Supplementary Material

**Supplementary Material Item:** Example FGD guide questions:

What influences the food you eat?

What influences the food that other people your age eat?

How do other people influence your diet?

What does being healthy mean to you?

What types of physical activities do you do?

What/who influences your daily activities?

**Supplementary Material Item:** Extract from the coding framework (Theme 1. generational differences in nutrition education and knowledge)

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| **Given what we know of the data, are there any generational differences between adolescents’ and caregivers’ nutrition education and knowledge? If so, does this vary by context?** |
| **SITE** | **NOTES FROM FGDs WITH ADOLESCENTS** | **EXAMPLE EXTRACTS** | **NOTES FROM FGDs WITH CAREGIVERS** | **EXAMPLE EXTRACTS** |
| **Low income urban** | **Jimma, Ethiopia** | * The adolescents viewed health in a very holistic way - considering the importance of both physical and psychological well-being. They acknowledged the importance of social relationships, having a job, being able to provide for your family, personal hygiene and being disease free.
* Mention alcohol and cigarettes and how it’s associated with early death. Addiction in general is highlighted as an issue that is a cause of concern in this setting. Adolescents seem more concerned about addiction than their caregivers. This is only mentioned once by caregivers, but quite frequently by adolescents (Ethiopia).
* Adolescents were concerned about their weight and described avoiding certain foods to remain ‘thin’.
* Avoidance of meat is generally viewed as positive for health among adolescents.
* The participants felt that physical activity is beneficial for your appearance (e.g., to look ‘strong’ you need to regularly exercise).
* They highlighted the need for a balanced diet.
* The link between healthy lifestyles and avoiding disease are known about including cancer, HIV, liver and kidney disease.
 | * *“I look being healthy in two ways Physical and mental. Mental health and mental peace is a big deal, you can take medication to physical disease but it’s difficult to diagnose mental health (peace).’* (Girl, aged 15-17, Jimma)
* *“Those who protect themselves from different addiction and who have close and normal relation with the community are healthy and those who spend their time on drugs are unhealthy”.* (Boy, aged 15-17, Jimma).
* *“If you have idle land what good it have if you didn’t plough it, so adolescents of our age are the future of our country they should have to avoid alcohol drinking and addiction at all.”* (Girl, aged 15-17, Jimma*)*
* *“Unhealthy individuals are who don’t work and dependent on other person”* (Girl, aged 10-12, Jimma)
 | * Parents also have a holistic view of health (being able to learn, physical health). The way someone thinks is also associated with physical health.
* Parents were concerned that unhealthy children may not be able to learn.
* Being fat is associated with being unhealthy. Parents highlighted how either too much or too little sleep can cause adolescents to become overweight.
* Parents had a very broad view of health, highlighting the importance of psychological health.
 | * *“Those [who are healthy] whom all of their body (12 parts) are healthy”* (Man caregiver, Jimma)
* *“So the characteristics of being healthy is being happy, eating well, play with friends and having good learning ability. If he is not healthy he/she might even sleep while leaning”* (Man caregiver, Jimma)
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| **Abidjan, Côte d’Ivoire** | * The adolescents were very aware that eating too many sugary, sweet foods is bad for their health.
* They were also aware that foods that were too salty or fatter were bad for health.
* They learnt information about nutrition through television adverts and caregivers. They also learnt about nutrition through school, the older adolescent girls in particular said this.
* Adolescents in this site also had a holistic view of health, considering psychological and social aspects that make up a healthy person rather than just the physical.
 | * *“Since we watch TV shows and documentaries a lot, we were told that eating too many sweets is not good. We were recommended to avoid eating foods that are too salty, sweet or fatty.”* (Boy, aged 15-17, Abidjan).
* *“Selling foods and drinks that are too sweet is not good. Since we watch TV shows and documentaries a lot, we were told that eating too many sweets is not good. We were recommended to avoid eating foods that are too salty, sweet or fatty”* (Girl, aged 10-12, Abidjan)
 | * Parents felt that ‘health’ was primarily associated with food (someone who has a good appetite, a balanced diet, eating plenty of fruit and vegetables).
* They felt that for adolescents to be healthy, they needed to eat lots of ‘growth nutrients’. They should eat food that makes them strong and protects them. Healthy foods are those that contain lots of nutrients.
* Regularity of meals was also emphasised as important for health.
* The caregivers were aware of the link between sugary foods and diabetes.
* They had learnt from television adverts that they should consume 5 fruits and vegetables per day to remain healthy.
 | * *“F: What is health, precisely? When you say that someone is in good health, what does he look like? What does someone in good health look like?*
* *P: He has a good appetite”.*
* *P: His diet is balanced”.*
* *P: For me it is the same thing, his diet is balanced, he is well-fed. One does not need to be fat to be considered as “in good health”* (Caregivers, Abidjan)
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| **Urban slums** | **Mumbai, India** | * Good health was defined in terms of diet (fruit and vegetables, milk, eggs, fish, chicken, banana), eating at regular times, exercise (e.g., yoga), having energy, having a ‘fresh’ mind, having a healthy body.
* They knew a lot of ways that a person could become or remain healthy including: eating certain foods (yoghurt), getting up early, doing yoga and other physical activities (e.g., cardio), brushing teeth, avoiding unhealthy (outside, oily) foods, eating lots of green leafy vegetables, eating an apple every day.
* ‘Outside foods’ were seen as unhealthy foods and the adolescents felt that they should not eat those if they wanted to be healthy. Particularly ‘Chinese’ outside food were seen as unhealthy. They knew about chemicals in this type of food including MSG.
* They knew that they may get ill from eating outside food because the food is cooked out in the open.
 | * *“If we eat healthy food we get healthy body”* (Boy, aged 15-17, Mumbai).
* *“Good health means we should be fit”* (Girl, aged 10-12, Mumbai).
* *“… Should not eat junk food”* (Girl, aged 10-12, Mumbai).
* *“Mind should be fresh”* (Girl, aged 15-17, Mumbai).
* *P4: Morning we should get up early & we should exercise*

*P3: Should do yoga**P12: Cardio one should do.* (Girl, aged 15-17, Mumbai).  | * As in some of the other Indian sites, caregivers were preoccupied with the adolescent’s academic achievements. Some were aware that good health would improve brain function.
* They were aware of the types of food that were conducive to good health. They knew that ‘outside’ food was unhealthy and their adolescents should not eat it.
 | * *“Good health is important. If health is good then, their brain will function well and then they will study well. They will get good job or do good in their work and progress in life. That’s why parents wants good health of their children”* (Caregivers, Mumbai)
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| **Poor urban townships** | **Soweto, South Africa** | * Both the younger and older adolescents expressed similar understandings of the concept of ‘nutrition’.
* Across all groups nutrition was understood to describe individuals’ daily diets, including cereal staples and vegetables, as well as other high-vitamin foods.
* Adolescents associated healthy eating with consuming fruit and vegetables, as well as with drinking water in some cases.
* Many of the adolescents described their own diets as unhealthy.
* Older adolescent girls also believed that exercising could negate some of the effects of unhealthy dietary practices.
 | * *"Nutrition means that the food has a lot of vitamins"* (Girl, aged 15-17, Soweto)
* *"[I] think I am kind of unhealthy because I eat food with lots of fat, things like Kotas”* (Boy, aged 15-17, Soweto)

* *"[My] health is bad because I eat too much junk food and sweets"* (Girl, aged 10-12, Soweto)
* *“I think eating junk and exercising, you can be healthy”* (Girl, aged 15-17, Soweto)
* *“Making your body active and ensuring that you are healthy both inside and out”.* (Boy, aged 15-17, Soweto).
 | * Caregivers had a similar understanding of nutrition as the adolescents.
* Unlike adolescents, caregivers acknowledged the need for a balanced across specified meal times.
* Unlike their children, caregivers understood that exercise could not compensate for unhealthy eating behaviours.
* A cycle of family intergenerational factors were described as influencing food choice and eating practices. For example, they recognised how their current dietary behaviours had been shaped by their caregivers and that they were now modelling the same dietary practices for their own children.
* Both adolescents and their caregivers understood the consequences of unhealthy eating practices – specifically linking them to the consumption of high sugar and fat foods, often termed ‘junk food’ items. However, regardless of this understanding, both adolescents and caregivers described regularly eating these foods.
 | * *"Nutrition is just eating right and balancing your diet throughout the day, like knowing your breakfast, what you need to eat, your lunch and your supper"* (Caregiver, Soweto)
* *“There are people who are strictly in [the] exercising department but you can’t even say that they are healthy because there are also these fast food shops that sell McDonald’s and people are always eating there so you are not healthy if you still go there and eat lots of fast food”* (Caregiver, Soweto)

* *“Mine [health] is not good as it used to be, the last time I was pregnant and a little healthier compared to now. I’m eating fat cakes and spicy things*" (Caregiver, Soweto)
* *"My grandmother would have made porridge, [so] even when I grow up I am going to do that…if I wake up at home I need to go and queue in a line for fat cakes, I will continue doing that because [it is] more of a tradition to me"*(Caregiver, Soweto)

 * *"It also starts with us as parents because kids are observant, so they’ll see that at home they’re always having junk or there isn’t any form of exercise so they don’t get used to a healthy lifestyle"*(Caregiver, Soweto)

 * *“You will find young boys always holding alcohol in his hand and when you ask them, even we are afraid to ask them, ‘where do you get that?’ you are afraid to get hurt or afraid to get shot”.*  (Man caregiver, Soweto).
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| **Low and middle income urban** | **Mysore, India** | * The adolescents talked about certain vitamins and minerals conducive to good health and growth (vitamin A, proteins, carbohydrates, whole wheat, fibre).
* They knew that they should be eating lots of fruit and vegetables, and less sugary foods.
* They knew that they shouldn’t eat unhealthy (e.g., ‘junk’) foods (but at the same time admitted that they did anyway).
* The relate certain foods to strengthening bones (e.g., drinking milk).
* The adolescents talked about reading the back of food packets to obtain nutritional information about that food.
* They are getting information about food (hygiene and nutrition info) on whatsapp, about healthy foods on adverts. They also get nutrition information from TV adverts and school (specifically, textbooks and science lessons).
* Good knowledge about drinking water. They also know scientific and medical terms (e.g., marasmus) and nutrients.
* They knew about the link between obesity and diseases, blocked veins.
 | * *“P: I thought Marasmus is for obesity and kwarshiokar was for (can’t hear)*
* *P: No! Marasmus is…means…like (can’y hear)*
* *P: So then what’s kwashiokar?*
* *P: So too much fat is not good and too little fat is also not good”* (Mixed FGD, aged 10-12, Mysore)
 | * Information available about junk food on whatsapp.
* Knowledge informs what they want their child to eat (e.g., proteins).
* They were very knowledgeable. Important diet includes calcium, magnesium, proteins, fibre.
* Knowledge about the need for protein for vegetarian diets.
* Some of the caregivers had talked to dietitians.
 | * *“Now my children are thin or whatever, later I’m worried about them getting obese also… junk is introduced in their system they’ll get used to it and they want it”.* (Caregiver, Mysore).
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| **Rural and peri-urban villages** | **Pune, India** | * The adolescents had learnt a lot in school about nutrition and health.
* The adolescents had specific knowledge of various vitamins and minerals. They knew that street food is filled with unhealthy additives, and dirty water (contaminated), flies spreading disease etc.
* They highlighted the risk of death from eating too much caffeine and chocolate.
* Healthy people are ‘fresh’, disease free, fit (through exercise).
 | * *“[someone who is healthy is] One who does not have any disease”* (Boy, aged 15-17, Pune).
* *“We had a lesson in fifth. It contained information on proteins, sugars, cereals, vitamins A, B, fibrous substances and leafy vegetables. Misal contains proteins and sugars.”* (Boy, aged 10-12, Pune)
 | * Cleanliness and neatness were associated with health. Mothers believed that if the mother is ‘neat’, her children will stay neat.
* Caregivers believed that children should be taught healthy habits by mothers, such as hand washing. They felt it was their important role to pass their knowledge onto their children.
* Mothers were concerned about the impact of digital technology, considering that adolescents’ addiction to digital media was bad for their health.
* Caregivers highlighted the importance of regular meals and avoiding outside food for health.
* ***Note.*** *There isn’t as much data to go on for this theme. Neither groups talked much about health knowledge.*
 | * P4: *“It is important to wash hands before eating”.*
* P3: *“Hand wash after using toilet”.*
* P7: *“Wash your face and feet after coming from the outside”* (Caregivers, Pune).
* *“what we should do is, we should not let them go near the food items which shouldn’t be eaten (laughter) if we don’t let them go then how will they eat?”* (Caregiver, Pune).
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| **Rural villages** | **Kiang West, The Gambia** | * They were very knowledgeable about the impact of diet on health.
* Disease prevention knowledge was very good- specifically toothache (they emphasised this in many of the adolescent groups), blood pressure, diabetes, digestion, bone strength, rickets, night blindness. Participants were aware of the association between food hygiene (e.g., infestation can cause sickness) and health.
* Many of the participants were aware of the nutritional benefits that some foods may have. They talked about the benefits of proteins for building muscle, carbohydrates, and the benefits of vitamins (A, C and E) for good health. Good for joints, energy, strength (which they need for working in the fields).
* Participants’ knowledge base seemed to be partly factual, evidence based (perhaps from the MRC unit which is in close proximity to the villages) and some family influenced/ cultural beliefs. Some of their knowledge was based on short-term consequences of eating certain foods (e.g., stomach ache) in contrast to long-term issues such as diabetes.
* The younger adolescents were more focussed on short-term diet effects than older adolescents. Especially sickness, stomach aches and tooth ache.
* Adolescents, even in poor settings, know about healthy diet and lifestyles. They want to be healthy (have energy, feel happy, look good and live longer) but adolescent values, including a desire for autonomy, a need to ‘belong’ in their peer group, plus vulnerability to marketing, leads them to make unhealthy choices.
* It seems as though the adolescents are generally using more scientific language around nutrition and health. In contrast, the caregivers used more lay terms and expressed more local-based beliefs.
 | * “*Vitamin C is good in the body. All these things you see, if you lack one of them you see, you have disease. Disease like, when a child is born without proper diet, will have malnutrition and constipation also”.* (Boy, aged 15-17, Kiang West).
* *“F: If you eat a lot of sugary things, what do they do?*
* *P: It causes diabetes”* (Boy, aged 15-17, Kiang West)
* *“And these ones also are vegetables, they have vitamins, vitamin C is good in the body. All these things you see, if you lack one of them you see, you have disease. Disease like, when a child is born without proper diet, will have malnutrition and constipation also, due to lack of all these foods.”* (Boy, aged 15-17, Kiang West)
 | * There were more examples of culturally constructed beliefs among the caregivers- some are factual and others are cultural beliefs (e.g., some foods ‘make men weak’, concerns that sugar causes children to wet the bed).
* Parents pass on local knowledge and beliefs about food to their children.
* Parents were aware of long-term health consequences of diet behaviors (joint pain, diabetes, blood pressure, skin disease,). Generally they often stated that certain foods were good for their health. Eating certain foods were good for fighting disease.
* Concerns about sugar and worms.
* Fathers talked about health specifics much less than mothers other than ‘cleansing the bowel’ and ‘toothache’. There was some mention of blood pressure, liver problems, gas, bone strength, potency and weakness (which would inhibit ability to work). They mention ‘being fat’ which was associated with not being strong and heartburn.
* Parents feel that it is their responsibility to guide their children to eat the right foods. They feel that otherwise, they will not know.
 | * *“So, we are all talking about the same thing, what is our good health, as he said, children don’t know how important it is so if you do not guide them they will not know; but the healthy foods that we have such as Futo, Nyelengo and mono if they eat those most, they will not have these small ailments during the rainy season but rice can cause constipation, oil too can cause constipation and if you cook Durango they frown on it; by and large all these joint pains are caused by eating too much rice; when you eat rice in the afternoon, you should eat something different at night”* (Man caregiver, Kiang West)
* *“If there is a lot fat in the body, you become lazy, sleeping much all the time, you become weak and not able to do your normal work; makes you sick”* (Man caregiver, Kiang West)
* *“Eating a lot [of] sweets all the time is what makes children to be wetting the bed”.* (Woman caregiver, Kiang West).
* *“Children don’t know how important it [health]is so if you do not guide them they will not know.”* (Caregiver, Kiang West).
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| **Dervan, India** | * The older adolescents girls had a holistic view of health. When asked about how they viewed health, they referred to intelligence, happiness, sleep, diet, weight, having a ‘fit’ body, absence of disease, engaging in physical activity.
* Their role models were people who were fit,healthy, who taught them about nutrition (e.g., school teacher), who weren't sick very often,
* They knew what to do to keep themselves healthy (e.g., eat leafy green veg, fruit etc. They knew to avoid unhygienic food (e.g., that which had been left out in the open)
* They felt that their caregivers took care of their health by making sure that they ate healthy foods. Their caregivers also prevented them from consuming unhygienic foods.
* Many attributed healthy people with having eaten leafy vegetables.
 | * *“I feel that my body should be fit. This is what I feel. I don’t think I am either fat or slim… But I should be disease free, healthy and be happy in whatever I do.”* (Girl, aged 15-17, Dervan).
* *“First of all I feel that my body should be fit. This is what I feel. I don’t think I am either fat or slim.. But I should be disease free, healthy and be happy in whatever I do.”* (Girl, aged 15-17, Dervan)
 | * Parents felt that they have shown their children how to be healthy. E.g., if they don’t eat junk food then their children learn not to.
* The caregivers didn’t express much knowledge about health and nutrition. There were a few instances where they did- commenting that leafy vegetables were good for the blood.
 | * *P1: We don’t eat outside*

 *P2: We also don’t eat out* *P3: We ourselves don’t eat so our children have learned not to eat*(Caregivers, Dervan). |