

## **Low fruit and vegetable consumption in Mozambique: results from a WHO STEPwise approach to chronic disease risk factor surveillance.**

Padrão P, Laszczyńska O, Silva-Matos C, Damasceno A, Lunet N. *Br J Nutr* 107: 428-435, 2012.

### **Introduction**

Fruits and vegetables are important dietary sources of vitamins, minerals and a variety of bioactive phytochemicals with potential health benefits. The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations recommend consumption of a total of at least five servings per day of fruits and vegetables, both to enhance the micronutrient adequacy of the diet and to reduce the risk of obesity and related chronic diseases.

The WHO STEPwise Approach to Surveillance (STEPS) is a standardized method for collecting information on risk factors for chronic disease, including fruit and vegetable consumption. The survey results can be used to compare conditions in different countries and to monitor trends over time. In this month's edition of NNA, we present the results of a recently completed secondary analysis of data collected during the 2005 STEPS survey in Mozambique to examine the adequacy of fruit and vegetable intake.

### **Methods**

The 2005 Mozambique STEPS study was a nationally representative, cross-sectional cluster survey with population samples from both urban and rural areas. Adults aged 25-64 years were randomly selected from 95 geographically defined clusters. Trained interviewers administered the STEPS questionnaire to elicit information on the respondents' socio-demographic characteristics (e.g., income and education) and behavioral risk factors for chronic disease. Participants were asked the number of days that they usually eat fruits and vegetables in a typical week, and the frequency of consumption on those days. The mean daily frequency of fruit and vegetable consumption was calculated as the product of the number of days per week and frequency of consumption on those days, divided by 7.

### **Results and conclusions**

Of the 3378 individuals contacted, 3323 (98.4%) participated in the study. Overall, 17.8% of the respondents consumed at least two servings of fruits per day, and 18.7% consumed at least two servings of vegetables. However, only 4.2% of the respondents consumed at least 5 servings of fruits and vegetables per day.

There were no consistent relationships between age group or family income and fruit and vegetable consumption. After adjusting for these factors, consumption of at least 2 servings of fruit per day tended to be less frequent in urban settings and among men; similar results were reported for vegetable consumption. Urban men and women with at least 6 years of education were more likely to consume at least 2 servings of fruit or vegetables per day than those who were less educated, but there was no similar trend in the rural areas.

## Program and Policy Implications

Very few adults in Mozambique consume the recommended 5 servings per day of fruits and vegetables. The slightly greater frequency of consumption in rural areas may be related to home production or easier access to fresh food markets. Greater frequency of consumption among more educated individuals in urban areas suggests that educational interventions may be helpful in promoting greater fruit and vegetable consumption. Reported consumption of fruits and vegetables in other African countries is generally higher than in Mozambique, but still low in relation to WHO/FAO recommendations, so interventions are needed to increase fruit and vegetable consumption throughout the continent.

### NNA Editors' comments\*

This study addresses several issues that are not often considered in Africa, namely, the importance of fruit and vegetable consumption for prevention of chronic disease, and the factors associated with consumption of these food items. Strengths of the study include the nationally representative sample and standardized collection of information. However, a limitation is that the portion sizes of fruits and vegetables consumed were not estimated. The STEPs instrument suggests creating "showcards" that illustrate standard portion sizes of locally consumed foods to assist respondents in estimating the amounts consumed on a typical day, but this was not done in the present study because of financial limitations. Thus, it is possible that the actual portions consumed by respondents were either greater than or less than the standard 80g portion size assumed by the STEPs approach. Nevertheless, the low fruit and vegetable intakes reported in this study are consistent with their low estimated availability according to the FAO Food Balance Sheets for Mozambique. In 2005, the amount of fruits and vegetables (excluding starchy roots and vegetable oils) available for consumption was 21.3 kg/capita/yr, or ~58 g/capita/d on average (less than 1 portion per day). In contrast, the amount of starchy roots available for consumption was 270.9 kg/capita/yr, or ~742 g/capita/d [tubers such as potato and cassava are not included in the STEPs instrument].

Strategies for increasing fruit and vegetable intake in Africa include the promotion of home, school, and community gardens and behavior change communication. In South Africa, home gardens focusing on production of yellow and dark-green leafy vegetables were associated with increased serum retinol among children 2-5 years of age (Faber et al., 2002). Behavior change interventions are also critical to sensitize individuals to the importance of fruits and vegetables for long term health and motivate them to adopt the recommended frequency of intake.

The STEPs surveys can provide useful information on the frequency of consumption of different foods, but this data collection instrument needs to be validated with regard to the amounts of these foods that are consumed. FAO Food Balance Sheets provide quantitative information on national food availability, but not the distribution of these foods within the population. Thus, collection and analysis of detailed information on dietary intakes by individuals of all ages (such as the information obtained via 24-hour dietary recalls or weighed food records) are also needed to confirm the results of the larger food frequency surveys, and to assess the impact of social and behavioral change interventions on food and nutrient intake.

## References

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\* These comments have been added by the editorial team and are not part of the cited publication.

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