

## Impact Study of K SARAP Mix and Its Effect to Malnourished Children

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### ABSTRACT

*An experimental study was conducted to come up with sustainable, affordable, nutritious, and palatable menu to help alleviate malnutrition among children in a barangay in Quezon. It aims to create simple dishes from K SARAP MIX composed of roasted and ground rice and monggo and coconut oil. It aimed to measure its effect when served as viand, or snacks to the weight of malnourished children after 4 months of scheduled feeding. It also aimed to do a cost analysis and evaluate the acceptability of these recipes.*

*An initial weight survey identified 25 malnourished preschool children. The K SARAP MIX was cooked into dishes such as congee, champorado, pancake, balls, crispy dilis, burger patty, camote/banana turon, polvoron, kare-kare, spaghetti, coated fried or chicken, gravy, etc. Feeding was done three times a week during lunch time which lasted for 4 months. The weight was taken monthly and compared with the initial weight. Its use is versatile because it can be an additive to any menu. It can be added to any vegetable or meat for a variation in taste. The mothers were taught how to prepare and cook.*

*Findings revealed the weight of the participants improved gradually. Seventy two percent (72%) improved from malnourished to normal, one, from severely malnourished to malnourished while 25 % did not improve. Mothers have identified its advantages such as economical, palatable, nutritious, easy to prepare, can be prepared in a variety of ways and appealing to the children.*

*It is therefore, highly recommendable for supplementary feeding, for personal consumption or for commercial purpose to help improve the nutritional status of children and also to augment the mothers' income.*

**Keywords:** Malnourish, K SARAP Mix

### I. INTRODUCTION

Malnutrition is still a prevailing health problem in the Philippines and in some depressed barangays in Quezon province. In 2011, estimated 18% or 103 million children under five years of age in developing countries were underweight according to WHO standards. Children in poorest households are twice as likely to be underweight. Those living in the rural areas are more likely to be more underweight than those living in the urban areas. Childhood malnutrition, including poor growth and micronutrient deficiencies is the underlying cause of estimated 35% of all deaths among children under five years of age.

Caudal, (2008) states that the causes of malnutrition are divided into two; the general population and among Filipino children. The general population is subdivided into: Poverty in which groups with low income generally have inadequate food intake both qualitatively and quantitatively. Intake is usually high in carbohydrates and low in protein, faulty food intake in which the food consumption surveys revealed inadequate intake of nutritious foods such as green leafy vegetables, vitamin C rich foods, milk, eggs, dried beans, fats and oils, etc resulting to inadequacy of essential nutrients; poor distribution of food supply-availability in large quantities does not guarantee equal distribution of food; large family size in which the number of the family members increases, less amount of food are available to each member. It is also attributed to

declining prevalence of breastfeeding, infectious diseases such as diarrhea, high prevalence of parasitism as attributed to mothers in which poor diets in pregnant and lactating mothers and poor health of the mother is the cause. Malnutrition in the Philippines is caused by a different factor which is faulty food intake. Surveys revealed that inadequate intake of nutritious foods such as green leafy vegetables, vitamin C-rich foods such as milk, eggs, dried beans, fats and oils resulting to inadequacy of most essential nutrients.

Rice is a complex carbohydrate that is digested slowly allowing the body to utilize the energy released over a long period of time which is nutritionally efficient. Rice has low sodium content and contains useful quantities of potassium, the B vitamins, thiamine and therefore a wonderful food for the very young and the elderly. It is suitable for vegetarians and vegans, with brown rice in particular complementing vegetarian and vegan dishes. It is an excellent food to help keep body health. There are many benefits that can be obtained from rice like it can be a source of carbohydrates, good source of energy, low fat, low salt, no cholesterol, low sugar, no gluten, no additives and no preservatives. Brown rice contains a small amount of rice bran oil. It is consisting of resistant starch, which is the starch that reaches the bowel undigested.

Proteins are basic material for every body cell. When at the age 4 years, body protein content reaches the adult level of about 18% of body weight. Its primary function is to build and

repair tissues. It helps maintain fluid and electrolyte balances in the body and prevent edema. It provides energy when the supply of carbohydrates and fats are insufficient. Proteins are found in animal and plant foods. The animal food sources provide the highest quality of complete protein. They include meats, fish, poultry, eggs, milk, and cheese. Examples of plant foods containing protein are corn, grains, nuts, sunflower seeds, sesame seeds and legumes such as monggo soybeans, navy beans, pinto beans, split peas, chick peas and peanuts.

Fats belong to a group of organic compounds called lipids. It is a greasy substance that is not soluble in water. They provide more concentrated source of energy than carbohydrates, it is composed of carbon, hydrogen and oxygen. It is also an essential fatty acid and acts as carrier of fat soluble vitamins A, D, E, and K. The fats stored in the body tissues that provide energy when one cannot eat. It serves as insulation from cold.

In the inadequacy of the nutrients mentioned above, rice, monggo and coconut oil were identified as the best, cheaper, and available sources of carbohydrates, and fats source which is very abundant in Quezon.

## II. MATERIALS AND METHODS

An experimental study was conducted to come up with sustainable, affordable, nutritious, and palatable menu to help alleviate malnutrition among children. It aims to create simple dishes from K SARAP MIX composed of pan roasted and ground rice and monggo and coconut oil. It aimed to measure its effect when served as viand, or snacks to the weight of malnourished children after 4 months of scheduled feeding. It also aimed to do a cost analysis and evaluate the acceptability of these menus from the participants.

An initial weight survey was done first. Twenty five underweight preschool children were identified as the participants. The K SARAP MIX was prepared using pan roasted and ground rice and monggo in a proportion of 2:1. Two tbsp of Coconut oil is needed for every cup of the mixture. Feeding was done three times a week during lunch time which lasted for 4 months. Dishes such as congee, champorado, pancake, balls, crispy dilis, burger patty, camote/banana turon, polvoron, kare-kare, spaghetti and many more. It is also used for breading (batter) for fried fish/chicken/pork, as thickening for sauce or gravy. Its use is versatile because it can be an additive to any menu. It can be added to any vegetable or meat for a variation in taste. The mothers were taught how to prepare and cook. The children were weighted monthly and results were compared to the initial weight. Mothers were asked to evaluate the K sarap mix.

A proportion of 2:1 rice is to monggo is the base ingredient used in all the recipes. 2 tbsp coconut oil is added per cup of the mixture. One cup processed K SARAP MIX may be sold at Php 25.00

Recipe for Bola Bola (K Sarap Balls) Makes 100 balls. Good for 17 servings at 6 pcs per person

Php 6.65 per serving. (NOTE: all cost estimation did not include fuel cost for cooking)



Figure 1. K SARAP MIX (rice and monggo and coconut oil)



Figure 2. LALATOK (K Sarap Tokwa Balls) Ingredients

Table 1  
Raw Ingredients for the Balls (Lalatok)

Ingredients	Unit/amount	Cost Price
K sarap mix	1 cup	Php 12.00
Cooking oil	½ cup	6.00
Salt	2 tsp	.20
Kintchay (minched)	¼ cup	2.20
Carrots (diced)	½ cup	5.00
Egg (beaten)	2 pcs	9.00
Seasoning mix (optional)	2 tbsp	3.50
Garlic (minched)	¼ cup	3.25
Onion (minched)	½ cup	11.00
Black pepper (ground)	1 tsp	1.00
Tofu (cubed)	10 cubes	50.00
Onion leeks (leaves, minced)	½ cup	2.50
<b>Subtotal</b>		<b>105.65</b>

Table 1 (cont.)

**Raw Ingredients for the Balls (Lalatok)**

<b>Ingredients for the Sauce</b>		
Sugar	2 tbsp	0.44
Vinegar	2 tbsp	0.60
Salt	pinch	.05
Garlic	1 glove	0.27
Water	½ cup	0
Banana catsup	¼ cup	6.00
<b>Subtotal</b>		<b>7.36</b>
<b>Grand total</b>		<b>113.01</b>

**Procedure:**

**Balls:** Mix all the ingredients altogether, portion into bite size pieces then fry till golden brown.

**Sauce:** Mix all the ingredients, boil in low fire while constantly stirring.



Figure 3. LALATOK (Finished product)



Figure 4. Camote con Banana Roll Ingredients

Table 2

**Ingredients for Camote con Banana Roll**

<b>Raw Ingredients</b>	<b>Unit</b>	<b>Cost Price</b>
Camote (boiled & mashed)	½ cup	Php 12.00
K sarap mix	1 cup	12.00
Banana (saba, boiled & shredded)	1 cup	3.80
Condensed milk	½ cup	24.00
Margarine	2 tbsp	.32
Lumpia wrapper	75 pcs	105.00
Sugar	1 cup	11.00
Oil	2cups	18.00
<b>Total</b>		<b>186.12</b>

Recipe for the Camote/Banana Turon makes 100 pcs. Good for 33 servings at 3 pcs each person  
Php 1.86 per piece

After preparing all the ingredients, mix them together thoroughly. Wrap the mixture in lumpia wrapper. Fry till golden brown. Roll in sugar after frying.



Figure 5. Camote con Banana Roll (Finished product)



Figure 6. Banana Burger Ingredients

Table 3

**Recipe for K SARAP BURGER**

<b>Raw Ingredients</b>	<b>Unit</b>	<b>Cost Price</b>
Banana (saba) peelings (boiled)	10 pcs	0
Onions (minced)	2 tbsp	2.20
Garlic (minced)	1 tbsp	1.08
Black pepper	2 tsp	1.25
K sarap mix	½ cup	6.00
Flour	¼ cup	5.76
soy sauce	2 tbsp	3.50
Salt	2 tsp	.50
Kintsay (chopped)	¼ cup	2.50
Oil for frying	½ cup	7.00
<b>Total</b>		<b>29.79</b>

Note: the banana itself can also be used instead of the peeling  
**Makes 20 patties. Good for 20 servings. Php 1.48 per patty/serving**



Figure 7. Banana Burger (Finished product)

Recipe for Congee. Makes 15 servings. Cost Php 3.79 per serving.



Figure 8. Congee Ingredients

Table 4  
Ingredients for Congee

Raw Ingredients	Unit	Cost Price
K SARAP MIX	2 cups	Php 24.00
Ginger (minced)	2 tsp	1.00
Onion leaves	¼ cup	1.25
Egg	2 pcs	9.00
Garlic	1 tbsp	1.08
Dried shrimp (hibi)	20 gms.	10.00
Onion (minced)	1 tbsp	1.10
Fish sauce	1 tbsp	.50
Beef cubes	2 pcs	10.00
Black pepper	Pinch	0
Water	8 cups	0
<b>Total</b>		<b>Php 56.85</b>

**Procedure:**

Sauté garlic, onion, ginger in fish sauce. Add the K sarap mix and 8 cups water while stirring constantly. Add the beef cubes, black pepper, dried shrimp and salt to taste. When cooked, add garnishing like chopped onion leaves (optional).



Figure 9. Congee (Finished product)

Table 5  
Monthly Weight Reading After Feeding with K SARAP MIX

Participant	Birthday	Date of Weighing										Result
		Jan		Feb		Mar		April		May		
		Wt Kg	Degree of Malnutrition (DM)	Wt	DM	Wt	DM	Wt	DM	WT	DM	
1	01/31/11	9.1	UW	9.3	UW	9.5	UW	9.7	UW	10	N	Improved
2	02/14/11	9.0	UW	9.1	UW	9.3	UW	9.5	UW	9.6	UW	NI
3	04/18/12	6.6	UW	7.0	UW	7.5	UW	7.8	N	8.1	N	Improved
4	07/05/12	5.5	UW	5.8	UW	6.1	UW	6.3	UW	6.9	N	Improved
5	03/17/09	12.2	UW	12.5	UW	12.8	N	13.1	N	13.4	N	Improved
6	09/13/08	12.9	UW	13.2	UW	13.6	N	13.9	N	14	N	Improved
7	07/20/10	10.4	UW	10.6	UW	10.9	N	11.2	N	11.3	N	Improved
8	09/21/09	11.4	UW	11.6	UW	11.9	UW	12.2	N	12.5	N	Improved
9	08/21/08	9.6	UW	9.8	UW	10.1	UW	10.3	UW	10.3	UW	NI

**Table 5 (cont.)**  
**Monthly Weight Reading After Feeding with K SARAP MIX**

10	04/28/08	13.0	UW	13.2	UW	13.4	UW	13.6	N	13.9	N	Improved
11	10/28/08	11.5	UW	11.6	UW	11.8	UW	12.2	N	12.5	N	Improved
12	03/17/10	10	UW	10.3	UW	10.5	UW	10.7	UW	10.8	UW	NI
13	10/05/08	12.4	UW	12.6	UW	12.8	UW	13.2	N	13.5	N	Improved
14	02/11/08	13	UW	13.2	UW	13.3	UW	13.5	UW	13.8	UW	NI
15	07/15/10	10.2	UW	10.4	UW	10.9	N	11.3	N	11.5	N	Improved
16	08/07/07	14.3	UW	14.6	N	14.8	N	15	N	15.2	N	Improved
17	07/08/10	9.9	UW	10.2	N	10.5	N	10.7	N	10.8	N	Improved
18	07/07/07	14.3	UW	14.5	N	14.9	N	15.1	N	15.3	N	Improved
19	08/24/08	13.1	UW	13.2	UW	12.9	UW	13.3	UW	13.7	N	Improved
20	08/05/09	11.2	UW	11.5	UW	11.7	UW	11.9	UW	12	UW	NI
21	11/29/07	13.5	UW	13.6	UW	14.6	N	14.7	N	14.8	N	Improved
22	09/02/08	12.5	UW	12.7	UW	12.9	UW	13	UW	13.2	UW	NI
23	07/01/10	9.5	UW	9.6	UW	9.7	UW	9.8	UW	10.5	N	Improved
24	07/07/07	13	UW	13.2	UW	14.1	UW	14.4	UW	14.8	N	Improved
25	10/16/08	10.2	SUW	10.7	SUW	10.5	SWU	11	UW	11.2	UW	Improved

**Legend : SUW = Severely Underweight**  
**UW = Underweight**

**N = Normal**  
**NI- Not Improved**

The table shows the initial weights of the children before the start of the feeding program. Gradually they have gained weight during the 4 months feeding program. Seventy two percent (72%) of the children have gained weight and have improved from underweight to normal weight while one child improved from severely underweight to underweight. However, six (24%) did not improve. It only shows that the feeding program is effective in achieving the desired weight for the majority of the participants. The supplementary feeding is complete in carbohydrates, fats and protein and is served in a variety of preparation that encouraged the children to eat more.

palatable taste. These are the criteria that are necessary for ideal feeding programs.

### III. CONCLUSIONS

Findings revealed the weight of the participants improved gradually. Seventy two percent (72%) improved from malnourished to normal. One, from severely malnourished to malnourished while 25 % did not improve. It is therefore, an effective and practical solution to malnutrition. It is highly recommendable to prepare this K SAPAP MIX for personal consumption or for commercial purpose. It can help improve the nutritional status of children and also help augment the mothers' income. Several other recipes may be tried on and it is also recommended for adults, too.

### REFERENCES

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Table 2

Evaluation of the Mothers on the Acceptability of the K SARAP MIX

Characteristics	Frequency	Percentage
1. affordable	24	96
2. palatable (delicious)	23	92
3. nutritious	23	92
4. easy to prepare	21	84
5. can be prepared in a variety of way	21	85
6. appealing to children	20	80

The table shows the evaluation of the mothers regarding the characteristics of the K SARAP MIX. It is evident that foremost is its economical advantage and its nutritious and