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A simplified dietary assessment to identify groups at-risk for dietary vitamin A deficiency

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The study aimed 1) to develop a locally adapted SDA (simplified dietary assessment) questionnaire taking into consideration available vitamin A rich foods and portion sizes in the study sites, and 2) to compare the SDA methodology vis-a-vis the long method of dietary vitamin A assessment. Field testing of the SDA questionnaire was carried out among 433 preschoolers belonging to households with or without home gardens in 3 selected municipalities. Vitamin A status of the children was assessed using the SDA and long method of dietary evaluation.

Comparison of vitamin A status using SDA vis-a-vis the long method revealed that 85 and 86% of those found to have high risk for vitamin A inadequacy using the SDA actually had <67% vitamin A adequacy using the long method, during the lean and peak periods of home gardening, respectively (significant at $\alpha \leq 0.01$). The SDA also showed high sensitivity in identifying preschool children with high VAD risk with 88-90% positive predictive value, and a high specificity in not classifying as low (96%) or moderate (91%) VAD risk cases those children who did not meet 100% RDA or had vitamin A intake which was either ≥ 100% adequacy or <67% RDA for vitamin A.

The SDA method provides a simple and rapid approach to assessment of risk for dietary inadequacy of vitamin A among population groups or individuals. The availability of the SDA empowers the Local Government Units (LGUs), Non-Government Organisations (NGOs) and People's Organisations to assess VAD in their areas on a more timely basis and facilitates feedback to mothers of children at-risk through nutrition education and counselling.

Introduction

While the Philippine national nutrition surveys include estimates of per capita as well as preschool vitamin A intake and adequacy, this is done only every five years and estimates only for national and regional levels can be generated. At present, the commonly employed method for estimating VAD (vitamin A deficiency) uses the complex food weighing or 24-hour recall which requires technical expertise in data collection and analysis. While local manpower for nutrition may be available, technical expertise in dietary assessment is wanting. This has been recognised as a major obstacle in efforts towards efficient programming, planning and managing of intervention strategies.

There have been efforts in developing short methods of nutritional assessment including shorter versions of the Food Composition Tables[1,2], dietary diversity scores[3], key monitoring indicators[4], and proxy indicators such as the use of core foods[5] or number of meals per day[6]. The key monitoring and proxy indicators have yet to be tested and validated. Furthermore, training and use of local manpower as data collectors for national and regional nutrition surveys have been resorted to in recent years in an effort to build local capabilities for nutritional assessment to some extent. At the least, however, college education and a degree in nutrition or allied fields, skill and competence remained basic requirements[7].

For the assessment of vitamin A status, guidelines for a simplified procedure were developed by the International Vitamin A Consultative Group or IVACG[8]. The simplified dietary assessment fills the pressing need for a simple and rapid procedure for dietary assessment to enable local government units, people's organisations and non-government organisations to generate crucial information on vitamin A status so that the vitamin A problem in a province, city, municipality, and barangay can be attended to.

Description of the Simplified Dietary Assessment

The Simplified Dietary Assessment (SDA) procedure classifies populations and individuals into categories of VAD risk on the basis of habitual vitamin A intake. The SDA is simple and rapid because it focuses only on vitamin A rich foods and food combinations commonly available and eaten by a population or specific age group being investigated in a geographical area of interest. In developing countries, these are usually not very many. The assessment includes a simple 24-hour recall of intake by portion size instead of actual weight, combined with a one-week or one month history of usual intake pattern. Instead of assessing intakes by physical units (ie microgram of retinol equivalent), foods are categorised as high, moderate or low vitamin A food based on the retinol content of the typical small portion size (SPS).

The assessment is done using a locally-adapted and simple structured questionnaire. A worker with limited specialisation in nutrition and food composition can be trained with ease and use the questionnaire without supervision to determine the relative risk of habitually inadequate vitamin A intake of target individuals.

Objectives of the Study

The study reported here aimed to: develop a locally-adapted SDA questionnaire taking into consideration available vitamin A rich foods and portion sizes of such foods for

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preschool children in study sites, and compare the SDA and traditional long method of dietary assessment.

Methodology

This study was a major component of the home gardening study done in three provinces covered by the Department of Agriculture's Family Food Production Project (FFPP) and employed a three stage (municipality, barangay, households) sampling in the selection of sample site and study households based on the presence of a home gardening program. One municipality each in Abra and Catanduanes and two in Bataan, and four barangays per province - two with FFPP and two without - were chosen. Households with garden (102) and without (106) garden were randomly selected from households with second and third degree malnourished preschool children in the study sites. A total of 433 preschool children were included in the study. The study involved assessment of dietary intake during two periods - one during the cool dry months (December - February) or peak period and the other during the hot dry months (March to May) or lean gardening period.

A complete 24-hour recall of food intake including intake outside the home was carried out on each of the preschool children in the study with mothers as respondent. In addition, a weekly vitamin A food frequency interview using the Simplified Dietary Assessment (SDA) questionnaire for each child was done. The 24-hour recall data were processed in two ways: one through the SDA method to determine the Consumption Index (CI) score and vitamin A deficiency (VAD) risk category and the other through the traditional long method which involved the calculation of vitamin A content using the Philippine Food Composition Table[9] and percent vitamin A adequacy using the Recommended Dietary Allowances (RDA) for Filipinos[10]. Retinol from breastmilk was also considered in the computation of total retinol intake. Retinol content of breastmilk was estimated for breastfed children based on the daily average breastmilk intake of children per age group. The weekly food frequency data were also processed using the SDA to determine the Usual Pattern of Food (UPF) score and VAD risk category. Differences between the peak and lean periods were compared, using the paired t-test and ANOVA, for preschoolers present, for both periods.

Data on VAD risk levels obtained using the SDA were tested vis-a-vis data on vitamin A percent adequacy from traditional or long method for sensitivity and specificity using the 2 x 2 contingency table for the correspondence of diagnostic classification. The chi-square goodness-of-fit test was applied. Differences between the distribution of children by VAD risk category using the SDA and by percent vitamin A adequacy using the long method as well as by VAD risk based on the one-day consumption index (CI) and usual pattern of food consumption (UPF) scores were tested using the chi-square.

Towards developing the local SDA which was the major tool used in assessing the vitamin A intake of preschool children from households with and without home gardens, in a study on the impact of home gardening on vitamin A consumption[11], the following stepwise procedure was carried out:

1. Identification of common sources of vitamin A in study areas. This was done by reviewing past dietary data and special nutrition studies with dietary assessment components done by the Food and Nutrition Research Institute (FNRI) in provinces which to a large extent are not culturally or socio-economically distinct from the study sites; doing market surveys in study sites; and examining agricultural reports of municipalities concerned.
2. Determination of portion sizes of available and commonly eaten food sources of vitamin A. Portion sizes, in common household measures, were determined from past dietary surveys and studies by the FNRI. The frequently recorded smallest portion size for each of the foods was identified as the "small portion size" or SPS, while the largest recorded portion size was "large portion size" or LPS. When the perceived SPS of a particular food known to be a vitamin A source yielded a very small amount of vitamin A and its medium portion size (MPS) still yielded less than 50μg RE, portion sizes were adjusted.

   A portion size card was developed. The card defines the small, medium and large portion sizes of each food in the list to aid the researcher when administering the SDAQ.
3. Determination of vitamin A content (μg RE) of small portion sizes of available and commonly eaten food sources of vitamin A and grouping by vitamin A content.

   The weight in grams of the SPS of foods listed was computed using the List of Weights and Measures[12] as reference while vitamin A content was determined using the Philippine Food Composition Table[9]. The foods in the list were then arranged in ascending order according to vitamin A content of the SPS.

   Foods whose SPS contained less than 50 μg RE were categorised as Low vitamin A foods; those with 50-250 μg RE were grouped as Moderate vitamin A foods and those with greater than 250 μg RE as High vitamin A foods.
4. Assignment of a vitamin A score to each food and food combination.

   A score of 1 was assigned to the SPS of low vitamin A foods. For moderate and high vitamin A foods, the scores were 3 and 5 respectively. Scores increase proportionately from the basic score for medium and large portion sizes of the same foods, as well as "relative-to-weekly" frequency of intake.
5. Design of the SDAQ (Appendix)

   The first column lists the commonly eaten and available food sources of vitamin A by vitamin A content, ie low, moderate or high vitamin A food. The next three columns show the vitamin A scores corresponding to small, medium and large portion sizes for each food in the list for the 24-hour recall component of the SDAQ. The next several columns show vitamin A scores corresponding to the frequency of consumption in a week by portion size for each food in the list, for the weekly food frequency component of the SDAQ.

   The lower portion of the SDAQ provides space for indicating the Consumption Index, which is the summation of scores relative to the 24-hour recall component of the SDA, and the Usual Pattern of Food score, which is the summation of scores relative to the weekly food frequency component of the SDA. Information on breastfeeding and vitamin A supplementation are accounted for in a space provided in the questionnaire.

Results

A. Vitamin A status using the long method of dietary assessment

The mean vitamin A intake by the children, all ages considered, was calculated to be 56.9% RDA during the peak home gardening period and 67.1% RDA during the lean period. Children who were less than two years of age had higher vitamin A intake (74% RDA and 70.5% RDA during

Table 1. Mean and standard deviation vitamin A intake including breastmilk from one-day food recall.

Age group	Vitamin A from food sources		Assumed vitamin A from breast milk		Total vitamin A			
					Intake		% Adequacy	
	Peak	Lean	Peak	Lean	Peak	Lean	Peak	Lean
Less than 2 years	110.1±247.3 n=109	99.9±130.3 n=103	198.3±86.4 n=87	208.2±84.5 n=85	247.8±242.2 n=118	237.2±131.6 n=118	74.0±73.1	70.5±39.1
2-6 years old	181.9±214.7 n=315	237.2±514.1 n=314	125.0±160.5 n=6	70.0±27.4 n=5	184.1±215.6 n=315	238.3±513.9 n=314	50.5±58.6	65.8±144.9
All Ages	163.4±225.4 n=424	203.3±454.4 n=417	193.5±93.3 n=93	200.6±88.2 n=90	201.5±224.7 n=433	238.0±443.3 n=432	56.9±63.6	67.1±125.1

the peak and lean periods, respectively) than the 2 - 6 years old (50.5% RDA and 65.8% RDA for peak and lean, respectively). The advantage of the younger preschool children may be attributed to breastfeeding, particularly by about 74% of these children (Table 1). The higher vitamin A intake during the lean period may be attributed to the high intake of vitamin C-rich foods which were likewise good sources of vitamin A, like mangoes, especially during the summer months. The role of fats and oils is essential to the absorption of vitamin A. However, intake was very low during the peak and lean period. This was reflective only of the amount of oil/fat inherent to the food item eaten. Added oil/fat used in cooking was not accounted for.

In terms of distribution, 69.3% and 67.7% of the preschool children had < 67% vitamin A adequacy; 18.0% and 21.1% had 67-99% of the RDA while 12.7% and 11.3% met 100% adequacy for the same nutrient during the peak and lean home gardening periods (Table 2).

B. Vitamin A Deficiency risk using the SDA

Using the SDA, mean vitamin A scores based on a one-day CI were 3.8 ± 4.4 SD during the peak period and 3.6 ±3.7 SD during the lean period (Table 3). This means that, on average, a child included in the study ate less than four small portions of a low vitamin A food (eg about 4 tbsp of kamote* tops) or about 1 small portion each of a low vitamin A food (1 Tbsp of kamote tops) and a medium vitamin A food (eg 1 Tbsp malunggay** leaves) a day.

Table 2. Distribution of preschoolers by adequacy level of vitamin A intake, by gardening period of collection.

i	Peak	Lean
	% Distribution of preschoolers	
Less than 67%	69.3	67.6
67 - 99%	18.0	21.1
100% and above	12.7	11.3

Table 3. Mean and standard deviation vitamin A scores from one-day food recall and weekly food frequency pattern.

Age group/ Study period	One-day food recall	Weekly food frequency pattern
Less than 2 years		
Peak	4.6 ±4.0 SD	33.3 ±19.4 SD
Lean	4.3 ±2.4 SD	31.7 ± 18.5 SD
2 - 6 years old		
Peak	3.4 ±4.6 SD	32.1 ±30.2 SD
Lean	3.3 ±4.1 SD	27.6 ± 27.4 SD
All ages		
Peak	3.8 ±4.4 SD	32.4 ±27.6 SD
Lean	3.6 ± 3.7 SD	28.7 ± 25.4 SD

Anova-test significant difference in vitamin A score for one-day food recall between age group at $\alpha \leq 0.01$ during lean period and $\alpha \leq 0.05$ during peak period. T-test significant difference in vitamin A score for weekly food frequency pattern between study period at $\alpha \leq 0.05$ for children ages 2-6.

Also using the SDA, computed were mean vitamin A scores of 32.4 ±27.6 SD for the peak and 28.7 ± 25.4 SD for the lean based on a one week usual pattern of food (UPF) particularly with reference to vitamin A foods. The UPF scores indicate that, on the average, a child included in the study had for one week a total of 32 small portions of low vitamin A foods or other possible combination, considering scores assigned to the vitamin A foods and portion sizes in the locally-adapted SDAQ.

In terms of distribution, 63% to 67% of the sample children, based on UPF scores, and 70% to 72% based on CI scores, were found to have high VAD risk. The difference in the distribution by VAD risk using the CI and UPF scores were not found to be significant. Children 2-6 years old had a high proportion of high VAD risk than the two years of age regardless of gardening period. The proportion of children with low VAD risk, however, was higher among the older preschoolers than the younger ones (Table 4).

Table 4. Percent distribution by vitamin A deficiency risk categories using SDA method by age group.

A. Usual pattern of food consumption.

Vitamin A deficiency risk category	< 2 years old		2 - 6 years old		All ages	
	Peak	Lean	Peak	Lean	Peak	Lean
Low	12.7	6.8	20.0	13.7	18.0	11.8
Moderate	36.4	39.0	12.4	15.0	18.9	21.5
High	50.8	54.2	67.6	71.3	63.0	66.7

B. 24-hr food recall consumption index.

Vitamin A deficiency risk category	< 2 years old		2 - 6 years old		All ages	
	Peak	Lean	Peak	Lean	Peak	Lean
Low	11.0	7.6	10.8	11.5	10.9	10.4
Moderate	28.8	38.1	12.1	12.7	16.6	19.7
High	60.2	54.2	77.1	75.8	72.5	69.9

C. Comparison of SDA with the long method of dietary assessment

The chi-square goodness-of-fit test showed that the distribution of preschool children by VAD risk using the SDA methodology tended to be similar as that of the long method of assessment, the relationship being highly significant ($P \leq 0.01$) for all ages and by age groups. Table 5 shows the distribution of preschool children (PSC) by VAD risk category using the SDA and by percent adequacy of vitamin A intake using the long method. Eighty eight to 90% of those children, all ages considered, with less than 67% vitamin A adequacy, were correctly classified as high VAD risk, indicating high sensitivity of the SDA in identifying high VAD risk cases. The sensitivity and specificity of the SDA vis-a-vis the long method are highlighted in Table 6. Positive predictive values of the instrument for identifying high VAD risk were computed to be 86% and 85% for the peak and lean periods, respectively (Table 7). A lower sensitivity of the SDA in

* Kamote is Ipomea batatas (Linn.) **Malunggay is Moringa Oleifera Lam

classifying those children whose vitamin A intakes were between 67 - 99% of the RDA (57-61%) as well as those who met 100% RDA (49-68%) was, however shown. By age group, the SDA instrument developed appears to have higher sensitivity in identifying VAD risk levels of children less than two years of age as positive predictive values for children were higher regardless of period than that for children 2 - 6 years old regardless of period. The results also indicate a high specificity of the SDA for the low and moderate VAD risk categories as more than 90% of children who did not meet 100% adequacy or had vitamin A intake which were either > 100% adequacy and < 67% adequacy were not classified as low or moderate risk, respectively. With regard to the specificity of the SDA for high VAD risk, 67 - 69% of children whose vitamin A intake was more than two-thirds of the RDA were not classified as high risk.

The sensitivity of the SDA for low and moderate VAD may be improved, it is proposed, by adjusting the cut-off scores for VAD risk categories as follows (specifically for CI):

- High VAD risk - < 5 CI score
- Moderate VAD risk - 5 - 6 CI score
- Low VAD risk ≥ 7 CI score

A child with a total CI score of 7 in theory had about 350 μg RE (7 x 50 μg RE) which is about 100% of the RDA for Filipino preschool children, and should thus be classified as low rather than moderate risk. The IVACG guidelines indicated a cut- off of >7 rather than ≥ 7 CI score for low VAD risk. Those children whose CI scores are 5 and 6 (estimating an intake which is more than two-thirds of but less than the RDA) may be classified as moderate risk. Cut-off for UPF scores should also be adjusted accordingly.

Table 6. Sensitivity and specificity of using the SDA method vis-a-vis the long method of dietary assessment.

Vitamin A deficiency risk category	Sensitivity	Specificity
Low		
Peak	58.2	96.0
Lean	44.9	94.0
Moderate		
Peak	52.6	91.3
Lean	57.1	90.3
High		
Peak	90.0	66.9
Lean	88.4	68.6

Table 7. Positive predictive values of using the SDA method vis-a-vis the long method of dietary assessment.

Vitamin A deficiency risk category	< 2 years old		2 - 6 years old		All ages	
	Peak	Lean	Peak	Lean	Peak	Lean
Low	85	67	62	44	68	49
Moderate	94	80	24	40	57	61
High	85	86	86	85	86	85

Using these modified cut-off points, the SDA's sensitivity of classifying as low VAD risk those children with ≥ 100% of the recommended intake, increased to 55% from 45% during the lean period. The positive predictive value of the instrument for identifying moderate cases was improved from 57 to 67% during the peak and from 61 to 66% during the lean.

With regard to the other signs of vitamin A deficiency, there were no reported signs of Bitot's spots or any complaints about night-blindness among the children.

Conclusions

In the light of the local government code, the need for local level assessment of nutritional status and planning of nutrition programs has become more urgent. The country recognises it needs assessment models, such as the SDA for determining VAD risk, which local manpower can adapt if proven useful.

Assessment results using the SDA on the one hand and the long method on the other, particularly with regard to the distribution of preschool children by vitamin A deficiency/adequacy, are highly comparable. The high sensitivity of the SDA in identifying the high VAD risk cases makes the instrument most useful for prioritising individuals as well as communities for vitamin A interventions considering limited resources. The high specificity of the SDA for low and moderate VAD, likewise, limits the probability of misclassifying high risk VAD cases as low priority for vitamin A intervention. Adjusting the cut-off scores for low and moderate VAD risks categories using CI scores could improve to some extent the sensitivity of the instrument in classifying low risk cases as well as the positive predictive value for identifying moderate cases.

The SDA questionnaire is easy to administer and accomplish, although this has yet to be tested among field workers in nutrition in as much as the purpose is for a local level assessment of VAD risk by local manpower. Technical skill however seemed to be a requisite for developing the appropriate SDA questionnaire. Provincial and municipal nutritionists who are knowledgeable about food consumption patterns in their communities may be tapped and trained to do this. A SDA questionnaire that may be applicable to the widest extent possible, ie across geographical groups in the country may be looked into.

Among the potential benefits of the SDA are :

1. The availability of the SDA empowers the Local Government Units (LGUs), Non-Government Organisations (NGOs) and People's Organisations to assess vitamin A deficiency in a province, municipality and barangay on a more timely basis, and therefore efficiently and more responsively address the problem;
2. Simple and adaptable for use by the local level, the SDA promotes people's participation in planning and managing community nutrition and development projects; and
3. The SDA facilitates feedback to mothers of children at-risk through nutrition education and counselling.

Ethics approval. Informed consent to participate in the above study was obtained from the sample households after being advised of the nature of the study.

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一個用以鑒定有維生素 A 缺乏危險的人群的簡單膳食評估

摘要

該研究目的在於：① 建立一個當地適用的簡單膳食評估（ SDA ）問卷，這個問卷考慮到當地可獲得的含有豐富維生素 A 的食物和數量。② 比較 SDA 法與傳統的長期膳食維生素 A 評估法。作者從三個地區選擇了有家庭菜園和沒有家庭菜園的學齡前期兒童 433 名爲對象，進行簡單膳食評估問卷（ SDAQ ）。兒童的維生素 A 營養狀況用 SDA 法及長期膳食評估法同時測試。

在家庭菜園旺季和淡季分別得出的結果爲：用 SDA 法發現處於高度維生素 A 不足危險的兒童有 85 和 86%，而用長期膳食評估法則少於 67% ($\alpha \le 0.01$)。SDA 法亦顯示有高度敏感性，它可預知學齡前期兒童的 88–90%維生素 A 缺乏（ VAD ），同時，對那些維生素 A 進食沒有到達 100% RDA 或維生素 A 進食 > 100% 和 < 67% RDA 的兒童， SDA 法亦有高度的特異性。

SDA 方法提供了一個簡單和快速途徑去評估膳食維生素 A 不足的人群和個體。同時 SDA 可使政府單位、非政府機構和社會團體評估他們當地的維生素 A 缺乏情況，並可及時地、方便地通過營養教育和勸告給有維生素 A 缺乏危險兒童的母親。

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Appendix. Simplified dietary assessment questionnaire

Food items by vitamin a content	24 Hour Food Recall			NEVER	Weekly food frequency																				
					Small Portion							Medium Portion							Large Portion						
GROUP L	SPS	MPS	LPS		7	6	5	4	3	2	1	7	6	5	4	3	2	1	7	6	5	4	3	2	1
Doughnut	1	1.5	2	0	7	6	5	4	3	2	1	10.5	9	7.5	6	4.5	3	1.5	14	12	10	8	6	4	2
Pan de letse	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Hotdog/hamburger roll	1	2	4	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	28	24	20	16	12	8	4
Butter cookies	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Hotcake (Homemade)/choc.cake/butter cake	1	2	4	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	28	24	20	16	12	8	4
Cerelac	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Yellow camote, boiled	1	2	4	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	28	24	20	16	12	8	4
Kamoteng kahoy, linupak,budin	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Kamote talbos/kangkong/petsay,luto	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Saluyot, luto	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Kalabasa, bunga, luto	1	1.5	2	0	7	6	5	4	3	2	1	10.5	9	7.5	6	4.5	3	1.5	14	12	10	8	6	4	2
Papaya, hinog	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Tiyesa	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Banana Cue/lakatan	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Pineapple Orange Juice	1	2	4	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	28	24	20	16	12	8	4
Mango Juice	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Tulingan, bangus, GG, dalagang bukid, hasa-hasa, matangbaka, tunsoy, talakitok, biyang puti, ayungin	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Tawilis, pampano, samaral,hito, tanigi	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Bagoong, Isda	1	2	4	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	28	24	20	16	12	8	4
Tuna, sardines/sardines in tomato sauce	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Tinapa, galunggong or tamban	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Alamang, fresh	1	1.5	2	0	7	6	5	4	3	2	1	10.5	9	7.5	6	4.5	3	1.5	14	12	10	8	6	4	2
Hipon, suwahe, luto	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Halaan,tahong,tulya linaga/luto	1	1.5	2	0	7	6	5	4	3	2	1	10.5	9	7.5	6	4.5	3	1.5	14	12	10	8	6	4	2
Pusit, boiled	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Sub-Total																									
GROUP L (continued)																									
Baboy, liempo	1	1.5	2	0	7	6	5	4	3	2	1	10.5	9	7.5	6	4.5	3	1.5	14	12	10	8	6	4	2
Baboy, laman, pinirito	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Blood, pork , chicken	1	1.5	2	0	7	6	5	4	3	2	1	10.5	9	7.5	6	4.5	3	1.5	14	12	10	8	6	4	2
Manok, bituka	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Vienna sausage	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Manok, pitso	1	2	4	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	28	24	20	16	12	8	4
Manok, pakpak	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Itlog, manok, luto/eggyolk	1	2	4	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	28	24	20	16	12	8	4
Itlog, pugo, luto	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Milk, evap, powdered, condensed, filled	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Chocolait	1			0	7	6	5	4	3	2	1														
Cheese filled/ spread	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
Mantekilya/sandwich spread	1	2	4	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	28	24	20	16	12	8	4
Milo/Ovaltine pulbos	1	2	3	0	7	6	5	4	3	2	1	14	12	10	8	6	4	2	21	18	15	12	9	6	3
GROUP M																									
Gabi, dahon, luto/malunggay	3	6	9	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	63	54	45	36	27	18	9
Carrot, luto	3	6	9	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	63	54	45	36	27	18	9
Mangga, piko, hinog	3	6	12	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	84	72	60	48	36	24	12
Baboy, pigi	3	6	12	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	84	72	60	48	36	24	12
Pork liver, boiled	3	6	12	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	84	72	60	48	36	24	12
Manok, dressed whole	3	6	9	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	63	54	45	36	27	18	9
Pugo, laman	3	6	12	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	84	72	60	48	36	24	12
Balut/penoy, boiled	3	6	9	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	63	54	45	36	27	18	9
Itlog, pato, pula	3	6	12	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	84	72	60	48	36	24	12
Milk, evap, whole	3	6	12	0	21	18	15	12	9	6	3	42	36	30	24	18	12	6	84	72	60	48	36	24	12
Milk, powdered, whole	3	4.5	6	0	21	18	15	12	9	6	3	31.5	27	22.5	18	13.5	9	4.5	42	36	30	24	18	12	6
GROUP H																									
Manok, atay	5	10	20	0	35	30	25	20	15	10	5	70	60	50	40	30	20	10	140	120	100	80	60	40	20
Liver spread	5	10	15	0	35	30	25	20	15	10	5	70	60	50	40	30	20	10	105	90	75	60	45	30	15
Sub-Total																									
Total																									
Additional score for currently Breastfed																									
Additional score for vitamin A supplement																									
Grand Total																									
Risk category (circle based on corresponding grand total scores	**Low score> 7** **Moderate 5-7** **High< 5**				**Low scores > 49** **Moderate 35 - 49** **High < 35**																				