Executive summary of the National Food Consumption Survey Fortification Baseline (NFCS-FB-I) South Africa, 2005
GAIN congratulates the Government of South Africa, the Department of Health, UNICEF, the Chamber of Milling, the Chamber of Baking, Academicians and Researchers, Development Bank of Southern Africa, Retailers and Consumers on the success of the national wheat and maize flour fortification program.
Executive Summary

National Food Consumption Survey-
Fortification Baseline
(NFCS-FB-I)
South Africa, 2005

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Published by:
Medpharm Publications (Pty) Ltd
www.medpharm.co.za
PREFACE

One of the recommendations of the National Food Consumption Survey (NFCS) was that due consideration should be given to initiating a programme of food fortification with a view to addressing micronutrient deficiencies in the country. The Directorate: Nutrition of the Department of Health, following extensive consultations with local and overseas experts, issued a Tender for a national survey with the aim of establishing baseline information on the predisposition of people to food fortification as well as establishing selected blood micronutrient values in children aged 1–9 years and women of child bearing age. The nine universities teaching Nutrition/Dietetics in the country, and the Medical Research Council (MRC), all part of an existing Consortium, the National Food Consumption Survey (NFCS), now named the National Food Consumption Survey (NFCS) – Fortification Baseline (NFCS-FB-I), tendered for the survey and was awarded the Tender. This report summarises the key findings of this national survey. There is potential for additional analysis of the database on many other specific issues within the framework of the available parameters studied. Any such analyses will form part of the survey's capacity building component, additional to the one the survey has already created.

In the report itself, the introduction and the methodology sections are followed by selected key findings in order to impart a global picture of the current situation in the country. The Appendix includes the Training Manual containing the Questionnaires that were developed specifically for and used in the survey, together with the training details that all the coordinators, team leaders and field workers received prior to the implementation of the survey. The directors of the NFCS-FB have agreed that the results of the survey will also be published in peer reviewed scientific journals.

The survey had to be stopped in its first week of implementation because, on the basis of clinical grounds, an unusually high number of blood samples received at the African Micronutrient Research Group of the Division of Human Nutrition of the University of Stellenbosch – the central processing laboratory in the Tygerberg Academic Hospital – were found to be haemolysed upon arrival. The Tygerberg Academic Hospital is a public hospital and part of the National Health Laboratory Services (NHLS). Better trained phlebotist nurses were employed and two other (private) central processing laboratories (PathCare and Lancet Laboratories) were appointed for the processing of the samples at the nearest possible laboratory site to that of sample collection. The purpose of these newly appointed laboratories was to decrease the time intervening between the drawing of the blood and its processing. For reasons of logistics, it was not possible to engage the NHLS more extensively in the resolution of this difficulty. These measures proved successful and the survey was restarted within two weeks from the time it was stopped. The survey was completed uneventfully in any other way and as planned. These corrective measures were taken in consultation with and approval of the Tender. These measures also had financial implications in the sense that the original budget amount tendered for the implementation of the survey was insufficient to cover the additional expenses. The actual implementation of the survey had a long lag time for a number of administrative reasons unrelated to the undertaking of the Consortium to complete the survey fully and write the report in the shortest possible time, bearing in mind the size and nature of the survey.

The appropriateness of the title of the survey (Fortification Baseline) was also debated among the role players involved, since the mandatory food fortification legislation was enacted in April 2003 and implemented in October 2003. The survey was implemented in January 2005. The title was retained on account of the fact that the survey would have been the first of its kind at the national level being implemented after the legislation for mandatory fortification. Additionally, the survey and its title would lend itself to being a reference point and an “expansion/continuation” of the NFCS for any future such surveys, which would form part of the monitoring and evaluation programme of the food fortification policy in the country.

This survey would not have been possible without the excellent community support it has received, or without the commitment, dedication and hard work of the directors, coordinators, team leaders and fieldworkers of the survey, and the personnel of the Directorate: Nutrition of the Department of Health as well as the sponsors. The University Consortium consisted of (in alphabetical order) the Universities of Cape Town, Free State, Limpopo (MEDUNSA and Polokwane campuses), KwaZulu-Natal, North West, Pretoria, Stellenbosch (Chair and legal entity for the Tender) and Western Cape.
ACKNOWLEDGEMENTS

This survey was commissioned by the South African Department of Health. The financial support of the Global Alliance for Improved Nutrition (GAIN) provided through UNICEF, with inputs from the Department of Health, the National Fortification Alliance and the Micronutrient Initiative is gratefully acknowledged.

The valuable and important contribution of the following colleagues and institutions is also gratefully acknowledged:

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EXECUTIVE SUMMARY

INTRODUCTION

In 1999 the first ever National Food Consumption Survey (NFCS) was undertaken in 1–9 year old children ($n = 2894$). The mothers/caregivers of the children were interviewed and information was obtained on the children’s growth, dietary intake, procurement patterns and food inventories as well as the prevalence of hunger. This study provided the Department of Health (DOH) for the first time with vital information about the nutritional status of children and the foods eaten and purchased by households in South Africa. Based on this, the DOH was able to develop and implement strategies to address malnutrition in children.

The main anthropometric findings of the NFCS were that one in 10 children was overweight and just more than one in five was stunted. Furthermore, and in terms of the prevalence of stunting, younger children (1–3 years) were most severely affected, as were those that lived in the rural areas and on commercial farms in particular. In relation to being overweight, the highest prevalence was documented among children of urban households and whose mothers had tertiary education. Irrespective of the type of malnutrition, the level of maternal education was found to be an important determinant of both nutritional disorders among these children.

Dietary findings indicated that, in general, one out of two children had an intake of approximately less than half of the recommended level for energy as well as of a number of important micronutrients. In fact, the majority of children consumed a diet deficient in energy and of poor nutrient density to meet their nutrient requirements. This pattern of intake was worst in the rural areas. For South African children as a whole, the dietary intake of the following nutrients was less than 67% of the Recommended Dietary Allowances (RDAs): energy, calcium, iron, zinc, selenium, vitamin A, vitamin D, vitamin C, vitamin E, riboflavin, niacin, folic acid and vitamin $B_6$. These data were supported by the findings that, at the national level, one out of two households experienced hunger, one out of four were at risk of hunger and only one out of four appeared to be food secure.

The study also provided the DOH with information on the most commonly consumed foods and the average portion size thereof. At national level, the five most commonly eaten foods included maize, sugar, tea, whole milk and brown bread. With a few exceptions, this pattern appeared to be fairly consistent in all the provinces. This data formed the basis on which decisions on food fortification were made and legislated for in October 2003. Since that date, it is mandatory for manufacturers to add iron, zinc, vitamin A, thiamin, riboflavin and vitamin $B_6$ to maize and wheat bread flour. Based on the findings of the NFCS, the DOH also developed educational materials for the public based on the food-based guidelines which have been specifically developed for South Africans.

In order to maintain the surveillance system of national surveys introduced by the Department of Health as well as to have a base on which the food fortification policy can be monitored and evaluated in the future, the current survey was commissioned early in 2003. For this purpose, therefore, and apart from data on child growth, biochemical analyses of physiological fluids (blood and urine) have been included in the survey. However, the final decision to implement the survey was delayed till approximately the middle of 2004 for various reasons regarding the funding for the survey. The survey population was also extended to include women of child bearing age, the second most vulnerable group of the population. Furthermore, it was deemed necessary to also evaluate adults’ knowledge, attitudes and practices with regard to food fortification and re-evaluate the prevalence of hunger in the country. The survey can also be seen as a means of obtaining more data in relation to the Millennium Developmental Goals.

This final report therefore provides an overview of trends of the data analyses on the nutritional status of children and women of child bearing age, food procurement and inventory, knowledge, attitudes and practices of women with regard to food fortification, biochemical evaluation of selected micronutrients as well as on the prevalence of the presence at the point of consumption of vitamin A in fortified maize meal. The report encapsulates the key findings of the survey and lends itself to further detailed analysis on specific issues within the framework of its database content.

In this supplement, it is only the Executive Summary of the Report that is published. The Appendix to the Executive Summary imparts an impression of the structure of the full report in which the findings of the survey have been reported more extensively.
1. AIM OF THE SURVEY

The aim of this National Food Consumption Survey – Fortification Baseline (NFCS-FB-I) survey was to define the anthropometric, iron, iodine, zinc, folate and vitamin A status of children aged 1–9 years and women of reproductive age in South Africa as well as to describe the knowledge, attitude and practices with regard to food fortification and fortified food products.

1.1 Primary Objectives:
Determine in children aged 1–9 years and women of reproductive age (16–35 years) in South Africa, the:
- Anthropometric status.
- Vitamin A, iron, iodine, zinc and folate status.
- Prevalence of the use of food products fortified with vitamin A, thiamin, riboflavin, niacin, folic acid, iron and zinc at the household (HH) level, on the basis of detecting the presence of vitamin A in maize at the point of consumption.
- Prevalence of the use of iodised salt at the HH level.
- Prevalence of the presence of vitamin A in fortified maize at the HH level. This served as a proxy for the prevalence of fortification with the legislated fortificant premix containing vitamin A, thiamin, niacin, riboflavin, folic acid, iron and zinc.
- Prevalence of hunger.
- Knowledge, attitude and practices regarding the use of fortified products as well as awareness of and access to such food products.

1.2. Secondary Objectives:
Using the data from the primary objectives, to propose/recommend:
- Appropriate nutrition education messages and/or concepts.

2. SURVEY METHODOLOGY

A cross-sectional survey of a nationally representative sample of children aged 1–9 years in South Africa using the Census 2001 data.

The survey population consisted of all the children aged 1–9 years (12–108 months) and women of reproductive age (16–35 years) living in the same HH in South Africa. This initial sample was adapted by means of 25% over-sampling to accommodate for children and women who would not be at home at the time of the survey. A total of 226 Enumerator Areas (EAs) were included in the survey, 107 of which were urban-formal, 23 urban-informal, 15 rural-formal and 81 tribal areas. All qualifying EAs for the survey were selected with a known probability. A qualifying HH for inclusion in the survey was defined as any HH with at least one child aged between 1–9 years and at least one woman of reproductive age (16–35 years) in it.

- Validated questionnaires [Socio-demographic, Knowledge Attitude and Behaviour questionnaire (KAB), Food Procurement and HH Food Inventory and Hunger Scale] were administered by trained fieldworkers and a blood and urine sample was taken from the respondents of each HH to assess micronutrient status. Samples of tap water and maize were collected from each HH and tested for iodine and vitamin A respectively, the latter at the HH level. All questionnaires were translated into the country’s official languages for use as appropriate.

- A training manual was developed and used for the training of all field personnel engaged in the implementation of the survey.

- Anthropometric status assessment included height and weight.

- Quality assurance measures were employed throughout the survey.

MAIN FINDINGS

3. SOCIO-DEMOGRAPHIC DATA

Findings
- The response rate in the survey was 91%.
- The information for the completion of the questionnaires was predominantly provided by the mother of the child and can therefore be considered reasonably reliable, within the specifications of the methodology employed.

- Nationally, 20.5% of children aged 1–4 years of age (12–59 months) were reported to have received a high dose vitamin A supplement from the health services within the last six months, with 10% of children’s respondents not being sure whether the child had received such a supplement.

- Nationally, almost half of the HHs were headed by males (father, husband) with the father (of the woman respondent) heading the HH in almost one third of HHs and the husband and the grandfather being the head of the HH in 17% and 2% of HHs respectively.

- Nationally, more than one in two HHs (55%) had a monthly income between R1–R1000 with urban informal HHs reporting the highest percentage of no income (6%) as well as an income of R1–R500 (35%).
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• Six out of ten HHs nationally obtained their water from an own tap, whereas one in four HHs obtained their water from a communal tap. The remainder of the HHs obtained their water either from a river/dam (9%) or a borehole/well (4%).

• One out of two HHs had both a radio and a television set in working order, with the radio being the most common means of receiving information.

• A very significant percentage of the country’s population still live under adverse socio-economic conditions. Although a trend towards an improvement in some of these conditions appears to have occurred since 1999, it is only the long-term socio-economic upliftment of the population that is likely to ensure the improvement of the nutritional status of the community.

Recommendations

On the basis of these findings, and the current literature2-15

• Government should accelerate and expand its current policies and programmes on job creation and poverty alleviation, which must be afforded the greatest priority.

• Social security programmes targeted at female headed HHs should be further developed, and should also incorporate developmental approaches.

• Child support grants and old age pensions should be re-evaluated not only in terms of their adequacy in monetary value in relation to the prevailing financial climate in the country but also with a view to broadening the “means tested” qualifying households/mothers/caregivers.

• Families and mothers/caregivers in particular, should be targeted for any relief and educational programmes. Particular emphasis should be placed on the education and empowerment of women.

• The radio should primarily be used, together with television, for disseminating information on nutrition education in general and food fortification in particular.

• Innovative means of communication such as the cell phone should be used to disseminate nutrition education messages. Such a system could also be used for improving the high dose vitamin A supplementation programme.

• A Panel of Experts should be convened to discuss and comprehensively evaluate the current high dose vitamin A supplementation programme in terms of compliance, missed opportunities and the correct implementation of all its components in all provinces including the recording of the supplements in the Road to Health card. The Panel should also recommend what additional analyses of the data base may be necessary, if any.

• The Panel should also discuss and recommend a minimum set of socio-demographic data that need to be collected in national surveys. Intersectoral representation of such experts would be of the essence. The Panel should further provide input to the creation of a nutrition surveillance system as recommended elsewhere in this report.

• Appropriate and comprehensive training should be made available so that personnel of créches are enabled to administer high dose vitamin A supplements as well as other micronutrient supplements in older children according to prevailing policies.

• National days for single high dose vitamin A supplements should be instituted to support the on-going facility based programme and capture older children whose clinic attendance is unpredictable/inadequate.

• The Road-to-Health card should be formatted with vitamin A supplementation points in a format not dissimilar to that currently used for immunisation.

• The necessary human and financial resources should be made available in order to facilitate the better implementation of the recommended additional programmes.

• The achievement of these aims should be addressed within the current framework of the Integrated Nutrition Programme (INP) of the Directorate: Nutrition.

• The Consortium remains available to the Department of Health for consultation/assistance.

4. ANTHROPOMETRIC STATUS

Findings

• At the national level, stunting and underweight remain by far the most common nutritional disorders affecting almost one out of five and almost one out of ten children respectively.

• By contrast, 10% of children nationally were classified as overweight and 4% as obese.

• At the national level the nutritional status of younger children (12–71 months of age) has marginally but significantly improved in comparison with the 1999 NFCS data. These findings, however, should be seen within the known limitations of comparative analysis and be interpreted with caution.

Recommendations

On the basis of these findings, and the current literature16-26

• Stunting should continue to be addressed within the current framework of the INP, which is based on an integrated nutrition strategy for South Africa, and which, in line with
the findings of the present survey, appears to be effective. Nevertheless, it is also strongly recommended that the Directorate: Nutrition is provided with the necessary additional resources to promote child growth with particular emphasis on establishing and strengthening community based growth monitoring and promotion.

- A Panel of Experts should be convened to assess the feasibility and implementation, as appropriate, of a programme which will enable duly trained nursing staff, dietetic assistants, nutritionists and dietitians to measure the length/height of children who are enrolled in the Nutrition Supplementation programme at clinics. Length measuring boards or mats and stadiometers or wall-mounted tapes to measure height should be available at clinics. Standards for height-for-age and body mass index (BMI) for age should also be made available, so that children at risk of becoming stunted or overweight/obese can be identified at an early age. The Panel should also recommend what additional analyses of the data base may be necessary, if any.

- The Panel should further make appropriate recommendations for inclusion in the national nutrition surveillance system as described elsewhere in the report.

- Dietitians or nutritionists should become more involved in the follow-up of children in the Nutrition Supplementation Programme, identifying those who are stunted and providing the necessary nutrition education to promote child growth.

- In terms of priorities, all children who are stunted or overweight should be targeted according to prevalence and the prevailing provincial priorities. Identification, but more importantly follow-up activities should be strengthened and intensified, and should be supervised overall by dietitians/nutritionists. A system whereby patient files or cards are kept at the clinic would be useful and should be strengthened as necessary to ensure follow-up and scheduling of home visits to patients who drop out of treatment programmes.

- Due consideration should be given to accelerating the creation of crèche (child care) facilities within the community and at the work place, especially in provinces with a high prevalence of stunting as well as in disadvantaged communities within the identified provinces which have a high prevalence of stunting. Dietitians and nutritionists could become involved in the training of staff at these child care centres in menu planning, food purchasing and preparation and food hygiene.

- Similarly, the creation of both community and health facility-based rehabilitation centres should be accelerated for the intensive treatment, supervision and follow-up of severely malnourished children. Treatment protocols should be carefully developed, taking cognisance of the risks for overweight.

- Mothers/caregivers should be educated according to the prevailing needs of their environment. Food fortification and both aspects of malnutrition, namely under- and over-nutrition, should form part of any nutritional education programme. Promotion of exclusive breast-feeding up to the age of six months of life, followed by appropriate complementary feeding should be key components of nutrition education. Dietary interventions should also focus on the child made more vulnerable to malnutrition due to HIV/AIDS or other infectious diseases.

- With regard to complementary feeding, the Panel should also assess the nutritional quality of complementary foods used in the Nutrition Supplementation Programme and evaluate their cost-effectiveness specifically in terms of costs in relation to outcomes. The Panel should further specifically evaluate the available evidence, nationally and internationally, which indicates that the consumption of foods of animal origin is more beneficial in the prevention, reversal and management of stunting.

- An anthropometric assessment of children in the age range of the present survey should be repeated in three/five years with a view to monitoring the progress on the findings of the present survey.

- Overweight and obesity among women should be the target of appropriate community based programmes. These should be based on a lifestyle approach that includes dietary interventions as well as an increase in physical activity level, from the sedentary to the more active level. The necessary resources to implement such programmes should be made available for this purpose. Promotion of exclusive breast-feeding may contribute to a lower prevalence of overweight among older children.

- Obesity in children is best addressed at the clinic, crèche, school and home environment.

- In collaboration with the Department of Education, changes in the school environment should include the promotion and/or re-introduction of Physical Education, apart from the necessary dietary interventions at the crèche, school and home. Regulation of school tuck-shops should include control of the sponsoring of school activities as well as a reduced intake of sweetened cold drinks and high-energy-nutrient-poor snacks.
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• Appropriate messages should be developed which highlight the health benefits of weight management in relation to the well described morbidity/mortality profiles of those who are overweight or obese.
• The achievement of these aims should be addressed within the current framework of the Integrated Nutrition Programme (INP) of the Directorate: Nutrition.
• The Consortium remains available to the Department of Health for consultation/assistance.

5. KNOWLEDGE, ATTITUDE AND BEHAVIOUR (KAB) ON FOOD FORTIFICATION AND NUTRITION

Findings
• The main domain that was investigated was the awareness of and the intention to purchase fortified foods in a randomly selected group of the population in South Africa. Among the theories used to describe food choice behaviour, the Theory of Planned Behaviour (TPB), an extension and adaptation of the Theory of Reasoned Action (TRA), seemed to provide a good framework for conceptualising, measuring and empirically identifying factors that determine behaviour that impact on health. An adaptation of the expanded TPB model provided the theoretical framework for this survey.
• The findings of the present survey portray an indication of the beliefs, awareness, and intention and attitudes regarding food fortification as well as basic nutrition knowledge (on micronutrients) of women in selected HHs.
• Seven out of ten of the respondents nationally scored highly in their beliefs that adding vitamins and minerals to food was healthy, safe, energy boosting and helped with the growth of children without altering the taste or appearance of the food.
• The health professional, radio/TV and school, but not the husband, exerted strong normative influence on at least 74% of selected women nationally.
• One out of two women respondents indicated that they would buy foods with added vitamins and minerals even if they did not know their benefits. They also indicated that they would buy fortified foods even if they were “a little more” expensive than foods that did have added vitamins and minerals.
• At the national level, nearly four out of ten women knew about the food fortification legislation. This was true in all areas of residence irrespective of the age of the child as well as across all provinces.
• Nationally just under one out of two women respondents included in the survey had previously seen the food fortification logo with the Eastern Cape having the lowest such exposure, but only one out of five women interpreted the logo correctly or had previously heard of the concept of “food fortification”.
• The terminology “food fortification” was not easily understood and/or correctly interpreted. The findings on awareness with regard to the food fortification legislation and logo, however, reflected well on the effectiveness of the food fortification awareness campaigns that were implemented in 2004/5. It would, therefore, appear that past efforts on the education of the public on aspects of food fortification have been largely successful.
• Nationally, eight out of ten women respondents indicated their intention to buy fortified maize meal, bread, and wheat flour in the ensuing two weeks, and that they would be looking for the fortification logo as well as reading the label of the food products that they buy to ensure that they were fortified.
• Nationally eight out of ten women respondents included in the survey had a sound to very good basic nutrition knowledge score on vitamins and minerals, except for iodine.
• Nationally and provincially, a positive to very positive attitude with regard to healthful eating was volunteered by at least six out of ten women.

Recommendations
On the basis of these findings, and the current literature
• Current efforts on the education of the public on aspects of food fortification appear to have been largely successful and should be continued and intensified.
• A Panel of experts in education should be convened to create a set of educational messages which will impart, to an already motivated public, instrumental knowledge on the benefits of food fortification and fortified foods. The Panel should also recommend what additional analyses of the data base may be necessary, if any.
• Schools, health facilities, health professionals and the lay press should be afforded a greater opportunity in imparting knowledge on the benefits of food fortification and fortified foods.
• Continued and consistent messages on the benefits of food fortification should be addressed to the public at large to improve on an already excellent coverage as part of the monitoring and evaluation programme on food fortification.
• Special attention ought to be paid to the design of the educational component of the communication campaigns to ensure that the terminology around food fortification is more customer-friendly and is clearly and correctly understood and interpreted.

• The health professional, TV/radio and the school curriculum should be used as a means to a better understanding of the meaning of food fortification as well as the interpretation thereof.

• The achievement of these aims should be addressed within the current framework of the Integrated Nutrition Programme (INP) of the Directorate: Nutrition.

• The Consortium remains available to the Department of Health for consultation/assistance.

6. FOOD PROCUREMENT

Findings

• At the national level, six out of ten of the women did not look for the fortification logo when procuring maize, bread or flour products. This finding reflects on past behaviour with regard to food fortification while the KAB (Chapter 5) mainly assessed the intention to modify behaviour once the population had been appropriately sensitised regarding the benefits of such changed behaviour. The latter was found to be positive.

• Nationally, nine out of ten HHs procured maize meal (in descending frequency) of the four main types of maize meal, namely sifted raw (white), special raw (enriched), super raw (white) and special raw (white) for consumption.

• Three quarters of South African HHs procured wheat flour for consumption with relatively little variation by area of residence. However, seven out of ten HHs in the country procured cake flour (which is not fortified by Law) for consumption, and used it for baking bread at home.

• Bread was procured for consumption by eight out of ten HHs in South Africa with brown bread being the choice in seven out of ten HHs.

• In general terms, procurement of maize for consumption tended to decrease with increased HH income and money spent on food, whereas the opposite was the case for wheat flour and bread.

• The most popular bread products consumed in the country were vetkoek followed by steamed bread.

• Almost all HHs in the country had salt in their inventory with little difference across the areas of residence and provinces. At the national level, the brand name of both the iodised coarse and iodised fine salt was identified in six out of ten HHs.

• Overall, the data obtained from the procurement questionnaire were supportive of the information obtained from the inventory section of the questionnaire, thus affording a reasonable degree of certainty regarding procurement patterns.

• At the national level a maize meal sample was obtained from nine out of ten HHs. The fortification logo could be confirmed on the package in six out of ten of the HHs nationally.

• The presence of vitamin A in maize was detected in seven out of ten of the samples on which the maize was tested nationally indicating, at least on this basis, that the miller industry was complying with current regulations.

• Stability issues of vitamin A in the fortification premixes have been identified and are discussed in Chapter 10 of the report.

Recommendations

On the basis of these findings, and the current literature28-32

• Current efforts on the education of the public on aspects of food fortification appear to have been largely successful and should be continued and intensified.

• Continued and consistent messages on the benefits of food fortification should be addressed to the public at large to improve on an already excellent coverage as part of the monitoring and evaluation programme on food fortification. Emphasis in the awareness and education campaigns ought to be placed on the correct use of fortified food products, since it seemed as if unfortified products were preferred for home baking.

• Food and micronutrient insecurity should be addressed within the current framework of the INP and the enacted food fortification programme. Current efforts should be continued and intensified. In addition to food fortification, food diversification may be important in improving micronutrient status in an appropriate setting(s). Current thinking though indicates that “dietary diversification has not produced significant results at scale”. Nutrition education, behaviour change alongside crop diversification and the introduction of new crops and use of indigenous foods need to be encouraged. Home gardens should only be encouraged in settings where the feasibility and sustainability of such an activity have been established.

• The on-going good, productive and effective partnership that has been achieved with sectors of the food industry should be maintained and improved in ways that will be conducive to attaining the goal that all HHs in the country have confirmed presence of fortified foods. Particular attention should be afforded to the continued support of the
The Consortium remains available to the Department of
• The current component of the INP programme regarding
• The vitamin A field test kit, as tested in this survey, should be
• A Panel of Experts should be convened to discuss and
• Within the design framework of the present survey, it
• HH food security is defined as the secure and permanent

Findings

7. HUNGER

• HH food security is defined as the secure and permanent
• A questionnaire-based measure was used to determine
• The prevalence of hunger, at best had not improved since
• At the provincial level the prevalence of HHs experiencing
• At the national level, one out of two HH (51.6%) experienced
• In this study, factor analysis (Varimax rotation) showed a
• The CCHIP hunger index is composed of eight questions
• The CCHIP hunger index is measured by an additive scale can
• The CCHIP hunger index is defined as the
• The CCHIP hunger index is also used in the Community Childhood Hunger Identification Project (CCHIP). This measure (CCHIP hunger index) was also
• The corresponding Cronbach’s alpha (internal consistency)
• The validation findings of the CCHIP hunger index reported
• The CCHIP hunger index is composed of eight questions
• In this study, factor analysis (Varimax rotation) showed a
• At the national level, one out of two HH (51.6%) experienced
• At the provincial level the prevalence of HHs experiencing
• The prevalence of hunger, at best had not improved since

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• There was an overall consistent association between the hunger risk classification and anthropometric status.
• HHs at risk of hunger or experiencing hunger procured a smaller number of fortified foods. Additionally and in general terms, HHs at risk of hunger or experiencing hunger tended to be of the informal dwelling type, had the lowest monthly income and spent the lowest amount of money weekly on food. The mothers of such HHs also had a lower standard of education.

Recommendations

On the basis of these findings, and the current literature:
• Food and micronutrient insecurity should be consistently addressed within the current framework of the Integrated Food Security Strategy for South Africa and the INP including the enacted food fortification programme in order to reduce the incidence of hunger and risk of hunger successfully.
• Specific measures addressing the predictors of food insecurity (HH income, employment status, the presence of children in the HH and a history of homelessness/informal dwelling) must be prioritised for meeting the Millennium Development Goals of halving poverty and hunger. Such measures should include the creation of employment opportunities which should rank among the highest priorities of the government.
• The data of the present survey should also be communicated to other relevant sectors within government, especially the agricultural sector, in order to highlight the importance and extent of the food and micronutrient insecurity in the country, and to increase partnerships among different role players to ensure sustainable interventions within the context of vulnerable communities.
• A Panel of Experts should be convened to establish active and on-going collaboration with the Department of Agriculture, the HSRC and other relevant role players to collate, analyse, integrate, and interpret nationally available data on food security with the aim of establishing an appropriate methodology for evaluating food security at the household and individual level. The Panel should also recommend what additional analyses of the data base may be necessary, if any.
• The Panel should further make appropriate recommendations for inclusion in the national nutrition surveillance system as described elsewhere in the report.
• The on-going good, productive and effective partnership that has been achieved with sectors of the food industry should be maintained and improved in ways that will be conducive to attaining the goal of all HHs in the country having the confirmed presence of fortified foods.
• The current component of the INP regarding micronutrient supplementation should be retained, reassessed and resourced to attain greater coverage by consistently monitoring the appropriate implementation thereof.
• The Consortium remains available to the Department of Health for consultation/assistance.

8. IODINE STATUS

Findings
• At the national level almost all (97%) of the HHs had salt containing a significant (>2 ppm) amount of iodine and with almost eight out of ten HH having salt with a higher (>15 ppm) iodine content.
• Both at the national and provincial levels there has been a consistent increase since 1998 in the percentage of HHs using salt with an iodine content in excess of 15 ppm.
• The mean iodine concentration in drinking water was significantly higher in Limpopo (64.8 µg/L) and even higher in the Northern Cape (196.6 µg/L) when compared with the other provinces, an issue that needs to be addressed urgently at least in the Northern Cape.
• The highest median Urinary Iodine (UI) concentration was recorded in the Northern Cape. This finding raises issues of serious concern and needs to be addressed on an urgent basis, despite the small number of HHs from that province that were included in the survey.
• Four out of 10 women and five out of ten children nationally had a UI concentration in the excessive category of iodine status.
• At the provincial level children's UI concentration was in the excessive range in six out of the nine provinces with the highest such prevalence in the Northern Cape (children 95%; women 83.3%).
• Essentially, based on the median UI of women and children, South Africa has achieved the virtual elimination of Iodine Deficiency Disorders (IDD).

Recommendations

On the basis of these findings, and the current literature:
• The Department of Health should convene a Panel of Experts, which should include medical experts, to reassess its current salt iodation programme with a view to making recommendations on the current level of iodation, as well as assessing the safety of the current iodine status primarily, but not exclusively, of the inhabitants of the
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Northern Cape. The Panel should also recommend what additional analyses of the data base may be necessary, if any.

- The Panel should take cognisance of the trends in median UI concentrations since the enactment of the legislation on salt iodation.
- The Panel should further develop a strategy, building on the good progress until now, to further strengthen the national salt iodation programme and to ensure the sustainability of the virtual elimination of iodine deficiency in South Africa.
- The Panel should also make appropriate recommendations for inclusion in the national nutrition surveillance system as described elsewhere in the report.
- The Panel of Experts should, in view of the high water iodine content and the excessive (if not toxic) median values documented in the survey, justify the continued consumption of iodised salt in the Northern Cape.
- The high median UI concentrations should be reported to the IDD Network as well as the WHO with a view of South Africa playing a leading role not only in the interpretation of the data but the safety aspects of such high median concentrations.
- Current efforts should be continued and strategies strengthened to ensure accurate iodation of table salt, for example the monitoring of iodine in salt and the training of salt producers in the titration method.
- Compliance measures of salt iodation should be strictly monitored to ensure adherence to current legislation.
- Micronutrient supplements should be reassessed for their iodine content, especially those intended for women of child bearing age.
- The achievement of these aims should be addressed within the current framework of the Integrated Nutrition Programme (INP) of the Directorate: Nutrition.
- The Consortium remains available to the Department of Health for consultation/assistance.

9. SELECTED MICRONUTRIENT STATUS

VITAMIN A:

Findings

- Two out of three children and one out of four women nationally had a poor vitamin A status.

- Provincially, six out of 10 women respondents in KwaZulu-Natal had a poor vitamin A status, the highest in the country. This was also reflected in the prevalence of a poor vitamin A status in the children.
- The presence of infection/inflammation did not contribute significantly to the low blood vitamin A concentration.
- The prevalence of a poor vitamin A status in children in the country appears to have increased when compared with previous national data and is indeed a cause of grave concern. This comparison, however, should be interpreted with great caution and with due consideration to the known limitations of such comparisons.
- The pattern of increased prevalence in poor vitamin A status appeared uniform, irrespective of the area of residence, age and province.
- Stability issues of vitamin A in the fortification premixes have been identified and are discussed in Chapter 10 of the report.

Recommendations

On the basis of these findings, and the current literature:

- The food fortification programme must continue to be a milestone in the current INP programme while other approaches (education, consumption of vitamin A rich foods, food diversification, supplementation) to address the poor vitamin A status of children and women of reproductive age should be concurrently strengthened.
- A Panel of Experts should be convened to discuss and comprehensively evaluate the current high dose vitamin A supplementation programme in terms of compliance, missed opportunities and the correct implementation of all its components in all provinces including the recording of the supplements in the Road to Health card. The Panel should also recommend what additional analyses of the data base may be necessary, if any.
- The Panel should also make appropriate recommendations for inclusion in the national nutrition surveillance system as described elsewhere in the report.
- The Panel should further assess emerging trends in infant and maternal supplementation with a view to revising the approach of the current programme.
- The vitamin A content of the high vitamin A capsules at the point of consumption should be evaluated for compliance with the prescribed specifications and their storage at the level of dispensing should be assessed.
- Complementary feeding practices should be re-evaluated and strengthened to ensure adequacy of vitamin A intake. At the same time, the supplementary foods that are currently
provided in the Nutrition Supplementation Programme should not simply concentrate only on energy content but also on dietary quality and adequate micronutrient composition.

- Innovative means of communication such as the cell phone should be used to disseminate nutrition education messages. Such a system could also be used for improving the high dose vitamin A supplementation programme.

- The Panel should assess the feasibility of providing appropriate and comprehensive training so that personnel of crèches are enabled to administer high dose vitamin A supplements as well as other micronutrient supplements in older children according to prevailing policies.

- The Panel should also assess the feasibility of introducing national days for single high dose vitamin A supplements in addition to the on-going facility based programme in order to capture older children whose clinic attendance is unpredictable/inadequate.

- The Panel should further identify methods other than serum vitamin A for the detection of improvements in vitamin A status at an earlier stage than serum vitamin A levels allow. A rapid assessment study should be carried out in 2008 using the methodology the Panel identifies. Such a study could also be clinic based as a means of evaluating the current supplementation programme.

- The emerging option of community level fortification with vitamin A should be explored both in terms of feasibility and safety.

- All mothers should receive a single high dose vitamin A supplement within the first month postpartum during one of the postnatal visits. This practice should be assessed and reviewed in the context of exclusive breast-feeding practices as well as the current HIV guidelines on Nutrition.

- A second Panel of Experts should be convened to investigate the identified stability issues of vitamin A in the final fortified product.

- The industry manufacturing premixes should police itself in terms of strict compliance with current legislation and ensure, in collaboration with the millers, that the correct amount of vitamin A reaches the consumer at the household level.

- The micronutrient component of the INP programme should be strengthened, expanded in expertise and appropriately resourced to address current and urgent issues of the food fortification programme.

- The Consortium remains available to the Department of Health for consultation/assistance.

**IRON:**

**Findings**

- Almost one third of women and children were anaemic on the basis of Hb concentration, with moderate and severe anaemia being relatively uncommon.

- At the national level, one out of five women and one out of seven children had a poor iron status.

- The provinces worse affected by poor iron status were Gauteng, Mpumalanga and Limpopo in the case of women, and the Free State, Mpumalanga, Limpopo and the Western Cape in the case of the children.

- The prevalence of a poor iron status in children in the country appeared to have increased when compared with previous national data and is indeed a cause of concern. This comparison, however, should be interpreted with caution and with due consideration to the known limitations of such comparisons.

- The presence of infection/inflammation did not contribute significantly to the prevalence of anaemia but may have masked inadequate iron status.

**Recommendations**

On the basis of these findings, and the current literature73-92

- The food fortification programme must continue to be a milestone in the current INP programme while other approaches (education, consumption of iron rich foods, food diversification, supplementation) to address the poor iron status of children and women should be concurrently strengthened.

- A Panel of Experts should be convened to discuss and comprehensively evaluate the current micronutrient supplementation components of the nutrition supplementation programme in terms of compliance, missed opportunities and the correct implementation of all its components in all provinces.

- The Panel should also assess emerging trends in infant and maternal supplementation with a view to revising the approach of the current programme.

- The Panel should further make appropriate recommendations for inclusion in the national nutrition surveillance system as described elsewhere in the report.

- The Panel should also identify a minimum set of the most appropriate indicators for the assessment of iron status at a national level in the future. A rapid assessment study should be carried out in 2008 using the indicators the Panel identifies. Such a study could also be clinic based as a means of evaluating the current supplementation programme.
Panel should also recommend what additional analyses of the data base may be necessary, if any.

- An iron sulphate syrup supplement distribution programme should be instituted for a period of three years primarily for all children in the 6–23 months age group.
- Current practices at the antenatal level regarding iron supplements should be assessed both in terms of approach, the type and dose of the iron supplements dispensed as well as compliance.
- Iron supplements should only be dispensed to children with confirmed iron deficiency anaemia, especially malnourished children, during the period of convalescence from illness as the safety of routine iron supplements is currently being debated and may be ill advised.
- Current intrapartum practices relating to umbilical cord clamping in the context of preventing and/or delaying the onset of iron deficiency in the infant should be reassessed in collaboration with the Directorate: Maternal and Child Health, and be so adapted to be in line with emerging trends and recommendations.
- Complementary feeding practices should be re-evaluated and strengthened to ensure adequacy of iron. At the same time, the supplementary foods that are currently provided in the Nutrition Supplementation Programme should not simply concentrate on energy content only but also on dietary quality and adequate micronutrient composition.
- Innovative means of communication such as the cell phone should be used to disseminate nutrition education messages. Such a system could be used for improving the current nutrition supplementation programme.
- The Panel should also assess the feasibility of providing appropriate and comprehensive training so that personnel of crèches are enabled to administer iron supplements as well as other micronutrient supplements in older children according to prevailing policies.
- The emerging option of community level fortification with iron should be explored both in terms of feasibility and safety.
- The industry manufacturing premixes should police itself in terms of strict compliance with current legislation and ensure, in collaboration with the millers, that the correct amount of iron reaches the consumer at the household level.
- The micronutrient component of the INP programme should be strengthened, expanded in expertise and appropriately resourced to address current and urgent issues of the food fortification programme.
- The Consortium remains available to the Department of Health for consultation/assistance.

FOLIC ACID:

Findings

- On the basis of mean serum and red blood cell folate concentrations, folic acid status would appear to be adequate uniformly throughout the country.
- Respondents from provinces with better consumption of green leafy vegetables tended to have higher serum and red blood folate concentrations, when compared to respondents from other provinces with a lesser such consumption.
- It is possible that the normality of folate status in the country may be the first indication that, for a water soluble vitamin, the food fortification programme is associated with a beneficial outcome.

Recommendations

On the basis of these findings, and the current literature

- The food fortification programme must continue to be a milestone in the current INP programme.
- A Panel of Experts should be convened to discuss and comprehensively evaluate the current micronutrient supplementation components of the Nutrition Supplementation Programme in terms of dispensing folic acid supplements in all provinces.
- The Panel should also reassess and make recommendations on the current level of folic acid fortification. The Panel should moreover assess the need to include vitamin $B_{12}$ in the fortification premix. It is recommended that the approach relating to the considerations of the risk to benefit ratio must be biased in the favour of risk rather than benefit, since there is no evidence that high serum and red blood folate concentrations are associated with any additional health benefits (but may indeed be detrimental) and the food fortification programme is of a long term nature.
- The Panel should further engage the micronutrient supplements industry with a view to rationalising current practices regarding the folic acid and vitamin $B_{12}$ supplements available in the country. The possibility of standardising such supplements to one formulation of a maximum content of 400 µg with the single indication for pregnancy should be seriously considered. The Directorate: Food Control and the Medicines Control Council should be engaged for collaboration and guidance as appropriate/necessary. Furthermore, the content and dose of vitamin B of such over-the-counter supplements should be discussed and
recommendations should be made. The Panel should also recommend what additional analyses of the data base may be necessary, if any.

- The Panel should make appropriate recommendations for inclusion in the national nutrition surveillance system as described elsewhere in the report.
- A rapid assessment study should be carried out in 2008 which can be clinic based.
- The assessment of vitamin \( B_{12} \) status of the population should be included in any future surveys since there is a paucity of such data at the national level.
- Current practices at the antenatal level regarding folic acid supplements should be reassessed. The reassessment should include the need, type and dose of the folate supplements currently dispensed at antenatal clinics. The discontinuation of such supplements should be seriously considered.
- The appropriate Chief Directorate(s) within the Department of Health should be engaged to coordinate and interpret the available data on folic acid status in relation to the reported reduction in the incidence of neural tube defects in the country following the introduction of the food fortification programme. Current practices should be reassessed and strengthened with a view to continued monitoring of neural tube defects.
- Innovative means of communication such as the cell phone should be used to disseminate nutrition education messages.
- The industry manufacturing premixes should police itself in terms of strict compliance with current legislation and ensure, in collaboration with the millers, that the correct amount of folic acid reaches the consumer at the household level. Overcompliance, as apparently is the practice at present, should be discouraged and discontinued.
- The Department of Health should approach the relevant laboratories in the private sector and the National Health Laboratory Services with a view to standardising the reporting of blood folate and vitamin \( B_{12} \) concentrations as well as the cut off points for the definition of a state of deficiency.
- The micronutrient component of the INP programme should be strengthened, expanded in expertise and appropriately resourced to address current and urgent issues of the food fortification programme.
- The Consortium remains available to the Department of Health for consultation/assistance.

**ZINC:**

**Findings**

- Nationally, 45.3% of children had an inadequate zinc status and children of this age group (1–9 years) should be considered to be at risk of zinc deficiency.
- Inadequate zinc status was more prevalent among the youngest children and those living in rural formal and urban formal areas.
- Provincially, the Western Cape had the highest prevalence of inadequate zinc status.
- These findings should be interpreted within the context of the sample sizes which appear in the relevant section of the report.

**Recommendations**

On the basis of these findings, and the current literature\(^{117-131}\)

- The food fortification programme must continue to be a milestone in the current INP programme while other approaches (education, consumption of zinc rich foods, food diversification, and supplementation) to address the poor zinc status of children should be concurrently strengthened.
- A Panel of Experts should be convened to discuss and comprehensively evaluate the current micronutrient supplementation components of the Nutrition Supplementation Programme in terms of compliance, missed opportunities and the correct implementation of all its components in all provinces. The Panel should also recommend what additional analyses of the data base may be necessary, if any.
- The Panel should also make appropriate recommendations for inclusion in the national nutrition surveillance system as described elsewhere in the report.
- The Panel should further identify a minimum set of the most appropriate indicators for the assessment of zinc status at a national level. A rapid assessment study should be carried out in 2008 using the indicators the Panel identifies. Such a study could also be clinic based as a means of evaluating the current supplementation programme.
- The Panel should assess the feasibility of providing appropriate and comprehensive training to personnel of crèches to administer zinc supplements as well as other micronutrient supplements in older children according to prevailing policies.
- Complementary feeding practices should be re-evaluated and strengthened to ensure adequacy of zinc. At the same time, the supplementary foods that are currently provided
in the Nutrition Supplementation Programme should not simply concentrate only on energy content but also on dietary quality and adequate micronutrient composition.

- Innovative means of communication such as the cell phone should be used to disseminate nutrition education messages. Such a system could also be used for improving the current nutrition supplementation programme.
- The emerging option of community level fortification with zinc should be explored both in terms of feasibility and safety.
- The industry manufacturing premixes should police itself in terms of strict compliance with current legislation and ensure, in collaboration with the millers, that the correct amount of zinc reaches the consumer at the household level.
- The micronutrient component of the INP programme should be strengthened, expanded in expertise and appropriately resourced to address current and urgent issues of the food fortification programme.
- The Consortium remains available to the Department of Health for consultation/assistance.

10. RELATED RECOMMENDATIONS

NUTRITION SURVEILLANCE IN SOUTH AFRICA

Background
The understanding of the role of nutrition in health and the implementation of appropriate policies to improve nutritional status ultimately depends on accurate data and the dissemination of correct information based on such data. The very purpose of a Food and Nutrition Surveillance (FNS) programme is to collect population based information, interpret it and disseminate information on nutrition. Such information must be population based, decision and action oriented, sensitive and accurate, timely, relevant and communicated effectively.

Recommendations
On the basis of the needs that arise from these findings, other related considerations and the current literature

- The current efforts on nutrition surveillance in the country should be reassessed, strengthened and formalised. The periodic reviews and surveys of the currently used indicators of nutritional status should be retained and improved.
- A new monitoring FNS unit/centre should be created within the Directorate: Nutrition to collate, disseminate and promote on an on-going basis the use of correct nutrition information on the current nutrition situation in the country.
- The appointment of dedicated personnel who will be responsible for Nutrition Surveillance at all levels (national, provincial, district, municipal) should be afforded top priority. The appointed personnel should have the necessary expertise and skill, and training should be provided where needed and on an on-going basis.
- A Panel of Experts should be convened to discuss and make recommendations on the creation of a national nutrition surveillance system which should be implemented independently or as a greater part of the District Health Information System or the annual General Household Surveys.
- The Panel should also consider the feasibility of annual facility based surveys/assessments of all children and adults who visit such facilities in a time framework that will complement the data obtained from other national surveys.
- The Panel should have wide, but relevant, representation from all sectors, to ensure that data already available from all sectors is collated, interpreted, and appropriate structures are created for the purposes of on-going research to create the necessary/missing knowledge using the most suitable sectors.
- The creation of institutional mechanisms for the dissemination of correct nutrition information in the relevant fields of nutrition should be created.
- The desegregation of nutrition surveillance data should reflect the nutritional status of the vulnerable groups in relation to time and should not only include the lifecycle but also the human rights approach.
- A minimum set of nutrition surveillance data should be created and implemented with the collaboration of all relevant and appropriate sectors.
- A specialised section within the proposed FNS system should be created to manage all aspects of the legislated food fortification programme.
- The INP programme should be strengthened, expanded in expertise and appropriately resourced to address current and urgent issues of the FNS system.
- The Consortium remains available to the Department of Health for consultation/assistance.
HUMAN RESOURCES OF THE INTEGRATED NUTRITION PROGRAMME

Background

The findings of the present survey highlight some of the commendable successes, and disappointing failures, of the current efforts to improve the nutrition situation in the country. Clearly, the policies in place, when correctly implemented, are associated with successful and desirable outcomes. When policies fail they appear to do so because of constraints primarily of the human resource type. The latter need was clearly identified and flagged for urgent attention in the report of the Nutrition Committee to the Minister of Health in 1994 in which the projected human resource needs for the successful implementation of the INP were identified, and norms were even recommended for implementation. Further recommendations that this issue is urgently addressed were made in the NFCS report to the Minister. It is, therefore, regrettable that insufficient progress has been made in this aspect of the INP over the past years, a situation that has hampered progress and the more extensive attainment of planned essential deliverables. The importance of human resources for successful outcomes, which perhaps has been overlooked and at times neglected, has recently been highlighted in the WHO 2006 report. The report is categorical on the “chronic shortage of well-trained health workers. The shortage is global, but most acutely felt in the countries that need them most. For a variety of reasons, such as the migration, illness or death of health workers, countries are unable to educate and sustain the health workforce that would improve people’s chances of survival and their well-being”. Of course the importance of this complex issue of human resource does not simply refer to “numbers” but equally to the appropriate utilisation and welfare of the available human resource at any one given time. It may, therefore, be seen as unfortunate that there has not been a national audit of the available human resource for nutrition and the utilisation thereof, a need that should be urgently addressed as part of the identified priorities and recommendations in this report.

Recommendations

- The current human resource component of the INP should be retained, assessed and strengthened.
- A national audit of dedicated and supporting nutrition personnel in the country should be undertaken as a matter of urgency.
- The audit should, as a minimum, incorporate the assessment of current staffing levels, nutrition personnel categories, location, placement, qualifications and skills of current staffing and nutrition personnel expenditure in relation to the declared aims and deliverables of the INP.
- A human resource strategy for Nutrition in the public health sector should be formulated, formalised and implemented.
- The INP programme should be strengthened, expanded in expertise and appropriately resourced to address current and urgent issues in human resource requirements.
- The Consortium remains available to the Department of Health for consultation/assistance.

11. GENERAL RECOMMENDATIONS

- Socio-economic upliftment is considered essential for the sustainable reduction of micronutrient deficiencies and undernutrition in general. It is important to note that these particular nutritional disorders, because of their intimate link to socio-economic status and dietary intake, may be used as medium-term indicators in assessing the success of the currently implemented national nutrition programmes.
- In order to achieve a sustainable solution in the reduction of micronutrient deficiencies and other dietary inadequacies, it is essential to develop a comprehensive strategy that will address such issues in the immediate- and medium-term, i.e. until such time that socio-economic upliftment can achieve a sustained reduction. For immediate- and medium-term solutions to be effective, several different aspects of adequate micronutrient intake need to be addressed at a national level, which should include campaigns to:
  - Increase consumer awareness of adequate micronutrient intake.
  - Increase awareness and understanding of the food fortification programme in relation to micronutrient health.
  - Increase awareness of the importance of exclusive breast-feeding up to the age of six months of age and continued breast-feeding with appropriate and safe complementary feeding up to the age of two years or beyond.
  - Use of the Food Based Dietary Guidelines for nutrition education.
  - Improve health worker training in respect of stunting as well as healthful eating and food choices including the importance of micronutrients.
  - The further analysis of the survey’s database should be used for additional capacity building.
• A survey to monitor the progress of the food fortification programme should be planned for implementation in three years from the date of this report.

In summary, this national survey, an extension/continuation of the National Food Consumption Survey (NFCS) in 1999, elicited an overall excellent participation of respondents, and documented the following:

• A significant proportion of the population still lives under adverse socio-economic conditions despite some meaningful improvements in certain such parameters over the past six years.

• An apparent improvement in the anthropometric status (stunting) of children 1–9 years of age (NFCS 1999 comparison).

• An apparent deterioration in the vitamin A status of children aged 1–5 years (SAVACG 1994 comparison).

• An apparent deterioration in the iron status of children aged 1–5 years (SAVACG 1994 comparison).

• A high prevalence of poor zinc status among children 1–9 years of age.

• A high prevalence of poor iron and vitamin A status in women of child bearing age.

• A positive knowledge, attitude and behaviour among the respondents towards food fortification.

• The wide purchase and use of fortified products at the household level.

• The confirmation that at the household level, maize does contain vitamin A thus providing an indirect measure of compliance with the Food Fortification legislation.

• The persistence and possible worsening of the prevalence of hunger (NFCS 1999 comparison).

The effect of HIV/AIDS on the parameters measured in this survey is not known, since the survey was not designed to address this relationship and the HIV status of the respondents was not determined or known.

12. IN CONCLUSION

The findings of the present survey build on those of the SAVACG and the previous National Food Consumption Survey in helping to create a better and evidence based environment for the improvement of the nutritional status of the country’s population, thus helping to reduce the burden of nutrition related disorders and complications. The Directors of the survey believe that this has been a very successful and much needed survey in both providing baseline data for future reference and also in helping to inform policy makers of areas that need special/urgent attention. The Directors of the survey also wish to express their sincere gratitude to all the subjects who volunteered to participate in the survey as well as to those who made the survey possible and successful. They are so acknowledged in the appropriate Chapters of the report.

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“The South African Milling Industry supports the Food Fortification Programme in South Africa”
Appendix: Structure of the Report

National Food Consumption Survey-Fortification Baseline (NFCS-FB-I):

The knowledge, attitude, behaviour and procurement regarding fortified foods, a measure of hunger and the anthropometric and selected micronutrient status of children aged 1–9 years and women of child bearing age:

SOUTH AFRICA, 2005

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### CHAPTER 3: GENERAL AND SOCIO-DEMOGRAPHIC FACTORS IMPACTING ON NUTRITIONAL STATUS

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For governments and NGOs, working in partnership is a cost-effective way to improve public health; Companies gain in reputation and business.

Can you benefit from fighting malnutrition? Find out at www.gainhealth.org/win
Malnutrition affects over 2 billion people worldwide and kills 3.5 million children every year. It is an ongoing tragedy that can and must be prevented. The world has the food, know-how and the money. Fight malnutrition.