Nutrition of Mothers and Infants in Tonga

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Introduction

Pregnant mothers, lactating mothers, and infants are special groups of people in as far as nutritional needs are concerned, both in quantity and quality. Pregnancy is the period of time when a new person is being formed inside the body of the mother. The unborn child is completely dependent on the health and well-being of the mother, he is a "parasite" on the mother's nutritional stores. Again during lactation the baby continues to draw his nutritional needs from his mother through breastfeeding. Nutrition in the first year of an infant's life is very important as this is the most rapid stage of development in a child after he is born. Normally infants will double their weight by 6 months and triple them by one year.

Nutrition of Pregnant and Lactating Women in Tonga

The 3 broad types of nutritional problems in any setting are:

- under-nutrition
- over-nutrition
- wrong nutrition

Under-Nutrition

This is rare in Tongan mothers. The pre-pregnant weights of most mothers are above 60 kilograms with the average falling between 70 to 80 kilograms. However, repeated cycles of pregnancy and lactation have led to maternal under-nutrition and the production of small-for-date babies in a few isolated cases. Also, in cases of severe hyperemesis gravidarum, mothers do not obtain their ideal nutritional requirements during the first trimester and may actually lose some weight; but they quickly pick up during the 2nd and 3rd trimesters when their symptoms disappear.

Over-Nutrition

This is the common nutritional problem of Tongan mothers. "Pregnant women should eat for two". This old familiar statement of encouraging expectant and nursing mothers to increase their food intake is in fact true, but the interpretations of how much extra should be consumed are usually incorrect. Some would even interpret this extra amount as an additional plate of food for every meal. As expected, the biggest consequence of this overeating is obesity, both during pregnancy and even after delivery.

How much extra should a pregnant woman be allowed to eat? It must be clarified that although additional nutritional requirements are necessary during pregnancy and lactation to provide for the growth and development of the baby and the production of breastmilk, the extra amount should not exceed the recommended allowance as shown in *Table 1.*

Table 1. Energy Requirements for Adult Women.

Adult Woman	*Energy Requirements /Day (KCal)*
Non-pregnant	2700 - 3000
During pregnancy	+350 - 400
During lactation	+550

In other words, a mother needs one-fifth extra of her usual daily requirement during pregnancy, and one-fourth extra during lactation. Generally speaking, a weight gain of up to 12.5kg can be regarded as physiological in any pregnancy. Relative components of this physiological weight gain are shown in *Table 2.*

Theoretically, most of the weight gained is gotten rid of by the processes of delivery and lactation. Pregnancy per se is therefore not fattening, except temporarily, yet there are many of our women who fail to regain their pre-pregnant sizes after it is all over. What is likely to follow in the ensuing years of further pregnancies is the accumulation of unwanted fat so that at the completion of a woman's last pregnancy and lactational period, she is significantly overweight.

Table 2. Components of Weight Gain During Pregnancy

Component	*Weight Gain (kg)*
Foetus, placenta, amniotic fluid	4.75
Uterus and breasts	1.30
Blood	1.25
Body Fluids	1.20

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Effects of Obesity on Pregnancy

From the fat patient's own point of view, pregnancy is less comfortable than for a slimmer woman. Skin disorders, mostly of the fungal, intertriginous variety are more common. Oedema of the lower extremities is exaggerated.

Dyspnoea (shortness of breath) on exertion is common and the subjective effects of anaemia are magnified. A striking factor in obese pregnancy is hypertension.

Because of the thick abdominal wall, mal-presentation of the foetus is not easily detected. Pendulous abdomen is common in obese pregnant women.

Labour is no better favoured by obesity. The needs for surgical induction and operative delivery are more common. The babies are often much larger than expected. Post partum haemorrhage has also been found to be more common in obese mothers.

Wrong Nutrition

Wrong nutrition is a common problem in Tonga. This refers to eating the wrong types of food, eating an unbalanced diet, or adopting an irregular meal pattern. Wrong food types include bulky, low-energy fast foods, eg. sweets, cakes, ice-cream, etc. A typical unbalanced diet of developing countries include too much starchy staple food and not enough of protein food, vegetables and fruits. Unbalanced diets is an important cause of iron deficiency anaemia commonly found in women with frequent pregnancies due to repeated depletions of their iron stores.

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In the 1986 Tonga National Nutrition Survey it was found that the diets of most women of reproductive age were very low in dark green vegetables, and protein foods were not always available on regular basis. This could have contributed to the high incidence of mild and moderate iron deficiency anaemia in pregnant and lactating women. This incidence was found to be higher in urban than rural women.

Infant Nutrition in Tonga

There are three recognizable stages in infant nutrition. These are:

- foetal nutrition
- pre-weaning *and*
- weaning.

These are discussed separately below.

Foetal Nutrition

The foetus is totally dependent on maternal stores for its nutritional needs. It is not so much what a woman eats that matters as what she fails to eat, and *the deficiencies are more important than the excesses.* The baby is the last to suffer in cases of malnutrition, for it is the complete parasite. Since the baby will take the best of what is going, its size and development are only reduced materially in advanced malnutrition.

Pre-Weaning Period

"Breastfeeding is Best"

It is well established that under normal conditions, human milk is the best food for all infants. Many studies have revealed that breastfed infants have lower mortality and morbidity rates than formula-fed babies. Breastfeeding provides the sufficient energy and nutrients for the first 4-6 months.

Breastfeeding in Tonga

Breastfeeding is promoted and supported by all healthworkers at all levels in Tonga. From the 1986 Tonga National Nutrition survey it was found that 100% of mothers initiated breastfeeding soon after delivery. However, bottles were introduced rather early: 73.7% introduced bottles during the first two days. Of these, 88% of the newborns were getting boiled water and 7% were getting infant formula.

The survey also revealed that by age 3-5 months 10.8% of babies were not breastfed anymore. This figure increased to 19.1% in the 6-8 month age-groups. Introduction of solids appeared to be early with some babies receiving solids in combination with breast or formula in the first 3 months. There were 78.9% of 3-5 month olds who were receiving some solids, and 4.4% of this same age group were receiving solids only with no supplementary milk feeds. Most babies receiving milk feeds (bottle or breast) would slowly be taken off their diet during the period 12-17 months so that by age 24 months 97.3% of them depended solely on a solid diet.

Formula Feeding

Formula feeding alone can be the milk feed for the baby, or it can serve as a supplement to breastfeeding. Bottle feeding occurs under the following circumstances:

early adoption, severe maternal breast infection, premature babies (until sucking is established adequately), working mothers, insufficient production of breast milk and twins.

There are special infant formula available in Tonga. Some mothers, because of lack of knowledge and the high cost of infant formula are using sweetened condensed milk to feed infants. This is both nutritionally wrong and dangerous, and it can cause infant gastroenteritis.

Weaning Period

During the first 4-6 months, breastmilk alone is enough to supply the infant's nutritional needs. By 6 months breastmilk alone is insufficient to fulfill the energy and requirements of the rapidly growing child. Therefore, supplementary solid diet needs to be introduced around 4-6 months so that by 6 months the baby is getting enough solids to supplement his milk feeds.

To "*wean*" means to "*accustom*" and the term is used to describe the process in which the baby "*becomes accustomed*" to foods other than breastmilk or milk formulas.

The weaning period extends from the time the baby is solely breast or formula fed until he is eating the regular family meals and has stopped breast and formula feeding. The period may range from 4-6 months to 1-2 years.

Management of Weaning

The aim of health and nutrition workers must be to ensure that all children under their care consume adequate amounts of a well-balanced diet that is hygienically prepared from locally available food.

The first weaning foods can be introduced after 4-6 months and the amount and types slowly increased. A weaning diet consists of gradually diminishing amounts of breastmilk or formula and increasing proportion and quantities of other foods needed to fulfill nutrient requirements.

Most Tongan mothers know when and how to introduce weaning foods but they still need education and guidance on the types and ingredients. Generally, as in most developing countries, more starchy staple food is given while insufficient protein and oil-rich foods and green vegetables are given.

When to Stop Breast-feeding?

Breastfeeding should continue for as long as possible, at least for the first year. There is no reason why a pregnant mother should not continue breastfeeding if she is able to consume a good diet.

A child who is given a good supplementary diet and plenty of attention at mealtimes will probably wean himself from the breast.

Breastfeeding should stop slowly over a period of several weeks, the number of feeds gradually diminishing. If breast-feeding is stopped suddenly, for instance, if the mother puts a bitter substance on her breasts, or sends the baby away to a relative, the child suffers severe trauma and the mother's breasts usually become engorged.

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