

California Polytechnic University, Pomona

Case Study

Toddlers

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Case Study - Olivia

General Description

Olivia is a fifteen month old little girl who lives with both of her parents. Olivia was born in the United States, but her parents are from Poland, and all of their family still lives over there. Olivia is learning both English and Polish, and will sometimes combine the two languages. She knows about thirty words, and can repeat most simple words. She is able to combine two words for a thought, and is working on combining three words. She has mastered walking, and is trying to figure out how to run. She loves to listen to music, dance, look through books, and draw. She also loves her fairy tale cartoons, and insists on watching one every day, or she will follow mom or dad around with the remote control.

Olivia spends the entire day with her mom. Her mother works as a nanny for a five year old boy, and is able to take Olivia to work with her for social interaction, and to ensure that she eats well and on time. She is currently bottle fed, and eats solid foods. Most meals are eaten in a high chair, but there are some moments when she does eat in front of the television. She takes two naps a days, and her mom takes her to the park every day at least for an hour. Her sleep schedule is as follows:

5:30-6:00 am: Wakes up for milk, and will go back to sleep

7 am: Wake up

9:45-10:30 am: First nap

3-4:00 pm: Second nap

8:00 pm: Bedtime

Anthropometrics

Olivia	Actual			Recommendations (+ 8 oz/month, + 0.4 inches/ month)		
Age (months)	10	13	15	10	13	15
Height (in)	28.5	30.0	30.5		29.7	30.5
Weight	18 lb 13 oz	20 lb 4 oz	21 lb 10 oz		20 lb 5 oz	21 lb 5 oz

* Olivia fell between the 50th and 75th percentile for all of her measurements. Please see attached growth chart.

Nutrition Intake and Nutritional Status, Dietary Habits

Olivia is bottle fed milk, drinking other liquids from a straw cup, and eating solid foods. Most meals are eaten in a high chair, but there are some moments when she does eat in front of the television. She is a happy healthy baby, who recently started getting fussy during meal times. Mom has been struggling feeding her, but this is also a new issue.

From the MyPlate analysis, Olivia is meeting both her recommended dairy and protein intake. She is above the recommended fruit intake by 35%, but she did not meet the recommendations for grain intake (less 22%), and total vegetable intake (less 61%).

According to the ESHA breakdown, Olivia consumed 769.93 calories during her 24 hour recall. Estimated Energy Requirements (EER) for children ages 13-36 months is $(89 \times \text{weight of child (kg)} - 100) + 20$. Olivia's EER would be $(89 \times 9.82\text{kg}) - 100 + 20 = 794$ kcal. Olivia consumed 97% of her recommended calories.

Evaluation and Recommendations:

There were some key areas where we noticed that Olivia's diet could use improvement after analyzing the Diet Adequacy Bar Graph:

Nutrients where Olivia was over 110% of the recommendation:

- Calories from Saturated Fat (143.72%)
- Protein (435.20%)
- Dietary fiber (112.61%)
- Vitamin A - RAE (165.13%)
- Vitamin B2- Riboflavin (235.61%)
- Vitamin B3 - Niacin (151.81%)
- Vitamin B6 (113.35%)
- Vitamin B12 (375.60%)
- Biotin (258.86%)
- Vitamin C (219.75%)
- Pantothenic Acid (144.12%)
- Iodine (151.23%)
- Magnesium (134.83%)
- Manganese (127.91%)
- Phosphorus (142.26%)
- Selenium (213.18%)
- Zinc (162.43%)
- Choline (115.34%)

Nutrients where Olivia was under 90% of the recommendation:

- Mono fat (73.66%)
- Poly fat (34.15%)
- Vitamin B1 (85.95%)
- Vitamin B3 (64.74%)
- Vitamin D (45.80%)
- Vitamin E (45.76%)
- Folate (80.34%)
- Vitamin K (56.84%)
- Chromium (5.75%)
- Fluoride (62.93%)
- Iron (69.43%)
- Potassium (34.44%)
- Sodium (45.33%)
- Omega 3 Fatty Acids (32.52%)
- Omega 6 Fatty Acid (34.00%)

Recommendations:

The areas of highest concern with Olivia's diet are the ratio of fruits and vegetables, her high protein and saturated fat intake, as well her need for more MUFAs and PUFAs, omega 3 and 6, potassium, iron, and vitamins B1, B3, D, and E.

Fruit and Vegetables

Olivia was at 135% of her recommended fruit intake, while she only reached 39% of her total vegetable intake. Olivia's mother fed her two different types of fruit both at breakfast and lunch, and her morning snack also included fruit. Substituting vegetables at one of these meals (such as lunch), and then giving a mix of both one fruit and one vegetable at snack time would help to balance out the amount of fruits and vegetables that Olivia is receiving. By choosing some colorful vegetables that are higher in the vitamins that Olivia is lacking, two areas can be addressed. Adding vegetables such as spinach, or other dark leafy greens, sweet potatoes, or broccoli would help to increase Olivia's vegetable intake, as well as increase her Vitamin E and potassium levels.

High Protein Intake

According to our text and ESHA, the recommended amount of protein for 1 - 3 year olds is 10 - 13 g/day. Olivia consumed 44g during her 24 hour recall. The food items highest in protein in her diet were the scrambled eggs, milk, yogurt, and chicken. Since Olivia is meeting her recommended dairy intake for the day, it is more important to decrease the other amounts of proteins that she is receiving.

Saturated Fat Intake and Vitamin D

The highest amount of saturated fats in Olivia's diet came from the 2% milk that she was drinking. By switching to low fat milk fortified with vitamins A and D, this would address both Olivia's high intake of saturated fats, and her lack of vitamin D. The time that she spends in the park with her mother will also increase her vitamin D.

Vitamins B1, B3, Omega 3 and 6, and MUFAs and PUFAs

Including foods such as fish (cold water tuna, salmon, or trout - though be aware of mercury levels), black beans, cashew or peanut butter, avocado, and fortified orange juice, or maintaining foods such as peas, whole wheat, chicken, and eggs will help with Olivia's vitamin and omega intake. These items can also help with Olivia's potassium intake. Being conscious of the types of oils that are being used to prepare meals will also help with Olivia's MUFA and PUFA intakes. Incorporating nut butters, or using oils such as olive, canola, or flaxseed oils will help ensure that Olivia is meeting her recommendations.

Overall Concerns and Recommendations

Iron deficiency is a serious concern for Olivia at this age. We highly recommend that foods such as beans, spinach, nut butter, and enriched snacks be incorporated into her diet to help make sure she is meeting her iron recommendations, as well as other vitamins and minerals that were mentioned above.

The fact that Olivia is also still on the bottle increases her risk for dental caries. Her mother needs to ensure that she is receiving proper dental care, especially after consuming liquids higher in sugar from the bottle. Weaning her off the bottle should also be a focus, but not at the expense of her dietary needs.

Fluoride levels also need to be monitored, and is something that Olivia's mother should discuss with her doctor since the levels are unknown in the tap water that Olivia is consuming.

Appendix

24 Hour Dietary Recall:

6:00 am

5 oz Milk (whole)

8:30 am - Breakfast:

1 egg, scrambled

1/2 slice whole wheat bread

1/2 Tbsp cream cheese

1/4 cup cut up strawberries

1/4 of a pear

green tea

10:30 am

5 oz Milk (whole)

12:00 pm - Snack:

pear, peas, spinach, pouch

water

2:00 pm - Lunch:

1/4 cup whole milk plain Greek yogurt

1/4 cup blueberries

1/2 banana

water

4 pm

5 oz Milk (whole)

5 pm - Snack:

1/4 cup cheerios

water

7 pm - Dinner:

1/4 cup diced chicken

1/3 cup whole wheat pasta with 1 tbsp spaghetti sauce

1/4 cup peas

Water

See attached: MyPlate Food Group Analysis, ESHA Nutrient Analysis

