

**PACIFIC JOURNAL OF MEDICAL SCIENCES**  
**{Formerly: Medical Sciences Bulletin}**  
**ISSN: 2072 – 1625**



**Pac. J. Med. Sci. (PJMS); Volume 8, No. 2, May 2011**

**Special Issue:**

**National Nutrition Survey Papua New Guinea, 2005; (NNS 2005)**

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**Executive Summary**



# National Nutrition Survey Papua New Guinea, 2005



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## EXECUTIVE SUMMARY

This report summarizes findings from the second national nutrition survey in Papua New Guinea (PNG), with data collection during May-November 2005 by the Papuan New Guinea Department of Health (DoH) and UNICEF, with funding and technical support from the U.S. Centers for Disease Control and Prevention (CDC). The survey collected data on vitamin A, iodine, iron, and anemia status of the population, assessed overall nutritional status of target groups based on anthropometric indices, and provided other relevant information for the planning, implementation and monitoring of appropriate population based interventions to prevent vitamin and mineral deficiencies in Papua New Guinea. Population groups surveyed included: preschool children (6-59 months old), women of childbearing age (15-49 years old), and adult men (18 years and older).

### Survey objectives and methods

The objectives of the survey were to:

- Determine the household coverage of adequately iodized salt
- Determine the urinary iodine levels among non-pregnant women of child bearing age 15-49 years
- Determine the prevalence of anemia, iron deficiency and iron deficiency anemia in children 6-59 months of age and non-pregnant women of child bearing age 15-49 years
- Determine the prevalence of vitamin A deficiency in preschool children 6-59 months of age and non-pregnant women of child bearing age 15-49 years
- Assess the nutritional status of preschool children (6-59 months) and non-pregnant women of reproductive age (15-49 years) and men (18 years and older) based on anthropometric indicators
- Determine the prevalence of anemia in adult men 18 years and older
- Determine the contribution of malaria to anemia in preschool children and non-pregnant women of child bearing age and the contribution of hookworm to anemia in preschool children 24-59 months of age
- Assess the use and consumption levels of centrally-processed staple foods, in order to determine their suitability as vehicles for fortification

A two-stage, 100-cluster, probability proportional to population size (PPS) survey was performed with stratification by region (Southern, Highlands, Momase and Islands) to generate national and regional estimates. In each of the 100 selected clusters, approximately 20 households were randomly selected using standard mapping, numbering, and segmentation methodologies.

### SUMMARY OF RESULTS

The prevalence of various nutrition related parameters by population group is presented in Table 0-1.

## **Nutrition**

### ***Nutritional status based on anthropometric indices***

Based on the WHO Child Growth Standards (Onis M et al 2008) just under half (43.9%) of the 937 Papua New Guinean preschool children 6-59 months of age surveyed, were found to be stunted in growth (height-for-age z score HAZ<-2), an indicator of chronic malnutrition; 4.5% were wasted, an indicator of acute malnutrition (weight-for-height z score WHZ <-2), and 18.1% were classified as underweight (weight-for-age z score WAZ<-2). There were some major regional differences. Mamose region had the highest prevalence of stunting (52.0%), wasting (8.2%) and underweight (31.9%). Based on WHO classifications (WHO, 1995), Papua New Guinea is a country with a “high” prevalence of stunting, a “medium” prevalence of underweight, and a “low” prevalence of wasting.

The prevalence of Chronic Energy Deficiency (CED) based on Body Mass Index (BMI <18.5 kg/m<sup>2</sup>) among the 892 non-pregnant women 15-49 years of age surveyed was 5.3%. The prevalence was higher in the Southern region (11.2%) and in Mamose region (8.0%). Among non-pregnant women 17.4% were overweight (BMI 25.0 to 29.9 kg/m<sup>2</sup>) and 5.1% (BMI ≥30 kg/m<sup>2</sup>) were obese (WHO 1995).

The prevalence of Chronic Energy Deficiency (CED) based on Body Mass Index (BMI <18.5 kg/m<sup>2</sup>) among the 787 men 18 years and older surveyed was 2.9%. The prevalence was highest in the Southern region (7.5%). Among the men surveyed 16.1% were overweight (BMI 25.0 to 29.9 kg/m<sup>2</sup>) and 4.0% (BMI ≥30 kg/m<sup>2</sup>) were obese (WHO 1995).

### **Infant and young child feeding**

Most of the mothers of children 6-59 months of age interviewed (83.6%) reported that they initiated breastfeeding within the first 24 hours after birth. More than 85% of children were still breastfed up to one year of age across all four regions, with 80% of children still breastfed up to 18 months of age. More than 80% of children were introduced to foods or liquids other than breast milk before the WHO recommended age of 6 months of age.

## **Iodine**

### ***Iodine status***

Among the non-pregnant women 15-49 years the median urinary iodine (UI) level was 170 µg/L and 28.9% of women had a UI <100 µg/L and 12.6% had a UI <50 µg/L. The WHO/UNICEF/ICCIDD (2001) minimum goals are to have no more than 50% of reproductive age women with UI under 100 µg/L and no more than 20% with a UI under 50 µg/L. Nationally, Papua New Guinea has been successful in meeting these targets. However, only 61.9% of the households had salt available on the day of the survey and in 8 of the 97 clusters surveyed none of the households had any salt.

In households without salt on the day of the survey the median UI was 113.5 µg/L and 45.6% of women had a UI <100 µg/L and 23.9% had a UI <50 µg/L. In the households in clusters without any salt the median UI was 79.5 µg/L and 58.4% of women had a UI <100 µg/L and 35.1% had a UI <50 µg/L.

### ***Household coverage and quality of iodized salt***

Only 61.9% of the 1422 households surveyed had salt that could be collected and tested for iodine content. Of the salt samples that were collected 99.9% of all the salt had some iodine and 92.5% of the samples were adequately iodized >15ppm (WHO/UNICEF/ICCIDD, 2001). There were regional variations. In the Southern region 23.9% of the salt tested was inadequately iodized. All households in eight clusters did not have any salt available to be tested. Household members reported that difficulties finding salt was the main reason for not purchasing it.

Among the 839 households that reported purchasing salt commercially, an original labeled package of salt was available in approximately 53.6% of households. Of these 98.8% were labeled as “iodized”. A wide variety of brands were available but the two most popular were Tru Cook salt and Jumbo.

### **Vitamin A**

#### ***Vitamin A deficiency***

Of the 875 children 6-59 months surveyed, 25.6% were vitamin A deficient (< 0.70µmol/l). Excluding children with inflammation (a marker of infection) 15.7% were vitamin A deficient. In Mamose 35.3% of children had the highest prevalence of vitamin A deficiency (20.1% excluding those with markers of inflammation). Even controlling for infection the prevalence of vitamin A deficiency is of high public health significance (WHO 1996).

Of the 751 non-pregnant women 15-45 years, the prevalence of vitamin A deficiency was very low with only 0.7% being deficient. Only 1.7% of women reported difficulties seeing at dusk when they were able to see well during the day.

#### ***Vitamin A supplementation***

In this survey, 52.7% of children 6-59 months had ever received a vitamin A capsule and 15.5 % had received one in the last 6 months.

### **Anemia, iron deficiency and iron deficiency anemia**

#### ***Anemia***

Anemia prevalence as defined by WHO (WHO/UNICEF/UNU, 2001) among 910 preschool children 6-59 months old was 48.1%. This anemia prevalence is of high public health significance according to WHO criteria (WHO/UNICEF/UNU, 2001).

The prevalence of anemia among non-pregnant women was 35.7% (n=760), and 26.3% in men 18 years and older (n=778) indicating a moderate public health problem. In all target groups the prevalence was low in the Highlands and much higher in Mamose region.

#### **Iron deficiency**

Of the children surveyed 27.8% of children 6-59 months (n=872) were iron deficient (TfR> 8.0 µg/l), compared to 19.5% of non-pregnant women 15-49 years of age (n=751).

### ***Iron deficiency anemia***

Based on WHO cut-offs (WHO/UNICEF/UNU, 2001) the prevalence of iron deficiency anemia (IDA) among preschool children 6-59 months surveyed was 22.8%. Children 6-11 months were most likely to have IDA (36.6% prevalence). Among the non-pregnant women tested 15% were classified with IDA.

According to WHO criteria the high prevalence of anemia in children and moderate prevalence in women and men demonstrates a public health problem in Papua New Guinea. The low prevalence of iron deficiency and iron deficiency anemia indicates that iron deficiency is not the main cause of anemia and that infection and other factors are also important contributors (WHO/UNICEF/UNU 2001).

### **Fortification and awareness**

Food fortification is a strategy that the government of Papua New Guinea is considering to improve the nutritional status of the population. This survey looked at the presence of five potential foods fortification vehicles, flour, sugar, oil, rice and salt. Nationally 12.7% of households had flour present in the household on the day of the survey; 36.0% oil; 27.0% sugar; 22.0% rice and 61.9% salt. Just under a third of all households had none of the staple products mentioned above (30.5%), 43.8% had 1-2 staple products and 25.7% had 3-5 products. In rural areas 34.6% of households had no products compared to just 10.4% of urban areas.

**Table 0-1 Prevalence of various nutrition related indicators by population group, PNG National Nutrition Survey 2005**

Target Group	Stunting <sup>1</sup> %	Underweight <sup>2</sup> %	Wasting <sup>3</sup> %	Median Urinary iodine (µg/L) %	Urinary Iodine Deficiency <sup>4</sup> %	Anemia <sup>5</sup> %	Iron deficiency <sup>6</sup> %	Vitamin A deficiency <sup>7</sup> %
Preschool Children 6-59.9 mos.	43.9	18.1	4.5	--	--	48.1	27.8	25.6
Non-pregnant women 15-49.9 yrs	--	5.3	--	170.0	28.9	35.7	19.5	0.7
Men 18 yrs and older	--	2.9	--	--	--	26.3	--	--

<sup>1</sup> Stunting (Height-for-age) is defined by WHO as <-2.0 z-scores

<sup>2</sup> Underweight (Weight-for-age) Z-score) is defined by <-2.0 z-scores and BMI Kg/m<sup>2</sup> <18.5 in non-pregnant women and men

<sup>3</sup> Wasting (Weight-for-height) is defined by WHO <-2.0 z-scores

<sup>4</sup> Iodine deficiency defined as a public health problem when >50% of the population urinary iodine UI <100 µg/L.

<sup>5</sup> Anemia defined as Hb<11.0 g/dL in children, Hb<12.0 g/dL in women, and Hb<13.0 g/dL in men (Hb adjusted for altitude and cigarette smoking)

<sup>6</sup> Iron deficiency defined as transferrin receptor (TfR) > 8.0 µg/L

<sup>7</sup> Sub-clinical vitamin A deficiency is defined as serum retinol < 0.7 µmol/L, while severe vitamin A deficiency is defined as serum retinol < 0.35 µmol/L not excluding children with inflammation