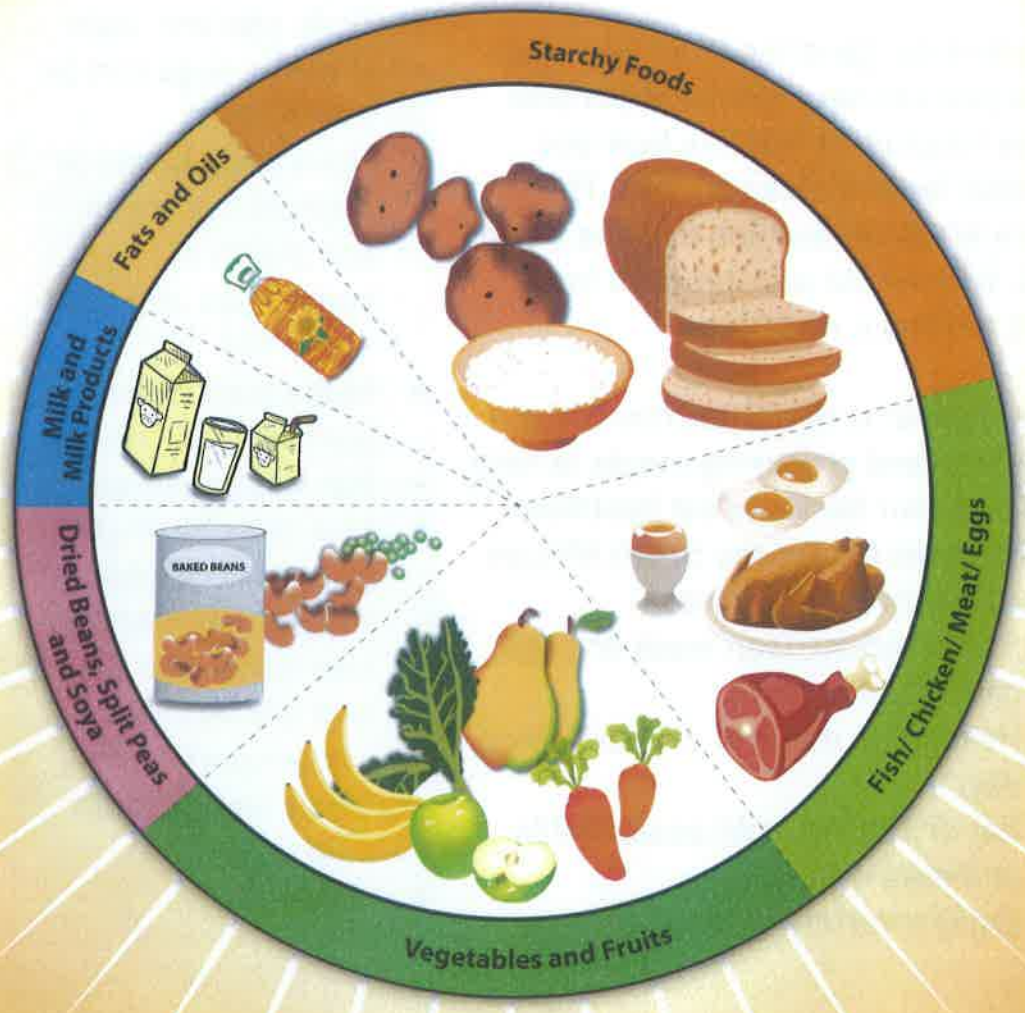
ANNEXURE Y



NEW BOOKLET (ENGLISH VERSION)

A Healthy Variety

Enjoy healthy food



A Healthy Variety

Enjoy healthy food

Why this booklet?

This booklet provides healthy eating guidelines for you and your family. Mostly, you eat food because you like it. You can enjoy food and at the same time eat healthily.

There is no 'good food' or 'bad food.' How you eat need not be expensive to be healthy. It matters how you choose food to make a meal. The more kinds of food you eat, the better it is. You should also prepare food well to keep it nutritious.

This booklet is to tell you more about choosing and preparing meals to help you and your family to eat healthily. It discusses four of the South African healthy eating guidelines:

- Fish, chicken, lean meat or eggs can be eaten daily
- Have milk, maas or yoghurt every day
- Eat dry beans, split peas, lentils and soya regularly
- Enjoy a variety of food

South African Food-Based Dietary Guidelines (2012)

- Enjoy a variety of food
- Eat dry beans, split peas, lentils and soya regularly
- Fish, chicken, lean meat or eggs can be eaten daily
- Have milk, maas or yoghurt every day
  Eat plenty of vegetables and fruit every day
- Make starchy foods part of most meals
- Eat fats sparingly
- Use salt sparingly; choose vegetable oils rather than hard fats
- Use sugar and foods and drinks high in sugar sparingly
- Drink lots of clean, safe water
- Be active

You will learn how to make good choices to avoid illnesses such as overweight, high blood pressure, blood vessel and heart diseases, Diabetes Mellitus (high blood sugar), and some cancers.

Feeding the family

Granny, you can help the whole family to eat well. The caregiver is a very important person in the household. As you grow older and wiser, you are also trusted for looking after the family and the children in the family.

Healthy food affects a child's ability to grow and learn. But every child needs more than food. They need love and care for the brain and the body to grow well. The child must be looked after in a safe and caring household from being a small baby until they are young adults.

Very often the mother and father have to go to work each day. The smaller children are left in your care. The family depends on you to take good care of the children. School children, who had nothing to eat before they go to school, do not learn and remember well.

You can share your knowledge with you family members by asking them to help you complete the exercises included in the booklet. You can also use this booklet to teach the children more about food when they colour in the pictures at the back of this booklet.

Enjoy!

Fish, chicken lean meat or eggs can be eaten daily

Fish, chicken, lean meat, and eggs are good sources of many nutrients. Unlike the starchy foods that come from grains, they all come from animals.

Must we eat fish, chicken, lean meat or eggs daily?

No, you don't have to. If you can afford it, you may eat these every day.

Red meat (beef, mutton, and goat) and especially organ meats all have animal fat and cholesterol in them. These fats may block your blood vessels. This can lead to a heart attack or stroke. Therefore you should only eat small amounts of these foods.

Also included in this group of foods are pork, game, chicken giblets and feet (run-aways) and fresh and tinned fish (for example sardines), which are lower in fat.

What the words mean

Healthy
To be well and free from sickness

Protein
An important substance in food that builds your body

Cholesterol
A type of fat that is not healthy for your heart and blood vessels

Animal fats
The hard fats found in animals and in eggs. They are less healthy than vegetable oils

Minerals
Nutrients which your body need to work properly

Vitamins
Nutrients that are found in foods that protect your body

It is important to eat small portions, such as a chicken thigh or a fish fillet. You can also eat dry beans, peas, lentils or soya instead of meat.

Why are fish, chicken lean meat and eggs needed by the body?

These include protein and minerals to build and repair your muscles, bones, teeth and your blood. They are also necessary for your children to grow strong and for pregnant and breastfeeding women.

Meat and eggs contain a mineral called iron and vitamin B12. Iron protects your body against tiredness and certain illnesses. Organ meats such as liver and kidneys contain the most iron.

Important to remember

Eating too much red meat is not healthy. You should enjoy small portions about the size of your hand's palm. Cut off all the visible fat from meat before cooking. Don't eat this fat.

Always eat chicken, fish, meat and eggs with other food. So add starchy foods and lots of vegetables. It is important to eat a variety of foods.

Keep vienna's, polonies, sausages and frankfurters for special occasions. They have lots of fat and salt, which are not healthy.

Some of these foods are expensive - what should you do?

- You need not eat these food every day
- Buy and eat small amounts of these foods
- Choose cheaper, lean cuts of meat with little bone to use in stews. Cut off all the fat that you can see
- Eat about three to four eggs per week to replace red meat or chicken
- Meat can also be replaced with dry beans, split peas, lentils or soya

- Tripe, intestines and organ meat is usually cheaper and you can eat small portions of this instead of meat
- Tinned fish is also healthy and is cheaper than fresh fish.

Some advice

- Cook lean meat or chicken at home. It is cheaper and healthier than a take away.
- Try to prepare chicken, fish and meat without frying. Rather boil, stew, grill or braai.
- Eggs can be hard boiled, scrambled, or poached instead of fried.
- You can make small portions of lean meat go further in stews and minced meat dishes by adding extra vegetables, dry beans, split peas, lentils or soya, pasta or noodles.
- You should try to eat fish at least twice per week. Fish has a good type of fat that protects the body against heart disease.
- The bones from fish (sardines and pilchards), build our bodies and teeth. They contain calcium which builds bones.

Handling of fish, chicken and lean meat

Take fish chicken or meat out of the freezer a day before you want to cook it. Place it in the refrigerator to defrost. Never keep it at room temperature or put it in the sun to soften.

Cooking of chicken, fish and meat changes the way it looks, how it tastes and makes it softer. Cooking also kills germs that might be in the raw flesh. Use herbs and spices to flavour these foods.

Never hold these foods, raw or cooked, at room temperature. It spoils easily. Store it in the refrigerator. If you do not have a refrigerator, cook smaller amounts and use it all immediately.

RECIPE

Savoury baked rice

(serves 4 people)

Ingredients

30ml (2 Tablespoons) sunflower oil
1 onion, chopped
1 green pepper, chopped
1 carrot, cut into small cubes
2 chicken breast fillets, cubed
250ml (1 cup) rice
500ml (2 cups) water
1 packet of Cream of Chicken Soup powder

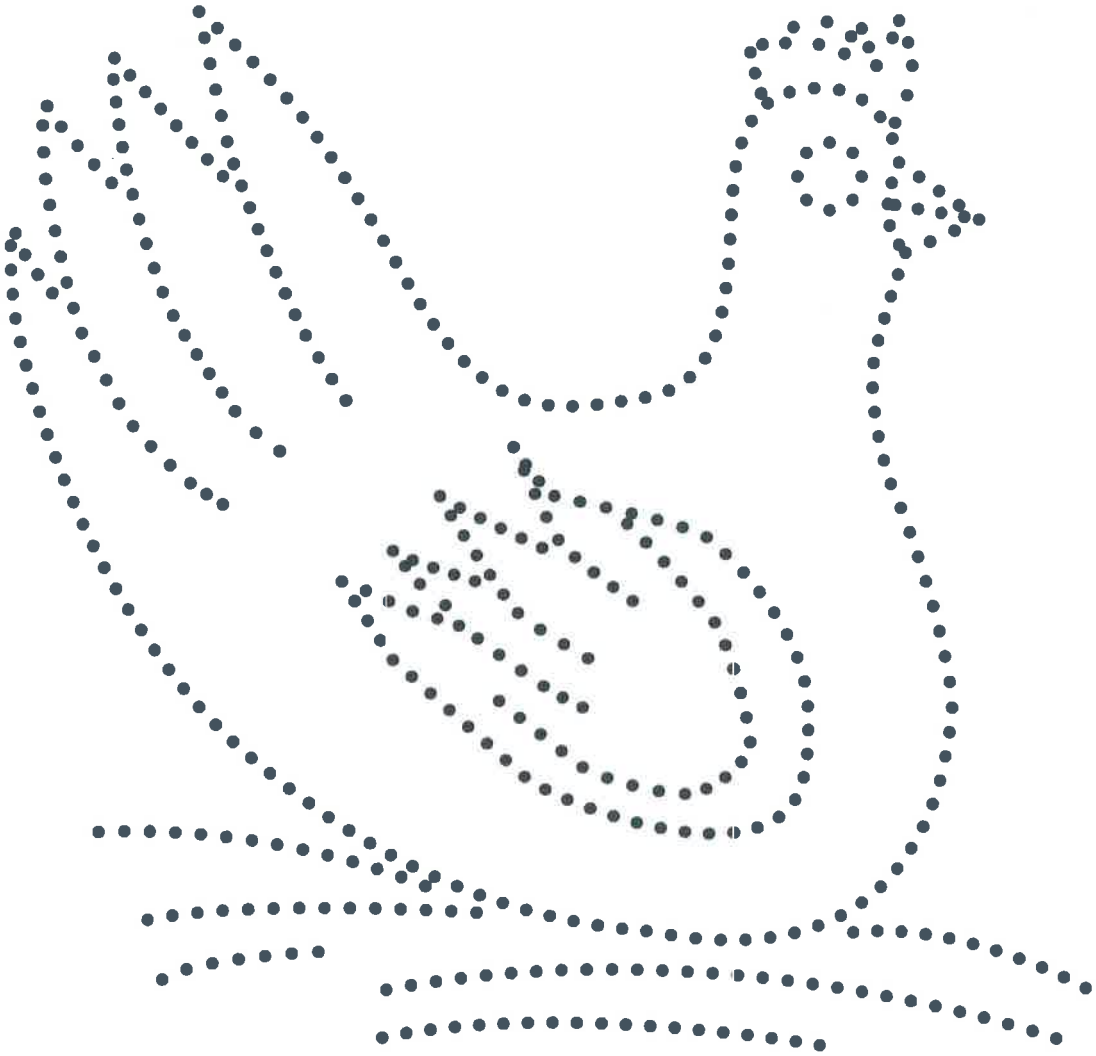
Method

1. Heat oil. Fry onion, green pepper and carrot. Add chicken cubes and fry until lightly brown.
2. Add the rice, stir fry for 2 minutes, and then add the water and soup powder. Stir together.
3. Tip into a greased 20x20cm baking dish. Top with grated cheese.
4. Bake at 180 degrees Celsius for 30 minutes.

Preparation time: 20 minutes
Cooking time 30 minutes

Join the dots to complete the picture

Ask the children in your household to help you.



TRADITIONAL RECIPE

Intestine, tripe and lungs

(serves 4 people)

Ingredients

500g ox intestines,
500g lungs
500g tripe
500ml (2c) water
1 medium onion, sliced
10 ml (2 teaspoons) curry powder
5 ml (1 teaspoon) salt
15 ml (3 teaspoons) vinegar

Method

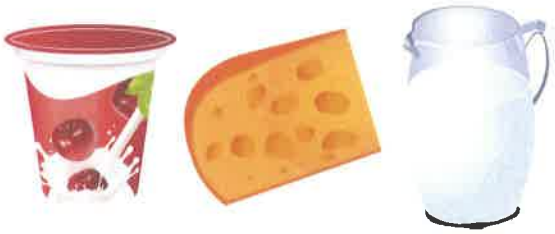
1. Wash meat thoroughly and cook in water until tender.
2. Leave to cool and cut meat into small pieces.
3. Add other ingredients to meat and water and cook for about 15 minutes
4. Serve hot.

Preparation time: 20 minutes
Cooking time 90 minutes

How much do you know?

- Why are fish, chicken, lean meat, and eggs good for your health?
- Which of these foods do you eat and how often?
- Why is lean meat healthier than meat with fat?
- What do the words 'can be eaten daily' mean to you?
- Which other foods do you eat with fish, chicken, lean meat or eggs?

Have milk, maas or yoghurt every day



The foods in this group of foods are important sources of protein, vitamins and minerals. They are rich in calcium. Milk, maas and yoghurt are sometimes referred to as dairy products. Varieties of milk such as full cream milk, low fat milk (2% fat), fat free milk, goat's milk and full cream and skimmed milk powder are included..

Cheese contains some animal fats, less healthy to your heart. Some products look like milk powder, but they are not made from milk. Examples include tea and coffee creamers and milk blends. They contain a type of fat that is not good for your body. Look for the Real Dairy sign.

Milk is not just for kids

Milk and milk products contain calcium which builds bones for children when they are growing up. Pregnant and breastfeeding women must also drink more milk.

What the words mean

Protein
An important substance in food that builds your body

Minerals
Nutrients which your body need to work properly

Calcium
A mineral that your body uses to build bone and teeth. Calcium is found in milk and the soft bones of fish

Vitamins
Nutrients that are found in foods that protect your body

They keep your bones strong and protect you from broken bones and broken hips later in life.

Milk helps guard your body against high blood pressure. High blood pressure is not good for your health. It might lead to getting a stroke. Use fat free milk if you are overweight or have a cholesterol problem.

Your body need vitamin D to use Calcium well. Oils and eggs have vitamin D, but your body also makes vitamin D from sunlight. Try to be in the sun for about 15minutes each day.

How much milk is enough?

Many South Africans do not drink enough milk. Some people do not like milk and others choose not to drink it because of cultural reasons.

You need about 2 cups (500ml) of milk per day to drink, or to use in your tea and coffee or with porridge or to use in cooking.

Fresh milk should be kept in the fridge, but milk powder can be kept for a long time outside the fridge. Only mix water and milk powder to use for one day in the household.

Some people may experience an upset stomach or bloating when using milk. If you do not stomach fresh milk well, you can buy soya milk in the shops. Be on the lookout for Calcium-fortified soya milk.

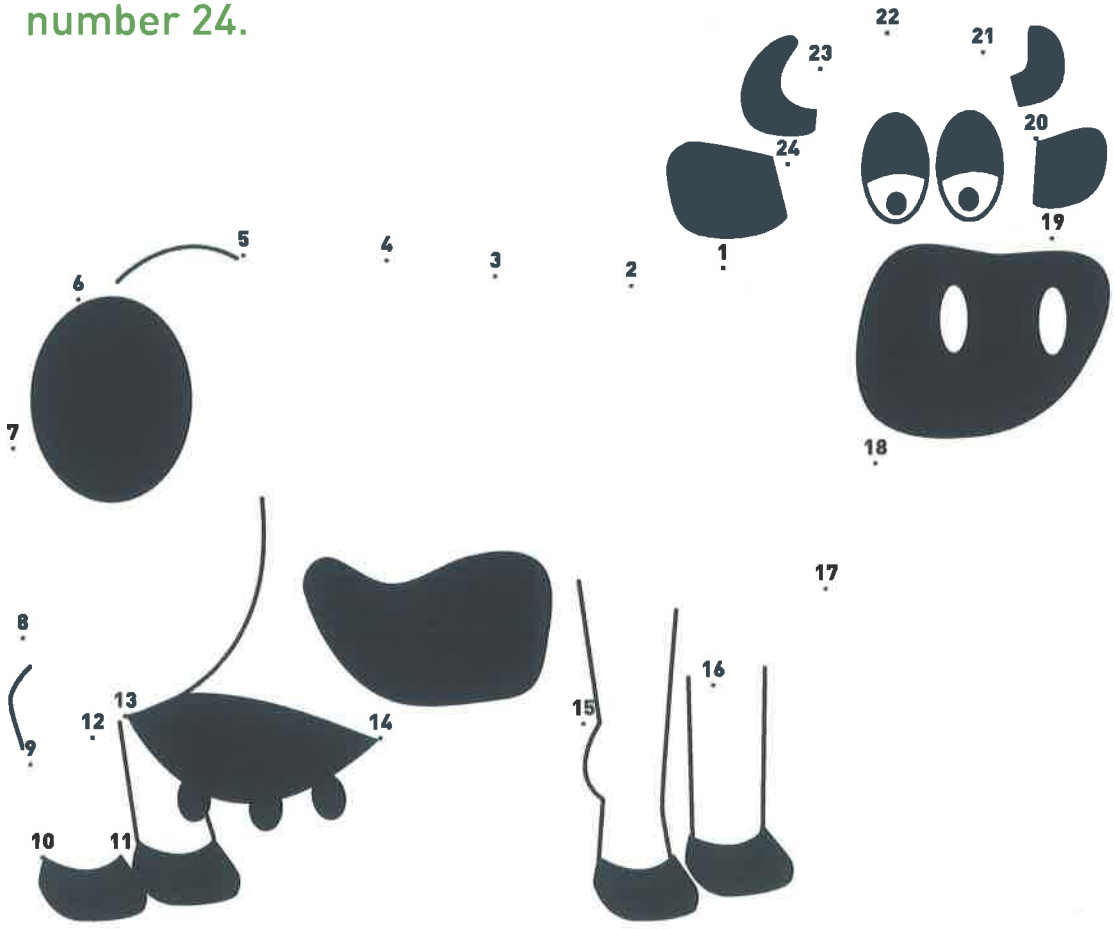
Some advice for you as caregiver

If your child or grandchild does not like milk, you can still look after their health by including milk in their food without them seeing or tasting milk:

- Children love custard, which is made of milk.

- You can make milk jelly as a treat. Halve the water and fill it up with milk
- Milk can be added to soup or porridge. (Replace water with milk)
- Treat them to milo or hot chocolate or yoghurt as a snack.
- Make a white or cheese sauce to serve with fish or vegetables or used grated cheese on top.
- Use milk or yoghurt or maas as a healthy snack between meals.

Ask your family to help you complete the picture. Connect the numbers with a line from number 1 to number 24.



What do you see in the picture?

What two types of food do we enjoy from what you see in the picture? Why are they important?

RECIPE

Pumpkin with Mealie Meal

(serves 4-6 people)

Ingredients

500ml (2cups) pumpkin, cubed
125 ml (1/2c) mealie meal
25 ml (2Tablespoons) margarine
250ml (1c) milk

Method

1. Cook all the ingredients, except mealie meal for 20 minutes
2. Add mealie meal and mix well.
3. Cook slowly for 15 minutes, stirring occasionally.
4. Serve hot.

Preparation time: 15 minutes
Cooking time 35 minutes

How much do you know?

- Why should you drink milk?
- Why is milk so important for children?
- Which other foods do you eat with milk?

It is important to have your blood pressure taken regularly at the clinic.

Answers to: Cow; we get red meat and milk from a cow; meat is important to build muscles and be strong and healthy; milk is important to build strong bones and teeth.

Eat dry beans, split peas, lentils and soya regularly

Eat healthy – live longer

As caregivers and parents we know how important it is that we, our children and families should enjoy a variety of foods in healthy meals. This is to make sure that your body gets everything you need. Dry beans, split peas, lentils and soya are healthy foods. They come from plants and are good sources of plant protein and soluble fibre.

This group of foods include dried beans, baked beans, butter beans, split peas or chick peas, dried or tinned lentils. Soya products that you can buy at most shops include soya mince, frozen soya burgers and soya sausages. Soya makes a hearty meal, low in cost. Soya can be used as meat or added to meat.

What the words mean

Dry beans and peas
Beans and peas are allowed to dry in their pods before collecting them from the land.

Protein
An important substance in food that builds your body

Fibre / Roughage / Soluble Fibre
This type of fibre holds water, binds with bile salts and cholesterol which is good

Minerals
Nutrients which your body need to work properly

Vitamins
Nutrients that are found in foods that protect our bodies

Fortified
In South Africa, all maize meal and white and brown bread flour (and bread baked with this flour) are fortified. This means that even more nutrients are added to them.

You get green, red and yellow lentils. Lentils are popular in every Indian home. It is usually eaten with cooked rice.

Lentils and split peas can also be used in soups and stews. You should eat these foods with other foods such as unrefined (coarse) or fortified starchy foods and vegetables.

When beans, peas and lentils are used fresh, they are used as vegetables.

What is good about dry beans, split peas, lentils and soya?

- They contain fibre which is very good for your heart and blood vessels.
- If you are overweight and want to lose weight they make you feel full.
- They are good for people with Diabetes Mellitus (high blood sugar).
- They contain very little fat and salt, which is healthy for you.
- We can eat them instead of meat and still be healthy.
- We can use them to make your meat go further.

What does eating regularly mean?

Regularly means you can eat it every day, but you should eat at least one cup three times a week. Eat them on the days that you don't eat meat.

If you never eat fish, meat, eggs or milk, you should try to eat dry beans split peas or lentils or soya every day.

Don't dry beans or split peas or lentils or soya give gas?

Yes, they do, especially if you are not used to eating them. If you never eat these foods, don't start them every day straight away. First

eat them once a week, then twice a week and then three times a week. The gas will then stop. Your body gets used to these dry foods.

Dry beans need soaking before cooking

Put the beans in a large pot and cover with fresh water. Water should be three to four times the amount of beans. Soak the beans overnight.

When starting to cook, don't add salt. It will only make the beans dry. Bring water to the boil and then turn down the heat to simmer the beans slowly. If they cook too fast the skins will break.

Leave the beans for one or two hours until they are soft. Only add a little salt when the beans are soft. Split peas, lentils and black-eyed beans can be cooked straight from the packet.

Dry beans, peas and lentils should be cooked very well before eating. Once cooked, beans can be kept in a covered container in the refrigerator for up to five (5) days. If you don't have a refrigerator, don't keep them longer than one (1) day.

Some Advice:

To save on electricity or fuel when cooking dry beans, peas and lentils, use a hay box.

Make your own hay box
Take a big cardboard box and fill it with balls of newspaper. After the beans have cooked for 30 minutes, take the pot and lid from the stove, wrap in a thick towel and place in the hay box.

Pack balls of newspaper around and on top of the pot. You can also use cushions or blankets instead of just newspaper. Leave the pot in the box for about four hours.

Tinned beans, peas and lentils don't need time to prepare and is healthy.

To cook dried soya mince: Add ½ cup of soya mince to 1½ cup boiling water. (Read the label on the packet). Boil slowly for 10 minutes while stirring all the time. Serve with samp or stiff porridge and vegetables.

Dry beans, split peas, lentils and soya can be very tasty to eat.

- Eat beans with chakalaka or with samp or other unrefined starchy foods.
- Darker beans like dry red kidney beans, speckled sugar beans match red meat, while white haricot or sugar beans match chicken and fish in recipes.
- Use soya mince and dry beans to make mince stews go further. One cup of dry beans will become three cups after cooking.
- Include beans, peas, lentils and soya in soups, pasta or rice dishes.
- Beans absorb the flavour of spices and herbs, making them 'cool' and tasty to eat.
- Try beans or lentils in a salad. Mix different kinds of beans to make a bean salad. Add a little sunflower oil.
- They are much cheaper than meat, and can be store for a long time
- Tinned beans save time and electricity.

Ask your family to help you to complete the Word Hunter

Mandla is thinking about some words linked to this group of foods. Find the words he is thinking about in the table.

H	E	A	L	T	H	Y
E	K	B	M	A	R	Z
A	P	E	A	S	C	E
R	U	A	N	T	O	V
T	W	N	A	Y	I	O
P	G	S	O	Y	A	J
L	E	N	T	I	L	S

RECIPE

Bean and fish cakes

(serves 4-6 people)

Ingredients

1 tin (410g) brown beans
1 tin (410g) pilchards
125 ml (½ cup) cake flour
1 small onion, grated
1 egg, beaten
Salt and pepper to taste
10 ml (2 tablespoon) parsley, chopped
15ml (teaspoons) Worcestershire sauce
2 to 3 tablespoons of sunflower oil for frying

Method

1. Mash the beans and the pilchards.
2. Mix the beans and pilchards with the flour.
3. Mix the rest of the ingredients into the bean mixture. Form flat fish cakes.
4. Fry in heated oil until golden brown and done.Drain fish cakes on brown paper.

Serve together with starchy foods and vegetables

Preparation time: 10 minutes
Cooking time 15 minutes

RECIPE

Bean soup

(serves 4-6 people)

Ingredients

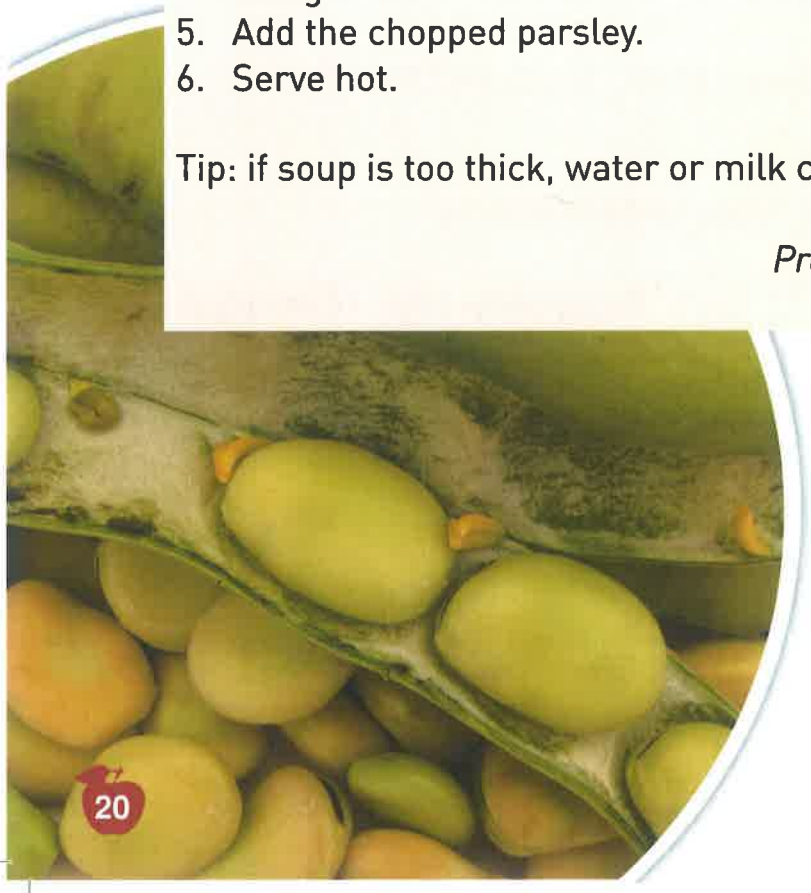
10ml (2 teaspoons) sunflower oil
1 onion, sliced
420g (1 can) baked beans
1 beef stock cube
750ml (3 cups) water, boiling
60ml (4 Tablespoons) Oats
Parsley , chopped (optional)

Method

1. Heat oil. Fry onion until lightly brown.
2. Add the baked beans and water. Cook slowly for 5 minutes
3. Add the oats stir and cook for 10 minutes.
4. Stir and mush the beans with a spoon until it is to your liking.
5. Add the chopped parsley.
6. Serve hot.

Tip: if soup is too thick, water or milk can be added.

Preparation time: 10 minutes
Cooking time 20 minutes



RECIPE

Butter Bean stew

(serves 4-6 people)

Ingredients

500ml (2 cups) butter beans (dry)
1 ½ onion, sliced
1 green pepper
15 ml (1Tablespoon) Curry powder
2 Tomatoes
500ml (2 cups) water
1 Mutton stock cube

Method

1. Soak butter beans overnight in water
2. Boil in clean water for 1 hour and drain
3. Heat oil in a pan. Fry onion until soft and light brown.
4. Add curry. Cook slowly for 2 minutes
5. Add beans and rest of the ingredients.
6. Cook slowly for 30 minutes.
7. Serve hot.

Preparation time: 10 minutes
Cooking time 20 minutes

How much do you know?

- How often do you and your family eat dry beans, split peas, lentils or soya?
- Which other foods do you eat with dry beans, split peas, lentils or soya?
- What does 'eating regularly' mean to you?
- What do you think the message of this pamphlet is?

Answer to Word Hunter:

H	E	A	L	T	H	Y
E	K	B	M	A	R	Z
A	P	E	A	S	C	E
R	U	A	N	T	O	V
T	W	N	A	Y	I	O
P	G	S	O	Y	A	J
L	E	N	T	I	L	S

Lentils

Soy beans

Split peas

Dry beans

Enjoy a variety of foods

Eating healthy today, keeps the doctor away

You should try to include different foods into your meals daily. A plate of food with different foods combined in a meal is called a mixed meal. An example of a mixed meal is maize meal porridge (pap), chicken, pumpkin and spinach. Therefore we should include into our meals food from the South African Food-Based Dietary Guidelines:

- 'Make starchy foods part of most meals'
- 'Eat dry beans, split peas, lentils and soya regularly'
- 'Fish, chicken, lean meat and egg can be eaten daily'
- 'Have milk, maas or yoghurt every day'

What does it mean to enjoy a variety of foods?

It means to eat more than one type of food. No food contains all the

What the words mean

Healthy
To be well and free from illness

Variety
Different, several kinds of food

Fortified foods
Foods that are strengthened with vitamins and minerals

Minerals
Nutrients which our bodies need to work properly

Vitamins
Nutrients that are found in foods that protect our bodies

nutrients that your body needs. If you eat one type of food every day, your body will not get all the nutrients that it needs to stay healthy. Children need a variety of foods to grow.

You should also have regular meals. It is very important for smaller children to have three meals with something in between meals. For example carrot sticks (carrot cut into thin strips) to chew on, or a cup of milk.

When you eat healthily you

- Will be able to do your work well
- Won't get sick quickly
- Won't get tired easily
- Will stay healthy much longer, and
- Will ensure that your children and grand children will grow into strong teenagers and adults

Eat healthy for less

Eating a variety of foods does not mean to cost more. Instead of buying a 'vetkoek' every day, buy an orange or banana.

Try to buy fresh vegetables and fruit in season; for example, buy oranges in winter when they are cheaper.

Buy fresh food grown in your area or grow them in your own garden.

In South Africa, all bread baked from white and brown bread flour and maize meal are fortified, making them healthier. Choose different foods for every meal.

Look for this picture on the packaging of fortified foods.

Make cooking fun

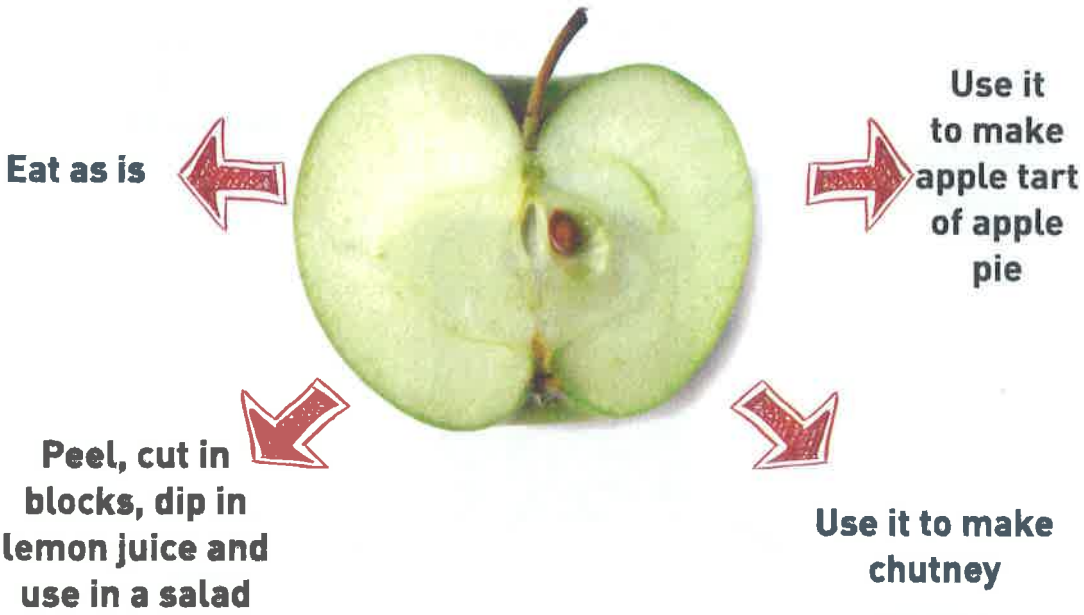
The same food cooked the same way all the time becomes boring.

- Try new recipes to prepare food differently.
- Try out vegetables and fruit that you haven't used before. Ask the shopkeeper how to prepare them if you don't know.
- Make your meals interesting by adding variety.
- Vegetables need not always be cooked. For example, you can eat carrots and cabbage fresh – use them in a salad.

Use the following ideas for preparing food in the place of frying in fat and oil:

- Baking or roasting in an oven.
- Grilling in an oven, or in a pan or over coals.
- Steaming.

Think of all the things that you can do with an apple...



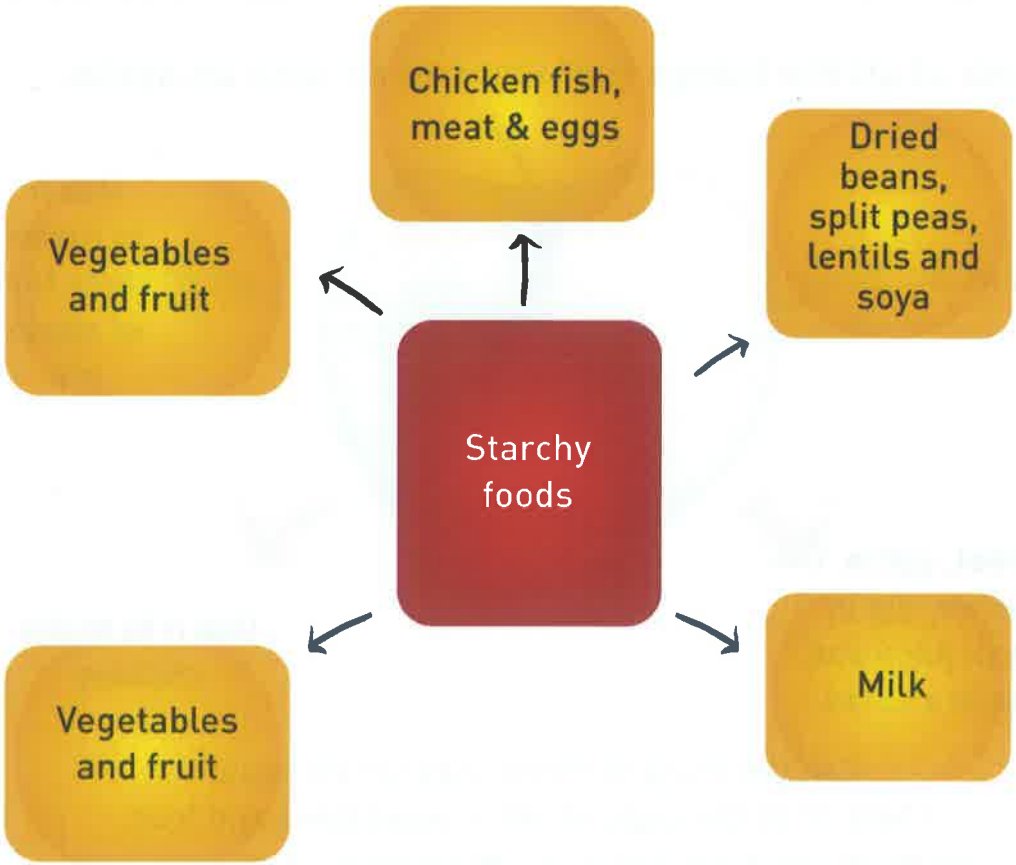
Can you think of more uses for an apple?
Think of all the uses of other vegetables and fruit.
Try them out, have fun and stay healthy. Enjoy your food

To eat is something you should enjoy. Eating with friends and family should be a happy event. Make it more enjoyable by adding variety to your meals. By adding variety, you and your loved ones will also stay healthy. 'Good food ends with good talk'.

Ask your family to help you to compile the meal and snacks.

Now place the numbers of the following foods into the spaces indicating the groups of food:

1. Stiff porridge
2. Savoury mince
3. Baked beans
4. Cooked spinach
5. Orange
6. Carton of maas

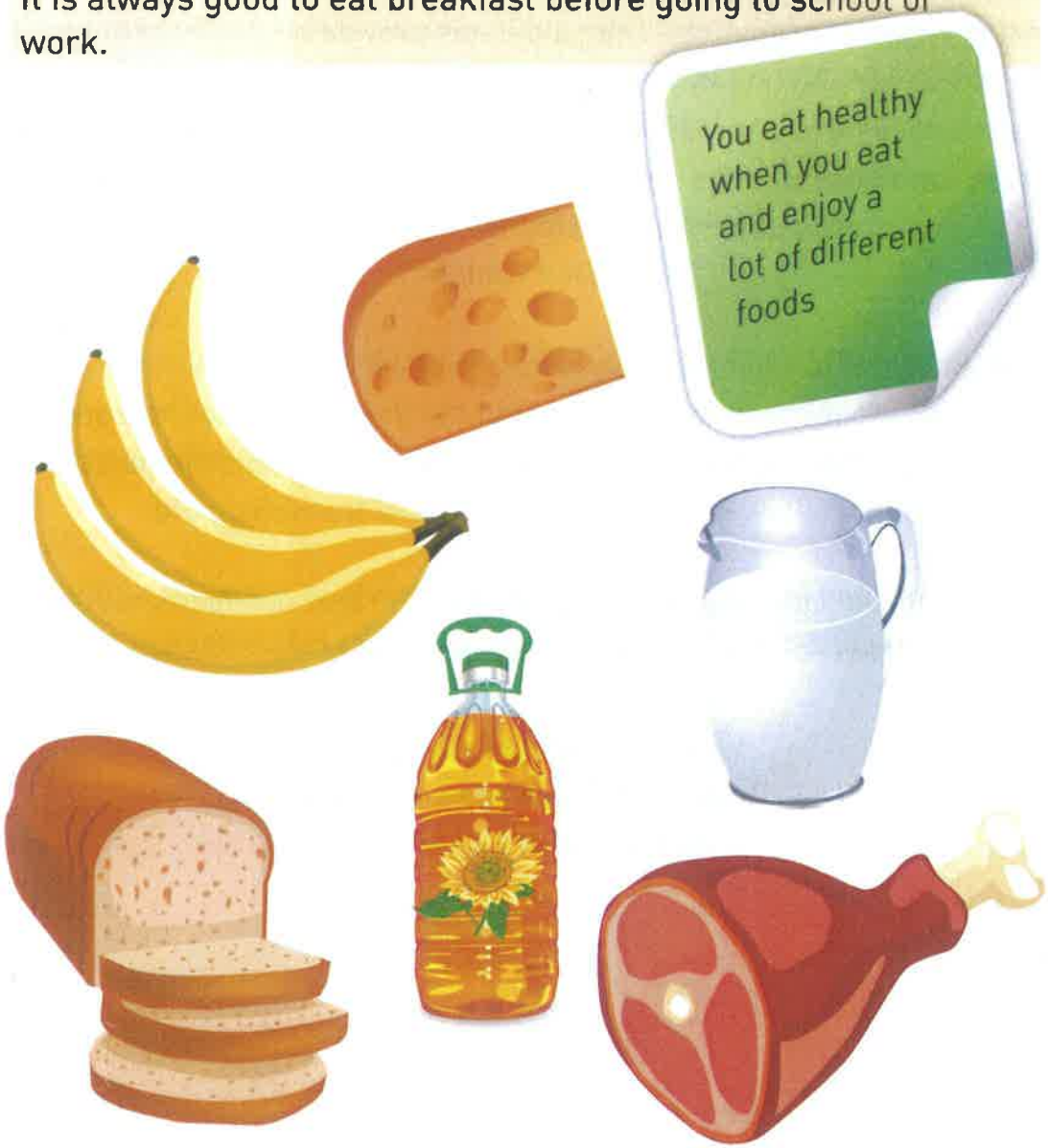


REMEMBER:

Several good, mixed meals daily are important.

This means that to stay healthy, we need to try to eat many different kinds of food at each meal. An example of a main meal is maize meal porridge, chicken, pumpkin and cabbage.

It is always good to eat breakfast before going to school or work.



The Department of Health approved eleven food-based dietary guidelines or food messages in 2003. These guidelines have been revised in 2012 by a panel of expert nutritionists. The guidelines provide a healthy eating plan to fight hunger and under nutrition, including micronutrient deficiencies in South Africa. At the same time these guidelines address overweight and chronic conditions such as overweight, high blood pressure, blood vessel and heart diseases, Diabetes Mellitus (high blood sugar), and some cancers.

This booklet has been designed as a supporting tool in a nutrition education programme for caregivers in the Vaal region, taking care of children or grandchildren in their households. These sensible guidelines can be followed by all the members of the household.

The Boipatong Interdenominational Women's Prayer Group is sincerely thanked for their help in the development of this booklet.

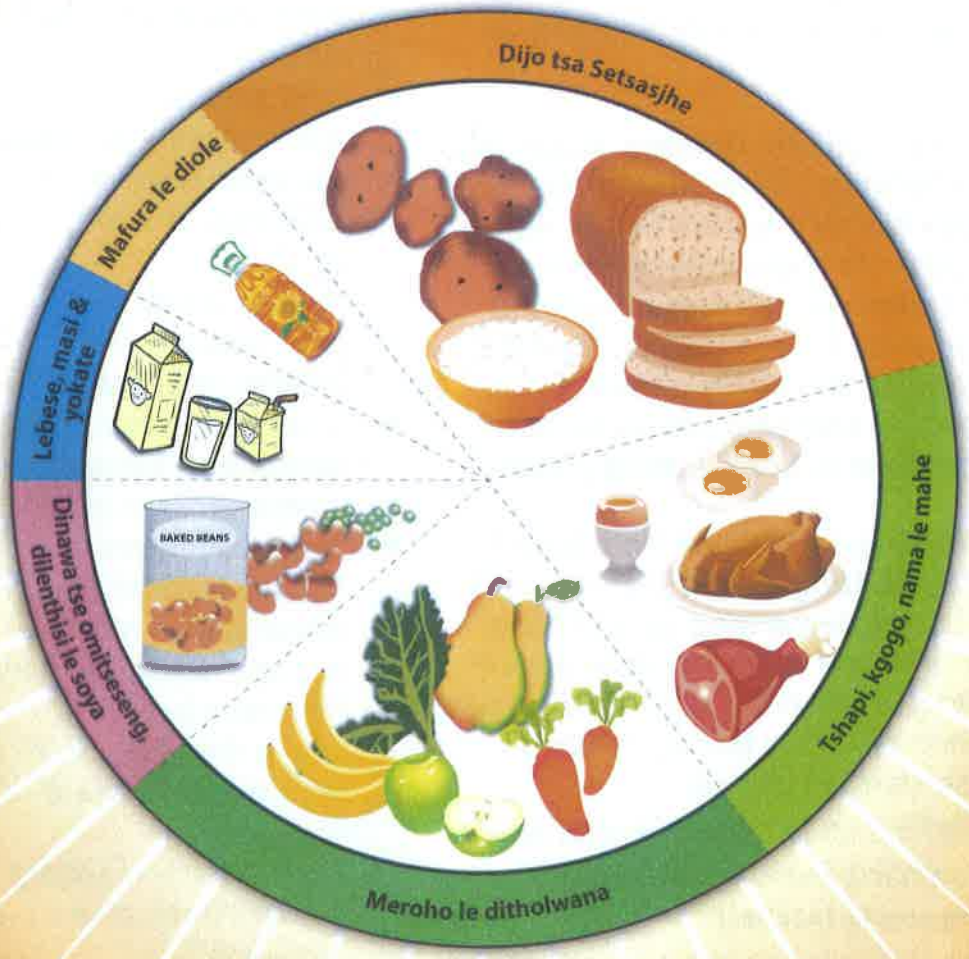
Vaal University of Technology
Centre for Sustainable Livelihood
Tel number 016 930 5132

ANNEXURE Z

NEW BOOKLET (SESOTHO VERSION)

Motswako wa Dijo Tse Nang le Phepo

Thabela dijo tse nang le phepo



Motswako wa Dijo Tse Nang le Phepo

Thabela dijo tse nang le phepo

Hobaneng ho hatiswa bukana yee?

Bukana ena e fana ka tataiso ya ho ja ka tsela e nang le phepo mme seo se tla o tswela molemo le lelapa la hao. Hangata o ja dijo hobane o di rata. O ka thabela dijo mme ka nako e tshwanang wa ja dijo tse nang le phepo.

Ha ho na 'dijo tse molemo' kapa 'dijo tse sa lokang.' Ha ho hlokahale hore o je dijo tse turu hore e be tse nang le phepo. Ke habohlokwa hore na o kgetha dijo jwang ha ho lokisa dijo tse tla jewa. Ha o ja dijo tsa mefuta e mengata, seo se tla o tswela molemo. O boetse o lokela ho lokisa dijo hantle e le hore di be le phepo.

Bukana ena e reretswe ho o bolella ho eketsehileng mabapi le ho kgetha le ho lokisa dijo e leng se tla thusa wena le lelapa la hao hore le je dijo tse nang le phepo. E tshohla ditataiso tse nne tsa Afrika Borwa tsa ho ja dijo tse nang le phepo:

- Motho a ka ja tlhapi, kgoho, nama e se nang mafura kapa mahe letsatsi le letsatsi
- Nwa lebese, maas kapa yokate letsatsi le letsatsi

Ditataiso Tse Amanang le Tsela ya ho Ja Tsa Afrika Borwa (2012)

- Thabela motswako wa dijo
- Motho a ka ja tlhapi, kgoho, nama e se nang mafura kapa mahe letsatsi le letsatsi
- Nwa lebese, maas kapa yokate letsatsi le letsatsi
- Ja dinawa tse omisitsweng, dierekisi tse petsotsweng, dilenthisi le soya kgafetsa
- Ja meroho le ditholwana haholo letsatsi le letsatsi
- Dijong tsa hao ho be le setatjhe se sengata
- Ja mafura hanyane
- Sebedisa letswai hanyane; kgetha oli e entsweng ka meroho eseng mafura a tiileng
- Sebedisa tswekere, dijo le dino tse nang le tswekere e ngata hanyane
- Nwa metsi a mangata a hlwekileng, a sa kudiseng
- Ikwetlise

- Ja dinawa tse omisitsweng kgafetsa, dierekisitse tse petsotsweng, dilenthisi le soya
- Thabela mefuta e sa tshwaneng ya dijo

O tla ithuta tsela e nepahetseng ya ho kgetha dijo e le ho qoba malwetse a kang ho boima bo feteletseng ba mmele, phallo e hodimo ya madi, mafu a methapo ya madi hammoho le a pelo, lefu la tswekere ha e le hodimo mading (Diabetes Mellitus), le dikankere tsa mefuta e meng.

Ho fapa lelapa

Nkgono, o ka thusa lelapa lohle hore le je ka tsela e nepahetseng. Mohlokomedi ke motho wa bohlokwa haholo lapeng. Ha o ntse o hola mme o ba bohlale le ho feta, o boetse o tswepelwa ho hlokomela lelapa le bana ba teng ka lapeng.

Dijo tse nang le phepo di ka ama bokgoni ba ngwana ba ho hola le ba ho ithuta. Empa ngwana e mong le e mong ha a hloke dijo feela. O hloka lerato le tlhokomelo e le hore boko ba hae hammoho le mmele wa hao di ka hola hantle. Ngwana o lokela ho hlokomellwa lelapang le sireletsehileng le le mo hlokomelang ho tloha ha e le lesea ho fihlela a kena dilemong tsa ho ba motho e moholo.

Hangata bomme le bontate ba ya mosebetsing letsatsi le letsatsi. O siuwa le bana ba banyenyane hore o ba hlokomele. Lelapa le itshetlehile ka wena hore o hlokomele bana hantle. Bana ba sekolo ba yang sekolong ba sa ja letho, ha ba ithute hantle ebile ha ba hopole hantle.

O ka fetisetsa tsebo ya hao dithong tsa lelapa la hao ka ho ba kopa hore ba etse mosebetsi o kenyelleditsweng bukaneng ena. O ka boela wa sebedisa bukana ena ho ruta bana haholwanyane ka dijo ha ba ntse ba taka ditshwantso tse ka morao tsa bukana ena ka mebala.

Di thabele!

Motho a ka ja kgoho, tlhapi, nama, mahe le lebese letsatsi le letsatsi

Kgoho, tlhapi, nama le mahe di na le matswai a mangata. Ho fapana le dijo tse nang le setatjhe tse etswang ka dithollo, dijo tsena tsona kaofela di fumanwa diphoofolong.

Na re tlameha ho ja kgoho, tlhapi, nama le mahe letsatsi le letsatsi?

Tjhe, ha ho jwalo. Haeba o ka kgona, o ka ja dijo tsena letsatsi le letsatsi.

Nama e kgubedu (ya kgomo, ya nku le ya pudi) mme haholoholo dikarahare di na le mafura a phoofolo le kholesterole. Mafura ana a ka thiba methapo ya hao ya madi. Sena se ka etsa hore o tshwarwe ke lefu la pelo kapa seterouko. Kahoo o lokela ho di ja hanyenyane.

Mofuteng ona wa dijo ho boetse ho na le nama ya kolobe, ya phoofolo e tsonngweng, dikarahare le maotwana a kgoho (di-run-away) le tlhapi e qetang ho tshwaswa le e ka

Seo mantswe a se bolelang

Phepo

Ho phela hantle motho a se na malwetse

Diprotheine

Dikarolo tsa bohlokwa tsa dijo tse hahang mmele wa hao

Diminerale

Matswai ao mmele wa hao o a hlokang hore o sebetse hantle

Calcium

Minerale yeo mmele ya rona e hahang masapo le meno a rona ka yona. Calcium e fumanwa lebeseng le masapong a bonolo a tlhapi.

Divithamine

Matswai a fumanwang dijong a sireletsang mmele wa hao

lekotikoting (jwaloka disaratintshe), tse se nang mafura a mangata.

Ho bohlokwa ho di ja hanyenyane, jwaloka serope sa kgoho kapa tlhapi. O ka boela wa ja dinawa tse omisitsweng, dierekisi, dilenthisi kapa soya ho fapana le nama.

Ke hobaneng ha mmele o hloka kgoho, tlhapi, nama le mahe?

Di na le diprotheine le diminerale tse hahang le ho lokisa mesifa ya hao, masapo, meno le madi a hao. Di boetse di bohlokwa bakeng sa hore bana ba hao ba hole ba shahlile le bakeng sa bomme ba baimana le ba anyisang.

Nama le mahe di na le diminerale e bitswang tshepe le vithamine ya B12. Tshepe e sireletsa mmele wa hao kgahlanong le mokgathala le malwetse a itseng. Dikarahare tse kang sebete le diphiyo di na le tshepo e ngata.

Ke habohlokwa ho hopola

Ho ja nama e kgubedu e ngata ho ka o kudisa. O lokela ho e ja hanyane, bonyane e fellang ka hara seatla sa hao.

Ntsha mafura wohle ao o a bonang nameng pele o e pheha. O se ke wa ja mafura ana.

Kamehla o jelelle kgoho, tlhapi, nama ka dijo tse ding. Kahoo di je ka dijo tse nang le setatjhe le meroho e mengata. Ke habohlokwa ho ja mefuta e sa tshwaneng.

Baballa diviana, dipalone, diboroso le dirashene bakeng sa dinako tse kgethehileng. Di na le mafura le letswai le lengata e leng dintho tse ka kudisang motho.

Tse ding tsa dijo tsena di ja tjhelete e ngata – o lokela ho etsa eng?

- Ha ho hlokahale hore o je dijo tsena letsatsi le letsatsi
- Reka dijo tsena mme o je tse nyenyane
- Kgetha maqa a nama a chipi, a masesaane mme a na le masapo a manyenyane hore o etse setjhu. Seha mafura aa bonahalang.

- Ja mahe a mararo ho ya ho a mane ka beke ho fapana le ho ja nama e kgubedu kapa ya kgoho
- O ka boela wa ja dinawa tse omisitsweng, dierekisi, dilenthisi kapa soya ho fapana le nama
- Hangata dikahare di chipi mme o ka di ja hanyenyane ho fapana le nama
- Tlhapi e ka tining e na le phepo ebile e tshipi go feta e hlatswiswego.

Dikeletso tse ding

- Phehela nama kapa kgoho lapeng. Ho tjhipi ebile e ba le phepo ho feta ya restjhurenteng.
- Mahe aka bedisiwa.
- Leka ho pheha kgoho, tlhapi le nama o sa di hadike. O ka mpa wa di bedisa, wa di etsa setjhu kapa wa etsa borae.
- O ka atisa maga a manyenyane a masesaane a nama ka ho a kenya setjhung le nama e entsweng mince ka ho tswaka meroho, dinawa tse omisitsweng, dierekisi tse petsotsweng, dilenthisi, soya kapa phasta.
- Leka ho ja tlhapi bonyane habedi ka beke. Tlhapi e na le mafura a molemo a sireletsang mmele lefung la pelo.
- Masapo a tlhapi (saratintshe le pilchard), a haha mmele le meno a rona. A na le calcium e hahang masapo.

Tsela ya ho tshwara kgoho, tlhapi le nama e senang mafura

Ntsha kgoho, tlhapi kapa nama ka hara sehatsetsi (freezer) letsatsi pele o e pheha. E behe ka forijing e le hore e qhibidihe. O se ke wa e siya ka ntle mofuthung wa ntlo kapa wa e beha letsatsing hore e qhibidihe.

Ho pheha kgoho, tlhapi le nama ho fetola tsela yeo e shebahalang ka yona, kamoo e latswehang kateng mme ho etsa hore e be bonolo. Ho pheha nama ho boetse ho bolaya dikokwanahloko tse ka nnang tsa ba teng nameng e sa phehwang. Sebedisa dinoko tse entsweng ka dimela le dipaese ho natefisa dijo tsena.

Le ka mohla o se ke wa siya dijo tsena tse tala kapa tse sa phehwang ka ntle ho forije. Di bola habonolo. Di behe ka forijing.

Ha o sena porije, pheha dijo tsena kabanyinyane le ka pele.

RASEPE

Raese e bakuweng e letswai

(e ka jewa ke batho ba 4)

Dijo tse phehwang

30ml (Dikgaba tse 2 tsa tafole) oli ya sonobolomo
Hanyanese e le 1, e kgabetsweng
1 pepere e tala, e kgabetsweng
Sehwete se le 1, se kgabetsweng hasesaane
Difuba tse 2 tsa kgoho tse se nang masapo, tse kgabetsweng
250ml (komiki e le 1) ya raese
500ml (dikomiki tse 2) ya metsi
Pakete e le 1 ya Kerimi ya phoofo ya Sopho ya Kgoho

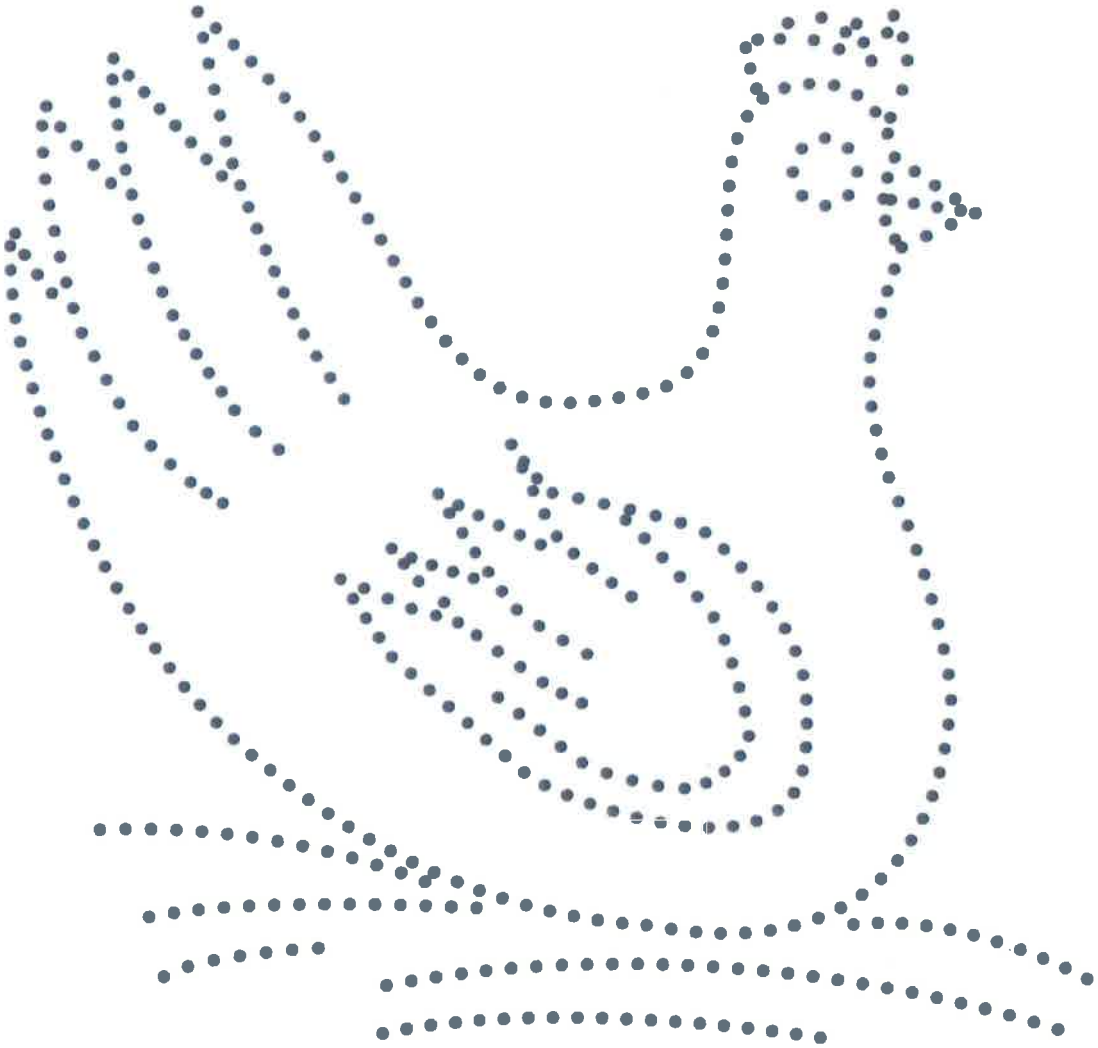
Mokgwa wa ho pheha

1. Futhumatsa oli. Hadika hanyanese, pepere e tala le sehwete. Tswaka le maqa a kgoho a kgabetsweng mme o hadike ho fihlela di batla di le sooho.
1. Tshela raese, mme o di hadike ka metsotso e mmedi o ntse o di fuduwa, ebe o tshela metsi le sopho e phoofo. Di fuduhe hammoho.
1. Di tshele ka hara pane ya ho baka e boholo ba disenthimithara tse 20x20. Tshela tjhisi e kereithilweng ka hodimo.
1. E bake ka motjheso wa dikgarata tse 180 tsa Celsius ka metsotso e 30.

Nako ya ho lokisetsa: metsotso e 20
Nako ya ho pheha: metsotso e 30

Kopanya di-dots ho feleletsa setshwantso.

Kopa bana ka ntlong hore bahothuse.



RASEPE YA HO TLOHA KGALE

Mala, mohodu le matshwafo

(e ka jewa ke batho ba 4)

Dijo tse phehwang

500g ya mala a kgomo,
500g ya matshwafo
500g ya mohodu
500ml (dikomiki tse 2) tsa metsi
Hanyanese e le 1 e mahareng, e sehilweng
10 ml (dikgaba tsa tee tse 2) ya curry powder
5 ml (kgaba ya tee e le 1) ya letswai
15 ml (dikgaba tsa tee tse 3) vinega

Mokgwa wa ho pheha

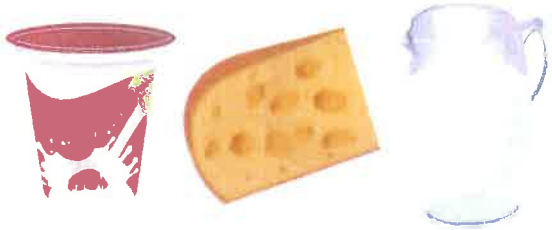
1. Hlatswa nama ka ho feletseng mme o e phehe ho fihlela e le bonolo.
2. E tshole hore e fole ebe o kgabela nama hore e be maqa a manyenyane.
3. Tshela dinoko tse ding ka hara nama le metsi mme o phehe ka metsotso e ka bang 15
4. Di ngwathe di tjhesa.

Nako ya ho lokisetsa: metsotso e 20
Nako ya ho pheha: metsotso e 90

O tseba hakae?

- Ke hobaneng ha kgoho, tlhapi, nama le mahe di le molemo hore mmele wa hao o dule o fepehile?
- Ke hobane ha o lokela ho nwa lebese?
- Ke dijo dife ho tsee tseo o di jang hona o di ja hangata hakae?
- O utlwisisa mantswe a reng 'di ka jewa letsatsi le letsatsi' joang?
- Ke dijo dife tse ding tseo o di jelellang ka kgoho, tlhapi, nama, lebese le mahe?

Nwa lebese maas kapa yokate letsatsi le letsatsi



Dijo tse welang sehlopheng sena ke mehlodi ya bohlokwa ya diprotheine, divithamine le diminirale. Di na le calcium e ngata. Lebese, maas, tjhisi le yokate ka dinako tse ding di bitswa dihlahiswa tsa lebese. Tsona di akaretsa mefuta e sa tshwaneng ya lebese jwaloka lebese la full cream, lebese le nang le mafura a tlaase (2% tsa mafura), lebese le se nang mafura, lebese la dipodi le la full cream le lebese la phoofo le hlapolotsweng (skimmed).

Tjhisi e na le mafura a diphoofolo, a ka o bakelang lefu la pelo. Dihlahiswa tse ding, tse kang lebese le phoofo, ha dia etswa ka lebese. Mehlala e akarelletsa lebese le phoofo la tee le la kofi le metswako ya lebese. Di na le mofuta o mong wa mafura o sa lokang bakeng sa mmele wa hao. Sheba letshwao la Real Dairy.

Seo mantswe a se bolelang

Diprotheine
Dikarolo tsa bohlokwa tsa dijo tse hahang mmele wa hao

Diminerale
Matswai ao mmele wa hao o a hlokang hore o sebetse hantle

Calcium
Minerale yeo mmele ya rona e hahang masapo le meno a rona ka yona. Calcium e fumanwa lebeseng le masapong a bonolo a tlhapi.

Divithamine
Matswai a fumanwang dijong a sireletsang mmele wa hao.

Lebese hase la bana feela

Lebese le dihlahiswa tsa lebese di na le calcium e hahang masapo a bana ha ba hola. Bomme ba baimana le ba anyisang le bona ba lokela ho nwa lebese haholo.

Di etsa hore masapo a dule a le tiile mme di o sireletsa hore o se robehe masapo kapa letheka hamorao bophelong.

Lebese le sireletsa mmele kgahlanong le phallo e hodimo ya madi (high blood pressure). Phallo e hodimo ya madi ke bokudi. E ka o bakela ho seterouko. Haeba o le boima haholo kapa o na le bothata ba kholesterole, sebedisa lebese le se nang mafura.

Mmele wa hao o hloka vithamine D hore o sebedise Calcium hantle. Dioli le mahe di na le vithamine D, empa mmele wa hao o ka boela wa hlahisa vithamine D ha o le letsatsing. Leka ho ba letsatsing hoo e ka bang metsotso e 15 letsatsi le letsatsi.

Lebese le lekaneng ke le lekae?

Maafrika Borwa a mangata ha a nwe lebese le lekaneng. Batho ba bang ha ba rate lebese mme ba bang ba kgetha ho se le nwe ka mabaka a ditso tsa bona.

O hloka dikomiki tse ka bang 2 (500ml) tsa lebese letsatsi le letsatsi, kapa hore o le sebedise ha o etsa tee le kofi kapa o le futswele ka papa kapa o le sebedise ha o pheha.

Lebese le foreshe le lokela ho behwa ka forijing, empa lebese le phoofo le ka behwa ka nako e telele. Tswaka metsi le lebese le phofo hore o le sebedise ka letsatsi lapeng.

Batho ba bang ba ka nna ba hlepha ka maleng kapa ba tlallana ha ba sebedisa lebese. Haeba lebese le foreshe le sa o tshware hantle, o ka reka lebese la soya mabenkeleng. Sheba lebese la soya le matlafaditsweng ka Calcium.

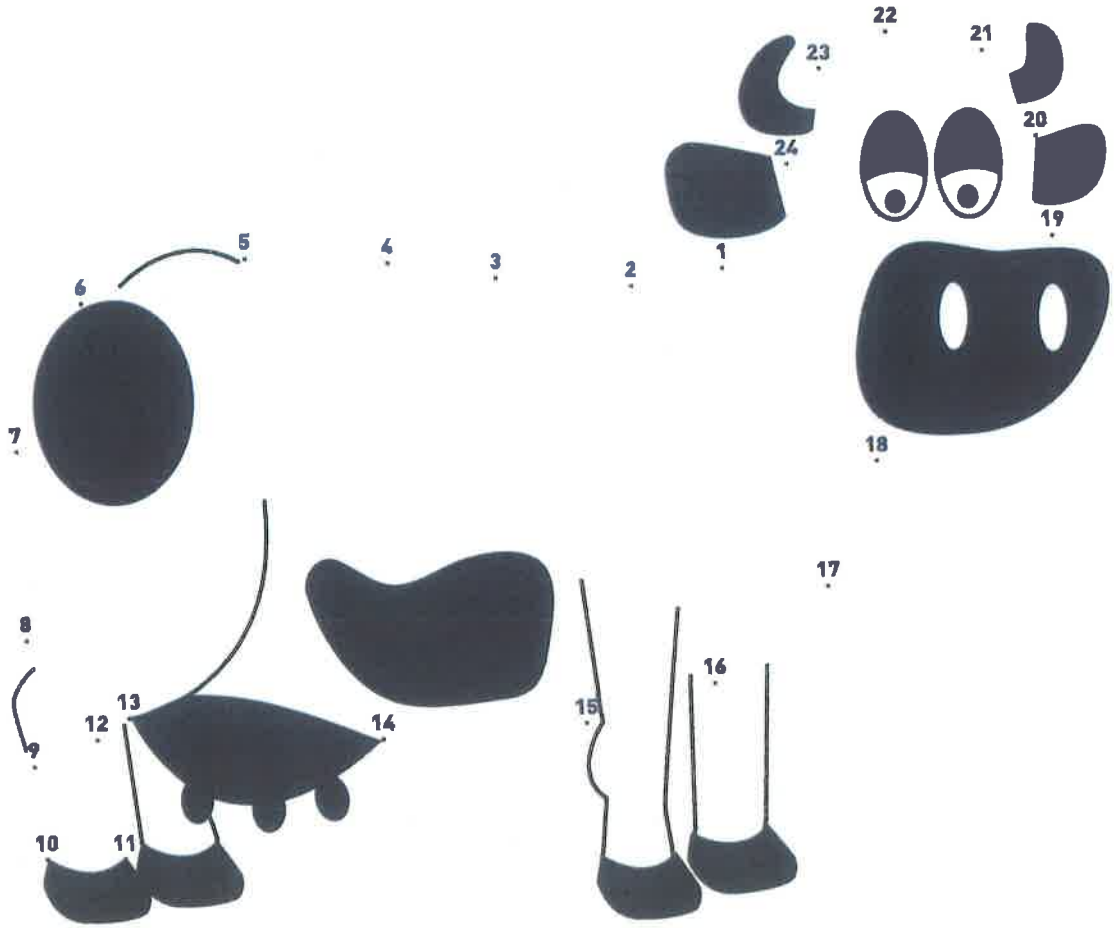
Dikeletso bakeng sa hao jwaloka mohlokomedi

Haeba ngwana wa hao kapa setloholo se sa rate lebese, o ntse o ka mo hlokomela ka ho mo tshella lebese dijong ntle le hore a le bone kapa a utlwe hore le teng:

- Bana ba rata custard, e entsweng ka lebese.
- O ka etsa jeli e entsweng ka lebese hore ba imone menwana. Halofo ya metsi ebe o tlatselletsa ka lebese.
- Lebese le ka tshelwa ha ho phehwa sopho kapa papa kapa lesheleshele. (Ho fapana le ho sebedisa metsi sebedisa lebese)

- Ba tshelle milo kapa hot chocolate kapa yokate e le dijo tse bobebe.
- Etsa soso e tsweu kapa ya tjhisi mme o ba ngwathele yona ka tlhapi kapa meroho kapa o fafatse tjhisi e kereithilweng ka hodimo.
- Ba fe lebese kapa yokate kapa maas e le dijo tse bobebe tse nang le phepo ha nako ya dijo tsa letsatsi e so fihle.

Kopa balelapa lahao hore bahuthuse ho kopanya dinomoro hogala ka 1 ho felela ka 24.



O bona eng ho seswantsho sena?

Ke dijo tse feng tseo tse pedi re di fumanang ho seswantshong?
Go reng di le bohlokwa?

RASEPE

Mokopu le Phoofo ya papa

(e ka jewa ke batho ba 4-6)

Dijo tse phehwang

500ml (dikomiki tse 2) ya mokopu, o kgabetsweno

125 ml (1/2 ya komiki) ya phoofo ya papa
25 ml (dikgaba tse 2 tsa tafole) ya margarine
250ml (komiki e le 1) ya lebese

Mokgwa wa ho pheha

1. Pheha dijo tsohle tse phehwang, ntle ho phoofo ya papa yeo o tla e faya ka mora metsotso e 20
2. Tshela phoofo ya papa ebe o e fuduwa hantle.
3. Pheha butle ka metsotso e 15, o fuduwa o sa kgaotse.
4. Di ngwathe di tjhesa.

Nako ya ho lokisa: metsotso e 15
Nako ya ho pheha: metsotso e 3

Ke lebese le ka kang le lokileng?

- Hobaneng re nwa lebese.
- Ke dijo tsefeng tse o ka dija le lebese.

Ke habohlokwa hore phallo ya madi a hao e nkwe kgafetsa tleliniking.

Karabo

- Kgomo,
- Re fumana nama le lebese
- Di aha meno le masapo a mele.

Ja dinawa tse omisitsweng, dierekisi tse petsotsweng, dilenthisi le soya kgafetsa

Ja dijo tse nang le phepo – phela nako e telele

Jwaloka bahlokomedi le batswadi, rea tseba hore na ho bohlokwa hakae hore rona, bana ba rona le ba malapa a rona re thabele mefuta e sa tshwaneng ya dijo tse nang le phepo. Sena ke ho tiisa hore mmele wa hao o fumana sohle seo o se hlokang. Dinawa tse omisitsweng, dierekisi tse petsotsweng, dilenthisi le soya ke dijo tse nang le phepo. Di tswa dimeleng mme ke mohlodi o motle wa diprotheine tse tswang dimeleng le ditlheferetsi tse monyelang.

Sehlopha sena sa dijo se akarelletsa dinawa tse omisitsweng, dinawa tse bakilweng, dinawa tse bonolo haholo,

Seo mantswe a se bolelang

Dinawa tse omisitsweng le dierekisi
Dinawa le dierekisi di tlohellwa hore di omele ka hara makgapetla pele di bokellwa masimong.

Diprotheine
Karolo ya bohlokwa ya dijo e hahang mmele wa hao

Ditlheferetsi tse monyelang
Mofuta ona wa ditlheferetsi o monya metsi, o kopanya matswai le kholesterole e molemo

Diminerale
Matswai ao mmele wa hao o a hlokang hore o sebetse hantle

Divithamine
Matswai a fumanwang dijong a sireletsang mmele ya rona

dierekisi tse petsotsweng kapa dierekisi tse nang le letheba le tse omisitsweng kapa dilenthise tse kentsweng ka lekotikoting.

O fumana dilenthisi tse tala, tse kgubedu le tse tshehla. Dilenthisi ke dijo tsa lelapeng le leng le le leng la Maindia. Hangata di jelellwa ka raese e phehilweng.

Dilenthisi le dierekisi tse petsotsweng di ka boela tsa sebediswa ha ho phehwa disopho le ditjhu. O lokela ho ja dijo tsena le dijo tse ding tse kang dijo tse nang le setatjhe tse sa ntshwang ditlheferetsi kapa tse sireleditsweng le meroho. Ha dinawa, dierekisi le dilenthisi di jewa di sa le tala, di tshwana le meroho.

Dihlahiswa tsa soya tseo o ka di rekang mabenkeleng a mangata di akarelletsa soya mince, dibega tsa soya tse hatseditsweng kapa diboroso tse entsweng ka soya. Soya e etsa dijo tse monate, tse sa tureng. Soya e ka sebediswa jwaloka nama kapa ya tswakwa le nama.

Molemo wa dinawa tse omisitsweng, dierekisi tse petsotsweng, dilenthisi le soya ke ofe?

- Di na le ditlheferetsi tse molemo haholo bakeng sa pelo le methapo ya hao ya madi.
- Haeba boima ba mmele wa hao bo le hodimo haholo mme o batla ho theola boima ba mmele, di etsa hore o ikutlwe o kgotshe.
- Di molemo ho batho ba tshwerweng ke lefu la tswekere le bitswang Diabetes Mellitus (ho ba le tswekere e ngata haholo mading).
- Di na le mafura le letswai le lenyane haholo, mme seo se molemo hore o fepehe.
- Re ka di ja ho fapana le nama mme ra nna ra phela hantle.
- Re ka di sebedisetsa ho atisa nama.

Ho di ja kgafetsa ho bolela eng?

Ho di ja kgafetsa ho bolela hore o ka di ja letsatsi le letsatsi, empa bonyane o lokela ho ja komiki e le nngwe hararo ka beke. Di je ka matsatsi ao o sa jeng nama ka wona.

Haeba ha o so je tlhapi, nama, mahe kapa lebese, o lokela ho leka dinawa tse omisitsweng, dierekisi tse petsotsweng kapa dilenthisi kapa soya letsatsi le letsatsi.

Dinawa tse omisitsweng di lokela ho inelwa pele di phehwa

Tshela dinawa ka pitseng e kgolo hammoho le metsi a foreshe ebe wa kwahela. Metsi a lokela ho feta dinawa ka makgetlo a mararo ho isa ho a mane. Inela dinawa ka metsing bosiu bohle.

Ha o qala ho di pheha, o se ke wa di noka letswai. Le tla etsa hore dinawa di omelle le ho feta. Bedisa metsi pele ebe o fokotsa mollo e le hore dinawa di bele butle. Haeba di phehwa ka mollo o hodimo haholo, makgapetla a tsona a tla petsoha.

Tlohela dinawa hore di bele ka hora e le nngwe kapa tse pedi ho fihlela di le bonolo. Noka letswai hafeela di se di le bonolo. Dierekisi tse petsotsweng, dilenthisi le dinawa tse nang le letheba le letsho di ka phehwa hang feela ha di tswa ka hara pakete.

Dinawa tse omisitsweng, dierekisi le dilenthisi di lokela ho phehwa ho fihlela di butswitse pele di jewa. Hang ha di phehilwe, dinawa di ka behwa ka sekhafothineng se kwahetsweng ka forijing ka matsatsi a mahlano. Haeba o se na foriji, o se ke wa di beha ka nako e fetang letsatsi le le leng (1). Ha ho hlokahale hore o phehe dinawa, dierekisi le dilenthisi tse ka lekoti-koti, di se di ntse di na le phepo.

Ho pheha soya: Tshela halofo (½) ya komiki ya soya mince ka hara komiki e le 1 le ½ ya metsi a belang. (Bala leibole e paketeng). Di bedise butle ka metsotso e leshome o ntse o fuduwa ka dinako tsohle. E ngwathe mme e jelellwe ka setampo kapa papa le meroho.

Na dinawa tse omisitsweng kapa dierekisi tse petsotsweng kapa dilenthisi kapa soya ha di etse hore motho a tlallane moya?

E, ho jwalo, ka ho kgetheha ha o sa tlwaela ho di ja. Haeba ha o so je dijo tsena, o se ke wa qala ho di ja letsatsi le letsatsi hanghang. Qala ka ho di ja hang ka beke, ebe habedi ka beke jwale o tla di ja hararo ka beke. O ke ke wa hlola o tlallana. Mmele wa hao o tla be o se o tlwaetse dijo tsena tse omisitsweng.

Dinawa tse omisitsweng, dierekisi tse petsotsweng, dilenthisi le soya ke dijo tse monate.

- Jelella dinawa ka chakalaka kapa ka setampo kapa ka dijo tse ding tse sa ntshwang ditlheferetsi mme di na le setatjhe.
- Dinawa tse sootho tse kang tse kgubedu tse omisitsweng tse tshwanang le phiyo, dinawa tse tswekere tse matheba di monate ka nama e kgubedu, ha dinawa tse tshweu kapa dinawa tse nang le metsero (sugar beans) di monate ka nama e tshweu le tlhapi ha di phehelletse hammoho.
- Sebedisa soya mince le dinawa tse omisitsweng ho atisa setjhu sa mince. Komiki e le nngwe ya dinawa e tla ba dikomiki tse tharo ha o qeta ho di pheha.
- Tswaka le dinawa, dierekisi, le dilenthisi le sopho kapa phasta kapa raese.
- Dinawa di nka monko wa dipaese le dimela tse entsweng dinoko, e leng se etsang di be monate di be di hlabose ha motho a di ja.
- Leka dinawa kapa dilenthisi le salate. Tswaka mefuta e sa tshwaneng ya dinawa ho etsa salate. Tshela oli ya sonobolomo e nyenyane.
- Di tjhipi ho feta nama, mme di ka behwa nako e telele
- Dinawa tse ka lekoti-koti di boloka nako le motlakase.

Keletso e Nngwe
Hore o baballe motlakase kapa parafine ha o pheha dinawa tse omisitsweng, dierekisi le dilenthisi, sebedisa lebokose la jwang.

Iketsetse lebokose la hao la jwang
Nka lebokose le leholo ebe o le tshela dikoranta tse entsweng dibolo. Ka mora hore dinawa tse phehwe ka metsotso e 30, tshola pitsa hammoho le sekwahelo setofong, e phuthele ka thaole e tenya ebe o e kenya ka lebokoseng la jwang.

Kenya dibolo tsa dikoranta ho pota pitsa le ka hodima yona. O ka boela wa sebedisa mesamo kapa dikobo ho fapana le dikoranta feela. Tlohela pitsa ka hara lebokose ka nako e ka etsang dihora tse nne.

Kopa lelapa leno hore le o thuse ho tlatsa Word Hunter ena

Mandla o ntse a nahana ka mantswe a mang a amanang le sehlopha sena sa mantswe. Fumana mantswe ao a nahanang ka wona setshwantshong sena.

T	H	E	M	O	P	E
P	E	L	O	B	E	R
L	D	I	N	A	W	A
S	O	Y	A	B	O	K
F	D	I	T	A	W	I
N	P	H	E	P	O	S
E	R	E	K	I	S	I

RASEPE

Sopho ya dinawa

(e ka jewa ke batho ba 4-6)

Dijo tse phehwang

10ml (dikgaba tse 2 tsa tafole) tsa oli ya sonobolomo
1 hanyanese, e kgabetsweng
420g (lebekere le 1) la dinawa tse bakuweng
beef stock e 1
750ml (dikomiki tse 3) tsa metsi, a belang
60ml (Dikgaba tse 4 tsa tafole) tsa Outse
Parsley, e kgabetsweng (ha o rata)

Mokgwa wa ho pheha

1. Futhumatsa oli. Hadika hanyanese ho fihlela e batla e le sootho.
2. Tshela dinawa tse bakilweng le metsi. Di phehe butle ka metsotso e 5.
3. Tswaka le outse, o fuduwe le ho di pheha ka metsotso e 10.
4. Fuduwa le ho phesela dinawa ho fihlela di le ka tsela yeo o di batlang.
5. Tswaka parsley e kgabetsweng.
6. Di ngwathe di tjhesa.

Keletso: Haeba sopho e tiile haholo, o ka e hlapolla ka metsi kapa lebese.

Nako ya ho lokisa: metsotso e 10
Nako ya ho pheha: metsotso e 20

RASEPE

Dikuku tsa dinawa le tlhapi

(e ka jewa ke batho ba 4-6)

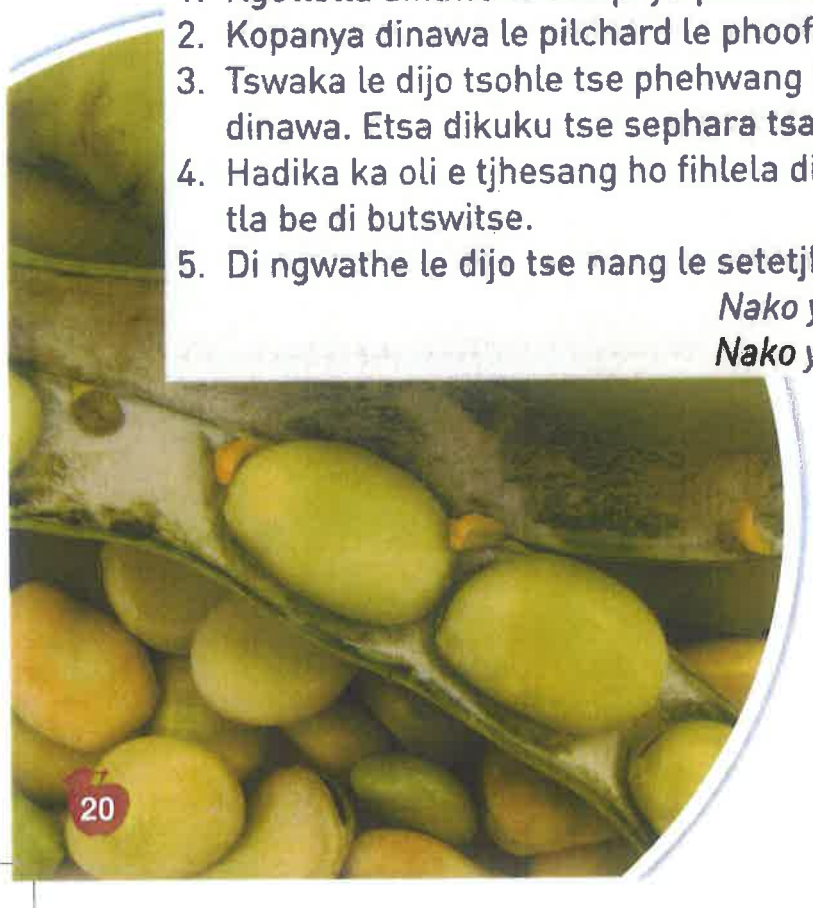
Dijo tse phehwang

1 lebekere (410g) la dinawa tse sootho
1 lebekere (410g) la pilchard
125 ml (½ ya komiki) phoofo ya dikuku
1 hanyanese e nyenyane, e kereithuweng
1 lehe, le fehlilweng
Letswai le pepere hore ho be le tatso
10 ml (dikgaba tse 2 tsa tafole) tsa parsley, e kgabetsweng
15ml (dikgaba tsa tee) tsa soso ya Worcestershire
Dikgaba tse 2 ho ya ho tse 3 tsa tafole tsa oli ya sonobolomo bakeng sa ho hadika

Mokgwa wa ho Pheha

1. Kgotlella dinawa le tlhapi ya pilchard.
2. Kopanya dinawa le pilchard le phoofo.
3. Tswaka le dijo tsohle tse phehwang ka hara motswako wa dinawa. Etsa dikuku tse sephara tsa tlhapi.
4. Hadika ka oli e tjhesang ho fihlela di ba sootho ba kgauta, di tla be di butswitse.
5. Di ngwathe le dijo tse nang le setetjhe le meroho

Nako ya ho lokisa: metsotso e 10
Nako ya ho pheha: metsotso e 15



RASEPE

Setjhu sa dinawa tse bonolo

(se ka jewa ke batho ba 4-6)

Dijo tse phehwang

500ml (dikomiki tse 2) tsa dinawa tse bonolo [butter beans] (tse omisitsweng)]

1 ½ ya hanyanese, e kgabetsweng
1 pepere e tala
15 ml (Kgaba e le 1 ya tafole) ya Curry powder
Ditamati tse 2
500ml (dikomiki tse 2) tsa metsi
mutton stock e le 1

Mokgwa wa ho pheha

1. Inela dinawa ka metsing bosiu bohle
2. Qeta hora e le 1 o di bedisa ka hara metsi a hlwekileng ebe o tlhotla metsi
3. Futhumatsa oli ka hara pane. Hadika hanyanese ho fihlela e le bonolo mme e batla e le sootho.
4. Noka curry. Di phehe butle ka metsotso e 2
5. Tshela dinawa le dijo tsohle tse phehwang.
6. Di phehe butle ka metsotso e 30.
7. Di ngwathe di sa tjhesa.

Nako ya ho lokisa: metsotso e 10
Nako ya ho pheha: metsotso e 20

O tseba hakae?

- Wena le lelapa leno, ke ka makgetlo a makae le jang dinawa tse omisitsweng, dierekisi tse petsotsweng, dilenthisi kapa soya?
- Le jelella dinawa tse omisitsweng, dierekisi tse petsotsweng kapa soya ka eng?
- Ho di 'ja kgafetsa' ho bolela eng ho wena?

- O nahana hore molaetsa wa pampitshana yee ke ofe?

Fumana mantswe a Word Hunter ena:

T	H	E	M	O	P	E
P	E	L	O	B	E	R
L	D	I	N	A	W	A
S	O	Y	A	B	O	K
F	D	I	T	A	W	I
N	P	H	E	P	O	S
E	R	E	K	I	S	I

Dilenthisi

Dinawa tsa soya

Dierekisi tse petsotsweng

Dinawa tse omisitsweng

Thabela dijo tsa mefuta e sa tshwaneng

Ho ja dijo tse nang le phepo, ho etsa hore ngaka e tlohe pela hao

O lokela ho leka ho ja mefuta e sa tshwaneng ya dijo tseo o di jang letsatsi le letsatsi. Poleite ya mefuta e sa tshwaneng ya dijo tse kopantsweng e bitswa motswako wa dijo. Mohlala wa motswako wa dijo ke (papa, nama ya kgoho, mokopu le moroho wa sepinitjhe). Kahoo, dijong tsa rona re lokela ho kenyelletsa dijo tse tswang South African Food-Based Dietary Guidelines:

- 'Eba le setatjhe se sengata dijong tseo o di jang
- ' Ja dinawa tse omisitsweng, dierekisi tse petsotsweng, dilentisi le soya kamehla'
- ' Motho a ka ja kgoho, tlhapi, nama le mahe letsatsi le letsatsi'
- ' Lebese ke la bohlokwa'
- ' Enwa lebese, maas le yokate letsatsi le letsatsi'.

Ho thabela dijo tsa mefuta e sa tshwaneng ho bolela eng?

Ho bolela ho se je mofuta o le mong wa dijo. Na ho na sejo se

Tlhaloso ya mantswe

Phela hantle
Ho phela hantle motho a se na malwetse

Motswako
Mefuta e sa tshwaneng, e mengata ya dijo

Dijo tse sireleditsweng
Dijo tse matlafaditsweng ka divithamine le diminerale

Diminerale
Matswai ao mmele ya rona e a hlokang hore e sebetse hantle

Divithamine
Matswai a fumanwang dijong a sireletsang mmele ya rona

nang le matswai wohle ao mmele wa hao o a hlokang. Haeba o ja mofuta o le mong wa dijo letsatsi le letsatsi, mmele wa hao o ke ke wa fumana matswai wohle ao o a hlokang hore o dule o phetse hantle. Bana ba hloka mefuta e sa tshwaneng ya dijo hore ba hole.

Ha o ja dijo tse nang le phepo o

- Tla kgona ho etsa mosebetsi wa hao hantle
- Ke ke wa kula le feela
- Ke ke wa kgathala le feela
- Tla phela hantle ka nako e telele haholo, ebile

Tla tiisa hore bana ba hao le ditloholo ba hola ho fihlela e le batjha esita le batho ba baholo ba shahlileng

Ho Ja dijo tse nang le phepo ha ho ture

Ho ja dijo tsa mefuta e sa tshwaneng ha ho bolele ho lefa tjhelete e ngata.

Ho fapana le ho ja makwenya letsatsi le letsatsi, reka lamunu kapa banana.

Leka ho reka meroho e sa tswa kguwa le ditholwana tse nakong; ka mohlala, reka dilamunu mariha ha di sa bitse tjhelete e ngata.

Reka dijo tse sa tswa kguwa tse lengwang sebakeng sa heno kapa o di leme jareteng ya hao.

Mona Afrika Borwa, bohobe bohle bo bakuweng ho tloha ho ba phoofo e tshweu ho ya ho e sootho le phoofo ya papa di sireleditswe, e leng se etsang hore di be le phepo. Kgetha dijo tse sa tshwaneng dijong tsohle tseo o di jang.

Thabela ho pheha

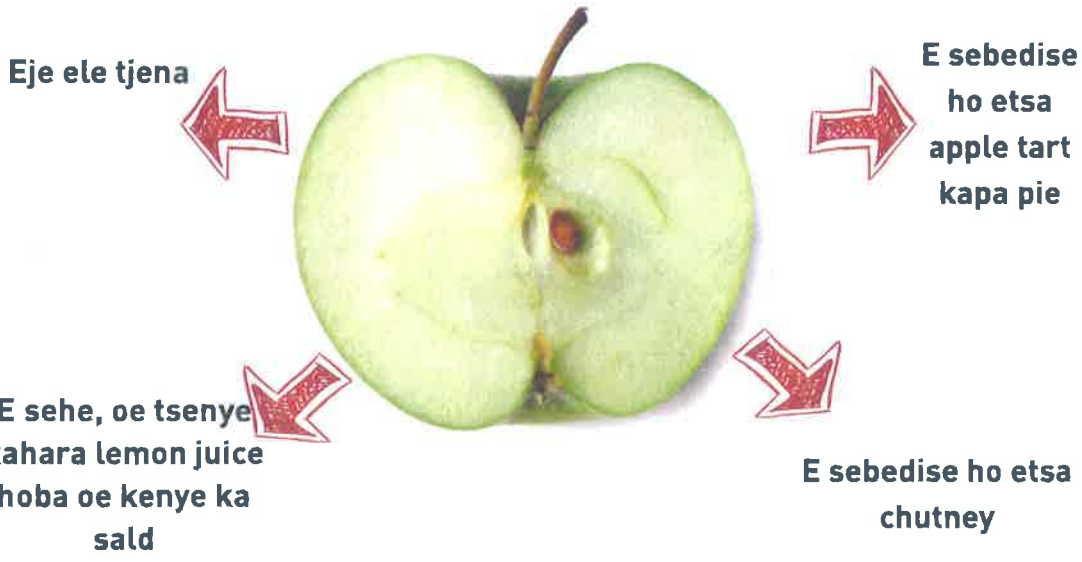
Ho ja dijo tse phehilweng ka tsela e tshwanang kamehla hwa tena.

- Leka dirasepe tse ntjha hore o phehe dijo ka ditsela tse sa tshwaneng.
- Leka meroho le ditholwana tseo o qalang ho di sebedisa. Botsa monga lebenkele hore na di phehuwa jwang haeba o sa tsebe.
- Etsa hore dijo tsa hao di kgahlise ka ho kenya metswako e sa tshwaneng.
- Ha ho hlokahale hore kamehla meroho e phehuwe. Ka mohlala, o ka ja dihwete le khabetjhe tse sa phehwang – wa di etsa disalate.

Ho fapana le ho hadika dijo ka mafura kapa ka oli, sebedisa ditsela tse latelang tsa ho pheha dijo:

- Di bake kapa o di hadike ka ontong ka mafura a tsona
- Di etse mmeso ka onto, kapa ka pane kapa ka mollo wa mashala.
- Di phehe ka metsi (di fubetse).

Think of all the things that you can do with an apple...



O ka nahana ka tsela tseding tsa ho sebedisa di apole?
Kapa meroho emng?
Di leke, o ithabise o gopole go ba phepong.

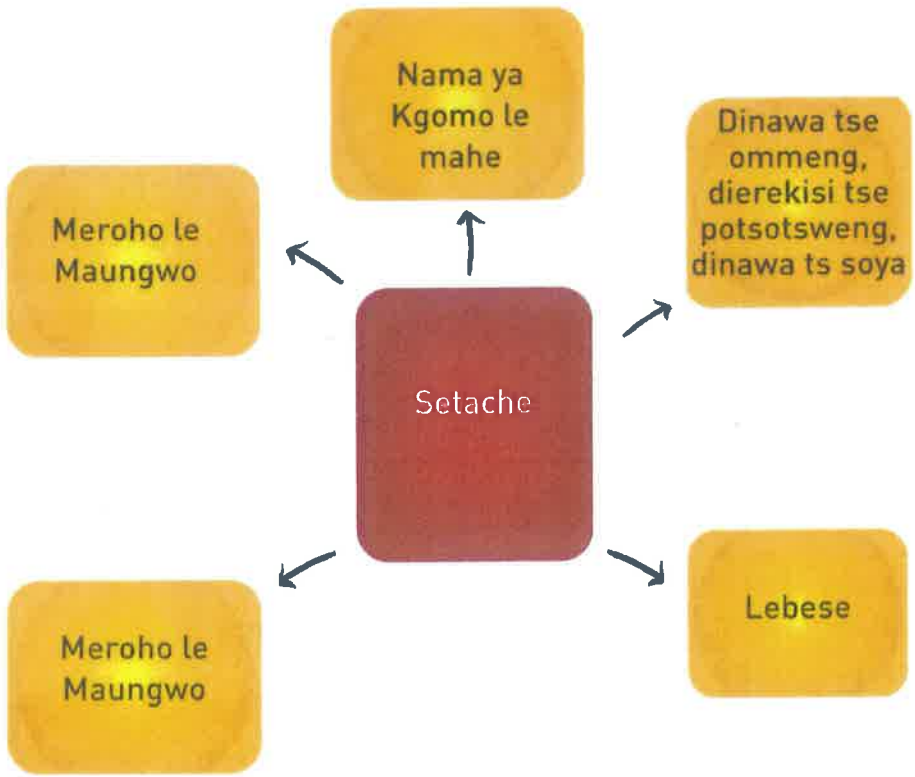
Thabela dijo tsa hao

Hore o je ntho e itseng o lokela ho e thabela. Ho ja le metswalle le ba lelapa e lokela ho ba ketsahalo e monate. Etsa hore ho hle ho be monate ka ho kenyelletsa dijo tsa mefuta e sa tshwaneng dijong tsa hao. Ka ho kenya metswako e sa tshwaneng, wena le batho bao o ba ratang le ka boela la dula le phetse hantle. 'Ha dijo di le monate moqoqo e ba o monate.

Kopa ba lelapa la hao ba ho thuse ka ho phega dijo le di snack.

Lokela dinomoro tse latelang ka hare ha mapokising a latelang:

1. Papa
2. Mince onaleng letshwai
3. Dinawa tsa lekoti-koti
4. Sipinichi se phehiwleng
5. Dinamune
6. Maas



Ka 2003, Lefapha la Bophelo bo Botle le ile la tjhaela monwana ditataiso tse leshome le motso o le mong tse amanang le tsela ya ho ja kapa melaetsa ya dijo. Moifo wa ditsebi tsa phepo o ile wa ntlafatsa ditataiso tsena ka 2012. Ditataiso tsena di bolela hore na mona Afrika Borwa re ka latela tsela efe ya ho ja e le ho lwantsha tlala le kgallo ya phepo, e akarelletsang kgaello ya matswai a bohlokwa mmeleng. Ka nako e tshwanang, ditataiso tsena di sebetsana le ho ba boima haholo le malwetse a mang a dulang a le teng a kang boima bo feteletseng ba mmele, phallo e hodimo ya madi, mafu a methapo ya madi le a pelo, lefu la tswekere ha e le ngata haholo mading (Diabetes Mellitus), le dikankere tse ding.

Bukana ena e qapetswe hore e be sesebediswa se thusang lenaneong la thuto la phepo mme e tla thusa bahlokomedi ba tikolohong ya Lekwa (Vaal), ho hlokomela bana kapa ditloholo ka malapeng. Setho se seng le se seng sa lelapa se ka latela ditataiso tsena tse molemo.

Ho tswa pelong re lakatsa ho leboha Boipatong Interdenominational Women's Prayer Group ka ho re thusa ho hlahisa bukana ena.

Tsela ya ho ikopanya le rona

Center of Sustainable Livelihood

Vaal University of Technology

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