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« THE SOUTH AFRICA DILEMMA: MALNUTRITION AND OBESITY. WHAT ABOUT VEGETABLES AND FRUIT? »

Editorial

South African demographics include a mix of developed and developing communities, each with their own associated health problems and risk profiles. There are areas in which communities will increasingly suffer from non-communicable diseases, such as obesity, diabetes, heart disease and cancer. Against this, the incidence of micro-nutrient malnutrition, stunting and even overt malnutrition will be high.

In the article by Kraemer & Badham, they express a link between nutrition, disease and prosperity. They stress how increasing vegetable and fruit (V&F) consumption is an important long-term goal in preventing the malnutrition cycle. Mchiza's article, meanwhile, indicates that obesity may be the result of food insecurity. These two articles both link V&F in potentially slowing the vicious cycle of non-communicable diseases and malnutrition.

As explained in Love's article, South Africans aren't consuming enough V&F daily. The MRC* shows that the average intake of vegetables and fruit in South Africa is just under three daily servings, considerably less than the WHO's recommendation of a minimum of five daily servings.

In South Africa, the National Department of Health fully supports the 5-a-day message; one of the food based dietary guidelines is to eat plenty of V&F every day. Love further explains this and how this approach is being integrated into the concept of everyday living. These articles stress the importance of increasing V&F consumption in an attempt to decrease prevalence of micronutrient malnutrition and obesity. The 5-a-Day for Better Health Trust acknowledges the need to promote increased V&F consumption, encourage citizens to grow their own produce, and promote local produce consumption.

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LINK BETWEEN NUTRITION, DISEASE AND PROSPERITY: Preventing non-communicable diseases by tackling malnutrition

— Klaus Kraemer, Jane Badham —
SIGHT AND LIFE

We face a harsh health reality in the developing world. Nutritional deficiencies, predominantly in the form of micronutrient malnutrition, increase the susceptibility to communicable diseases and non-communicable diseases (NCD) such as heart disease, diabetes and cancer. Many economically developing regions are now suffering a double burden of obesity, diabetes and other related NCDs, on top of nutritional deficiencies and infectious diseases. These all have a significant and negative impact on the lives of individuals that flows over to affect communities, and ultimately harms the economy of nations.

Low and middle income countries are at the centre of both longstanding and new public health challenges. Much is now being spoken about nutritional deficiencies in the context of undernutrition, some two billion people across the world live with hidden hunger; and while important, we also need to focus attention on addressing the NCDs that will cause over three quarters of all deaths in 2030 and will pose additional hardship on already stretched health care budgets.

Hidden hunger

Hidden hunger is defined as micronutrient (vitamin and mineral) deficiency in a person's diet. It is not malnutrition as classically presented as the hungry or starving individual, but malnutrition as it should properly be defined: poor overall quality of nutrition. It means that the two billion who suffer from hidden hunger, may eat enough calories to live, but have a basic diet that fails to provide sufficient levels of crucial vitamins and minerals that allows them to be mentally and physically healthy.

A key link between undernutrition and NCDs is micronutrients (vitamins and minerals), which yet again mostly affects the world's poor women and children – further increasing the disparities between the affluent and the poor. The fact remains that women make up little over half of the world's population, but they account for 60 percent of the world's hungry. They also produce between 60 and 80 percent of the food in most developing countries where they have less access to land and credit than men do.

The powerful consequences of nutrition transition

Human diet and nutritional status have undergone a number of major shifts over the last three centuries. The concept of the nutrition transition can be defined as a stepwise sequence of characteristic changes in dietary patterns and nutrient intakes associated with societal, economic and cultural changes during the demographic transition of populations. It focuses on shifts in diet, especially its structure and overall composition and is reflected in outcomes such as changes in body stature and body composition, and is paralleled by major changes in health status. A clear example is how changes in European and American diets have caused fluctuations in the average height of men and women throughout time.

Now more than ever, we need to not only understand the dietary and health changes taking place and their consequences, but we also need to define and implement program and policy changes that will positively improve the total nutritional and health status of people in developing economies.

The prevalence of overweight and obesity exceeded that of undernutrition in the majority of 37 developing countries studied as far back as 2005. Recent trends show the rising prevalence has spread and the emergence of obesity has further accelerated not only among adults but also adolescents and even children in the emerging middle class. It is not obesity alone but also diabetes, hypertension, dyslipidemia and arthrosclerosis appear to be on the increase. The reality is that four out of five NCD deaths are in low and middle income countries. This indicates a negative nutrition transition that has serious implications on physical and mental development and performance.

Preventing NCD's through adequate nutrition

Increasing the consumption of vegetables and fruit, especially traditional but now neglected local vegetables, is also an important but longer term goal to improve the nutritional status in developing countries. Affordability and availability are often the greatest barriers to consumption in consumer research in developing countries but household preferences also pose a significant challenge especially as urbanisation and time pressures increase. For long term success a multiplicity of strategies and interventions at all levels are essential.

PROJECTED DEATHS BY CAUSE FOR HIGH-, MIDDLE-, AND LOW- INCOME COUNTRIES

Source WHO-World Health Statistics 2008

RESOURCES

For details on the work of SIGHT AND LIFE visit www.sightandlife.org

For details on the Millennium Development Goals visit www.un.org/millenniumgoals

For details on the Copenhagen Consensus 2008 visit: www.copenhagenconsensus.com/Home.aspx

For details on the 1000 Day movement visit: www.thousanddays.org

For the Scaling Up Nutrition (SUN) documents search on www.unscn.org

For the Lancet series on Chronic Disease: The Lancet, Volume 376, Issue 9753, 13 November 2010

Food Insecurity may explain the age difference in body size in Africa

— Zandile Mchiza —

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When contemplating nutritional disorders on the African continent, until recently, under-nutrition has been at the forefront of considerations. Over the last decade we have been seeing evidence that suggest over-nutrition to have already been entrenched in Africa, to the extent where the prevalence of obesity in adults often surpasses that of underweight in children under the age of five years[1].

The nutritional status of Africans

The Demographic and Health Surveys (DHS) of Africa suggest over-nutrition in women to co-exists, with under-nutrition in children in many African countries[1]. Figure 1 presents data suggesting obesity in adult women to rival that of severe stunting in children.

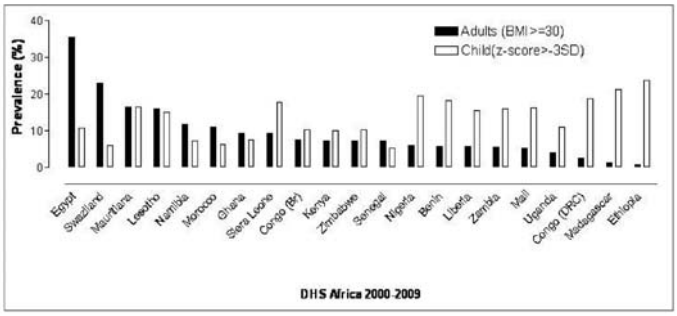

Figure 1 : Obesity in African women and severe stunting children under the age of 5 years in Africa[1]

Causes of under-nutrition in Africa

Food insecurity (FI) is associated with under-nutrition given its definition that it is a lack of access to nutritionally balanced and diverse diets[2]. The consistent emerging trend in Africa indicates that in households affected by FI, women are reducing the quality of the food their family eats, or are feeding their children poor quality foods, or they skip their meals so that their children can eat[3-5]. African households that are food insecure spent less money on food than their food secure counterparts[1-3]. The National Food Consumption Survey (NFCS) of South Africa3 highlighted that the number of food items in the South African home inventory was influenced by the household's income, such that an average of less than eight different food items was observed in poorer households compared to 16 from their higher income counterparts. The secondary analysis of the NFCS of South Africa also indicated that the dietary diversity and variety scores of children (1-9 years) in poor households were dismal, with more than a third of these children recording low diversity and variety in their diet. Labadarios et al.'s findings in 2010, further established that the majority of South Africans consume a diet that is low in dietary variety[6,7]. Poorer and rural households were the worst affected, with animal products and vitamin A rich fruits and vegetables being the least consumed.

Causes of over-nutrition in Africa

Associating FI with over-nutrition may seem erroneous given its afore-mentioned definition. However, there is strong evidence supporting the concept that FI does not only associate with under-nutrition in children but also with over-nutrition in women[3-8]. Certainly, the association between FI and obesity among women is by no means causal, indeed it may be a function of emerging affluence, and requires further investigation. However, it should be borne in mind that within food insecure African households, it is common to find women who naturally select energy-dense foods during times of food shortage as a mechanism of survival[8]. Energy-dense foods typically contain high quantities of fat, sugar and/or starch, as opposed to low-energy dense foods which are higher in fibre and micronutrients, such as fruit and vegetables[8,9]. Further, energy-dense foods cost less per unit of energy than animal products, fruits and vegetables[9]. As such, women lacking adequate resources may be purchasing these less expensive energy-dense foods in order to alleviate hunger[3,9,10]. Indeed, The NFCS documented that in food insecure South African households the most commonly procured food items were maize (94%), sugar (93%) and bread (52%) and hard margarine or cooking fat (59%)[3]. Availability of these energy-dense food items in the households seems to translate into them being commonly consumed. Similarly, Steyn et al. observed results that suggest poor Kenyan women to consume less fruits, vegetables and animal protein, but higher energy-dense foods such as maize (68%), sugar (88%), bread (46%), fats and oils (73%)[10]. In both the afore-mentioned studies women in these poor households presented with a higher BMIs[3,10].

Summary and conclusions

In Africa, both under-nutrition and obesity may well be "by-products" of FI within poorer households. The results show a cause for concern in view of the challenging goal to achieve food security in totality. The FAO suggests achieving food security in totality by improving food availability; food access; food utilization; as well as food stability in each household at all times[2]. In this regard, it may therefore be necessary to conduct an audit of the already abundant African food policies to evaluate their content, recommendations and the extent to which they are effectively implemented to increase dietary variety and reduce FI. It would appear that these policies might be promoting overconsumption of certain foods more than others, given the current evidence presented in this review, which indicates that the basis of African diets appear to be carbohydrates and fats, with a lower than recommended intake of protein (from animals), vegetable and fruits.

REFERENCES

1. Measure Demographic and Health Surveys (DHS) on line: STATcompiler. Building tables with DHS data. Accessed [15 July 2010] Available at http://www.cdc.gov/reproductivehealth/Surveys
2. FAO. The state of Food Insecurity in the World: Monitoring progress towards the World Food Summit and Millennium Development. Food and Agriculture Organization of the United Nations 2004.
3. Labadarios D (ed.). The National Food Consumption Survey (NFCS): Children aged 1–9 years, SA, 1999. Pretoria: Directorate: Nutrition, Department of Health, National Food Consumption Survey Consortium, Stellenbosch, South Africa 2000.
4. Labadarios D *et al.* SA Journal of Clinical Nutrition 2008; 21(3) (Suppl. 2):247–300.
5. South African Social Attitudes Survey (SASAS). Human Science Research Council 2008. Available at www.hsrc.ac.za
6. Steyn NP et al. Public Health Nutrition. 2006; 58:912-13.
7. Labadarios D *et al.* Nutrition Journal. 2011;10:33.
8. Tarasuk V *et al.* Low-income women's dietary intakes are sensitive to the depletion of houshold resources in one month. J Nutr. 2007; 137:1980-87.
9. Temple NJ, Steyn NP. Food prices and energy density as barriers to healthy food patterns in Cape Town, South Africa. Journal of Hunger and Environmental Nutrition 2009; 4:203-213.
10. Steyn NP *et al.* Dietary, social and environmental determinants of obesity in Kenyan women. Scandinavian Journal of Public Health. 2011; 39:88-97.

Eat plenty of vegetables and fruits everyday

— Penny Love —

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Today, eating more vegetables and fruits for better health is a concept with which most of the general public is familiar. However, only in recent times, with new research findings, have we really begun to understand the mechanisms of action of vegetables and fruits in health promotion and disease prevention.

Which vegetables and fruits should we choose?

Vegetables and fruits most commonly cited as offering a protective effect are onions, garlic, red pepper, carrots, spinach, cabbage, broccoli, brussels sprouts, cauliflower, tomatoes, and raw, fresh citrus fruit[1,3]. While the evidence seems to consistently point to specific vegetables and fruits, studies on individual nutrient action on disease prevention are still inconclusive. There are probably many other active substances in vegetables and fruits which are as yet unknown, and the interactive and synergistic effect of nutrients in foods cannot be discounted. Encouraging a variety of vegetable and fruit intake is therefore still the best overall advice.

Are south africans eating sufficient vegetables and fruits?

What is optimal intake? — The professional's opinion

An intake of at least five portions (400 g) of vegetables and fruits per day has become established as a manageable, minimum recommendation by numerous international and national health promotion agencies, producers and retailers[4-9].

How much is 'plenty'? — The consumer's view

Findings from the South African Food-Based Dietary Guidelines Consumer Study[10] highlighted that consumers interpreted the word 'plenty' in two ways:

(1) frequency ('as often as possible'; 'every day') and (2) quantity ('at least two per day'). Numerical values ascribed to the word 'plenty' ranged from a minimum of one vegetable and one fruit a day to as many as five to nine vegetables and/or fruits a day.

How many vegetables and fruits are South Africans eating?

Regional and ad hoc food and nutrient studies describe a similar trend between cultural groups and rural/urban dwellers, namely, and average two main meals a day with small quantities of vegetables and fruits, with women consuming notably more vegetables and fruits than men[11-14]. Overall intakes of vegetables and fruits for South Africans can therefore be regarded as not meeting the global recommendations of five portions daily.

What are the barriers to eating vegetables and fruits?

Although aware of the health benefits of eating plenty of vegetables and fruits every day, participants of the South African Food-Based Dietary Guidelines Consumer Study[10] indicated a number of constraints, in particular, affordability (lack of household income), availability (and therefore highly contingent on seasonal fluctuations), and household taste preferences (with children and sometimes men being most resistant to vegetable and fruit consumption in the household).

Similar barriers to the consumption of vegetables and fruits have been reported among low income, multi-ethnic worksite groups in the United States, who cited perishability, inconvenience, cost, storage difficulties, preparation time, taste dislikes, poor availability, and difficulty changing old habits[15,16]; and in the United Kingdom, who cited cost, complacency and family influences[17,18].

Strategies to overcome barriers to achieving optimal intake

Knowing why and what to eat does not always translate into a change in food selection — people eat food, not nutrients. The greater challenge is being able to advise people in simple and practical ways while overcoming barriers to change.

For any educational messages to have a positive impact on behaviour, they should be adapted and customised to meet the needs and resources of the individual(s) for whom the messages are intended. Where food insecurity exists or financial constraints prevent frequent consumption of vegetables or fruits, suggestions for increasing consumption may need to focus more on promoting self-sufficiency, e.g. establishing vegetable gardens.

Apart from having a consistent educational message, multiple marketing strategies should be used to enhance the effectiveness with which the message reaches the consumer. Retailers can merchandise the message in their supermarkets, run newspaper advertisements that provide consumers with supplementary information, give away educational materials, and create interactive events to promote awareness. A comprehensive national media campaign can provide systematic and focused coverage of events. At a community level, the message can be brought to consumers through the co-operative efforts of health, educational, agricultural and voluntary agencies working with groups in the private sector. Schools, worksites, clinics, farmers' markets and food assistance programmes can be used to promote the message and community intervention studies conducted to determine the effectiveness of the message[19].

Conclusion

There is adequate evidence to support a dietary guideline for increased vegetable and fruit consumption in South Africa. Increased vegetable and fruit consumption also assists in meeting other dietary guidelines, such as increased intakes of starchy foods and decreased intakes of fats. This dietary guideline should therefore not be seen in isolation, but as one aspect of healthy eating that fits in with the other food-based dietary guidelines. While health professionals may be in agreement as to the necessity of such a dietary guideline, the challenge lies in showing the consumer how this can be realistically achieved given their specific constraints. Health professionals can do much to accelerate this process by providing individual, regional, provincial and national strategies to overcome barriers to change.

REFERENCES

1. Tavani *et al.* Am J Clin Nutr 1995; 61: suppl, 1372S-1377S.
2. Block G. Am J Clin Nutr 1991; 53: 270S-282S.
3. Steinmetz K et al. JADA 1996; 96: 1027-1039.
4. USDA (United States Department of Agriculture). Nutrition Today 1997; 32(4): 172-173.
5. NTF (Nutrition Task Force). Wellington, New Zealand: Department of Health, 1991.
6. Health and Welfare Canada. Canada: Ministry of Supply and Services, 1992.
7. Hunt P *et al.* Journal of Human Nutrition and Dietetics 1995; 8: 335-351.
8. Commonwealth of Australia. Publication No. 2425. Australia: Commonwealth Department of Health and Family Services, 1998.
9. Malaysian Ministry of Health. Malaysian Dietary Guidelines. Kuala Lumpur: National Coordinating Committee on Food and Nutrition, 1999.
10. Love P *et al.* S Afr J Clin Nutr 2001; 14(1): 9-19.
11. Vorster H *et al.* Durban: Health Systems Trust, 1997.
12. Walker A. Nutr Res Rev 1996; 9: 33-65. 28. Mackeown J et al. Ecology of Food and Nutrition 1994; 33: 27-36.
13. UNISA (University of South Africa). Research Report No. 205. Pretoria: UNISA Bureau of Market Research, 1994.
14. Bourne L *et al.* Cent Afr J Med 1994; 40: 140-148.
15. Cohen N *et al.* Am J Nutr Ed 1998; 30: 381-386.
16. Cox D *et al.* Nutrition and Food Science 1996; Sept/Oct (5): 44-47.
17. Kilcast D *et al.* Nutrition and Food Science 1996; Sept/Oct (5): 48-51.
18. Dittus K *et al.* Am J Nutr Educ 1995; 27: 120-126.
19. Heimendinger J *et al.* Am J Clin Nutr 1995; 61: suppl, 1397S-1401S.