

## Opportunities and Limitations of Using Food Composition Tables in Clinical Nutrition and Dietetics in Kenya

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### Abstract

Food composition tables (FCTs) are used by Nutritionists in the nutrition practice. Kenya does not have a comprehensive FCT and thus uses borrowed FCTs to complement. The various opportunities and limitations of using FCTs in clinical nutrition in Kenya are not well documented. This study sought to assess the opportunities and limitations of using FCT in Kenya. A cross-sectional study design was used on a sample of 64 randomly selected Nutritionists based in Kenyan major health facilities. All nutritionists had used FCTs to formulate diets for patients with various disease conditions. Only 28.1% had used them for product development. The Kenyan tables lacked some foods, nutrients and processed foods. About 26.6% highlighted that the nutrient content of some foods with different varieties was missing. Some foods are poorly labeled in the tables leading to challenges in identification. Some borrowed FCTs differ significantly in nutrient contents leading to confusion on which one to use. The study concludes that poor nutrition decisions are made due to inaccurate calculations. Lack of comprehensive FCTs in Kenya limits the reliability of results. The study recommends development of comprehensive FCTs specific to Kenya.

**Keywords:** Opportunities; Limitations; Food Composition Tables; Nutritionists

### Abbreviations

FCT: Food Composition Table; HF: Health Facilities

### Introduction

Many African countries have used databases on food composition from the western countries, specifically those from the United Kingdom and the United States [1]. These tables are preferred due to their electronic nature and readiness in availability; they also contain detailed information on different nutritional contents in foods. There are, however, many shortcomings that result from these borrowed tables. Kenya has a Food composition table (FCT) that was completed in 1993 [2]. Kenya has used borrowed food content tables, and this interferes with important food decisions given that exotic food tables can never be close to portraying the real nutritional value of indigenous foods [3].

Food composition data emanates from the scientific literature, food industry, estimates based on the nutritional content of similar foods, calculated ingredients and contract lab analysis. Caution is needed so as not to compromise the quality of data collected. Timeliness regarding when the sample gets collected up until when it is analyzed may interfere with the nutritional results. Faulty data summation methods that include determination of measures such as mean, median, mode, ranges, and outliers may affect the data on food composition. The numbers of individual samples determine the accuracy of the food composition data [4].

Food components may vary for the same type of food depending on where it grows and located. The environment may cause variability in food component. According to Deharveng, *et al.* [5], there exists remarkable variation in nutrient content in foods from different re-

gions. The growing conditions, harvesting and storage situations, processing and meal preparation all result in differences in the content of nutrients in the same type of foods [5].

When using borrowed tables, lack of the specific type of food needed for analysis automatically leads to adopting the figures of the next similar kind of food. Some foods are country specific, and each country has its consumption patterns [4]. There exist different fortification regulations across the borders that apply to different food items. Food biodiversity greatly influences food composition making nutrients vary thousands of times in different varieties of the same food item. Each country has varying food composition and cannot be made uniform, not even through globalization. It is important to note that borrowed food composition tables may lead to faulty research results and policy decisions [6]. Borrowed food composition tables are not representative of national food habits and consumption patterns of the borrowing nation, as they do not contain a majority of the highly consumed foods in such nations [3].

The nutritional contents of indigenous food and the exotic ones vary [7]. Thus, the importance of local food composition tables can thus not be overemphasized [1]. There are however many documented shortcomings that result from lack, incomplete or use of borrowed tables [3]. The various opportunities and limitations of using FCTs in clinical nutrition in Kenya are not well documented. This study focused to assess the opportunities and limitations of using FCTs in Kenya.

**Methods**

A cross-sectional study design was used. The study was conducted in the whole country targeting the 64 major Health Facilities (HF) in Kenya. A total of 64 Nutritionists (one from each HF) were randomly selected. An open-ended questionnaire was used for data collection. Data were analyzed using SPSS.

**Results and Discussion**

**Usage of food composition tables by Nutritionists in Kenya**

The tables were mainly used for diet counseling (100%), diet planning (89.5%), though a few (20%) used it for product development (Table 1). The majority (87.5%) used the Kenyan tables despite their limitations.

		n (64)	%
Gender	Female	46	71.9
	Male	18	28.1
How the tables have been used	Diet counseling	64	100
	Diet planning	55	89.5
	Product development	18	28.1
FCTs used	Kenyan + borrowed	56	87.5
	Kenyan only	8	12.5
Borrowed tables	USDA FCT	38	67.9
	Tanzania FCT	28	50.0
	Both	12	21.4
	Other FCTs	6	10.7

*Table 1: Usage of food composition tables by Nutritionists in Kenya.*

**Opportunities**

The nutritionists reported that since diets have to be planned, clients counseled and products developed, the use of borrowed FCTs estimated for estimation is better than none. Before a country develops their own tables, which is a costly and complicated issue, they can

use the existing ones to ensure no gaps exist. The periodical use of the borrowed tables and the emerging challenges is an opportunity that has prompted a continued call for resources and support to develop a country based FCT. A study in Mozambique indicates that using the available databases is better than none [7].

### Limitation of Kenyan tables

The way Kenyan FCT is compiled is hard to identify a food. There are many missing foods, missing nutrients like magnesium and lack of nutrient content of various varieties of food. The tables thus tend to underestimate or overestimate the nutrients intake. These limitations of FCTs were also noted in a study on nutrient intakes estimated from standard tables of food composition in Japan [8] and a comparison between the British and American tables [9].

### Limitation of borrowed FCTs

Borrowed FCTs do not appropriately complement the existing Kenyan FCT. This is due to; most local foods are unavailable in the tables' especially indigenous foods, lack of some nutrients, large nutrient content variations in different tables leading to confusions on which to use, lack of nutrient content on the various varieties of food. There is a problem with identifying and matching foods in the tables. These findings agrees with a study by Sacco, *et al* [4].

### How nutritionists have been overcoming these challenges

Nutritionists indicated that they have tried to overcome these challenges by using a food with similar characteristics and assuming cooked foods are same as raw foods. In addition, they use simple calculations to estimate nutrients in fortified foods, ignoring missing nutrients like magnesium and calculating the mean when there is a difference in two foods. A study by Vaz [10], also focused on estimations so as to arrive at various conclusions when doing dietary planning.

### Conclusion

Nutritionists in Kenya have used the existing incomplete Kenyan FCTs together with borrowed food composition tables. Borrowed tables can never be close to portraying the real nutritional value of local foods. The unreliable results interfere with important food decisions due to the use of estimations derived from other tables, rather than actual values. The reduced accuracy of information from borrowed databases may lead to poorly formulated policies. Lack of comprehensive tables in Kenya limits the process of optimal diet planning. It also limits the reliability of any conclusions that may be drawn.

### Recommendations

This study recommends that borrowed tables should be used with caution and that Kenya develops its own comprehensive tables.

### Competing Interests

The authors declare they have no competing interests.

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### Bibliography

1. Greenfield H and D A T Southgate. "Guidelines for the Use of Food Composition Data". *Food Composition Data Springer US* (1992): 163-169.
2. Sehmi J K. "National Food Composition Tables and the Planning of Satisfactory Diets 1993" (1993).

3. Van Heerden S M and H C Schönfeldt. "The need for food composition tables for southern Africa". *Journal of Food Composition and Analysis* 17.3-4 (2004): 531-537.
4. Sacco Jocelyn and Valerie Tarasuk. "Limitations of food composition databases and nutrition surveys for evaluating food fortification in the United States and Canada". *Procedia Food Science* 2 (2013): 203-210.
5. Deharveng G., et al. "Comparison of nutrients in the food composition tables available in the nine European countries participating in EPIC". *European Journal of Clinical Nutrition* 53.1 (1999): 60-79.
6. Arab., et al. "European food composition tables in translation". *Springer Science & Business Media* (2012).
7. Korkalo Liisa., et al. "Food composition tables for Mozambique". *Helsinki Finland* (2011).
8. Imai T., et al. "Nutrient intakes estimated from standard tables of food composition in Japan: Comparison of the 5<sup>th</sup> revised edition with the 4<sup>th</sup> revised edition". *Journal of Japanese Society of Nutrition and Food Science (Japan)* (2006).
9. Garcia V., et al. "Effect of the choice of food composition table on nutrient estimates: a comparison between the British and American (Chilean) tables". *Public Health Nutrition* 7.4 (2004): 577-583.
10. Bharathi AV and Vaz Mario. "Dilemmas in planning diets using existing food composition tables". *National Medical Journal of India* 17.5 (2004): 280.

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