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Descriptive and Comparative Study of the Nutritional Knowledge and Behavior of Mothers of Young Children Who Have Received Targeted Nutritional Education and Those Who Have Not as a Method to Ascertain the Effectiveness of the Little Tree Nutritional and Educational Centre in Combating Malnutrition in the Pienaarsig Township of Nieu Bethesda, Eastern Cape Province, South Africa

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Descriptive and comparative study of the nutritional knowledge and behavior of mothers of young children who have received targeted nutritional education and those who have not as a method to ascertain the effectiveness of the Little Tree Nutritional and Educational Centre in combating malnutrition in the Pienaarsig Township of Nieu Bethesda, Eastern Cape Province, South Africa

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THE SCOPE OF MALNUTRITION'S HOLD ON SOUTH AFRICA AND THE POLICIES AND PROGRAMS AIMED AT LOOSENING ITS GRIP

In South Africa, malnutrition is a discrete killer—widespread famine and starvation are not daily news events, cases of kwashiorkor, marasmus, and wasting are all but non-existent—but, under-nutrition in South Africa is a reality that threatens to stunt the social and economic development of the country in the coming decades. In combination with the expected impact of the AIDS pandemic, malnutrition may prove to be the breaking point for South Africa's peoples. The severity of the problem may come as a surprise to those who see South Africa as a promising middle income country on its way up after Apartheid, a country with major industry and major investment and the façade of the First World. The kicker is: South Africa is a middle income country in which most of the country suffers in abject poverty, unable to get jobs and unable to feed itself.

Poverty, unemployment, and malnutrition are inherently linked. Up to two-thirds¹ of South Africa's population lives in poverty². Unemployment and underemployment are key players in this shocking figure. As of March 2004, the unemployment rate³ was estimated to be 27.8% overall, 32.5% in the Eastern Cape Province, and as high as 33.5% among previously disadvantaged population groups country-wide⁴. Lack of jobs and the money to sustain the household has grave implications when it comes to where two-thirds of the country will find its next meal. Food security is a dream for an estimated 39% of South Africans⁵. It's not only lack of money causing food insecurity, many South Africans, even if they had the funds, are unable to access food or the means by which to produce their own. With South Africa's social welfare nets full of holes and not strong enough to break the fall of its people, there is hunger⁶.

It is estimated that over one third of infant deaths have malnutrition as the primary cause. With an infant mortality rate exceeding 72 in every 1000 live births, the numbers tell the tale. Malnutrition's sway does not end at infancy. The mortality rate for children under five is even more staggering at 112 in every 1000 children⁷ in the poorest provinces. Death is not the only outcome. The 1999 National Food Consumption Survey⁸ indicates that 21.6% of children between ages of one and nine are stunted and one in ten children are underweight due to chronic malnutrition. In addition,

¹ Bradshaw D, Steyn K (eds). Poverty and Chronic Diseases in South Africa: Technical Report 2001. Medical Research Council; 2002. <http://www.mrc.ac.za/bod/povertyfinal.pdf>

² The official definition of poverty is the proportion of people/households living in poverty. Depending on the poverty line and the methodology used there are various estimates of the extent of poverty, therefore caution should be observed in comparing estimates from different sources, and comparative reliability can be assessed from the rank order correlation between different sets of estimates.

³ The official definition of the unemployed is that they are those people within the economically active population who (a) did not work during the 7 days prior to the interview, (b) want to work and are available to work within a week of the interview, and (c) have taken active steps to look for work or to start some form of self-employment in the 4 weeks prior to the interview. The expanded definition excludes criterion (c). It therefore includes discouraged work seekers who have failed to take active steps to obtain employment in the 4 weeks prior to the interview.

⁴ Statistics South Africa. Statistical release P0210 Labour force survey. <http://www.statssa.gov.za>. March 2004.

⁵ Mgijima, C, 1999. Situational Analysis of Food Security and Nutrition in South Africa. A Speech at the 3rd Session of the International Consultative Conference on Food Security and Nutrition as Human Rights, Randburg, South Africa

⁶ Bonti-Ankomah, Samuel. Addressing food insecurity in South Africa. Paper presented at the SARP conference on Land Reform and Poverty Alleviation in Southern Africa. June 2001. <http://www.sarpn.org.za/EventPapers/Land/20010605Bonti.pdf>

⁷ Actuarial Society of South Africa. AIDS and demographic model. ASSA2000. <http://www.assa.org.za>.

⁸ Labadarios, D.; Steyn, N.; MacIntyre, U.; Swart, R.; Gericke, G.; Huskisson, J.; Dannhauser, A.; Voster, H.; Nesamvuni, A. The National Food Consumption Survey (NFCS)—Children aged 1-9 years, South Africa, 1999. *South African Journal of Clinical Nutrition*, 14(2): 62-75, 2001.

half of the country's children fail to meet recommended daily allowances of key vitamins and minerals, including vitamin A, vitamin C, riboflavin, niacin, vitamin B6, folate, calcium, iron, and zinc. Long term deprivation of these vitamins and minerals claims even more lives. Between 18 and 43% of children aged 6-71 months, mostly concentrated in rural areas, have marginal vitamin A status with serum retinol levels less than 20 µg/dL; 21% of children in the same age group are anemic (H_b<11g/dL); and, disorders linked to iodine deficiency are still visible in a country that has had mandatory salt iodization on the books since 1995⁹.

What do these vitamins and minerals mean to South Africa's people? Chronic vitamin A deficiency (VAD) is known to cause night blindness (and does in 12% of children age 6-71 months) and is the world leading cause of preventable blindness. If present from conception, VAD can cause retard growth, cause the sufferer to be more susceptible to infection, and in severe cases, cause death. Iron deficiency anemia (IDA) can increase the risk of premature pregnancy, low birth weight, and maternal mortality. IDA is associated with infection by parasitic hookworms—a common affliction for the nation's poorest¹⁰. Iodine deficiencies (IDD) can have permanent and horrific effects on the mental and physical development of young children, including decreased intellectual capacity and increased risk of goiter and cretinism¹¹.

On the whole, studies undertaken by the South African National Nutrition Survey (SANNSS)¹² have indicated that the dietary intake of the majority of the country's children was inadequate for proper growth and development with respect to energy intake and nutrient density. These children are more susceptible to infectious diseases such as measles, diarrhea, acute respiratory infections, and worst of all, HIV/AIDS. With continued widespread malnutrition, the malnutrition-infection complex is likely to join the terrible twins of tuberculosis and AIDS in their ravaging of this country. Even without the confounder of the HIV/AIDS pandemic, the loss of manpower, the damaging of human potential, and continued poor quality of life due to malnutrition has serious implications for the social and economic development of South Africa¹³.

To address the poor and deteriorating nutrition status of the South African population, the Department of Health charged the Nutrition Directorate in 1995 with the task of implementing a comprehensive strategy to address the iniquities of the past as they manifested in food insecurity and fragmented health service. The result was the Integrated Nutrition Strategy, its Integrated Nutrition Policy, and the implementation side of the policy, the Integrated Nutrition Programme (INP). The stated aim of the INP is to facilitate a coordinated, multi-level, collaborative, and holistic approach to solve the nation's nutrition problems while improving the nutritional status of all South Africans.

⁹ OMNI Micronutrient Fact Sheets: South Africa. <http://mostproject.org/SAfr.htm>. Accessed: 31 August 2004.

¹⁰ Vitamin Information Centre (2001). National Food Consumption Survey in Children aged 1-9 years: South Africa 1999. Part I Methodology, Socio-economic Data, and Anthropometric Data. Medical Update, 37, April 2001.

¹¹ Information available at: <http://www.merck.com/mrkshared/mmanual/section1/sec1.jsp>.

¹² Vorster, H.; Jerling, J.; Oosthuizen, W.; Becker, P.; Wolmarans, P. Nutrient intakes of South Africans. An analysis of the literature (SANNSS Group Report). Isando: Roche, 1995.

¹³ Witten, C.; Jooste, P.; Sanders, D.; Chopra, M. South Africa Case Study. National Micronutrient Program Country Case Studies. Food and Nutrition Bulletin, 25(1), Mar. 2004.

Through various services and interventions, the INP in conjunction with the primary health care system of the District Health System, set out to curb malnutrition. Keeping with the primary healthcare approach of South Africa, the INP takes a preventative over curative approach. For example, the INP assists communities by helping to bolster their capacity to increase their self-sufficiency with regard to food and nutritional needs while simultaneously working for the protection of the health of the most vulnerable groups—children, women, and those pregnant and nursing¹⁴.

The INP is better recognized as the programs it operates. Under the INP domain are the National Nutrition and Social Development Programme (NNSDP), the Protein-Energy Malnutrition Scheme (PEMS), the Primary School Nutrition Programme (PSNP), as well as various community-based nutrition projects.

Originally formed in the early '90's to assist people adversely affected by the introduction of the value added tax (VAT) on foodstuffs, the NNSDP functions to augment community self-sufficiency through the provision of life's necessities—food, shelter, and clothing. Funds are distributed based on need and population size to each province for use by non-governmental organizations and community based organizations in the community. Despite the apparent broader mission of the NNSDP, it functions on the ground as merely as food-handout program with uncertain effectiveness. The major drawbacks seen in the NNSDP are poor ability to reach needy populations, poor administrative capacity, and its focus on food handouts (which increase community dependency as opposed to self-sufficiency). The NNSDP was restructured in 1994 and has been absorbed into the Community Based Nutrition Programme (CBNP).

The PSNS was implemented in 1994 to increase the learning capacity of primary school children, decrease the incidence of 'hunger in the classroom' and subsequently increase school attendance, teach proper eating habits and nutrition, and increase the micronutrient intake of young children¹⁵. Over 4.2 millions learners have been reached by the scheme in over 14,175 primary schools nationally. Most of those schools have been in the rural areas. Despite these numbers, the PSNS has never met its target coverage of schools or students usually ranging between 77 and 90% of the target in both categories. The schools that are reached suffer under the burden of maintaining the scheme without adequate monetary support (in 1994-1995 fiscal year, only 29% of the budget allocated to PSNS was used). Often budget shortages have reduced the nutrition scheme to no more than providing each student with a slice of bread at midday.

The Protein Energy Malnutrition Scheme has been implemented in clinics and primary care hospitals. Its purpose is to supply supplementary food to at-risk children (those whose weight are below the third percentile or whose growth falters for two consecutive months) until weight has been gained and growth is on track. PEMS depends on the promotion and advocacy of accurate growth

¹⁴ <http://www.doh.gov.za/programmes/nutrition.html>

¹⁵ Kloka, D. Primary School Nutrition Programme. Department of Health. June 2003. <http://www.asfsa.org/meetingsandevents/archive/anc2003/handouts/southafrica.pdf>.

monitoring by health care workers for all children. Growth monitoring is done through use of the Department of Health's Road-to-Health Chart (RtHC)¹⁶. As of the beginning of this year, PEMS, as a health facility-based nutrition program, is not effectively addressing malnutrition¹⁷. Most issues arise from poor compliance of mothers and health care workers with the demands of proper growth monitoring. It has also proved difficult to reach older children at the proper intervals and once on the food supplementation program, poor mother/child compliance has been rampant. Overall, PEMS has been unable to effectively detect and prevent the at-risk from progressing to the malnourished.

Community-based nutritional programs under the INP focus on household food security, the generation of food-based income, as well as the various direct and indirect nutrition interventions of the INP. Directly, the INP combats malnutrition through nutrition education and promotion, micronutrient supplementation (as including in the nutrition objectives of the National Program of Action for Children), food fortification, and disease specific nutritional counseling and support (i.e. for HIV/AIDS, hypertension, or diabetes mellitus). Indirectly, the INP is involved in parasite control, improving food accessibility, the provision of healthcare services and safe clean water. The main focus, however, within any community-based program is growth monitoring through PEMS and nutrition education, promotion, and advocacy.

Specifically relating to micronutrients, the National Program of Action for Children and the South African government have implemented several policies and programs to address micronutrient malnutrition. These include supplementation, fortification, diet diversification, and public health measures such as parasite control, water and sanitation programs, and increasing immunization coverage. With respect to iodine, compulsory iodization of salt to 40-60ppm was mandated in 1995. Since then, coverage of iodized salt and the average content of iodine in household salt has increased to level that appears high enough to stave off IDD. However, holes in iodized salt coverage still expose vulnerable groups—mostly rural populations—to under-iodized salt¹⁸. It is necessary to continue the push for universal and adequate iodization through the inclusion of salt producers in policy development as primary role players and strengthen liaisons with health authorities and scientists.

Iodization of table salt has been extremely successful compared to the progress that has been made by the South African government in the area of vitamin A supplementation and fortification. In 1994 and 1999, two advisory groups¹⁹ separately and strongly recommended that a high dose vitamin A supplementation program be implemented in the nation's primary health care facilities. As of March 2004, there is still no national scheme for supplementation with the verdict being that universal

¹⁶ See example Road-to-Health Card (RtHC) in Appendix C.

¹⁷ Schoeman, S.; Hendricks, M.; Dhansay, M.; Laubscher, J.; Benade, A; The health facility-based nutrition programme does not address malnutrition effectively. Medical Research Council Policy Brief, 1, 2004.

¹⁸ Jooste, P.; Weight, M.; Lombard, C. Iodine concentration in household salt in South Africa. WHO 2001 Bulletin, 2001, 79 (6).

¹⁹ South African Vitamin A Consultative Group (SAVACG). Anthropometric, vitamin A, iron, and immunisation coverage status in child aged 6-71 months in South Africa, 1994. South African Medical Journal, 86(4): 354-357, 1996.

supplementation in South Africa is impossible²⁰. This revelation is due to the prohibitive cost and low availability of the 200,000 IU high dose vitamin A capsules. The cheaper and more readily available 100,000 IU capsule is currently not registered for use in South Africa and cannot be legally bought, imported, or donated without authorization by the South African Medicines Control Council. That authorization does not appear to be granted anytime in the near future.

Vitamin A fortification is more promising. As of 2003, fortification in South Africa commenced with a US\$2.8 million grant from the WHO's Global Alliance for Improved Nutrition²¹. The grant will support the cost of fortification for four years and includes mandatory fortification of corn meal and white and brown wheat flours with vitamin A, thiamine, riboflavin, niacin, pyridoxine, folic acid, iron, and zinc. Reaching the small millers that contribute 20% of the corn meal produced nationwide is still a pressing issue. Compliance by these 'independents' is imperative as their product is sifted corn meal (cheapest meal with lowest natural nutrient density) and their customers are the most likely to be vitamin A deficient. Without this grant, it is likely that fortification in this country would still be on the drawing board. Prior to the grant's issuance, the government was stalling on the fortification issue with unnecessary food consumption surveys (that ate up millions of Rand) and extensive consultations with the corn meal, flour, and sugar industries. Only time will tell if fortification will continue after 2006.

Solving the problem of malnutrition in South Africa will take cooperation and input from all sectors. In addition to the feeding programs, growth monitoring, food supplementation schemes, and fortification policies, it is imperative to have the support of the community and the at-risk target population when formulating and implementing these programs. 'Winning over' the community can only be achieved through transparency and often requires educational interventions. In a country where almost a quarter of people over the age of twenty have little or no formal education, almost half of the population lives isolated rural areas, and traditional beliefs and customs are still in practice, the situation of malnutrition may be worsened by a lack of nutritional information and knowledge, undesirable dietary habits and other nutritionally related practices, and attitudes, perceptions, and socio-cultural influences that adversely affect nutritional status. In these conditions, effective nutrition education programs are desperately needed.

²⁰ Hendricks, M.; Saitowitz, R.; Fiedler, J.; Hussey, G.; le Roux, I.; Makan, B.; Sanghvi, T.; Maglagang, H.; Dary, O. An assessment of the feasibility, coverage, and cost of a vitamin A fortification programme in South Africa. *South African Journal of Clinical Nutrition*, 14(2), 46-55, 2001.

²¹ Fortification Begins in South Africa. NOVIS, 2003. <http://www.nutraingredients.com/news/news-ng.asp?id=38777-fortification-begins-in>.

The backbone of the nutrition education program is often described as GOBI-FFFF. This acronym was coined by UNICEF²² as a policy for child survival and incorporates these ideas²³:

*G*rowth Monitoring
*O*ral Rehydration
*B*reastfeeding
*I*mmunization
*F*eeding
*F*amily Planning
*F*emale Education

With these seven pillars of child survival as a guide, nutrition education programs can accomplish the following: education of the mother on the importance of positive growth and how the RtHC represents their child's growth and overall health; teaching of the mother about diarrhea-related dehydration, the need and importance of oral rehydration therapy, and how to properly prepare and administer the therapy to their sick child; informing the mother about the economic and health benefits of breastfeeding for their child and themselves and helping to reestablish the culture of breastfeeding in the community through 'Breast is Best' promotion; informing mothers about the necessity and scope of immunization in protecting their child from certain diseases and promoting immunization; providing mothers and children with supplementary food to increase their nutritional status and decrease the risk of infant mortality; encouraging families to limit and adequately space children by educating about the health and economic benefits; and, providing basic literacy skills to mothers so they can better care for their children and themselves. Most importantly, the nutrition education program emphasizes the role of the community in its operation by functioning not as a service for solely the individual but as a service for the community. With proper execution of the GOBI-FFF strategy in a context appropriate for the community, the exacerbating factors that adversely affect the community's nutritional status²⁴ can be gradually addressed in a culturally sensitive manner and strides can be made toward improved nutrition.

But, have any 'strides' been made? Malnutrition, today, is still a primary area of concern for the INP and all the policy is in place to properly make forward strides. Unfortunately, when the time is right to make that first step, South Africa's feet seem glued in place; there is a severe gap between the formulation of policy and its implementation. Factors that contribute to this paralysis include the lack of the political will from key stakeholders to see programs from the drawing board to the ground and maintain them by securing proper funding. The technical expertises to design, implement, monitor, and evaluate the programs also fall short. While possibly a man-power issue, the lack of technocrats to oversee the programs also indicates a lack of commitment from leaders who possess the skills to effectively and efficiently deal with associated technical, commercial, and bureaucratic issues. Prime examples of this are the mismanagement of the economic, political, and trade issues that

²² Helman, C. Culture, Health, and Illness. 4th Ed. Arnold Publishers, 2001.

²³ For a detailed explanation of GOBI-FFF, see Appendix D.

²⁴ Lack of nutritional information and knowledge, undesirable dietary habits and other nutritionally related practices, and attitudes, perceptions, and socio-cultural influences.

hampered food fortification and the government's apathy in taking steps to make universal vitamin A supplementation a possibility by approving the 100,000 IU high-dose vitamin A capsules. The government seems to be sitting on its hands awaiting some benevolent 'champion' to build the necessary political will and the enthusiasm (or sense of desperate urgency) needed to catalyze the process of restoring health to South Africans.

ON THE GROUND: NIEU BETHESDA AND THE LITTLE TREE NUTRITIONAL AND EDUCATIONAL CENTRE, EASTERN CAPE PROVINCE, SOUTH AFRICA

Nieu Bethesda is nestled in a rare fertile valley of the arid expanse of the Great Karoo. Surrounded by the Sneeuberg mountain range and the highest mountain in the Eastern Cape, the Compassberg, Nieu Bethesda is 50 kilometers on gravel road from the nearest town, Graaff-Reinet. As a testament to its isolation, traffic was once so scarce in the village that certain streets were converted to gardens for growing potato and lucerne²⁵. Even today, life in this charming village is just about the same as it was 130 years before when Nieu Bethesda was founded.

The village was started by a group of farmers in the area who wished to have a church closer to home than Graaff-Reinet. The land on which Nieu Bethesda stands was originally a farm, called Uitkyk²⁶, owned by B.J. Pienaar. Mr. Pienaar created the fertile valley by diverting the nearby river to drain on his land through a system of furrows. This furrow system is one of the few still operating today. The land was sold to the farmers and the town of Nieu Bethesda was founded under the auspices of the Dutch Reform Church. In 1880, the administration of the village split from the church and entered a period of growth with agriculture being the economic 'driving force'. By 1930, the Great Depression, improved transportation, and the village's isolation caused the village to go into decline. Nieu Bethesda's salvation came from the arts. Nieu Bethesda resident, South African playwright Athol Fugard's play *The Road to Mecca* based on the life of the village eccentric, Ms. Helen (Martins), gained international recognition and put Bethesda back on the map²⁷. Today, tourism remains Nieu Bethesda's top industry.

Ms. Helen's famous Owlhouse and Camel Yard are the destinations of most visitors to Nieu Bethesda, but once there, travelers will find a whole lot more—except streetlights, tarred roads, banks, petrol, or credit card facilities. Accommodations abound in the village with almost every household taking in guests in their spare rooms, a somewhat upscale Backpacker's, and a variety of Bed and Breakfasts. During the day, one can browse the wide variety of crafts sold at almost every establishment and on the street, take a tour of the township by donkey cart with Jakob, or relax in the Die Waenhuis Pub and Grub (or one of the numerous other restaurants and coffee shops) for a locally brewed beer and some rugby. Nature-lovers are in 'hog-heaven' here with the world's greatest

²⁵ http://www.places.co.za/html/nieu_bethesda.html.

²⁶ The farm was called Uitkyk because the people living there always had to be wary of wild animals and the 'Bushmen'.

²⁷ Information available at: <http://www.nieubethesda.info/history.htm>.

variety of succulents and an ample serving of wildlife. Opportunities to participate in bird-watching, horseback riding, mountain biking, climbing, and guided tours of Rock Art and Anglo-Boer War engravings are readily available²⁸.

In addition, one can visit a variety of community projects²⁹, some of which are the Bethesda Art Centre and Workshops, Nieu Bethesda Community Development Foundation, Masakhane Women's Club, Sneeuwitjie Restaurant and Guesthouse, Sneeuwitjie Educare Centre, Antie Evelyn se Eetplek, and the Nieu Bethesda Theatre. Or, one can support small-time entrepreneurial crafters at Die Goggahuis, Freddie Jacobs Crafts Workshops, Frankie's Keyholders, Iet Uit Niks, Gordon's Wood and Wireworks, Margaret's Slippers and Boots, Nicky's Boats and Ships, Nieu Bethesda Woolen Craft, Sofie's Slippers and Jackets, Thandimali Tuck Shop, Uthando Leatherworks, WP & BD Cement/Wire/Metal, Prima Cash Stores, and the Silver Lining Sewing Project.

With all the things that go on in Nieu Bethesda, it hard to imagine that it is a town of merely 588 people³⁰ (including all people within a 7 kilometer radius). The people are a diverse and divided lot. A little less than fifty people, primarily descendents of the village founders and other farmers, are Afrikaners. An even a smaller percentage are English-speaking 'white' South Africans and foreigners that have recently moved into the area. These two groups make up the residents of the town proper and outlying farms. The remaining 89% of the population are Afrikaans-speaking descendents of the Khoi and San peoples, commonly and incorrectly referred to as 'colored', and Xhosa peoples. The two groups are residents of the township, dubbed unofficially Pienaarsig by the residents of the town proper. The Xhosa community in Pienaarsig consists of about 40 people. The Apartheid regime's Group Areas Act forcibly moved the township inhabitants to their present location on a rocky hillside from the valley in which Nieu Bethesda is situated today³¹. Just as the township still remains on this forced land, the affects of Apartheid strategy to strip people of their culture and dignity (especially when considering the 'coloured' descendents of the Khoi and San) still linger.

The 'white' population of Nieu Bethesda lives a comfortable life. Most residents are employed, retired, or independently wealthy. All live in suitable housing, have access to food, water, plumbing, electricity, and their own transportation—on the whole they are extremely well-off and enjoy a high quality of life. Although Pienaarsig is less than half a kilometer from the village center, township residents live in conditions entirely antithetical to their fellow Nieu Bethesdans.

Eighty percent of the township population is estimated to be unemployed with the twenty percent that are employed likely underemployed. Most receive money only from government grants and pensions, most commonly, the child grant of R170/month³². All live in government built housing with one indoor tap, a pit toilet, and refuse collection service. The government subsidizes electricity

²⁸ Information available at: <http://www.owlhouse.info/>

²⁹ Peterson, Amelia. Mapping Exercise Field Notes. SIT South Africa: Public Health. 2004.

³⁰ Information available at: <http://www.fallingrain.com/world/SF/1/NieuBethesda.html>.

³¹ FSS Journal. Tour and Conversation with Lucas. 26/11/2004.

³² FSS Journal. Conversation with Frank. All-Pay Day, 18/11/2004.

and water providing a fixed amount each per month³³. Few have access to reliable transportation and, as a result, cannot replenish supplies unavailable in Nieu Bethesda as needed even if they had the monetary means. However, a few bakkies do run an infrequent taxi service to Graaff-Reinet for R50 each way. Food availability and affordability in the village is an issue with prices in Nieu Bethesda significantly higher than in Graaff-Reinet, the nearest town. In addition, the foods available in the village are limited to bulk meals (white bread flour, sugar, and sifted maize meal) and some meats. Vegetables, of limited selection, are only available every other Saturday.

Government grants are issued mid-month and recipients do most of their monthly food purchasing on that day, known as All-Pay Day. Retailers from Graaff-Reinet come into Nieu Bethesda and set up booths outside the Community Hall where the grants are issued to sell their wares. The vendors sell everything from fruits and vegetables to girl's dresses to cheap plastic toys. Most people purchase 'food hampers', which, depending on price, can contain a wide variety of essentials: beets, carrots, onions, oranges, white bread flour, white sugar, white rice, sifted maize meal, matches, canned foods, soya mince, cooking oil, vinegar, soap, etc. A few local vendors try to get a cut of the All-Pay Day pie with booths selling home-cooked food, pelony, and wieners³⁴. There is a high incidence of alcoholism reported in the township and much of the All-Pay Day grant money is said to go to the purchase of alcohol, which is readily available in the township³⁵.

Negativity among the village dwellers in reference to the residents of the township is endemic. Whether it is lingering racism or just burnout, a dense smattering of 'white' villagers have very disparaging views regarding the intellectual capacity, worth, and ability of their township counterparts to affect change in their communities and/or 'make something of themselves'. In years past, interracial cooperation was quite high. But today, some villagers refuse even to assist their disadvantaged brethren with a ride into town to buy food. More often than not, the villagers express attitudes of hopelessness when it comes to their township comrades, often dismissing projects to empower the township community as destined to fail. The 'white' residents do not even consider the township as part of Nieu Bethesda nor the people as Nieu Bethesdans. Thus, they easily brush off the problems of the township as "somebody else's problem"³⁶.

With the conditions for the average township resident as they are, food insecurity is a major problem. Understandably, malnutrition is also a concern. A significant portion of the township dwellers are visibly underweight, however, only with children under 5 has any attempt been made to determine the extent of malnutrition in Pienaarsig and implement strategies to address it.

Little Tree Nutritional and Educational Centre (LTNEC) was established on March 24th of 2004 by Tita Stoop, an immigrant from Holland, as a project of the Stichting InteGraal Foundation of Holland. Inspired by the success of the Ndlovu Nutritional Unit in Elandsdoorn Town, South Africa,

³³ FSS Journal. Meeting with Interpreter and Advisor. 14/11/2004.

³⁴ FSS Journal. All-Pay Day Observations. 18/11/2004.

³⁵ FSS Journal. Conversations with Tita. 15/11/2004.

³⁶ FSS Journal. Observations, 27/11/2004.

Ms. Stoop began a very basic nutrition program in the kitchen of the Nieu Bethesda Community Hall with cooperation of the Camdeboo District authorities and the Nieu Bethesda Community Foundation³⁷. Her strategy, based on GOBI-FFF themes, is to combat malnutrition in the township by:

- Providing supplementary feeding for undernourished children under five years old;
- Educating mothers and caregivers about nutrition, healthy food, meal and budget planning, gardening, and commercially viable skills (sewing, knitting, etc.);
- Promoting proper nutrition, breastfeeding, proper family planning, proper healthcare strategies, and immunization;
- Teaching mothers about the dangers of alcohol abuse and sexually transmitted diseases such as HIV/AIDS; and,
- Helping mothers to establish and care for “door-size” gardens at home.

To run the program, Ms. Stoop recruited and trained four otherwise unemployed local women: three as Community Health Workers (CHW), and one as a gardener. The role of the CHWs is to conduct the day to day operation of the center. The CHWs were trained in communication skills with adults and children, nutrition, the signs and treatment of dehydration, anthropometrics and interpretation of the RtHC, sewing and knitting skills, and gardening. As project manager, Ms. Stoop’s role is in the areas of fundraising (in South Africa and in her native Holland), monitoring the township population’s children through quarterly weighing, maintaining supplies to run the program, and planning for the future expansion of the program to its own building³⁸.

The program runs five days a week from nine to eleven o’clock. Eight mothers and their undernourished children identified and recruited during the first wave of weighing in March 2004 participate in the program. The children range in age from 14 months to 5 years. The children are fed ‘e’ pap nutroceutical porridge, multivitamin syrup, and an iron pill³⁹ first thing in the morning by their mothers followed by breastmilk depending on the child’s age. Afterwards some of the children go to the Sneeuwitjie Educare Center next door while the younger ones play on the floor of the kitchen. The mothers work on their knitting and sewing projects and enjoy rooibos tea with ample helpings of milk and sugar. On Mondays and Fridays, the children are weighed after they have been fed and their progress is recorded and monitored on their RtHC. Around 10:30 the children are given Milo drink, raisins, fruit, or ‘egg flip’⁴⁰ depending on the season. At eleven, the mothers pack up their knitting and return home with their children. On Fridays, the mothers are given ‘e’ pap porridge mix for the weekend⁴¹. Approximately every month the children who are sick or show faltering growth curves are taken by Ms. Stoop to the doctor in Graaff-Reinet (the closest available) for checkups. The children have been treated for ailments ranging from worm infestations, bronchitis, tonsillitis, eye infections, and impetigo.

Currently Ms. Stoop is working on moving the center to its own facility. A plot of land has been purchased and building plans have been submitted. She is preparing the land for the future

³⁷ Stoop, T. Little Tree Nutritional and Educational Centre-Nieu Bethesda, South Africa. Informational pamphlet received via email.

³⁸ Stoop, T. What has been done so far: January 15th 2004 – March 31st 2004. Received via email.

³⁹ See Appendix F for nutrition facts and ingredients of ‘e’ pap nutroceutical porridge and multivitamin syrup.

⁴⁰ See Appendix F for Milo drink nutrition facts and ingredients and ‘egg flip’ ingredients.

⁴¹ FSS Journal. Observations, 12-26/11/2004.

community garden and securing water for irrigation. Ms. Stoop plans to reweigh the township in December of 2004 and hopefully with its own facility the center can expand to accommodate more mothers and children. She is also continually looking for new knitting and sewing projects that will produce marketable items to help in income supplementation for the mothers. Ms. Stoop also has plans to do community-wide workshops on good nutrition and permaculture gardening to improve the nutritional status of the residents of the township that the center cannot help directly. A major problem facing LTNEC is raising awareness and support in the village. While Ms. Stoop has been able to raise interest and limited support abroad, she have found that the village residents are consistently disinterested in her endeavor and will not provide assistance.

**IN LIVING COLOR: PICTURE ESSAY OF NIEU BETHESDA AND LITTLE TREE NUTRITIONAL AND
EDUCATIONAL CENTRE**

RESEARCH AIM AND OBJECTIVES

Little Tree Nutritional and Educational Centre is a grassroots project that has the opportunity to have a significant positive impact on the problem of malnutrition in the Pienaarsig Township, the overall nutritional status of the township, and in the securing of a brighter future for the residents by promoting self-esteem, self-sufficiency, and a healthy environment. This research aims to assess the effectiveness of LTNEC since its inception nine months ago in implementing its objectives and provide suggestions based on the data gathered for improvement. The study will attempt to accomplish its aim by determining and comparing the levels of nutritional knowledge and nutritional behavior among those who participate in the center and those who do not in the past as well as presently.

METHODOLOGY

This study combined both case-control analysis and descriptive techniques. The case group consisted of five mothers of young children in the Pienaarsig Township who have participated in the Little Tree Nutritional and Educational Centre (LTNEC). The control group consisted of five mothers of young children or of children with young children in the Pienaarsig Township who have not participated in LTNEC and have not received any targeted nutrition education.

All participants agreed to participate under the conditions of complete anonymity and did not wish to sign any documents or have their voices recorded. Each participant read or had read to them the applicable participant information sheet and expressed understanding of the points outlined in the Confirmation of Participation and Consent Form. Each participant was given a copy of the appropriate participant information sheet and the consent form and instructed to use the contact information listed if they experienced any problems during the study.

The study consisted of four phases carried out over a period of two weeks in the Pienaarsig Township:

Phase One A descriptive study that assessed the current nutritional knowledge of the control and case groups. The extent to which the case group believed that their knowledge had changed since joining LTNEC was also assessed.

Phase Two A descriptive study that assessed the current nutritional behavior of the control and case groups. The extent to which the case group believed that their behavior had changed since joining LTNEC was also measured.

Phase Three A descriptive study of each group that gathered socio-demographic information and information about illness and health seeking strategies.

Phase Four An informal observation-based study of LTNEC philosophy, mission, and operation and the nutritional opportunities of Nieu Bethesda was conducted.

Each phase utilized a variety of measurement tools. All communication, either spoken or written, was conducted in the native language of the participant. The questionnaires were administered by the researcher/interpreter either orally or in written format depending on participant preference. For cross-referencing purposes, each participant received a confidential code number that linked the questionnaires to the ‘diet diary’ and home visit (but not to their name for privacy reasons).

In phase one, each participant completed a nutritional knowledge questionnaire entitled “What do you know about nutrition?”. The extent to which the case group believed that their nutritional knowledge had change was measured with a supplemental questionnaire entitled “About You and ‘Little Tree’”.

In phase two, the level of current nutritional behavior was measured in two ways. First, each participant was asked to keep ‘diet diary’ or record of all items eaten and drank for at least 7 full days in notebooks provided to them. Second, each participant’s home was visited and the amount and types of food and drink readily available in the home were noted. The extent to which the case group believed that their nutritional behavior had changed since joining LTNEC was measured in another section of the “About You and ‘Little Tree’” Questionnaire.

In phase three, each participant completed a socio-demographic questionnaire entitled “About You, Your Family, and Where You Live” that gathered key information about the lives of the participants.

In phase four, LTNEC was visited on several occasions, informal conversations were conducted with key players in LTNEC, documents pertaining to LTNEC operation were perused, and the nutritional opportunities of Nieu Bethesda were explored through informal conversations with village residents.

DATA ASSESSMENT STRATEGY

Data analysis was based on the assignment of scores to the questionnaires, the ‘diet diary’, and the home-visit. The case and control participants’ nutritional knowledge questionnaires were assessed and given a score based on the level of current nutritional knowledge. The case participant supplemental questionnaires were also assessed and scored in terms of extent to which their knowledge had changed. The ‘diet diary’ was analysed and given a score representing 75% of the nutritional behavior score based on the quality of the participant’s eating behavior. The home-visit received a score contributing the remaining 25% of the nutritional behavior score based on the quality of the food and drink items recorded during the visit. The case supplemental questionnaire portion regarding past nutritional behavior received a separate score that represents the extent to which LTNEC has changed nutritional behavior. The socio-demographic questionnaire for each participant was scored based on their quality of life and susceptibility to nutritional problems, illness, and disease.

The following criteria were used in the assignment of scores based on the raw data:

NUTRITIONAL KNOWLEDGE QUESTIONNAIRE Score was a measure of level of nutrition knowledge, both abstract and practical, on a scale of 0-100 with 100 being the highest possible nutritional knowledge based on the information covered in the

questionnaire. Questions in Parts 1, 2, 4, and 5 addressed the following topics:

- Abstract Nutrition
 - Definitions of basic nutritional terms
 - Knowledge of foods fit into which food group or have specific qualities
- Practical Nutrition
 - Meal planning
 - Feeding babies and young children
 - Nutrition during pregnancy and breastfeeding
 - Food hygiene
 - Vegetable gardens

Part 3 data was not scored. In Parts 1, 2, and 5, each question was worth two total points. Points were awarded for a correct response. On some questions, multiple responses were appropriate and received partial credit. The participant's score on this section was calculated by simple addition of the points awarded. In Part 4, participant responses were scored based on a set of 8 criteria. One point was awarded for each criterion met. Again, partial credit was awarded for some criteria. The 8 criteria were:

- All three food groups represented
- Unrefined foods chosen over refined foods
- Includes vegetables
- Includes fruit
- More building and preventative foods than energy foods
- Includes a source of calcium
- Includes a source of iron
- Includes a source of vitamin A

*SOCIO-
DEMOGRAPHIC
QUESTIONNAIRE*

Scores were determined by weighing factors that negatively affect one's quality of life against those that positive affect one's quality of life on a scale of 0 to 100 with 100 being the highest possible quality of life and least susceptibility to nutritional problems, disease and illness based on the factors included in the questionnaire. The score is relative and can only be applied to the participants and the township residents. Factors that increase one's quality of life or decrease susceptibility to nutritional problems, illness, and disease:

- LANGUAGE: bilingual or greater
- BIRTHPLACE: Nieu Bethesda
- TIME IN NIEU BETHESDA: greater than three years
- EDUCATION: greater than standard 3 education but less than standard 7; greater than or equal to standard 7 education but less than standard 10; greater than or equal to standard 10 education
- EMPLOYMENT: any type
- INCOME SOURCE: receives income from own employment, family, or old age pension

- FAMILY SIZE: total less than 5 members
- FAMILY MAKEUP: number of children and seniors is less than number of adults; number of employable males in household is greater than 1
- NO. EMPLOYED: more than one employed person in household; number of employable males is less than or equals number employed in household
- R/MO. TO BUY FOOD: greater than or equal to R100/month/person
- HOUSE AMMENITIES: refrigerator, freezer, gas/electric stove, paraffin stove, oven, radio, television, bucket for collecting rainwater, vegetable garden, fruit trees, food animals, non-food animals
- GARDEN: have had garden in the past
- COMMUNITY INVOLVEMENT: involvement in any community group/organization
- SICKNESS (PARTICIPANT): less than once per year; over five years ago since last sick
- SICKNESS (CHILD): less than once per year; over five years ago since last sick
- HEALTHCARE PRACTICES: visit the clinic immediately when sick; ask for information/assistance from friends and family; visit a traditional doctor
- CLINIC VISITS/YEAR (PARTICIPANT): less than two visits per year except if visit is for contraceptives/condoms, regular checkups, chronic illness care, or health information
- CLINIC VISITS/YEAR (CHILD): 12 per year if under 3 years of age if for immunizations; less than twice a year if 3 years of age or older except if for regular checkups, chronic illness care, or health information
- REASONS FOR CLINIC VISITS: contraceptives/condoms; regular checkups; immunizations; health information

Factors that decrease one's quality of life or increase susceptibility to nutritional problems, illness, and disease:

- AGE: less than 20 years at time of birth of child; greater than 45 at time of birth of child
- LANGUAGE: monolingual
- TIME IN NIEU BETHESDA: less than three years
- EDUCATION: less than Standard 3 education level
- EMPLOYMENT: none
- INCOME SOURCE: only income from governmental grant
- FAMILY SIZE: total more than 5 members
- FAMILY MAKEUP: number of children and seniors exceeds number of adults; number of employable males in household is less than 1
- NO. EMPLOYED: one or less employed people in household; number of employable males exceeds number employed in household
- R/MO. TO BUY FOOD: less than or equal to R50/month/person; greater than R50/month/person but less than R100/month/person
- HOUSE AMMENITIES: no refrigerator/freezer; no vegetable

- garden; no stove of any kind
- GARDEN: have not had garden in the past
- COMMUNITY INVOLVEMENT: none
- SICKNESS (PARTICIPANT): chronic illness; once per month
- SICKNESS (CHILD): chronic illness; once per month
- HEALTHCARE PRACTICES: treatment at home with supplies available; do nothing to treat; visit the clinic as a last resort
- CLINIC VISITS/YEAR (PARTICIPANT): more than two visits per year for sickness
- CLINIC VISITS/YEAR (CHILD): less than 12 per year if under 3 years of age if for immunizations; more than twice a year if 3 years of age or older except if for regular checkups, chronic illness care, or health information
- REASONS FOR CLINIC VISITS: neither child/respondent visits clinic; only if child is ill; only if respondent is ill; chronic illness care; no immunizations for child under 3

'DIET DIARY' The 'diet diary' score (75% of the nutritional behavior score) was calculated based on the following criteria:

- At least two meals eaten daily
- Daily intake represents all three food groups
- Daily intake includes fruit
- Daily intake includes vegetables
- Daily intake includes a source of calcium
- Daily intake includes a source of vitamin A
- Daily intake includes a source of iron
- Daily intake is made up of more building and protective foods than energy foods

One point or partial point was awarded daily for each criterion met with the exception of the first criterion (At least two meals eaten daily) which was worth three points. The total score was found by adding up each day's score. Scores were made comparable by expressing them as a percentage of the possible points (depended on the number of full days the 'diet diary' was completed by the participant).

HOME-VISIT The home-visit score (25% of total nutritional behavior score) was calculated based on the following criteria:

- All three food groups represented
- Unrefined foods chosen over refined foods
- Includes vegetables
- Includes fruit
- More building and preventative foods than energy foods
- Includes a source of calcium
- Includes a source of iron
- Includes a source of vitamin A

One point or partial point was awarded for each criterion met.

CASE *Past Nutritional Knowledge Score.* Score represented the extent to which
SUPPLEMENTAL the case participant’s nutritional knowledge had changed since joining
QUESTIONNAIRE LTNEC on a scale of 0-100 with 100 considered the greatest possible
change in knowledge. The following scoring scheme was used:

- If questions 1, 2, 3=Ja then participant (1) received nutrition education, (2)knows more about nutrition, (3)knows how to feed self/kids better, then the greatest change in knowledge has occurred (2/2=100%).
- If questions 1, 2=Ja, ½=50%; 1, 3=Ja, 1.5/2=75%; 2, 3=Ja, 1.5/2=75%; 3=Ja, ½=50%; 2=Ja, 0.5/2=25%; 1=Ja, 0/2=0%.

Past Nutritional Behavior Score. If the case participant indicated no change in buying habits since joining LTNEC, then the past nutritional behavior score was considered to be equal to the present nutritional behavior score. If change was indicated since joining LTNEC, then the participant’s response was scored based on the same criteria used to score the home-visit. This score was pro-rated to be comparable with the present nutritional behavior score.

RESULTS

The nutritional knowledge scores are represented in the Figure 1 below. Scores ranged from 61 to 80.5 points (out of 100) with an average score of 69.85. The case group had the lowest and highest scores and an average 2.3 points higher than the control group (71.0 and 68.7, respectively).

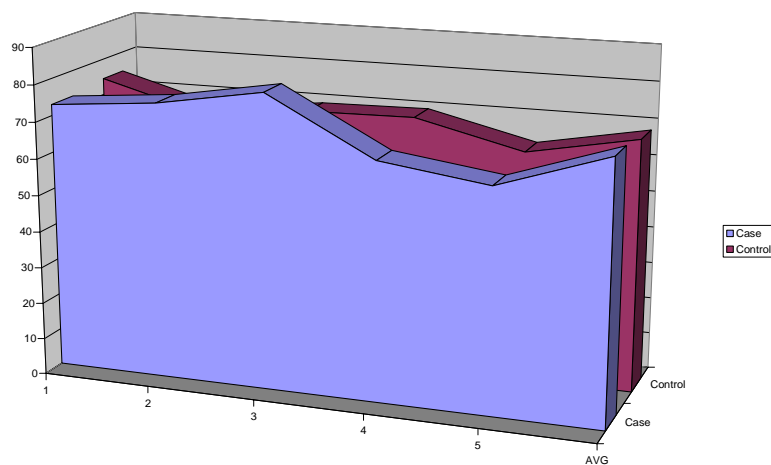


Figure 1: Nutritional Knowledge Questionnaire Scores

All respondents answered 26.1% of the questions in Parts 1, 2, and 5 correct or partially correct. 58.6% of all questions (27 of 46) were answered correctly or partially correct by 8 or more participants and 78.3% of all questions (36 of 46) were answered correctly or partially correct by 5 or more participants (see Figure 2).

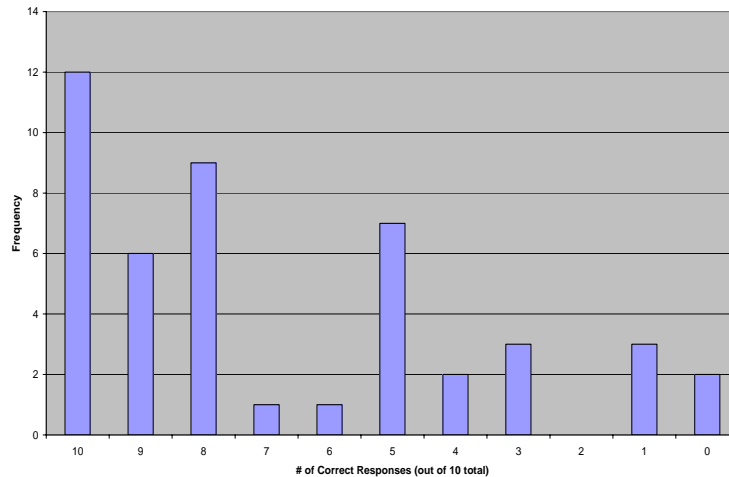


Figure 2: Frequency of number of correct responses for parts 1, 2, and 5 of the Nutritional Knowledge Questionnaire.

As previously explained, the nutritional knowledge questionnaire covered both practical and abstract nutrition information. The overall average in abstract nutrition section (part 1) was 14.9 points out of 32 total or 46.6% whereas the overall average on practical nutrition section (parts 2, 4, and 5) was 80.81% or 54.95 points out of 68 total. Abstract nutritional questions in which all participants answered correctly covered the following topics:

- amount of fat to include in one’s diet (P2.2: You should eat a lot of fat.)
- importance of consuming a variety of foods (P2.3: You should eat from all three food groups.)
- use of drugs/alcohol during pregnancy (P2.9: It is okay to drink and smoke cigarettes when you are pregnant.)
- superior nutritional value of breastmilk to formula (P2.11: Breastmilk has nutritious things in it that formula milk does not have.)
- introduction of solid foods to babies (P2.14: Solid foods should only be given to a baby who is four to six months old.)
- spoilage of formula/breast milk (P2.15: If you have extra formula milk after feeding your baby it is okay to save it for the next day.)
- breastfeeding when ill (P2.17: If a mother has a cold, she should stop breastfeeding.)
- baby-bottle sanitation (P5.1: Baby bottles should be boiled in water before each feeding.)
- washing of fruits/vegetables (P5.2: Fruits and vegetables should be washed before eating.)
- food storage hygiene (P5.3: Leftover food should be covered and eaten soon after.)
- waste disposal/compost use and knowledge (P5.8: Rubbish that will rot can be used in gardens as compost.)
- protecting gardens from animals (P5.10: Gardens should be fenced in to keep animals out.)

Abstract nutritional questions in which more than five of the respondents answered incorrectly covered the following topics:

- what protein does for the body (P1.2: [...] is body building stuff for good growth, healthy brains, and strong muscles.)
 - The most popular response was ‘vitamin’. A response of ‘mineral’, ‘vitamin’, or ‘calcium’ was given partial credit and inclusion of those responses as correct would raise correct response percentage to 80% (from 10%). Partial credit was given on this question due to the similarity of the questions for ‘mineral’, ‘vitamin’, and ‘calcium’ and the high likelihood of confusion especially with the words ‘strong bones’, ‘strong muscles’, and ‘strong teeth’.

- what vitamins do for the body (P1.3: [...] are stuff that keeps the body free of disease.)
 - Answers on this question ranged almost all categories: ‘protein’, ‘energy food’, ‘starchy foods’, ‘vitamins’, ‘minerals’, and ‘calcium’. Partial credit was given for responses of ‘mineral’ and ‘calcium’ and inclusion of those responses as correct would raise correct responses to 60%. The low instance of correct responses on this question can possibly be attributed to the vagueness of the question.
- what fiber does for the body (P1.4: [...] is stuff in plant foods that helps you make and get rid of stools (poop).)
 - The most common response was ‘fat’. The concept of fiber is said to be virtually unknown in the community due to the low occurrence of ailments related to low fiber diets (constipation, etc.) and high occurrence of diarrheal illnesses. It is unlikely clinic sister would instruct someone to increase fiber content of their diet.
- what minerals do for the body (P1.6: [...] are protective substances that help make good blood, bones, and teeth.)
 - Partial credit was given for responses of ‘calcium’ and ‘vitamins’. No respondents answered ‘vitamins’ but inclusion of ‘calcium’ as correct raises the correct response rate to 40%. Other responses included ‘energy food’, ‘fat’, and ‘fiber’; no one selected the correct answer of ‘minerals’. A low instance of correct responses is possibly due to confusion of the question with that for calcium where the only difference between the two is the inclusion of ‘good blood’ in P1.6.
- foods considered building foods or protein rich (P1.a: meat, poultry, fish.)
 - These items were most often classified as energy foods (sugar, starch, oil, or fat).
- foods considered protective foods or vitamin/mineral rich (P1.b: green vegetables, yellow and orange fruits.)
 - Only one respondent classified these items as protective foods containing vitamins and minerals. 60% classified the foods as body building or high-protein and 30% classified as energy foods (sugar, starch, oil, or fat).
- foods considered building foods or protein rich (P1.d: beans, peas, oats, legumes)
 - Most often classified as a protective food, rich in vitamins/minerals
- importance of variety in diet (P2.1: Eating only energy foods is good for you body.)
 - While 100% of participants answered P2.3 on diet variety correctly, only 30% answered correctly here.

Within the abstract nutritional section, the information contained in questions 1, 2, 3, 5, 6, 7, a-f was covered in LTNEC lecture “Gesonde Kos”. A comparison of case and control results on those questions is shown in Figure 3.

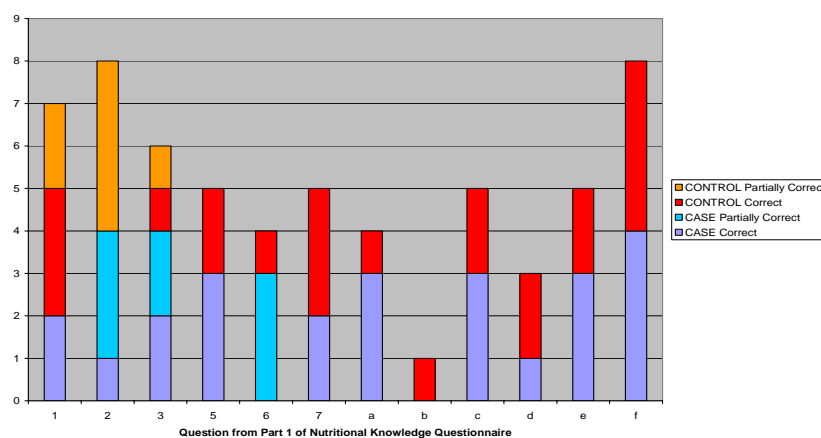


Figure 3: Comparison of case and control: number of correct or partially correct responses on the abstract nutritional information covered in LTNEC lectures.

If counting only correct responses, case outperformed control on 50% of the questions, control did better than case on 41.7% of the questions, and both groups did equally well on 8.3% of the questions. If counting correct and partially correct responses, case prevailed on 50% of the questions, control dropped to doing better on only 33.3% of the questions, and both groups did equally well on twice as many questions (16.7% of the questions).

The socio-demographic scores are represented by Figure 4. The control quality of life and protection against nutrition problems, illness, and disease was significantly greater than the case group. The control averaged 50.64 points out of 100 while case average was 10.83 points lower at 39.82.

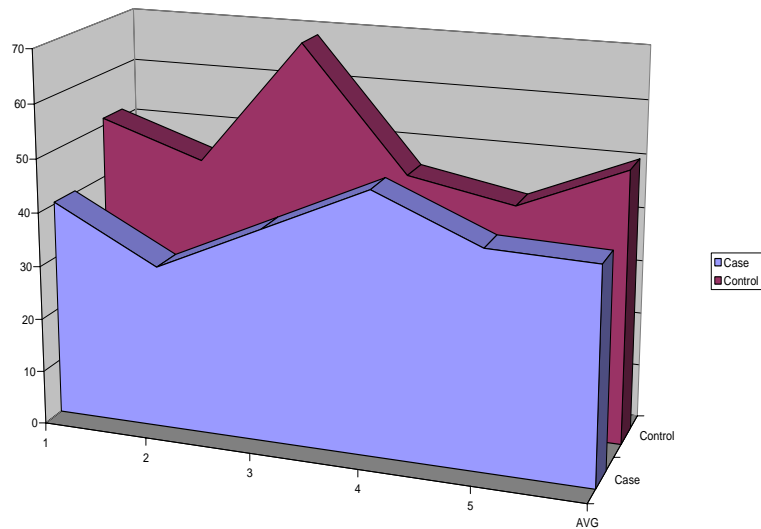


Figure 4: Socio-demographic Questionnaire Scores

Figure 5 pictorially compares how all respondents fared on each criterion by comparison with the highest and lowest possible scores for that criterion.

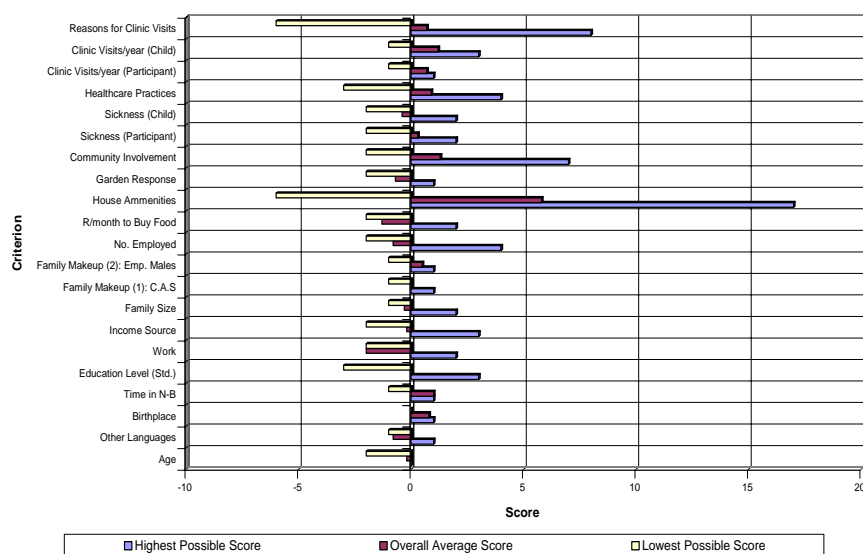


Figure 5: Overall average scores for each criterion of the Socio-demographic Questionnaire compared against the highest and lowest possible scores for each criterion.

All participants received less than half the possible points on the following criteria: other languages, employment, income sources, family size, number of employed persons per household, Rand available per month to purchase food, community involvement, child sickness, and reasons for clinic visits. Control had a higher average than the case group in twelve of the categories contributing to its overall higher average: other languages, educational level, family makeup (number of children and seniors compared to number of adults—abbreviated as CAS), number of employed person per household, Rand available per month to purchase food, home amenities, having a garden in the past, child sickness, healthcare practices, number of clinic visits/year for both child and participant, and reasons for clinic visits. Control received less than half the possible points in only nine of the categories (age, other languages, employment, income sources, family size, number of employed persons per household, Rand available per month to purchase food, having a garden in the past, and community involvement) while control received less than half the possible points in twelve categories (other languages, education level, employment, income sources, family makeup—CAS, number of employed persons per household, Rand available per month to purchase food, having a garden in the past, child sickness, number of clinic visits per year for the child, and reasons for clinic visits. The case group only had a higher average than control in 5 of the categories: age, family size, family makeup (number of employable males), community involvement, and participant sickness.

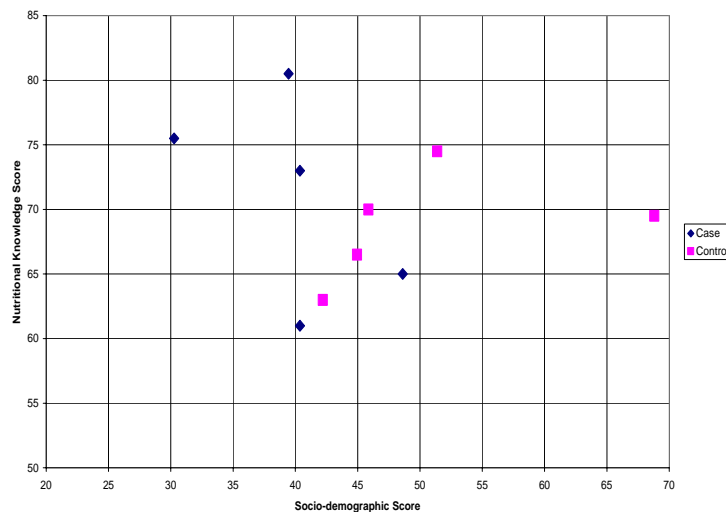


Figure 6: Socio-demographic score versus Nutritional Knowledge Score

Figure 6 attempts to find a correlation between the socio-demographic score and the nutritional knowledge score overall and for case and control groups separately. The control group data indicates an increase in the nutritional knowledge score as the demographic score increases. This suggests a relationship between quality of life and susceptibility to nutritional problems, illness, and disease and the level of nutritional knowledge. However, this trend is not seen in the case data nor overall when case and control data is combined. To determine if the control trend is meaningful or coincidental, the nutritional knowledge scores for both groups were plotted against several of the

socio-demographic criteria: age, education level, family size, number of children, etc.—all criteria where a high score might affect a participant’s nutritional knowledge. Figures 7 and 8 show plots for two of the criteria.

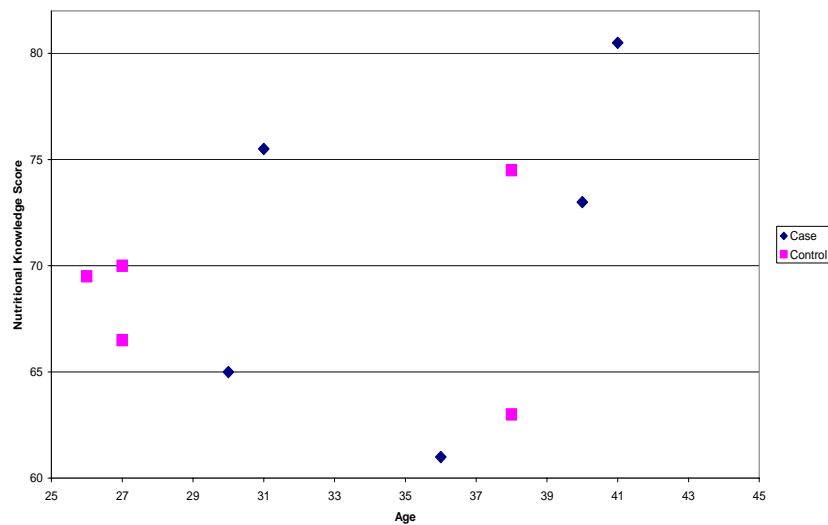


Figure 7: Participant age versus Nutritional Knowledge Score

With respect to age, there is no correlation with nutritional knowledge. The average age of the case group was 4.4 years older than average control age (35.6 and 31.2, respectively) but the case group nutritional knowledge average was not significantly greater than the control’s average. The oldest respondent (41 years old) did, however, receive the highest nutritional knowledge score (80.5).

The average education level of the control group is higher than that of the case participants (std. 5.6 versus std. 2) but average nutritional knowledge score is lower in the control group (68.7 versus 71.0). Contrary to expectations, the participant with the lowest educational level (standard sub A/0) had the highest nutritional knowledge score, while the participant with the greatest education level (standard 10) had an average score (69.5, with overall average of 69.85). More shockingly it was found that 66.7% of participants with educational levels less than standard 5 had scores higher than all participants having educational levels greater than or equal to standard 5 (40% of all participants). Only 33.3% of participants with educational levels less than standard 5 had scores falling in the same range as the participants with over standard 5 education. Overall there appears to be a negative correlation between the respondent’s level of education and their nutritional knowledge as shown in Figure 8.

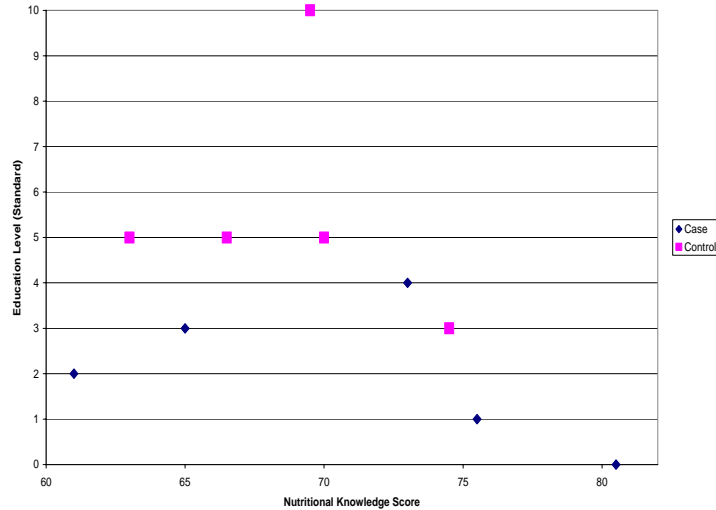


Figure 8: Level of education (standard) of participant versus Nutritional Knowledge Score

The scores from the combined nutritional behavior measurement tools, the home-visit and ‘diet diary’, are represented in Figure 9. Case had both the highest and lowest nutritional behavior scores but managed to have a higher average score than the control by 9.01 points (42.05 versus 33.04). Overall the average was 37.54 meaning that both groups failed to meet almost 2/3 of the nutritional behavior criteria. Looking at the ‘diet diary’ data, per person per day, the control participants met the criterion of at least two meals per day 90% of the time versus only 47.5% of time by the case participants. The inclusion of fruits criterion was met a mere 3% of the time by the control group and 7.5% of the time by the case. The case group met all the other criteria more often than the control group especially the inclusion of all three food groups, the inclusion of a source of calcium, the inclusion of a source of vitamin A, and the inclusion of more building and protective foods than energy foods criteria. However, about 17% of the time, all participants failed to meet any of the criteria.

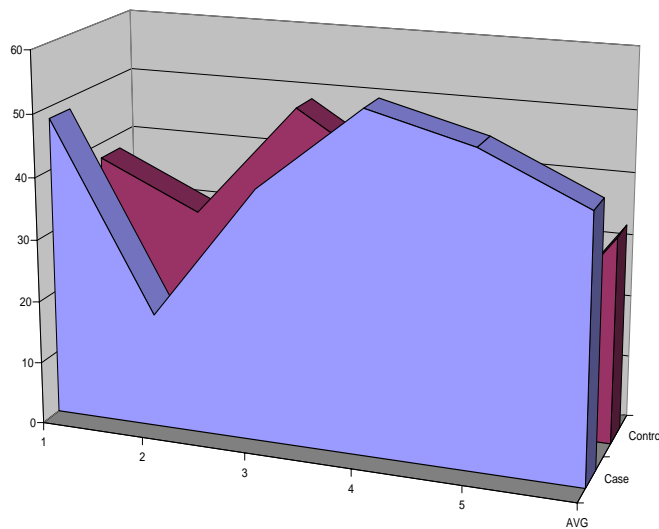


Figure 9: Nutritional Behavior Scores

Figure 10 represents the top ten food items consumed per participant in one week. In order, these were white bread, meat/fish/poultry, mielie meal pap, potatoes, rice, coffee, vegetables, tea, samp, and beans. All other foods listed in the ‘diet diaries’ were consumed less than once per person per week. The control group consumed more bread, coffee, and tea, and more overall, per respondent per week than the case group.

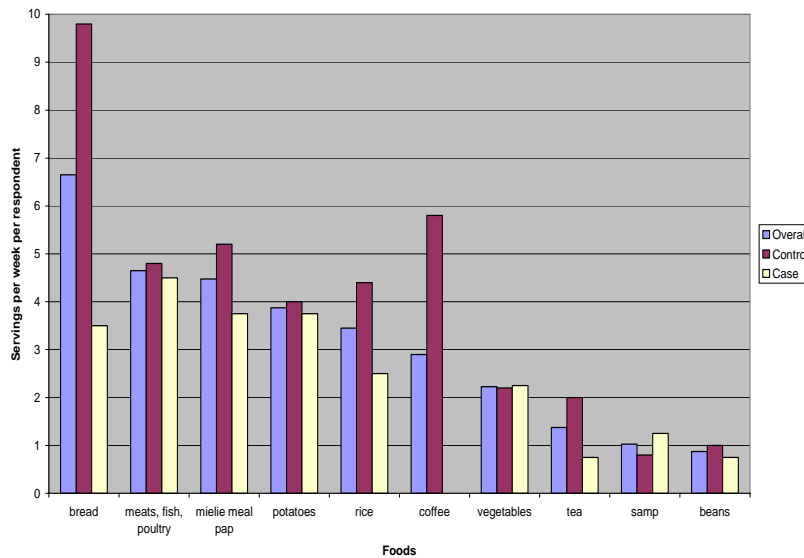


Figure 10: Top 10 foods eaten in one week per participant.

Of top 10 foods consumed, 5 are considered energy foods, 2 considered body building foods, 2 have relatively no nutritional value, and one is considered a protective food. The vegetable category is made up by 45% cabbage, 15% beetroot, 15% tomatoes and the remaining 25% by green beans, onions, carrots, and pumpkin. Only 2 instances of fruit (bananas) being consumed were recorded for the entire week across both groups.

In sharp contrast to the ‘diet diaries’, the home-visit data indicated that the case participants on average had more readily available food than the control participants. Of those foods, the case participants had significantly more protective foods, building foods, and non-nutritive foods. See Figure 11.

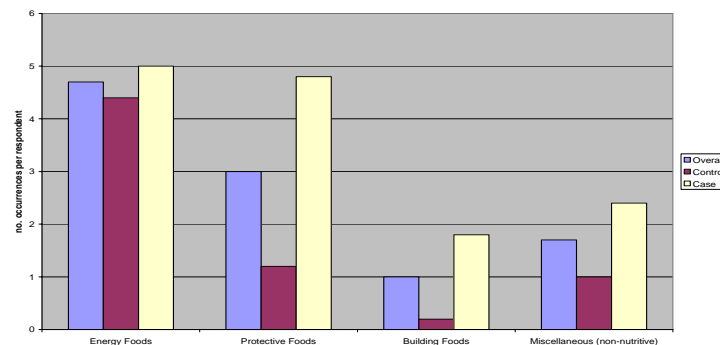


Figure 11: Frequency of food groups in items recorded during the home-visit.

Energy foods kept in the home included white bread flour (100% of participants), white sugar (80%), and corn meal (60%). Building foods consisted mainly of beans. The frequency of protective foods found in the home was artificially high due to the inclusion of some condiments (such as salt, tea, and curry powder) as protective foods. Non-condimental protective foods were, most commonly, cabbage, and less often, onions, carrots, beetroot, and pumpkin. With the exception of 3 case participants, all respondents had less than 9 items in their homes.

When compared against the nutritional knowledge score, some relationships with the nutritional behavior score emerge as shown by Figure 12. As nutritional knowledge scores increase for case participants, a decrease in nutritional behavior is witnessed. For control participants, as the level nutritional behavior increases, there is an increase in nutritional knowledge. In both cases, however, the correlation coefficient is not strong ($r^2_{\text{case}}=0.336$, $r^2_{\text{control}}=0.5474$) and these results must be used with some degree of caution.

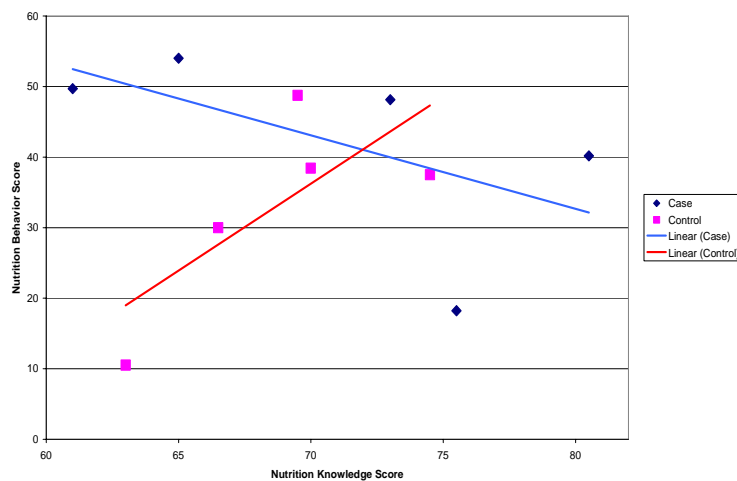


Figure 12: Nutritional Behavior Score versus Nutritional Knowledge Score

Past nutritional behavior and knowledge of case participants was assessed via the case supplemental questionnaire. Four of five of the participants have been attending LTNEC since its inception in March 2004. One participant joined soon after in May 2004. All case respondents indicated that at LTNEC they had received nutritional education and now know more about nutrition and how to feed themselves and their children better than they did prior to joining LTNEC for across the board scores of 100 (greatest possible change in knowledge). All case participants also indicated that they would purchase the same items if given R300 that they would purchase today resulting in zero change in nutritional behavior or past nutritional behavior scores equal to present nutritional behavior.

Part Three of the Nutritional Knowledge Questionnaire gathered information on the factors that informed the participant's food purchases (Figure 13) and the sources that contributed to their nutritional knowledge (Figure 14). This section was not scored. The most important factors (to 50% or more of respondents) that always affected the buying of food were (in order) taste (100%), what

your family will eat (90%), price (80%) and what you will eat (80%), brand name (70%), nutritional value (60%), and fat content (50%). The most important factors (to 40% or more of respondents) that never affected the buying of food are sugar content (60%) and how long the item will last or stay fresh (40%). Advertisements were cited (40% of the time) as affecting the buying of food only sometimes.

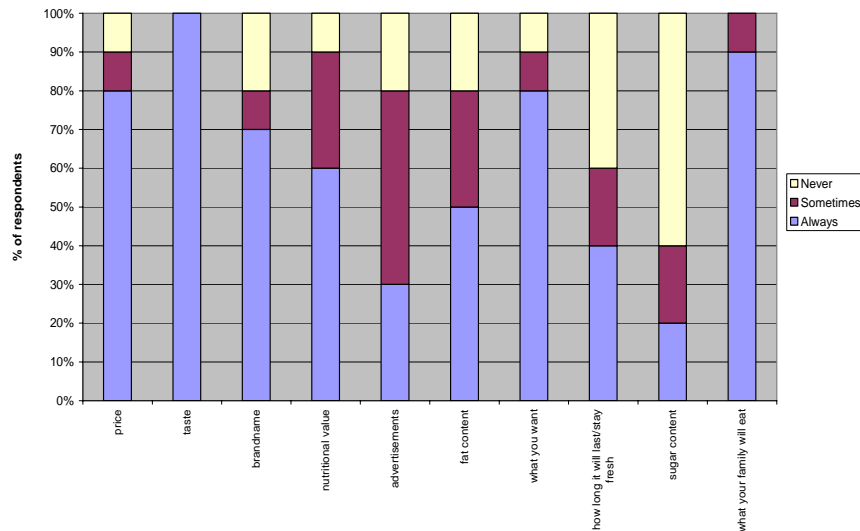


Figure 13: Factors affecting the purchase of food.

In comparison of the factors affecting the purchase of food between case and control participants, the control group was found to be more affected by price, brand-name, and nutritional value than the case. Control also pays much more attention to how long the item will last or stay fresh and is more conscious of sugar and fat content of food purchased.

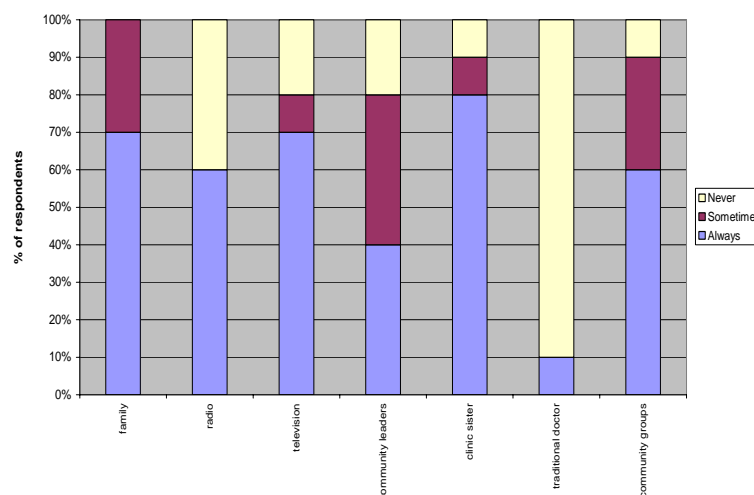


Figure 14: Sources of Nutritional Information

The most important sources (to 50% or more of respondents) that always contribute nutritional information to the participant are (in order) the clinic sister (80%), family and television (70%), and radio and community groups (60%). The participants never receive nutritional

information from traditional doctors (with one exception who replied that she always receives nutritional information from traditional doctor) as use of the traditional doctor is not common healthcare practice in the community. Besides the traditional doctor, the participants put the next least important sources as radio (40% never) and community leaders (60% never and sometimes).

A comparison of the sources contributing to the nutritional knowledge of the respondents among case and control participants show that case participants receive nutritional information more often from their families, television, community leaders, and community groups (i.e. LTNEC) than do the control participants. Only one, a case participant, receives information from a traditional doctor. Control participants, on the whole, receive nutritional information more often from radio and the clinic sister than do the case participants.

DISCUSSION

It is always a challenge to research a population to which the researcher is a foreigner. First are the issues of translation, the need for interpreters, and the task of gaining the trust of community in which the research is conducted. The intimacy needed to gather sensitive data is often hampered by the distancing from the population that an intermediary causes. The researcher is often unable to connect to subjects on a personal level and establish a feeling of mutual trust and comfort with the subject. Or, on the flip side, a subject may feel uncomfortable with the intermediary in small communities where confidentiality is difficult to maintain and the presence of a community insider will make a subject's concern of privacy all that more prohibitive to the researching process. These challenges lead to inaccuracies and omissions in data where subjects may not have felt comfortable enough with the researcher or intermediary to express their true views or give accurate information on a sensitive topic. In addition, the issue of translation presents a problem especially when the researcher is not familiar with the target language as the spirit of the document may be lost or changed in translation unbeknownst to the researcher. In this study, comfort levels among the participants appeared to be a major issue. Some of the participants were extremely nervous and visibly shaking during the administration of questionnaires.

Further complications arise as a foreign researcher when the target population is previously oppressed or disadvantaged. In this study, the target population, the Afrikaans-speaking descendants of the Khoi and San, was doubly oppressed—firstly during the Apartheid regime and even after the 1994 ANC victory as they are still fighting to be recognized as who they are: the progenitors of the nation. The former though has more implications in the progress of this study. The Apartheid regime's legacy is generations of people who have been stripped of their pride, self-efficacy, and self-worth. Today, as communities work to rebuild, researchers are finding it difficult to elicit varied responses from subjects who are not used to being asked their thoughts and opinions on matters but being told. The subjects tend to revert back to past mentalities of “yes baas, no baas” and supply responses that they believe the researcher, especially if white, wants to hear, not necessarily responses

that are true to what they know or believe. It is important to work with the study population and effectively communicate who the researcher is, why the research is being done, how the target population can assist, and in what ways the data and results will be used. In addition, the researcher must construct the study with the fragility of the population's self-esteem in mind. With the building of trust and understanding, challenges such as these can be marginalized.

Illiterate or undereducated populations also present unique challenges. When developing measurement tools, such as questionnaires, the level of reading comprehension must be taken into consideration and questions and directions simplified with respect to word choice and sentence complexity. It is also important to develop a format that is simple and self-explanatory for the subjects. It can also not be assumed that the participants will be familiar with common assessment strategies like matching, multiple choice, fill-in-the-blank, etc. and care must be made to explain these tools better than what would normally be required. In this study for example, instead of asking the extent to which the participants agreed to a certain statement on a scale of 1-4 (strongly disagree, disagree more than agree, agree more than disagree, strongly agree), participants were asked simply whether they felt the statement was right or wrong (or good or bad). While this removes a certain amount of possible variation in the results, it proved to be significantly easier for the participant's to understand and for the researcher to administer. For participants that can neither read nor write or don't feel comfortable doing so, provisions must also be made to administer the measurement tools orally via the interpreter. Oral administration is very taxing for the interpreter and care must be taken to ensure that each tool is administered similarly without omissions. Most questionnaires in this study were administered orally but all 'diet diaries' were completed by the participants on their own. Five of the participants were issued questionnaires orally in a small group setting (two and three). This proved problematic as participants would often default to the first answer proposed with the result of similar scores within each group and an inaccurate measurement of participant's knowledge, behavior, etc.

All three of these challenges influenced the small range of scores received from the Nutritional Knowledge Questionnaire. When comparing the entire nutritional knowledge questionnaire neither group appears to be significantly superior or inferior in nutritional knowledge with the overall average rather high. The high frequency of correct and partially correct answers suggests that the material covered in the questionnaire was too basic especially with respect to the practical knowledge. Over-revision of the questionnaires to simplify language, material, and format to accommodate the low educational and literacy level of the area, led to the removal of many questions of harder difficulty. It was also felt that the participant's self-esteem would be damaged, especially in the abstract knowledge section, by asking too many questions that the participants did not know in a format that very much resembled an exam. The response to this concern to simplify resulted in ambiguous questions with multiple possible responses. Establishing a baseline and ceiling to the nutritional knowledge of the participant thus proved difficult as universally high scores made

the results less meaningful. So, while a difference in case and control nutritional knowledge may exist, it is not possible to ascertain given the oversimplification of the questionnaire.

The participants on the whole had greater knowledge of practical nutritional knowledge than of abstract nutritional knowledge. This is as expected in a location where formal education opportunities are few but the extended family unit is strong and practical knowledge is easily passed on from generation to generation. The knowledge that was universal included items necessary for healthy living and healthy children; it acts as baseline knowledge for the community. The baseline reflects positively on the community because it indicates that an exclusive breastfeeding culture is alive and well in Pienaarsig, an important step in UNICEF's GOBI-FFF to beating childhood malnutrition.

The ceiling of nutritional knowledge among the participants indicated that knowledge of abstract nutrition was low. While not imperative to living a healthy life, it is useful to know and understand the three food groups, what foods they contain, and how each of them affects the body. Responses for the food group classification indicated that while most understood which foods were energy-giving, the participants were confused as to which foods were body-building or protein-rich and which foods provided vitamins and minerals in abundance. Protein-rich foods were classified as both energy foods and protective foods while protective foods were most often thought to be building foods. This confusion may explain the low consumption of protective foods in the village and low frequency in which participant's indicated that they would purchase fruits and vegetables if given R300 to buy food and the more frequent consumption of building foods. Participants realize the importance of protective foods in their diets (and variety overall) and if it was thought that foods like beans, peas, oats, and legumes were protective, they would be inclined to consume more.

The results addressing diet variety were incongruent. 100% of participants answered one question (P2.3) correctly but only 30% succeeded in answering a second question on the same topic (P2.1). This discrepancy is possibly due to the wording of the question which was simplified from its original form. Originally this question read: "A diet that contains only energy foods (sugars, starches, oils, and fats) will make a person weak". The question was simplified for comprehension but with the revised form, respondent understanding hinged on recognition of the word 'only'. Proper recognition changed depending on the question's mode of administration and the emphasis with which the interpreter and/or translation placed on the word. If the participant failed to recognize, the question might look like: "A diet with energy foods is good for you." Hence the participant's answer might change.

Comparison of the case and control results for the questions covering the information included in LTNEC lectures was unremarkable. The results suggested that while LTNEC participants retained some of the information covered in LTNEC "Gesonde Kos" lecture, the case group did not outperform control to an extent great enough to say that the lectures were successful. The non-LTNEC participants knew almost everything that the LTNEC participants knew. Different strategies

might need to be considered by the LTNEC community health workers to teach lecture material. Possibilities might include hands-on activities like the preparation of well-balanced meals in the community kitchen to teach about the importance of including all three food groups, or the construction of alternative models to describe how food is used by the body, e.g. the internal combustion engine model.

The socio-demographic results indicated a substantial difference between the case and control groups and overall, a low quality of life and high susceptibility to nutritional problems, illness, and disease—a testament to the high levels of unemployment, food insecurity, and poverty talked about earlier. However, even though the average was low on the scale of 0-100 devised to score the questionnaire, it must be kept in mind that the scale is relative and comparable only to the participants and the Pienaarsig community. The consistently higher average scores of the control group on twelve of the criteria indicates that the control group enjoys a higher standard of living and are less susceptible to the nutritional problems that brought the case mothers to the LTNEC program. Greater quality of life for the control was based on largely monetary matters and health and healthcare of the family. Understandably, with more money at their disposal, the control mothers are able to more effectively stave off nutritional problems that cause frequent illness and clinic visits for illness by the case mothers and children. At this early stage of the LTNEC program and curriculum administration, it is understandable to see the control group outperforming the case group with respect to socio-demographics because not enough time has elapsed for the income building and self-sustainability aspects of LTNEC to have made a noticeable change in the case group.

Comparison of the socio-demographic score with the nutritional knowledge score identified a positive correlation between the two variables for the control group and no correlation for case and overall. Looking at the correlation of the control group data alone, it suggests that control's greater monetary capacity, higher educational levels, and infrequent sickness contributes to a greater knowledge of nutrition or is caused by a greater knowledge of nutrition. Lack of a correlation for the case group data or the data overall suggests that the control group's trend is probably coincidental. It is possible, though, that because the case group's nutritional knowledge has been artificially augmented by participation in LTNEC (even to the small extent that it appears the case group retained that knowledge), there is no longer a relationship with socio-demographic score as the nutritional knowledge score is based now on the case participant's intellectual capacity.

If the socio-demographic score is broken down, still no strong correlations with age or educational level emerge. In comparison with age, no relationship with nutritional knowledge means that experience and maturity in this community do not equate with greater understanding of nutrition (practical and abstract). In comparison with education, a weak negative correlation is witnessed. The control group's abysmal performance on the nutritional knowledge questionnaire even with higher educational levels and the case's good performance even with lower educational level attest to this negative correlation. This relationship reflects disparagingly on the quality of education for Nieu

Bethesda's and South Africa's disadvantaged. The possible explanations include that nutrition was not a topic adequately taught in formal education or that nutrition was not taught at all. The latter is most likely as South Africa Departments of Education and Health are only looking to include nutritional education in Curriculum 2005 to fulfill INP objectives. Also, the negative correlation suggests that the education the participants received in Nieu Bethesda (all but 1 has lived in Nieu Bethesda the majority of their life) was not adequate enough even to prepare its learners to seek out information and knowledge after leaving the classroom from non-academic sources such as magazines, books, and packaging labels. Therefore, it makes sense that case scores should show no relationship to education level because they have been artificially augmented through LTNEC.

The nutritional behavior results upheld the findings of the socio-demographic data by providing further evidence that food security is a problem among the participants as daily intake was often sub-standard based on the scoring criteria. However, even with significantly less means by which to purchase food, the case participants managed to choose more wisely than control participants when eating and purchasing food. Case's perseverance in the face of the malnutrition adversary is possibly due to the support and guidance received at LTNEC. Upon comparison with the nutritional knowledge data, one sees that as knowledge increases nutritional behavior subsequently decreases. Thus, for the case group, other factors, not necessarily awareness about good nutrition, affect food choices. Such factors could be cultural, social, economic, or based on location. The most likely factor is participation in LTNEC, as that is the only obvious factor shared only by case participants. For the control group, an opposite trend is seen. This suggests that, in their case, good nutritional behavior is secondary to high levels of knowledge about good nutrition.

Analysis of the top ten foods eaten and low overall average nutritional behavior scores speaks gravely for the micronutrient status of the township residents. Due to the lack of vitamin- and mineral-rich fruits and vegetables eaten or available in Nieu Bethesda to the participants there is a high possibility of widespread micronutrient deficiencies in the township population as a whole. The micronutrients found lacking by both measurement tools were vitamin A and calcium.

While overall a lack of food in the homes was commonplace, three of the case participants had significantly greater amounts of food readily available than the other seven participants. But, the 'diet diaries' for these three participants did not score particularly higher. It is unclear whether this finding is significant or merely a result of the home-visit occurring soon after food was purchased. It would have been of interest to interview these participants on how or why an apparent relative abundance of food in the house does not translate into more appropriate eating habits. It is possible that unfavorable situations in the home, like alcoholism, prohibit the transfer of food from cupboard to mouth.

Little information was gathered about the past knowledge and behavior of the case participants prior to joining the nutritional program. All case participants indicated the greatest possible change in knowledge and no change in behavior. So, LTNEC, at this point in time, has not

been successful in altering the purchasing and eating habits of its members. LTNEC has only conducted one lecture at the time of writing. The questions based on the “Gesonde Kos” lecture, mentioned previously, represents the only material on which case knowledge could have increased. And, as said earlier, since the case scores on the nutritional knowledge questions covered in the LTNEC lecture are not remarkably better than the control scores, the case knowledge prior to joining LTNEC must have been significantly less than that of the current control knowledge if significant change in knowledge has occurred.

The universality of responses on the case supplement may indicate inaccuracy in the data supplied by the participants; these questions came late in the administration process and participants may have taken short-cuts due to fatigue. While many factors prohibit change in nutritional behavior based on purely knowledge, the substitution of brown bread in the diet is an example of one thing that LTNEC participants could do now. LTNEC has instructed its participants on the benefits of brown bread for both the body and the wallet, but all mothers still use white bread flour on a regular basis. In this respect, altering behavior may just require convincing. Major changes, however, require more than just convincing; rather, they may require an alteration of the socio-economic fabric of the township and its ties with the village proper.

Among the factors affecting food purchase, little attention was paid to the nutritional value of foods. This was especially the case among the LTNEC mothers. While they have received education on nutrition, their low levels of education may make them ignorant of nutritional facts and ingredients listings on food. But, given their greater nutritional behavior, it is likely that they inherently pay attention to the level of nutrition in non-processed and unpackaged foods—like fresh meats, fruits, and vegetables. On the other hand, it was promising to see that advertisements were not frequently factors that informed food purchase. Television, the source of most advertisements, is notorious for promotion of unhealthy foodstuffs and new products that may cut out many of the nutrients included in the original. Brand name however was a popular factor. This is disconcerting as many times the more popular brand is the more expensive brand. For example, a popular margarine in the township is Rama which sells at the Graaff-Reinet Spar for almost nine Rand more than an equivalent amount of Sunshine D margarine. Sunshine D is even enriched with vitamins whereas Rama is not. Despite this information, many township residents are adamantly loyal to their Rama margarine. Often, it is the less educated that are more susceptible to the exaggerated or false claims of marketing companies. But, in this study, brand name was more often a factor informing food purchase in the control group.

Although the participants only ‘sometimes’ let advertisements affect what they buy, both groups receive an unhealthy amount of nutritional information from television. However, with most township residents watching South African Broadcasting Company stations, public service programs and announcements may be numerous enough to counteract the effect of the advertisements. Most trust the clinic sister with their nutritional information needs. However, great emphasis is also placed on the role of the family in supplying nutritional information. Familial knowledge systems, if

promoting undesirable nutrition, are extremely hard change. No information was gathered in this study, however, that says familial knowledge systems in Piensaarsig need change. If there are instances in which tradition is adversely affecting health, LTNEC may need to work within the cultural milieu of the population to find acceptable solutions.

CONCLUSIONS

This study sought to describe the nutritional knowledge and behavior of the residents of Nieu Bethesda's Piernaarsig Township through a case-control analysis of mothers participating in Little Tree Nutritional and Educational program and those who do not with the aim of determining the effectiveness of the nutritional program in combating malnutrition in the township. Using several measurement tools (questionnaires, 'diet dairies', home-visits), the following results were obtained:

- Neither the case or control groups have significantly greater levels of nutritional knowledge. Participants knew most information that dealt with practical issues and little of the abstract nutritional information.
- The control group enjoyed a significantly higher quality of life than the case group. With money, frequency of sickness, and how illness is dealt with being the key areas that set the control group apart.
- The control group's greater quality of life is directly and positively correlated to their level of nutritional knowledge whereas the case group's quality of life is independent of their nutritional knowledge.
- The level of nutritional behavior in the case group is greater than in the control group. Even with less means, the case group manages to make wiser decisions about food and food purchase than the control group.
- Nutritional knowledge was found to adversely affect nutritional behavior meaning that good nutritional behaviors are attributable to other factors.
- Food insecurity, inadequate food intake, and diets low in micronutrient density are major issues contributing to the poor nutritional status of the community.

For Little Tree Nutritional and Educational Centre these results reflect both positively and negatively. The LTNEC participants seemed not to retain much of the information from LTNEC's lecture nor do they have nutritional knowledge levels that suggest that there has been an intervention (when compared to the control participants). Socio-demographic results and the case supplemental questionnaire indicate that the case participants know significantly more than they did prior to joining LTNEC. Thus, LTNEC has been successful in increasing the case group's knowledge about nutrition to the level of their neighbors. Behaviorally, the fact that the case group manages to choose food more wisely than the control group even with less means, speaks well for LTNEC educational program. LTNEC guidance has likely encouraged the mothers to select and eat food more healthily. Despite

this achievement, LTNEC still has much work to do in changing its participant's nutritional behavior. Based on the low level of nutritional knowledge and behavior found universally, it is imperative that LTNEC plan community wide interventions to prevent the malnutrition problem from growing out of hand. Participant, once 'graduated', need to be encouraged to spread what they have learned at LTNEC. However, before that can occur, more nutritional education needs to be given in methods suitable for the learning capabilities of the participants. And lastly, if the program is to continue, support must be garnered from both the township and the village. The program needs to be operated with transparency and its successes need to be publicized. Help from all sectors must be accepted with the well-being of the community, not of the individuals involved, kept in mind. Because Little Tree's survival depends on community involvement, it is imperative that steps be taken to repair the damaged relationship of the township and village. It is everybody's responsibility, black and white, Xhosa-speaking and English-speaking and Afrikaans-speaking, to work towards a brighter future for the whole of Nieu Bethesda.

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REFERENCES (IN ORDER OF CITATION)

- ¹ Bradshaw D, Steyn K (eds). Poverty and Chronic Diseases in South Africa: Technical Report 2001. Medical Research Council; 2002. <http://www.mrc.ac.za/bod/povertyfinal.pdf>
- ⁴ Statistics South Africa. Statistical release P0210 Labour force survey. <http://www.statssa.gov.za>. March 2004.
- ⁵ Mgijima, C, 1999. Situational Analysis of Food Security and Nutrition in South Africa. A Speech at the 3rd Session of the International Consultative Conference on Food Security and Nutrition as Human Rights, Randburg, South Africa
- ⁶ Bonti-Ankomah, Samuel. Addressing food insecurity in South Africa. Paper presented at the SARPN conference on Land Reform and Poverty Alleviation in Southern Africa. June 2001. <http://www.sarpn.org.za/EventPapers/Land/20010605Bonti.pdf>
- ⁷ Actuarial Society of South Africa. AIDS and demographic model. ASSA2000. <http://www.assa.org.za>.
- ⁸ Labadarios, D.; Steyn, N.; MacIntyre, U.; Swart, R.; Gericke, G.; Huskisson, J.; Dannhauser, A.; Voster, H.; Nesamvuni, A. The National Food Consumption Survey (NFCS)—Children aged 1-9 years, South Africa, 1999. South African Journal of Clinical Nutrition, 14(2): 62-75, 2001.
- ⁹ OMNI Micronutrient Fact Sheets: South Africa. <http://mostproject.org/SAfr.htm>. Accessed: 31 August 2004.
- ¹⁰ Vitamin Information Centre (2001). National Food Consumption Survey in Children aged 1-9 years: South Africa 1999. Part I Methodology, Socio-economic Data, and Anthropometric Data. Medical Update, 37, April 2001.
- ¹¹ Information available at: <http://www.merck.com/mrkshared/mmanual/section1/sec1.jsp>.
- ¹² Vorster, H.; Jerling, J.; Oosthuizen, W.; Becker, P.; Wolmarans, P. Nutrient intakes of South Africans. An analysis of the literature (SANNSS Group Report). Isando: Roche, 1995.
- ¹³ Witten, C.; Jooste, P.; Sanders, D.; Chopra, M. South Africa Case Study. National Micronutrient Program Country Case Studies. Food and Nutrition Bulletin, 25(1), Mar. 2004.
- ¹⁴ <http://www.doh.gov.za/programmes/nutrition.html>
- ¹⁵ Kloka, D. Primary School Nutrition Programme. Department of Health. June 2003. <http://www.asfsa.org/meetingsandevents/archive/anc2003/handouts/southafrica.pdf>.
- ¹⁷ Schoeman, S.; Hendricks, M.; Dhansay, M.; Laubscher, J.; Benade, A; The health facility-based nutrition programme does not address malnutrition effectively. Medical Research Council Policy Brief, 1, 2004.
- ¹⁸ Jooste, P.; Weight, M.; Lombard, C. Iodine concentration in household salt in South Africa. WHO 2001 Bulletin, 2001, 79 (6).
- ¹⁹ South African Vitamin A Consultative Group (SAVACG). Anthropometric, vitamin A, iron, and immunisation coverage status in child aged 6-71 months in South Africa, 1994. South African Medical Journal, 86(4): 354-357, 1996.

- ²⁰ Hendricks, M.; Saitowitz, R.; Fiedler, J.; Hussey, G.; le Roux, I.; Makan, B.; Sanghvi, T.; Maglagang, H.; Dary, O. An assessment of the feasibility, coverage, and cost of a vitamin A fortification programme in South Africa. *South African Journal of Clinical Nutrition*, 14(2), 46-55, 2001.
- ²¹ Fortification Begins in South Africa. NOVIS, 2003. <http://www.nutraingredients.com/news/news-ng.asp?id=38777-fortification-begins-in>.
- ²² Helman, C. *Culture, Health, and Illness*. 4th Ed. Alnold Publishers, 2001.
- ²⁵ http://www.places.co.za/html/nieu_bethesda.html.
- ²⁷ Information available at: <http://www.nieubethesda.info/history.htm>.
- ²⁸ Information available at: <http://www.owlhouse.info/>
- ²⁹ Peterson, Amelia. *Mapping Exercise Field Notes*. SIT South Africa: Public Health. 2004.
- ³⁰ Information available at: <http://www.fallingrain.com/world/SF/1/NieuBethesda.html>.
- ³¹ FSS Journal. Tour and Conversation with Lucas. 26/11/2004.
- ³² FSS Journal. Conversation with Frank. All-Pay Day, 18/11/2004.
- ³³ FSS Journal. Meeting with Interpreter and Advisor. 14/11/2004.
- ³⁴ FSS Journal. All-Pay Day Observations. 18/11/2004.
- ³⁵ FSS Journal. Conversations with Tita. 15/11/2004.
- ³⁶ FSS Journal. Observations, 27/11/2004.
- ³⁷ Stoop, T. Little Tree Nutritional and Educational Centre-Nieu Bethesda, South Africa. Informational pamphlet received via email.
- ³⁸ Stoop, T. What has been done so far: January 15th 2004 – March 31st 2004. Received via email.
- ⁴¹ FSS Journal. Observations, 12-26/11/2004.

APPENDICES

APPENDIX A: ENGLISH DOCUMENTS

CASE PARTICIPANT INFORMATION SHEET

Thank you for your interest in this study. This study is entitled: “Relationship between nutritional knowledge and behavior in mothers of young children who have received targeted nutritional education and those who have not as a method to ascertain the effectiveness of the *Little Tree Nutritional and Educational Centre* nutritional curriculum in the Pienaarsig Township of Nieu Bethesda, Eastern Cape Province, South Africa”. This study is being conducted by Amelia Peterson.

Amelia Peterson is an undergraduate chemistry major from the United States of America who attends the University of Puget Sound in Tacoma, Washington. She is studying this spring in South Africa through an American study abroad institution known as the School for International Training (SIT). The SIT South Africa program is based in Port Elizabeth at the University of Port Elizabeth. The program’s curriculum emphasizes public health in South Africa with emphasis on the primary health care system. The final month of this program is spent conducting independent research on a topic of the student’s choosing. As the student is not a professional, the research conducted will be used for strictly educational purposes.

The purpose of this study is to assess how one’s knowledge about nutrition affects one’s nutritional behavior under two conditions: 1)if a person has received nutritional education at *Little Tree Nutritional and Educational Centre* (LTNEC), and 2)if a person has not received nutritional education at LTNEC. Information from this study will help to assess the effectiveness of LTNEC’s nutrition education curriculum and its implementation in Pienaarsig Township.

Your participation in this study is completely voluntary and you have the right to withdrawal from the study at any time for any reason without penalty. Please read the following before making any decisions regarding your participation.

As a case participant you should meet the following criteria:

- Resident of Pienaarsig Township in Nieu Bethesda, Eastern Cape Province, South Africa.
- Mother/primary caregiver to young child/ren (preferably less than 5 years).
- Attendee of LTNEC.

As a case participant you will be asked to do the following:

- Complete two questionnaires, one regarding personal information and another assessing your nutritional knowledge.
- Keep a detailed ‘diet diary’ either in a notebook or, if needed, by oral dictation to the researcher of all food items eaten, drank, and bought by you and your dependents for one week. The notebook will be provided to you at no charge for use during the week. The ‘diary’ can be kept in the language of your choice.
- Allow Ms. Amelia Peterson to visit your home and record the food/drink items in your home.

As a case participant you will be asked to help maintain the credibility and reliability of the study. During the course of the study, it is asked that you do NOT do the following:

- Change any aspects of your usual diet; including what or how much or how frequently you eat/drink or feed your family.
- Buy any ‘special’ food or drink that you normally would not purchase.
- Alter the ‘diet diary’ so that it includes or excludes any extra information.

All information gathered in this study is strictly confidential. Your name will in no way be attached to the information you might supply. You will be issued a confidential code number for the purposes of this study.

This study will operate in Nieu Bethesda between Friday 12 November 2004 and Sunday 28 November 2004. The questionnaire and house-visit will occur at a date and time of your choice between Friday 19 November 2004 and Saturday 27 November 2004. You will receive a calendar to remind you of these dates upon your agreement to participate.

There will be a small remuneration for your participation in the form of a food parcel to be distributed upon collection of the 'diet diary' and completion of questionnaires/house-visit.

If, after having read and understood, the information about the study given above, you wish to participate in the study please fill out the Confirmation of Participation and Consent Form attached and return it to Amelia Peterson. If you do not wish to participate, no further action is necessary.

Thank you for taking time to read this information sheet and for your consideration.

If you have any questions or concerns regarding participation in this study, please feel free to contact:

Ms. Amelia Peterson, student researcher
Email acpeterson@ups.edu
Cell 084-644-7562

Mrs. Tita Stoop, project advisor
Email tita.stoop@intekom.co.za
Office 049-8411-744

If you have any concerns about the conduct of the study or researcher, please feel free to contact:

Dr. Mthobeli Guma, academic director
Office 041-504-2949
Fax 041-504-2771

Thank you again,

Amelia Peterson
Student Researcher
School for International Training
United States of America

CONTROL PARTICIPANT INFORMATION SHEET

Thank you for your interest in this study. This study is entitled: “Relationship between nutritional knowledge and behavior in mothers of young children who have received targeted nutritional education and those who have not as a method to ascertain the effectiveness of the *Little Tree Nutritional and Educational Centre* nutritional curriculum in the Pienaarsig Township of Nieu Bethesda, Eastern Cape Province, South Africa”. This study is being conducted by Amelia Peterson.

Amelia Peterson is an undergraduate chemistry major from the United States of America who attends the University of Puget Sound in Tacoma, Washington. She is studying this spring in South Africa through an American study abroad institution known as the School for International Training (SIT). The SIT South Africa program is based in Port Elizabeth at the University of Port Elizabeth. The program’s curriculum emphasizes public health in South Africa with emphasis on the primary health care system. The final month of this program is spent conducting independent research on a topic of the student’s choosing. As the student is not a professional, the research conducted will be used for strictly educational purposes.

The purpose of this study is to assess how one’s knowledge about nutrition affects one’s nutritional behavior under two conditions: 1)if a person has received nutritional education at *Little Tree Nutritional and Educational Centre* (LTNEC), and 2)if a person has not received nutritional education at LTNEC. Information from this study will help to assess the effectiveness of LTNEC’s nutrition education curriculum and its implementation in Pienaarsig Township.

Your participation in this study is completely voluntary and you have the right to withdrawal from the study at any time for any reason without penalty. Please read the following before making any decisions regarding your participation.

As a control participant you should meet the following criteria:

- Resident of Pienaarsig Township in Nieu Bethesda, Eastern Cape Province, South Africa.
- Mother/primary caregiver to young child/ren (preferably less than 5 years).
- Have not participated in LTNEC or have attended any nutritional education programs in the last 10 years.

As a control participant you will be asked to do the following:

- Complete two questionnaires, one regarding personal information and another assessing your nutritional knowledge.
- Keep a detailed ‘diet diary’ either in a notebook or, if needed, by oral dictation to the researcher of all food items eaten, drank, and bought by you and your dependents for one week. The notebook will be provided to you at no charge for use during the week. The ‘diary’ can be kept in the language of your choice.
- Allow Ms. Amelia Peterson to visit your home and record the food/drink items in your home.

As a control participant you will be asked to help maintain the credibility and reliability of the study. During the course of the study, it is asked that you do NOT do the following:

- Change any aspects of your usual diet; including what or how much or how frequently you eat/drink or feed your family.
- Buy any ‘special’ food or drink that you normally would not purchase.
- Alter the ‘diet diary’ so that it includes or excludes any extra information.

All information gathered in this study is strictly confidential. Your name will in no way be attached to the information you might supply. You will be issued a confidential code number for the purposes of this study.

This study will operate in Nieu Bethesda between Friday 12 November 2004 and Sunday 28 November 2004. If you choose to participate, you will receive your notebook on Tuesday 16 November 2004. You will be asked to keep the 'diet diary' for the week starting Tuesday 16 November 2004 and ending Tuesday 23 November 2004. The 'diet diary' will be collected on Tuesday 23 November 2004. The questionnaire and house-visit will occur at a date and time of your choice between Friday 19 November 2004 and Saturday 27 November 2004. You will receive a calendar to remind you of these dates upon your agreement to participate.

There will be a small remuneration for your participation in the form of a food parcel to be distributed upon collection of the 'diet diary' and completion of questionnaires/house-visit.

If, after having read and understood, the information about the study given above, you wish to participate in the study please fill out the Confirmation of Participation and Consent Form attached and return it to Amelia Peterson. If you do not wish to participate, no further action is necessary.

Thank you for taking time to read this information sheet and for your consideration.

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Thank you again,

Amelia Peterson
Student Researcher
School for International Training
United States of America

**What do you know about nutrition?
Questionnaire**

PART 1

Choose the right word from those listed below (letters a-h) to fill in the blank in each of the sentences (numbers 1-8).

1. Foods that have sugar, starch, oil, or fat are _____.
2. _____ is body-building stuff for good growth, healthy brains, and strong muscles.
3. _____ are stuff that keeps the body free of disease.
4. _____ is stuff in plant foods that helps you make and get rid of stools (poop).
5. Foods like maize, cereal, potatoes, and samp are _____.
6. _____ are protective substances that helps make good blood, bones, and teeth.
7. _____ is found in foods like cooking oil, bacon, butter, margarine, etc.
8. _____ is something that helps to make strong bones and teeth.

- | | |
|------------------|-------------|
| a. protein | e. vitamins |
| b. energy foods | f. minerals |
| c. starchy foods | g. fiber |
| d. fat | h. calcium |

Decide which of the 3 food groups each group of foods (letters a-f) is in.

| | Body Building (protein). | Energy: sugar, starch, oil, and fat. | Protective: vitamins and minerals. |
|--|-------------------------------------|---|---|
| Meat, poultry, and fish. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Green vegetables, yellow and orange fruit. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Bread, rice, and samp. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Beans, peas, oats, and legumes. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Sweet drinks, candies, and jellies. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Milk, cheese, and eggs. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Choose the best answer.

1. Which of these has lots of iron? Answer: _____
 - a. fruit
 - b. liver, spinach, beans
 - c. tea
 - d. starchy foods

2. Which of these is good for your eyesight? Answer: _____
 - a. carrots
 - b. bread, samp
 - c. fish
 - d. nuts

PART 2

Answer with **Yes** or **No**. Check the box for **Yes** or **No** to the right.

| | Yes | No |
|--|--------------------------|--------------------------|
| 1. Eating only energy foods is good for your body. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. You should eat a lot of fat at every meal. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Each meal should have all three food groups in it. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. You should force children to finish their food. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Drinking lots of alcohol during pregnancy will make your baby unhealthy. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Brown bread is more healthy than white bread. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. What a pregnant mother eats affects the health of her unborn baby. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. A pregnant mother should eat lots of high fat foods to help her gain weight. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Drinking alcohol and using drugs is okay when you are pregnant. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Breastfeeding is better than bottlefeeding. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Breastmilk has special things in it that protect a baby that formula milk doesn't have. | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. A baby can start eating solid foods on the first day of its life. | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. It is okay to add more water to formula milk to make the package last longer. | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Solid foods should only be given to babies who are at least 4 to 6 months old. | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. If a baby does not drink all of the formula in its bottle, you can save it for the next day. | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Babies should be fed whenever they cry. | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. If a mother has a cold, she should stop breastfeeding. | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. When your child is sick you should give lots to drink so he doesn't get dehydrated. | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. Sick children need more food to help them stay strong. | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. If your baby is sick you should stop breastfeeding. | <input type="checkbox"/> | <input type="checkbox"/> |

PART 3

How often do these things affect what you decide to buy?

| | Always | Sometimes | Never |
|--|--------------------------|--------------------------|--------------------------|
| 1. price | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. taste | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. the brand name, like Omo, Koo, etc. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. how healthy it is | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. advertisements | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. how much fat it has | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. what you want | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. how long it will last or stay fresh | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. how much sugar it has | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. what your family will eat | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

How much do each of the following give you information about nutrition or what you should eat?

| | Always | Sometimes | Never |
|---------------|--------------------------|--------------------------|--------------------------|
| 1. family | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. radio | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. television | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | | |
|------------------------|--------------------------|--------------------------|--------------------------|
| 4. community leaders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. clinic sister | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. traditional doctors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. community groups | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

PART 4

If you had R300 to buy food and drink, what would you buy?

PART 5

Answer **Yes** if you think the sentence is right and **No** if you think the sentence is wrong.

- | | Yes | No |
|---|--------------------------|--------------------------|
| 1. Baby bottles should be boiled in water before each feeding. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Fruits and vegetables should be washed before eating. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. It is okay to drink from and bathe in streams. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Leftover food should be covered and eaten soon after. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Raw or undercooked (pink) meat is safe for eating. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Food that was just bought but smells bad or unusual is probably still safe. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Long-life milk does not need to be refrigerated after opening. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Rubbish that will rot can be used in gardens to help plants grow. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Pesticides and chemicals should always be used on gardens to protect the vegetables from bugs. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Gardens should be fenced in to keep animals out. | <input type="checkbox"/> | <input type="checkbox"/> |

**Questions about You, Your Family, and Where You Live.
Questionnaire**

PART 1

Please answer the following questions about yourself.

1. How old are you? _____
2. What is your first (native or mother) language? _____
3. Do you know any other languages?
 - No
 - Yes; which ones? _____
4. Where were you born? _____
5. How long have you lived in Nieu Bethesda? _____
6. What was the highest level of education you finished (grade or standard okay)?

7. Do you work or have a job?
 - No
 - Yes; what type of job do you have? (Select one.)
 - Self-employed
 - Full-time employee
 - Part-time employee
 - Other; what type? _____
8. Where do you get money? (Select all that apply to you.)
 - Work
 - Government grant
 - Pension
 - Family
 - Other; where? _____

PART 2

Please answer the following questions about your family.

9. How many people including yourself normally stay in your house in Nieu Bethesda?

10. Please list the ages and genders of each person that normally stays with you. Do not include yourself.

11. How many of the people in your house are employed? _____
12. How much money does your household have each month to buy food?

PART 3

13. What things do you have in your house? (Select all that apply to your house.)
 - Refrigerator
 - Freezer
 - Gas or electric stove

- Paraffin stove
- Oven (of any kind)
- Radio
- Television
- Bucket to catch rainwater
- Vegetable garden (if checked, skip to 16)
- Fruit trees
- Animals for non-food use
- Animals for food use

If you checked that your house currently has a vegetable garden, **skip questions 14 and 15.**

14. In the past have you ever had a vegetable garden at your home?

- No
- Yes

15. Why did you stop gardening or why have you never had a garden?

PART 4

16. Do you take part in any community groups, for example, church groups, school groups, women's groups, volunteer groups/organizations, support groups, social or recreational clubs?

- No
- Yes; which ones?

17. In your opinion, how often do you get sick? how often does your child get sick? (Check one box for you and one box for your child.)

| | Always (chronic illness) | Often (about 1 time each month) | Sometimes (about 1-2 times each year) | Rarely (once every couple of years) | Never (more than 5 years ago) |
|------------|---|--|--|--|--|
| You | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Your child | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

18. When your child is ill what do you do? (Select all that apply to you.)

- Treat at home with what you have (ex. change diet, home remedy, etc.)
- Nothing
- Visit the clinic immediately
- Visit the clinic as a last resort only
- Visit a traditional doctor
- Ask your friends and family what to do

19. How old is your child? _____

20. How many times per year do you go to the clinic? _____

21. How many times per year does your child go to the clinic? _____

22. Why do you go to the clinic? (Check all that apply.)

- Only if I'm ill
- Only if my child is ill
- Neither I nor my child goes to the clinic
- Care for chronic illness
- Get Contraceptives (pill, injection, etc.) or condoms
- Regular checkups
- Immunizations
- Get information on health
- Other reasons?

CASE

CODE: _____

**About You and “Little Tree”
Questionnaire**

Answer **Yes** if the sentence is right or **No** if the sentence is wrong.

| | Yes | No |
|---|--------------------------|--------------------------|
| 1. Since going to “Little Tree”, I have learned some things about nutrition and how to feed my family. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. I know a lot more now about how to live a healthy life and how to keep my children healthy. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. I think about food and what I eat and feed my child differently now that I know how to make healthy meals. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. I want to learn more about health and caring for my child from “Little Tree”. | <input type="checkbox"/> | <input type="checkbox"/> |

In what month did you start going to “Little Tree”? _____

Before you started going to “Little Tree” and learned about good food and healthy meals, what would you have bought if you were given R300?

- Same things I said I would buy no on that other questionnaire.
- Different things than I would buy now. Please list what you would have bought in the past:

GEVALLE MEDEWERKERS INLIGTINGSTUK

Dankie vir jou belangstelling in hierdie studie. Die studie is getitel: “Verhouding tussen dieetkundige kennis en gedrag van moders met jong kinders wat geteikende dieetkundige onderrig ontvang het en die wat geen sondanige onderrig ontvang het nie as ’n metode om die effektiwiteit van die *Little Tree Nutritional and Educational Centre* dieetkundige leerplan en die Pienaarsig Township van Nieu-Bethesda, Ooskaap Provinsie, Suid-Afrika”. Hierdie studie word gedoen deur Amelia Peterson.

Amelia Peterson is ’n voorgraadse chemiese student van die Verenigde State van Amerika wat studeer aan die Universiteit van Puget Sound in Tacoma, Washington. Sy studeer hierdie lente in Suid-Afrika duer ’n Amerikaanse oorseese studie-inrigting bekend as die School for International Training (SIT). Die SIT Suid-Afrika program is gesetel in Port Elizabeth aan die Universiteit van Port Elizabeth. Die program se leerplan beklemtoon openbare gesondheid in Suid-Afrika met klem op die primêre gesondheidsorg-sisteem. In die finale maand van hierdie program word onafhanklike navorsing gedoen oor ’n onderwerp van die student se eie keuse.

Die doel van hierdie studie is om vas te stel hoe kennis van voiding ’n mens se voedingsgedrag onder twee toestande beïnvloed: 1)an ’n persoon onderrig by die *Little Tree Nutritional and Educational Centre* (LTNEC) ontvang het, en 2)as ’n persoon nie onderrig by die LTNEC ontvang het nie. Inligting bekom in hierdie studie sal help om die effektiwiteit van die LTNEC dieetkundige onderrig leerplan en die toepassing daarvan in die Pienaarsig Township vas te stel.

As ’n gevalle-deelnemer moet jy aan die volgende voorwaardes voldoen:

- Inwoner van Piernaarsig Township in Nieu-Bethesda, Ooskaap Provinsie, Suid-Afrika.
- Moeder/primere sorggewer van jong kind/ers (verkieslik jonger as 5 jaar).
- Het deelgeneem aan LTNEC.

As ’n gevalle-deelnemer sal van jou die volgende gevra word:

- Vul twee vraelyste in, een ten opsigte van persoonlike inligting en a ander om jou dieetkundige kennis vas te stel.
- Hou ’n noukeurige ‘dieet-dagboek’ in ’n notaboek of, indien nodig, duer mondelinge diktering aan die navorser van alle voedsel-items wat geëet of gedrink en gekoop word deur jou en jou afhanklikes vir een week. Die notaboek sal kosteloos aan jou verskaf word vir gebruik deur die week. Die ‘dieet-dagboek’ kan in die taal van jou keuse gehou word.
- Laat Ms. Amelia Peterson toe om jou tuis te besoek om ’n opname van voedsel- en drank-items in jou huis te kan maak.

As ’n gevalle-deelnemer sal jy gevra word om die betroubaarheid en geloofwaardigheid van die studie te help behou. Gedurende die studie word van jou versoek om NIE die volgende te doen nie:

- Enige aspekte van jou normale dieet te verander nie; ingesluit wat, hoeveel en hoe dikwels jy eet/drink of jou familie voed.
- Enige ‘spesiale’ kos of drank te koop wat jy nie normaalweg sal koop nie.
- Die ‘dieet-dagboek’ te verander dat dit ekstra inligting uitsluit of insluit nie.

Alle inligting wat in hierdie studie bekom word, is streng vertroulik. Jou naam sal aan geen inligting wat jy versjaf gekoppel word nie. Vir die doeleindes van hierdie studie sal jy ’n vertroulike kodenommer ontvang.

Hierdie studie sal vanaf Vrydag 12 November 2004 tot Sondag 28 November 2004 in Nieu-Bethesda gedoen word. Die vraelys en huisbesoek sal op ’n tyd en datum van jou keuse plaasvind tussen Vrydag 19 November 2004 en Saterdag 27 November 2004. Met jou instemming om deel te neem sal jy ’n kalender ontvang om jou aan hierdie datums te herinner.

Daar sal 'n 'n voedselpakket as geen vergoeding wees vir jou deelname. Dit sal gegee word na ontvangs van 'dieet-dagboek' en voltooiing van jou vraelys/huisbesoek.

As jy aan hierdie studie wil deelneem nadat jy die bostaande inligting gelees en verstaan het, vul die Instemming tot Deelname en Toestemmingvorm wat hierby aangeheg is in en gee dit terug aan Amelia Peterson. As jy verkies om nie deel te neem nie, hoef jy niks verder te doen nie.

Dankie vir die tyd wat jy afgestaan het om hierdie vorm te lees en vir jou oorweging daarvan.

As jy enige verdere vrae of bekommernisse oor deelname aan die studie het, kontak gerus:

Ms. Amelia Peterson, studentenavorser
E-pos acpeterson@ups.edu
Cell 084-644-7562

Mev. Tita Stoop, projek-adviseur
E-pos tita.stoop@intekom.co.za
Kantoor 049-8411-744

As jy probleme het met die studie of die optrede van die navorser, kontak gerus:

Dr. Mthobeli Guma, akademiese direkteur
Kantoor 041-504-2949
Fax 041-504-2771

Weereens dankie,

Amelia Peterson
Studente-avorser
School for International Training
Verenigde State van Amerika

KONTROLE MEDEWERKERS INLIGTINGSTUK

Dankie vir jou belangstelling in hierdie studie. Die studie is getitel: “Verhouding tussen dieetkundige kennis en gedrag van moders met jong kinders wat geteikende dieetkundige onderrig ontvang het en die wat geen sondanige onderrig ontvang het nie as ’n metode om die effektiwiteit van die *Little Tree Nutritional and Educational Centre* dieetkundige leerplan en die Pienaarsig Township van Nieu-Bethesda, Ooskaap Provinsie, Suid-Afrika”. Hierdie studie word gedoen deur Amelia Peterson.

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Die doel van hierdie studie is om vas te stel hoe kennis van voiding ’n mens se voedingsgedrag onder twee toestande beïnvloed: 1)an ’n persoon onderrig by die *Little Tree Nutritional and Educational Centre* (LTNEC) ontvang het, en 2)as ’n persoon nie onderrig by die LTNEC ontvang het nie. Inligting bekom in hierdie studie sal help om die effektiwiteit van die LTNEC dieetkundige onderrig leerplan en die toepassing daarvan in die Pienaarsig Township vas te stel.

As ’n kontrole-deelnemer moet jy aan die volgende voorwaardes voldoen:

- Inwoner van Pienaarsig Township in Nieu-Bethesda, Ooskaap Provinsie, Suid-Afrika.
- Moeder/primere sorggewer van jong kind/ers (verkieklik jonger as 5 jaar).
- Het nie deelgeneem aan LTNEC of enige dieetkundige onderrig-program in die laaste 10 jaar nie.

As ’n kontrole-deelnemer sal van jou die volgende gevra word:

- Vul twee vraelyste in, een ten opsigte van persoonlike inligting en a ander om jou dieetkundige kennis vas te stel.
- Hou ’n noukeurige ‘dieet-dagboek’ in ’n notaboek of, indien nodig, duer mondelinge diktering aan die navorser van alle voedsel-items wat geëet of gedrink en gekoop word deur jou en jou afhanklikes vir een week. Die notaboek sal kosteloos aan jou verskaf word vir gebruik deur die week. Die ‘dieet-dagboek’ kan in die taal van jou keuse gehou word.
- Laat Ms. Amelia Peterson toe om jou tuis te besoek om ’n opname van voedsel- en drank-items in jou huis te kan maak.

As ’n kontrole-deelnemer sal jy gevra word om die betroubaarheid en geloofwaardigheid van die studie te help behou. Gedurende die studie word van jou versoek om NIE die volgende te doen nie:

- Enige aspekte van jou normale dieet te verander nie; ingesluit wat, hoeveel en hoe dikwels jy eet/drink of jou familie voed.
- Enige ‘spesiale’ kos of drank te koop wat jy nie normaalweg sal koop nie.
- Die ‘dieet-dagboek’ te verander dat dit ekstra inligting uitsluit of insluit nie.

Alle inligting wat in hierdie studie bekom word, is streng vertroulik. Jou naam sal aan geen inligting wat jy versjaf gekoppel word nie. Vir die doeleindes van hierdie studie sal jy ’n vertroulike kodenommer ontvang.

Hierdie studie sal vanaf Vrydag 12 November 2004 tot Sondag 28 November 2004 in Nieu-Bethesda gedoen word. As jy kies om deel te neem sal jy jou notaboek op Dinsdag 16 November 2004 ontvang. Jy sal versoek word om die ‘dieet-dagboek’ vir die week Dinsdag 16 November 2004 tot Dinsdag 23 November 2004 duur. Die ‘dieet-dagboek’ sal op Dinsdag 23 November 2004 by jou gekry word. Die vraelys en huisbesoek sal op ’n tyd en datum van jou keuse plaasvind tussen Vrydag 19

November 2004 en Saterdag 27 November 2004. Met jou instemming om deel te neem sal jy 'n kalender ontvang om jou aan hierdie datums te herinner.

Daar sal 'n 'n voedselpakket as geen vergoeding wees vir jou deelname. Dit sal gegee word na ontvangs van 'dieet-dagboek' en voltooiing van jou vraelys/huisbesoek.

As jy aan hierdie studie wil deelneem nadat jy die bostaande inligting gelees en verstaan het, vul die Instemming tot Deelname en Toestemmingvorm wat hierby aangeheg is in en gee dit terug aan Amelia Peterson. As jy verkies om nie deel te neem nie, hoef jy niks verder te doen nie.

Dankie vir die tyd wat jy afgestaan het om hierdie vorm te lees en vir jou oorweging daarvan.

As jy enige verdere vrae of bekommernisse oor deelname aan die studie het, kontak gerus:

Ms. Amelia Peterson, studentenavorser
E-pos acpeterson@ups.edu
Cell 084-644-7562

Mev. Tita Stoop, projek-adviseur
E-pos tita.stoop@intekom.co.za
Kantoor 049-8411-744

As jy probleme het met die studie of die optrede van die navorser, kontak gerus:

Dr. Mthobeli Guma, akademiese direkteur
Kantoor 041-504-2949
Fax 041-504-2771

Weereens dankie,

Amelia Peterson
Studente-avorser
School for International Training
Verenigde State van Amerika

BEVESTIGING VAN DEELNAME EN TOESTEMMINGSVORM

Ek het die Gevalle Deelname Inligtingstuk/Kontrole Deelname Inligtingstuk vir die studie met die naam “Verhouding tussen dieetkundige kennis en gedrag van moders met jong kinders wat geteikende dieetkundige onderrig ontvang het en die wat geen sondanige onderrig ontvang het nie as ’n metode om die effektiwiteit van die *Little Tree Nutritional and Educational Centre* dieetkundige leerplan en die Pienaarsig Township van Nieu-Bethesda, Ooskaap Provinsie, Suid-Afrika”, soos deur Amelia Peterson uitgevoer, gelees of dit is aan my gelees.

_____ (merk) Ek verstaan die doel van die studie soos gestel in die Gevalle Deelname Inligtingstuk/Kontrole Deelname Inligtingstuk.

_____ (merk) Ek verstaan dat daar criteria is vir deelname aan hierdie studie vir gevalle-deelnemers sowel as kontrole-deelnemers en ek getuig dat ek aan die kriteria voldoen.

_____ (merk) Ek verstaan dat daar verwagtinge vir sowel gevalle-deelnemers as kontrole-deelnemers is en ek getuig dat ek aan die verwagtinge na die beste van my vermoë sal voldoen.

_____ (merk) Ek verstaan dat die vraelyste en die ‘dieet-dagboek’ in my huistaal kan wees en, indien nodig, voorsiening daarvoor gemaak sal word dat die vraelys aan my gelees word dat ek mondelings my ‘dieet-dagboek’ aan die navorser kan dikteer.

_____ (merk) Ek verstaan dat die datum en tyd vir die vraelys en ander onderhoude buigbaar is en verander kan word om my behoeftes te pas.

_____ (merk) Ek verstaan dat ek ’n verantwoordelikheid het as ’n gevalle- of kontrole-deelnemer in hierdie studie om die betroubaarheid en geloofwaardigheid van die studie, soos gespesifiseer in die Gevalle Deelname Inligtingstuk/Kontrole Deelname Inligtingstuk, te verseker.

_____ (merk) Ek verstaan dat my deelname aan hierdie studie volkome vrywillig is en dat ek my van die studie te enige tyd om enige rede kan ontrek.

_____ (merk) Ek verstaan dat alle inligting wat deur hierdie studie ingewin word streng vertroulik is en aan niemand oorgedra sal word nie. My naam sal op geen manier gekoppel word aan enige inligting wat ek mag gee nie. Vir die doel van die studie sal ek voorsien werk met ’n vertroulike kode-nommer.

Sou jy enige van die bogenoemde stellings of die geldigheid van die studente-navorser wou bevestig, of enige klagtes het oor die studie, kan jy anoniem die studente-navorser se akademiese direkteur: Dr. Mthobeli Guma, SIT Buitelandse Studie: Openbare Gesondheid, Port Elizabeth, Telefoon: 041-504-2949, Fax: 041-504-2771, skakel.

Ek stem in om deel te neem aan hierdie studie. My kodenommer is: _____.

**Wat weet jy van gesonde kos?
Vraelys**

DEEL 1

Kies die regte woord van die lys a-h wat by elk van 1-8 pas skryf die letter (bv. a) waar dit pas neer.

1. Kos met stysel, suiker, olie en vet is _____.
2. _____ is liggaams opbouende kos, belangrik vir normale groei, om 'n gesonde verstand te ontwikkel, spiere, ensovoort.
3. _____ dit beskerm die liggaam teen kieme.
4. _____ maak dat jy normaal na die toilet gaan (spysvertering).
5. Kos soos mielies, graankos, en aartappels is _____.
6. _____ is nodig om gesonde bloed, bene en tande te maak.
7. _____ is energiekos wat in kook olie, spek, vleis, botter, margarine, ens. is.
8. _____ is ook nodig vir gesonde bene en tande.

- | | |
|---------------|-------------|
| a. proteïn | e. vitamine |
| b. energiekos | f. minerale |
| c. stysel | g. vesel |
| d. vet | h. kalsium |

Sê by watter van die 3 kosgroepe die nommers a-f pas. Maak 'n kruisie in die regte blokkie.

| Kos | Liggaams opbouende kos of proteïn. | Energiekos: stysel, suiker, olie en vet. | Beskermende kos: vitamine en minerale. |
|---|--|--|--|
| a. Vleis, hoender, eier, vis. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Donkergroen en geel groente en vrugte. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Mielies, graankos, aartappels. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Boontjies, ertjies, graankos, groente. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Suiker, lollies, koeldrank. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Eiers, melk, kaas. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Kies die regte antwoord (bv. a).

1. Watter kos het baie yster? Antwoord: _____
 - a. vrugte
 - b. lewer, spinasie, boontjies
 - c. tee
 - d. stysel kos

2. Watter kos is reg om goed te kan sien? Antwoord: _____
 - a. wortels
 - b. brood, samp
 - c. vis
 - d. neutte

DEEL 2

Antwoord met **Ja** of **Nee**. Maak 'n kruis by **Ja** of **Nee**—reg of nie reg.

| | Ja | Nee |
|--|--------------------------|--------------------------|
| 1. 'N dieet met net energiekos is gesond. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Jy moet baie vet eet. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Jy moet van al die kosgroepe eet. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Dit is reg om kinders te dwing om baie te eet. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Dit is reg om baie alkohol (drank) te drink. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Bruinbrood is gesonder as witbrood. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Jy moet gesond eet wanneer jy verwag. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Jy moet baie vet eet terwyl jy verwag. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Baie alkohol (drank) en sigarette is reg as jy verwag. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Borsvoeding is beter as bottelvoeding. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Borsmelk het beskermende stowwe wat nie in bottelvoeding is nie. | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Vanaf die eerste week moet die baba vastekos eet. | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Dit is reg om baie water by die melkpoeier te sit, sodat die pak langer hou. | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Vastekos moet jy eers aan die baba gee as hy drie maande oud is. | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Dit is reg om oorskiet (ekstra) bottelvoeding tot die volgende dag te bewaar. | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Jy moet jou baba kos gee elke keer as hy huil. | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. As die moeder verkoue is, moet sy stop met borsvoeding. | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. As jou baba siek is moet jy hom baie gee om te drink sodat hy nie uitdroog (ontwater) nie. | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. Nadat jou baba siek was, moet hy baie eet om sterk te word. | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. As jou baba siek is moet jy stop met borsvoeding. | <input type="checkbox"/> | <input type="checkbox"/> |

DEEL 3

Waarna kyk jy as jy kos in die winkel koop? (en wanneer) Maak 'n kruis by **Altyd**, **Soms**, of **Nooit Nie**.

| | Altyd | Soms | Nooit Nie |
|--|--------------------------|--------------------------|--------------------------|
| 1. prys | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. smaak | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. wie dit maak, bv. Omo, Koo, ens. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. of dit gesond is | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. advertensies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. hoeveel vet daarin is | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. wat jy wil hê | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. hoe lank die kos reg (vars) sal bly | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. hoeweel suker daarin is | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. of jou familie daarvan hou | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Wie vertel jou van gesonde kos en wat jy moet eet?

| | Altyd | Soms | Nooit Nie |
|-------------------------|--------------------------|--------------------------|--------------------------|
| 1. familie | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. radio | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. televisie | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. gemeenskapsleiers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. kliniek suster | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. tradisionele dokters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7. gemeenskapsgroepe

DEEL 4

As jy R300 het om kos en drink te koop. Wat sal jy koop?

DEEL 5

Antwoord **Ja** as dit reg is en **Nee** as dit nie reg is nie.

| | Ja | Nee |
|--|--------------------------|--------------------------|
| 1. Bababottels moet altyd gekook word voor gebruik. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Was goente en vrugte baie deeglik. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Dit is reg om in die veld water te drink. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Dit is veilig (reg) om rou vleis te eet. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Oorskietkos moet jy toemaak en nie lank wag om dit te eet nie. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Vleis dat jy net gekoop het, maar sleg ruik is veilig om te eet. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Lang-lewe melk hoef nie in die yskas gebêre te word nadat jy dit oopgemaak het nie. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Afval van groente en vrugte is reg vir kompos vir die tuin. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Groente moet altyd met gif gespuit word teen insekte. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. 'N tuin moet 'n draad om hê om diere uit te hou. | <input type="checkbox"/> | <input type="checkbox"/> |

**Vrae oor Jou, Jou Familie, en waar jy bly.
Vraelys**

DEEL 1

Antwoord asseblief die volgende vrae oor jousef.

1. Hoe oud is jy? _____
2. Wat is jou Erste Taal (huistaal)? _____
3. Kan jy ander tale praat?
 - Nee
 - Ja; watter tale? _____
4. Waar is jy gebore? _____
5. Hoe lank bly jy al in Nieu-Bethesda? _____
6. Moem die hoogste graad of standerd onderwys wat jy geslaag het? _____
7. Werk jy tans?
 - Nee
 - Ja; watter tipe werk het jy? (Kies een.)
 - Werk vir myself
 - Werk voltyds (5 dae in week)
 - Werk tydelik
 - Ander; watter tipe? _____
8. Waar lery jy geld? (Kies almal wat pas.)
 - Werk
 - Regering toelaag
 - Pensioen
 - Familie
 - Ander; waar? _____

DEEL 2

Antwoord asseblief die volgende vrae oor jou familie.

9. Hoeveel mense (jousef ingesluit) bly gewoonlik in jou huis in Nieu-Bethesda?
10. Maak 'n lys van die onderdamme en geslag (manlik/vroulik) van al die persone wat altyd by jou bly. Moenie jousef hier noem nie.

| Onderdam (jare oud) | Geslag (m/v) |
|----------------------------|---------------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

11. Hoeveel van die mense in jou huis het werk? _____
12. Hoeveel geld het die mense in jou huis elke maand vir kos? _____

DEEL 3

13. Merk alles op die lys wat julle in die huis het.
 - Yskas
 - Vrieskas
 - Gas of elektriese stoof

- Parrafiën stoof
- Oond (enige soort)
- Radio
- Televisie
- Houer om reënwater op te vang
- Groente tuin (indien wel, los vraag 14 en 15 uit)
- Vrugte bome
- Diere (troeteldiere)
- Diere (om te slag of vir melk/eiers)

Beantwoord vraag 14 en 15 net indien jy nie 'n groentetuin het nie.

14. Het jy al in die verlede 'n groentetuin by die huis gehad?

- Nee
- Ja

15. Waarom het jy opeghon tuinmaak of waarom het jy nog nooit 'n tuin gehad nie?

DEEL 4

16. Neem jy deel aan enige gemeenskaps-groepe? bv. kerk-groepe, skool-groepe, vrone-groepe (organisasies), ondersteunings-groepe, sosiale of sportsklubs.

- Nee
- Ja; watter groepe?

17. Hoe dikwels word jy siek? Hoe dikwels word jou kind siek? (Merk een blokkie vir jou en een vir jou kind.)

| | Altyd (kroniese siekte) | Dikwels (omtrent 1 keer per maand) | Soms (omtrent 1-2 keer per jaar) | Selde (1 keer elke paar jaar) | Nooit (meer as 5 jaar gelede) |
|----------|--|---|---|--|--|
| Jy | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Jou kind | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

18. Wat doen jy as jou kind siek is? (Kies almal wat pas.)

- Behandel han/haar by die huis met wat jy het (bv. ander kos, tuismedisyne, kruie, ens.)
- Niks
- Gaan dadelik na die kliniek toe
- Gaan net kliniek toe as dit baie ernstig is
- Besoek 'n tradisionele dokter
- Vra jou familie en vriende wat om te doen

19. Hoe oud is jou kind? _____

20. Hoeveel keer per jaar gaan jy na die kliniek toe? _____

21. Hoeveel keer per jaar gaan jou kind na die kliniek toe? _____

22. Waarom gaan jy na die kliniek toe? (Kies almal wat pas.)

- Net as ak siek is
- Net as my kind siek is
- Nie ek of my kind gaan kliniek toe nie
- Vir my kromese siekte (bv. hoë bloeddruk)
- Om voorbehoedmiddels te kry (die pil, inspiutings) of kondome
- Vir gereelde ondersoeke
- Vir inentings
- Om inligting te kry oor siektes
- Ander redes? Noem hulke.

Baie dankie dat jy hierdie vorm voltooi het.

CASE

CODE: _____

Vrae oor jou en “Litte Tree”?
Vraelys

Antwoord wet **Ja** as dit reg is en **Nee** as dit nie reg is nie.

| | Ja | Nee |
|---|--------------------------|--------------------------|
| 1. Vandat ek na die saal gaan weet ik meer van gesonde kos. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Ek het baie geleer oor hoe om gesonde te lewe en my kinders gesond te hou. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Ek maak nou gesonder kos vir my kinders. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Ek wil meer leer oor gesondheid by die saal. | <input type="checkbox"/> | <input type="checkbox"/> |

In watter maand het jy begin ou na die saal te gaan? _____


Voordat jy na die saal begin kom het en jy R300 gehad het wat sou jy gekoop het?

- Die selfde kos as by die andere vraag.
- Ek sou ander dinge gekoop het as nou. Maak 'n lys van wat jy toe sou gekoop het:

APPENDIX C: SOUTH AFRICA DEPARTMENT OF HEALTH ROAD TO HEALTH CHART (RTHC)

Road to Health Chart

IMPORTANT always bring this chart when you visit any health clinic, doctor or hospital and present the chart on school entry



Department of Health

Child's name: _____ boy girl

Child's ID number: _____

Date of birth: day: _____ month: _____ year: _____ **Place of birth:** _____

Birth weight: _____ **Birth length:** _____ **Birth head circumference:** _____

Problems during pregnancy / birth / neonatally: _____

APGAR 1 min: _____ **Gestational age (wks):** _____ **Mother's Serology:** _____

Mother's file numbers: Antenatal: _____ Delivery: _____

RTHC information given by: Mother's name: _____ Father's name: _____ Who does the child live with? _____

How many children has the mother had? Number born: _____ Number alive now: _____ Date information given: _____ day: _____ month: _____ year: _____

Reason(s) for death(s): _____

Visual screening

Pencil test (>6 weeks)
Result: L: yes no R: yes no Date tested: _____ day: _____ month: _____ year: _____

Snellen Chart test: conduct with E-chart (5 > years)
Result: L: / / R: / / Date tested: _____ day: _____ month: _____ year: _____

Hearing screening

Does baby appear to listen when someone is talking or singing? (at 3 months)
Result: yes no Date tested: _____ day: _____ month: _____ year: _____

Does baby turn to a loud noise? (at 6 months)
Result: L: yes no R: yes no Date tested: _____ day: _____ month: _____ year: _____

Voice test: Hearing impairment (> 12 months)
Result: Normal hearing Moderate impairment Severe impairment Date tested: _____ day: _____ month: _____ year: _____

IMMUNISATIONS

| Batch no: | Vaccine | Site | Date given day / month / year | Signature |
|-----------|--------------------------|-------------|----------------------------------|-----------|
| | BCG | Right arm | / / | |
| | Polio 0 | Oral | / / | |
| | Polio 1 | Oral | / / | |
| | DTP 1 | Left thigh | / / | |
| | Hib 1 | Left thigh | / / | |
| | DTP 1 / Hib 1 (Combined) | Left thigh | / / | |
| | Hep B 1 | Right thigh | / / | |
| | Polio 2 | Oral | / / | |
| | DTP 2 | Left thigh | / / | |
| | Hib 2 | Left thigh | / / | |
| | DTP 2 / Hib 2 (Combined) | Left thigh | / / | |
| | Hep B 2 | Right thigh | / / | |
| | Polio 3 | Oral | / / | |
| | DTP 3 | Left thigh | / / | |
| | Hib 3 | Left thigh | / / | |
| | DTP 3 / Hib 3 (Combined) | Left thigh | / / | |
| | Hep B 3 | Right thigh | / / | |
| | Measles 1 | Right thigh | / / | |
| | Polio 4 | Oral | / / | |
| | DTP 4 | Left arm | / / | |
| | Measles 2 | Right arm | / / | |
| | Polio 5 | Oral | / / | |
| | DT 1 | Left arm | / / | |

In need of special care (mark with X)

Was the baby less than 2,5kg at birth? yes no Are any brothers or sisters underweight? yes no

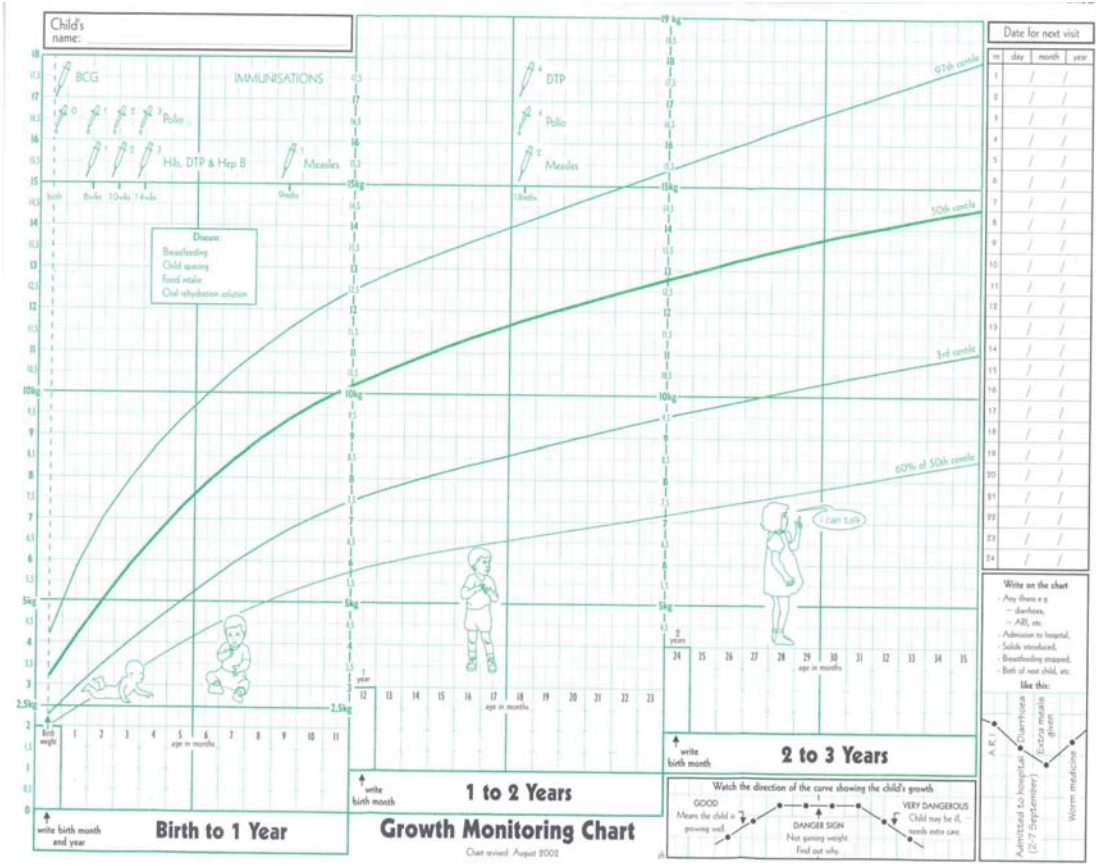
Is the baby a twin? yes no Is the baby bottle fed? yes no

Household TB contact? yes no Does the mother need more family support? yes no

Are there any reasons for taking extra care? yes no (for example single parent etc.) _____

Address of clinic(s) visited

Clinic 1: _____ Clinic 2: _____



GOBI-FFF

GROWTH MONITORING—which could help mothers to prevent most child malnutrition before it begins. With the help of a U.S. 10-cent growth chart, and basic advice on weaning, most mothers could maintain their child’s healthy growth—even within their limited resources. More than 200 different growth charts are coming from over 80 countries.

ORAL REHYDRATION—which could save most of the more than 4 million young children who now die each year from diarrhoeal dehydration. One out of every 20 children born into the developing world dies due to dehydration brought on by ordinary diarrhoea, before reaching the age of 5. It is the biggest single cause of child deaths in developing countries. Previously, the only effective treatment for dehydration was the intravenous feeding of a saline solution - a cure beyond the physical and financial reach of most of those who need it. Now a child can be rehydrated by drinking a solution of salts, sugar, and water administered by the mother in the child’s own home. Most of these children could be saved by this simple Oral Rehydration Therapy (ORT). It is one of the simplest but most important breakthroughs in the history of science.

BREASTFEEDING—which can ensure that infants have the best possible food and a considerable degree of immunity from common infections during the first six month of life. For infants, breast-milk is more nutritious, more hygienic, and provides a degree of immunity from infection. For the mother, breast-feeding is economical—but it also makes heavy demands on her energy, time, and freedom of movement.

IMMUNIZATION—which can protect a child against measles, diphtheria, whooping cough, tetanus, tuberculosis, and polio. At present, these diseases kill as estimated 5 million young children a year, leave 5 million more disabled, and are a major cause of child malnutrition.

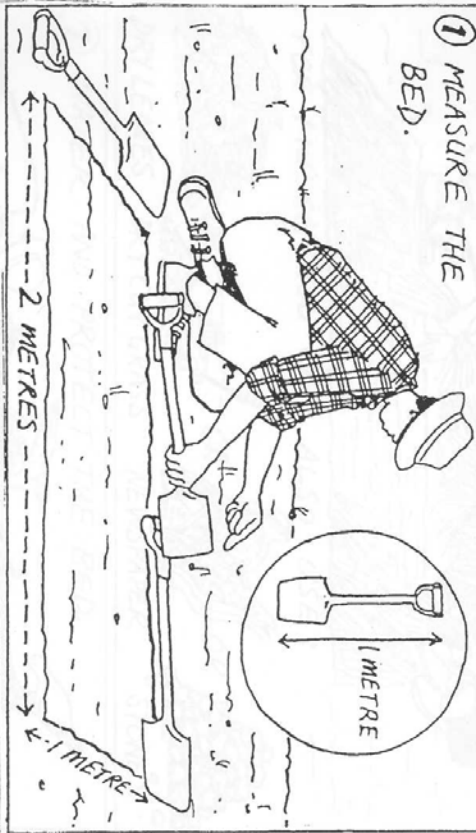
FEEDING: a handful of extra food each day for at-risk pregnant women has been shown to reduce the risk of low birth-weight—a risk which carries with it a two or three times greater likelihood of death in infancy.

FAMILY PLANNING: infant and child deaths have been found to be, on average, twice as high when the interval between births is less than two years.

FEMALE EDUCATION: even within low-income communities, a child born to a mother with no education has been shown to be twice as likely to die in infancy as a child born to a mother with even four years of schooling.

FOOD GARDENS FOUNDATION

**GROW YOUR OWN VEGETABLES USING THE EASY FOOD GARDENS METHOD
- FILL YOUR STOMACH, STAY HEALTHY AND SAVE MONEY!**



① MEASURE THE BED.

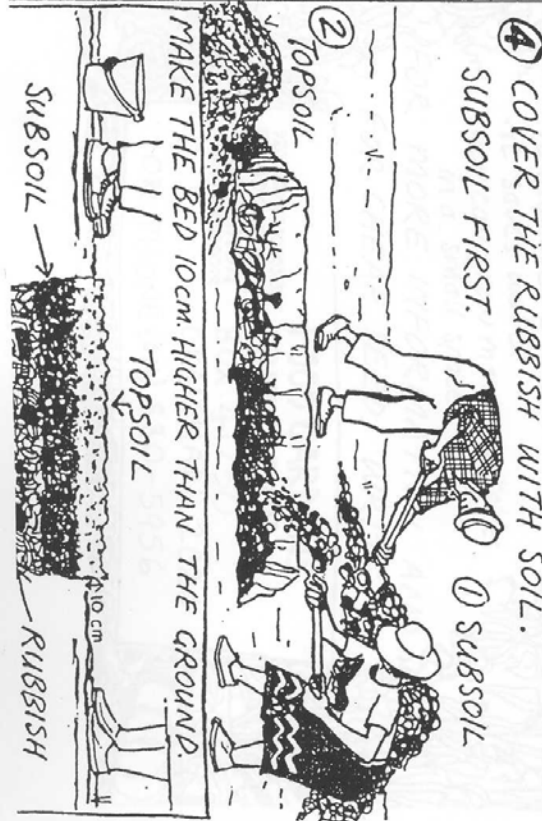


③ HALF-FILL WITH RUBBISH. WET THE RUBBISH.

USE ONLY RUBBISH THAT WILL ROT.



② DIG THE BED KNEE DEEP.



④ COVER THE RUBBISH WITH SOIL. SUBSOIL FIRST.

MAKE THE BED 10CM. HIGHER THAN THE GROUND.



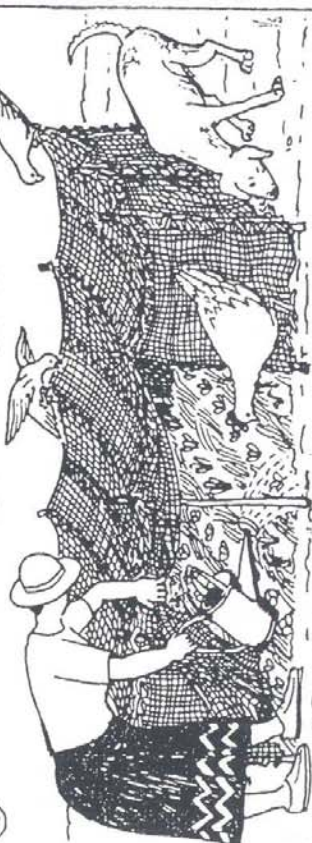
⑤ COVER WITH MULCH



FOR MULCH YOU CAN ALSO USE:



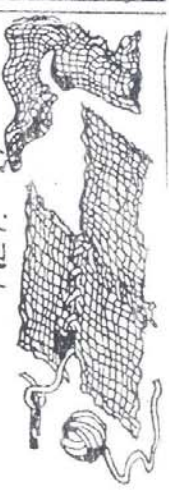
⑦ WATER AND PROTECT THE BED.



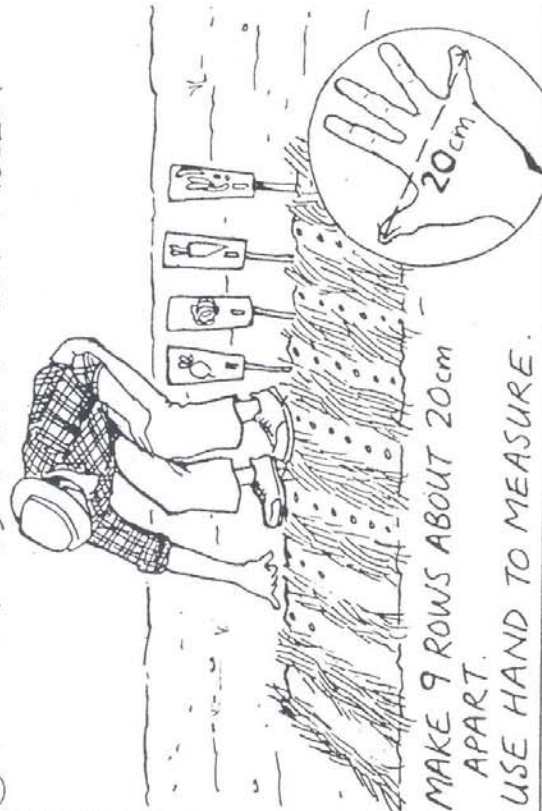
MAKE YOUR OWN SPRINKLER



AND YOUR OWN NET.



⑥ PLANT 9 OR 5 KINDS OF VEGETABLES.



The Food Gardens method is good -

- it improves the soil
- it saves water
- you can grow many vegetables in a small space.

FOR MORE INFORMATION AND FOR CHEAP SEED, WRITE TO

FOOD GARDENS FOUNDATION
 BOX 41250
 CRAIGHALL 2024
 OR PHONE (011) 880-5956

APPENDIX F: INGREDIENTS AND NUTRITION FACTS

Life Force® 'e' Pap Nutroceutical Porridge

Distributed by Africafoods c.c.

P.O. Box 741311 Fairlands, 2030

Unit 6 14th Ave. Ctr., 42 Kessel St., Fairlands, Johannesburg, South Africa

Tel (+27) 0961 476 359, Fax (+27) 011 678 5564

www.africafoods.co.za

Manufactured by Econocom Foods c.c.

P.O. Box 84099, Greenside 2034, Johannesburg, South Africa

41 Chromium St., Uraniaville, Klerksdorp 2570

email: basilb@iafrica.com

Ingredients: Precooked maize, added soya flour, sugar, salt, aspartame and acesufame K (non-nutritive sweeteners), plus flavorings, anti-oxidants, citric acid, and enriched with mix of specially formulated essential vitamins and minerals. Contains added trace elements of manganese, copper, selenium, chromium, molybdenum, iodine.

| Nutritional Contents | Unit | Quantity per 100g |
|-----------------------------|-------------|--------------------------|
| Theoretical Energy | kJ | 1800 |
| Protein | g | 11.56 |
| Moisture | g | 7.00 |
| Carbohydrates | g | 73.55 |
| Total Fat | g | 5.27 |
| Total Dietary Fiber | g | 1.92 |
| Potassium | g | 0.46 |
| Sodium | g | 0.30 |

| Vitamins | Unit | Quantity in 100g | RDA for child ages 7-10 | %RDA per 100g for child ages 7-10 |
|-----------------|-------------|-------------------------|--------------------------------|--|
| A | RE | 1000 | 700 | 142 |
| B1 | mg | 1.4 | 1.2 | 116 |
| B2 | mg | 0.8 | 1.4 | 57 |
| B3 | mg | 2.7 | 16 | 16 |
| B5 | mg | 0.9 | 5 | 18 |
| B6 | mg | 2 | 1.6 | 125 |
| B12 | µg | 1 | 3 | 33 |
| C | mg | 60 | 45 | 133 |
| D | µg | 1 | 10 | 10 |
| E | mg | 10 | 7 | 142 |
| Folic Acid | µg | 200 | 300 | 66 |
| Biotin | µg | 15 | 120 | 12 |

| Minerals | Unit | Quantity in 100g | RDA for child ages 7- 10 | %RDA per 100g for child ages 7-10 |
|-----------------|-------------|-----------------------------|---|--|
| Calcium | mg | 120 | 800 | 15 |
| Chromium | µg | 30 | 200 | 15 |
| Copper | mg | 0.3 | 2.5 | 12 |
| Iodine | µg | 23 | 120 | 19 |
| Iron | mg | 14 | 10 | 40 |
| Magnesium | mg | 45 | 250 | 18 |
| Manganese | mg | 0.45 | 3 | 15 |
| Molybdenum | µg | 30 | 300 | 10 |
| Selenium | µg | 200 | 200 | 100 |
| Zinc | mg | 15 | 10 | 150 |

Nestle Milo®

Ingredients: Sucrose, whey (milk), malt extract (gluten), cocoa, glucose syrup, skim milk, hydrogenated palm oil, milkfat, dibasic calcium phosphosphate (341), soya lecithin, vitamins, ferric pyrophosphate, magnesium carbonate (540).

| | Quantity per 100g powder | Quantity per 20g serving | Quantity per 20g powder and 200mL milk |
|------------------------|-------------------------------------|---|---|
| Energy | 1667 kJ | 333kJ | 893kJ |
| Fat | 8.5g | 1.7g | 9.1g |
| Protein | 7g | 2.5% | 14.4% |
| Glycemic Carbohydrates | 73g | 14.6g | 24.3g |
| Dietary Fiber | 4.4g | 0.9g | 0.9g |
| Sodium | 211mg | 42.2mg | 158mg |
| Vitamin A | 1562µg RE | 31.2% | 38% |
| Vitamin D | 4.8µg (CC) | 19% | 23% |
| Vitamin E | 8.7%mg α-TE | 17.3% | 19.3% |
| Vitamin C | 25mg | 8.3% | 14.3% |
| Vitamin B1 | 2.3mg | 32.9% | 38.9% |
| Vitamin B2 | 2.5mg | 31.3% | 50.9% |
| Niacin | 18mg | 20% | 20.9% |
| Vitamin B6 | 3.5mg | 35% | 39.8% |
| Vitamin B12 | 3µg | 60% | 140% |
| Pantothenic Acid | 7mg | 23.3% | 34.7% |
| Potassium | 935mg | 187mg | 461mg |
| Calcium | 410mg | 82mg | 332mg |
| Phosphorus | 560mg | 14% | 38% |
| Iron | 15mg | 21.4% | 22.9% |
| Magnesium | 130mg | 8.7% | 16.7% |

%RDA for Adults over 10 years of age.

Egg Flip

Ingredients: raw egg, milk, custard powder.

Portfolio Pharmaceuticals (Pty.) Ltd. Multivitamin Syrup®

Portfolio Pharmaceuticals (Pty.) Ltd, 40 Electron Avenue, Isando

Each 5mL contains:

| | |
|----------------|----------|
| Vitamin A | 2300 IU |
| Vitamin D3 | 200 IU |
| Thiamin HCl | 1mg |
| Riboflavin | 1.2mg |
| Pyridoxine HCl | 0.5mg |
| Nicotinamide | 5mg |
| Ascorbic Acid | 35mg |
| Vitamin B12 | 0.0025mg |

Contains Preservatives: methyl paraben 8mg, propyl paraben 0.8mg.