

# **A COMPARATIVE ANALYSIS OF FIVE DIFFERENT SCHOOL FEEDING STRATEGIES IN THE VAAL REGION**

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**MTech Food Service Management**



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## **ABSTRACT**

School feeding programmes are defined as interventions that deliver a meal or snack to children in the school setting, with the intent of improving attendance, enrolment, nutritional status and learning outcomes. The Primary School Nutrition Programme (PSNP) was introduced in South Africa as a Presidential Lead Project in 1994 with the specific aim to improve education by enhancing active learning capacity, school attendance and punctuality. However, not all children qualify to participate in the PSNP and a variety of alternative products, of which little information is known, are used as part of school feeding programmes implemented by non-governmental organisations (NGOs). The aim of this study was to investigate such programmes used in the Vaal Region.

Five different products used in school feeding programmes in a primary school in Eatonside and two primary schools in Orange Farm were compared in terms of the nutritional content of the products, the impact of these products after a seven month intervention on the nutritional status of the children by analysing their dietary intakes as well as biochemical and anthropometrical measurements, menu cost, compliance of the products by conducting sensory analyses and shelf life studies, and the impact on school attendance. Based on the results of this study, guidelines on the optimal school feeding strategy would be provided to NGOs and to the Gauteng Department of Education.

The five products were a micronutrient dense “vetkoek”, PSNP, two commercial products namely Corn Soya Blend (CSB) and Sejo and, lastly, fruit, which was used as the control. In the Sethlabotja school in Eatonside, the sample consisted of 160 randomly selected boys and girls (40 children participating in the PSNP, and 60 children in each of the vetkoek and fruit groups) and in Sinqobile and Reitumetse schools in Orange Farm the sample included 45 randomly selected children in each of the CSB and Seja groups.

Pre-intervention results indicated poor nutritional status. Mean daily energy intake of all the children was below the Dietary Reference Intakes for children between seven and ten years. A mainly carbohydrate-based diet was followed, with inadequate fruit and vegetable intake. The anthropometric indices indicated acute and chronic food shortage. The biochemical results indicated that normal values were present for the majority of the parameters.

The post-intervention results indicated that the food consumption patterns did not change substantially during the intervention but the mean energy intake of the children as well as weight, height and body mass index increased with all the interventions. Although few statistically significant differences were observed between the five groups with regard to nutritional status indices, positive changes were observed in each of the groups.

The products evaluated in this study proved to be within the range of the provincial school feeding budget. CSB and Sejo were the cheapest programmes because they are subsidised. Compliance to the products was good. No significant differences between commercial and home-prepared food items were found. School attendance was not formally recorded in all the groups. However, a decrease in absenteeism was noted in those groups where it was recorded. It is recommended that further research is conducted on the impact of school feeding on the cognitive performance of school learners in the Vaal Region.

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## ABBREVIATIONS

AAS	atomic absorbance spectroscopy
AIDS	acquired immunodeficiency syndrome
ANOVA	analysis of variance
ARC	Agricultural Research Centre
BMI	body mass index
CBOs	community based organisations
CSB	corn soya blend
CSIR	Council for Scientific and Industrial Research
DoE	Department of Education
DoH	Department of Health
DORA	Division of Revenue Act
DRI	Dietary Reference Intake
EAR	Estimated Average Requirement
EER	Estimated Energy Requirements
FAO	Food and Agricultural Organization
FfDO	Food for Development Office
FIFO	first in first out
FFE	Food for Education
GFE	Global Food for Education
Hb	haemoglobin
Hct	haematocrit
HClO <sub>4</sub>	perchloric acid
HIV	human immunodeficiency virus
HGSFP	Home Grown School Feeding Programme
HNO <sub>3</sub>	concentrated nitric acid
IDD	iodine deficiency disorders
INEE	Interagency Network for Education in Emergencies
INP	Integrated Nutrition Programme
INS	Integrated Nutrition Strategy

ISL	Institute of Sustainable Livelihoods
IU	International Unit
JAM	Joint Aid Management
LPG	liquefied petroleum gas
K	potassium
km	kilometre
MDG	Millennium Development Goals
-2SD	minus two standard deviations
mg	milligram
mm	millimetre
MRC	Medical Research Council
Na	sodium
NCHS	National Centre for Health Statistics
NEPAD	New Partnership for Africa's Development
NFCS	National Food Consumption Survey
NGOs	Non-Governmental Organisations
NSLP	National School Lunch Program in the USA
NSNP	National School Nutrition Programme
OAU	Organisation for African Unity
PE	petroleum ether
PEDs	Provincial Education Departments
PHC	Primary Health Care
PSFA	Peninsula School Feeding Association
PSNP	Primary School Nutrition Programme
QFFQ	quantitative food frequency questionnaire
PTA	Parent Teacher Association
R	Reception
RBC	red blood cell count
RDA	Recommended Dietary Allowance
RDP	Reconstruction and Development Programme
RE	Retinol Equivalent
SA	South Africa

SFP	School feeding programme
SFPs	School feeding programmes
SGBs	School governing bodies
SPSS	Statistical Programme for Social Sciences
TB	tuberculosis
THUSA	Transition and Health during Urbanisation in South Africa
TNT	Thomas Nationwide Transport
µg	microgram
UN	United Nations
UNICEF	United Nations Children's Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization
USDA	United States Department of Agriculture
VAD	vitamin A deficiency
vit	vitamin
VUT	Vaal University of Technology
WISHH	World Initiative for Soy in Human Health
WITS	University of the Witwatersrand
WFP	World Food Programme
WHO	World Health Organization

## **DEFINITION OF TERMS**

Estimated Average Requirement (EAR) is a nutrient intake estimated to meet the requirement of half of the healthy individuals in a specific life stage and gender group (Murphy & Poos 2002:844).

Programmes in the thesis refer to the feeding programmes in the three schools that were investigated (including procurement, storage, preparation, serving and monitoring), whereas the feeding strategies in the title refer to the five different food items/products used in the schools. These were the fortified (biscuits developed for PSNP), developed (vetkoek) and commercial (Sejo, CSB and fresh fruit) strategies followed in the schools.

Recommended Dietary Allowance (RDA) is the average daily dietary nutrient intake level that is sufficient to meet the nutrient requirements of 97-98 percent of individuals in the specified life stage and gender group. The RDA applies to individuals, not a group, and serves as a goal for dietary intake by individuals (Boyle 2003:91).

Spaza shop is an informal type of tuck shop located in informal settlements.

Vetkoek is a small, deep-fried cake made from unsweetened dough, a typical South African food.