

| Facts | Ideas | Learning Issues | Action Plan |
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| <p>Kanyange's mother watched Kanyange slowly get severely ill overtime.</p> <p>Over a few months, Kanyange's health has deteriorated. Stopped playing with her friends & gets lethargic all the time.</p> <p>Kanyange's abdomen started to swell, ribs poking to her chest, arms and legs (from knee to downwards) got thinner, change in hair colour (yellow reddish), and loss of weight.</p> | <p>Kanyange experienced health complications.</p> <p>The symptoms show that Kanyange is suffering from a disease.</p> | <p>1. What are the symptoms faced by Kanyange?</p> <p>2. What are the symptoms of weak immune system?</p> <p>3. What are the causes of weak immune system?</p> | <p>1. Abdomen swelling, ribs poking to her chest, arms and legs which is from knee to downwards got thin, changes in hair colour which turns from dark brunette to yellowish red and has also started to fall off and experienced a major weight loss.</p> <p>2. Extreme tiredness, gets weaker and sicker day by day.</p> <p>3. The pattern of colonic micro-flora has vast amounts of pathogenic bacteria found in the malnourished with less diverse and mature flora. Gram negative bacteria found in the small intestine of the malnourished children. The phagocytosis in the malnourished is disrupted due to the leucocytes' ability was impeded to ingest bacteria or particles.</p> |
| <p>Kanyange's 7 years old brother Kagabo, has also faced health crisis just like his sister.</p> <p>Kagabo's grade started to drop and falling asleep in class.</p> | <p>Kagabo's body immune system has weakened.</p> <p>Mental health symptoms appear.</p> | <p>Does it exist if we just considered the person as malnourished by looking on the physical appearance or mental symptoms on that person?</p> | <p>- It might be yes because malnourished people can be strongly considered when she/he was positively detected by the mutation detection. However, as what we can see, the physical appearance of Kanyange likely 50 % shows the symptoms that she get malnourished.</p> |
| <p>They consume sweet potatoes, bananas, and cassava as their daily meal.</p> <p>The staple food source of Rwanda, Burundi</p> | <p>The daily diet pattern consumed by the family members are imbalanced.</p> <p>Vast consumption of cassava that leads to unhealthy starch accumulation. (Non-healthy lifestyle)</p> | <p>What are the effects of over-consuming cassava?</p> | <p>- May have a higher chance of developing certain paralysis conditions due to the accumulation of chemicals called cyanogenic glycosides.</p> <p>- Possesses an antinutrient property in which it may interfere with digestion and impedes the absorption of</p> |

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| | Overconsumption of starch (carbohydrates) will give side effects to people. | | minerals and vitamins in the body's system |
| <p>The family went to speak to the village chief and traditional healer.</p> <p>They were told to visit the Health Centre because it could cause by the food, they are feeding their children.</p> | <p>Rwanda Burundi is a region located at the intertropical convergence zone which experience heavy precipitation at certain time of the year that causes diseases that associates with malnutrition.</p> | <p>Why do the villagers lack awareness about nutrition?</p> | <p>Lack exposure on nutrition education. Continuous predicaments such as the land availability, gender issues, and policy issues, that lead to malnutrition</p> |
| <p>The health worker measured Kanyange's arm and a tape with 3 colours (red, yellow and green) are shown.</p> <p>Red – shows that individual was severely malnourished</p> <p>Yellow – shows that individual was moderately malnourished</p> <p>Green – shows that individual was healthy</p> <p>The measurement came out 'RED'</p> | <p>MUAC tape are predominately used to measure the upper arm circumference of children to detect malnutrition.</p> <p>Kanyange was positively malnourished with red measurement.</p> | <p>How does MUAC tape used to detect malnutrition?</p> | <ol style="list-style-type: none"> 1. Make sure the children are not wearing any cloth on his or her left arm. 2. If possible, the children should stand straight and sideways to measure. 3. Bend the child's left arm at 90 degrees to the body. 4. Find the mid-point of upper arm which is between the tip of the shoulder and the elbow. 5. Mark with pen the upper arm point. 6. The arm should be in relax position on his or her side. 7. Using both hands, place the MUAC tape window (0cm) on the mid-point. 8. While keeping the left hand steady, wrap the MUAC tape around the outside of the arm with right hand. 9. Feed the MUAC tape through the hole in the tape while keeping the right hand planted on the arm. 10. Pule the tape until its fit securely around the arm while keeping the right hand steady on the child's arm. 11. Read and record the measurement at the window of MUAC tape. 12. If less than 12.5cm (red or yellow) the children should receive a treatment. |

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| <p>The health worker explains that Kanyange would need medical treatment immediately.</p> <p>Kanyange would become even more ill and possibly could die if no medical attention is given.</p> <p>Malnourishment causes stomach complications which disrupts the digestive system.</p> | <p>Medical treatment is vital to treat malnourished people</p> <p>Medical attention and treatment are needed to monitor the severity of malnutrition of patient from time to time</p> <p>Malnutrition is caused by people who does not obtain enough nutrition that incorporates a variety classes of food.</p> | <p>What are the alternative ways to detect malnutrition?</p> | <p>- Traditional method of malnutrition assesment such as by calculating Body Mass Index (BMI), measuring skinfold thickness, and Mid-arm muscle circumference (MAMC).</p> <p>-The Subjective Global Assessment (SGA) and Nutritional Risk Screening (NRS-2002) for greater accuracy in results.</p> <p>- A clinical examination by the doctors would be a better option because they will check for an enlarged liver, a condition called hepatomegaly and swelling for the patient.</p> <p>-Tests such as blood and urine test is extremely accurate that measures the level of protein and sugar in the blood.</p> |
| <p>The regular dish Kanyange's mother usually serves could get Kanyange's condition worsens.</p> <p>Kanyange need special food from the clinic.</p> | <p>There are 6 essential nutrients to be consumed. They are proteins, carbohydrates, lipids, vitamins, minerals and water</p> | <p>What are the effects of lack of nutrients in human body?</p> | <p>-Iron deficiency that can lead to anemia.</p> <p>-Hypertension and high blood pressure</p> |
| <p>Malnutrition impedes children's growth.</p> <p>Malnutrition is not just about the quantity food consumed but also the quality.</p> <p>Malnourished children are more likely to catch diseases like cholera, diarrhea and malaria.</p> | <p>Malnutrition could lead to health complications either when nutrition is poorly obtained or recklessly consumed.</p> <p>Kanyange is considered malnourished due to the weakening of the immune system.</p> | <p>Why does Kanyange is considered malnourished based on their food routine consumed?</p> | <p>Eating cassava frequently on a daily basis is one of the factors that causes Kanyange to become severely malnourished.</p> |
| <p>Kanyange still receives breastmilk from her mother until she is 2 years old.</p> | <p>Breastfeeding is undeniably a great way to keep Kanyange healthy and helps to prevent malnutrition/diseases.</p> | <p>1. What are the benefits of breastfeeding?</p> <p>2. What is the age range that is suitable for breastfeeding?</p> | <p>1)- breastfeeding protects infants against contagious and transmissible diseases such as respiratory tract infections and gastrointestinal sickness during infancy and beyond.</p> |

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| | | | <p>- an immunological and antibacterial asset against pathogens while a tip to prevent Kanyange from attacked by diseases</p> <p>2)- within six month and will slowly transitioned to appropriate family food after six months while continuing to breastfeed for two years or longer.</p> |
| <p>Kanyange's mother prepares food which was split in 3 different family of foods based on their nutritional status.</p> <p>Family 1 – Protein (make body grow strong & build muscle)</p> <p>Family 2 – Carbohydrates (provide energy)</p> <p>Family 3 – Fruits/Vegetables give vitamins and minerals)</p> | <p>Balanced diet is important for the malnourished so that they can keep on receiving enough nutrients.</p> | <p>1. What is the importance of balanced diet?</p> <p>2. What are the essential food pyramid sources must be consumed?</p> | <p>1)- Balanced diet has a correlation between antibody formation and the development of immune system.</p> <p>- imbalanced diet causes immunodeficiency affecting infants, children, adolescents, and elderly people.</p> <p>2)- Four levels of food on food pyramid.</p> <p>-The bottom level is the carbohydrates such as grains which need to be consumed the most.</p> <p>-The second lower level is fibre such as fruits and vegetable that needs to be consumed moderately.</p> <p>-The third level is protein such as meat, fish or eggs. The fourth level is fat such as oil salt or sugar that must be consumed less</p> |
| <p>Kanyange's mother has planted myriad types of vegetables so that they could keep them as stock for future consumption.</p> <p>After 2 months, there is a noticeable difference for the family.</p> <p>Kanyange has recovered from her disease that associates with malnutrition. She looks healthier and stronger.</p> | <p>Vegetables and fruits are very important to the body.</p> <p>Vegetables contains vitamins that is useful to fight infections and to maintain a steady growth.</p> <p>There are different types of vitamins with different types of</p> | <p>1. What are the role of cofactors & vitamin in metabolism?</p> <p>2. What are the types of vitamin needed to maintain good immune system?</p> <p>3. What are the food rich in</p> | <p>1)- keep and help metabolic activity to work properly</p> <p>- Vitamin play a role on absorption, transport and metabolism</p> <p>2)- Vitamin A, B, C, D, E, K because they carry different functions from one another.</p> |

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| | <p>advantages because it plays a big part in human metabolism.</p> | <p>cofactors & vitamins?</p> <p>4. What are the effects of imbalanced intake of vitamins?</p> | <p>- provide variety functions for eyes, brain, blood cell, nervous system, skin and provide energy that is good to maintain immune system.</p> <p>3)- beef, liver, dried milk, nuts, oats, oranges, eggs, seeds, legumes, peas and yeast, orange, kiwi, lemon, guava, grapefruit and vegetables such as broccoli and cauliflower.</p> <p>4)- prevent adverse chronic diseases in a good manner</p> <p>- too low or too high intake of vitamins are correlated with adverse health effect because each vitamin have been designed towards amount of dose which are suitable for us to consume a particular type of vitamins.</p> |
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