

## DIETARY DIVERSITY IN WESTERN SERAM

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Two neighboring communities in western Seram were studied for dietary variation. One community was a traditional, rural Malukan community (Lohiatala, n=65); the other was composed of transmigrants from heavily populated regions of western Indonesia (Waihatu, n=86). A dietary diversity score derived from 24-hour recall data revealed significantly greater dietary diversity in the traditional community, especially among women and children. A food group analysis yielded significantly greater consumption of sago, tubers (especially cassava) and protein foods in the traditional community, while the transmigrant community consumed significantly more rice. Perhaps the diverse Malukan diet can serve as a model for the Indonesian government's objective of diversifying diets, especially among transmigrants.

### Introduction

Diversification of food crops is a concern of the Indonesian government in the fifth five-year plan, 1989–1994 (Soetrisno 1992: 3–4, Sidik 1992: 1–2). This is a useful goal, as a diverse diet has been shown, on a population basis, to meet nutrient requirements. Indeed, diversity is a primary principle of nutrition.

Previously, Indonesian food policy was focused on national self-sufficiency in the production of rice (Sidik 1992: 1–2). Interest in rice has been international. The so-called “green revolution” focused on achieving food security through technology, specifically the creation of higher-yield varieties of crops such as rice. This approach must have a limit, however, beyond which technology cannot further increase yield. In the early 1990s, rice productivity reached its economic limit at the existing level of technology in Indonesia. However, due partly to the

success of national family-planning programs, the country achieved self-sufficiency in rice.

Concern for the protein content of diets led food technologists to promote rice for its relatively high protein content relative to tubers or sago. Subsequently, however, scientists have shown that if a diet meets caloric needs, it usually meets protein needs (Sukatme and Edmundson 1992: 35). Furthermore, no population eats *only* their staple food; the diet must be viewed as a whole, and small amounts of fish or legumes will usually suffice to meet protein needs.

However, contributions of rice in governmental transmigration programs—involving the movement of rice-eating people to outer islands—has created new demand for rice in those islands, among both the transmigrants themselves and the surrounding populations. National price controls on rice have further assured a market for rice in Indonesia (Soekirman 1978: 154).

Maluku, where sago (*Metroxylon rumphii*) and tubers are the historic staple foods, can be a model of dietary diversity for Indonesia. Furthermore, the dietary patterns of transmigrants (traditionally rice-eaters) may provide a model of adaptation to a more diversified staple food environment. However, the converse may also occur, that Malukans will shift their staple food preference toward rice. Against this background, we will describe and discuss dietary patterns of two villages in Seram, one a village of primarily indigenous Alune ethnicity (Lohiatala), and one of transmigrants from Java, Lombok, Sumatra, and Nusa Tenggara (Waihatu).

### Methods

This research was conducted in July 1992 in Lohiatala and Waihatu villages in the district of Kairatu, Western Seram, by collaborating researchers from the University of Hawai'i in Honolulu and Universitas Pattimura in Ambon.

Lohiatala consists of 134 households and 700 people in an area of 2300 square meters. There is electricity, but water is obtained from the river that runs alongside the village. Villagers moved to Lohiatala from farther up the mountain in 1966. Waihatu has 423 households and 2290 people. Transmigration to Waihatu occurred in 1973, with 400 households (1595 people) from Lombok, Central Java, Sumatra, and Nusa Tenggara (Departemen Transmigrasi 1992). The village has an area of 12

hectares. When the transmigrants arrived in 1973, the land had sago and durian growing on it.

For this study, 93 households were selected at random (29 in Lohiatata and 64 in Waihatu). Data were collected on all household members present. An additional 81 people were interviewed at the monthly village Posyandu health services (43 in Lohiatata and 38 in Waihatu), giving a total sample of 174 (72 from Lohiatata and 102 from Waihatu). Data included demographic information and consumption of food in the last 24 hours (24-hour dietary recall). Data were entered in the EpiInfo computer program for statistical analyses. The t-test was utilized for differences between the means of parametric data and the Kruskal-Wallis test was used for nonparametric data.

A dietary diversity score was utilized in data analysis. This score was calculated by adding all different food items given in the 24-hour recall. Breast milk was counted as one food item for infants who were breast-feeding. Foods were also grouped into the categories rice, sago (as *papeda*), tuber (cassava being most common), banana, vegetable, protein (including soy products, fish, and wild animals), and rice porridge (*bubur*) for other analyses.

**Table 1. Dietary Diversity Scores in Western Seram, 1992**

VILLAGE	N	MEAN + S.D.	MEDIAN
<i>Lohiatata</i>	65	7.3 + 2.2	7
Children	29	6.6 + 1.8	7
Female	8	7.0 + 2.1	6.5
Male	20	6.5 + 2.4	7
Men	7	6.6 + 1.8	6
Women	29	8.2 + 1.9	8
<i>Waihatu</i>	86	5.8 + 1.9*	6
Children	22	4.5 + 2.1*	4
Female	13	4.9 + 2.4	5
Male	8	3.9 + 1.6*	3
Men	18	6.2 + 1.6	6
Women	46	6.2 + 1.7*	6

NOTE: Dietary diversity scores were derived by adding the total number of differing food items cited in 24-hour dietary recall. Asterisks mark t-test scores that are statistically different from the same group in Lohiatata,  $p < 0.05$ .

The study was approved by the Committee on the Use of Human Subjects at the University of Hawai'i.

### **Results**

Dietary diversity scores for individuals in a random sampling did not differ significantly from those in a Posyandu sampling, so the samples were combined for all analyses presented here.

Diets in Lohiatata were more diverse than those in Waihatu (Table 1). The diets of men showed no statistical difference between the two villages, but the diets of both women and children did, showing greater diversity in Lohiatata.

The food-group composition of diets also differed between the two communities (Table 2). Lohiatata residents consumed more sago, tubers, and protein foods, while Waihatu residents consumed more rice. Vegetable consumption was the same in the two communities.

### **Discussion**

The lower diet diversity of women and children in Waihatu than in Lohiatata may reflect cultural differences in household distribution of food, but could also reflect a shortage of food in Waihatu. Indeed, others have observed that the poorest are those that are likely to transmigrate and that there are more households in poverty in transmigration communities than in other communities (World Bank 1988: 17–22). The lower dietary diversity of women and children could have important nutritional consequences, since women and children are at greatest risk for undernutrition due to the high biologic demands of pregnancy, lactation, and growth.

Diets differed between the transmigration village, Waihatu, and the Alune Malukan village, Lohiatata. Diets were more diverse in Lohiatata, utilizing sago, tubers, and more protein foods. Diets in Waihatu relied heavily on rice. In both communities, bananas and rice porridge appear to be foods for young children. Given the governmental interest in diversifying food supplies and in developing eastern Indonesia, perhaps programs could be implemented to encourage transmigrants to consume more traditional Malukan foods and thereby diversify their diets. This would likely increase demand for sago and decrease reliance on the government among transmigrants, thus having a positive effect on development in eastern Indonesia.

**Table 2. Foods Consumed by Food Group in Western Seram, 1992**

FOOD GROUP	N	LOHIATALA	N	WAIHATU
<i>Rice</i>	65	0*	90	3
Women	30	0*	46	3
Men	6	0*	18	3.3
Children	29	0*	26	1
Female	8	0*	15	1.5
Male	20	0*	10	0.6
<i>Sago</i>	66	2.5*	88	0
Women	30	6*	44	0
Men	7	6*	18	0
Children	29	0.5*	26	0
Female	8	1*	15	0
Male	20	0.5*	10	0
<i>Tubers</i>	66	3.5*	88	0
Women	30	7.5*	44	0
Men	7	24*	18	0
Children	29	0	26	0
Female	8	0.3*	15	0
Male	20	0	10	0
<i>Protein</i>	66	3*	89	2
Women	30	4*	45	2
Men	7	2*	18	3.5
Children	29	2*	26	0.8
Female	8	2*	15	1
Male	20	3*	10	0.5
<i>Vegetables</i>	66	2	90	2
Women	30	3*	46	2
Men	7	1	18	2
Children	29	2*	26	0.8
Female	8	1	15	1
Male	20	2*	10	0.5
<i>Bubur</i>	66	0	89	0
Women	30	0	46	0
Men	7	0	18	0
Children	29	1*	25	0
Female	8	1*	14	0
Male	20	1*	10	0
<i>Banana</i>	66	0	90	0
Women	30	0	46	0
Men	7	0	18	0
Children	29	0	26	0
Female	8	1	15	0
Male	20	1.2*	10	0

NOTE: N is the median number of times consumed per day. Asterisks mark Kruskal-Wallis-test scores that are statistically different from the same group in Waihatu,  $p < 0.05$ .

On the other hand, von Benda-Beckmann (1990: 190–191) has argued that commercialization of sago (now primarily a *subsistence* food stuff) would be detrimental to food security and, furthermore, that a shift toward root crops would be damaging to the ecology of Maluku. Therefore, any program aimed at encouraging consumption of Malukan foods should be tested on a pilot basis before expanding.

### NOTE

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