

DIET

SUSTAINABLE
FOOD SAFETY:
A "CONSUMER SAFARI"
IN SENEGAL





SUSTAINABLE FOOD SAFETY: A “CONSUMER SAFARI” IN SENEGAL



MISSION REPORT

by CHIARA FRAZZOLI

chiara.frazzoli@noodlesonlus.org

Researcher at the Food and Veterinary Toxicology Unit, Dept. of Veterinary Public Health and Food Safety, Istituto Superiore di Sanità, Rome, Italy.

LA SICUREZZA ALIMENTARE SOSTENIBILE: UN “SAFARI FRA I CONSUMATORI” IN SENEGAL

La salute sostenibile, cioè transgenerazionale, implica la corretta programmazione fetale e le possibilità di salute in età adulta. L'identificazione e la gestione dei fattori alimentari (sicurezza alimentare sostenibile) nel “flusso di salute” materno-infantile è particolarmente urgente in popolazioni che stanno vivendo profondi cambiamenti che stanno inducendo invecchiamento e urbanizzazione della popolazione, con crescente incidenza delle malattie croniche. In questo “consume safari” viene analizzata la dieta Senegalese per porre le basi per l'identificazione di fattori gestibili, tra i quali l'HACCP tossicologico, con importanti implicazioni per la prevenzione e la sovranità alimentare. La comprensione delle radici culturali delle preferenze e dei sistemi alimentari contribuisce a sanare le disparità di salute mediante strategie, canali e strumenti per coinvolgere la popolazione alfabetizzata e analfabeta nelle aree urbane, semiurbane e rurali.

SUMMARY: Sustainable, i.e. transgenerational, health implies proper conceptus programming and health challenges of healthy adulthood. The identification and management of dietary factors (sustainable food safety) in the mother-child health flow factors is especially urgent in population undergoing sweeping changes that are shifting the balance toward an older and more urbanized population that experiences more chronic disease. The Senegalese diet is analyzed in this “consumer safari” to put the basis for the identification of malleable factors, including toxicological HACCP, with important implications for prevention and food sovereignty. The comprehension of cultural roots of diet preferences and food systems contributes filling health disparities by laying-down strategies, channels and tools for empowering literate and illiterate people in urban, semi-urban and rural settings.

1 AN INTRODUCTION ON SUSTAINABLE FOOD SAFETY: MATERNAL DIET AND CHILD HEALTH

The aim of a consumer safari is to gain insights into the social- and cultural-environments of consumers: diet is a complex issue, influenced by environment and lifestyles, providing macronutrients (e.g., proteins, lipids) and micronutrients (vitamins, trace elements) to such vulnerable life stages as intrauterine life and breastfeeding. Maternal diet before and during pregnancy is critical

to prevent an inadequate and/or unbalanced embryonic nutrition which can lead damage to foetal development, and also to long-term risk of increased burden of diseases in adulthood.

Analogously, early and exclusive breastfeeding for 6 months for all children improves the infant resistance to diseases and especially reduces infant deaths caused

Acknowledgements

I thank the friendly sustain received from the Italian Association of Senegalese Women DEGGÒ during my ISS mission in Senegal. In particular, I thank Ms. Thiama Mbow (Mbacke region) and Ms. Ndeye Djenaba Tine (Dakar region).

by diarrhoea, asthma and pneumonia; most important, it provides the nutrients required at appropriate amounts for an adequate development of the baby. For instance, breast milk is a source of iodine that is essential for the function of thyroid, hence, to body growth and intellectual development.

Early and exclusive breastfeeding is a highly recommendable health-promoting practice that needs further support in Senegal where, e.g., feeding water still is a common practice and neonates are not regularly fed colostrums.

Moreover, communication related to the market replacement foods and breast milk substitutes should be severely surveyed in health systems, sales outlets, distribution points, and the news media, to monitor compliance with the International Code of Marketing of Breast milk Substitutes.

1.1 METABOLIC DISORDERS

While malnutrition and micronutrient deficiencies are not eradicated in Senegal, there is also an increased prevalence of a group of severe diseases related to an excessive and unbalanced consumption of foods and calories such as obesity, hypertension, diabetes, hypercholesterolemia and cardiovascular disorders.

Much of the rise of obesity pandemic is attributed to lifestyle factors as hyper-caloric/nutritionally poor diet and sedentary life; however, the risk of developing metabolic disorders in adult life is also much influenced by factors that operate during pre- and early postnatal development.

In particular, a wrong or inadequate nutritional stimulus

in utero or in the early neonatal life stages may enhance the risk of developing adulthood disease. The risk can remain “hidden” or further increased and triggered to elicit disease later on, depending on the safety, quality of diet and living environment, involving such factors as poor intake of non-essential but beneficial food components (e.g., antioxidant in fruits and vegetables) and enhanced exposure to undesirable compounds (mycotoxins, heavy metals, pesticides, man-made contaminants).

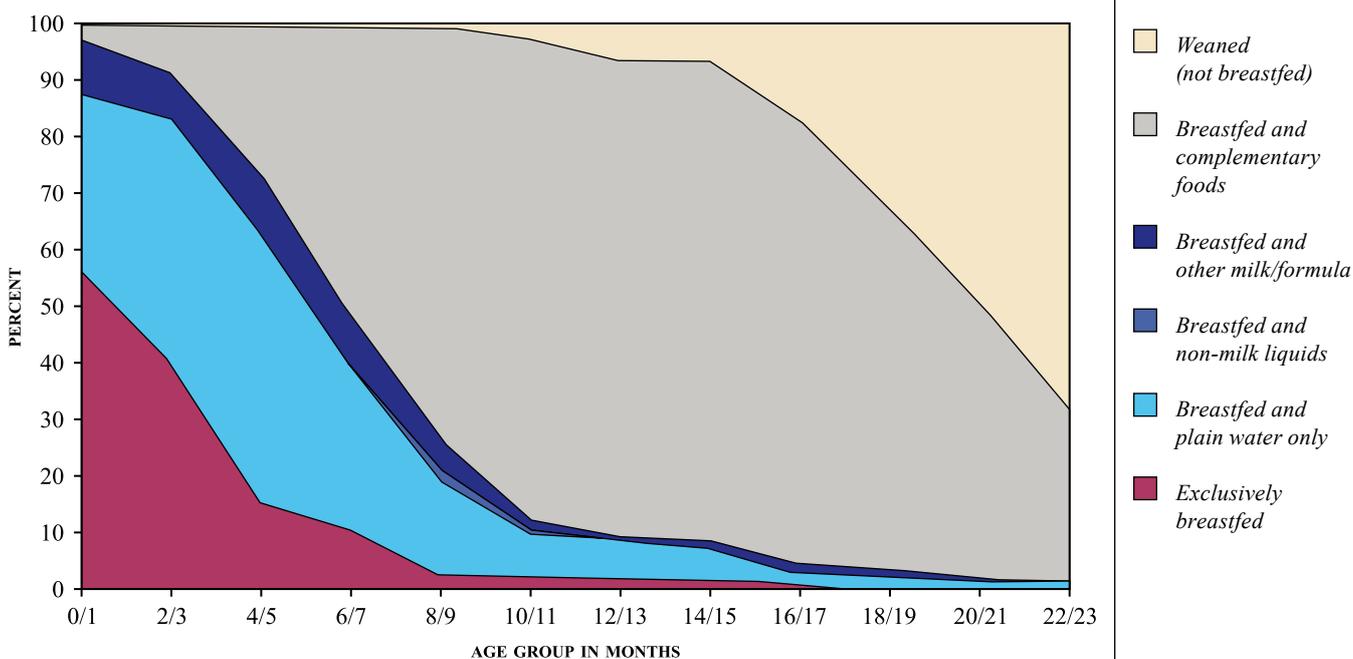
For instance, a strong programming stimulus in later development of diet-induced obesity is the mismatch between the prenatal under-nutrition and postnatal high-fat nutrition. In this case, the trigger may be the alteration of the placental function by some widespread chemical contaminants: one example is Bisphenol A, a constituent of polycarbonate plastic used for packaging of many baby-food products and biberon bottles. The exposure to other triggering substances, such as dioxins, that accumulate in fatty foods, especially of animal origin, could be decreased by selecting lower-fat meats, fishes, poultry, and dairy products.

1.2 PAEDIATRIC SUSCEPTIBILITY TO INFECTIONS

Beyond the infectious agent itself, other factors are required to support the onset of an infectious disease, and/or to facilitate its progression or to weaken the effectiveness of immune responses. In particular:

I. Nutritional deficiencies leads to deregulation of response to infection, thereby enhancing the virulence of pathogens; in its turn, infections aggravate micro-

BREASTFEEDING PRACTICES BY AGE, SENEGAL 2005



Source: DHS

nutrient deficiencies both by reducing nutrient intake (decreased strength and appetite, increased diarrhoea) and by directly interfering with their metabolism, e.g., viruses in the body using essential minerals for their own purposes.

II. Immunotoxic contaminants (e.g., Aflatoxin B1, produced by microscopic fungi contaminating wheat and grain) can directly impair the immune function; other contaminants (heavy metals, dioxins) can also alter immunity indirectly, causing or exacerbating either primary and secondary nutritional deficiencies,

III. Even in the absence of primary deficiencies in the mother, secondary deficiencies (caused by unbalanced intakes or contaminants) in infants may contribute a less effective innate and adaptive immune responses and increased susceptibility to infections.

1.3 BIRTH DEFECTS

Food components have a role in the prevention of birth defects. The most well-known example worldwide is the major preventive effect of an adequate intake of the vi-

tamin folic acid towards neural tube defects (NTDs), a group of severe malformations of the brain and spine. In general, a diet rich in fruits, eggs, but especially green vegetables gives the woman sufficient folic acid: it is important that such healthy diet is taken as a habit before the start of the pregnancy, because NTDs are induced very early in gestation.

NTDs and other malformations are not prevented solely by folic acid. A healthy diet rich in fruits and vegetables, low in fats and sugars as well as composed by foods from unpolluted areas and stores supports a healthy pregnancy. This diet will provide a better intake of preventive nutrients (zinc, inositol) and a lower intake of contaminants (e.g., arsenic, the mycotoxin fumonisin B1) which interfere with the metabolism of folic acid and other nutrients.

Overall, diabetes, obesity, and the excess of food sugars or fats, have been signaled as risk factors for malformations. Thus, when we prevent today the risk of developing obesity and diabetes by healthy and safe nutrition of pregnant women and newborns, we will also protect the health of the future generations fathered by the today's children.

2 NOTES ON SENEGALESE DIET

Besides snacks, street cooked food is not marketed; eating is a main component of social life and, even some restaurants along main streets serve travelers, food is preferably cooked at home to be eaten with friends and relatives.

Daily diet is not deficient in calories and proteins; however, especially in rural areas and in the poorest areas of cities, is also less varied, and possibly less rich in trace nutrients, than it would seem at first glance. Fish is mainly consumed dried and, even though diffused, is considered as a cheap food. Palm oil is the widespread vegetable fat for cooking.

Further to the regional ones, all dishes have many variations: the ceebu yapp may also be red, the ceebu ginaar also white, the cu can be prepared with meat, shrimp or bulett (fish balls). The precious coff in the ceebu jén can be replaced with less expensive fish (e.g. the yaboy), the use of vegetables can be limited or, away from the sea, simple dishes of millet and tapioca (manioc starch) are prepared. Noticeably, fruit is not a traditional part of the meal; moreover, it is relatively expensive and especially consumed as canned juice.

Meals are eaten in a single flat dish on the ground,

the guests sit down on the floor or on small stools and eat using the right hand or the spoon.

2.1 NDÉKKI LI (BREAKFAST)

For breakfast you eat mainly bread (French baguette) accompanied by tuna (Pinton, a sardine paté produced in Dakar), imported cheese, mayonnaise (in the traditional version or white, made by Fulani with milk and without eggs) or imported margarine and Senegalese chocolate. These foods are available in any boutique (small shop, the equivalent Italian grocery store of several years ago), at least in cities. Also sandwiches with gruyère, beef saucisson or omelette and, since some years, jams of Senegalese production are consumed.

2.2 AÑ BI (LUNCH)

Lunch is the main meal and for many Senegalese is equivalent to ceebu jén (rice with fish) with the variation of colour (white or red). In addition to the ceebu jén, ceebu jaga, ceebu yapp (rice with meat), ceebu



>> Senegalese cooking recipes (www.insenegal.org/20Cucina/).



ginaar (rice with chicken) and all the ñaari cin, i.e. white rice accompanied by a sauce of meat or fish and vegetables, as: mafe, domoda, yassa jén, yassa ginaar, cu jén, cu diw tiirr, suppokanja, curry.

The rice brisé, whose grains appear very small because broken, is the best for ceebu jén.

2.3 REER BI (DINNER)

Lighter and more various dishes are served for dinner: meat, chicken or fish and salads, firir, bulett (fish balls) to eat with bread, risotto-like rice (ceebu toy, such as the daxinn, the mbaxall or the ceebu tatu naar), couscous or pasta (spaghetti or small macaroni) with meat and onions sauce, the supp and the traditional cérè, i.e. Senegalese couscous made from millet that is consumed with a sauce of meat and vegetables or served as a basis for the preparation of desserts.

Sweets can replace dinner or breakfast, for example the lax or the ngallax, or be served during particular periods (e.g. the caakry on nights of Ramadan).

The local fast-food serve hamburgers or chawarma (Arab bread filled with meat cooked on the spit, onions, tomatoes and fried chips); in the dibiteries you can buy beef or lamb meat just grilled and served with mustard and chilli.

2.4 LECCANTU (SNACKS)

Peanuts grills in the sand, salted or with sugar (gerte caff o gerte xott o gerte sucar), cashews from the Casamance, fataya, pastel or akra with spicy souce, beñé (sweet), green mango with a little salt or the ce-rises (small green and bitter fruits), tandarm (fresh or dried dates, especially consumed during Ramadan), mboqq (toasted corn cobs).



>> Senegalese cooking recipes (www.insenegal.org/20Cucina/).

2.5 SOFT DRINKS

The term *boisson* means all American sodas or their Senegalese version, which are sold in all the boutiques.

Local drinks are named *jus* (juice), the most famous is the ice served *bissap* (infusion of red flowers similar to

karkadé), but also *daqqar* (tamarindo), ginger (slightly spicy taste), *ditax* juice, the *buy* and cocktails.

Most popular drinks are the *duté* infusion, milk powder and soluble coffee; children add cacao powder to milk; very few use UHT milk. The *Touba coffè* contains *jarr* (a slightly pepper flavoured spice).

The meal ends with *ataya* (tea).

3 IMPLICATIONS OF THE “PASTORAL ROOTS” CULTURE ON DIET AND DEVELOPMENT

Before you cook pap to sell, cook to eat first.

local proverb

One reason for the limited variety of dishes in Senegal may lie in the absence of food recycling. One can think that both climate (over 30°C all the year) and daily availability of food do matter and that the food recycling practice arises in farming cultures that need to optimize resources and save foods for the winter; this cultural framework defines its values in terms of economising behaviours. On the other side, in the pastoral culture the relative abundance (availability of food, dressing and housing) decreases the need of socio-economical development, and storing and recycling have less reason to exist. Thus, in a “pastoral roots” view of the “quality of life”, the food surplus from the meal is not recycled nor saved; it is offered to poorer families or to visitors (who may be migrants, pilgrims, sellers, or even people passing-by). Thus, food offering is part of a series of actions that maintain the social links; visiting and sitting around food or beverages are all-important activities in the Senegalese everyday life. This behaviour receives further support by the bonds and customs created by the Islamic community, which in Senegal, is characterised by the influence of the Mouride brotherhood.

Noteworthy, it should be kept in mind that pastoral social organisation is the basis of the traditional social security functions of the entire community.

Another component is the agricultural structure of Senegal, which pivots on the peanut farming. Monocultural farming, basically linked to the production cycle of a single plant species, is less able to foster a varied side-production accompanied by timely rotation of cultures and food storage. In a country where plantations of peanuts cover 40% of the cultivated lands, the subsistence farming that produces millet, cassava and rice does not receive adequate support and the country is forced to import staple foods. For instance, since the end of the 19th century, when the French colonialists imposed the rise from their settle-

ments in Indochina, rice is often imported from Asia, because local production does not cover national requirements.

Overall, development planning in Africa may have been unsuccessful so far because both pastoral cultural roots and pastoral systems are poorly understood. The assumptions on pastoral production systems as “inert”, “backward” and economically “unreasonable” need to be deeply reconsidered in a framework where labour is cheap, capital is scarce and the infrastructure (including transport) is poorly developed; this is particularly important given the rapidly changing circumstances of pastoral production (from subsistence to commercial production), increasing population load and growing per capita needs.

This changing scenario is related to significant environmental problems linked to increasing pasture and water scarcity. The subsequent environmental degradation -and the accompanying high risk of poor health- can be faced only if fully understood in terms of the current social, economic and political context of production, that aims more at food security rather than at maximising profits.

The context is rooted in the individual/community/food production /environment relationships, as well as on the balance between civilization and progress. In this context, only the understanding of values and goals of pastoral production and viewpoint on life will allow to suggest more appropriate and feasible sustainable food safety initiatives.

4 PASTORAL ROOTS AND TODAY DAIRY PRODUCTIONS

Since 2002, Senegal was administratively divided into 11 regions and 34 departments, inhabited by different ethnic groups: the Wolof and Lébou (45%), Pular (25%), the Serer (14%) and other less representative groups (Manding, Socé, Soninké). Of over 10 million people living in the country, more than 2 live in Dakar, the rest in other cities particularly in central and southern zones of Senegal; urbanisation has led the percentage of the population living in cities currently to 41%, of which 54% in Dakar.

The Senegal beef capital was estimated in 2004 to approximately 3 million cattle, which produce a quantity of milk equal to 130 million litres/year. The main breeds are the Zebu Gobra, at the North and the Centre Sahel area of the country, and the N'Dama in the southern areas. Where the two breeds coexist, the Djakoré has developed. Besides bovine milk, there is also some production of goat and ewe milk, but it has a minor role.

Despite attempts to answer with local production to the increasing demand for dairy products, Senegal must import approximately 2/3 of the milk needs, both as milk powder and finished products.

Local milk is sold both raw and transformed into sour curdled milk (lait caillé), yoghurt, and regenerated milk.

Milk powder is the raw material for countless companies that, at various level (handcraft, small transformation industries up to multinationals) turn it into numerous brands, products, and types of packaging (e.g. bags, jars, plastic bottles); between products, the thiacyr (yoghurt and cereals), fondé (millet with yoghurt) and sombi (rice milk).

In the area of extensive pastoral system in the northern pastoral area (Ferlo) and at the Senegal River, farming is characterized by a periodic movement of the herds from the internal area of the Ferlo (Diéri) and the flood region (Walo). The pastoral zone is the only presenting milk production surpluses, but the lack of processing units and their remoteness from large roads and centres of consumption penalize its economic potential. The serious problems related to the system of collection (by foot, bicycle or car, sometimes even over long distances) as well as to the lack of the cold chain makes the number of associations for processing of local milk increasing; some benefit governative support, as in the peanuts area (administrative regions of Diourbel, Louga, Kaolack, Fatik and Thiès). Here, the agro-pastoral system integrates agriculture and breeding, and livestock is intended as investment, savings and workload; peanuts and by-products are used to feed livestock. Also in the South of the country (administrative regions of Tambacounda and Kolda, Ziguinchor) crops of peanuts, rice, cotton and sesame seed integrate N'Dama breeding. Recently, around the major urban centres (Dakar) the

intensive system is developing to meet the increasing demand for local product; noteworthy, the ferme de Niacoulrab and the ferme de Wayembam, both born from private initiatives. In intensive rearing, with predominantly foreign breeds of European origin such as the (local names) Jersiaise, Montbéliarde and Frisone, artificial insemination with imported semen and mechanised milking have developed; here, milk surplus becomes caillé only in more favourable seasons. The price of fresh milk is variable; in large urban markets, price fluctuates between the 450 and 700 cfa per litre, which makes it expensive and a poorly competitive food. Cheese is generally imported from Europe: to date, both dietary habits and cost make it a niche product.

4.1 NOMADIC PASTORAL FULANI (MBORORO'EN)

The Fulani (also known as Fulbe or Peuls) are among the most widely dispersed and culturally diverse peoples in Africa. Many Fulani trace their beginnings back one thousand years to the Senegambia area; nomadic, pastoral Fulani (full-time cattle keepers) are called Mbororo'en, whereas the settled Fulani are called Fulbe wuro. The Mbororo'en move about with their cattle for much of the year. They live in small, temporary camps that can be quickly dismantled as they move in search of pasture and water for their herds.

In rural areas, kin groups (lenyol) tend to live close together and join in work efforts, whereas in towns and cities they tend to widely disperse.

The primary goal of pastoral production is subsistence security in the short and long term, which is largely achieved through accumulation of animals, species diversification and maintenance of social ties. Seasonal and annual fluctuations in food supply are coped by hunting wildlife and, where possible,



>> Pastoral Fulani, Chiara Frazzoli for NOODLES © Senegal, 2010.

agricultural foodstuffs (obtained by trade or minimal cultivation).

Further to the need of secure markets to sell animals and purchase foods, the pastoral Fulani are currently facing many problems: i) drought that often reduces water supply and pasture, as well as impairing herd's health; ii) increasingly less land available for herding and iii) increased conflicts with settled people.

Present-day governments are also curtailing the Fulanis' movements or trying to force them to settle down. To respond to adverse socio-economic and environmental conditions, pastoralists in the Senegalese area of Ferlo are re-inventing their livelihoods by increasing their involvement in the national market economy in order to continue a "pastoral way of life".

5

APPROACHES TO EFFECTIVE COMMUNICATION ON HEALTHY FOOD PRODUCTIONS AND DIET

In spite of the long-standing conventional belief that they are rich country's diseases, infertility, diabetes mellitus and certain cancers are part of a broader epidemiological transition from infectious/parasitic diseases to non-infectious diseases in Sub-Saharan Countries, including Senegal. A number of factors are causing this transition, including urbanization (sedentary lifestyle, imported food) and preventable factors associated with maternal pre-, peri-, post gestation diet and behaviours. For instance, the benefits and protective effect of eating fresh fruit and vegetables are poorly known.

In general, the integration between food security and food safety can be managed by both promotion of good food chain practices (producing, handling and marketing raw and finished foods) and by consumer education (selecting and cooking foodstuffs). For instance, the widespread use of cooking pots made of tinned copper and the increasing preference towards high meat consumption whilst considering fish as a food for the poor, represent two points where improvements can be driven by consumer education.

Promoting good practice may have a greater impact at short-medium term, but it requires a keen understanding of the system, including the role of street markets and snack sellers; consumer education may be slower to implement (as it is difficult to change habits) but it can be started immediately and it fulfils the citizenship's right of empowerment about her/his own health.

In its turn, empowerment is related to the sustainable food safety framework, which implies promoting prevention of diseases for the generation to come by identifying and managing priority issues for mother-child health. Thus, updated information should be circulated on i) diet of young women before and during pregnancy and breastfeeding; ii) feeding practices for newborn and young children.

Early and exclusive breastfeeding is a highly recommended practice, however, common problems are

identified: throwing away colostrum, the highly nutritious first breastmilk, is common practice in Senegal; also, many mothers gave their infants water to drink in addition to their breastmilk, thus exposing their babies to many possible waterborne diseases and pollutants.

To set up communication plans, the following points should be defined:

- a. the communications strategy;
- b. channels for delivering the messages;
- c. tools.

The following approach should be set up for communication activities in Senegal:

a. communication at the community level through the spreading of informative materials to young women and all those who have contact with mothers and children;

b¹. direct communication through the empowerment of health operators that give primary health care inputs to mothers. In particular, the Senegalese Association of Midwives, already involved in family planning projects, can reach people in all the Senegalese territory by its network of 650 midwives working in villages, town and cities;

b². implementation of the general health awareness in young generations and families by communication in schools and nurseries;

c. meetings and illustrated informative materials.

To effectively promote the awareness and empowerment on health, communication activities and their impact should be periodically revised and discussed with local communities.

Relevant links
www.iss.it/prvn,
www.cncr.org,
www.insenegal.org/20Cucina/