
# ABSTRACT BOOK

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## 2024 NUTRITION CONGRESS

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17th Congress of the Association for Dietetics in South Africa (ADSA)

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# ABSTRACT ▶ INFORMATION

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# Evaluating the effectiveness of the integrated nutrition interventions in Uganda

**Mr Edgar Agaba**[1], Prof Per Ole Iversen, Prof Xikombiso Mbhenyane
[1]Stellenbosch University, Cape Town, South Africa

**Biography:**
Edgar Agaba is a public health professional from Uganda. He is currently pursuing a Ph.D. in Nutritional Sciences at Stellenbosch University.

**Introduction:** A substantial global push exists to address multi-sectoral nutrition and health challenges due to malnutrition-related complications. The challenge has been which interventions yield better nutrition outcomes. Therefore, this study evaluates the effectiveness of a community multisectoral program in Uganda to understand which interventions yielded better outcomes by studying a set of interventions and their impacts.

**Methods:** The difference-in-differences estimation, which is a quasi-experimental design was used to estimate the effect of a specific intervention or treatment by comparing the intervention group and the control group in 6 districts in Uganda using secondary data. A total of n=3267 in 2012 at baseline and n=2420 in 2016 at the end line. Stata 18 software for analysis was used to conduct the statistical analysis.

**Results:** The analysis revealed that integrated programs significantly reduced child anemia, by 11.4% ($p<0.01$). Reduction in stunting, wasting, and underweight rates were not statistically significant. Parishes receiving nutrition-only interventions had a significant positive impact of 2.64% in reducing underweight ($P<0.1$) and a 2.6% impact in improving the number of children meeting minimum dietary needs ($P<0.05$). Parishes receiving financial intervention only significantly reduced stunting by 6.01% ($P<0.05$). In addition, financial incentives reduced child anemia by 10.7% ($P<0.01$). Interventions that focused on WASH had a positive significant impact on reducing stunting by 4.4% ($p<0.05$).

**Conclusion:** Integrated interventions, particularly combining agriculture with nutrition or WASH, significantly reduced child anemia and child illness. These results highlight the interplay between improved nutrition knowledge and agricultural outcomes, enhancing food security and access to balanced diets. Whether implemented independently or in conjunction with nutrition or WASH, agriculture interventions reduced child illness by improving food storage and hygiene practices to reduce foodborne illnesses. Integrating nutrition and financial components significantly improved children's nutrition and health, substantially reducing stunting, wasting, and anemia.

# Bridelia tea consumption improves oxidative status in outpatients with type 2 diabetes in Ghana

**Mr Collins Afriyie Appiah**[1,2], Dr. Jennifer Ngounda[1], Dr. Mavis Boakye-Yiadom[3], Prof Felix Charles Mills-Robertson[2], Ms. Riette Nel[4], Prof Rabia Johnson[5], Prof Corinna Walsh[1]

[1]Department of Nutrition and Dietetics, Faculty of Health Sciences, University of the Free State, Bloemfontein, South Africa, [2]Department of Biochemistry and Biotechnology, Faculty of Biosciences, College of Science, Kwame Nkrumah University for Science and Technology, Kumasi, Ghana, [3]Centre for Plant Medicine Research, Mampong-Akuapim, Ghana, [4]Department of Biostatistics, Faculty of Health Sciences, University of the Free State, Bloemfontein, South Africa, [5]Biomedical Research and Innovation Platform, South African Medical Research Council, Cape Town,

**Biography:**

Mr. Collins Afriyie Appiah is a PhD dietetics candidate at the University of the Free State, South Africa. His project is titled "The effect of Bridelia tea consumption on oxidative status in people living with type 2 diabetes". He holds an MPhil degree in Dietetics from the University of Ghana and a BSc degree in Biochemistry from the Kwame Nkrumah University of Science and Technology (KNUST), Ghana. Collins is also a lecturer in nutrition and dietetics at the KNUST, Ghana. He is a licensed dietitian (Ghana) with over 10 years' experience in dietetics practice in Ghana.

**Background:** Chronic hyperglycaemia is known to stimulate oxidative stress. Bridelia ferruginea, a tropical African plant widely available in Ghana, has been shown to have significant antioxidant content.

**Objective:** To assess oxidative status and associated parameters in outpatients with type 2 diabetes (PWT2D) consuming Bridelia tea compared with those receiving standard diabetes treatment only.

**Methods:** This comparative cross-sectional study, conducted in Ghana, involved 70 PWT2D [median age- 55.0 years (IQR 50.0-63.0) and BMI of 28.7 kg/m2 (IQR 22.6-32.7)] who have been consistently consuming Bridelia tea (bridelia group) for ≥4 weeks, and 92 PWT2D [55.5 years (50.5-64.0) and BMI of 27.3 kg/m2 (24.4-30.2)] on standard treatment only (comparator group). Lipid peroxidation (thiobarbituric acid reactive substances (TBARS)) was determined as indicator of oxidative stress. Total antioxidant capacity (TAC), glycated haemoglobin (HbA1c) and dietary intake of antioxidant rich-foods were also assessed.

**Results:** The comparator group had significantly better glycaemic control (median HbA1c - 7.7% (6.7-9.4)) than the bridelia group (9.2% (7.6-11.4)), p=0.001. There was no significant difference (p=0.114) in oxidative stress levels between the bridelia group and the comparators (TBARS: 323.0 ng/l (287.5-374.0) and 317.0 ng/l (272.5-342.0) respectively). At baseline, frequency of intake of antioxidant-rich foods (excluding Bridelia tea) fell in the monthly category for both bridelia and comparators groups. However, the bridelia group had significantly higher (p=0.001) TAC status than the comparator group [1.01 mmol/l (0.93-1.10) and 0.92 mmol/l (0.84-1.03) respectively].

**Conclusion:** PWT2D consuming Bridelia tea had similar oxidative stress status, but higher antioxidant status than those who did not consume the tea, even though those who did not consume the tea had better glycaemic control, and consumed antioxidant-rich foods (excluding Bridelia tea) more frequently. In addition to standard treatment, Bridelia tea consumption could potentially serve as a sustainable source of antioxidants to mitigate oxidative stress in PWT2D in resource-limited settings like Ghana.

# Community-based intervention to improve nutritional outcomes in children living with disability in high-density areas of urban and peri urban parts of Harare, Zimbabwe

Information | Education Abstract

**Dr Svitlana Austin**[1]
[1]Ministry of Health and Child Care, Harare, Zimbabwe

**Biography:**
I lead Malnutrition Unit at Sally Mugabe Children's Hospital that provides specialised care for patients with severe acute malnutrition. Our Malnutrition Unit is the biggest stabilisation centre for malnutrition in the country admitting around 500 children per year. Since the establishment of the Unit the quality care of care and outcomes for malnourished patients dramatically improved. We are collaborating with partners, such as UNICEF to establish a Centre of Excellence for management of malnutrition at Sally Mugabe Children's Hospital, which is a hub for training and research in this area.

**Introduction:** Children with disability represent the most vulnerable group of malnourished patients. In Zimbabwe their complex needs are further compounded by lack of social support, limited specialised medical services and stigma.

**Objectives:** To assess the acceptability and impact of a multidisciplinary community intervention to address nutritional and rehabilitation needs of children living with disability in disadvantaged communities of Harare.

**Methods:** Over a period of a year a team consisting of a paediatrician, a rehabilitation specialist, a nutritionist and a counsellor conducted monthly outreach visits to 12 high-density sites in urban areas in Harare. The team aimed to deliver a comprehensive service including growth monitoring and nutritional rehabilitation, psychological counselling, physiotherapy and educational sessions covering essential topics of care for a child with disability. The impact of the intervention was assessed by regular anthropometric measurements of the children and caregivers' feedback.

**Results:** A total of 617 children with disability aged 5 months to 13 years were enrolled into the program. Majority of patients had cerebral palsy (72%). Other disabilities included trisomy 21 (4%) and hydrocephalus (3%). A significant number of children did not have an established diagnosis (over 20%). At the onset of the program severe acute malnutrition was identified in 93 (15%) of the children with 202 (33%) having moderate malnutrition. Over the course of the intervention, improvement in anthropometric indices was demonstrated in the majority of children with moderate malnutrition (123/202) and a significant number of children with severe malnutrition (61/93). The program was well received with the caregivers with vast majority of them reporting improved confidence in looking after their children and better knowledge in attending to their special needs.

**Conclusion:** Children with disabilities and their families can greatly benefit from a community-based interventions providing multidisciplinary support to address social determinants that affect their nutritional and health outcomes.

# Classifying food items by nutritional content using mixture model clustering

**Dr Yusentha Balakrishna**[1,2], Professor Samuel Manda[2,3], Professor Henry Mwambi[2], Dr Averalda van Graan[4,5]
[1]Biostatistics Research Unit, South African Medical Research Council, Durban, South Africa, [2]School of Mathematics, Statistics and Computer Science, University of KwaZulu-Natal, Pietermaritzburg, South Africa, [3]Department of Statistics, University of Pretoria, Pretoria, South Africa, [4]Biostatistics Research Unit, SAFOODS Division, South African Medical Research Council, Cape Town, South Africa, [5]Division of Human Nutrition, Department of Global Health, Stellenbosch University, Cape Town, South Africa

**Biography:**
Dr Yusentha Balakrishna is a Specialist Statistician at the South African Medical Research Council. She has interests in high-dimensional and multivariate data analysis. Her PhD research investigated the application of advanced statistical techniques to food composition data to inform nutritional guidelines and policies.

**Introduction:** Identifying classes of nutritionally similar food items is important for creating food exchange lists to meet health requirements. Cluster analysis methods, such as mixture models, can assign food items into classes based on nutritional similarity. Utilizing probabilistic clustering methods accounts for the uncertainty of cluster boundaries.

**Methods:** Using univariate Gaussian mixture models, we determined data-driven classes of food items in the South African Food Composition Database (SAFCDB) based on nutrient content.

**Results:** Classifying food items by individual nutrient contents produced classes with differing means and estimates of variability that could be ranked on a low to high nutrient contents scale. Classifying food items by their sodium content resulted in five classes with the class means ranging from 1.57 to 706.27 mg per 100 g. Four classes were identified based on available carbohydrate content with the highest carbohydrate class having a mean content of 59.15 g per 100 g. Food items clustered into two classes when examining their fatty acid content. Foods with a high iron content had a mean of 1.46 mg per 100 g and was one of three classes identified for iron.

**Conclusion:** The overlap between classes was evident and supports the use of probabilistic classification methods. This identified classes could be considered for diet planning for medical conditions and individuals with dietary restrictions.

# Factors that affect exclusive breastfeeding practices in the Ugu District Municipality, KwaZulu-Natal in 2021

**Mrs Jenusha Balmith-Rampersad**[1]
[1]Murchison District Hospital, Department of Health, Port Shepstone, KwaZulu-Natal, South Africa

**Biography:**
Jenusha Balmith-Rampersad is a Dietitian in the public health sector. She is currently a senior Dietitian at a rural hospital on the South Coast of Kwazulu-Natal. She has 10 years of experience as a Dietitian. Her passion lies in community nutrition, outreach, advocacy, promotive and preventative nutrition. Jenusha completed her Masters of Public Health in 2022 from the University of Kwazulu-Natal with her dissertation focusing on breastfeeding practices within her local catchment population.

**Background:** Breastfeeding is a key child survival intervention with numerous benefits, including limiting child morbidity and mortality. South Africa's exclusive breastfeeding (EBF) prevalence of 31.6% remains below the global nutrition target of 50% by 2025. The purpose of this study was to identify factors that affect EBF of infants for the first 6 months of life in the Ugu District Municipality, KwaZulu-Natal, in 2021.

**Method:** An observational, cross-sectional study design with analytic and descriptive components was used. The target population were mothers of babies between 6 and 24 months with history of breastfeeding their infants in the first 6 months.

**Findings:** The prevalence of EBF from this study was 64.1% which was higher than the current South African EBF prevalence and the UN target of 50% by 2025. The factors associated with a higher likelihood of EBF was noted amongst older mothers; had a secondary schooling education; those who used a community tap and fire as main water and cooking sources respectively; mothers who were primary caregiver, and attended breastfeeding support groups. Factors associated with a higher likelihood of mixed feeding: mothers of older infants; mothers with low education level or a tertiary education; primiparous women; mothers having one child residing with them; total household income >R5000 per month, and homes that used an inside tap.

Breastfeeding ceased due to returning to work and milk insufficiency. Breastfeeding breaks were afforded to 54.9% of employed mothers, but shorter than stipulated. More HIV positive mothers breastfed than mixed fed. Mothers that were visited more than once by a Community Health Worker breastfed longer.

**Conclusion:** Findings of this study emphasizes the need to strengthen support services for mothers and healthcare workers. The presentation of recommendations can be of benefit for those in similar settings to capacitate health workers and improve breastfeeding support

# NCD-profile and dietary diversity of an Umzinyathi District community in KwaZulu-Natal, South Africa

**Ms Jandri Barnard**[1]
[1]University of KwaZulu-Natal, Newcastle, South Africa

**Biography:**
Practicing dietitian and award winning health writer for the past 14 years.Completing BDietetics at the University of Pretoria and MSc Dietetics in 2016 from the University of KwaZulu-Natal.Gave online nutritional wellness classes in 2021 – 2022 for the University of Pretoria employees.She received a research fellowship In 2009 she was a Diabetes researcher in the Cell Biology department of the University of Groningen in the Netherlands.Completed the Post Graduate Program in Paediatric Nutrition in association with Boston University School of Medicine in 2017, on the ALLSA Dietetics Committee, SCOPE accredited member for the World Obesity Federation and member of ESPEN.

**Introduction:** South Africa (SA) was rated as the most unhealthy country in 2019, with over 85% of deaths from non-communicable diseases (NCDs). The highest attributing causes include hypertension (HPT), hyperlipidemia and diabetes mellitus (DM), with 50% of the population at risk for being overweight and obesity, within 30 – 69 years range, with 50% being female. This poses a threat to achieving a reduction in premature deaths from NCDs by a third by 2030, as per the 2030 Agenda for Sustainable Development.
The study aimed to determine self-reported NCD profile and dietary diversity among adults residing in a rural community, with limited access to clinics.

**Methods:** Participants were conveniently sampled with door-to-door visits within the Umzinyathi District – one of the most underdeveloped rural areas of KwaZulu-Natal (KZN) in SA. Fieldworkers-administered 24-hour recall was used to determine dietary diversity as per the consumption of 12 food groups.

**Results:** The black African study sample (N=150) were predominantly female (83.3%).Self-reported NCDs included reports of HPT (50%), DM (29.3%) and hypercholesterolemia (21%). Primary food group consumption included cereals (97.3%), sweets (94.6%), miscellaneous items (93.3%) and oils and fats (81.3%) predominantly. 70% of participants reported daily vegetable consumption but limited to tomatoes and onions. Followed by flesh and organ meats (40%) and fruit (36.6%) intake. Nearly 56.6% consumed 4–6 food groups, while 14.6% consumed 10–12 food groups. Traditional food consumption included jeqe (steamed bread), samp (dried corn kernels that have been stamped and chopped), organ meats and indigenous vegetables like amadumbe tubers and amaranth (wild spinach).

# ► Evaluating the impact of a mobile application with a novel, non-invasive face scan technology to improve lifestyle behaviors in South Africa

**Dr Yulia Berezhnaya**[1], Dr. Shellen Goltz[1], Mrs Katherine Page[1], Mrs Cassie Dikkerson[1], Dr Tristin Brisbous[1], Dr Christopher Cushing[2], Ms Calissa Leslie-Miller[2]
[1]PepsiCo, Cape Town, South Africa, [2]Clinical Child Psychology Program University of Kansas, Lawrence, US

**Biography:**
Dr. Yulia Berezhnaya is leading Life Sciences agenda for PepsiCo Sub-Saharan Africa. Dr. Berezhnaya holds PhD in Human and Animal Physiology from Moscow State University and has 15+years of industry experience as a Nutrition science lead in various markets. Dr. Berezhnaya has wide experience in nutrition research and is a co-author in many scientific publications.

Mobile apps can promote short-term wellness behaviors across the general population. To maximize the long-term potential of this technology, products that target a high-value health behavior and are interesting and desirable to consumers are needed. This non-randomized pilot study will investigate the potential of a mobile app, called Aspire2B, to help participants reach their wellness goals.

Aspire2B leverages a novel, non-invasive face scan technology together with behavior change techniques to motivate users. The primary objective is to evaluate the acceptability and usability of Aspire2B, as well as identify predictors of higher engagement with the app. The secondary objective is to understand physiological changes that could be used to inform further clinical research through exploratory analyses. In Spring 2024, we will enroll 400 South African participants aged 18-75 years from both biological sexes who are smartphone and fitness app users. Participants will download the app, answer onboarding questions related to demographics and health behaviors, and complete a series of face scans using Transdermal Optical Imaging (TOI). TOI applies signal processing and machine learning to facial videos captured by conventional cameras to estimate physiological values. Participants will receive their heart rate, stress index (based on heart rate variability), and biological age (leveraging a cardiac workload model). Next, they will be enrolled in the Bokomo 'Grab Your Grains! Challenge' and asked to personalize goals for gradually improving wholegrain intake.

Participants will have access to videos and articles to learn about biological age, and will receive recipes, exercise and meditation tips, and nudges for encouragement. At the end of the 21-day challenge, participants will receive a final biological age score and will be asked to complete an off-boarding questionnaire. We hypothesize that Aspire2B will be widely accepted and deemed user-friendly, thereby contributing to the advancement of personalized wellness interventions.

# What higher LSM South Africans consume for breakfast and what drives these choices

**Dr Yulia Berezhnaya**[1], Dr Colin Rehm[4], Dr Henriëtte de Kock[2], Dr Suné Donoghue2, Dr Andrew Johnson[3], Mrs Chanelle Thompson[5], Dr John Taylor[2]
[1]PepsiCo Global Research & Development, Life Sciences, Cape Town, South Africa, [2]Department of Consumer and Food Sciences, University of Pretoria, Pretoria, South Africa , [3]Beyond Insights, Durban, South Africa, [4]PepsiCo Global Research & Development, Life Sciences, Purchase, US, [5]PepsiCo Consumer Insights, Cape Town, South Africa

**Biography:**
Dr. Yulia Berezhnaya is leading Life Sciences agenda for PepsiCo Sub-Saharan Africa. Dr. Berezhnaya holds PhD in Human and Animal Physiology from Moscow State University and has 15+years of industry experience as a Nutrition science lead in various markets. Dr. Berezhnaya has wide experience in nutrition research and is a co-author in many scientific publications.

**Introduction:** Although breakfast is generally perceived as the most important meal, limited information exists on breakfast consumption patterns in South Africa. The findings of this study could facilitate a better understanding of the drivers of food choice while informing strategies to improve population-level diets.

**Methods:** We conducted an online survey of South African adults with a Living Standard Measure (LSM) between 5-10 who regularly consumed breakfast. A total of 842 respondents provided valid data on consumption of 21 breakfast food items [BFI] and reasons for choosing each breakfast food item regarding emotional and functional benefits being sought when consuming each BFI. Principal components analysis (PCA) was used to determine whether the BFIs could be meaningfully reduced into fewer categories. Descriptive analyses summarized BFI consumption by population sub-group (e.g., age, gender, self-reported health).

**Results:** PCA identified three broad components: “on-the-go/away-from-home”, “traditional”, and “functional”, though not all BFIs fit within these (e.g., bread/toast and pastries/pancakes). The most consumed BFIs were bread/toast/sandwiches, ready-to-eat cereal, fruits/dried fruits/nuts, and high-fibre cereal. Younger respondents consumed more bread/toast/sandwiches and leftovers and fewer breakfast shakes, functional cereals, mageu/motoho, muesli, rusks/breakfast biscuits, and yoghurt ($p<0.05$ all). Lower LSM respondents had more mageu/matoho, leftovers, amagwinya/fatcake/vetkoek, and less yoghurt ($p<0.05$). The top functional reasons for choosing each BFI varied, but nutritious/healthy (top 3 reasons for 16/21 BFIs), tasty (top 3 for 15/21), and can be consumed quickly (top 3 for 9/21) were leading reasons of the 15 assessed. The top emotional drivers sought from specific BFIs were feeling energized/recharged (top 2 reasons for 19/21 BFIs) and having a fresh start (top 2 reasons for 17/21 BFIs).

**Conclusion:** Higher LSM South African adults consume a wide variety of BFIs and these are driven primarily by nutrition/health, satiety, and taste, and seeking feelings of energy and having a fresh start.

# The efficacy of a diabetes self-management education programme on the health literacy of T2DM patients from a first-level hospital Lusaka, Zambia

**Mrs Ronel Beukes**[1], Ms Phililo Nambeye[1]
[1]Stellenbosch University, Cape Town, South Africa

**Biography:**
Ronel Beukes holds a Master in Nutrition from Stellenbosch University. She is a Lecturer in Community Nutrition with an interest in health education.

**Introduction:** Self-care behaviors to contribute to optimal blood glucose control in patients diagnosed with Type 2 diabetes mellitus (T2DM) depends on a good level of health literacy. The aim of this study was to assess the efficacy of a Diabetes self-management education (DSME) programme for the health literacy of patients with T2DM attending a first-level hospital in Zambia.

**Methods:** A total of 242 patients diagnosed with T2DM attending the Matero Hospital in Zambia were recruited through multistage sampling. The quasi-experimental design was applied to measure change associated with intervention. A four-week DSME programme was provided to participants. Participants were allowed to practice the health literacy for an additional four weeks. Data collection occurred before and after the intervention to assessed patients' level of knowledge, attitudes and practices (KAP) regarding T2DM before and after the intervention by administering a structured questionnaire. Data were analyzed using proportional Chi-square calculation for correlations, the Wilcoxon Signed Rank Test to test the Null hypothesis, and multinomial logistic regression to assess factors contributing to the KAP of T2DM patients.

**Results:** The median KAP score improved from 30 to 50 (p=0.000; Wilcoxon Sign Rank Test). Only household income had a correlation to the health literacy of participants (p=0.000; Chi-square correlation). KAP-level scores increased from 16.9%(n=41) to 59.9%(n=145). Multinomial logistic regression indicated that KAP and other outcomes were significantly influenced by education level, average household income, age, gender and area of residency at pre intervention. At post intervention, marital status, household income, gender and tertiary education influenced a positive (p=0.000) relative to a negative level of practice.

**Conclusion:** The study rejected the Null Hypothesis. DSME is effective in increasing the health literacy of the T2DM patients and should be allocated adequate time and provided regularly by dedicated educators following a diagnosis of T2DM.

# ► The skilling-reskilling evolution of nutrition professionals

**Mrs Ronel Beukes**[1], Doctor Marianne Bester[1], Professor Evette van Niekerk[1]
[1]Stellenbosch University, Cape Town, South Africa

**Biography:**
Ronel Beukes is a PhD candidate in Nutritional Sciences at Stellenbosch University. She and currently serves as a Lecturer within the Division of Human Nutrition at the same institution. Her primary research interests lie in Health Education within Community Nutrition. Her doctoral research focuses on the reskilling of Registered Dietitians for emerging professional roles.

**Introduction:** In the near future Dietitians and Nutritionists in South Africa will be educated towards an expanded professional profile as Dietitian-Nutritionist, drawing on a broader, integrated scope of practice aimed at addressing the changing demands of health care. The aim of this presentation is to highlight the evolving skills needs of nutrition professionals with a lifelong commitment to learning and reskilling through professional and personal growth.

**Method:** Applying Knowles's theory of adult learning (1988), which emphasises the adult learners' intrinsic desire to learn, the aim of this presentation is to briefly illustrate why and how the nutrition professional demonstrates a lifelong commitment to learning and professional growth by continuously striving to reskill themselves within the changing health care context in SA.

**Results:** Knowles organised his theory of adult learning, also known as andragogy around six assumptions about adult learning by explaining how adults learn and why they learn. These six assumptions, when applied to the expanded role of a Dietitian-Nutritionist suggest that professionals are driven by intrinsic motivation and an understanding of why they need to up- and reskill themselves, become self-directed lifelong learners who draw on their professional and personal attributes whilst learning new knowledge and skills through their problem-solving capabilities in relevant workplace settings. Therefore, Knowles's theoretical perspectives provide an opportunity to explore the expanded professional profile of the Dietitian-Nutritionist within the broader context of a skills evolution in healthcare.

**Conclusion:** The scholarly approach that healthcare professionals use in their daily practice is in keeping with Knowles's theory of adult learning and serves as a solid grounding for reskilling the current cohort of professionals towards their expanded professional roles as Dietitian-Nutritionists in future.

# Use of nutrition care process and nutrition care process terminology by South African dietitians

**Prof Renee Blaauw**[1], Dr Angela Vivanti[2,3], Dr Ylva Orrevall[4,5], Dr Constantina Papoutsakis[6], Dr Alison Steiber[6], Prof Elin Lövestam[7]
[1]Division of Human Nutrition, Stellenbosch University, Cape Town, South Africa, [2]Department Nutrition and Dietetics, Princess Alexandra Hospital, Brisbane, Australia, [3]School of Human Movement and Nutrition Studies, University of Queensland, Brisbane, Australia, [4]Department of Biosciences and Nutrition, Karolinska Institute, Stockholm, Sweden, [5]Medical Unit Clinical Nutrition, Women's Health and Allied Health Professionals Theme, Karolinska University Hospital,, Stockholm, Sweden, [6]Academy of Nutrition and Dietetics, Chicago, USA, [7]Department of Food Studies Nutrition and Dietetics, Uppsala University, Uppsala, Sweden

**Biography:**
Prof Renée Blaauw, PhD (Nutritional Sciences) is a Professor in Therapeutic Nutrition, Division of Human Nutrition, Stellenbosch University, South Africa. She is a Past Chairperson of the Professional Board for Dietetics in South Africa, a Past President of SASPEN and an honorary member of both SASPEN and ADSA. Her main research interests include Nutrition support of critically ill patients; Nutritional management of gastro-intestinal diseases and Hospital malnutrition.

**Introduction:** Implementation of standardised terminologies for nutritional care is prioritised globally. South Africa (SA) was one of 22 countries participating in the 2023 INIS study (International Nutrition Care Process and Terminology Implementation Survey), aiming to determine the extent of dietetics professionals use of the Nutrition Care Process (NCP) and Nutrition Care Process Terminology (NCPT), attitude towards, barriers and enablers encountered in daily practice.

**Methods:** Registered dietitians were invited through the Health Professions Council of South Africa database to complete an online validated questionnaire, consisting of modules focusing on demographic information, NCP/T implementation, attitudes and knowledge, as well as electronic health records (EHR). Data was downloaded to MS Excel and analysed using STATISTICA version 13.5. Summary statistics and Pearson correlations were used, with significance set at $p<0.05$.

**Results:** The NCP concept was known to 85.5 % (n=190) of all participants (n=225). Majority consulted outpatients (64.9%, n=146) and inpatients (52.4%, n=118). The primary enabler to use NCP/NCPT was “regular education and training sessions” (61.6%, n=85) and the most frequent barrier was “lack of time” (56.5%, n=70). Electronic health records were not used in 68.8% of cases. Knowledge score ranged from 0-87.5%, mean 46.1±24.9%. Mean frequency of NCP use, across all four steps, 16.1±4.3/20 was significantly higher than mean frequency of NCPT use, 12.7±5.0/20; $p<0.000$. Frequency of NCP/NCPT use correlated positively with duration of use ($r=0.469$, $p<0.000$ NCP; $r=0.542$, $p<0.000$ NCPT). However, no significant association between NCP/NCPT knowledge and frequency of use was found.

**Conclusion:** The NCP concept was used by most, with NCPT used in fewer cases. Knowledge was suboptimal and not linked to frequency of use. As this was the first study of its kind in SA, it provides the opportunity for action to enhance knowledge concerning this standardised international language. Key role players will be engaged in the process.

# Socio-demographic determinants of perceived healthfulness, intention to purchase and consumption of selected ultraprocessed products in a lower income country

**Dr Makoma Bopape**[1], Dr Jeroen De Man[2], Dr Lindsey Smith Taillie[3], Prof Rina Swart[4]
[1]University of Limpopo, South Africa, [2]University of Antwerp, Belgium, [3]University of North Carolina at Chapel Hill, USA, [4]University of the Western Cape, South Africa

**Biography:**
Makoma Bopape is a lecturer at the University of Limpopo, Department of Human Nutrition and Dietetics. She is currently involved in work around food policy and food environment.

Consumption of ultraprocessed products is increasing in lower income countries.

**Objective:** To investigate the determinants of nutrient content awareness, perceived healthfulness and consumption of ultraprocessed products among South Africans.

**Methodology:** Cross-sectional study involving secondary data analysis. The study comprised 1951 adults (18-50 years), with 63.5% females and 66.3% of participants from a low socio-economic group. Participants were shown A4 images of mock-branded ultraprocessed products, with no nutrition information and were asked questions based on the images. Participants were asked to identify products that were high in nutrients of concern, identify whether products were healthy or unhealthy, their intention to purchase the products and frequency of consumption of selected ultraprocessed foods.

**Analysis:** R package was used for statistical analysis. Regression analysis were conducted for associations. The level of significance was set at p-value < '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1..

**Results:** Regarding nutrient content awareness, more than half (58.1%) were not aware that chips are high in fat and over a third (41.8%) were not aware that fruit juice is high in sugar. Only 13% of the participants perceived fruit juice as unhealthy and more than 50% showed the intention to purchase fruit juice, cereals and yoghurt in future. More than 50% reported consuming most ultraprocessed products either daily or weekly. Perceived healthfulness was associated with education, gender and age, whilst ultraprocessed product consumption was associated with education, age, gender and being unemployed. Intention to purchase ultraprocessed products was the only variable associated with socioecoomic status.

**Conclusion and Implications:** Intervention strategies such as nutrition education and front-of-pack labelling may have a role in improving nutrition awareness and discouraging ultraprocessed products consumption.

# Sensory evaluation versus microbial, instrumental texture and colour qualities in chevon value-added products

**Mrs Nokwethemba Buthelezi**[1], Dr Karina Palmer[2], Professor Unathi Kolanisi[1, 2]
[1]University of KwaZulu-Natal, PMB, South Africa, [2]University of Zululand, KwaDlangezwa, South Africa

**Biography:**
Ms Buthelezi Thembelihle is the Masters Student at the University of KwaZulu-Natal, Food Security Program under the School of Agriculture, Engineering and Science.
Area of specialisation is on agro-processing and food security issues, agricultural product processing, value addition and food innovation for food and nutrition security requirement.
I am an emerging researcher in the field of food product development for consumer demand and food security. And, I am looking forward to become the matured Scintific researcher in the field of community engagement within the scope of food product development and innovation.

**Introduction:** The influence of profiled chevon characteristic (goat meat) and the global changing consumer trends in food production and consumption are slowly changing the consumer perceptions of indigenous-underutilized food. However, goat meat is slowly understood as the best meat for human health recently, curbing diseases like diabetes, cow protein alleges/ intolerance, and heart-related diseases due to low levels of total fat, saturated fatty acids, and cholesterol in goat meat. However, the existing gap in terms of innovative techniques and strategies applied in the space of goat meat production is the limitation on the development of convenient chevon value-added products with a focus on the needs of the contemporary and future consumers.

**Objective:** Objective: Objective: The study aimed to evaluate the variant chevon products in terms of physical properties (texture and colour), safety (microbial load), and sensory qualities for consumer acceptability.

**Methods:** The study adopted an experimental research design in a form of sensory evaluation through product development trials, using the trained panelists of 30 participants from the Consumer Science Department of University of Zululand and Owen Sithole College of Agriculture, Agro-processing Unit. The 5-point Hedonic scale was used to evaluate the products for consumer acceptability.

**Results:** The physical quality of each product was measured using TA- XT Texture Analayser for triplicate readings to indicate the firmness of the product. HunterLab ColorFlex Colorimetric Spectrophotometer (model 45/0, HunterLab Reston, USA) was used in to determine mean values for L*, a*, and b*. Microbial count was determined in each sample for consumer safety.

**Conclusion:** It is important to document these technologies in order to preserve them for future generations and to create some form of referencing database to refer from for future studies.

# Iron status and associations with birth outcomes of pregnant women in urban Free State Province of South Africa

**Dr Janet Adede Carboo**[1], Dr Jennifer Ngounda[1], Dr Jeannine Baumgartner[2], Dr Liska Robb[1], Dr Marizeth Jordaan[1], Prof Corinna May Walsh[1]
[1]University of the Free State, Bloemfontein, South Africa, [2]King's College, Waterloo Campus, Waterloo, United Kingdom

**Biography:**
Dr Carboo is a registered dietitian and a post-doctoral fellow at the Department of Nutrition and Dietetics at the University of the Free State. Her current research interest is micronutrient supplementation in pregnancy to improve birth outcomes in South Africa. She is particularly interested in the effect of prenatal iron and vitamin D supplementation on birth outcomes.

**Introduction:** Despite routine iron supplementation for pregnant women in South Africa, anaemia and iron deficiency (ID) in pregnancy remain a public health concern.

**Objective:** To determine the association between iron status and birth outcomes of pregnant women attending an antenatal clinic at a regional hospital in Bloemfontein.

**Methods:** In this cross-sectional study of 427 pregnant women, blood was taken to analyse biomarkers of anaemia, iron status and inflammation. Information about birth outcomes, HIV exposure, socio-demographics, diet and supplement intake were also collected. Logistic and linear regression were used to determine the association between iron status and birth outcomes.

**Results:** The median (interquartile range [IQR]) gestational age was 32 (IQR: 26-36) weeks. Anaemia, ID, ID anaemia (IDA) and ID erythropoiesis (IDE) were present in 42%, 31%, 19% and 9.8% of participants, respectively. Median dietary iron intake was 16.8 (IQR:12.7-20.5) mg/d. No significant associations of anaemia and iron status with low birth weight and prematurity were observed. However, infants born to participants in the third haemoglobin (Hb) quartile (Hb >11.3-12.2 g/dL) had a shorter gestation by 1 week than those in the fourth Hb quartile (p=0.009). Compared to pregnant women without HIV, women with HIV had increased odds of being anaemic (OR:2.14, 95%CI: 1.41, 3.247), having ID (OR:2.19, 95%CI: 1.42, 3.37), IDA (OR:2.23, 95%CI: 1.36, 3.67), IDE (OR:2.22, 95%CI: 1.16, 4.22) and delivering prematurely (OR:2.39, 95%CI: 1.01, 5.64).

**Conclusion:** Anaemia and ID were prevalent in this sample of pregnant women, despite the reported intake of prescribed iron supplements, with those living with HIV infection more likely to be affected. Research focusing on the best formulation and dosage of iron supplementation to enhance iron absorption and status, and compliance to supplementation is recommended.

# Domestic food preparation methods of community members in peri-urban Mangaung, Bloemfontein, South-Africa

Dr Lucia Ntsoaki Meko[1], Dr Elmine du Toit[1], **Mrs Angelique Carson-Porter**[1], Me Riette Nel[2]
[1]Department of Nutrition and Dietetics, Bloemfontein, South Africa, [2]Department of Biostatistics, Bloemfontein, Sou

**Biography:**
Ms A. Carson-Porter is a lecturer in the Department of Nutrition and Dietetics, at the UFS; and she is a registered dietitian in South Africa. Me Carson-Porter's fields of interest include the fields of Food Service Management, Health Sciences Education and nutrition education in type 1 diabetes and community nutrition. Ms Carson-Porter is a PhD candidate in the Department of Nutrition and Dietetics at the UFS.

**Introduction:** South Africa's food environment is characterised by an increase in intake of high energy, nutrient-poor and cheap foods that increase the risk for developing non-communicable diseases. The addition of salt, fats, sugar and other condiments may affect the nutritional value of these meals. The aim of the study was thus to assess domestic food preparation methods.

**Methods:** Study population included eligible community members recruited in Mangaung. A descriptive study design was used. Data were collected by means of structured interviews using a questionnaire developed for the study.

**Results:** Median age (N=150) was 49.6 years [P25; P75: 34;63]. Almost two-thirds of participants earned between R500 - R3000, 42.0% did not have secondary education or higher and 57.3% lived in government subsidised housing. Food preparation methods most used were boiling (90.5%) and shallow frying (88.5 %). Various forms of salt, soup powder, stock cubes, oil and sugar were added to foods. At least 50% added salt to starchy foods and stock cubes to chicken (40.7%) and red meat (25.3%). Oil and margarine were added to potatoes (70.6%), spinach (88.7%) and tomato relish (77.4%). Sugar was added to pumpkin (76.0%), beetroot (50.0%) and tomato relish (46.0%).

**Conclusion:** Addition of unhealthy condiments, fats and sugar during food preparation may increase the risk for developing non-communicable diseases. Due to these additions, the assumption that home-prepared meals are healthier than takeaways may not be true in this sample. Further research is recommended. Interventions must be aimed to encourage a culture-sensitive, healthy lifestyle by addressing barriers to healthy eating.

# Feeding practices and social support of primary caregivers with children attending ECD centers in the Xhariep District, Free State, South Africa

**Mrs Angelique Carson-Porter**[1]
[1]University of the Free State, Bloemfontein, South Africa

**Biography:**
Mrs. Angelique (AC) Carson-Porter completed BSc Dietetics at the University of the Free State (UFS) in 2010 and thereafter completed her community service year in the Free State. She has been a practicing registered dietitian since 2012. She worked as regional dietitian for an international catering company, managing food service units across various platforms in the government and private sectors while also being involved in student training for UFS. Since then, she was appointed 2018 as a permanent lecturer and is involved in research at the UFS, while part-time in private practice. She obtained her MSc Dietetics degree in 2022.

**Introduction:** Malnutrition among young children stands as a global challenge. In developing countries, undernutrition is a major contributing factor in children failing to achieve their developmental potential. Preventing malnutrition requires, among other things, nutritious, diverse, and safe foods in early childhood. This study aimed to determine primary caregivers' choices, motivation and social support for the foods they fed their children.

**Methods:** A qualitative study was undertaken among primary caregivers with children in early childhood development centres in Jagersfontein, Springfontein and Trompsburg in the Xhariep District, which are rural towns affected by unemployment. Twelve participants who met the inclusion criteria were conveniently sampled. Semi-structured interviews were used to explore the primary caregivers' choices, motivation and social support for foods they fed their children until data saturation was reached.

**Results:** The mean age of the participants was 31 years. Nine of the participants relied on social grants as a source of income. The participants reported mostly feeding their children maize porridge, milk, juice and water. The participants reported that they borrowed money from loan sharks and used store credit to purchase electricity and food when they had none. Participants reported receiving nutrition advice from neighbours and grandmothers who live nearby, and from the staff at their local clinics. They implemented the advice from grandmothers and neighbours, because they had raised children before.

**Conclusion:** The level of education, employment status, and community support influenced the primary caregivers' feeding practices. This study gave insight into primary caregivers' daily struggles, including high electricity costs and resorting to high-interest loan sharks to secure their children's meals. The advice from the staff at the local clinic was not implemented all the time due to lack of access to recommended food, alerting clinic personnel to the dire state and minimal societal advancement in the Xhariep District.

# Preserving Dietary Diversity: Plant-based indigenous vegetable preservation practices among households in Vhembe, Limpopo province, South Africa

**Mrs Joelaine Chetty**[1], Dr Averalda Van Graan[1], Dr Shonisani Ramashia[2], Dr Mthokozisi Zuma[3], Prof Xikombiso Mbhenyane[4]
[1]South African Medical Research Council, Pretoria, South Africa, [2]University of Venda , Thohoyandou, South Africa, [3]Agricultural Research Council, Pretoria, South Africa, [4]Stellenbosch University, Cape Town, South Africa

**Biography:**
Joelaine is a Research Dietitian working at the South African Medical Research Council, Biostatistics Research Unit, within the South African Food Database department. A strong interest in the scarce skill of food compilation has seen her active and committed to striving for a country-specific food composition database for South Africa. She has presented food composition related research nationally and internationally over her career path. Joelaine is a proud Air Force Military spouse and mother of two young adults and 3 fur babies. She is currently working towards her PhD in Nutritional Science at the University of Stellenbosch.

**Introduction:** Preserving plant-based indigenous vegetables is crucial for maintaining biodiversity and promoting sustainable food systems. A paucity of preservation technique data, together with limited robust food compositional data of the plant-based indigenous vegetables consumed within South Africa exists.

**Objective:** To source commonly consumed indigenous vegetables and observe preservation practices among selected households in Vhembe.

**Method:** Purposive sampling of households of the Vhembe district municipality of Limpopo, who utilize, grow, gather, and preserve plant-based leafy vegetables, was set as an immediate inclusion criterion. Participants were randomly selected across 17 villages from four local municipal districts. Data collection involved structured interviews with 268 households across communities. The interviews explored commonly consumed and cultivated indigenous vegetables, preservation practices, cultural beliefs and traditions related to vegetable preservation. Primary outcome variables were variety of leafy vegetables consumed, preserved and methodological details to preserve each type. Descriptive statistics, inferential variables such as frequencies, means averages, standard deviations will be calculated in STATA.

**Results:** More females than males were interviewed (n=231, n=36, respectively), the mean age of 51yrs and the oldest participant age reported 90 years. Top five, commonly consumed vegetables as ranked by preference, included: Phuri, Munawa, Delele, Mushidzhi and Mutohotoho. Frequently reported preservation methods were sun-drying (86%) whilst 62% of the sample population reported that they felt an increase in consumption of indigenous vegetables is common practice. Cultural practices and beliefs play a significant role in shaping preservation methods.

**Conclusion:** This study reports on the availability, access and consumption of diverse plant-based indigenous vegetables, together with detailed preservation methodologies which extend shelf life, in times of scarcity. Understanding traditional practices is crucial for promoting food security, preserving biodiversity, and supporting sustainable food systems. These findings contribute to the scientific dietetics community's understanding of traditional food preservation practices and their role in promoting nutrition and sustainability.

# Cardiometabolic risk in primary school-aged children with physical inactivity and unhealthy eating habits: A comparison study

**Dr Juley De Smidt**[1], Ms Tammy Hartel[1], Prof Andre Oelofse[1], Ms Sabreen Parker[1], Ms Lynn-Joy Solomon[1]
[1]University of the Western Cape, Cape Town, South Africa

**Biography:**
Stellenbosch University MBChB-graduate, completed her PhD at the University of the Western Cape. She started her research career in 2004 in the Department of Human Physiology at Stellenbosch University Medical School.
Currently employed by the University of the Western Cape as a full-time lecturer and researcher. Her passion for her work is evident in lecturing and supervision of postgraduate students in the field of Developmental Origins of Health and Disease, with special emphasis on cardiometabolic diseases.

Childhood obesity is not only related to adult obesity but is also associated with poorer cardiometabolic health outcomes in adulthood, adding to the burden of disease and strain on healthcare systems.

**Aim:** healthier eating habits and physical activity have better cardiometabolic health outcomes in 10–14-year-primary school-aged children from low-income settings around Cape Town area.

**Objectives:** using ultrasound measurements of the carotid intima media thickness (CIMT) and lipid profiles to illustrate better cardiometabolic health outcomes including lower waist circumference (WC), skin fold thickness (SFT), body mass index (BMI) measurements.

**Methods:** A comparison, case control study of 280 primary school-aged children from the Western Cape, South Africa.

**Collected data included:** dependent variables, ultrasound measurements of the cIMT, BMI, SFT and WC. And independent variables, in utero exposure to teratogens, nutrition, physical activity.

**Results:** In utero exposure to teratogens ($r=0.11$ at $p=0.01$) was significantly associated with cIMT. Anthropometric adiposity measurements of children in this study did not correlate with in utero exposure. However, a reduced odd ratio for low BMI males born to smoking mothers (OR = 0.66, CI 0.45 – 0.96). Finally, regression analyses revealed, unhealthy diet ($r =0.63$, $p<0.01$) was significantly associated with dyslipidemia [$F (4,478) = 83.07$, $p<0.01$, $R2 = 0.41$] adjusting for in utero exposure.

**Conclusion:** From a public health perspective identify cardiometabolic risk in primary school-aged children is not just essential but, ultrasound can be used as a safe yet sensitive screening tool. And as an intervention strategy for addressing obesity and -related illnesses, promotion of healthy eating and increased physical activity form the cornerstone. .

# Early nutrition and in-utero teratogen programming effects of later life health outcomes: Prospective study

**Dr Juley De Smidt**[1], Ms Kiyara Govender[1]
[1]University of the Western Cape, Cape Town, South Africa

**Biography:**
A Stellenbosch University MBCHB graduate completed her PhD at the University of the Western Cape. She started her research career in 2004 in the Department of Human Physiology at Stellenbosch University Medical School. In 2006, she obtained a diploma in Natural / Alternative Medicine from the University of the Western Cape. And, in 2008, she was employed by the University of the Western Cape as a full-time lecturer. Her passion for her work is evident in lecturing and supervision of postgraduate students in the field of Developmental Origins of Health and Disease, with special emphasis on cardiometabolic diseases.

**Introduction**: Substantial evidence now shows that nutrition during both pre- and early post-natal life can programme long-term health into adulthood. This study aims to investigate the link between maternal diet, micronutrient deficiencies, in utero teratogen exposure and socioeconomic status and the health outcomes in their children at birth, six and twelve months of age. Therefore, the objectives were to demonstrate the interaction of diet and teratogens on the health outcomes in offspring.

**Methods:** A sub-sample of 150 pregnant mothers was selected from an ongoing prospective study. These selected mothers from a low-income setting around Cape Town area formed the generation 1 and their new-borns form generation 2. Follow-ups were scheduled for at birth, six and twelve months. Data collected includes maternal anthropometric, dietary intake, socioeconomic status, and educational level were collected at recruitment and follow-up antenatal visits. Infant anthropometric, feeding, and dietary intake, cognitive development and ultrasound data were collected at birth, six and twelve months.

**Results:** Maternal micronutrient deficiency was significantly correlated with newborn weight ($r = 0.184$; $p = 0.008$), newborn length ($r = 0.211$; $p = 0.002$), newborn head circumference ($r = 0.191$; $p = 0.006$). Maternal nutrition was a significantly predictor of new-born head circumference in males [$F(4) = 16.571$, $R2 = 0.248$, $p < 0.001$], gestational age [Beta = -0.019, $p = 0.009$] and birth weight [Beta = 0.248, $p < 0.001$].

**Conclusion:** Maternal diet and lifestyle modifications before and during pregnancy can decrease the long-term cardiometabolic risk in offspring. It can also assist in discontinuity of an intergenerational cycle of obesity which might otherwise lead to escalating rates of obesity and related disorders in South Africa. Equally important, the effective translation of public health strategies to strengthen the scientific evidence on effects of early life programming in low-income populations.

# ► An analysis of food and beverage marketing on television in South Africa

Ms Lisa Deyce[1], Dr Tamryn Frank[1], Ms Alice Khan[1], **Prof Rina Swart[1,2]**
[1]University of the Western Cape, Cape Town, South Africa, [2] DSI/NRF Centre of Excellence in Food Security, Cape Town, South Africa

**Biography:**
I am a dietitian currently working as a Research Assistant in Public Health Nutrition at the University of the Western Cape. I completed both my BSc Dietetics degree (2016) and my Masters in Nutrition (2022) at the University of the Western Cape. I have a special interest in food marketing on social media and have worked on projects relating to child directed marketing on television as well as on social media by influencers.

Television marketing of ultra-processed products has been shown to be associated with increasing childhood obesity rates. In 2014 recommendations were made to the Advertising Standards Authority and the Department of Health in South Africa to prohibit the advertising of alcohol and unhealthy products (particularly during children's television viewing times). These recommendations have not been adhered to.

This project aimed to 1) assess the frequency and level of exposure of television viewers to food marketing, particularly to children, 2) identify techniques used in television food marketing and 3) assess the nutritional composition of food marketed on television.

This descriptive study used secondary data collected from an advertisement broadcast monitoring company. Food and beverage advertisements were downloaded for 16 randomly selected dates in 2022 from 8 television channels (4 free, 4 paid channels). The INFORMAS protocol for the analysis of television advertisements was used. Nutrition information was collected for each product observed in each advertisement and analysed using the South African Nutrient Profiling Model and the WHO Africa Nutrient Profiling Model.

A total of 6852 advertisements were collected, with 351 unique advertisements. The preliminary results show that according to the SA NPM, 60% of advertisements contained products that would carry a warning label. According to the WHO Africa NPM, 70% of advertisements would not be permitted to be marketed to children. Advertisements containing products that would carry a warning label and/ or alcohol contain more marketing techniques than advertisements without these products.

The majority of advertisements on popular television channels in SA contain products that would carry warning labels and would not be permitted to be advertised to children. Children are exposed to pervasive marketing techniques on products that are detrimental to their health. Industry self-regulation on marketing restrictions of unhealthy products does not work, enforceable marketing regulations are required.

# Strategic communication for interventions in malnutrition prevention and management

**Mrs Liezel Engelbrecht**[1], Prof Lisanne du Plessis[1], Prof Scott Drimie[1]
[1]Division of Human Nutrition, Department of Global Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Stellenbosch, South Africa, Cape Town, South Africa

**Biography:**
Liezel Engelbrecht is a registered dietitian with a Master of Public Health Nutrition from Stellenbosch University. She currently works as an Innovation Manager at the DG Murray Trust, where she focusses on research, projects and programmes aimed reducing and preventing malnutrition among children and promoting early childhood development. She has background in print media and content creation and started her career as a journalist and editor before changing career paths.

**Objectives:** Strategic communication serves as a boundary spanner that can reach across different spheres of influence. As malnutrition, which encompasses a spectrum of nutritional imbalances, is strongly influenced by social and structural determinants of health it is necessary to reach stakeholders in different spheres. The primary objective of this study was to evaluate the success of the strategic communication of two initiatives launched by the Western Cape Department of Health to reduce the prevalence of malnutrition in the province: the First Thousand Days (FTD) campaign, which mainly focusses on infant and young child nutrition, and the WesternCape on Wellness (WoW!) programme, which focusses on the reduction of noncommunicable diseases (NCDs) and obesity.

**Design:** This was an exploratory-descriptive qualitative (EDQ) study with an analytical component. Success was measured based on the awareness, knowledge and behaviour of frontline workers and community members related to the initiatives and its objectives.

**Setting:** The study was conducted in low-resource communities in the Western Cape Province, South Africa, namely Zweletemba and Masiphumele.

**Participants:** The total sample size was 17, which included community representatives (n=6), frontline workers (n=4), community NGO officials (n=4) and key government officials (n=3).

**Results:** The results show a lack of awareness and knowledge of the WoW! initiative, and sub-optimal behaviour related to the FTD initiative among frontline workers and community members.

**Conclusions:** Despite multisectoral interest, the results highlight limited commitment to resources needed for the successful implementation of communication strategies intended to change behaviour aimed at reducing malnutrition. Double duty actions (DDAs) imbedded in a whole of society approach (WoSA) may offer solutions.

# Evaluation of non-sugar sweeteners in the South African packaged food supply

**Dr Tamryn Frank**[1], **Ms Loren Hans**, **Dr Elizabeth Catherina (Rina) Swart**[1]
[1]University of the Western Cape, Cape Town, South Africa

**Biography:**
Tamryn is a researcher at the UWC School of Public Health. She holds a PhD in Public Health. She spent 2022 as a visiting scholar at the University of North Carolina's Global Food Research Program in the USA. In her work as a researcher she has served on the team developing a nutrient profiling model and front-of-package warning labels for SA. She is also involved in child-directed marketing research, and researching ultra-processed product intake. Before branching out into academia, Tamryn worked as a primary health care dietitian for eight years for the SA Department of Health.

**Introduction:** The Health Promotion Levy (a sugary beverage tax) was implemented in South Africa in 2018, that led to product reformulation by the food industry to reduce the amount of sugar in beverages. In 2023, a draft Regulation (R3337) on food labelling was published in South Africa. This draft regulation proposes a front-of-package warning label, including a warning label for non-sugar sweetener (NSS) on packaged foods containing NSS. Currently, very little is currently known about the prevalence of packaged foods that contain NSS in South Africa, or how the prevalence of NSS has changed over time.

**Objectives:** This study aims to evaluate the presence, and types of NSS in the South African packaged food supply, and how the prevalence of various types of NSS has changed between 2018 and 2022.

**Methods:** This study is a cross-sectional study, evaluating non-sugar sweetener content in all packaged foods and beverages sold in the six largest supermarket chains in South Africa, using packaged food data collected in 2018, 2020 and 2022.

Results: The analysis for this study is still underway (and will be completed prior to the conference). It will provide information on the food and beverage categories with the highest prevalence of NSS, the types of NSS commonly used in South Africa, as well as an evaluation of changes to the number of products carrying NSS over time.
Introduction: The Health Promotion Levy (a sugary beverage tax) was implemented in South Africa in 2018, that led to product reformulation by the food industry to reduce the amount of sugar in beverages. In 2023, a draft Regulation (R3337) on food labelling was published in South Africa. This draft regulation proposes a front-of-package warning label, including a warning label for non-sugar sweetener (NSS) on packaged foods containing NSS. Currently, very little is currently known about the prevalence of packaged foods that contain NSS in South Africa, or how the prevalence of NSS has changed over time.

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# Characteristics and outcomes of educational and counselling interventions on breastfeeding in early and full-term infants conducted in low-and-middle income countries: A systematic review

**Ms Debby Gates**[1], Ms Hanli Etsebeth[2], Dr Patricia Makwambeni[2], Dr Emmanuel Nwozu[2], Associate Professor Janetta Harbron[2]
[1]2 Military Hospital, Cape Town, South Africa, [2]HPALS, Department of Human Biology, University of Cape Town, Cape Town, South Africa

**Biography:**
Debby completed her BSc in Dietetics (1992) at the University of Stellenbosch. After graduation she joined in South African Military Health Service as dietitian and currently based at 2 Military Hospital, Wynberg. The first 8 years were devoted to primary health care (Gauteng) and since 2001 she has been practicing as dietitian in paediatrics. For 15 years this role was also shared with food service management and GIT surgery & diseases. She has extended dietetic experience and living her passion within paediatric nutrition care. Debby is also currently a PhD candidate at the University of Cape Town.

Despite ongoing promotional efforts, exclusive breastfeeding (EBF) rates remain far below the World Health Organization and United Nations International Children's Emergency Fund's 2025 target. We aimed to systematically synthesize the most recent evidence on characteristics and outcomes of postpartum educational and counselling interventions on breastfeeding duration.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) were followed. Experimental and observational studies conducted on postpartum adult mothers of early and full-term infants, in Low-to-Middle-Income Countries, published in English between 2012 and 2022, were included. We searched PUBMED, Ebsco Host (Academic Search Premier, Africa-Wide Information, CINAHL, Health Source: Nursing/Academic Edition, APA PsycArticles and APA Psycinfo), Scopus, Web of Science and Cochrane Library during March 2023. Reference lists of final selected articles were screened. Study selection, data extraction, and quality assessment were carried out by two independent reviewers.

Of the initial 1952 titles identified, 12 studies were included. Interventions were offered as education only (n= 5), or in combination with supportive counselling (n= 7). Majority (n= 10) were conducted within an urban setting by health care workers. Intensity provided as face-to-face (n= 2), telephonic (n= 3), and combination (n= 5). Heterogeneity amongst educational content and intervention time-point assessment (day 3 until 6 months postpartum) were evident. All intervention groups (n=12) demonstrated significant increase in EBF duration rates but not necessarily at equivalent time-points, or achieving the 2025 target rate. Studies assessing knowledge (n= 4), attitude (n= 4) and self-efficacy (n= 2) showed increases as well as increased EBF rates. No interventions were aimed at early term infants.

Educational and counselling interventions have strong potential to improve exclusive breastfeeding duration rates. Future studies aimed at early term infants are recommended.

# Inadequate hospital management support of food service facilities and staff may impede food safety in public psychiatric hospitals in the Eastern Cape, South Africa

**Ms Asanda Getyeza**[1], Mrs Marieke Theron[1], Professor Rina Swart[1]
[1]University of Western Cape, Cape Town, South Africa

**Biography:**
Asanda Getyeza has been the Chief Food Service Manager for the past nine years, with 15 years of experience in public hospital food services. She is currently a Ph.D. candidate at the University of Western Cape and completed her MSc. specializing in nutrition at the University of Western Cape in 2020.
Asanda is passionate about nutrition, psychiatry, and population-based health. Her MSc. research focused on the nutritional adequacy and quality of food for psychiatric patients in public hospitals in the Eastern Cape.

**Introduction:** The study investigated the effects of inadequate food service management and insufficient managerial support on food safety in public psychiatric hospitals in the Eastern Cape province. It focuses on the significant role of hospital management in enhancing food service performance. Foodservice has a crucial role in providing therapeutic benefits to patients and is required to produce nutritionally adequate meals that are in acceptable quantities and microbiologically safe. South Africa's Regulation 638 of 2018 governs food services. Non-compliance issues like inadequate hand hygiene infrastructure and a lack of training threaten food safety and quality. Training should focus on the essential job aspects to improve performance. The study recommends investing in employee skill development and providing essential infrastructure to ensure compliance with food safety regulations. Prioritizing food service training can improve food quality, increase patient food consumption, and improve overall hospital experiences.

**Methods:** This study employed a qualitative descriptive cross-sectional design. The sample population consisted of 96 participants.

**Results:** Food service personnel's poor compliance with food safety regulations in public psychiatric hospitals emanates from a need for more resources, infrastructure, and job-specific training. Between 2014 and 2019, 26% [n=8] of 31 food service personnel received training. In 2019, 19% [n=6] of food service personnel were trained in occupational health and safety, while only 3% [n=1] were trained in a catering-related course.

**Conclusion:** The quality and safety aspects of the food service units could have been more optimal. Ensuring safe and healthy food-producing services in public healthcare requires basic hygiene infrastructure, enforcing hygiene standards, and adequate training of food handlers on food safety principles. An accountability culture can help improve food service performance and maintain regulatory compliance. Without these measures, the goal of a safe food-producing environment remains a pipedream.

# Higher iron status at early pregnancy in women receiving routine iron supplementation is associated with more respiratory infectious morbidity and lower response to immunisation in their infants: The NuPED cohort

**Dr Caylin Goodchild**[1], Dr Elize Symington[2], Prof Jeannine Baumgartner[1,3], Dr Lizelle Zandberg[1], Dr Amy Wise[4,5], Prof Marius Smuts[1], Prof Linda Malan[1]

[1]Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, [2]Department of Life and Consumer Sciences, University of South Africa, Johannesburg, South Africa, [3]Department of Nutritional Sciences, King's College London, London, United Kingdom, [4]Department of Obstetrics and Gynaecology, University of the Witwatersrand, Johannesburg, South Africa, [5]Empilweni Services and Research Unit, University of the Witwatersrand, Johannesburg, South Africa

**Biography:**
Caylin owns a Dietetics practice in Sandton, JHB.

**Background:** In SA, pregnant women receive routine iron supplementation for anaemia prevention regardless of their iron status. Antenatal iron deficiency and anaemia, along with elevated ferritin and haemoglobin have been associated with various maternal morbidity symptoms. Little is known about how maternal iron status associates with infectious morbidity in infants.

**Aim:** This study aimed to assess whether the iron status at < 18 weeks' gestation is associated with infectious morbidity in infants of urban pregnant women who received routine supplementation in SA.

**Setting:** A public maternal and child specialist hospital in Johannesburg, SA.

**Method:** In 84 mother-infant pairs from a prospective cohort, we measured biomarkers of maternal iron status and anaemia at <18 weeks' gestation and infant respiratory and gastric infection, measles response and antibiotic use between ages 6 and 12 months. Associations were determined using multivariable regression models adjusted for confounders.

**Results:** The odds to experience respiratory illness tended to be 3.3 (95% CI 0.838, 13.086) times higher in infants whose mothers had ferritin ≥30 µg/L at <18 weeks' gestation (p=0.088). The odds to have a higher measles vaccination response was 82% lower in infants whose mothers had ferritin ≥30 µg/L at <18 weeks' gestation (p=0.024). The odds in infants whose mothers were non-anaemic (Hb>11.0g/dL) tended to be 7.3 times (CI 0.723, 74.536) higher to receive antibiotics (p=0.092).

**Conclusion:** Infants of women with a sufficient to higher iron status at early pregnancy supplemented daily with ~55 mg elemental iron had more respiratory illness, a lower immune response to measles vaccinations, and more antibiotic treatment than their deficient to lower iron status counterparts. The current routine supplementation strategy may cause unintended harm to infants of iron-sufficient mothers.

# Assessment of the knowledge of patients with diabetes mellitus who use isiZulu vs English diabetic food exchange lists

Information | Education Abstract

**Prof Annelie Gresse**[1], Mr Busani Hlabisa[1], Mr Mvelo Gumede[1]
[1]Nelson Mandela University, Port Elizabeth, South Africa

**Biography:**
Prof Annelie Gresse is a registered dietitian with a DSc in Dietetics from Potchefstroom University for CHE (now Northwest University). She has lectured for 40 years and is also in educational management positions since 1992. Her main research areas are diabetes mellitus and school nutrition

**Introduction:** The incidence of diabetes mellitus is increasing, with the prevalence estimated at 12.8% globally and amongst urbanized black communities in South Africa 5.3 to 8%. Food exchange lists are often used to keep the intake of macronutrients constant and for variety. There are no food exchange lists in the Zulu language.

The aim of this pilot study was to determine whether a simplified diabetic food exchange list, translated into the isiZulu language, will improve the Zulu diabetic patients' understanding of the food exchange list, compared to the English exchange list.

**Methods:** A comparative, cross-sectional, pre-test-post-test quantitative research design was used in both a rural and an urban setting. A programme with a theoretical nutrition and exchange list application component, was used for two groups of Zulu speaking diabetic patients, one group trained in English, and one trained in isiZulu.

**Results:** In the rural area, the isiZulu trained group increased their mean score from 43.3% in the pre-test to 75.6% in the post-test and the English trained group increased their mean score from 35.0% in the pre-test to 54.2% in the post-test. There was no significant difference in the scores of the two groups in the pre-test ($p = 0.126$) but the scores in the post-tests were significantly different ($p < 0.001$). In the urban area the isiZulu trained group increased their mean score from 36.9 % in the pre-test to 64 % in the post-test and the English trained group increased their mean score from 31.2 % in the pre-test to 69.3 % in the post test. There was no significant difference between the scores of the two groups in the pre-tests ($p = 0.904$) or in post-test ($p = 0.192$).

**Conclusion:** This research contributes valuable insights to addressing language barriers in healthcare communication.

# Continuous professional development of dietitians and nutritionists– compliance, barriers to compliance and preferences of practitioners

Information | Education Abstract

**Prof Annelie Gresse**[1], Mrs Lenore Spies[1], Mrs Liesbet Koornhof[1], Dr Nasheetah Solomons[1], Dr Vanessa Mbhatsani[1], Ms Piletso Manisa[1], Mrs Phumeza Mkontwana[1], Ms Rebone Ntsie[1], Mr Mathubesizwe Radebe[1]
[1]Dietetics and Nutrition Board, HPCSA, Pretoria, South Africa

**Biography:**
Prof Annelie Gresse is a registered dietitian with a DSc in Dietetics from Potchefstroom University for CHE (now Northwest University). She has lectured for 40 years and is also in educational management positions since 1992. Her main research areas are diabetes mellitus and school nutrition. She is the Head of Department of the Department of Human Nutrition and Dietetics at Nelson Mandela University and the University Representative on the Dietetics and Nutrition Board of the HPCSA

**Introduction:** The continuous professional development (CPD) compliance of dietitians and nutritionists are below 40% in South Africa. This is concerning as it may lead in future to professionals being scrapped from the roll and, with only around one dietitian or nutritionist per 10 000 people in South Africa, a reduction in the workforce will have serious consequences.

The aim of this survey was to determine the barriers to compliance and the preferences of practitioners in obtaining points for CPD.

**Methods:** An online questionnaire was sent to about 5 600 dietitians and nutritionists and to increase participation, practitioners were reminded about it during various events. Google Forms were used to analyse the responses.

**Results:** Only 38.8% of the 335 respondents felt that it is difficult to obtain enough CPD points. The lack of time (47%), inconvenient times and places of events (62%) and the cost of activities (46%) were the main barriers to obtaining CPD points. The most important support for practitioners were to be able to complete activities in their own time (70%). Reading articles are still seen as the most preferred method to obtain points (56%), followed by online courses (48%). The topic most preferred was ethics (43%), followed by gut health (36%) and chronic diseases of lifestyle (36%).

**Conclusion:** A suggestion that can be investigated was to create one platform where all CPD opportunities are loaded or linked so that it is easy for practitioners to access activities can be of benefit. The Dietetics and Nutrition Board will assist to augment ethics articles for CPD points in ethics in their newsletters. All CPD providers should take note of the results and implement solutions. Practitioners should also make use of other activities that can be conducted to earn CPD points as per CPD guideline.

# ► Dietary intake and associated factors (food security, psycho-social and behavioral change) in women with Gestational Diabetes Mellitus (GDM)

Ms Shabira Gaffoor-Farooqui[1], Professor Naomi Levitt, Ms Christina Zarowsky, Professor Shane Norris, Ms Katherine Murphy, **Prof Janetta Harbron**[2]
[1]Masters Student (UCT), Cape Town, South Africa, [2]University of Cape Town, Cape Town, South Africa

**Biography:**
I'm from Cape Town, graduated from UWC in 1999 with BSc in Dietetics (Hons).I am a private practicing dietician for over 20 years. My area of specialty is lifestyle diseases, gut health and nutrigenetics. I presented talks on local radio stations and wrote short articles for a local newspaper and magazine. I am a mom of 2 kids, a daughter who is a 3rd year student at UCT and a son who is currently in grade 12. My new goal is to venture into the academic field. I'm passionate about art, love the outdoors and go for walks regularly.

**Introduction:** GDM prevalence has increased globally, including South Africa, in the last twenty years. There is limited literature about the dietary intake, specifically the types of foods consumed by women with GDM in Cape Town.

**Objectives:** To investigate the dietary intake and associated factors in women with GDM in Cape Town.

**Methods:** The baseline cross-sectional data of n=205 women with GDM who participated in the Integrated Intervention for Diabetes Risk after Gestational Diabetes (IINDIAGO) study were analyzed. Food Frequency (FFQ) and interviewed-administered questionnaires were used to collect information on diet, health behaviors, food security, psycho-social factors, and perceived barriers. Frequencies and means were calculated.

**Results:** Added sugar was the most prominent food consumed and the highest contributor to total energy (TE) and total carbohydrate intake. The top five foods most commonly consumed were fruit (96.7%), potato (95.6%), yellow vegetables (33.2%), white rice (91.7%) and pasta (88.9%). The majority indicated that they 'Always' add fat to pasta (64.9%), mashed potato (62.9%), baked potato (53.7%), yellow vegetables (52.7%), other vegetables (47.3%) and stews/meat dishes (55.9%). Soft tub margarine (60.5%), fish oil (57.1%) and sunflower oil (30.2%) were the fats used by most participants. The perceived barriers to consuming healthy foods included cost (60.9%), accessibility (58.5%), taste (52.7%), and limited time to cook (47.3%). Most participants were food secure, however 18.5% ran out of money to buy food and/or had to cut the size of meals or skip meals due to affordability. Half of the participants had self-reported depression; mild in 26.9% and moderate to severe in 24.5%.

**Conclusion:** The type of food consumed by women with GDM consisted of many unhealthy choices and energy-dense foods. Other factors that may influence dietary intake include depression, food insecurity, affordability of foods and perception of healthy food. This research provides ideas for targeted intervention recommendations.

# Malnutrition relapse is a concern in children aged 6-59 months in rural North West Province, South Africa

**Prof Lize Havemann-Nel**[1], Mrs Anneke Saunders[1], Prof Edelweiss Wentzel-Viljoen[1], Dr Mariaan Wicks[1]
[1]North-west University, Potchefstroom, South Africa

**Biography:**
Lize is a Registered Dietitian who is currently employed as an Associate Professor in the Centre of Excellence for Nutrition at North-West University (NWU). Until recently she was fulltime employed in the School for Nutrition, Physiology and Consumer Sciences at NWU where she was mainly responsible for the undergraduate Community Nutrition training of the Dietetic students and doing nutrition research. Her main research interest has recently shifted to include Public Health Nutrition - in particular Infant and Young Child Nutrition and malnutrition, where she supervises several MSc and PhD research projects that include both quantitative and qualitative research methodology.

**Introduction:** The prevalence of malnutrition in children under five remains high, and unfortunately many cases of severe acute malnutrition (SAM) are detected too late. Initiatives, including the WHO 10-step in-hospital malnutrition treatment protocol are in place to treat children who are indeed identified with SAM. Of concern, however, are those children who are discharged post-hospital treatment, but who relapse and need treatment for the same condition again. Malnutrition relapse exacerbates poor physical, social and cognitive development.

**Aim:** This study examined the prevalence of malnutrition relapse, with and without readmission to hospital, in children aged 6-59 months in a rural area in the North West Province, South Africa.

**Methods:** Admission and discharge information for the treatment SAM and moderate acute malnutrition (MAM) was extracted from Christiana Hospital between 1 January 2019 and 31 August 2021, for children aged 6-59 months. Those who were readmitted for SAM or MAM were identified and recorded as relapse with readmission. Children treated between 1 January 2020 and 31 August 2021 were followed up at home and anthropometric status was determined to identify whether malnutrition relapse occurred, since discharge from hospital, without readmission.

**Results:** A total of 85 children (55% male and 45% female) were identified for inclusion as first-time admissions, with most SAM/MAM admissions falling within the age group of 12-23 months. The total malnutrition relapse rate in this study was 24% (n=20 children). Of these children, 12 have been readmitted to hospital, whereas eight children relapsed without readmission. Two children relapsed for a second time, and two passed away.

**Conclusion:** Relapse after discharge following in-hospital treatment for SAM/MAM is a concern in rural areas, and extra monitoring is necessary during follow-up care at household/community level. Further research identifying the factors underpinning why mothers fail to prevent malnutrition relapse is warranted.

# Practice experience and outcomes of an audit of a pilot VLCD programme for management of cardiometabolic risk in obesity

Dr Lauren Hill[1], **Mrs Sarina Nel**
[1]Critical Point Nutrition Consultancy, Cape Town, South Africa

**Biography:**
I have been in private practice for over 10 years, with a primary focus in weight loss and nutritional treatment of chronic disease. Since 7 years ago I have used Optifast in a weight loss program, which I have been using extensively in assisting patients with weight loss elements of chronic disease, both in and out of hospital. I have completed both CDE trainings on Optifast and have participated in data gathering. I have also endeavoured to assist a prominent medical aid scheme in their evaluation of Optifast, with the goal of including the product under their scheme cover.

**Introduction:** Cardiometabolic risk factors in obesity are associated with significant health risks and require aggressive dietary interventions to avoid untoward medical episodes such as diabetic emergencies and cardiac events. This pilot audit of clinical practice aimed to track the real-life impact of the use of commercial Very Low Calorie Diet (VLCD) therapy in the context of supervised dietetic care. This is of relevance because the perceived high cost of VLCD products limits uptake in private practice. Therefore, demonstration of rapid metabolic and body weight improvements may incentivise patients to comply to such programmes for a defined period due to superior results compared to standard diet-based dietetic approaches.

**Methods:** A clinical audit of high risk obese patients with cardiometabolic risk factors was undertaken as part of routine clinical management in single private practice. Dietary prescription was 600-800kcal and 60-80g protein. Patients underwent nutritional and biochemical assessment upon first referral, at 6 weeks and at 12 weeks.

**Results:** Seven patients were audited to investigate commercial VLCD effectiveness. Mean 12 week weight loss was 7.8 ± 4.48kg, BMI reduction was 5.5 kg/m2 ± 5.8, percentage fat loss 1.7 ± 3.2%, and waist circumference 9.6 ± 5.3cm. Reduction in HbA1c was 7.1 ± 6.3 % and total cholesterol 1.5 ± 1.2 mmol/l.

**Conclusion:** In our practice experience, the use of a commercial VLCD produces clinically relevant improvements in body weight, BMI waist circumference and metabolic parameters within 6-12 weeks.

# Effect of market participation on the food and nutrition security status of the rural smallholder farmers

**Dr Simphiwe Innocentia Hlatshwayo**[1], Dr Mjabuliseni Ngidi[1], Dr Temitope Ojo[1]
[1]University of KwaZulu-Natal, Pietermaritzburg, South Africa

**Biography:**
Dr Hlatshwayo is a Postdoctoral researcher at the University of KwaZulu Natal under Food Security discipline. Her research interest include smallholder farmers market participation, crop productivity, food and nutrition outcomes.

Hunger and malnutrition remain serious issues in developing countries, particularly in rural regions. Increased market participation of smallholder farmers can result in improved livelihood and nutrition outcomes. However, smallholder farmers encounter several obstacles that hinder their ability to participate in the market.

As a result, the objective of this study is to investigate the factors that influence market participation and its impact on household nutrition security. The study relied on secondary data gathered from a sample size of 1520 people. About 389 of smallholder farmers participated in the market. The results from Food Consumption Score (FSC) cut-off points showed that in the overall sample households, 54% were within the acceptable food consumption diets (>42), while 30% and 16% were in the borderline (28.5-42) and poor diets (0-28), respectively. According to the Household Dietary Diversity Score (HDDS) findings, 57% of smallholder farmers in the total population sample consumed highly diverse diets (consisting of at least 6 food groups), while 25% and 18% of smallholder farmers consumed diets with medium dietary diversity and low dietary diversity, respectively.

The results from marginal analysis showed that gender of household head, receiving social grants and higher wealth index had a positive impact on market participation. The results from Poisson endogenous treatment effect model showed that household size, ownership of livestock, social grant, wealth index, access to market information and involvement in crop production had a positive and statistically significant impact on household nutrition security. On the other hand, agricultural assistance showed a negative and significant impact on household nutrition security. Providing nutrition education among smallholder farmers can help to raise awareness on the importance of nutrition security. More nutrition programmes and workshops that need to be conducted in rural areas to help smallholder farmers on improving their nutrition security status.

# Effects of Xylitol and Erythritol on some type 2 diabetes and obesity related parameters: A comparative study

**Ms Nothando Philile Hlongwane**[1], Prof Md. Shahidul Islam[2]
[1]University of KwaZulu-Natal, Durban, South Africa, [2]University of KwaZulu-Natal, Durban, South Africa

**Biography:**
Nothando Philile Hlongwane is a student at University of KwaZulu-Natal, School of Life science who has an undergraduate degree and Honours in Biochemistry and is currently doing her masters. She is supervised by Professor MS Islam from Biomedical Research Lab.

**Introduction:** Diabetes is an escalating public health epidemic that demands urgent medical attention. Therefore, this study was aimed to investigate and compare the antioxidant, anti-hyperglycemic, and anti-hyperlipidemic properties of erythritol and xylitol, two widely used sugar replacers.

**Methods:** The antioxidant potential of xylitol and erythritol was measured by their ability to scavenge the free radicals including 2,2-Diphenyl-β-picrylhydrazyl radical (DPPH), nitric oxide (NO) and Hydroxyl radical (OH). Furthermore, the effects of xylitol and erythritol on carbohydrate and lipid digestive enzymes were assessed by measuring their inhibitory activity on α-amylase, α-glucosidase, and pancreatic lipase, respectively. Anti- hyperglycemic effects were further evaluated using glucose uptake in yeast cells. Moreover, oxidative stress biomarkers including glutathione (GSH), superoxide dismutase (SOD), catalase (CAT) and nitric oxide (NO) enzymes were measured to further evaluate the antioxidative effect of xylitol and erythritol. The binding affinities of xylitol and erythritol to the aforementioned digestive enzymes was also evaluated using molecular docking.

**Results:** Xylitol and erythritol exhibited a dose dependent antioxidant activity on DPPH, NO, and OH radicals, and inhibitory activity on lipid and carbohydrate digestive enzymes. Both sugars promoted the absorption of glucose into the yeast cells. Inducing oxidative stress on the liver resulted in increased NO, and decrease in GSH, CAT, and SOD levels. However, the addition of sugar alcohols reversed these effects as shown by increase in GSH, CAT, and SOD levels with a decrease in NO level. However, xylitol showed better activity than erythritol in terms of all parameters studied. Furthermore, xylitol also displayed the highest binding affinity to α-amylase, α-glucosidase and pancreatic lipase compared to erythritol.

**Conclusion:** The findings of this study suggest that xylitol has better efficacy in terms of antidiabetic, anti-hyperglycemic and anti-hyperlipidemic effects than erythritol. Further studies on experimental animal model and humans are required to ascertain the results of this study.

# The impact of sugar and milk addition on the antioxidant, antidiabetic and anti-obesogenic properties of coffee

**Mr Almahi Idris**[1], Prof. Shahidul Islam[1]
[1]Biomedical Research Lab, Department of Biochemistry, School of Life Sciences, University of KwaZulu-Natal, Westville Campus, Durban 4000, South Africa., Durban, South Africa

**Biography:**
Almahi Idris is a student at the University of KwaZulu natal. He holds a masters in Biochemistry and is currently pursuing a PhD in Biochemistry, particularly in biomedical research. His PhD is on the studies on the antioxidative and antidiabetic effects and underlying mechanisms of selected coffee beans from different parts of the world in type 2 diabetes

**Introduction:** Coffee beans have a long history of use as traditional medicine by various indigenous people. Recent focus has been given to the health benefits of coffee beans and their bioactive compounds. Research on the bioactivities, applications, and effects of processing methods on coffee beans' phytochemical composition and activities has been conducted extensively for the management of diabetes and obesity.

**Objective:** The current study aims to evaluate the effect of adding sugar and milk on coffee's antioxidant, antidiabetic, and anti-obesity properties using in vitro and in silico experimental modules.

**Methods:** Black coffee, black coffee and sugar, black coffee and milk, and black coffee, sugar and milk were screened in vitro for antioxidant properties using DPPH, FRAP, and NO as well as their antidiabetic, and anti-obesogenic inhibitory effect on α-glucosidase, α-amylase, and pancreatic lipase enzymes.

**Results:** Black coffee showed the highest scavenging in vitro antioxidant activities more than coffee with sugar, coffee with milk, and coffee with sugar and milk. The black coffee further presented higher α-glucosidase, α-amylase, and pancreatic lipase inhibitory activities. Furthermore, LC-MS analysis indicated the presence of various compounds in coffee and milk. In silico analysis, revealed a strong molecular interaction of chlorogenic acid found in coffee with enzymes under the study.

**Conclusion:** The black coffee demonstrated the most potent efficacy as antioxidant, antidiabetic, and anti-obesogenic effects compared to the addition of sugar and milk to the coffee, which decreased its potential activities. Hence, black coffee consumption may be beneficial for managing T2D and obesity. However, further investigations in animal models and human subjects are warranted in this regard.

# Antidiabetic and anti-obesogenic properties of selected artificial sweeteners; and their modulatory effect on the redox imbalance of Fe2+-induced hepatic oxidative stress

**Ms Huda Ismail**[1], Professor S .Shahidul Islam[1]
[1]Department of Biochemistry, School of Life Sciences, University of KwaZulu-Natal (Westville Campus), Durban 4000, South Africa, Durban, South Africa

**Biography:**
Huda Ismail is a dedicated student .Holding an honors degree in biochemistry from the university of Kwa-Zulu-Natal .She is currently pursuing a masters in biochemistry with her research on biomedical research with a focus on T2D and obesity in particular to enhance the development of improved alternative medications and supplements for the more effective treatment of these disorders.

**Introduction:** The excessive consumption of simple carbohydrates, such as sucrose and fructose, has been identified as one of the most significant risk factors contributing to the development of type 2 Diabetes and obesity. Consequently, the use of artificial sweeteners (AS) as sugar alternatives has surged.

**Objective:** Present study was intended to examine the antioxidant, anti-obesogenic, and anti-diabetic potential of commonly used AS, namely saccharin, sucralose, aspartame, and acesulfame potassium, using in vitro, ex vivo, and in silico experimental models.

**Methods:** The in vitro antioxidant activity was determined using the DPPH, NO, and OH• radical scavenging activities. The effects of the sweeteners on α-amylase, α-glucosidase, pancreatic lipase inhibitions, and on glucose uptake using yeast cells was evaluated. Computational molecular docking was further conducted to examine their mode of enzyme inhibition. Additionally, their protective effect against Fe2+ -induced oxidative hepatic injury was investigated ex vivo.

**Results:** Saccharin showed the most significant ($p<.05$) in vitro antioxidant activity among the other sweeteners. Sucralose showed the most potent inhibitory effects against carbohydrate digestive enzymes, α-amylase (IC50=0.2%), and α-glucosidase (IC50=0.60%). Furthermore, it exhibited the most pronounced enhancement of glucose uptake in yeast cells (IC50=0.06%). While aspartame was most effective against pancreatic lipase ($p<.05$), docking results revealed that all sweeteners have appreciably strong binding affinity for the enzymes studied. Further, treatment with AS reversed oxidative stress, as evident by a reduction in nitric oxide (NO) and increased glutathione (GSH) level, catalase, and superoxide dismutase (SOD) activities, with saccharin being the most effective in terms of antioxidative effects.

**Conclusion:** Overall, the results of this study suggest that all studied AS have some level of anti-diabetic and anti-obesogenic effects with saccharin found to be the most beneficial sweetener followed by sucralose. Hence, it's recommended that saccharin and sucralose may be used as a supplement in antidiabetic and anti-obesity foods.

# Upskilling community health workers to be growth monitoring champions for young vhildren using a blended learning approach

Information | Education Abstract

**Ms Anna-Marie Müller** [1]
[1]Grow Great, Durban, South Africa

**Biography:**
Over the past 20 years, I have provided technical and implementation support to public sector priority health programs including the completion of nation-wide health systems research projects. Largely focusing on the provision of paediatric and adolescent antiretroviral treatment, care and support services and recently shifted to the provision of community-based maternal child health and nutrition services targeting the first 1000 days. Over the years, gaining extensive knowledge, skills and experience in the implementation and monitoring of health systems strengthening initiatives, key stakeholder engagement in change management and data informed health decision making for quality improvement and assurance.

**Introduction:** Routine comprehensive growth monitoring of young children in vulnerable communities remains a challenge across South Africa despite being recognised as a key intervention to support children at risk of malnutrition, poor growth and development. Grow Great Champions (GGC), a programme of the Grow Great Campaign, was established in 2018 to upskill, motivate and affirm Community Health Workers (CHWs) to be champions for young children, foregrounding comprehensive growth monitoring, nutrition and health guidance as routine, prioritised support to pregnant women and young children in the first 1000 days.

**Methods:** A blended learning approach using combined online learning content with face-to-face learning opportunities is delivered to CHWs over two days as part of onboarding to the GGC programme. Baseline-Endline Surveys are conducted pre- and post-training to ensure training efficacy and quality followed by practical growth monitoring skills training three months post-onboarding. Continuous mentoring and coaching in the field reinforces the application of skills learned during onboarding, a critical aspect of the program.

**Results:** Training was conducted in the City of Johannesburg District in June and Mopani District in July 2023 with 800 CHWs. Baseline-Endline surveys revealed statistically significant changes in CHW knowledge and confidence pre- and post-training. Overall, CHWs reported high levels of motivation and strong desire for additional training to support young children. Training outcomes varied significantly by trainer, highlighting the need for experienced trainers, well versed in training content and growth monitoring.

**Conclusion:** CHWs play a pivotal role in early intervention and prevention of malnutrition. By providing CHWs with appropriate tools, skills, and knowledge, through the GGC blended learning approach they can effectively identify children exhibiting stunting, Moderate Acute Malnutrition (MAM), Severe Acute Malnutrition (SAM), and those at risk of malnutrition comprehensively. Ongoing in-service training and support accompanied by consistent mentoring and coaching of CHWs is encouraged and needed.

# Maternity protection for women and the potential implications for breastfeeding on return to work at a tertiary hospital in the Western Cape

**Ms Crystal Jacobs**[1]
[1]Department of Health, Cape Town, Western Cape, South Africa

**Biography:**
I am Crystal Jacobs a Registered Dietitian and Accredited lecturer at the University of Stellenbosch. My education: I completed my BsC degree in Dietetics in 2008 at UWC, I further pursued my education and completed a PGDIP in Education of Health Care Professionals at UCT in 2016 and then completed a Master's degree Public Health Nutrition at UWC in 2022. I also completed the African Nutrition Leadership Programme with the Northwest University Centre for Excellence in Nutrition in March 2024. I have sound knowledge, skills in nutrition throughout the lifecycle. I have a special interest in mother and childcare.

**Background:** Optimal maternal health and support in the workplace can have positive impact on the health outcomes of the mother and baby. Legislation specifies that women be protected during the pregnancy period as well as return to work.

**Aim:** To determine the availability of maternity protection practices in the workplace and potential implications for breastfeeding.

**Methods:** A descriptive research study design, using online questionnaire. Additionally, individual in-depth interviews were conducted, using a semi-structured interview guide, with different levels of management.
Ethical considerations: Approval was obtained from the Biomedical Research Ethics Committee at UWC. The project was registered on the National Research Database and approval obtained from the CEO of the Hospital. Participants had to provide written consent.

**Results:** Samples included women participants, permanently employed, and some who were on a full-time permanent contract and eligible for the maternity protection package. Findings demonstrated that in terms of the maternity protection package such as maternity leave, women were granted four months with paid benefits. Mixed reactions reported as to how duties affected their health. A lack of knowledge of their right to health and safety during pregnancy and after birth was evident. Overall, women had a lack of knowledge and understanding of the policies and legislation on maternity protection. Only 67% responded that they continued breastfeeding on return to work. Women experienced challenges with support and the lack of implementation of the breastfeeding workplace policy. The findings from the semi-structured interviews demonstrated lack of knowledge of policies and legislation in terms of the maternity protection package.

**Conclusion:** Findings suggest the need to inform women, create more awareness on the rights of women during and after pregnancy. Beastfeeding support to women returning to work can be strengthened, existing policies be implemented effectively. Management to improve support and practices on maternity protection.

# ► Optimization modelling to identify sustainable diets for Ghanaian adults living in their country of origin and migrants in Europe

**Dr Gabriel Kallah-Dagadu**[1,2], Prof. Ina Danquah[3], Prof. Wafaie Fawzi[2]
[1]University of KwaZulu-Natal, Pietermaritzburg, South Africa, [2]Harvard T.H. Chan School of Public Health, Boston, USA , [3]Heidelberg Institute of Global Health, Heidelberg , Germany

**Biography:**
Gabriel Kallah-Dagadu hails from Ghana and earned a PhD in Statistics from the University of Cape Coast in September 2018. Gabriel has been a lecturer in the Department of Statistics and Actuarial Science at the University of Ghana from September 2014 until June 30th, 2022. In September 2022, he was promoted to Senior Lecturer. Gabriel is a postdoctoral fellow at the University of KwaZulu-Natal and Harvard Chan School of Public Health. His research applies statistical and machine-learning methods for modelling health and climate change datasets, specifically interrelationships among climate change, food systems, nutrition, and planetary health in sub-Saharan Africa.

**Introduction:** Modernizing dietary practices among African populations, driven by economic development, urbanization, and European migration, has led to unsustainable diets. This study aimed to use optimization modelling to identify optimal diets for Ghanaians in Ghana and three European cities, addressing nutritional needs, reducing greenhouse gas emissions (GHGE), achieving affordability, and maintaining cultural acceptability.

**Methods:** Cross-sectional data from the Research on Obesity and Diabetes among African Migrants (RODAM) study, encompassing 5,898 Ghanaian adults aged 18-96 years, collected in Ghana, Amsterdam, Berlin, and London from 2012 to 2014, formed the basis of the analysis. Food intake was assessed using the 134-item Ghana food propensity questionnaire; life-cycle analysis provided food-related GHGE; and food costs were assessed through a market survey. We employed a linear programming-based optimization algorithm in three cycles.

**Results:** In this study population (mean age: 47±12 years; female: 62%), optimization modelling achieved nutrient adequacy and decreased costs with minimal GHGE reductions in Ghana and substantial reductions in Europe for both genders. These ranged from 50-65%, translating into 1.5 kg CO2eq per day (Europe) to 2 kg CO2eq per day (rural Ghana). Cost reductions ranged from € 1.06 (Berlin) to GH¢ 5.00 (rural Ghana). Optimized diets were characterized by increased consumption of fish, fruits, vegetables, cereals, and starchy tubers, substituting red meat, meaty dishes, and sugary foods.

**Conclusion:** This study identified consistently optimized diets for both genders at each study site. Our findings argue for promoting plant-based diets to obtain healthy, climate-friendly, culturally acceptable, and affordable diets for Ghanaians transitioning.

# Rediscovering South Africa's indigenous food heritage: A study on consumption patterns and implications for sustainability in the Gauteng Province

**Dr Hema Kesa**[1], Dr Alex Kamgain[1], Prof Xikombiso Mbhenyane[2]
[1]Food Evolution Research Laboratory, University of Johannesburg, Johannesburg, South Africa, [2]University of Stellenbosch, , South Africa

**Biography:**
Hema Kesa is the Director of the Food Evolution Research Laboratory (FERL), a virtual research lab located within UJ. She supervises postgraduate research projects and lectures Gastronomy (Nutrition) and Sociology of Food and Beverage (Nutrition). Her research interests are in community nutrition and food security. She and the FERL play a key role in encouraging the awareness of good nutrition in communities and the Food Service Industry with the use of Extended Reality (XR) technology and mobile applications.

**Introduction:** South Africa boasts a rich diversity of indigenous food crops with significant potential for fostering health-promoting properties in foods. Rooted in its cultural tapestry, the consumption of these crops has historically played a vital role in addressing nutritional needs and ensuring food security across Africa. However, contemporary trends reveal a decline in the consumption of indigenous foods. This shift is attributed to the nutrition transition and the pervasive commercialization of modernized foods. Amidst high rates of malnutrition and poverty, there arises a critical need to comprehend consumption patterns and knowledge surrounding indigenous foods in South Africa.

**Objectives:** This study investigates the consumption of indigenous foods in the Gauteng province and its implications for the sustainability of the country's food system.

**Methodology:** A descriptive cross-sectional quantitative design was employed, the study surveyed (n=746) participants in Gauteng province through random sampling. Descriptive analysis was done; mean with standard deviations calculated for continuous variables, and percentages calculated for categorical variables.

**Results:** Findings indicate a predominance of female respondents (60%) aged 26-35 (52%), predominantly residing in urban areas within the City of Johannesburg. The commonly identified grain crop was sorghum, the vegetable crop was Amadumbe and the fruit crop was Marula. These were particularly favoured among Black respondents. While positive perceptions towards indigenous foods were prevalent, limited accessibility posed a significant barrier to consumption. Seasonal consumption patterns and motivations driven by health and nutrition underscored respondents' willingness to embrace indigenous foods if made locally accessible.

**Conclusions:** Integration of these crops into the mainstream food system holds promise for enhancing biodiversity, supporting small-scale farmers, and mitigating reliance on resource-intensive agricultural practices. Moreover, valuing indigenous foods fosters cultural preservation and empowers local communities, contributing to a more sustainable and inclusive food system in South Africa

# Market trends and behaviors relating to yoghurt intake in the current economic context in South Africa

Information | Education Abstract

**Ms Leanne Kiezer**[1]
[1]Danone Southern Africa, Bryanston, South Africa

**Biography:**
Leanne Kiezer, RD
BSc Diet UKZN
PG Dip Diet UKZN
MSc Nutrition NWU
Leanne Kiezer is a Registered Dietitian with a Master's Degree in Nutrition from North-West University. She is currently the Head of Corporate Affairs at Danone Southern Africa, leading the company's mission to deliver health through foods to as many Southern Africans as possible. Leanne has served on the ADSA Gauteng South branch committee (2014 - 2015), ADSA executive committee (2016 - 2017) and held the sponsorship portfolio as part of the International Congress of Dietetics local organising committee (2018 - 2021).

**Introduction:** Yoghurt has the credentials to help address the double burden of micronutrient deficiencies and diet-related non-communicable diseases. For this reason, yoghurt is recommended for daily intake as part of the South African Food-Based Dietary Guidelines. However, economic pressures experienced by South Africans may cause in a decline in yoghurt consumption.

**Objectives:** To analyse market trends relating to the yoghurt category and gain insights into yoghurt consumption behaviour in South Africa.

**Methods:** Data was acquired from three sources:

- NielsenIQ report of volumes of spoonable yoghurt sold across retailers in South Africa from 2020 to 2023.
- NielsenIQ OMNIBUS: a representative, nationwide survey (n=3299) of South Africans across metro, urban and rural segments in July 2023.
- NielsenIQ Usage & Attitudes Study conducted among regular yoghurt users (n=850) in Gauteng, KZN, Eastern and Western Cape in July 2023.

**Results:** Forty percent of South Africans declared they were in a worse financial position versus the previous year, driven by food prices (51%), economic downturn (22%) and increasing cost of utilities (19%). From 2020 to 2023, the total volume of yoghurt sold decreased by 18%. The trend was attributed to consumers 'switching' in favour of dry starches including rice, samp and pasta. Forty-six percent of the participants were regular yoghurt users, 20% were lapsed users, and 34% were non-users. The leading barrier to yoghurt consumption was 'cost'. Eighteen percent of the participants declared that they consume less yoghurt per week than they did 12 months ago. Regular users mostly consumed yoghurt 2-3 times per week (42%) or less frequently (32%) compared to the daily recommended intake of two servings per day.

**Conclusion:** Yoghurt intake in South Africa is declining and may be driven by economic barriers. Education focusing on the benefits of yoghurt should be prioritised to encourage daily intake.

# An integration of indigenous foods to Community Nutrition Development Centre (CNDC) menu: A case study of social protection in King Cetshwayo District

Information | Education Abstract

**Prof Unathi Kolanisi**[1]
[1]University of Zululand, Empangeni, South Africa

**Biography:**
Unathi Kolanisi currently works at the Department of Consumer Science, University of Zululand

The Community Nutrition Development Centres (CNDCs) have integrated human rights, dignity, and food and nutrition security into their menu design, but have faced challenges in incorporating indigenous ingredients. A community engagement initiative revealed a lack of knowledge on menu creation and diversified diet preparation, despite studies showing indigenous-based diets lower chronic disease risks, improve health, and affirm cultural heritage. The integration of indigenous foods into CNDC menus is a complex process that requires careful consideration of cultural, nutritional, and environmental factors.

To address this issue, the study piloted the integration of indigenous foods into the menu of a CNDC, to address nutrition transition in indigenous communities. The combination of exploratory case study and phenomenological research design to enhance the depth and richness of qualitative research. Complementary the approaches were used where the students specialising in the field of Meal and Menu planning worked created a menu including indigenous foods, being guided by the existing CNDC menu. For food preparation, students (30) worked with food handlers (15) from the King Cetshwayo district to prepare the Menu, and the Social Development officials to taste the plates (40), as a qualitative consumer sensory evaluation tool, implementing Focus Groups and Interviews/In-Depth Interviews.

The study highlights the importance of a diverse food plate for food and nutrition security, but challenges like budget constraints, limited nutrition knowledge, and limited skills in preparing and serving indigenous meals persist. Integrating indigenous foods into CNDC menus is crucial to promote diversity and break monotony. However, the shrinkage tendency of African leafy vegetables and seasonality necessitate urgent response. Collaboration with other stakeholders is essential for better service delivery and avoiding duplication of services. Food plates should be diverse, containing adequate portions of nutritious, culturally acceptable foods, served with dignity to satisfy hunger and promote active health.

# Unveiling the potential use of a diet quality questionnaire in cardiovascular disease risk screening: A preliminary study

**Dr Retha Kotze**[1], Mr Edward Upton[1]
[1]University of the Western Cape, Bellville, South Africa

**Biography:**
Dr Retha Kotze holds a PhD in nutrition and is a lecturer and researcher in the Department of Medical Bioscience (MBS) at the University of the Western Cape (UWC). Her main responsibility is lecturing of undergraduate and honours' program students. Dr Kotze also supervises postgraduate students. Her research involves three diverse domains, including 1) reproductive biology (focusing on the honey bee, particularly the effect of environmental factors on honey bee sperm biology); 2) cardiovascular disease risk (the role of dietary intake in prediction of CVD risk); 3) teaching and learning (use of educational tools, including immersive technologies, for blended learning).

**Introduction:** Diet quality, including diet diversity, have been associated with cardiovascular disease (CVD) risk. In South Africa, however, dietary intake has not yet been widely implemented as part of CVD risk screening. Therefore, this study aimed to explore the use of a diet quality questionnaire (DQQ) as part of CVD risk screening and its relationship with CVD risk factors.

**Methods:** Thirty-six university employees, aged between 20 and 74 years, participated in CVD risk screening on campus. Diet diversity was assessed using the South African DQQ from which diet adequacy indicators, e.g. diet diversity score (DDS) and global dietary recommendation (GDR) score were calculated. Physical activity and anthropometric measurements were also assessed. Additionally, biomarkers (lipid profile, HbA1C, C-reactive protein, and cystatin-C) were determined using point-of-care devices. CVD risk was determined using an adjusted Framingham 10-year risk score and body mass index.

**Results:** No correlations were found between DQQ indicators and the assessed parameters. However, positive correlations were found between the CVD risk score and parameters not included in the algorithm, which included HbA1C ($R^2$=0.264; p=0.004), waist circumference (WC) ($R^2$=0.248; p=0.004), and waist-to-hip-ratio ($R^2$=0.390; p<0.001), whereas a negative relationship was observed with high-density-lipoprotein cholesterol levels ($R^2$=0.138; p=0.048). Interestingly, considering the DDS (<5; ≥5) and GDR score categories (<10; ≥10), HbA1C was positively related to CVD risk only in the <5 ($R^2$=0.535; p=0.005; n=13) and <10 ($R^2$=0.373; p=0.020; n=14) categories, while WC was related to CVD risk only in the >5 ($R^2$=0.293; p=0.025; n=17) and >10 ($R^2$=0.532; p=0.001; n=16) categories, respectively.

**Conclusion:** Conflicting results were obtained regarding the relationship between diet diversity and CVD risk. The use of the South African DQQ, for the purpose of CVD risk screening, should be further investigated in a larger sample size and be validated.

# Consumer acceptability of a seitan sausage by University of Zululand students, South Africa, a pilot study

Mr Khanyisani Siyanda Dladla[1], Dr Karina Palmer[1], **Ms Papama Kupiso**[1]
[1]University of Zululand, Empangeni, South Africa

**Biography:**
Mr Khanyisani Dladla is a master's student in the Department of Consumer Sciences in University of Zululand. His passion is on food security and product development and or food innovation.

**Introduction:** Recent studies have shown an increased demand in consumption for plant-based meat alternatives. Seitan, also known as “wheat meat” is a vegetarian meat option, and can be used in a variety of dishes.
The study aims to evaluate the potential for consumer acceptance of an innovative food product: seitan sausage as a meat substitute for young adults from the University of Zululand, KwaZulu-Natal, South Africa.

**Methodology:** A cross-sectional design was utilized for this study. The target population included students from the University of Zululand; inclusive of all races and genders, between 18-30 years of age. A total of 60 students were randomly selected to participate in the study. Data collection comprised of using a food action rating test and a 9-point hedonic rating scale to evaluate the potential for consumer acceptance of the seitan sausage.

**Results:** Majority of the participants liked the product (84%), whilst 16% disliked the product. In terms of willingness to purchase the product, 86% of the participants indicated they would consume the product should it be available in the market.

**Conclusion:** The findings revealed that the developed seitan sausage has potential to be accepted by the youth as a meat alternative. Further research needs to be conducted to determine if the developed product would be acceptable to a larger population as this was a pilot study and the results are may not be representative of youth in South Africa.

# The microbial, sensory acceptability and shelf-life properties of sourdough products: A case study of a sourdough practical-related project

**Ms Papama Kupiso**[1], Ms Nokuthula Shongwe Seabi[1]
[1]University of Zululand, Empangeni, South Africa

**Biography:**
Ms Kupiso possesses a Master's degree in Applied Science, specializing in Food and Nutrition. Her area of expertise lies in conducting research related to Food and Nutrition. Presently, she is enrolled in a PhD program at the Durban University of Technology. Concurrently, she holds a position in the Laboratory at the University of Zululand, specifically in the Department of Consumer Science. In this role, she finds great satisfaction in applying her knowledge of food and nutrition to various projects.

**Introduction:** Sourdough bread has become more popular in recent times owing to its distinct flavour, texture, and potential health advantages. To gain deeper insights into the microbial, sensorial acceptability, and microbial characteristics of sourdough, a case study is carried out in a class laboratory practical context.
The sourdough preparation process involves spontaneous fermentation by lactic acid bacteria and yeast. A mixture of flour and water is combined to create a sourdough starter, which ferments for 24 hours. Sourdough bread is rich in probiotic lactic acid bacteria and yeast, which gives it its unique taste and texture. The fermentation process lowers pH levels and prevents harmful bacteria growth, making sourdough a safer and healthier choice than other bread options. The probiotic properties of the lactic acid bacteria in sourdough are thought to offer health benefits. Ongoing research will reveal more results, to be shared at the upcoming conference.

**Methodology:** A cross-sectional study design will be used to gather data. A total of n=60 participants will be randomly selected to participate in the study. A trained panel will also assess and monitor the sensory attributes of the bread samples for 14-days to establish their shelf life.
The microbial composition of the final product will be analysed by culturing samples on different media to isolate and identify microorganisms. Biochemical tests and 16S rRNA gene sequencing will determine specific bacterial and yeast species.

**Conclusion:** In summary, this research shows that sourdough is not only delicious and healthy but also has benefits from the traditional sourdough-making process, which creates a diverse and beneficial microbial environment that improves the quality of the bread. Further studies are needed to explore the potential health benefits of regularly consuming sourdough, as well as to examine how factors like flour type and fermentation time affect its nutritional and microbial properties.

# Capturing growth indices on the road to health booklets in clinics in Free State, South Africa

**Ms Patience Legoale**[1,2], Dr Mashudu Manafe[1]
[1]Sefako Makgatho Health Sciences University, Pretoria, South Africa, [2]Department of Health, Bloemfontein, South Africa

**Biography:**
Patience Legoale, an esteemed Registered Dietitian with a MSc in Dietetics qualification, also completed the Africa Nutrition Leadership Program in 2024. She's dedicated to Integrated Nutrition Programs with over 25 years of experience. Patience oversees Therapeutic Nutrition, Food Service Management, and Community Nutrition matters at the Free State Province Department of Health. She offers invaluable insights into malnutrition prevention and management. She published an article in Health SA Gesondheid on 12 July 2024, hsag.v29i0.2587.

**Background:** Growth monitoring plays an essential role in the development of young children. Anthropometric indices are of utmost importance for healthcare professionals to identify children at risk of inadequate growth and malnutrition.

**Aim:** This study aimed to assess the capturing of the growth indices in the Road to Health Booklets (RTHB) in clinics.
Setting: The study was carried out in Mangaung Metropolitan municipal clinics in the Free State province, South Africa.

**Method:** A descriptive quantitative study was conducted using a checklist to audit 264 RTHBs. Descriptive statistics were used to analyze data.

**Results:** The findings showed that birth weight was recorded in most 99% (n = 262) of the RTHBs. The mid-upper arm circumference (MUAC) was not recorded in 58% (n = 153) of the cases during the last visit. Weight-for-Age (WfA) was routinely plotted in 91% (n = 241) of the RTHB. The length or Height-for-Age (LHfA) was plotted in 38% (n = 99) of the RTHB and
Weight-for-Length or height (WfLH) was plotted in 31% (n = 81) of the RTHB.

**Conclusion:** The results demonstrated that certain anthropometric measures including MUAC, length, or height were absent from the records of the RTHB. Consequently, RTHB may not be effectively used to evaluate nutritional status, affecting early detection of malnutrition in children.

**Contribution:** The research makes a valuable addition to the existing body of knowledge for monitoring growth and measurement of anthropometric indices in the RTHB, as well as the appropriate execution of these practices.

# Phytonutrient screening of five commonly consumed indigenous vegetables in Limpopo province

**Ms Mmakoma Letsoalo**[1]
[1]University of Limpopo, Polokwane, South Africa, [2]University of Limpopo, Polokwane, South Africa, [3]University of Limpopo, Polokwane, South Africa

**Biography:**
Mmakoma Mendy Letsoalo is a PhD candidate at the University of Limpopo. She holds a Masters in Plant production. She is passionate about research and always keen to learn new things. She has an interest in traditional medicine and Indigenous vegetables as they have great nutritional potential but they are often neglected. Her biggest interest is documenting research based information on the mentioned crops and encourage their utilization.

**Introduction:** South Africa is rich in different edible indigenous leafy vegetables including Amaranthus cruentus, Bidens pilosa, Tribulus terrestris, Crotalaria.juncea and Cleome gynandra which are often consumed for food as medicine in the Limpopo province. Indigenous leafy vegetables (ILVs) are rich in various nutrients and bioactive compounds which can contribute to tackling challenges related to non-communicable diseases.

**Objective:** This study focused on screening some proximate analysis and bioactive phytonutrients of commonly consumed ILVs with those of spinach in Limpopo province.

**Methodology:** Five ILVs including A. cruentus, B. pilosa, T. terrestris, C. juncea and C. gynandra and an exotic vegetable; spinach (Spinacia oleracea) were collected at Ga-Molepo village in Limpopo small scale farms during summer season of 2023-2024. Total phenols, total flavonoids, scavenging activity, protein and minerals were compared among the ILV.

**Results:** A. cruentus exhibited higher levels of calcium (480 mg/100 g) and vitamin A (10.47 mg/100 g) compared to other studied vegetables. Whereas C. gynandra showed elevated protein content (5.1%/ 100 g), iron (19 mg/100 g), and vitamin C (144 mg/100 g). Cleome gynandra also displayed elevated levels of total phenols (15.15 ± 0.2 mg GAE/g) and total flavonoid (5.65 ± 0.30 mg CE/g), along with a high percentage of free radical scavenging activity (86.64 ± 0.36/ 200 µg/mL), compared to other vegetables. Spinach exhibited lower nutritional concentrations compared to all studied ILV vegetables.

**Conclusion:** A. cruentus and C. gynandra can be recommended in diets to enhance the nutritional security as they have recorded highest nutritional concentrations compared to other ILVs and the S. oleracea.

# Grandmother's perceptions towards the established breastbanks in a rural area of Limpopo Province, South Africa

Information | Education Abstract

**Mrs Mantji Mahlatjie**[1], Ms Julia Molomo[1], Mr Danny Ngoepe[1], Mr Jackson Senoamadi[1]
[1]University of Limpopo, Polokwane, South Africa, [2]1, Polokwane, South Africa, [3]1, Polokwane, South Africa

**Biography:**
I am Mantji Annah Mahlatjie, born and bred in Polokwane, Limpopo Province. I obtained Bachelor of Nutrition in 2001 (University of the North) and worked as a clinical dietitian at the following institutions (Uitenhage Provincial hospital -Eastern Cape Province, Chris Hani Baragwanath hospital - Gauteng Province, Polokwane hospital and Mankweng Hospital – Limpopo Province). I am currently a lecturer at the University of Limpopo since 01 August 2012 to date. I have obtained Master of Science in Dietetics at the University of Limpopo in 2018 and a published two author articles from master's project. I am currently enrolled for PhD.

**Introduction:** Breastmilk is natural and ideal for the new-born. It is regarded to be the first feeding choice as it is nutritionally complete to meet the infant's nutrient requirements. However, there are many reasons for a mother to be unable to provide sufficient breastmilk. In such a case, donor breastmilk from breastmilk banks could be beneficial. The use of donor breastmilk gives an opportunity to the recipients to obtain the benefits of breastmilk in the absence of their mothers own milk. Limpopo province has set up two human milk banks in the hospitals, which are in use. However, the perceptions of grandparents regarding the established breastmilk banks remain unknown.

**Methods:** Qualitative data were collected among grandmothers aged 50-75 years, using one-on-one, semi structured interviews. Snowball sampling method was used to access the participants, where data saturation was reached at interviewing 16 participants. Measures to ensure trustworthiness were adhered to. Data was analysed using inductive open coding technique.

**Results:** The grandmothers revealed insufficient knowledge regarding the existence of a breastmilk banks. However, most of the participants perceived breastmilk banks as a good initiative and shown positive attitudes towards encouraging mothers to donate and to use donated human milk for their grandchildren. However, some participants had negative views towards utilising donor breastmilk due to concerns about safety procedures.

**Conclusion:** It is important to educate the population at large about the quality processes and procedures at the banks in order to dispel misconceptions regarding the transfer of illnesses through donated milk.

# Dietary diversity, total food intake, and its relationship to nutrient adequacy in North-Eastern South African children: The MAL-ED cohort

**Dr Tjale Cloupas Mahopo**[1], Prof Cebisa Nesamvuni[1], Dr Benjamin McCormick[2], Dr Ramya Ambikapathi[3], Prof Laura Caulfield[4], Prof Pascal Bessong[5]

[1]University of Venda, Thohoyandou, South Africa, [2]Fogarty International Center/NIH, Maryland, USA, [3]Department of Public Health, Purdue University, Lafayette, United States, [4]Center for Human Nutrition, Department of International Health, The Johns Hopkins Bloomberg School of Public Health, Baltimore, United States, [5]SAMRC-UNIVEN Antimicrobial Resistance and Global Health Research Unit., Thohoyandou, South Africa

**Biography:**
Dr. Tjale Cloupas Mahopo is a dedicated lecturer in the Department of Nutrition at the University of Venda, South Africa. He holds a PhD in sustainable agriculture and is a registered nutritionist with the Health Professions Council of South Africa. Dr. Mahopo's research interests include enhancing food safety standards, addressing malnutrition, and investigating antimicrobial resistance. He actively contributes to academia through publications, mentoring, and research supervision, demonstrating a commitment to advancing knowledge and addressing critical health issues.

**Objective:** We evaluated the association between dietary diversity, total food intake, and nutrient adequacy during the critical transition period in children aged 9-24 months.

**Methods:** An observational birth cohort was conducted in Dzimauli, Limpopo Province, South Africa. A total of 254 children aged 9-24 months in the South Africa MAL-ED cohort were included. Food item dietary diversity scores and nutrient adequacy were calculated. The dietary diversity score was calculated as the sum of food groups consumed during the previous 24 hours. Nutrient adequacy was determined by calculating the sum of the micronutrients in the complementary foods and estimated breastmilk intakes on a given day compared to the recommended intakes.

**Results:** The total number of food variety scores consumed in 24 hours ranged from 0-28. The total number of food items ranged from 7 (IQR: 4, 9) to 11 (IQR: 9, 13) at 9-12 months and 12-24 months, respectively. Children (76.6%) aged 9-12 months consumed fewer than four food groups, while dietary diversity increased with age. Low dietary diversity scores were observed, but the median probability of adequacy across 11 nutrients was high (0.7-0.9). The mean probability of adequacy increased as the number of food items (odds 1.30, 95%CI: 1.25, 1.36) and the diet diversity increased (odds 1.55, 95%CI: 1.38, 1.71) when considered in separate models.

**Conclusions:** Despite low dietary diversity, mean nutrient adequacy was very high, likely due to fortification. We recommend local foods based on high PA values, including soft porridge with fortified maize and legumes such as peanuts, beans, chicken liver, amaranth, and Mopani worms.

# The influence of different cooking methods and leaf maturity on colour, total chlorophyll, total phenolic, and carotenoid content in okra (Abelmoschus esculentus) leaves.

**Ms Lebo Maila**[1], Dr. Faith Seke[1], Dr. Abe Gerrano[2], Dr. Semakaleng Mpai[3], Prof. Dharini Sivakumar[1,4]
[1]Department of Crop Science, Tshwane University of Technology, Pretoria West, 0001, South Africa., Pretoria, South Africa, [2]Agriculture Research Council, Vegetable, Industrial and Medicinal Plants, Private Bag, X293, Pretoria, South Africa., Pretoria, South Africa, [3]Green Biotechnologies Research Centre of Excellence, Department of Plant Production, Soil Science and Agricultural Engineering, University of Limpopo, Private Bag X1106, Sovenga 0727, South African., Mankweng, South Africa, [4]Centre for Nutrition & Food Sciences, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, QLD, 4108, Queensland, Australia.

**Biography:**
Lebo Ruth Maila, a dedicated scholar and researcher, has embarked on an academic journey marked by a profound commitment to learning. As a current master's student at the Tshwane University of Technology, Lebo Maila continues to delve into the complexities of Agricultural masters. With a solid foundation established through the completion of Bachelor of Technology at the same institution, Lebo Maila has consistently demonstrated a passion for academic excellence and a drive to contribute meaningfully to their field. Lebo Maila has exhibited an approach to academic inquiry, driven by a desire to address contemporary challenges and effect positive change.

**Introduction**: Okra (Abelmoschus esculentus) is an African indigenous vegetable that belongs to the Malvaceae family. It is rich in nutrients which are necessary for malnutrition prevention. The leaf maturity and cooking influence flavour and palatability of leaves by affecting the overall bioavailability of bioactive composition.

**Objective:** This study aimed to evaluate the interaction effect between different cooking methods (boiling, steaming, and stir-frying) and the leaf maturity (young and mature) on the changes in colour properties, total chlorophyll, total phenolic content, and carotenoid content.

**Methods:** Okra leaves (Clemson Spineless) utilized in this study were harvested 60 days after seed planting and were subjected to three different cooking methods (boiling, steaming, and stir-frying). The impact of different cooking on colour, total chlorophyll, total phenolic and total carotenoid contents were determined.

**Results:** There was a significant difference in the studied parameters between young and mature leaves. Both Young and mature raw leaves contained the highest ΔE total colour difference as compared to the cooked samples. The lowest ΔE was observed in both young (19.60) and mature (13.72) leaves after boiling. Total chlorophyll content in mature leaves (24.6953 mg 100 g-1) was higher compared to the young leaves (17.4505 mg 100 g-1). On the contrary, the lowest total chlorophyll content was recorded after stir-frying. Young, steamed leaves retained the highest TPC (6939.53 mg/100g), TCC (2004.21 mg/100 g), respectively.

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# Development of an Orange-Fleshed Sweet Potato (OFSP) yoghurt as a strategy to increase consumption of the OFSP

**Dr Onwaba Makanjana**[1], Prof Ashika Naicker[1]
[1]Durban University of Technology, Durban, South Africa

**Biography:**
Dr Onwaba Makanjana is a lecturer at the department of Consumer Sciences at DUT. She holds a PhD in Food and Nutrition. Her PhD research focused on food product development, with the goal of addressing malnutrition in young children. She has worked in numerous projects on food security, indigenous food systems and nutrition interventions. She is currently supervising Masters and a PhD student and she is a reviewing editor for the African Journal of Inter/Multi-disciplinary Studies. She has presented her research in an international journal, at national conferences and abroad.

**Introduction:** The orange-fleshed sweet potato is rich in beta-carotene and it is produced in KwaZulu-Natal and other provinces in South Africa. It is a drought-resistant and nutritious crop that has been identified as a sustainable crop that can improve food security and address vitamin A deficiency. Multi-sectoral strategies are essential in promoting OFSP consumption, hence in this research study, a yoghurt was developed to promote its consumption.

**Methods:** In this experimental study, the OFSP yoghurt was developed using pureed OFSP. A HACCP flow diagram was formulated to ensure food safety and quality of the OFSP yoghurt. Pasteurised full cream milk was heat treated at 80ºC for 30 minutes, cooled to 43ºC and whey powder was added to increase the SNF, a thickening agent was added to reduce syneresis. A thermophilic starter culture used to ferment the yoghurt which was thereafter cooled and flavoured. The nutritional composition of the yoghurt was determined, and microbiological analysis was conducted at a SANAS accredited laboratory. Consent was obtained from participants prior to them conducting descriptive sensory evaluation.

**Results:** The freshly produced sample had <10 CFU/g for coliforms, yeast and mould. The moisture content was 82.5g per 100g of the freshly produced OFSP yoghurt and fat and protein were 3.2g and 3.8g, respectively. The mouthfeel was rated as excellent, creamy and the yoghurt was tasty with just the desired level of sweetness.

**Conclusion:** The OFSP yoghurt was sensory acceptable and it should be advanced in food product development to increase its consumption.

# Seasonal variation of lean arm fat and fat arm area among Ellisras population from childhood to young adulthood

**Ms Mankopodi Mahlako Makhubedu**[1], Prof Kotsedi Daniel Monyeki[1], Ms Moloko Matshipi[1]
[1]Department of Physiology and Environmental Health, Polokwane, South Africa

**Biography:**
Makhubedu MM, a tutor at the University of Limpopo, South Africa and a prospective PhD student, under the supervision of Prof KD Monyeki, the Principal investigator of the Ellisras Longitudinal Study. As a member of the Ellisras Longitudinal Study journal club, she has taken part in reviewing several papers for several international journals. My research interests include non-communicable diseases, anthropometry and epidemiology, nutrition and longitudinal studies. She is a member of the Physiology Society of Southern Africa and has presented her research findings in several conference proceedings.

Overweight and obesity (OW/W) continue to be major public health problem in Africa. The risks of OW/W are associated with potentially negative impacts on children's health, growth and development in later life. This study aimed to investigate the seasonal variation of upper arm lean and fat areas from childhood to young adulthood among the rural population of Ellisras. Mid-upper arm circumference (MUAC), triceps and biceps skinfold measurements were measured according to standard anthropometric procedures. The measurements were collected during the autumn and spring seasons from 1999 to 2003. Anthropometric measurements of the participants (752 boys and 998 girls, aged 4 to 17 years) who completed the survey in 2003 were used to calculate their total upper-arm area, arm fat area (AFA) and arm muscle area (AMA). Data were analysed using the Mann-Whitney U test to examine sex and age differences in the participants' anthropometric characteristics. The healthy percentile ranges by sex and age were used to categorise the cut-off points. The generalised estimate equation was used to test the relationships between the data on AFA, AMA and MUAC obtained in the autumn and spring of the years when the surveys were conducted. The prevalence of OW/W was relatively low in AFA, AMA and MUAC. A significant (p-value = 0.020) positive association in AFA for boys aged between 8 – 11 years ($\beta$ = 0.47; 95% CL: 0.07; 0.82) and girls of the same age (p-value = 0.001), $\beta$ = 1.30 (95% CL: 0.58; 2.03) in spring as compared to autumn were found. Furthermore, there was a significant median association between AFA and AMA, in autumn and spring. In conclusion, seasonal variation in the development of fat and lean arm areas among the Ellisras children was observed over time from mid-childhood to adolescence.

# Incidence of COVID-19 infection among infants aged 6 to 9 months from a low socioeconomic community receiving eggs as a complementary food for 6 months

Dr Regina Nakiranda[1], **Prof Linda Malan**[1], Dr Hannah Ricci[1,2], Prof Herculina S Kruger[1], Dr Arista Nienaber[1], Dr Marina Visser[1], Mrs Cecile Cooke[1], Prof Cristian Ricci[2], Prof Mieke Faber[1,3], Prof Marius Smuts[1]
[1]Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, [2]Africa Unit for Transdisciplinary Health Research (AUTHeR), North-West University, Potchefstroom, South Africa, [3]South African Medical Research Council (Non-Communicable Diseases Research Unit), Tygerberg, South Africa

**Biography:**
Dr Regina Nakiranda is a pediatrician with in interest in infant nutrition. She competed a PhD in Nutrition on the immune response of 6 to 9-month-old infants receiving an egg daily as complementary food.

**Background:** Recent evidence suggests infants under five years are at greater risk of new variants of COVID-19. Little is known about the incidence and symptoms of COVID-19 among healthy peri-urban under two-year-old infants in South Africa.

**Objectives:** This study aimed to estimate the incidence of COVID-19 infection among healthy 6-9-month-old infants and assess if providing eggs influenced COVID-19 incidence and symptoms.

**Methods:** 6-9-month-old infants were randomly provided with one chicken egg per day and the control group receiving no eggs for six months. At endpoint, infant, maternal/caretaker and household COVID-19 information and symptoms data were collected with a structured questionnaire and COVID-19 ELISA test was done using Quansys Biosciences SARS-CoV-2 Human Immunoglobulin G (IgG) Q-Plex Multiplex ELISATM.

**Results:** Out of 446 infants who completed the study, 426 (95.5%) infants participated in the COVID-19 sub-study. The rate of positive SARS-COV-2 IgG antibody serology in the infants was 53.7% with no difference in the egg and control groups (P=0.585). COVID-19 symptoms were reported in 108 (49.8%) infants in the egg group and 96 (45.9%) infants in the control group. Overall, 91 (46.4%) infants had COVID-19 symptoms together with a positive SARS-COV-2 serology, and 53.6% had positive serology but were asymptomatic. Daily egg consumption did not affect reported infant COVID-19 symptoms or SARS-COV-2 seropositivity before and after adjusting for infant age and sex, maternal COVID-19 symptoms, and baseline elevated AGP>1g/L. Thirty-one (7.3%) infants reported other serious illnesses, eight (1.6%) infants were reported to be hospitalised, and three (0.6%) infants died during the study.

**Conclusion:** A high rate of SARS-COV-2 seropositivity among infants under two years from a low socioeconomic community was observed. About half of the infants were asymptomatic. However, there was no significant impact of daily egg intake on reported COVID-19 symptoms or seropositivity.

# Dietary practices and analysis of selected nutrients in the LCHF diet in type 2 diabetics

**Mr Roger Manzini**[1], Professor Corrie du Preez[1], Dr Gerrit Breukelman2
[1]University of Zululand, Empangeni, South Africa, [2]University of Zululand, Richards Bay, South Africa

**Biography:**
My name is Rogers Manzini, a second-year PhD candidate and temporary lecturer. I posses master's degree in Biochemistry, with focus to Therapeutic Nutrition, and I also hold an honours degree in Consumer Science.

**Introduction:** Nearly 463 million people are living with diabetes, and type 2 diabetes is the most common form. Current approaches to diabetes management focus on adopting a healthy lifestyle and the use of hypoglycaemic drugs. However, drug usage is associated with some adverse side effects. Therefore, the diet is currently being advocated as an ideal approach to diabetes management. This study aimed to assess dietary practices and analyse some selected nutrients in the low-carbohydrate high-fat diet.

**Method**: Thirty-nine self-selected type 2 diabetics participated in the study. This was a quantitative study followed by a non-randomised experimental design, conducted at a Diabetes Clinic in Richards Bay, South Africa. The study utilised a semi-structured questionnaire to obtain baseline data, including demographic information and the eating habits of participants. Also, a specialised food diary collected dietary information, i.e. a daily log of food and beverages consumed each day, 5 days a week for 13 weeks.

**Results:** The baseline findings showed that only 33.3% of participants followed dietary guidelines, which mainly advocated reducing carbohydrates in the diet.
Carbohydrates and flesh meat constituted most of the diet and frying (73.7%) was the most preferred preparation method. Approximately 51.3% consumed alcohol in moderation. Food diary findings showed that carbohydrate intake was higher in all weeks while fat intake was lower in weeks 1 and 13 ($P<0.001$ for all). Magnesium was lower for both groups ($P<0.05$ for all) and Iron intake was lower for the Experimental group in all weeks ($P<0.001$). Vitamin B12 was higher for both groups across 13 weeks.

**Conclusion:** Participants need to cut down on sodium intake and increase magnesium and iron-rich foods. Since the LCHF diet did not yield significant benefits. Therefore, a balanced diet, with reduced intake of refined carbohydrates, should be adopted.

# Harnessing Artificial Intelligence (AI) and Digital Technologies for Sustainable Nutrition

**Ms Kitso Marake**[1], Mr Michael Olusanya[2]
[1]Sol Plaatje University, Kimberly, Northern Cape, South Africa

**Biography:**
My name is Kitso Marake. I am a Data Science Honours student at Sol Plaatje University. Passionate about data science, I am dedicated to exploring the latest advancements in AI and digital technologies for sustainable nutrition. With a keen interest in leveraging data for impactful solutions

Access to safe, adequate nutrition is a fundamental human right. However, in South Africa, data from 2015 shows that 589 million individuals experienced hunger. In 2021, this figure increased to 768 million, underscoring the lack of access to safe and adequate nutrition. This issue is worsened by different factors such as unemployment, high levels of poverty, low household income, climate change, economic stability, and geographic isolation. Current challenges in the food industry are food waste, scarcity, processing, manufacturing, and impact on the environment require a lot of investment and time but Artificial intelligence (AI) can bridge this gap. In the 21st century, AI finds applications in Pattern Recognition, Natural Language Processing, Image classification, Robotics, and automation of farming operations. AI has the potential to revolutionize food nutrition practices, facilitating a shift towards reduced environmental footprints and increased resilience and health. This study aims to explore the potential of AI and digital technologies in advancing sustainable nutrition practices. The study employs a quantitative approach to assess the impact of AI and digital technologies on sustainable nutrition and the study focuses on South Africa as a country and what is the current use of AI and digital technologies in nutrition. The study populations include stakeholders involved in the food and nutrition sector (policymakers, nutritionists, and food industry professionals). This is ongoing research; data collection will be collected, and a model will be developed. Integrate the Literature review results and provide a comprehensive understanding of the AI and digital technologies on sustainable nutrition. Model development where AI models are tailored to address the challenges identified and provide recommendations to policymakers, Food industry professionals, etc.

# ► Tea and herbal infusions: Their antioxidant activity and phenolic profile

**Ms Makaepea Mossa Maoto**[1]
[1]University of South Africa, Pretoria, South Africa

**Biography:**
Ms MM Maoto holds MSc Food Science and Technology from University of Venda. Currently a lecturer in the department of Life and Consumer Sciences at University of South Africa. Special interest in medicinal plants, food preservation, food nutrition and antioxidants.

Topical consumer interest in natural, safer and nutritional drinks, has inspired the search for medicinal plants that can be used to produce healthy drinks. In this regard, Artemisia Afra (A. afra) is a medicinal plant that is traditional known to impart several health promoting benefits. This medicinal plant is usually consumed as tea to treat various colds and flu. Tea is a new and effective strategy for reducing the severity of neurological diseases and for protecting against obesity, cardiovascular disease, type 2 diabetes and certain types of cancer. However, there is lack of information on natural compounds of A. afra plant mainly concerning polyphenols and antioxidants activity which are scarce information in the current literature. This study is aimed to produce green and black tea from A. afra leaves and also characterize their quality parameters. The Box-Behnken design was employed to optimize the processing parameters; drying temperature (50 - 80oC), drying time (4 -12 hours) and rolling time (5 -10 min). The total phenolics content, antioxidant capacity, ascorbic acid analysis were carried out. The highest amount of polyphenolic content was 162.58 mg/GAE/g, antioxidant activity and ascorbic acid were also recorded. Owing to these properties, green and black tea produced from A. afra leaves could be associated with antioxidant, antimicrobial, and anticancer properties acting against inflammation, and various diseases.

# Surviving food insecurity at institutions of higher learning: An explanatory enquiry

Ms Mohube Elizabeth Mashabela[1], **Ms Matjie Rapetsoa[2]**, Prof Mosa Selepe[2]
[1]Pietersburg Hospital, Polokwane, South Africa, [2]University of Limpopo, Polokwane, South Africa

**Biography:**
Mashabela Mohube Elizabeth is an Assistant Director Dietetics at Pietersburg Tertiary hospital in Limpopo Province. She holds a Master of Science in Dietetics from University of Limpopo (UL). Her research focuses on food insecurity in institution of higher learning. Her study was funded by the University of Western Cape (CoE). She is currently busy with article writing on her research for publication. She presented twice in the scientific conferences. She served as member of ADSA committee Nationally (2018) and was a chairperson of ADSA Mopani (2013 – 2017). She is an external examiner for the third year Level at UL.

**Introduction:** This paper is a component of a larger study on "Nutrition knowledge, food insecurity and coping strategies among students in institution of higher learning in the Limpopo Province". Institutions of higher learning are struggling with food insecurity, despite the fact that eating is regarded as a fundamental human right.

**Objective:** This study explored the life experiences and coping strategies of food insecure students.

**Methods:** Fourteen purposefully selected in-depth qualitative interviews were conducted with Health Care Science food-insecure students using an interview guide with one central question and eight follow-up questions.

**Results:** Students described their experiences with food insecurity, how it affected them, and how they dealt with it. Six themes emerged from the interviews, (1) coping strategies, (2) health triangle effects, (3) nutritional knowledge, (4) effects of hunger on academic performance, (5) factors contributing to lack of money to buy food, and (5) competing expenses. Most students used a variety of coping strategies such as borrowing money, sharing food, buying cheap unhealthy meals, skipping meals, eating fewer meals per day, reducing portion size, and seeking help from families and friends.

**Conclusion:** These findings help to clarify what it meant to be food insecure in higher education and can influence how institutions of higher learning serve students' basic needs. This suggests the need for a compassionate university management to assist with establishment of support systems such as food banks to alleviate food insecurity among eligible students and further raise awareness of the issue on campus.

# Isolation of Yam (Discorea spp) starch and its application as a thickener in pudding

**Mr Kurai Gareth Mawoneke**[1], Mr Raphael Kwiri1, Dr Melody Ndemera[1]
[1]Harare Institute Of Technology, Harare, Zimbabwe

**Biography:**
Staff Development Fellow, Harare Institute of Technology
M.Tech Degree in Food Processing Technology (2023-2025), B. Tech (Honours) Degree in Food Processing Technology (2015-2019) – Harare Institute of Technology
Research Interest: Food Engineering, Food Product Development, and Valorisation of underutilized crops

**Introduction:** Yam (Discorea spp) starch possesses unique functional and physicochemical properties that has potential food applications as alternatives to conventional starch sources.

**Objectives:** To isolate yam starch from yam tubers, characterize its physicochemical properties and functionality in pudding and evaluate its product acceptance and proximate characteristics.

**Methods:** Fresh yam tubers were bought from a local market, cleaned, peeled and sliced before the isolation process. Starch was isolated using oxalic acid solution through a series of washing, settling, decantation, and drying steps. Moisture content, amylose content, granule size, viscosity and gelatinization temperature were characterized. Pudding samples were prepared with varying yam starch concentrations (0%, 3%, 6%, and 10%) on weight/weight basis and comparisons were made against the conventional starch source. ANOVA, Turkey's post-hoc test were used for statistical analysis to determine the significant differences in viscosity, texture, and sensorial attributes of the pudding samples

**Results:** The isolated yam starch had 10.2% moisture content, 23.92% amylose content, 76.08% amylopectin, and 73.68 % swelling capacity. Due to their high swelling capacity yam starch can find application as a thickener in the pudding. A significant difference ($p>0.05$) was observed between increasing starch concentrations and viscosity of pudding samples. 3%, 6%, and 10% yam starch exhibited viscosities of 2100cP, 2900cP, and 3750cP respectively. Texture analysis demonstrated that the addition of yam starch improved the firmness and consistence of the pudding samples. Results from sensory evaluation indicated higher acceptability for pudding sample with yam starch concentration of 6%. There no significant ($p<0.05$) difference between the yam starch pudding and the control, indicating high potential of yam starch in replacing corn starch in commercial pudding formulations.

**Conclusion:** Yam starch can be isolated and can be used industrially in pudding formulations at 6% concentration (w/w) as a corn starch replacer.

# Impact of the food environment on food choices and nutrition transition in Breedevalley Municipality, Western Cape

**Prof Xikombiso Mbhenyane**[1], Dr Mthokozisi Zuma[1], Ms Vhushavhelo Nedzingahe[1]
[1]Stellenbosch University, Cape Town, South Africa

**Biography:**
Prof Xikombiso Mbhenyane is a Registered Dietitian (Health Professions Council of South Africa), a Professor, Head and Department of Science and Innovation and Technology-National Research Foundation Research Chair in Food Environments, Nutrition and Health in the Division Human Nutrition at the Faculty of Medicine and Health Sciences, Stellenbosch University. She is a C2 National Research Foundation rated scientist in South Africa.

**Introduction:** Food environments are the interface through which people interact with the broader food systems. To determine the effects of food environments on peoples' food choices, it is crucial to understand what people consume. This study investigated the impact the food environment has on food choices and nutrition transition in Breede Valley municipality, South Africa.

**Methods:** The study design was an analytical, cross-sectional study, using quantitative techniques. A sample of 365 households were randomly selected from the Breede Valley Municipality. Food environments, food system, food choices and nutritional measurements of the participants were assessed, using a validated questionnaire.

**Results:** Over half (51.0%) of the participants were aged 36-55 years. Almost a quarter of the households were food secure. The study findings revealed that soft drinks were the most sold food item as indicated by households' participants in grocery/supermarkets and convenience/corner/spaza shops at 97.1% and 98.3%, respectively. Whereas, in open markets/street vendors vegetables were the most sold food items 97.9%, followed by fruits at 95.8%. Many households' participants (70.8%) indicated restaurants as very expensive, with just over half (54.6%) who indicated the same for grocery/supermarkets. Open markets/street vendors were indicated by over a third as not expensive.
Almost all household participants (94.1%) mostly considered price when they bought their food. Households that had a medium dietary diversity score (score of 8 to 11) were 44.1%. Furthermore, the study revealed that only 19.3% of households had home gardens, fields, or farms.

**Conclusion:** Food environments were observed to influence food choices.

# Promotion of increased consumption of indigenous vegetables among African women with/at risk of hypertension in Gqeberha, South Africa: A community participatory action research study

Information | Education Abstract

**Ms Zitandile Mfono**[1]
[1]Nelson Mandela University, Gqeberha, South Africa

**Biography:**
Zitandile Mfono holds a BSc and Post Graduate Diploma in Dietetics and a Master of Public Health from the University of KwaZulu-Natal. She is a PhD candidate at Nelson Mandela University, where her research is focused on promoting indigenous vegetable intake among women with hypertension or at risk of non-communicable diseases. She has conducted research and engagement project in indigenous vegetable intake and chronic diseases, in Gqeberha. Ms Mfono is an emerging researcher in the Black Academics Advancement Programme funded by The National Research Foundation (NRF) and the FirstRand Foundation (FRF) for completion of her PhD studies.

**Introduction:** African women living in peri-urban areas are faced with multiple socio-economic challenges, leading to difficulties in consuming adequate vegetable intake and are at a high risk for non-communicable diseases (NCD). The South African Food Based Dietary Guidelines support eating “plenty of fruit and vegetables” for protective benefits against NCD. It is suggested that indigenous vegetables such as African leafy vegetables may significantly contribute to meet these recommendations. The current study aimed to collaboratively promote the use of indigenous vegetables by African women in a peri-urban area with/at risk of hypertension with the goal of improving agency for increasing vegetable intake.

**Methods:** A qualitative research study design was used, that uses a participatory action research (PAR) methodology which is based on critical, transformative, and emancipatory paradigms. In this method, the researcher works collaboratively with communities while attempting to address challenges faced by that community, instead of the traditional approach to research that studies participants as “subjects”.

**Results:** 12-24 participants participated in the study after a three months of recruitment process from a local clinic, the duration of the study was one year (October 2022 to October 2023). The research followed the four cyclical phases of questioning/inquiry, planning, implementation and reflecting phases. The study promoted collaborative learning, action and reflection leading to continuous improvement in implementation of social actions. After the second or third major cycles, a project evaluation was conducted and collaboratively reflected on to evaluate if the goals of the project were met and how the community benefited from the process

**Conclusion:** Nutrition professionals or researchers working in community or public health nutrition may benefit from using qualitative research methodologies such as PAR for intervention studies. PAR ensures that solutions are a best fit for that community, are more accepted and sustainable.

# The effect of lactic acid fermentation on physicochemical parameters and lab survival in different pumpkin leaves accessions (Cucurbita moschata and Cucurbita pepo) and different melons (watermelon, cantaloupe and honeydew) smoothies

**Ms Pretty Mhlanga**[1], Dr. Faith Seke[1], Prof. Dharini Sivakumar[1,2]
[1]Phytochemical Food Network, Department of Crop Sciences Tshwane University of Technology, Pretoria 0001, South Africa, , , [2]Centre for Nutrition & Food Sciences, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, QLD 4108, Queensland, Australia, ,

**Biography:**
Pretty Mhlanga is a hardworking Masters student at the Tshwane University of Technology. She's a critical thinker, and a dedicated team player who enjoy challenges; willing to learn and acquire new skills at all times. She holds a post graduate diploma in Crop Science from Tshwane University of Technology. She's currently working on investigating the effect of lactic acid fermentation on physicochemical parameters and lab survival in different pumpkin leaves accessions (Cucurbita moschata and Cucurbita pepo) and different melons (watermelon, cantaloupe and honeydew) smoothies in a motive of producing probiotic products with decreased sugars in order to improve consumer's health.

**Introduction:** Consuming fruits and vegetables is a reasonable way of combating hunger and nutrient deficiency. However, fruits such as melons and vegetables (pumpkin leaves) are perishable due to their high-water content. Recent studies have shown that lactic acid fermentation extends the shelf life of fruits and vegetables and enhances several beneficial properties, including nutritional value and flavour; while reducing toxicity. Fermented fruits and vegetables can serve as a potential source of probiotics.

**Objective:** The study was aimed at investigating the effect of fermentation with Lactobacillus plantarum 75 (L75) and Bifidobacterium longum (B. longum) on physical-chemical parameters, lab survival, and ascorbic acid in different pumpkin leaves accessions (Cucurbita moschata/pepo) and different melons (watermelon, cantaloupe, and honeydew) smoothies.

**Methods:** Matured pumpkin leaves and melon smoothies were fermented with L75 and B. longum for 72 h at 37º C. Physical-chemical parameters (colour, Total Soluble Solids (TSS), pH, Ascorbic Acid (AA), Titratable Acidity (TA)), and lab survival were assessed. Non-fermented smoothies were treated as controls during the study.

**Results:** Fermentation had a significant effect on the physical-chemical parameters as it increased TA (6.500 equivalent lactic acid g/100g) in Cucurbita pepo-Cantaloupe B. longum smoothie; whilst decreasing pH (4.083) in Cucurbita pepo-watermelon B. longum smoothie and TSS (3.100 ºBrix) in Cucurbita moschata-Honeydew L75 smoothie. The 24 h fermentation increased AA (2.600 mg/100g), acceptability, lab survival and colour change in the Cucurbita pepo-honeydew L75 smoothies. Increased fermentation time led to a decrease in the mentioned properties.

**Conclusion:** This study, therefore, recommends lactic acid fermentation at 24 h as this helps with food preservation, and the production of probiotic products, with decreased sugars and increased AA which contributes to the well-being of consumers.

# Intrinsic and extrinsic product cues affecting South African consumers' perceived value of pork meat

Mr Diewald Jordaan[1], **Prof Annchen Mielmann**[1], Ms Carike Brits[1]
[1]Faculty of Health Sciences, North-West University, Potchefstroom, South Africa

**Biography:**
I'm Diewald Jordaan, born on April 6, 2000, and my roots trace back to Heidelberg Gauteng. My academic journey led me to North-West University, where I specialized in BConSci Food Product Management, earning prestigious Golden Key awards. I am pursuing a master's in Consumer Science - I navigate the complexities of academia. By day, I contribute to Eskort Pty Ltd, blending my skills with professional growth. Beyond the office, I'm an outdoors enthusiast, relishing fishing, hunting, and adventurous activities. A sports lover at heart, my journey is a fusion of academic dedication, career milestones, and a passion for the outdoors.

The demand for high quality pork meat have increased as consumers are becoming more concerned about the nutritional quality and safety of food. Consumers' perceived value can be influenced by product cues as consumers' quality evaluation of pork meat is formed by utilising product cues. This study aimed to determine the intrinsic and extrinsic product cues influencing consumers' perceived value of pork meat. This quantitative and ethically approved study implemented a cross-sectional survey and non-probability convenience sampling method. The target population was meat-eaters currently residing in South Africa and having access to social media. A sample size of 300 respondents was recommended for this study. An online questionnaire was advertised on social media and consisted of four sections: Screening questionnaire; Demographics; and Intrinsic- and extrinsic cues. This ongoing study consisted predominantly of a younger age (25 to 34 years) group (27.3%) represented by more females (72.7%) which classified themselves as omnivores (87.9%). More than half of the respondents consumed pork meat on a weekly basis and viewed pork meat as positive (79.8%). The main reasons for purchasing pork meat were due to their affordability when compared to other red meats and their sensory characteristics. Mean scores for the pork meat product cues revealed significant ($p<0.05$) results as for the intrinsic cues, the taste (4.30), colour (4.17) and flavour (4.10) of the pork cuts were evaluated as moderately to very important. For the extrinsic cues, the best before date (4.31) and the chilled/refrigerated (4.01) were regarded as moderately to very important. The product cues identified might aid the South African pork industry to promote pork's nutritional value and unique product cues that will contribute to a more optimistic perceived value of pork-derived food products.

# Seasonal variation in blood pressure among Ellisras rural population aged 4 to 18 years overtime: Ellisras Longitudinal Study (ELS)

**Ms Thandiwe Ntomfuthi Mkhatshwa**[1], Ms Moloko Matshipi[1], Prof Kotsedi Daniel Monyeki[1]
[1]University of Limpopo, Polokwane, South Africa

**Biography:**
Thandiwe Ntomfuthi Mkhatshwa is currently a junior lecturer at the University of Limpopo. She graduated with a bachelor of science honors from the same University and is currently awaiting her masters results. She served as part of the local organising committee for the 3rd ELS and Other Non-Communicable Disease International Conference. She also formed part of four published articles, and presented at conferences such as the Physiology Society of Southern Africa and the Public Health Association of South Africa. Ms Mkhatshwa is an emerging researcher who is eager to learn more and contribute to the scientific body of knowledge.

**Background:** Hypertension has been a growing concern globally. Its prevalence continues to escalate especially in cold seasons which leads to high mortality compared to other seasons. This study investigated seasonal variation in blood pressure among the Ellisras rural youth aged 4 to 18 years.

**Method:** A total of 1974 (1033 boys and 941 girls aged between 4 to 14 years) who are part of the Ellisras Longitudinal Study (ELS) participated in the study at baseline (autumn 1999). The same participants were followed repeatedly over time (autumn and spring 2000, 2001, 2003). In spring 2003, a total of 1701 (873 boys and 828 girls age of 14 and 18 years) participants were enrolled in the study. Blood pressure was measured using a standard procedure. Data were analysed using the Mann-Whitney U test to examine age and sex differences in participants' blood pressure in autumn and spring. The generalized estimate equation (GEE) was used to test the relationship between autumn and spring blood pressure measurements overtime.

**Results:** The prevalence of elevated SBP was significantly (P≤0.05) higher in spring (1.2−14.9%) compared to autumn (0.5−3.1%) among Ellisras boys and girls from 1999−2003. Autumn (2003) SBP (B=0.009 95% CI: 0.003−0.016) was significantly (P≤0.05) associated with spring measurements over time (1999−2003) when adjusted for age and gender. Elevated SBP in autumn (2003) showed significant (P≤0.05) risk with spring variables (1999−2003) unadjusted (OR=0.036, 95% CI: 0.016−0.057), even after adjusted for age and gender (OR=0.033, 95% CI: 0.014−0.054).

**Conclusion:** Elevated SBP was significantly high in spring compared to autumn amongst Ellisras rural children over time. Furthermore, the risk of developing high SBP in spring compared to autumn was evident. The need to investigate the lifestyle patterns and biological risk factors of Ellisras rural children in spring and autumn will share more light in this study.

# Transforming health and taste through utilization of food technological advances to eliminate trans-fats in the African diet

**Ms Nyasha Mlambo**[1], Prof. Kudakwashe Chitindingu3, Dr. Melody Ndemera[2]
[1]Dendairy, Kwekwe, Zimbabwe, [2]Harare Institute of Technology, Harare, Zimbabwe, [3]Chinhoyi University of Technology, Chinhoyi, Zimbabwe

**Biography:**
Research and Development Officer (2022–present), Dendairy (Pvt) Ltd
M.Tech. Food Processing Technology (2023-2025)
B. Tech. (Hons.) Food Processing Technology (2011–2016)—Harare Institute of Technology
Research Interest: New Product Development, Quality and Food Safety Management Systems and Food Biotechnology

**Introduction:** Several potential food technological advances have been explored with the aim to eliminate trans-fats from human diets, at the same time enhancing organoleptic and health preferences. This is relevant in addressing the harmful effects of trans-fats with regards to obesity and cardiovascular diseases, specifically in African populations, while highlighting the necessity for suitable plans of action.

**Materials and Methods:** Extensive review of peer reviewed studies and journal articles across several digital databases was done. The review explored the different food technological advances, aimed at removal of trans- fats in processed foods. Technological advances include advanced processing techniques and fat substitution. Efficacy of labelling requirements, consumer awareness campaigns with regards to trans- fats and regulations in place were evaluated as well as barriers to establishing policy recommendations that could result in successful elimination of trans- fats in processed foods.

**Results:** Review of studies shows that food technological advances such product reformulation, regulations, mandatory labelling requirements such as those set by FDA, EFSA and implementation of policies as recommended by WHO, are capable of mitigating intake of trans- fat if applied in the African setup. Considerations should be given to cultural norms, dietary choices as well as availability of alternative fat substitutes when coming up with measures to mitigate intake of trans- fat. African governments should support and enforce policy implementations that regulate trans-fats in collaboration with relevant stakeholders

**Conclusion:** There is need to employ food technological advances to eradicate trans-fats from Africa diets. Tailor made strategies should be used inorder to address economic, socio-cultural, policy related factors for successful implementation of trans- fats elimination.

# Nutritional risk defined by mini nutritional assessment-short form and diet quality of Malawian older adults

**Ms Lustia Mndoliro**[1], Dr Sarah Browne[2], Dr. Clare Reynolds[2], Mrs Lustia Mndoliro Chatenga[3], Mrs Felistace Mtande[3], Mrs Triza Columbus Bonongwe[3], Mr Jonathan Misolo[3], Prof. Clare Corish[2]
[1]Utah State University, Logan, United States, [2]University College Dublin, Dublin, Ireland , [3]Kamuzu Central Hospital , Lilongwe , Malawi

**Biography:**
Lustia Mndoliro Chatenga is a clinical dietitian at Kamuzu Central Hospital in Lilongwe, Malawi.

**Introduction:** Inadequate food intake contributes to the risk of malnutrition in older adults.

**Objectives:** To screen for malnutrition and assess the dietary quality of older adults at hospital admission.

**Methods:** A hospital-based cross-sectional study of older adults (≥60 years, n=315) within 24-48 hours of admission was conducted at Kamuzu Central Hospital, Lilongwe, Malawi. Patients were screened for malnutrition using the Mini Nutritional Assessment-Short Form (MNA-SF) and categorized as normally nourished, at risk of malnutrition, or malnourished. Dietary quality was assessed using a 30-day food frequency questionnaire to derive a prime diet quality score (PDQS). Chi-square test and ANOVA were used to compare categorical and continuous variables, respectively.

**Results:** The mean age of participants was 66.8±8.8 years (range 60-93 years), with 58.4% male among those screened. Malnutrition was present in 40.3% of patients; 39.7% were at risk of malnutrition, and 20% were normally nourished. The prevalence of malnutrition was higher in male (45.7%) than female (32.8%) patients, while the risk of malnutrition was higher in females (45.8%) than males (35.3%); p=0.066. The mean PDQS was significantly (p=0.002) higher in normally nourished patients (19.7±3.1) compared with those at risk of malnutrition (18.8±3.0) or malnourished (18.0±3.3). Among those who were at risk of malnutrition or malnourished, the consumption of vegetables was moderate (2-3 servings per week), while the consumption of fruits, whole grains, poultry, eggs, dairy, beans, peas and soy products, nuts, and seeds was low (0-1 servings per week).

**Conclusions:** Eighty percent of older adults on admission to hospital in Malawi are at risk of malnutrition/malnourished. Poor diet quality occurs frequently, potentially contributing to the risk of malnutrition. Nutrition screening on admission and appropriate dietetic/nutrition interventions should be implemented before, during, and after hospitalization to prevent a deterioration in nutritional status in older adults admitted to hospitals in Malawi.

# An exploration of implementation dimensions of food and security interventions in Mopani District, South Africa

**Ms Mohlatso Anna Mnisi**[1], Prof Xikombiso Mbhenyane, Dr Mthokozisi Zuma
[1]University of stellenbosch, Cape Town, South Africa

**Biography:**
My name is Mohlatso Mnisi, I reside in Mopani District under the jurisdiction of Maruleng municipality in the Limpopo province. I coordinate programs in our communities that aim to improve food insecurity, poverty, and malnutrition through the programs called Food Security and the Fetsa Tlala (Finish hunger) food production initiatives in five municipalities. Whereby households are supported with garden tools, production inputs, and crop start-up products to increase food production. The program encourages food production for household consumption and commercial purposes.

**Introduction:** Evidence shows that the coexistence of malnutrition and food insecurity in underprivileged populations could lead to a catastrophic situation resulting in acute malnutrition and chronic hunger. Issues of food and nutrition security are by nature multidimensional and multifaceted.

**Objectives:** The study aims to explore implementation dimensions (context, recruitment, reach, fidelity and dose) of nutrition-sensitive and specific actions in the Mopani District.

**Methods:** The study used a qualitative approach. Purposive sampling was used supplemented by the snowballing technique to locate relevant key informants and beneficiaries. Key informants or officials of the four departments (Agriculture, Education, Health and Social Development).

**Results:** 15 key informants were interviewed in-depth, resulting in an overall response rate of 34% (15/44). Additionally, 16 focus group discussions were held with 95 beneficiaries, resulting in a response rate of 119% (n=95). The focus group discussions covered Agriculture (n=34), Education (n=28), Health (n=11), and Social Development (n=22). Only a few interventions use application-based recruitment for beneficiaries; most interventions use the identification of program recipients based on the circumstances. The dose is defined by the goals to be met in that specific fiscal year, and for the National School Nutrition Programme, the number of food handlers is determined by the number of learners registered in that particular year. Only a few programs were able to determine the target recipients addressed and reached by the programs. Action plans and performance plans are in place to guide interventions, even though fidelity could not be assessed.

**Conclusion**: Some programs were unable to determine their reach or whether they had reached their intended recipients. The dosage was not adequately covered sufficiently. The fidelity to the action plan was not sufficiently determined. The context of events and factors that may encourage or impede program delivery was not explored enough.

# The identification and management of refeeding syndrome in inpatient severely acutely malnourished children aged 6 to 59 months in Sub-Saharan African countries: A systematic review

**Ms Tshegofatso Mogase**[1]
[1]Sefako Makgatho Health Sciences University, Pretoria, South Africa

**Biography:**
I am a Cotutelle PhD candidate of the UK-SA DHET Doctoral Training Program, registered in Nutrition and Dietetics (PhD) at Sefako Makgatho Health Sciences University and University of Stirling in Scotland, UK with the Department of Nutrition and Dietetics and Faculty of Health Sciences and Sport respectively. My research is in Paediatrics where she focuses on the assessment of Refeeding Syndrome in severely acute malnourished children.
I have over 5 years of experience in academia with a keen interest in teaching and research. I am involved in teaching across many levels of Human Physiology courses and course coordinator postgraduate program

**Introduction:** Refeeding syndrome is a potentially fatal complication occurring in inpatient severely acutely malnourished children during the early phase of nutritional management. Its early identification and management are critical to prevent adverse outcomes. Addressing RFS in inpatient settings is critical in Sub-Saharan Africa, where severe acute malnutrition is common.

**Objective:** This systematic review aims to evaluate the current evidence on the identification and management of refeeding syndrome in inpatient severely acutely malnourished children aged 6 to 59 months in Sub-Saharan African countries.

**Methods:** A comprehensive search was conducted across major academic databases such as PubMed, and the Cochrane Library, from 2010 to 2024. Articles reporting on the identification and management of refeeding syndrome in inpatient SAM children in Sub-Saharan Africa were included. Reyyan Web software was used for data extraction and synthesis which were conducted using predefined criteria.

**Results:** A total of 13 studies were included in this review. Findings indicate that due to the lack of a standardized definition, has affected the diagnosis, treatment, and monitoring of refeeding syndrome, particularly in children diagnosed with severe acute malnutrition. Furthermore, it is difficult to establish the actual frequency of refeeding syndrome in children. Among the identified risk factors for refeeding syndrome development include oedematous severe acute malnutrition, rapid refeeding, and fatal shifts in fluids and electrolyte imbalances. Identification strategies encompass vigilant observation of biochemical parameters. Techniques for management include replacing electrolytes gradually and vigilant monitoring for complications.

**Conclusion:** The review underscores the importance of early refeeding syndrome identification and management in inpatient children with severe acute malnutrition aged 6 to 59 months in Sub-Saharan Africa, despite controversies in definitions and incidence rates. Common risk factors and effective prevention strategies are identified, although further research is needed to tailor protocols to local contexts, considering resource constraints and practices.

# Iron and zinc status of children aged 3 to 5 years attending Early Childhood Development centers in Vhembe District, South Africa

**Dr Selekane Ananias Motadi**[1,2], Doctor Mthokozisi kwazi Zuma[2], Professor Jeanne Freeland-Graves[3], Professor Xikombiso Getrude Mbhenyane[2]
[1]University of Venda, Thohoyandou, South Africa, [2]Stellenbosch University, Cape Town, South Africa, [3]University of Texas , Texas, United State of America

**Biography:**
Selekane Ananias Motadi is a registered Nutritionist with the HPCSA. He holds a BSc in Nutrition and a Master of Public Nutrition from the University of Venda, in Limpopo Province. He is currently a Lecturer at the University of Venda. He earned a Postgraduate Diploma in Health Professions Education from the University of Cape Town to expand his teaching responsibilities. His key research interests include micronutrients, maternal and child nutrition, malnutrition, dietary diversity, and elderly nutrition. He has published 12 articles in peer reviewed Department of Higher Education Journals.

**Background:** Children under the age of 5 years are the most vulnerable group for malnutrition. This study assessed iron and zinc status of children aged 3 to 5 years, attending Early Childhood Development centres (ECDs) in the Vhembe District of Venda, South Africa.

**Methods**: Random sampling was used to select eight preschools from the 24 in the municipality and 276 children (ages 3-5 years) to participate in the study. Body weight and height were measured using standard anthropometric techniques. Blood was collected and serum zinc, iron, ferritin, transferrin saturation, and transferrin levels were assessed. A Food Frequency Questionnaire was used to calculate dietary intake.

**Results:** The prevalence of severe underweight, severe stunted, and severe acute malnutrition was 4.7%, 12.7% and 2.9%, respectively; 5.5% were overweight and 1.7%, obese. About one-quarter of the children were considered iron deficient, according to transferrin saturation < 5%. Using serum iron levels < 40 µg/dl as indicative of depletion, 8% of the children exhibited low serum iron while 18% were mildly deficient. Using ferritin levels < 12 µg/L, all most (99%) children were iron deficient. However, no children in the study had zinc deficiency when using serum zinc <9.9 µmol/dL. Based on Recommended Dietary Allowance guidelines, children consumed insufficient amounts of calcium, vitamin B6, iron and zinc.

**Conclusion:** Iron deficiencies, accompanied by a high prevalence of stunting, were common in preschool children in the Vhembe District. Severe stunting was found in one-eighth of the children. Thus, improving nutritional status in this area is a critical need.

# ► The development and implementation of the Nutrition-Sensitive Agriculture (NSA) food system toolkit for low-middle income country

**Dr Lisebo Mothepu**[1], Professor Ashika Naicker1
[1]Durban University of Technolgy, Durban, South Africa

**Biography:**
My name is Lisebo Mothepu. I am a Doctor of Philosophy candidate at Durban University of Technology (DUT) with over 7 years' experience in Natural Science Research under Applied Science. I hold a Degree of Master of Applied Science in Food and Nutrition, Degree of Bachelor of Technology in Consumer Science: Food and Nutrition, and National Diploma: Consumer Science: Food and Nutrition. My area of expertise are food science and food and nutrition security especially in rural development. I am currently a lecturer with over 10 years of experience at DUT and the University of Zululand.

**Introduction**: Nutrition-sensitive agriculture (NSA) intervention under a food-based approach focuses on increasing agriculture activities towards healthy nutrition to address food and nutrition insecurity and malnutrition. The study aimed to develop, validate, and implement NSA toolkit underpinned by sustainable agriculture and sustainable local community food systems.

**Methods:** United Nations (UN) and United Nations Agencies (UNA) policies were used to develop the NSA toolkit. The IFAD and 2016-2025 UN Decade of Action on Nutrition, specifically the UN Decade of Family Farming (2019-2028) concepts, were used as the supporting bodies for the development of the toolkit. The Delphi technique was used to validate the toolkit. The toolkit was implemented among 126 females aged 20 and above residing in Lesotho. The experimental group had 63 participants from Mpharane, and the control group had 63 participants from Maqoala. The toolkit introduced and educated small-scale female farmers in agri-business and agro-processing using Greenhouse tunnels with irrigation and temperature control.

**Results:** The findings indicated that there was a steady increase in the production of fresh vegetables. Participants in Mpharane harvested 468, 612 and 675 cabbage heads in phases 1, 2 and 3, respectively. Participants in Maqoala harvested 567, 627, and 414 cabbage heads in phases 1, 2 and 3, respectively. There was a 12% increase of cabbage heads from phase 1 to 3 in Mpharane. A total of 1608 cabbage heads were harvested in Maqoala, whereas 1755 cabbage were harvested in Mpharane. Participants in Mpharane were able to retail and preserve the vegetables. However, participants in Maqoala did not sell but preserved the vegetables. Other vegetables harvested indicated similar results.

**Conclusion:** Food and nutrition insecurity can be reduced through NSA. The NSA toolkit benefited the participants by steadily increasing vegetable production with the use of Greenhouse tunnels for household consumption, agri-business and agro-processing.

# ► Mitigating the impact of intergenerational risk factors on stunting: Insights from the Grow Great Community Stunting Survey

**Dr Kate Rich**[1,2,]
1Stellenbosch University, Stellenbosch, South Africa, 2University of the Witwatersrand, Johannesburg, South Africa

**Biography:**
Dr Edzani Mphaphuli is the Executive Director of the Grow Great Campaign, where she continues working towards her lifelong mission of achieving healthcare equity and social justice. She obtained her medical degree and Master of Public Health (MPH) from the University of Cape Town's Medical School and a Diploma in HIV management. With a background in health systems strengthening and reforms, she has collaborated with various management teams to optimise healthcare service delivery across South Africa.

**Introduction:** A large body of research investigates the determinants of stunting in young children, but relatively few studies have considered which factors are the most important predictors of stunting. Intergenerational and socioeconomic factors have been found to be the most important predictors of stunting. This study aimed to examine the relative importance of predictors of height-for-age and stunting among children under five years of age in seven of the most food-insecure districts in South Africa, and to explore whether any factors moderate the relationship between intergenerational factors and child height-for-age.

**Methods:** We use data from the Grow Great Community Stunting Survey, which surveyed 3221 children under five in seven food-insecure districts across seven provinces in 2022. We use dominance analysis and variable importance measures from conditional random forest models (a machine learning algorithm) to assess the relative importance of predictors. We use conditional inference trees and moderation analysis to explore whether any factors moderate (weaken) the relationship between intergenerational factors and child height-for-age.

**Results:** We find that intergenerational and socioeconomic factors – specifically maternal height, birth weight and asset-based measures of socioeconomic status – are the most important predictors of height-for-age and stunting in these districts. We find that being on track for vitamin A and deworming, adequate sanitation, a diverse diet and good maternal mental health moderate the effect of birth weight or mother's height, having a stronger association with height-for-age in children with lower birth weights and with shorter mothers.

**Conclusion:** Though impacts are likely to be small relative to the impact of intergenerational risk factors, these moderating factors may provide promising avenues for helping to mitigate the intergenerational transmission of stunting risk in South Africa.

# Determining malnutrition risk factors within an informal settlement "A case study for urban dwellers post Covid-19 pandemic"

Information | Education Abstract

**Mrs Portia Mtshali**[1]
[1]Mangosuthu University of Technology, Umlazi, South Africa

**Biography:**
Portia Mtshali, a 32-year-old from Mount Frere in the Eastern Cape, South Africa, is a dedicated advocate for community development. Armed with a National Diploma in Community Extension from Mangosuthu University of Technology, a BTech from Tshwane University of Technology, and a Postgraduate Diploma from the University of the Free State, she's a committed research student under Dr. X Mkhize's guidance. Portia's passion extends beyond academia; she actively engages with local communities to implement sustainable initiatives. With her leadership and determination, she inspires others to effect positive change, aiming for a more equitable society.

**Introduction:** Informal settlement dwellers have often grappled with a low socio-economic status affecting their livelihoods, even more so post the Covid-19 pandemic. Factors such as unemployment, food accessibility and food environments contribute towards a compromised nutritional status.

**Study Objective:** The study objective was to determine socio-demographic factors (employment status, social support) and the nutritional status using anthropometric assessments (Body Mass Index-BMI, Waist Circumference-WC, Waist to Height Ratio-WHtR) as risk factors for malnutrition.

**Methods:** The study was a cross-sectional design with randomly selected (n=100) heads of households residing in informal settlements. Data was collected using semi-structured interviews. Trained fieldworkers conducted a socio-demographic survey and recorded anthropometric data for analysis.

**Results:** The mean age was 39.0 years (±SD 14.7) of which 72% were women and 28% were men. There were 83% respondents that reported being unemployed and 65% were living on various social support grants. Furthermore, 69% indicated that they were bread winners who indicated facing financial pressure to sustain households.
Anthropometric results indicated that the mean BMI score was 30.2 (±SD 0.7) placing most respondents under the Obese 1 category [>30kg/m2]. WHtR was above ≥0.5 for 64% (n=46) of the women with only 18% (n=5) for the men. There was a high statistical significance (p=001) for gender and BMI when both genders were compared.

**Conclusions:** There is an urgent need to implement targeted interventions that will address socio-economic challenges coupled with overweight and obesity trends for this community. Interventions must address issues of sustainability for future generations.

# Anthropometric status and its association with feeding practices of children aged 0 to 36 months in Thulamela Municipality, Limpopo Province

**Mr Anzani Mugware**[1], **Dr Selekane Ananias Motadi**[1], **Prof Lindelani Fhumudzani Mushaphi**[1]
[1]University of Venda, Thohoyandou, South Africa

**Biography:**
Mugware Anzani is a lecturer in the Department of Nutrition at the University of Venda. His area of interest includes maternal and child nutrition. Mr. Mugware completed his Master of Science in Public Nutrition at the University of Venda in 2022. He is currently pursuing a PhD at the same university.

Selekane Ananias Motadi is a registered Nutritionist with the HPCSA. He holds a BSc in Nutrition and a Master of Public Nutrition from the University of Venda, in Limpopo Province. He is currently a Lecturer at the University of Venda. He earned a Postgraduate Diploma in Health Professions Education from the University of Cape Town to expand his teaching responsibilities. His key research interests include micronutrients, maternal and child nutrition, malnutrition, dietary diversity, and elderly nutrition. He has published 12 articles in peer reviewed Department of Higher Education Journals.

**Background:** Poor Infant and young child feeding practices account for nutrients deficiency, illness and infections in children that lead to malnutrition at an early age.

**Aim:** The study aims to investigate the nutritional status and feeding practices of children aged 0 to 36 months in Thulamela Municipality.

**Methods:** A cross-sectional study was conducted to assess nutritional status and feeding practices of children in Thulamela Municipality. A total number of 250 mothers with children aged 0 to 36 were recruited using a convenience sampling technique. A structured questionnaire was used to interview mothers. Anthropometric measurements of children were assessed using standard procedure. Anthropometric measurements were calculated using WHO Anthro version 3.2.2. The data obtained were analysed using Statistical Package for Social Sciences (SPSS, Chicago, IL, USA) version 26.

**Results:** The mean (± SD) age of children in months was 10.53 (8.39). Exclusive breastfeeding up to six months was practised by only 7.6% of mothers while 87.5% of mothers introduced complementary feeding before the age of six months. The prevalence of stunting, wasting and underweight were 9.2%, 2% and 3.6% respectively. About 38.1% of children who received water before six months of age were more likely to be stunted as compared to their counterparts (19.9%) (p=0.001). Children who were given complementary foods one week after birth, the odds of being underweight were 9.00 times as compared to those who were given complementary foods after six months (OR=9.00; 95% CI=1.325 - 61.138).

# ► Nutri-economics of imitation meat vs meat of animal origin

**Dr Carmen Muller**[1], Dr Beulah Pretorius[1], Prof Hettie C Schönfeldt[1]
[1]University of Pretoria, Pretoria, South Africa

**Biography:**
Dr Muller is a post-doctoral fellow at the University of Pretoria in the Faculty of Natural Sciences and holds an MSc and PhD in Nutrition. She is passionate about nutrition research and promoting excellence in the field through science based information. She has a special interest in linking nutrient quantity and quality of foods to sustainable food systems for attaining nutrition and food security for all.

**Introduction:** The world is constantly changing. Importantly, consumer awareness is also changing, resulting in a shift in dietary choices and the introduction of new products lines. These changes in consumption patterns along with increased health and planetary awareness stimulated the demand for the innovation of plant protein-based meat in many countries.

**Methods:** Five of the most readily available burger patties with varying main ingredients were sourced using the INFOODS sampling guidelines (A– Beef; B– Soya & beef mix; C– Pea protein; D– Soya; E– Mushroom). Samples were sourced in quadruple and homogenised into two composite samples for analyses in duplicate. Burger patties were the product of choice as it is one of the most readily available imitated products. Nutritional analyses was done on the samples along with amino acids, nutrient density and fatty acid profiles as well as a cost analysis.

**Results:** Energy content of the products varied between 454–1047kJ/100g. Sodium, a nutrient of concern, is strictly governed in processed meat products but not in imitation meat products in SA. The 100%beef product had the lowest analysed sodium value (240mg/100g). A discrepancy was seen in the sodium values as stated on the packaging versus the analysed value of the imitation meat products with variances as high as 56% between values. Protein quality was measured and PDCAAS values, ranged from 0.93 for the pure beef product to 0.44 for the mushroom based patty. The validity of label claims was explored, revealing a prevalence of claims on imitation meat products compared to the meat-containing counterparts.

**Conclusion:** There were significant differences in the nutritional value of burger patties with varying main ingredients. This study highlights the need for updated legislation that governs new food products that are promoted to consumers.

# Developing capacity for community-based growth monitoring and promotion: ECD practitioners in the Eastern Cape

**Ms Anna-Marie Müller**[1], **Mrs Helen Donkin**[1]
[1]Zero2Five Trust, Durban, South Africa

**Biography:**
Anna-Marie supports a number of civil society organisations with nutrition programmes and strategy. Her expertise is in early nutrition, maternal and child health and public policy. She worked in philanthropy for 5 years in various positions at the DG Murray Trust and in 2024 stepped into the Acting Deputy Executive Director role at Grow Great. She also works with Zero2Five Trust as a consultant. Her training in public health nutrition was completed at the London School of Hygiene and Tropical Medicine.

**Introduction:** Growth monitoring and promotion (GMP) activities aim to improve children's nutritional status by regular monitoring of children's growth and development to detect malnutrition early. Traditionally, GMP activities are performed by health professionals, including nurses and community health workers. We aim to document the training of community-based GMP to be performed by a different cadre, namely Early Childhood Development (ECD) practitioners, in the Winnie Madikizela-Mandela (WMM) Local Municipality in the Eastern Cape, South Africa.

**Methods:** The Zero2Five Trust trains ECD practitioners in nutrition, early stimulation and Water, Sanitation and Hygiene (WASH), and provides nutrition supplementation to these programmes. Since 2019, experienced staff have conducted GMP in a sample of ECD centres. The Khula Nathi programme is a novel intervention as the screening of children's height, weight and mid-upper arm circumference (MUAC) is conducted by the ECD practitioner. Practitioners are supplied with a height tool, scale and MUAC tape. The data are captured in an m-Health application, CommCare, which alerts the user to refer children identified with stunting, wasting and underweight to their local Primary Health facility.

**Results:** We developed a training module including GMP, early stimulation and WASH concepts. In 2023, we trained 266 ECD practitioners from 143 ECD centres in the WMM Local Municipality, predominantly in English. In 2024, we trained 68 practitioners in isiXhosa and distributed translated copies of the ECD practitioner guide to the Road to Health Booklet. Deeper engagement with the training material was observed when training took place in isiXhosa, indicating that mother tongue training may be more suitable in this context.

**Conclusion:** Equipped with appropriate tools and training, ECD practitioners could be an effective non-health cadre to conduct community-based GMP in this context. By increasing community-based growth monitoring capacity, more children at risk of malnutrition can be identified and referred for appropriate treatment.

# Exploring the impact of a maternal support grant to improve maternal mental health and household food security amongst pregnant women during the COVID-19 pandemic

Ms Amanda Edwards[1], **Ms Anna-Marie Müller**[2]
[1]Grow Great Campaign, Dg Murray Trust, Cape Town, South Africa, [2] Zero2five Trust, , South Africa

**Biography:**
Amanda Edwards is a health systems researcher with over ten years' experience working in public and private health and education sectors in South Africa, the United Kingdom and Thailand. In 2018, she graduated with a master's degree in Public Health specialising in Health Policy & Systems from the University of Cape Town. Amanda has led diverse research projects and community outreach programmes. She is a published author and Margaret McNamara Fellow with special interest in how research informs health policy and practice in South Africa.

Many pregnant women in South Africa struggle to meet basic nutritional and financial requirements to ensure a healthy pregnancy, placing their health and their unborn child at risk. This study assessed the effect of a fortnightly digital food voucher, delivered through the CoCare voucher scheme to pregnant women during the COVID-19 pandemic in the Cape Town Metropolitan area, on mental health, hunger, and dietary diversity.

The study used a three-wave, longitudinal cohort survey design to investigate the impacts of CoCare vouchers in real time. Pregnant women from antenatal clinics in seven resource-constrained areas were to participate. In-depth telephonic survey interviews were conducted at baseline (October 2020, pre-voucher distribution), midline (April 2021), and endline (October-November 2021, post-voucher distribution). Primary outcomes included maternal mental health symptomatology (using PHQ-9), household food insecurity including maternal and child hunger, and dietary diversity. Generalised estimating equations were fit to examine each outcomes association with voucher exposure over time.

A total of n=567 participants were recruited at baseline, with n=205 comprising the final sample at endline. Most participants (58%) were between 25-34 years old and not recently employed (71%). Approximately 1/3 were pregnant with their first child, and 32% reported mental health difficulties. Relative to baseline, voucher exposure was associated with significant reductions in PHQ-9 at midline (effect=-1.6, 95%CI=-2.2, -1.1) and endline (effect=-1.2, 95%CI=-1.8, -0.57). Maternal hunger was reduced at midline (49% reduction, 95%CI=30-63%) and endline (48% reduction, 95%CI=33–63%). After adjusting for confounders, high PHQ-9 scores were significantly associated with increased maternal hunger (aOR=2.16, 95%CI=1.51,3.09). Dietary diversity showed no significant changes.

This study provides evidence for the potential of maternal support grants during pregnancy to shape positive health and nutrition outcomes for vulnerable pregnant women in South Africa. Extension of the Child Support Grant into the pregnancy could enhance access to this much-needed form of social support.

# Effect of biofertilizers on productivity and aflatoxin production in groundnuts (Arachis hypogaea)

**Ms Tariro Munyari**[1], Dr Nancy Nleya[1], Prof Kudakwashe Chitindingu[1], Dr Melody Ndemera[1]
[1]Harare Institute of Technology, Harare, Zimbabwe

**Biography:**
Tariro Munyari
Staff development fellow/ Assistant Lecturer, Harare Institute of Technology
Master of Technology degree in Food Processing Technology (2023-2025), Bachelor of Technology (Honours) degree in Food Processing Technology (2015-2019) – Harare Institute of Technology
Research Interest: Food safety, Quality management systems (QMS), Food Technologies, Food Safety Management Systems (FSMS)

**Introduction:** Groundnuts (Arachis hypogaea) is an important crop globally, but susceptible to aflatoxin contamination, which poses serious health risks to consumers. Various physical, chemical, and biological methods have been established to reduce the aflatoxin contamination in crops. However, there are safety concerns surrounding some of these methods and their hostility towards the environment has prompted researchers into looking for sustainable methods of curbing aflatoxin contamination in crops. The aim of this study was to explore the impact of various biofertilizers on the yield and overall productivity of groundnut crops as well as investigating the potential correlation between the application of biofertilizers and the levels of aflatoxin production in groundnut.

**Methods:** A review of studies on biofertilizers and their impact on productivity and aflatoxin production in groundnuts was carried out by referring to several scholarly articles and published research papers.

**Results:** All reviewed studies highlighted that biofertilizers can offer a sustainable alternative for improving crop productivity and soil health while reducing aflatoxin contamination thus ensuring food safety and food security. In most reviewed studies, biofertilizer application, particularly nitrogen fixing biofertilizers increased groundnut yield by about 40% and reduced aflatoxin contamination in groundnuts (preharvest reduction equated to 57-99% whilst the postharvest reduction equated to 93-95%). In addition, the reviews also revealed that long term use of biofertilizers is economical, eco-friendly, more efficient, productive and accessible to marginal and small farmers over synthetic fertilizers.

**Conclusion:** Few peer-reviewed research studies are published on the effectiveness of different biofertilizers in reducing aflatoxin contamination in groundnuts thus there is need for advancement of knowledge in the field of agriculture and food safety by providing empirical data on the impact of biofertilizers on aflatoxin production.

# Investigation into changes in inflammatory and immune cell markers in pre-diabetic patients from Durban, South Africa

**Ms Nomusa Mzimela**[1], Mr Aubrey Mbulelo Sosibo[1], Dr Phikelelani Siphosethu Ngubane[1], Prof Andile Khathi[1]
[1]University of KwaZulu-Natal, Durban, South Africa

**Biography:**
Nomusa Christina Mzimela is a cool, calm and collected woman who holds BSc (Biochemistry and Physiology) at University of South Africa, BSc Honours in Medical Science (Human Physiology) and Master of Medical Science (Human Physiology) at University of KwaZulu Natal (UKZN). Currently completing a Doctor of Philosophy in Health Sciences (Human Physiology) at UKZN. From honours level, I have been doing research based on pre-diabetes focusing on immunity, hematology and genetic. In 2023, has a published article on Sunday Tribune and Mercury based on Pre-diabetes in Durban, South Africa (Article online 'A study on pre-diabetes in the era of 'diabesity'.

**Introduction:** The prevalence of pre-diabetes is increasing in rapidly urbanizing cities, especially in individuals aged 25-45 years old. Pre-diabetes is an intermediate stage between normoglycaemia and onset of type 2 diabetes. Studies also indicate that this condition is associated with aberrant immune responses that are also influenced by environmental factors. This study sought to investigate changes in the concentration of immune cells and select inflammatory markers in patients (25-45 years) with pre-diabetes in Durban, South Africa.

**Methods:** Blood samples collected from King Edward Hospital, after obtaining ethics approval, these were divided into non-diabetic (ND, n = 30), pre-diabetic (PD, n = 90) and type 2 diabetic (T2D, n = 172) using ADA criteria. In each sample, the concentration of immune cells (neutrophils, lymphocytes, basophils, monocytes, and eosinophils) and selected inflammatory markers (interleukin (IL)-6, tumor necrosis factor (TNF)-□, C-reactive protein (CRP), fibrinogen, P-selectin, and soluble cell differentiation 40 ligands (CD40L) were determined.

**Results:** The results showed an increase in eosinophil, basophil and monocyte levels in the PD group as compared to the ND group. Additionally, the results showed a decrease in lymphocyte, and neutrophil levels in the PD group as compared to the ND group. Compared to ND, the PD and T2D groups had significant increases in serum TNF□, CD40L and fibrinogen concentrations. Additionally, there were decreases in serum CRP, IL-6, and P-selectin in the PD group while these markers increased in T2D group.

**Conclusion:** These findings were indicative of immune activation, sub-clinical inflammation, and highlight the impact of pre-diabetes in this population. The study groups also had more females than males, per group. More studies are recommended with a higher number of samples that are stratified by gender and represent the gender ratio in the city.

# Baseline assessment of the South African school food environment: Stakeholder perspectives

**Prof Ashika Naicker**[1], Mr Gilbert Tshitaudzi, Dr Evonne Singh, Dr Imana Pal, Dr Nokuthula Vilakazi, Dr Heleen Grobbelaar
[1]Durban University of Technology, Durban, South Africa

**Biography:**
Ashika Naicker is an Associate Professor in the Department of Food and Nutrition at the Durban University of Technology. Her research focus area involves the food environment for better health outcomes.

**Introduction:** The school food environment (SFE) significantly influences learners' food choices and health outcomes through the availability, provision and promotion of food and beverages within and outside the school. Stakeholders, acting as agents of change within the SFE, wield considerable influence either directly or indirectly, thus possessing the capacity to foster behavioural changes among learners to enhance their nutritional well-being and health outcomes. Following the review of the UNICEF blueprint for improving the SFE in South Africa, baseline assessments were conducted to gain a comprehensive understanding of the current state of SFE. The baseline assessment aimed to investigate stakeholders' perceptions, barriers, and facilitators to improve the SFE.

**Methods:** Six public schools representing a combination of an urban and rural mix, including three primary and three secondary schools, were preselected by the Department of Basic Education (DBE) in the iLembe district, KwaZulu-Natal, to serve as pilot schools. Using interview guides, focus group discussions (FGDs) were conducted with learners, teachers, volunteer food handlers, parents and the school governing body. Key informant interviews were conducted with Principals and vendors (formal and informal). Focus group discussions and key informant interviews were analysed through thematic analysis.

**Results:** Distinct themes and subthemes emerged from each stakeholder, shedding light on the situational barriers and facilitators influencing the SFE's capacity to foster a conducive environment for healthy eating habits. In this presentation, the emergent themes will be outlined, insights into commonalities between each stakeholder will be provided, and recommendations for interventions to improve the SFE in South Africa will be highlighted.

**Conclusion:** Identifying barriers and facilitators of the dual-edge nature of SFE through SFE stakeholder engagement serves as a valuable framework for developing intervention strategies tailored to promoting a healthy SFE in South Africa.

# Development of an Artificial Intelligence (AI) diabetic recipe generator through collaborative expertise

**Prof Ashika Naicker**[1], Dr Evonne Singh, Ms Anjellah Reddy, Dr Imana Pal, Dr Lisebo Mothepu
[1]Durban University of Technology, Durban, South Africa

**Biography:**
Ashika Naicker is an Associate Professor in the Department of Food and Nutrition at Durban University of Technology.

**Introduction:** Whilst artificial intelligence (AI) recipe generators are becoming increasingly popular, their accuracy hinges on recipe datasets sourced directly from the internet, which can lead to unpredictable combinations and a decreased level of accuracy. Involving food and nutrition academia and students in providing tried and tested recipes can offer several advantages, enhancing the overall quality, credibility and trustworthiness of the generated recipes. Given the paucity of suitable recipe sources for type 2 diabetes, this project aimed to develop an open-access AI diabetic-friendly recipe generator.

**Method:** Using the principles of Design Thinking learning, a database of diabetic-friendly recipes was produced by academia and students in the Department of Food and Nutrition at the Durban University of Technology. The developer used the database to train the AI model to generate recipes. During the training, unfamiliar recipes generated were tested by the Department of Food and Nutrition, and feedback was integrated to optimise the model.

**Results:** The Food and Nutrition team produced a refined dataset of diabetic-friendly recipes using existing recipes, and new recipes developed through a student project. The dataset underwent pre-processing to ensure that the data was ready for training. A suitable machine learning architecture was selected. The model was trained on the pre-processed dataset using supervised learning. During training, the model learnt patterns, relationships, and structures within the recipe dataset, generating coherent and contextually appropriate recipes. Unpredictable recipes were tested by the Department of Food and Nutrition team. Recipes were graded through a set of criteria, including sensory acceptability. Feedback was shared with the developer to refine and optimise the generator. The launch of the AI diabetic recipe generator will be detailed in this presentation.

**Conclusion:** The integration of expertise from diverse disciplines yielded clearer, more precise and accurate recipe instructions, mitigating the potential for confusion or misinterpretation by end-users.

# The influence of food labelling education on consumer usage of food labels: A study in Sandton, Gauteng: Protocol and formative results

Information | Education Abstract

**Ms Shakun Naicker**[1], Professor Ashika Naicker, Doctor Heleen Grobbelaar
[1]DUT, Sandton, South Africa

**Biography:**
I am a freelance food scientist with over 15 years of experience in quality and food safety systems governance, including the design and implementation of quality and food safety systems. I also have 5 years of experience in scientific and regulatory affairs specialising in product labelling, nutrition analysis and claims expanding across regulatory projects in SA, SAA, UK and Europe. I am a trained facilitator, facilitating training on topics in quality, food safety and food labelling landscape.
In Academia, I am a second year PhD student. I am also published author in South Africa Journal of Clinical Nutrition in 2023.

**Introduction:** To strengthen the framework of the national strategic health plan in South Africa (SA), the Department of Health is strengthening its position to mandate a front-of-pack nutrition labelling (FOPNL) tool in its efforts to decrease the risk of obesity and other non-communicable diseases (NCDs) among South Africans. This study aims to determine the level of awareness, comprehension, and utilisation of food labels by consumers when making food purchases and whether food labelling education influences understanding, usage, and overall perspective towards food labels among consumers in Sandton, Gauteng.

**Methods:** The study will be conducted in four phases and target communities in Sunninghill and Alexandra, Sandton. In phase 1, consumer awareness, understanding, usage, and attitude toward food labels will be determined. In phase 2, food labelling education lessons will be adapted, refined and validated through the Delphi method. In phase 3, food labelling education lessons will be implemented for 130 participants over a six-week period, and the changeover in knowledge will be measured.

**Results:** This study is currently in phase 1. Consumer awareness, understanding, usage and attitude on food labels are determined among 192 participants living in Sunninghill and 192 living in Alexandra. The reliability of the questionnaire was piloted for content validity. Thereafter, the questionnaire was translated into Xhosa and Zulu. Using a street map of each community, a starting point was randomly selected; thereafter, households were selected through systematic random sampling. The results of the survey will be reported.

**Conclusion:** This study has the capability of expanding into the food labelling system while simultaneously and successfully establishing educational methods to heighten consumer knowledge, which may result in consumers making informed and healthier food choices.

# Environmental enteric dysfunction biomarkers in 6 to 9-month-old South African infants associates negatively with growth and are improved by one egg per day for six months

**Dr Regina Nakiranda**[1], Prof Linda Malan[1], Dr Hannah Ricci[1,2], Prof Herculina S Kruger[1], Dr Arista Nienaber[1], Dr Marina Visser[1], Prof Cristian Ricci[2], Prof Mieke Faber[1,3], Prof Marius Smuts[1]

[1]Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, [2]Africa Unit for Transdisciplinary Health Research (AUTHeR), North-West University, Potchefstroom, South Africa, [3]South African Medical Research Council (Non-Communicable Diseases Research Unit), Tygerberg, South Africa

**Biography:**
Dr Regina Nakiranda is a pediatrician with in interest in infant nutrition. She completed a PhD in Nutrition on the immune response of 6 to 9-month-old infants receiving an egg daily as complementary food.

**Background:** This secondary analysis of the Eggcel-growth study aimed to investigate the effect of daily egg intake for six months in infants aged six to nine months on environmental enteric dysfunction (EED) biomarkers, and the association of EED markers with growth faltering.

**Methods:** A randomised controlled trial was conducted in Jouberton, South Africa among 500 infants who were randomly assigned equally to an intervention group receiving one chicken egg per day and a control that did not receive eggs. Both groups were followed up for six months. Data on infant and maternal sociodemographic information and anthropometric status of infants were collected. EED and inflammatory markers were analysed by Q-Plex Human EED (11-Plex)TM assay. In total, 447 and 441 infants at baseline and endpoint respectively were included in the EED sub-analysis.

**Results:** There was a significant reduction in FGF21 concentration from baseline to endpoint in the intervention group (B=-0.132; 95% CI -0.255, -0.010; P=0.035). Baseline, insulin-like growth factor 1 (IGF-1) was positively associated with endpoint length-for-age z score (LAZ), weight-for-age-z score (WAZ) and weight-for-length z score(WLZ) and there was an inverse relationship between baseline fibroblast growth factor 21 (FGF21) and intestinal fatty acid–binding protein (I-FABP) with endpoint growth indicators. Baseline IGF-1 was positively associated with reduced odds of wasting, stunting and being underweight (P<0.001), and baseline FGF21 was associated with increased odds of stunting (P=0.002), wasting (P=0.031), and being underweight (P=0.035). There was a 20% increased odds of stunting with baseline I-FAB (P=0.045), and a 30% increased odds of being underweight with baseline soluble CD14 (sCD14) (P=0.039).

**Conclusion:** FGF21 and I-FAB levels were associated with increased growth faltering, whereas complementary feeding with eggs resulted in a notable decrease in growth hormone resistance (reduction in FGF21 levels).

# Food environment influences food choices in Ehlanzeni Municipality, Mpumalanga Province

**Ms Vhushavhelo Nedzingahe**[1], Dr Mthokozisi Zuma[1], Prof Xikombiso Mbhenyane1
[1]Stellenbosch University, Cape Town, South Africa

**Biography:**
Vhushavhelo Nedzingahe is a PhD candidate in Nutritional Sciences at Stellenbosch University, South Africa. She is also a junior researcher in the Research Chair for Food Environment, Nutrition and Health at the same university. She holds a BSc in Nutrition and a Master's degree in Public Health Nutrition., Vhushavhelo is a registered Nutritionist with the Health Professions Council of South Africa (HPCSA). Vhushavhelo is also a member of the Nutrition Society of South Africa and Public Health Association of South Africa.

**Introduction:** Food environment can be defined as everyday actions that push consumers' food choices in particular directions and add to the daily consumer's dietary habits. This includes nutritional quality, price, safety, labelling, convenience and promotion of the foods.

**Methods:** This study investigated the influence of the household food environment on dietary diversity and food security at Ehlanzeni District, South Africa. A cross-sectional design was employed. A total of 430 households were systematically selected.

**Results:** Almost all the participants were females (90.5%) and almost half (48.8%) earned 1000 – 3000 ZAR monthly. Staple foods were the most available in 97.2% of households, with stiff porridge and bread as the most consumed in households and foods were least consumed. Food prices were an important factor when accessing food. The mean dietary diversity score was 4.10 ± 2.88. There was a significant association ($p < 0.001$) between dietary diversity score and household food insecurity access scale. Only 21.9% of households were food secure. Over two thirds (74.0%) of households experienced the domain: anxiety and uncertainty over food and less expensive foods was the common coping strategy in 62.3% of households when experiencing food shortages.

**Conclusion:** The study revealed that households consumed different types of foods from all 17 food groups. However, the household food environment lacked diversity and most of the households were food insecure. Affordability was an important factor in households when accessing food.

# First-year weight and length growth trajectories in preterm infants and their relationship to early life exposures and one-year anthropometry

**Ms Sanja Nel**[1,2,3], Prof Ute Feucht[4,2,3], Dr Tanita Botha[5,2,3], Prof Friede Wenhold[1,2,3]
[1]University of Pretoria, Department of Human Nutrition, Pretoria, South Africa, [2]University of Pretoria Research Centre for Maternal, Fetal, Newborn & Child Health Care Strategies, Atteridgeville, South Africa, [3]South African Medical Research Council (SA MRC) Maternal and Infant Health Care Strategies Unit, Atteridgeville, South Africa, [4]Univeristy of Pretoria Department of Paediatrics, Pretoria, South Africa, [5]University of Pretoria Department of Statistics, Pretoria, South Africa

**Biography:**
Sanja Nel completed her Bachelor in dietetics in 2009. She spent several years in the Public Health Sector, during which time she also qualified as a South African Certified Lactation Consultant. She completed her Masters in Dietetics in 2019, and is currently finishing up her PhD. Her research focuses on growth in infants and young children, with especial emphasis on the ways in which prenatal and early life conditions affect growth outcomes. She is currently affiliated to the University of Pretoria as well as the SAMRC Maternal and Infant Health Care Strategies Unit at Kalafong Hospital.

**Introduction:** Longitudinal growth of South African preterm infants is inadequately described. We describe first-year longitudinal weight and length trajectories in a cohort of preterm infants, and investigate associations with early-life factors and one-year anthropometry.

**Methods:** Z-scores of weight-for-age (WAZ), length-for-age (LAZ), and weight-for-length (WLZ) were calculated from outpatient records of 322 one-year-old preterm infants using Fenton and WHO Growth Charts. Latent trajectory analysis identified typical WAZ, LAZ and WLZ growth trajectories. Individual infants matched one trajectory per model. Multivariate analysis determined odds ratios (ORs) for early life factors and early WAZ gain (up to 50w postmenstrual age) predicting growth trajectories. Per-trajectory rates of underweight (WAZ< 2), stunting (LAZ< 2), wasting (WLZ< 2) and overweight (BMI-for-age z-score>+2) were calculated.

**Results:** Best-fit models identified three WAZ trajectories (catch-up, slow growth, faltering), three LAZ trajectories (catch-up, gradual gain, faltering), and two WLZ trajectories (gain, faltering). The respective odds of slow or faltering WAZ growth increased with increasing birth weight z-score (BWZ) (OR:2.75(1.47,5.16); 1.78(1.09,2.90)) and decreased with greater early WAZ gains (OR:0.44(0.30,0.64); 0.68(0.51,0.90)). Odds of LAZ catch-up decreased with increasing BWZ (OR:0.12(0.05,0.32)) and early WAZ gain (OR:0.54(0.37,0.80)); the odds of LAZ faltering decreased with greater early WAZ gain (OR:0.72(0.57,0.92)) and non-critical congenital heart conditions (OR:0.28(0.14,0.53)). Odds of WLZ faltering decreased with higher gestational age (OR:0.84(0.75,0.95) per week), higher BWZ (0.59(0.37,0.90)), and in adolescent mothers (OR:0.27(0.09,0.76)). At 1 year, WAZ and WLZ faltering resulted in more underweight (49.1%, 22.4%), stunting (45.5%, 23.5%) and wasting (21.8%, 10.3%), while WAZ catch-up and WLZ gain resulted in more overweight (24.4%, 17.6%; all p<0.001). For LAZ, gradual gain resulted in the least underweight (2.0%), stunting (2.1%) and wasting (2.1%, all p<0.001).

**Conclusion:** Preterm infants display various first-year growth trajectories. Lower BWZ was associated with catch-up growth. Poor early growth, predictive of growth faltering and consequent malnutrition, should be targeted.

# ► Weight, length and body composition trajectories up to two years in full term infants with prenatal placental insufficiency

**Ms Sanja Nel**[1,2,3], Prof Friede Wenhold[1,2,3], Dr Helen Mulol[2,3,4], Dr Nonhlanhla Yende-Zuma[5], Prof Ute Feucht[2,3,4]
[1]University of Pretoria Department of Human Nutrition, Pretoria, South Africa, [2]University of Pretoria Research Centre for Maternal, Fetal, Newborn & Child Health Care Strategies, Atteridgeville, South Africa, [3]South African Medical Research Council (SA MRC) Maternal and Infant Health Care Strategies Unit, Atteridgeville, South Africa, [4]University of Pretoria Department of Paediatrics, Pretoria, South Africa, [5]South African Medical Research Council, Durban, South Africa

**Biography:**
Sanja Nel completed her Bachelor in dietetics in 2009. She spent several years in the Public Health Sector, during which time she also qualified as a South African Certified Lactation Consultant. She completed her Masters in Dietetics in 2019, and is currently finishing up her PhD. Her research focuses on growth in infants and young children, with especial emphasis on the ways in which prenatal and early life conditions affect growth outcomes. She is currently affiliated to the University of Pretoria as well as the SAMRC Maternal and Infant Health Care Strategies Unit at Kalafong Hospital.

**Introduction:** Umbilical artery Doppler screening reduces stillbirth, but childhood growth and body composition (BC) of surviving infants may be affected. We describe weight, length and BC trajectories up to two years in a cohort of term-born infants with and without prenatal placental insufficiency (diagnosed by elevated umbilical artery resistance index (UmA-RI) on Doppler screening).

**Methods:** During eight visits over two years, 81 term-born infants were weighed, their length measured and their BC estimated using deuterium dilution. Individual growth trajectories were plotted using age- and sex-specific z-scores for weight-for-age (WAZ), length-for-age (LAZ), weight-for-length (WLZ), fat mass (FMZ), fat-free mass (FFMZ), FM-index (FMIZ) and FFM-index (FFMIZ). Longitudinal trajectory analysis identified typical trajectories, which were compared to early-life exposures using multivariate analysis.

**Results:** Trajectory analysis identified three latent trajectories – high, middle and low – for WAZ, LAZ, WLZ and FFMZ, and two trajectories for FMZ, FMIZ and FFMIZ. On multivariate analysis, WAZ trajectory was predicted by gestational age (GA; low trajectory OR:0.88(0.78-1.00), high trajectory OR:(1.12(1.01-1.25) per week), multigravidity (high trajectory OR:2.50(1.14-5.56)), and birth weight z-score (BWZ; low trajectory OR:0.11(0.03-0.43), high trajectory OR:4.55(1.23-16.67) per z-score) or small-for-GA (SGA; low trajectory, OR 9.09(1.75-50.00)). Low LAZ trajectory was predicted by higher UmA-RI z-score (OR:1.95(1.15-3.30) per z-score) or abnormal UmA-RI (OR:4.85(1.39-16.95)) and lower birth LAZ (OR:0.51(0.34-0.77) per z-score). Low WLZ trajectory was predicted by lower BWZ (OR:0.34(0.15-0.75) per z-score) but not SGA. Low FMZ trajectory was predicted by lower BWZ (OR:0.36(0.18-0.73) per z-score) or SGA (OR:6.86(1.77-26.69)), lower GA (OR:0.93(0.86-1.00) per week) and maternal HIV (OR:3.74(1.17-11.99)). Low FFMZ trajectory was predicted by lower BWZ (OR:0.38(0.21-0.69) per z-score) or SGA (OR:8.54(2.37-30.78)) and UmA-RI z-score (OR:1.78(1.13-2.80) per z-score) or abnormal UmA-RI (OR:6.45(2.05-20.24)).

**Conclusion:** While BWZ predicts WAZ, WLZ, FMZ and FFMZ trajectories, UmA-RI predicts LAZ and FFMZ. Routine UmA-RI screening can identify infants at high risk of later stunting.

# Sensory evaluation of a sorghum and millet based instant breakfast porridge suitable for the National School Nutrition Programme (NSNP)

**Ms Ngobile Ngcobo**[1]
[1]Durban University of Technology, Durban, South Africa

**Biography:**
Dynamic and innovative food product developer. Experienced in R&D, brings creative flair to every project and is currenty undertaking a Masters degree in Food and Nutrition.

**Introduction:** The National School Nutrition Programme (NSNP) is an important safety net in the provision of food to school learners in South Africa. However, the NSNP does not have a sustainable solution to provide learners with a nutritious breakfast. This study aimed to develop a sensory-acceptable, nutritious, and cost-effective breakfast porridge for learners in the NSNP.

**Methods:** In this cross-sectional and developmental study, systematic steps of food product development were followed to develop a sensory-acceptable breakfast porridge using two primary ingredients: sorghum and millet. The main techniques adopted in the product development included fermentation and drying. The sensory acceptability of the porridge was investigated using a visual and verbal anchored hedonic scale among 200 learners from four schools participating in the NSNP in KwaZulu-Natal, iLembe district. Participants were randomly selected and recruited through assent and informed consent from parents. Independent sample t-test were used to compare the sample means from unrelated groups and Pearson's correlation test was used to analyse the data for linear relationships between variables.

**Results:** The sensory evaluation results show that a significant proportion of learners rated the breakfast porridge as either ‘good’ (35.0%; n=70), ‘super good’ (26.5%; n=50) or ‘really good’ (14.5% ; n=29), collectively ($p<0.001$). There was no significant correlation between sensory scores across grade and age groups. However, while both boys and girls ranked the porridge above 4 on the 7-point hedonic scale, on average, boys (mean = 4.7) ranked it significantly higher than girls (mean = 4.16), $t(198) = 3.219$, $p=.002$.

**Conclusion:** This breakfast porridge can be a potential solution to enhance the NSNP breakfast programme, ensure that learners are sustained until the lunch meal is served, provide the necessary nutrition for optimal learning and development and contribute to the attainment of SDGs 2, 3, 4, 10, and 12.

# Development and consumer acceptance of a brown lentil bun by University of Zululand Students, South Africa, a pilot study

**Ms Nokubonga Ngwane**[1]
[1]University of Zululand, Empangeni, South Africa

**Biography:**
I am Nokubonga Ngwane, a lab technician from the University of Zululand. previously I have worked for the Durban university of technology where i obtained my B-Tech in Consumer science food and nutrition. at my current place of work I obtained my Bachelor of science honours in consumer science. at the moment I am pursuing my masters in consumer science.
My research interest is in product development to alleviate food insecurity.

**Introduction:** According to several studies, there has been an increase in consumer demand for plant-based foods. Consumers are more conscious of their health and the urge for organic and sustainable food sources. The consumption of legumes as meat replacements has not yet been explored in young people even though pulses have been given a central role in enhancing food security and nutrition.

To address the lack of research conducted on students in relations to pulses and non-meat products, this study conducted an experiment that evaluated the acceptability of a lentil bun and seitan a meat substitute product among university students in KwaZulu Natal, South Africa.

**Methodology:** This study explored experimental mixed method research design to collect data, target population were University of Zululand students inclusive of all races and genders, between the ages of 18 to 35. Three sensory evaluation trials were conducted using food action rating scale and 9-point hedonic rating scale to evaluate the acceptability of the lentil bun. A total of 60 participants were randomly selected for the sensory evaluation.

**Results and Discussion:** Results indicated that students have an interest in consuming lentil-based products with non-meat fillings as the product was found to be acceptable among the students, according to the sensory evaluation results most of the participants indicated that they would eat this product very often 33% of n=60 participants and another 33% indicated that they would eat this product every opportunity they got.

# Understanding and applying gene–environment interactions: A guide for nutrition professionals with an emphasis on integration in African research settings

**Prof Cornelie Nienaber-Rousseau**[1]
[1]North-West University, Potchefstroom, South Africa

**Biography:**
Holding a B.Sc in Health Sciences (2005) and an honours degree in Nutrition (2006) from Potchefstroom University, I progressed to an MSc and PhD in Nutrition at North-West University, focusing on cardiovascular disease risk factors and gene-diet interactions. I've also researched vitamin D in the elderly in the Netherlands. As a lecturer at NWU since 2010, I've been promoted to associate professor in 2017, taught extensively and received teaching excellence awards. I've co-supervised MSc students and supervised PhD candidates, boasting 28 publications and numerous conference presentations. I am an active member of professional organisations.

Non-communicable diseases (NCDs) are influenced by the interplay between genetics and environmental exposures, particularly diet. However, many healthcare professionals, including nutritionists and dietitians, have limited genetic background and therefore they may lack understanding gene–environment interactions (GxEs) studies. Even researchers deeply involved in nutrition studies, but with a focus elsewhere, can struggle to interpret, evaluate, and conduct GxE studies. There is an urgent need to study African populations, that bear a heavy burden of NCDs, demonstrate unique genetic variability and have cultural practices resulting in distinctive environmental exposures compared to Europeans or Americans, who are studied more. Although diverse and rapidly changing environments, as well as the high genetic variability of Africans and difference in linkage disequilibrium, i.e. certain gene variants are inherited together more often than expected by chance, provide unparalleled potential to investigate the omics fields, only a small percentage of studies come from Africa. Furthermore, research evidence lags behind the practices of companies offering genetic testing for personalised medicine and nutrition. We need to generate more evidence on GxEs that also considers continental African populations to be able to prevent unethical practises and enable tailored treatments. This review aims to introduce nutrition professionals to genetics terms and valid methods to investigate GxE, challenges, and proposes ways to improve quality and reproducibility. The review also provides insight into the potential contributions of nutrigenetics/nutrigenomics to the healthcare sphere, addresses direct-to-consumer genetic testing, and concludes by offering insights into the field's future, including advanced technologies like artificial intelligence and machine learning.

# Optimization of Mucilage Extraction Process from Okra (Abelmoschus esculentus (l.)) and application as an alternative stabilizer/emulsifier for dairy food product ice cream

**Ms Nelly Nkosi**[1]
[1]UNISA, Pretoria, South Africa

**Biography:**
My name is Ms Nelly Nkosi, and I am originally from KwaZulu-Natal-Pongola. I have completed a Master of Consumer Sciences (Cum Laude), currently registered for a Ph.D. in consumer sciences-food product development. My research interests include food product development; indigenous crops, consumer behavior; and teaching and learning in open-distance education. Over the years I have accumulated extensive experience in the academic environment, since year 2021 I have been a lecturer at the UNISA Department of Life and Consumer Sciences-teaching food modules. Outside my academic space, I enjoy cooking, hiking, and spending time with my family.

**Introduction:** Okra (Abelmoschus esculentus) is an abundant natural source of mucilage. This mucilage has a high potential to be used in the processing of food and pharmaceutical products owing to its functional properties. Mucilage which is an example of a natural hydrocolloid is a gummy substance that can extract seeds or soft stems of a variety of plants including okra (Abelmoschus esculentus). The food system uses these plant polysaccharides as emulsifier agents to modify the texture and palatability of food products or other ingredients with the gelling capacity to convert the emulsion into an emulsion.

**Objectives:** The objective of this study was to optimize the process parameters for the extraction of mucilage from the okra (Abelmoschus esculentus) crop using response surface methodology and to evaluate the potential use of mucilage as a potential alternative stabilizer in food product ice cream.

**Preliminary results:** The experimental data obtained were fitted to a second-order polynomial equation using regression analysis. The Analysis of variance (ANOVA) was used to determine the contribution of the terms in the quadratic model and 3D graphs were generated to observe the interactive effects of the variable in the model. The amount of extraction water (ml) and the amount of Okra (g) significantly influenced mucilage yield with p-values of 0,0001 and 0,0294 respectively while the extraction temperature (˚C) did not significantly ($p > 0.05$) influence the mucilage yield. The viscosity, and emulsion stability were 4.95 g/100 g, 80.11 mPa.s, 67.85%, and 80.56 respectively.

**Conclusion:** The results of the texture and melting tests showed that optimized okra mucilage can replace emulsifiers and stabilizers in the formulation of ice cream, maintaining the quality of the product. Overall, this work shows the possibility of using mucilage from okra mucilage in ice cream formulations as an alternative stabilizer in food product ice cream

# Knowledge and utilisation of indigenous foods plants among Ngqushwa Municipality, South Africa

**Ms Zoe Nomakhushe Nxusani**[1], Prof. Xikombiso Mbhenyane1, Dr Mthokozisi Zuma[1]
[1]Stellenbosch University, Cape Town, South Africa

**Biography:**
Zoe Nomakhushe Nxusani is a PhD scholar at Stellenbosch University in the Division of Human Nutrition at the Faculty of Medicine and Health Sciences. Her career background is Research in the Research Chair in Food Environments, Nutrition and Health, lecturing in the Education department, Post Graduate Certificate in Education, and Diploma in Technical and Vocational Education and Training Teaching programmes focusing on Consumer and Hospitality studies. Lecturing in Consumer Sciences: Food and Nutrition Departments. Her research areas of interest are indigenous foods, food and nutrition security, food safety and food quality systems.

A cross-sectional study was employed to investigate the knowledge and utilisation of indigenous food plants among Ngqushwa households in South Africa. A sample size of 407 households was randomly selected from twelve villages. The participants included the youth, women, elders, farmers and a household informant. Household diversity (indigenous knowledge and food production systems), individual dietary diversity, household food insecurity and indigenous food plant availability in the district were assessed using validated questionnaires. More than half (56.6%) of households were reported to be food-secured. Almost all (98%) of household respondents knew indigenous food plants and their benefits. The study shows high (91%) consumption of these foods influenced by their availability (97.3%). The communities reported consuming indigenous food plants as either food, nutrition or medicine. This suggests that consuming these foods may work against both the promotion of health and food security.

# ► Anaemia and neurodevelopmental delays in children exposed to maternal HIV infection and placental insufficiency

**Dr Mothusi Nyofane**[1,2,3,4], Dr Marinel Hoffman[1,3,4], Dr Helen Mulol[1,3,4], Mr Qondeni Ndlangamandla[5], Prof Ute Feucht[1,3,4]
[1]University of Pretoria, Pretoria, South Africa, [2]National University of Lesotho, Roma, Lesotho, [3]Research Centre for Maternal, Fetal, Newborn and Child Health Care Strategies, University of Pretoria, Kalafong Provincial Tertiary Hospital, Pretoria, South Africa, [4]Maternal and Infant Health Care Strategies Unit, South African Medical Research Council, Pretoria, South Africa, [5]Biostatistics Research Unit, South African Medical Research Council, Pretoria, South Africa

**Biography:**
Dr Mothusi Nyofane is a student at the University of Pretoria reading towards a PhD degree in Nutrition. His research focuses on placental insufficiency and maternal HIV exposure during pregnancy, child growth and neurodevelopment as well as infant feeding practices.

**Introduction:** Anaemia remains a public health problem affecting women and children, and its risk factors include nutritional deficiencies and infections such as HIV. It is known to be associated with delayed neurodevelopment in children.

**Objective:** To determine the prevalence of anaemia and its association with neurodevelopment among 18-month-old children with prior exposure to maternal HIV infection and placental insufficiency.

**Methods:** Placental insufficiency was detected by an abnormal umbilical artery resistance index (UmA-RI) on Doppler ultrasound at 28-34 weeks gestation. The cross-sectional study was conducted in 2021 at Kalafong Provincial Tertiary Hospital, South Africa, amongst 260 mother-child pairs including 24 preterm, grouped into HIV-unexposed-uninfected children (CHUU): n=198 vs HIV-exposed-uninfected children (CHEU): n=62 and normal UmA-RI (N-RI): n=225 vs abnormal UmA-RI (AbN-RI): n=35. Also, CHUU/N-RI (control): n=178 were compared to CHEU/AbN-RI (dual exposure): n=15. Children's haemoglobin concentration was tested using the HemoCue® System Analyzer, while cognitive, motor, and language development was assessed by Bayley-III (gestational age-corrected). Group outcomes were compared using Chi-squared and Fishers exact tests, and Pearson correlation test to determine associations.

**Results:** More than one-third of children across groups were mildly anaemic: CHUU: 43.9% vs CHEU: 41.9% and N-RI: 44.4% vs AbN-RI: 37.1%, without significant differences between groups. CHEU/AbN-RI had significantly lower length-for-age z-scores than CHUU/N-RI (1.3±1.3 vs 0.1±1.3; p=0.001). Bayley-III test demonstrated lower mean cognitive scores in CHEU vs CHUU: 98.5±11.1 vs 99.8±10.7; p=0.030; AbN-RI vs N-RI: 96.4±12.2 vs 100.0±10.5; p=0.017 and CHEU/AbN-RI vs CHUU/N-RI: 93.9±12.9 vs 100.0±10.6; p<0.001. No linear relationships between child haemoglobin and neurodevelopmental domains were found.

**Conclusion:** Findings suggest that maternal HIV exposure and placental insufficiency are independent risk factors for neurodevelopmental delay in children. Rates of anaemia remain alarmingly high. Child health programmes need to prioritise CHEU and children with prior placental insufficiency as at-risk groups for suboptimal length growth and cognitive delays.

# ► Impact of pre-treatments and drying on colour, bioactive compounds and antioxidant activity in different tomato (Solanum lycopersicum) cultivars

**Ms Nokuthula Abegale Nzimande**[1], Dr Faith Seke[1], Prof Dharini Sivakumar[1,2]
[1]Phytochemical Food Network, Department of Crop Sciences Tshwane University of Technology, Pretoria 0001, South Africa, [2]Centre for Nutrition & Food Sciences, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland, QLD 4108, Queensland, Australia

**Biography:**
Nokuthula Abegale Nzimande is currently pursuing her master's degree at Tshwane University of Technology. She earned her B-Tech specializing in crop production, from the same university and holds a national diploma in agriculture from Mangosuthu University of Technology. Her ongoing project focuses on assessing the impact of combining innovative pre-treatments and drying methods on phytochemical properties, antioxidant activity, and bioactive compounds of various tomato cultivars. This research was prompted by concerns, alterations and undesirable quality changes often associated with drying processes. By integrating pre-treatments, Nokuthula aims to effectively address these issues and enhance the overall quality of dehydrated tomatoes.

**Introduction:** The perishable nature of tomatoes has prompted the adoption of preservation techniques such as drying to extend shelf life and retain nutrients. To mitigate the degradation of phytochemicals such as antioxidants, pigments and bioactive compounds during the drying process, innovative pre-treatments have been proposed as an alternative way to improve the quality of dried products.

**Objectives:** To evaluate the effect of innovative pre-treatments (i.e. microwave and ultrasound) and drying methods (hot air and freeze drying) on quality characteristics of three tomato cultivars.

**Material and methods:** 8 mm thick tomato slices underwent two distinct pre-treatments: ultrasound (40 kHz, 20 min, at 30 ºC) and microwave (2450 MHz, 270 W, 2 min). Following these pre-treatments, a portion of tomato slices was exposed to hot air drying (60 ºC, air velocity of 0.1m/s) and another portion to freeze drying. The impact of these pre-treatments and drying methods on colour, total phenolic content (TPC), total carotenoids content (TCC) and antioxidant scavenging activity (DPPH) was then determined.

**Results:** The combination of ultrasound-freeze drying preserved bioactive compounds most effectively, with the highest TCC in cv. Zzx162 (95.50 mg/100g) and antioxidant scavenging activity (DPPH) (IC50=1.36) in cv. Zzx65. Microwave-freeze drying preserved the least bioactive compounds, with the lowest potent antioxidant scavenging activity observed in cv. Zzx162 (IC50=4.25). Conversely, ultrasound-hot air drying significantly increased in the redness a* value across all three cultivars, reaching a maximum in cv. Zzx162 (a* =33.92). Also, this combination retained a high total phenolic content in cv. Zzx162 (87.28 mg/100g), whereas the minimum value was observed in microwave-freeze drying in cv. Zzx171 (71.49 mg/100g).

**Conclusion:** The combination of pre-treatments and the drying process significantly influenced quality parameters and bioactive compounds. Ultrasound pre-treatment combined with the drying processes is a promising technology for enhancing quality parameters and bioactive compounds in dehydrated tomato products.

# Nutritional components and functional properties of pseudocereal (quinoa) and its potential uses in the food system for wellbeing: A review

**Dr Ruth Nachamada Olusanya**[1], Prof. Unathi Kolanisi[1]
[1]University of Zululand, Empangeni, South Africa, [2]University of Zululand, Empangeni, South Africa

**Biography:**
Ruth passion lies in Food Quality Food Safety Food & Nutrition Sensory Evaluation Nutraceuticals

Nutrient-related health issues including micronutrient deficiency and non-communicable disease are identified as jeopardizers of well-being and incapacitate livelihoods. Thus, people are becoming more conscious of their health status and are mindful of the nutritional contents of the foods they consume. Interestingly, a variety of climate-friendly superfoods including Quinoa also, pronounced (Keen-Wah) belong to the Amaranthacea family. However, these crops are underutilized, especially in indigenous food. The role of the nutritional content of quinoa in achieving sustainable food systems is crucial, and its use of indigenous food is essential to achieving food and nutrition security and meeting the top three Sustainable Development Goals (SDGs). Quinoa is an ancient crop native to the South American countries namely: Bolivia, Ecuador, Argentina, Chile, and Colombia. The Andean region cultivates Quinoa mainly for its seeds and is consumed similarly to rice and other staple grains. While Quinoa is mainly produced in American countries currently, its agronomic experiments, and cultivation, are spreading fast to other countries including sub-Saharan Africa. Phenotypically, Quinoa produces achene fruits (chenopod grains) with a rounded edible seed of about (1.5–4 mm). Quinoa has played a vital role in providing food and nutrition security in the regions where they have been domesticated. It is a pseudo-real with B vitamins, and dietary minerals greater than other grains. It is an excellent food with 'functional properties' that lower the risk of various diseases. Despite - the health-promoting benefits of quinoa, review studies on its nutritional, functional bioactive information, and its application in indigenous food, are limited/scarce. Yet, to tackle and mitigate the health consequences of food insecurity, demand the exploration of sustainable food alternatives that prioritize nutrition security and well-being. Thus, this review recapitulates the Nutritional components and functional properties of quinoa; for augmenting nutrient deficiencies and optimizing well-being.

# The development and consumer acceptance of goat meat burger patties among young adults in KwaZulu-Natal, South Africa

**Dr Karina Palmer**[1], Prof Ashika Naicker, Prof Unathi Kolanisi
[1]University of Zululand, South Africa, South Africa

**Biography:**
Dr Karina Palmer is a lecturer in the Department of Consumer Sciences, University of Zululand. She completed a PhD at the Durban University of Technology in Consumer Sciences: Food and Nutrition, specializing in product innovation and advance sensory techniques including lexicon development. She has been globally recognized for her indigenous food innovations and has showcased some of her innovations at local food exhibitions. Her research interests include food innovation and sensory evaluation with special focus on the promotion of indigenous foods to address food and nutrition insecurity.

**Introduction:** Although goat meat is a nutritious and sustainable Animal Food Source (AFS), it is not commonly preferred as an AFS in sub-Saharan Africa even though goats thrive in the region. To explore the potential of promoting goat meat consumption among young adults in KwaZulu-Natal, South Africa.

**Methods:** An experimental study involving the development, nutrient analysis and microbial testing of a goat meat product through a series of recipe development trials was conducted. This study aimed to use food processing techniques to improve the sensory qualities of goat meat (texture and aroma) in a value-added product. Goat meat patties were developed and evaluated for consumer acceptance using Check-All-That-Apply (CATA) food action rating scale and paired preference testing (n=100).

**Results**: Nutrient testing showed that the patty (31.57g/100g) was high in protein. The total fat content for the product was less than 10g per 100g portion. Whilst microbial testing showed that the coliform, yeast and mould, and total bacteria counts were low and well within the acceptable range.
The CATA test revealed the most frequently selected term used to describe the sensory attributes were for the patty were; ‘smoky’ for aroma (82%), ‘brownish-grey’ for appearance (68%), ‘meaty’ for flavour (92%), and ‘tender’ for texture (59%). Participants showed a positive attitude towards purchasing and consuming the goat meat patty (96%).

**Conclusion:** The findings suggest that promoting goat meat consumption in South Africa can be achieved through the introduction of value-added convenience products like the goat meat patties developed in this study.

# Defining dairy matrix and dairy matrix health effects: Results of an expert meeting

Information | Education Abstract

**Dr Stephan Peters**[1]
[1]Dutch Dairy Association (NZO), Den Haag, Netherlands

**Biography:**
Stephan Peters obtained a MSc degree in Human Nutrition and Toxicology and a PhD in in the development of clinical nutrition for weight-losing cancer patients. He specialised in the translation of complex food science into consumer-friendly information.
Before joining the NZO Stephan worked at the Netherlands Nutrition Centre as Science and Quality Manager. In this role, he played an important role in the development of the Dutch Food-based Dietary Guidelines.
Currently, Stephan works on research programs focused on dairy nutrition and health and its role in healthy and sustainable diets. He is also chief editor of the Dutch, Nutrition Magazine.

**Introduction:** The health implications of dietary choices transcend the effects of individual nutrients, exemplified by the complex interplay within dairy products. While dairy contains saturated fatty acids known to elevate LDL-cholesterol levels, epidemiological findings often fail to demonstrate a consistent association between dairy intake and increased risk of coronary heart disease (CVD). The notion of the dairy food matrix emerges as a potential explanation for these discrepancies.

**Methods:** A comprehensive review of literature addressing dairy matrix and the dairy matrix health effects preceded expert deliberations among nutrition scientists convened by the International Dairy Federation. This collective effort aimed to delineate the concept of dairy matrix and its implications for health.

**Results:** The expert consensus yielded the following definitions: Dairy matrix pertains to the unique structure of a dairy food, its components (e.g., nutrients and non-nutrients) and how they interact. The dairy matrix health effects denote the impact of the whole dairy food on health that extends beyond its individual components.

**Conclusion:** Harmonized definitions of the dairy matrix and its health effects are imperative to foster international discourse and advance nutrition science. The definitions established by the International Dairy Federation hold promise for promoting a deeper understanding of the mechanisms underlying the health effects of dairy beyond mere nutrient content.

# Avocados: The Forgotten Fruit in a Mediterranean Diet

Information | Education Abstract

**Dr Monique Piderit**[1]
[1]Nutritional Solutions, JHB, South Africa

**Biography:**
Dr Monique Piderit is a registered dietitian in private practice in Johannesburg.

The Mediterranean diet has long been praised for its health benefits. This way of eating is not a diet per se, but rather describes a style or pattern of eating characteristic of countries like Spain, Portugal and Greece: plant-based eating with high intakes of fruit, vegetables, wholegrains, legumes, nuts and olive oil, moderate intakes of fish (especially fatty fish), chicken, wine and dairy, and an emphasis on low intakes of meat, processed foods and refined grains.

Evidence suggests that this style of eating is favourably linked to reduced risk of many diseases, illnesses, and conditions, such as cardiovascular disease, colorectal cancer, breast cancer, ADHD in children and adolescents, and diabetes. It is also linked to a two-fold increase in the likelihood of weight loss maintenance.

A standout nutritional feature of the Mediterranean diet is monounsaturated fats, in particular oleic acid, found in olives and olive oil. Incorporating non-traditional foods as part of the diet, which still meet the nutritional criteria, provides more flexibility and greater adaptability when encouraging patients to adopt a Mediterranean diet.

Avocados, whilst not traditionally included in a Mediterranean diet, have a comparable nutrient composition to other traditional Mediterranean foods. For example, both avocados and olive oil are rich in oleic acid with similar ratios of unsaturated to saturated fat (6:1). One serving of avocado contains 5 g of monounsaturated fat, the majority of which is oleic acid (4.5 g), the same fatty acid found in olive oil. Avocados contain more fibre, potassium and folate compared to olive oil, and less energy per serving.

Considering this, including avocado as part of Mediterranean diet may help preserve the nutrient profile and make this dietary pattern more adaptable, flexible, and suitable to populations outside of the Mediterranean regions.

# ► Dairy intake screener as web-based application is reliable and valid

**Dr Monique Piderit**[1], Dr Zelda White[1], Prof Piet Becker1, Prof Friedeburg Anna Maria Wenhold1
[1]University of Pretoria, Pretoria, South Africa, [2]Nutritional Solutions, Johannesburg, South Africa

**Biography:**
Monique is a registered dietitian in private practice at Nutritional Solutions in Johannesburg.

The “Dairy Diary”, a user-friendly, web-based, eight-item dairy intake screener, scores usual frequency of consumption and portion size per eating occasion (product serving score; PSS), resulting in a daily serving score (DSS). We evaluated the screener test-retest reliability and comparative validity.

In a diagnostic accuracy study, a purposefully recruited sample of 79 (age: 21.6±3.8 years) dietetics/nutrition student volunteers from three South African universities completed three non-consecutive days of weighed food records within a seven-day period (comparative validity), followed by two administrations, two weeks apart, of the screener (reliability). Dairy intake from food records was compared to screener intakes (paired t-tests, Pearson rank correlations, Kappa statistic, McNemar’s test for symmetry and Bland–Altman plots). Sensitivity, specificity, predictive values, odds ratio (OR) and receiver operating characteristics (ROC) described the diagnostic accuracy of the categorised DSSs.

For reliability, mean PSSs and DSSs did not differ significantly ($p>0.05$) between screener administrations. PSSs were strongly correlated: milk ($r=0.69$; $p<0.001$), maas (fermented milk) ($r=0.72$; $p<0.001$), yoghurt ($r=0.71$; $p<0.001$), cheese ($r=0.74$; $p<0.001$). For categorised DSSs, Kappa was moderate ($k=0.45$; $p<0.001$). Non-agreeing responses suggested symmetry ($p=0.334$). For validity, the PSSs of the screener and food records were moderately correlated: [milk ($r=0.30$; $p=0.0129$), yoghurt ($r=0.38$; $p<0.001$), cheese ($r=0.38$; $p<0.001$),]. DSS, categorised, had $k=0.31$ ($p=0.006$) and - when continuous - the correlation was moderate ($r=0.3$; $p=0.007$). Bland-Altman analyses showed acceptable agreement for DSSs (bias: -0.49; 95%CI: -0.7 to -0.3). Categorised DSSs had high sensitivity (81.4%) and positive predictive value (93.4%), yet low specificity (55.6%) and negative predictive value (27.8%). The OR was 5.5 (4.4; 21.7). The area under the ROC curve (0.7) was acceptable.

# Impact of financial incentives and cashback on food purchasing behaviour

**Ms Carla Pool**[1]
[1]Vitality RSA, Johannesburg, South Africa

**Biography:**
Carla is a registered dietitian, currently leading nutrition strategy for Vitality Wellness. She has a decades' experience in the private health insurance industry, working in Discovery Healthcare Services and Strategic Risk Management in the Population Health Management team. She holds Master's Degree in Public Health focusing on Health Systems from UCT, as well as honours degrees in Physiology (Stellenbosch, 2011) and Nutrition and Dietetics (UCT, 2013)

**Introduction:** Reducing the long-term cost of healthy food may lead to improved health outcomes. There is much interest in the role of financial incentives in encouraging healthy diets but limited long term data on the impact of variable sizes of price reductions in large population interventions. This study is an update on previous work and examines the effectiveness of various levels of financial incentives for healthy food items on household grocery shopping behaviour among Discovery Vitality members.

**Methods:** The Discovery Vitality HealthyFood benefit, South Africa's largest healthy food programme, provides a cashback rebate of up to 75% for healthy food purchases at two of the largest supermarket chains across all provinces in South Africa. A longitudinal, retrospective study will be undertaken to determine changes in healthy food purchasing behaviour among Discovery Vitality members who initially earned a 25% cashback, followed by a subsequent increase in cashback to more than 25% after becoming members of Discovery Bank.
Outcomes: A comparison of the proportion of healthy food items and unhealthy food items purchased by Discovery Vitality members receiving a 25% cashback versus a cashback greater than 25%.

**Results and conclusion:** To be added once study is finalised.

# ► Can processed meat be a source of quality nutrients?

**Dr Beulah Pretorius**[1], Prof Hettie C Schönfeldt[1]
[1]University of Pretoria, Pretoria, South Africa

**Biography:**
Dr Pretorius is a NRF C-rated researcher at the University of Pretoria.
She has a keen interest in linking nutrient quantity and quality of foods for attaining nutrition and food security for all. Current food systems are increasingly homogenised to a limited number of foods, decreasing dietary diversity and leading to nutrient deficiency in vulnerable populations. Increasing dietary diversity is one of the best practices for sustainable intake of macro- and micronutrients. Dr Pretorius' research explores the nutritional significance of less familiar foods for sustainable food and nutrition security.

**Introduction:** A significant increase in processed meat consumption was reported in SA. Typically, the public receives nutrition information through strategies such as nutrition education, advertising and labelling. No study has previously examined the nutrient density and protein quality of South Africa-specific processed meat products. The only data on the nutrient composition of processed meat products generally available in the South Africa Food Composition Tables (FCT) are borrowed from USDA and UK databases.

**Objective Statement:** To describe processed meat products in terms of nutrient density and protein quality in comparison with other sources of protein.

**Methodology:** Processed meat products from different brands were randomly sampled from seven retailers in Gauteng. Samples were homogenised, coded and analysed for proximate, fatty acid, amino acid and mineral content. Nutrient density and protein quality were evaluated.

**Results:** The nutrient content and nutrient quality of the selected processed meat products will be reported on. The fat content ranged from 3.5% to 16.3% and the protein content ranged from 8.3 % to 16 %. Iron and zinc concentrations were found to be similar to values reported for beef and lamb. These products have a relatively higher nutrient density score (NRF9,3/100 kcal) compared to the other sources of protein in the study. The foods were ranked based on the indispensable amino acid score (DIAAS) using the different standard reference patterns for adults, adolescents and children. Threonine and valine were the amino acids found to be lacking in the studied processed meat products.

**Conclusion:** The nutrient content and protein quality together with affordability compared to plant sources of protein suggest the studied processed meat products can be considered as important nutrient and protein sources. However, consumer education needs to be ongoing about the benefits of eating lean meats and emphasise consuming processed foods in moderation.

# The dietician's role in the pre-operative workup for patients undergoing laparoscopic surgery of the upper GIT

**Ms Mico Price**[1,7,8], Dr Lousie van den Berg[1], Ms Mariette Nel[1], Dr Francois Schutte[2,3,4,10,14], Dr Abri Bezuidenhout[2,3,4,5,6,11,12,13,14], Dr Thinus Smit[2,3,4,5,6,14], Mrs Engela Francis[7,8,9], Dr Liska Robb[1]
[1]University of the Free State, Bloemfontein, South Africa, [2]South African Metabolic Medicine and surgical society, , South Africa, [3]South African Society of Endoscopic Surgeons, , South Africa, [4]Associations of Surgeons of South Africa, , South Africa, [5]Surgicom, , South Africa, [6]Sefako Magthato Health Sciences University, , South Africa, [7]South African Society for parenteral and enteral nutrition, , South Africa, [8]Association of Dietetics in South Africa, , South Africa, [9]European Society for Clinical Nutrition and Metabolism, , Luxembourg, [10]South African Medical Association, , South Africa, [11]Federation of South African Surgeons (FoSAS), , South Africa, [12]South African Colorectal Society (SACRS), , South Africa, [13]Hernia Interest Group (HiG), , South Africa, [14]South African Gastroenterology Society (SAGES), , South Africa, [15]University of Pretoria, , South Africa

**Biography:**
Mico Price is a private practicing Dietician who has worked in the clinical setting for the last 12 years.
She has completed her Master's in Dietetics from the University of the Free State with a study on the impact of following a VLCD on hepatic volume and body composition and the benefit thereof for the upper GI surgeon in terms of the ease of access to the EG Junction.
She is currently doing her PhD in Dietetics and looking to study MASLD further as well as getting a preoperative VLCD recognized as part of upper GI surgery ERAS guidelines.

**Introduction:** Hepatomegaly and visceral adiposity can complicate laparoscopic surgery of the upper gastrointestinal tract (GIT) with increased risk of visceral organ injury, longer operating times, and unnecessarily technically challenging situations which can be averted by introducing a preoperative two-week very low calorie diet (VLCD).

**Aim:** The study is designed to describe the volumetric changes in left hepatic lobe volume (LHLV) and body composition following a preoperative two-week VLCD as indicators of visceral adiposity and its effect on aversion of challenging operative difficulties.

**Methodology:** A cross-sectional study was conducted on 48 patients scheduled for a laparoscopic Nissen and Redo Nissen Fundoplication. Ethical approval was granted by the Faculty of Health Sciences of the University of the Free State (UFS-HSD2021/1664/2202-0006). Sonographic assessment of the liver volume left of the falciform ligament and an InBody assessment was obtained at baseline and on the day of surgery, following the VLCD (1000kcal or 800kcal per day meal plan).

**Results:** Statistically significant ($p<0.05$) changes in weight, BMI, waist circumference, body fat mass, body fat percentage, abdominal fat, muscle mass, and LHLV. A median weight loss of 3.5 kgs, 2.2 kgs body fat loss and 2.5cm decrease in waist circumference was observed. LHLV was reduced by 33% ($p<0.05$). A questionnaire on the surgeon's subjective assessments reported an 86.4% improvement in ease of access to the EG junction.

**Conclusion:** A dietician led two-week VLCD will improve access to the upper GIT in laparoscopic surgery by significantly reducing liver volume, and visceral adiposity, and can avert technically challenging situations and the need for pre-op LHLV measurement. Due to the findings, the current upper GIT unit has amended its preoperative workup to include a VLCD on all patients scheduled for laparoscopic upper GIT surgery.

# Empowering health through nutrition: Perspectives of type 2 diabetes patients in Dunoon

**Dr Georgina Pujol-Busquets Guillén**[1,2], Miss Jana Retief[1], Miss Jayne Bullen[1,3]
[1]The Noakes Foundation, Cape Town, South Africa, [2]Faculty of Health Sciences, Universitat Oberta de Catalunya (Open University of Catalonia, UOC), Barcelona, Spain, [3]Nutrition Network, Cape Town, South Africa

**Biography:**
Georgina Pujol-Busquets Guillén (PhD) holds a BSc in Pharmacy from the University of Barcelona, Spain and an MSc in Nutrition and Public Health and an MSc in Global Health. She has a PhD in Physiology from the University of Cape Town. She is an Assistant Professor at the Open University of Catalonia. She is the recipient of the Tim & Marilyn Noakes Postdoctoral Grant fellowship, and she holds a Postdoctoral position at The Noakes Foundation. She is interested in social determinants of health, gender and socioeconomic inequalities surrounding the development of chronic diseases.

**Introduction:** Overconsumption of ultra-processed foods that are rich in added sugar, refined carbohydrates and highly processed vegetable oils are believed to play a predominant role in the development of Type 2 Diabetes Mellitus (T2DM). Eat Better South Africa (EBSA), an organization that has run several education programmes to teach people from underserved communities the importance of healthier food choices for long-term health.

**Objectives:** To understand the challenges and factors that either hindered or supported participants' adherence to the nutrition education program, and to evaluate the program's feasibility and sustainability.

**Methods:** A qualitative investigation employing focus group discussions (FGDs) and individual interviews was conducted with participants diagnosed with T2DM who were enrolled in the 6-week EBSA program at a clinic in Dunoon, Cape Town. Interviews were conducted in March 2023 before, immediately following, and one year post-participation in the EBSA program. Thematic analysis was carried out using NVivo 14 software.

**Results:** Initial findings from baseline FGDs revealed participants' diverse dietary patterns, perceptions of healthy living, challenges of living with diabetes, and willingness to participate in the program. Post-program FGDs highlighted reasons for joining, facilitators and motivators for attendance, difficulties faced, and future intentions. Subsequent one-on-one interviews delved deeper into participants' attitudes towards diabetes diagnosis, dietary management, experiences with the healthcare system, and community efforts towards diabetes. Findings indicated a mix of positive attitudes towards lifestyle changes and challenges such as financial constraints and lack of support. The end-of-intervention assessment revealed improved perceptions of well-being, support as a key factor in health improvements, increased knowledge about diabetes and diet, and concerns about future constraints, including the lack of support from healthcare professionals.

**Conclusion:** These findings underscore the complex interplay of personal, social, and systemic factors in diabetes management and highlight the importance of ongoing support and education in sustaining health improvements.

# Nutritional knowledge, attitudes, and practices of patients diagnosed with hypertension in rural areas at Limpopo Province

**Ms Ditope Rabodiba**[1], Mr Calricks Malnetja[1], Mr Solly Ndlovu[1]
[1]University of Limpopo, Polokwane, South Africa

**Biography:**
Rabodiba Ditope Annah is a lecturer from the University of Limpopo, and a registered dietitian with the HPCSA. I have a BNutr from the University of the North, MSc in Public Health Nutrition from the University of Venda, postgraduate diploma in Health Sciences Education from the University of Witwatersrand. I have a special interest in pediatric nutrition, focussing on the nutrition of preterm neonates. I am supervising undergraduate and postgraduate researchers in the field of dietetics. I have served as a judge for both oral and poster presentations and also as a reviewer of abstracts at local and international conferences.

**Introduction:** The prevalence of hypertension (HPT) in SA is 30.8% among adults. It affects approximately 8.22 million. It is a leading cause of premature death worldwide. Poor knowledge can lead to poor adherence to lifestyle modification practices. A healthy diet is a cornerstone in the management of hypertension.

**Objectives:** To determine the nutritional knowledge, attitudes and practices of patients diagnosed with hypertension in the Dikgale area in Polokwane municipality, Limpopo Province.

**Methods:** A quantitative descriptive cross-sectional study design. The total population size was 419. A systematic random sampling method was used to select 200 patients diagnosed with hypertension. Ethical clearance was obtained from the Turfloop Research Ethics Committee/505/2023 and the Department of Health. The Knowledge, Attitudes and Practice (KAP) questionnaires were used to collect data among 200 patients diagnosed with hypertension aged between 30 and 75 attending four clinics around the Dikgale area. Data were analysed using Statistical Package for Social Scientists (V29). Knowledge were analysed as a score of less than 50% as poor, between 50-75% as moderate and 75-100% as excellent. Attitudes were analysed as poor if the score was less than 50% and good if the score was more than 50%. Practice were analysed as poor practice if the score was less than 50% and good practice if the score was more than 50%. Descriptive statistics such as the mean and standard deviation and the chi-square were determined.

**Results:** The total sample size was 200. The mean age of the participants was 56.6 years (±8.0), 60% female and 40% male. About 61% (n=122) of the participants had poor nutritional knowledge, 80% (n=160) of the participants showed good nutritional attitude and 58%, (n=116) of the participants had good nutritional practice.

**Conclusion:** The results showed that most of the participants had poor nutritional knowledge, positive attitudes and good practices.

# Burnout and stress of registered dietitians and nutritionists practicing in South Africa

**Dr Alpheus "Alpha" Rasekhala**[1], Dr Kwazi Zuma[1], Prof Renee Blaauw[1], Prof Xikombiso Mbhenyane[1]
[1]Stellenbosch University, Cape Town, South Africa

**Biography:**
Dr. Alpheus “Alpha” Rasekhala is the owner and private practising registered dietitian at Alpha Rasekhala and Associates registered dietitians at Life Healthcare and Clinix health groups.
He holds a Bachelor of Human Nutrition degree from the University of the North, now called the University of Limpopo, a Master of Science in Dietetics from North-West University and PhD Nutritional Sciences from University of Stellenbosch. He is an integrated all-rounder dietetics and nutrition professional.

**Introduction:** Burnout can be prevented before it appears and treated during its development by proactive interventions from organisations and individuals. Burnout syndrome is traditionally defined as a psychological reaction to chronic work-related stress characterized by reduced professional efficacy, increased mental distance from one’s work and exhaustion.
Research question: What are the burnout and stress levels of practising dietitians and nutritionists in South Africa?
Study design: Quantitative, descriptive, cross-sectional study.

**Methods:** After conducting a pilot study to test and adapt the research instruments- Copenhagen Burnout Inventory (CBI), Job Satisfaction Survey (JSS) and Dietitians and Nutritionists Stress scale (DNSS), the latter were implemented. Dietitians and nutritionists registered in South Africa were invited to participate by completing the online survey. Data was analysed using SPSS statistical software.

**Results:** The respondents (n=277) were predominately female (85.6%); 93.5% were dietitians and 5.4% nutritionists. The average duration of practising dietetics or nutrition was 16.66 ± 8.33 years, with 45.1% practising less than 10 years. All job sectors were represented, with the majority representing the public service (54.2%). The CBI subscales revealed equal numbers for no/low burnout (41.31%, n=107) and moderate burnout (40.54%, n=105) in the personal related burnout category. Similar figures were found for the work-related burnout category, with no/low burnout (41.7%, n=108) and moderate burnout (43.63%, n=113). The biggest proportion of respondents reported no/low burnout (48.65%, n=126) for the client-related burnout category. The JSS indicated that 66.67% (n=168) were slightly job satisfied and 30.95% (n=78) were ambivalent. Lastly, the majority respondents reported moderate stress levels (51.49%, n=121) according to the DNSS. Years of practice (p=0.049): annual salary (p=0.014) and older age (p=0,004) were significantly associated with stress levels.

**Conclusion:** Moderate levels of burnout and stress, with low job satisfaction scores were found amongst dietitians and nutritionists practicing in South Africa.

# Development and validation of guidelines to manage burnout and stress of dietitians and nutritionists in the workplace

**Dr Alpheus "Alpha" Rasekhala**[1], Prof Renee Blaauw[1], Prof Xikombiso Mbhenyane[1]
[1]Stellenbosch University, Cape Town, South Africa

**Biography:**
Dr. Alpheus “Alpha” Rasekhala is the owner and private practising registered dietitian at Alpha Rasekhala and Associates registered dietitians at Life Healthcare and Clinix health groups.
He holds a Bachelor of Human Nutrition degree from the University of the North, now called the University of Limpopo, a Master of Science in Dietetics from North-West University and PhD Nutritional Sciences from University of Stellenbosch.
He is an integrated all-rounder dietetics and nutrition professional.

**Introduction:** Moderate levels of burnout and stress, together with low job satisfaction scores were found amongst dietitians and nutritionists practicing in South Africa. This guided the research team to develop and validate guidelines for management of burnout and stress in these professionals. The main aim of the guidelines is to promote a supportive and inclusive work environment and positively affect job satisfaction.

**Study design:** A qualitative exploratory study.

**Methods:** A 2-phased approach was used to develop and validate the guidelines. Focus Group Discussions (FGDs) were held for the development to acquire an in-depth understanding of the current situation and to make informed recommendations and a combination of FGDs and face-to-face interviews were held with employers and employees to validate the guidelines. Data was analysed using Atlas.ti software.

**Results:** From the transcribed audio recordings, 27 codes emerged. These were further divided into various themes and sub-themes to represent structural/ organisational factors and individual support factors. The researchers analysed and interpreted the findings and adapted an existing model to develop the draft guidelines. Through a Delphi technique some of the themes were eliminated and the remaining themes were grouped into three domains representing individual, organisational, and relationship components. For each component listed under the three domains, the responsibilities of the individual and organisation were indicated, followed by assessment and monitoring criteria. Positive and constructive feedback were received during the validation phase which were used to make minor changes were proposed to the guidelines.

**Conclusion:** The proposed guidelines to manage burnout and stress in the workplace were well received and supported.

# Brown rice consumption and its influence on blood glucose levels: An investigation conducted among staff at a South African university

**Ms Anjellah Reddy**[1]
[1]DUT, Durban, South Africa

**Biography:**
Anjellah Reddy is a lecturer in the Dept of Food and Nutrition, and is currently engaged in her PhD studies.

**Introduction:** The healthful benefits of brown rice have been well documented. The replacement of white rice with brown rice in the diet has been shown to improve the management of blood glucose levels. The main aim of this study was to determine barriers and facilitators of brown rice consumption and examine the effects of including brown rice in the diet on blood glucose levels among university staff in South Africa.

**Methods:** In this cross-sectional, barriers and facilitators of brown rice consumption were determined through focus group discussions (FGDs). Normoglycaemic staff members completed a starch food frequency questionnaire, underwent anthropometric measurements, and participated in sensory evaluation of a brown rice meal paired with two popular main dishes and a controlled experiment to measure pre- and post-prandial blood glucose after consuming a brown rice breakfast. Data was analysed using thematic analysis and descriptive statistics.

**Results:** Major barriers to brown rice consumption included family preferences, sensory acceptability, time-intensive preparation, affordability, knowledge and skills. Two facilitators of brown rice consumption included the natural sensory appeal and healthful benefits. The consumption of brown rice was found to be the lowest among starch consumption (11.7%). The mean sensory evaluation scores for brown rice, when combined with butter chicken and lamb curry, were 7.90 and 7.67, respectively. No statistically significant difference in blood glucose levels were found before and after the consumption of a brown rice meal ($p=.431$), indicating that blood glucose levels remained consistent without any spikes.

**Conclusion:** This research paper highlights the health benefits associated with the consumption of brown rice. It emphasises the need for further research on promoting the adoption of brown rice among consumers in South Africa.

# KZN malnutrition and breastfeeding prevalence study 2023: Part 1 malnutrition

**Ms Nireshnee Reddy**[1], Mrs Ronel Sorgenfrei, Ms Sthandiwe Njokwe
[1]KZN Department of Health, Pietermartizburg, South Africa

**Biography:**
Nireshnee is a registered dietitian with a special interest in public health nutrition, dietetics and nutrition advocacy and children's rights. She completed a Master's in Medical Science (public health) in 2019 (UKZN) and has just under 20 years experience working in public health and nutrition industry sectors. She is employed at the KZN Department of Health since 2013 where she currently serves as the Assistant Director Nutrition. Nireshnee has been the recipient of the ADSA Flora Award in 2010 for contribution to the dietetics profession; and The Wimpfheimer-Guggenheim Fund for International Exchange in Nutrition, Dietetics and Management in 2012.

The South African Demographic and Health Survey reported that 15% of children under the age of five years were classified as being overweight (SADHS 2016). Having accurate anthropometric data for infants and young children is critical to provide reliable information to the Department to inform policy and programme development against the backdrop of 2.5% of children being wasted and 28.5% being stunted (SADHS 2016). One of the aims of this study was to determine the district specific prevalence of malnutrition in children under 5 years.

A mixed method approach was applied. For the quantitative part (prevalence of nutritional status), an analytic cross-sectional study design targeting 11 health districts in KZN was conducted. A stratified 2 stage sampling design was used to estimate the sample size to determine prevalence of malnutrition in subjects aged 0 – 59 months attending public health facilities. The estimated sample size was 4595 subjects. The information was collected on a pilot tested structured questionnaire administered by trained health workers. Data entry into Microsoft Excel was facilitated by 7 data capturers. Nutritional status was determined using WHO AnthroPlus software, based on the WHO Growth Reference Data. Data was then analyzed using the Statistical software SPSS version 29.

The study population included 4127 subjects. The provincial prevalence of malnutrition was 7.4% (n=304) for underweight, 4.8% (n=200) for wasting, 17.8% (n=730) for stunting, 15.4% (591) for overweight & obesity. The district specific prevalence for all indicators was calculated for the 11 districts. Whilst there has been a decreased in stunting and overweight prevalence in children in KZN in comparison to the last survey, there has been an increase in wasting.

The study met the objectives of providing district specific prevalence of malnutrition and change since last survey. These can now be used by districts to plan their interventions.

# Measuring stunting and tracking trends in prevalence: Why it is difficult and how we can do it better in South Africa

**Dr Kate Rich**[1,2], Liezel Engelbrecht, Dr Gabrielle Wills, Prof Ronelle Burger
[1]Stellenbosch University, Stellenbosch, South Africa, [2]University of the Witwatersrand, Johannesburg, South Africa

**Biography:**
Kate Rich is an economist based at the University of the Witwatersrand. Prior to this she was a Postdoctoral Research Fellow in the Research on Socioeconomic Policy (RESEP) group at the University of Stellenbosch, where she was involved in the research presented at this conference. Her research focuses on child development and stunting, nutrition, the connections between health and socioeconomic circumstances, and the evaluation of health policies and interventions.

**Introduction:** Estimated stunting prevalence among children under 5 can vary widely across surveys, even over relatively short periods of time, making it challenging to track trends in stunting prevalence and monitor progress towards reducing stunting. Measuring linear growth faltering in young children comes with a range of methodological and conceptual challenges, and surveys collecting height-for-age data in children do not follow a uniform methodology.

**Methods:** This paper provides a narrative review of the conceptual limitations of stunting as a measure of linear growth faltering and their implications for measuring stunting, as well as methodological considerations that may limit the comparability of stunting estimates across surveys. We also compare stunting estimates from some of the more recent South African surveys that include anthropometric data, highlighting some issues that may limit comparability.

**Results:** Stunting is an imperfect indicator of linear growth faltering at the individual level and underestimates the extent of linear growth faltering. The cut-off used to define stunting is arbitrary. Measuring stunting in children under 5 underestimates the number of children affected by stunting at the age of peak prevalence (around 2 years of age), in many cases with lasting consequences. The comparability of estimates of stunting prevalence may be limited by differences across surveys in the composition and representativeness of survey samples, the extent of measurement error, and definitions and measurement procedures. South African surveys that include anthropometric data suffer from several comparability issues.

**Conclusion:** South Africa needs more coordinated data collection efforts to generate data that would be better suited to tracking trends in stunting. We conclude with recommendations to improve the measurement of stunting and linear growth faltering to improve the comparability of stunting estimates over time and allow better monitoring of progress towards reducing stunting.

# Ten strategies for the development, implementation and evaluation of a culturally appropriate type 2 diabetes curriculum

Information | Education Abstract

**Dr Ingrid K Richards Adams**[1]
[1]The Ohio State University, Columbus, United States

**Biography:**
She holds dual appointments in Medical Dietetics in the School of Health and Rehabilitation Sciences in the College of Medicine and the Department of Extension at The Ohio State University. Her job provides a unique opportunity to collaborate with interdisciplinary teams to develop and implement evidence-based interventions and translate them into clinical and community settings. She works with national and international audiences who are disproportionally affected by obesity and chronic diseases. She is an avid foodie and enjoys traveling.

Diabetes is a serious disease with a high global burden. Statistics from the International diabetes federation show that diabetes affects over 537 million adults and their families. This number is projected to increase to 643 million by 2030. Diabetes self-management education is the cornerstone of type 2 diabetes management as it provides individuals with the knowledge, skills, and confidence to accept responsibility for managing the disease. Although national curricula exist for the management of type 2 diabetes few have been tailored to be culturally specific. That is, developed with the consideration of the needs, cultural background, skill set, and environmental conditions of a particular group of individuals.

The goal of this presentation is to provide participants with the knowledge and skills necessary to create culturally appropriate type 2 diabetes curricula. The session will cover intervention mapping, which includes needs assessment, creating program objectives, identifying and selecting appropriate theoretical models and strategies, designing and organizing the program, specifying adoption and implementation plans, developing program evaluation, and building sustainability at the onset of the program.

Personal examples will be shared from implementing The Taking Ownership of Your Diabetes curriculum, among low-income, minority audiences, and with individuals in the Caribbean. In addition, the results, impact, and lessons learned from implementing this curriculum will be highlighted. Participants will leave this session with skills that can be transferred to the development of culturally tailored curricula for other chronic diseases.

# Development and validation of the South African Diet quality index for Pregnancy (Sa-Dqi-P): The Nuemi study

**Dr Liska Robb**[1], Prof Gina Joubert[1], Dr Marizeth Jordaan[1], Dr Jennifer Ngounda[1], Prof Louise van den Berg[1], Prof Corinna Walsh[1]
[1]University of the Free Sate, Bloemfontein, South Africa

**Biography:**
Dr Liska Robb is currently a senior lecturer at the Department of Nutrition and Dietetics at the University of the Free State in South Africa. She obtained her BSc Dietetics degree in 2009, MSc Dietetics in 2013 and PhD Dietetics in 2021. Her research focus is on maternal and infant nutrition, with emphasis on the importance of micronutrients such as choline. She is passionate about improving long-term health by focusing on the importance of nutrition during the first 1000 days of life. She is actively involved in both undergraduate and postgraduate training in dietetics at the UFS.

**Introduction:** Diet quality indexes consist of combinations of foods and/or nutrient components that represent adherence to dietary guidelines. A high-quality diet during pregnancy contributes to optimal birth outcomes. We developed and validated the first diet quality index for pregnancy for South African women.

**Methods:** The South African Food Based Dietary Guidelines and pregnancy dietary guidelines were used as theoretical basis for the a priori development of the South African Diet Quality Index for Pregnancy (SA-DQI-P). To validate the SA-DQI-P, we applied it to data collected for the Nutritional status of Expectant Mothers and their newborn Infants study (N=682). We determined the associations between SA-DQI-P scores in tertiles with nutrient intakes, socio-demographic factors, household food security level and biochemical values.

**Results:** A lower household density ratio, household access to a toilet, refrigerator and microwave, a higher educational level, being employed and being food secure were significantly associated with a higher score ($p<0.05$). After correcting for energy intake, higher scores were significantly associated with higher intakes of protein, total fat, saturated fat, cholesterol, calcium, vitamin A, vitamin E, folic acid, vitamin B12 and vitamin C ($p<0.05$). Significantly more participants who were vitamin A deficient scored in the lowest tertile than those in higher categories ($p<0.05$).

**Conclusion:** The SA-DQI-P is the first DQI developed for a South African population and has proven to be valid in ranking diet quality in pregnant women in our sample. Information regarding diet quality of this vulnerable group can assist with planning nutrition intervention programmes to improve nutritional status.

# HbA1c is comparable to fasting glucose in the external validation of the African Diabetes Risk Score and other established risk prediction models in black South Africans

**Ms Nicola Royce**[1]
[1]M2Bio Sciences, Johannesburg, South Africa

**Biography:**
Nicola is a registered dietitian passionate about diabetes prevention, management, and potential remission. She earned her Bachelor's degree at the University of Pretoria and completed community service in Empangeni, where she saw the widespread issue of poorly managed diabetes. Determined to make a difference, she pursued a Postgraduate Diploma in Diabetes at the University of South Wales. Nicola then worked in business development at the Centre for Diabetes and Endocrinology, aiding in course and material development for healthcare professionals. Recognising the need for a type 2 diabetes risk prediction score, she enrolled in a Master's in Nutrition at North-West University.

**Background:** Using non-invasive risk scores to detect undiagnosed type 2 diabetes (T2D) ensures the restriction of invasive and costly blood tests to those most likely to be diagnosed with the disease. This study assessed and compared the performance of the African Diabetes Risk Score (ADRS) with three other diabetes risk prediction models for identifying screen-detected diabetes based on fasting plasma glucose (FPG) or glycated haemoglobin (HBA1c).

**Methods:** Age, sex, waist circumference, body mass index, blood pressure, history of diabetes and physical activity levels from the SA-NW-PURE study were used to externally validate the ADRS and other established risk prediction models. Discrimination was assessed and compared using C-statistics and nonparametric methods. Calibration was assessed using calibration plots before and after recalibration.

**Results:** Nine hundred and thirty-seven participants were included; 14% had prevalent undiagnosed T2D according to FPG and 26% according to HbA1c. Discrimination was acceptable and was mostly similar between models for both diagnostic measures. The C-statistics for diagnosis by FPG ranged from 0.69 for the Simplified FINDRISC model to 0.77 for the ADRS model and 0.77 for the Simplified FINDRISC model to 0.79 for the ADRS model for diagnosis by HbA1c. Calibration ranged from acceptable to good, though over- and underestimation were present. All models improved significantly following recalibration.

**Conclusions:** The models performed comparably, with the ADRS offering a non-invasive way to identify up to 79% of cases. Based on its ease of use and performance, the ADRS is recommended for screening for T2D in certain Black population groups in South Africa. HbA1c as a means of diagnosis also showed comparable performance with FPG. Therefore, further validation studies can potentially use HbA1c as the standard to compare to.

# Awareness, knowledge and attitudes of food and nutrition sustainability, and food choice drivers among university students

Information | Education Abstract

**Ms Sanrika Sahadeo**[1], Prof Ashika Naicker[1], Dr Onwaba Makanjana1
[1]Durban University of Technology, Stanger, South Africa

**Biography:**
I am Sanrika Sahadeo, 24 years old and completing my Master's at the Durban University of Technology in Food and Nutrition. I am passionate about food safety and food quality, and I have experience in this aspect. My academic interests are food and nutrition sustainability focusing on the SDGs, development of food literacy tools, food waste and sustainable recipe development. I am also keen on collaborating with industry in the near future. I am a family-orientated person with a bubbly personality. A few of my hobbies include baking, reading, and gardening. Positivity is my motto!

**Introduction:** Food systems are currently challenged by unsustainable and unhealthy consumption and production practices. The aim of this study was to investigate awareness, knowledge and attitudes of food and nutrition sustainability, and food choice drivers among university students in South Africa.

**Methods:** In this cross-sectional study, awareness, knowledge and attitudes of food and nutrition sustainability were investigated among 405 registered university students at the Durban University of Technology using a validated questionnaire. Participants were conveniently selected at key hub areas at the university and recruited through informed consent. Data was analysed using descriptive statistics, chi-square goodness-of-fit-test and one sample t-test.

**Results:** A notable 54.8% (n=222) of students were unfamiliar with the Sustainable Development Goals (SDGs), and the remaining 45.2% (n=183) heard of it but lacked knowledge. Significant proportions of students never heard of product environmental footprint (65.2%); life cycle assessment (66.2%); green washing (64.9%) and food miles (58.5%), $p<0.001$. A significant 77% (n=313) of students relied on the internet as the primary source of information about foods that do not harm the environment. There was significant agreement that students knew what a healthy diet comprised of; they understood the impact of a diet on health, and they knew what a sustainable diet consisted of ($p<0.05$). One of the food choice drivers that contributed to students being unable to have a healthy diet is that they found it difficult to avoid unhealthy food options (n=120), and some claim that the cost of healthy foods is too expensive (n=103).

**Conclusion:** This study sheds light on the concerning lack of awareness and knowledge regarding food and nutrition sustainability among young university adults. The study underscores the need for targeted educational interventions to bridge the knowledge gap and empower young adults to make informed and sustainable food choices.

# ► Drivers of food choice in 3 urban non-metro communities in South Africa

**Dr Nazeeia Sayed**[1], Prof Elizabeth Catherina Swart[1,2]
[1]School of Public Health, University of the Western Cape, Bellville, South Africa, [2]Department of Dietetics and Nutrition, University of the Western Cape, Bellville, South Africa

**Biography:**
Nazeeia is a registered dietitian with experience in teaching, project management, consulting, and research. Post her PhD, Nazeeia has worked with Prof. Rina Swart as a post-doctoral fellow and then researcher on the National Dietary Intake Survey. Nazeeia is currently working with Prof. Hettie Schonfeldt investigating foods commonly consumed by Indians in South Africa.

**Introduction:** With South Africa's high double burden of disease, increasing attention has been given to improving food environments to facilitate healthier food access. An understanding of the main drivers of food choice and barriers in consuming healthier foods, can assist in the formulation of nudge strategies to improve food intake.

**Objectives:** The objectives of this study were to describe the main drivers of food choice; assess if health considerations were a driver; ascertain foods considered healthy and unhealthy; determine the barriers and enablers to selected foods; and identify strategies employed and suggestions to improve the intake of nutritious food.

**Method:** Ethics approval was obtained from the Humanities and Social Sciences Research Ethics Committee of the University of the Western Cape. The study was qualitative and cross sectional in three urban non-metro sites in the Eastern Cape, KwaZulu Natal and Western Cape. Trained fieldworkers recruited eligible participants and conducted focus group discussions. Nine focus groups with 68 participants were completed. MS Excel was used to code the data and for thematic analysis.

**Results:** Financial considerations, household/family factors and the shop/food retail factors were the key drivers of food choice identified. Health considerations were present, but not prevailing. Enablers of healthy food consumption included: cost, recognized health/nutrition benefits, and good taste. Barriers were unavailability and unknown preparation, beliefs, and disliked taste. Respondents felt they engaged in activities to improve the intake of nutritious food, but that government could do more.

**Conclusion:** This study found that the pricing of food and retail promotions impact food choice. Interventions at the retail level and pricing strategies have the potential to nudge consumers to purchase healthier food, but needs testing in the urban South African context.
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# Proposed methodology to identify foods commonly consumed yy Indians in South Africa

**Dr Nazeeia Sayed**[1], Prof Hettie Schönfeldt[1,2]
[1]University of Pretoria,, South Africa, [2]SAARChI chair - Nutrition and Food Security, South Africa

**Biography:**
Nazeeia is a registered dietitian with experience in teaching, project management, consulting, and research. Post her PhD, Nazeeia has worked with Prof. Rina Swart as a post-doctoral fellow and then researcher on the National Dietary Intake Survey. Nazeeia is currently investigating foods commonly consumed by Indians in South Africa as a post doc with Prof Hettie Schonfeldt at the University of Pretoria.

**Introduction:** Deaths due to NCDs increased by 58.7% over 20 years in South Africa, with diabetes and ischaemic heart disease the leading cause of death in Indians, accounting for 27.4% of all mortality. Diet is an important modifiable risk factor, however, there is limited and outdated food intake data for Indians in South Africa. Food consumption studies are resource intensive.

**Objective:** This study sought to identify foods commonly consumed through alternate methodology.

**Method:** Ethics approval was obtained from the University of Pretoria, Faculty of Natural and Agricultural Sciences. The proposed methodology includes identifying foods consumed through the following five sources: 1) request to dietetic and nutrition professionals, 2) Facebook recipe pages, 3) markets and retail store visits in Durban, where the majority of Indians live, 4) input from the compilers of the national food composition database, and 5) input from food, nutrition and dietetic experts identified by the researchers.

**Results:** 1) An online data collection questionnaire was drafted and will be shared via dietetic and nutrition professional associations. 2) Two popular Indian recipe pages were identified. They will be reviewed for 3 months for commonly consumed foods. 3) Four Indian spice shop and popular take-aways, and two markets in Ethekwini, will be visited to document the foods sold. 4) The SAMRC will be requested to share their input. 5) Five experts from the National Department of Health and University food science/dietetic/nutrition departments have been identified, and will be contacted for their individual input, and group consensus on the final list of foods identified as commonly consumed.

**Conclusion:** Alternate ways to get information on foods consumed can be considered in the absence of food consumption surveys. The foods identified by this study will be shared with nutrition professionals, and used to compile a food composition booklet.

# ► Monitoring the quality of honey: South African case study

**Prof Hettie Carina Schönfeldt**[1], Dr Carmen Muller[1], Ms Tersia de Beer[2], Dr Beulah Pretorius[1]
[1]University of Pretoria, Hatfield, South Africa, [2]Department of Agriculture, Land Reform and Rural Development, Pretoria, South Africa

**Biography:**
Professor Schönfeldt holds a Research Chair in Nutrition and Food Security at the University of Pretoria. She is an advocate for nutrition research, promoting excellence through the creation, translation and dissemination of science-based information into policies and programmes. She publishes evidence on why country-specific food composition data is essential to make it possible to interpret the dietary outcomes of countries. She is a member of the UN High Level Panel of Experts on Food Security and Nutrition and serves as a scientific advisor to AFROFOODS, a network on the African continent, forming part of the IUNS/FAO INFOODS Task Force.

**Introduction:** Honey is a complex mixture with great variations in composition and characteristics due to its botanical and geographical origin, bee species, climate and season, or the nectar utilised by bees. The popularity of honey as a high-valued commodity is growing and consequently, honey adulteration is on the rise affecting the honey quality. From a legislative point of view, the SA government is currently concerned about labelling, which might be false, misleading or deceptive. Hence, food authenticity and traceability have become important issues in food testing.

**Aim:** To evaluate the quality of honey in the South African market over a 19-year period (1998 to 2017) using the Agricultural Product Standards Act, 1990 (APS) as an assessment tool.

**Methods:** The physico-chemical parameters tested were sugars, reducing sugars, pH, total acidity, moisture, ash, Lund's precipitate and hydroxymethyl-furfural. A canonical variate analysis (CVA) using 95% confidence was conducted to determine the quality groupings of firstly, locally produced and imported honey and secondly, the floral origins within local samples.

**Results:** The physico-chemical characteristics tested indicated a compliance of >80% for all tested honey samples. Therefore, honey sold on the SA market is generally in accordance with national and international standards. This is mainly due to the enforcement of the regulatory framework of SA, which ensures that honey available on the market is of acceptable quality, although a declining trend was observed. Furthermore, honey produced from crops differed significantly from all other forage types.

**Conclusion:** Authentication does, however, not just entail the evaluation of the quality of honey products but is also linked to consumer and market demands as it protects the consumer against adulterated, falsely labelled and fake products on the market. Since an overall declining trend in quality was observed over the past 19 years it should therefore be continuously monitored.

# Using predictive analytics techniques to impute missing data in food composition tables

**Prof Hettie Carina Schönfeldt**[1], Dr Beulah Pretorius[1], Dr Junior M Muka[2]
[1]University of Pretoria, Hatfield, South Africa, [2]University of Arkansas, Little Rock, USA

**Biography:**
Professor Schönfeldt holds a Research Chair in Nutrition and Food Security at the University of Pretoria, South Africa. She is an advocate for nutrition research, promoting excellence through the creation, translation and dissemination of science-based information into policies, programmes and training programmes both nationally, and internationally. She publishes evidence on why country-specific food composition data is essential to make it possible to interpret the dietary outcomes of countries. She serves as a scientific advisor to AFROFOODS, a network on the African continent, forming part of the IUNS/FAO INFOODS Task Force.

**Introduction:** High-quality food composition data are indispensable for decision-making in several health, agricultural, and nutrition-related activities. Analytical data are the most accurate type of food composition data (FCD). Yet, most food composition databases (FCDBs) compiled in Sub-Saharan Africa only contain a small amount of analytical data collected from foods consumed in this region. Most of the data are either borrowed/copied from FCDBs collected in other parts of the world, calculated, imputed, or presumed data.

**Research question:** How does the quality of imputed FCD generated using predictive analytics techniques compare to the data generated using traditional imputing methods?

**Methodology:** Due to the high cost of their chemical analysis, data on vitamins are most likely to be missing from FCDBs. For that reason, a model that predicts vitamin values when there are only non-vitamin nutrients available in the dataset was developed. Weka and R Commander linear regression analysis was used for the imputation of missing FCD. The Training data used was from the UK Food Composition database (McCance and Widdowson) and the test data was nutrient data for beef derived from PhD datasets.

**Results:** For most vitamin predictions, summary statistics given by Weka demonstrate that the linear regression models have strong explanatory power, significant relationship, and reasonable accuracy in predicting the dependent variable based on the given independent variables. Statistical significance with reasonably high F-statistic, and p-value below 0.05 were seen. In most cases, the variance percentage between the imputed value and the expected value is considered quite low and within tolerance.

**Conclusion:** The model developed is not only statistically significant but also practically useful. The formula it produces can be used accurately enough to impute missing vitamin values in Sub-Saharan African FCDBs, provided that data on certain nutrients are available and can be used as input variables.

# Prevalence and factors associated with food insecurity among tertiary students in Lesotho: A cross-sectional survey study

**Ms Mamakase Sello**[1], Ms Lineo Khophoche[1], Ms Matseliso Mohapi[1]
[1]National University of Lesotho, Maseru, Lesotho

**Biography:**
Mamakase Grace Sello is a Fulbright Alumni, author, researcher, entrepreneur, public health specialist, and lecturer at the National University of Lesotho. Grace holds a Bachelor of Science degree in Nutrition from NUL and a Master's degree in Public Health from Kansas State University in the USA.
With her vast experience and expertise in Public Health, Grace has made significant contributions to the development and implementation of various health initiatives aimed at improving the well-being of individuals and communities in Lesotho. Her dedication and commitment to the health sector have earned her numerous accolades and recognition both locally and internationally.

**Introduction:** Tertiary students are a new demographic group that is at risk of experiencing food insecurity, joining other groups such as single-parent households, people living in poverty, low-wage workers, and older people. Despite the growing concern about food insecurity among university students in Southern Africa, there is a lack of data regarding food insecurity among university students in Lesotho. Objectives: This study was conducted to determine the prevalence of food insecurity and possible associated factors among students in selected tertiary institutions in Lesotho.

**Methods:** The study involved a cross-sectional survey of 281 randomly selected students from two universities in Lesotho. The food security status of the participants was assessed using the 10-item Household Food Security Scale Module. Pearson correlations and Bivariate logistic regression were used to identify factors associated with food insecurity, and a p-value < 0.05 was considered significant for all statistical tests.

**Results:** A majority of the students were categorized as food insecure, with about 12.8% and 76.9% considered to have low and very low food insecurity, respectively. Food insecurity was found to be significantly associated with food affordability ($r=.243$, $p<0.05$), types of foods available on campus ($r=-.203$, $p<0.05$), and reliance on cheap food ($r=-.332$, $p<0.05$). The odds of food security were significantly higher for male students (7.357, 95% confidence interval [CI]: 1.643-32.947). Students who relied on cheap food had significantly lower odds of food security (0.033, 95% CI: 0.005-0.211). Students who could afford to buy any food had high odds of food security (15.638, 95% CI: 2.714-90.097).

**Conclusion:** The study's results provide valuable insight into the food security status of university students in Lesotho. The prevalence of food insecurity among the students was high, indicating a need for further research to understand the contributing factors affecting this population group.

# Sociodemographic factors associated with mixed-feeding practices among a cohort of mothers with infants aged 4 - 14 weeks in Tlokwe subdistrict, North West Province, South Africa

Prof Heculina Salome Kruger3, Dr Chantell Beverley Witten[2], Mrs Eloise Swanepoel3, **Mr Milton Semenekane**[1,3]
[1]University of Pretoria, Pretoria, South Africa, [2]University of Witwaterstand, Johannesburg, South Africa, [3]North-West University, Potchefstroom, South Africa

**Biography:**
Mr. Milton Semenekane is Master of Nutrition graduate from Centre of Excellence for Nutrition, North-West University. His interest are in Maternal and Child health with more focus on infant and young child feeding practices. Through his journey, he has been involved in several research projects: Nutrition During Pregnancy and Early Development, National Dietary Intake Survey & Role of Traditional Food Systems in Rapid Urbanization. Mr. Semenekane is currently a registered PhD Nutrition candidate with University of Pretoria. He will be looking at the consumption of indigenous and traditional foods among children under 5 years in urban South Africa.

**Background:** Exclusive breastfeeding for the first 6 months of an infant's life is the recommended gold standard for infant feeding; however, mixed feeding (MF) is common in various settings. In South Africa (SA), especially in the Tlokwe subdistrict of North West Province, there is little information on the association between sociodemographic factors and infant MF practices.
Objective: To identify the sociodemographic factors associated with MF practices in a cohort of mothers of infants aged 4 - 14 weeks in the Tlokwe subdistrict of North West.

**Methods:** The study setting was 8 health facilities in the Tlokwe subdistrict. Participants comprised postpartum women with infants aged 4 - 14 weeks. Data analysis used SPSS version 25.0. Normal data are presented as means (standard deviation (SD)), skewed data as median values (25th, 75th percentiles) and categorical values as percentages and frequencies. Chi-square tests and logistic regression analysed the association between sociodemographic factors and MF practices at time point 2 (10 - 14 weeks).

**Results:** The majority of the mothers were aged between 25 and 29 years, and 37% had at least 2 live children. MF increased with infant age. There was no significant association between any of the sociodemographic variables and MF practices. Logistic regression analysis showed a significant association between increased parity and MF. There was also a significant association between changes in infant feeding practices after receiving the child support grant at 10 - 14 weeks.

**Conclusion:** The high proportion of mothers who mixed-fed indicates that it is still the norm, as in other SA contexts. Therefore, strengthened breastfeeding education regarding appropriate infant-feeding choices in the promotion of infant development and survival for the short and long term should be emphasised.

# Assessing the capacity of the built environment to promote healthy food and beverage choices and physical activity at worksites in South Africa

**Ms Shivneta Singh**[1]
[1]Durban University of Technology, Durban, South Africa

**Biography:**
My name is Shivneta Singh. My career began in the department of Consumer Science: Food and Nutrition in 2016 and I graduated with a Cum-laude in 2019 for my Diploma. With a great taste for food since childhood and passion and drive for food and nutrition, I decided to further my study and graduated from my BTECH with a Cum-laude and Dean's Merit Award. I obtained a Masters qualification in Food and Nutrition in 2023, graduating with a Cum-laude and Dean's Merit award. My current interest is on enhancing the nutritional status of individuals for a better quality of life.

**Introduction:** Non-communicable diseases (NCDs) are the predominant global causes of mortality and present a significant challenge to global health. This study aimed to determine the capacity of the built environment (canteen and physical environment) to offer healthy food and beverages and promote physical activity at worksites in South Africa.

**Methods:** The capacity of the built environment was explored qualitatively through structured observations of the food and physical environment at two multinational consumer goods companies in South Africa. Structured observations were conducted using a worksite observation checklist on two days at each worksite. Six canteens were included in the worksites. One of the worksites did not have a canteen; however, they had a dining area with packaged foods provided by the vending machine.

**Results:** The findings indicate that worksites in an urban decentralised area lacked cycling paths but had good pedestrian infrastructure and accessible public transport. There was an absence of signage to promote walking. While Head Office employees enjoy access to a fully equipped gym, manufacturing sites only provide changing facilities. The worksite canteens offered cost-effective contract meals; however, the healthy meal option was the most expensive. Additionally, production incentives were granted to employees, including vouchers redeemable at the canteen for various food and beverage items.

**Conclusion:** An approach to encourage physical activity and enhance health is to alter the physical environment; it was therefore essential to conduct an environment assessment of the internal and external physical environment for designing practical and contextualised interventions to promote physical activity at the worksites. Promoting healthy food at canteens and vending machines, providing access to clean water, and decreasing the cost of fruits and vegetables are some of the specific methods that are advised for establishing a healthy workplace food environment.

# Contribution of fruits and vegetables to the household food security situation of rural households in Limpopo

**Ms Zoleka Sithole**[1]
[1]University of KwaZulu-Natal, Scottville, South Africa

**Biography:**
I am a Registered Dietician (RD) in South Africa. I hold a Bachelor of Science in Dietetics, Post Graduate Diploma in Dietetics and Master of Science in human nutrition from the University of KwaZulu-Natal. I have published a paper on Contribution of Fruits and Vegetables to the Household food Security Situation of Rural Households. My research interest centres around, malnutrition, food security, food and nutrition policy, health, and understanding people's livelihoods. I provide services to people that include children, adults, and families on treating and preventing non-communicable diseases, through scientific nutrition to make healthy dietary choices thus improving their livelihood

Food insecurity continues to be a burden for many South Africans. The production and consumption of fruits and vegetables have a potential role in improving household food security and are considered one of the critical pathways for reducing food insecurity and malnutrition levels in the country. This paper set out to determine the effect of fruits and vegetables on the food security status of rural households in the Limpopo province. Data (secondary) for this study were collected from 2043 respondents who were selected through stratified random selection based on the population size of the district municipalities in Limpopo. This study used a quantitative research approach, and data were analyzed using a descriptive analysis, the household food insecurity access scale (HFIAS), and a Poisson regression model with an endogenous treatment model. The findings revealed that gender and involvement in agricultural production had a positive significant relationship with the consumption of fruits and vegetables, while disability grants had a negative impact. Age, household size, and receiving a disability grant had a positive significant impact on determining the household food insecurity status; however, gender had a negative significant relationship. This study concluded that the consumption of fruits and vegetables considerably influenced the food security status of the household. There is a need for government officials and local leaders to provide food security interventions that prioritize women and elders. These may include promoting household production and consumption of diversified fruits and vegetables

# ► To determine the popular home-prepared complementary foods fed to infants in selected rural and urban areas in KwaZulu-Natal, South Africa

**Ms Hlengiwe Sokhela**[1], Dr Laurencia Govender[1], Prof Muthulisi Siwela1
[1]Dietetics and Human Nutrition, School of Agricultural, Earth and Environmental Sciences, University of KwaZulu-Natal, Pietermaritzburg, South Africa

**Biography:**
Dr Govender is a registered dietitian, who obtained her BSc Dietetics, PgDip Dietetics, MSc Dietetics (summa cum laude) and PhD Dietetics at the University of KwaZulu-Natal (UKZN). She is a Senior Lecturer in the Discipline of Dietetics and Human Nutrition at UKZN. She teaches and supervises students up to PhD level. Prior to taking up employment at UKZN, she had been working for the Department of Health as a Clinical Dietitian at Harry Gwala Regional Hospital. Her current research focuses on food-based nutrition interventions to reduce both over- and undernutrition particularly in rural population groups of KwaZulu-Natal, SA.

**Introduction:** The timely introduction of nutritious complementary foods and the continuation of breastfeeding is vital for optimal infant growth and development. However, not all infants are breastfed adequately or are fed appropriate complementary food, resulting in malnutrition. Therefore, effective and sustainable strategies to improve the nutritional content of home-prepared complementary foods are needed.

**Objective:** To identify and assess the popular home-prepared complementary foods fed to infants among selected rural and urban population groups in KwaZulu-Natal.

**Methods:** Purposive sampling was used to select the study participants. Stratified sampling was used to group participants according to the geographic location and the children's age groups. Telephonic interviews were used for data collection using a standardised questionnaire to identify popular home-prepared complementary foods and complementary food recipes used by the caregivers.

**Results:** This study indicated that a significant number of infants (n=23; 47.9%) started complementary foods from 6-7 months. Many infants (n=16; 33.3%) were introduced to solids before six months. Most of the caregivers (n=29; 60.4%) started feeding infants complementary foods in the form of white maize porridge. The three most popular home-prepared complementary foods used were pumpkin (n=26; 54.2%), potato (n=20;41.7%) and white maize porridge (n=16; 33.3%). Pumpkin was the most commonly grown and/or bought vegetable by caregivers (n=28; 58.3%) for complementary feeding. Twenty-six (54.2%) of the caregivers consumed indigenous crops. Additionally, many caregivers have not heard of moringa (n=32; 66.7%) or consumed moringa (n=18; 37.5%).

**Conclusions:** Starchy foods were the popular home-prepared complementary foods given to infants in this study. These foods can increase the risk of childhood undernutrition as they are deficient in protein, minerals and vitamins. This study indicates a need for food-based strategies such as adding accessible indigenous crops like moringa oleifera to popular home-prepared complementary foods to improve the nutritional quality.

# ► Weight regain following bariatric Roux-en-Y gastric bypass or sleeve gastrectomy in a South African setting

**Mrs Ermi Spies**[1], Mrs Sunette Swart[1], Ms Riette Nel[1], Prof VL Van den Berg[1]
[1]University of the Free State (UFS), Bloemfontein, South Africa

**Biography:**
Mrs. Ermi (HC) Spies studied BSc Dietetics at the University of the Free State (UFS) from 2000-2004 and thereafter completed her community service year in the Eastern Free State. She has been a practicing registered dietitian since 2006. She worked in the government sector for 4 years and since then part-time in private practice. She has been involved in student training part-time at the UFS since 2008 and was subsequently appointed in 2018 as a permanent lecturer and is involved in research at the UFS. She obtained her MSc Dietetics degree in 2018.

**Introduction:** Bariatric surgery (BS) is a successful treatment for long-term weight loss in morbidly obese patients; however, weight regain (WR) remains a problem. This study aimed to investigate WR after BS in a South African setting.

**Methods:** An observational, descriptive cross-sectional study amongst patients who received sleeve gastrectomy (SG) or Roux-en-Y gastric bypass (RYGBP) from 2009 to 2018. Socio-demographics, anthropometry, medical, biochemistry, and quality of life (QoL) data were collected using EvaSysTM questionnaires from telephone interviews and interdisciplinary files from March 2020 to January 2021.

**Results:** Among 100 participants, 70% received RYGBP and 30% SG (mean age: 49.5 years and 48.0 years, respectively). Significantly more females (79%) than males received BS (p=0.047), particularly in the RYGBP group. The SG group was significantly longer, 9.0 years post-surgery, compared to the RYGBP group of 6.3 years (p=0.0001), and had a higher initial median weight (140.5kg vs. 126.0kg). The total median weight loss percentage (TWL%) was similar (SG 36.4% vs. RYGBP 38.1%). Excess weight loss percentage (EWL%) was significantly less in the SG group (44.2% vs. 61.6%) (p=008), resulting in a higher median nadir weight in the SG group (87kg vs. 77.5kg) (p=0.035). Bariatric surgery was successful, with 63% of participants classified as good responders (≥50% EWL%), although the SG group were significantly lower responders (40% vs. 72.9%) (p=0.002). The total median WR% was 23.3%, with the SG group gaining significantly more weight (32.3% vs 21.7%) (p=0.032). Two-thirds (67%) experienced excess WR (>15%) and more so in the SG group (73.3% vs. 64.3%). Improvement in self-reported comorbidities and QoL, although anaemia slightly worsened.

**Conclusion:** Significant WR was seen among participants that received BS in a South African setting. The RYGBP group achieved higher TWL% and EWL%, with lower WR%. Comorbidities and QoL improved following BS.

# Assessment of the production and consumption patterns of iron- fortified beans by Zambian smallholder farmers in Senga Hill District

**Ms Mainza Syafunko**[1], Ms. Ronel Beukes[1]
[1]Stellenbosch University, Stellenbosch, South Africa

**Biography:**
Mainza P. Syafunko is a Zambian female, passionate about changing lives. She is married to Ntuna Chibomba, with whom they have three children together.
Mainza majored in Agricultural Economics for her undergraduate degree at the University of Zambia where she meritoriously graduated in 2010. Working in Zambia's agricultural space for over 13 years has exposed her to the challenges of poverty and inequality. She's glad to be part of the change agents and her desire to contribute more to improving livelihoods motivated her to study clinical nutrition and later master's in public health nutrition. She is a Stellenbosch University Alumni.

The Copenhagen Consensus identified biofortification as a key intervention to reduce micronutrient deficiencies in low-and-middle-income countries. Mbereshi beans is a biofortified bean variety that was released in 2012 to aid in addressing iron and zinc micronutrient deficiencies in Zambia. Primary to the positive nutritional gains that may arise from the release of the Mbereshi bean variety is an increase in production and consumption of the bean variety.

The aim of the study was to establish whether the release of the Mbereshi bean variety has affected the production and consumption patterns of the iron-enriched variety by the smallholder farmers in Senga Hill District.
A cross-sectional descriptive study design with an analytical component was adopted for this research. Data were collected from 250 smallholder farmers and three beans input suppliers by means of structured and dietary assessment questionnaires. Descriptive statistics, t-tests for independent samples and logistic regression were used to analyse the data. All the tests were evaluated at the 5% level of significance.

The study found that despite the variety having been released more than a decade ago, the production and consumption levels of Mbereshi beans were still low. There is need for development and implementation of policies that will stimulate the production and consumption of this iron-enhanced beans variety.
For increased effectiveness, a value-chain approach should be adopted in implementing nutrition strategies along the agricultural production pathway. Targeted communication strategies need to be incorporated in promoting the adoption of consumption and production of biofortified beans.
Findings from this study will contribute to the knowledge base in guiding policy makers on how the agricultural pathway can be effectively utilized in promoting nutrition among the rural poor amidst climate change vulnerabilities and limited access to alternative nutrition interventions.

# Anaemia in pregnancy: A review of South African prevalence and haemoglobin interpretation

**Dr Elize Symington**[1]
[1]UNISA, Johannesburg, South Africa

**Biography:**
Elize Symington, PhD Nutrition, has experience in public health research, specifically in determinants of health, nutritional status and dietary methodology relevant to early life exposures (maternal and child health). She is the principle investigator for a National Research Foundation (NRF) and Women-in-Research grant at Unisa for the study: Cardiovascular, haemostatic and micronutrient status of pregnant women in urban food environments. She collaborates on the Department of Health commissioned project: The National Dietary Intake Survey 2022 (NDIS) and is the first author of the Infant and Young Child feeding chapter. She serves on the Unisa Health Research Ethics Committee.

**Introduction:** Anaemia in pregnancy is associated with poor maternal health outcomes and adverse birth outcomes, including low birth weight and preterm birth. Haemoglobin concentration is affected by several factors including micronutrient deficiency, inflammation, hypoxia and haemodilution, however, current anaemia prevention focuses mainly on iron supplementation. The aim of this study was to review South African research on gestational anaemia prevalence and the interpretation of haemoglobin levels.

**Methods:** For this narrative review, we searched Google Scholar, MEDLINE, PubMed, Cochrane Central Register of Controlled Trials, and EMBASE. Papers and current treatment guidelines were checked for further relevant literature. The search was restricted to publications between 1 January 1990 and 1 March 2024. The search included the following terms: pregnancy; obstetric; gestational; antenatal; anaemia/anemia; haemoglobin/haemoglobin; iron; South Africa. To ensure quality data reporting, the 2020 Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) were followed where possible.

**Results:** Results will present a flow chart of the number of identified, included and excluded papers. Tables summarising available literature on anaemia prevalence among pregnant women in South Africa will be presented per region. Furthermore, results will reflect details regarding the type of blood sample (venipuncture or capillary), adjustment for altitude, smoking and gestational period; iron status and an interpretation of potential over- or under reporting of haemoglobin concentration. If iron supplementation use was reported, this will be included. The discussion of results will involve the challenges associated with iron supplementation.

**Conclusion:** There is no nationally representative data available on gestational anaemia prevalence, only estimations from meta-analyses. Furthermore, interpretation of haemoglobin concentration should consider WHO recommended factors including smoking and altitude. Lastly, routine antenatal iron supplementation efficacy for the prevention of anaemia in South Africa requires revision. Alternative options such as the WHO recommended multiple micronutrient supplementation and/or targeted management of anaemia should be investigated.

# ► Associations of maternal diet with fatty acid status during pregnancy: The NuPED study

**Dr Elize Symington**[1], Dr Cornelia Conradie[2], Dr Lizelle Zandberg[2], Dr Jeannine Baumgartner[3], Prof Linda Malan[2], Prof Mieke Faber[4], Prof Marius Smuts[2]
[1]Unisa, Johannesburg, South Africa, [2]North-West University, Potchefstroom, South Africa, [3]King's College, London, United Kingdom, [4]South African Medical Research Council, Cape Town, South Africa

**Biography:**
Elize Symington, PhD Nutrition, has experience in public health research, specifically in determinants of health, nutritional status and dietary methodology relevant to early life exposures (maternal and child health). She is the principle investigator for a National Research Foundation (NRF) and Women-in-Research grant at Unisa for the study: Cardiovascular, haemostatic and micronutrient status of pregnant women in urban food environments. She collaborates on the Department of Health commissioned project: The National Dietary Intake Survey 2022 (NDIS) and is the first author of the Infant and Young Child feeding chapter. She serves on the Unisa Health Research Ethics Committee.

**Background:** Data on relationships between dietary fatty acid (FA) and status in South Africa is limited. This study aimed to describe associations of dietary intake with FA status in pregnant women in Johannesburg.

**Methods:** This cross-sectional study in 250 pregnant women (<18 weeks' gestation) assessed dietary intake through a quantified food frequency questionnaire and determined nutrient patterns via principal component analysis (PCA). Total FA intakes were calculated and expressed as percentage of total energy (TE) intake. Gas chromatography mass spectrometry was used to analyse FA composition in red blood cell (RBC) phospholipids, expressed as percentage of total FAs. FA status patterns were determined using PCA. Multiple linear regression models were applied with dietary intake as predictor and FA status pattern as outcome.

**Results:** The median (IQR) TE intake was 10854(8350-13471)kJ/day and the median n-6 to n-3 FA intake ratio was 38:5(28:7-50:7). Percentage TE intake for all macronutrients fell within the acceptable macronutrient distribution range (AMDR), except below AMDR for monounsaturated FA and total n-3 FAs. Correlation analysis identified positive associations between some dietary FAs and respective RBC FAs, specifically myristic acid, palmitate, eicosapentaenoic acid, and docosahexaenoic acid. Three nutrient patterns and four FA status patterns were identified. Although some associations were found between nutrient patterns and FA status patterns, effect sizes were small (0.03 to 0.06). Some food group intakes correlated with FA status patterns. Specifically, fish and seafood intake correlated positively with the 'high n-3 PUFA' FA status pattern, while intake of cakes, biscuits, pudding, and red meat were associated negatively with this pattern.

**Conclusion:** Early pregnancy diets lacked MUFA and n-3 FAs but were high in total energy, with limited reflection of dietary FA intake on FA status, except for specific FAs and food groups. Genetic variation in desaturation and elongation enzymes may influence the FA metabolic flux.

# Dietary diversity and its association with anaemia in pregnant women in the Roodepoort area of Johannesburg, Gauteng

**Dr Elize Symington**[1], Ms Angelique Maloney[1]
[1]UNISA, Pretoria, South Africa

**Biography:**
Angelique Maloney a dedicated academic leader, currently Head of Academics at the International Hotel School in Pretoria. With expertise in hospitality management, education and consumer science, she holds an Advanced Diploma in Hospitality Management, two City and Guilds qualifications, and Honours Degrees both in Education and in Consumer Science. With experience in both secondary and tertiary education, she is passionate about nurturing future professionals and she is driven by a commitment to lifelong learning as she constantly advocates for further education and training.

**Introduction:** Anaemia is a global public health concern, especially in low and middle-income countries such as South Africa. This study aimed to investigate the association between anaemia prevalence and dietary diversity in pregnant women in the Roodepoort area of Johannesburg, Gauteng, South Africa.

**Methods & materials:** A cross-sectional study involving 294 pregnant women attending Discoverers Community Health Centre was conducted. Dietary diversity was assessed using a 24-hour recall method, while haemoglobin levels determined anaemia status. Statistical analyses included descriptive statistics, t-tests, ANOVA, Chi-square, and Pearson's correlation coefficient.

**Results:** The mean age of participants was 28.6 years, primarily South African (66.8%), Black African (90%), single (44.9%), and unemployed (56.8%), with most having completed secondary education (51.6%). Majority were in their second trimester (59.3%), non-smokers (87.3%), HIV negative (78.9%), and had previous pregnancies (73.5%). Mean haemoglobin for the sample was 11.6 g/dL, with 22.9% classified as anaemic. HIV positive participants had lower Hb levels (11.0±1.50 g/dL) compared to HIV negative participants (11.8±1.26 g/dL) ($p = 0.006$).
Food groups commonly consumed included grains, roots, tubers (99.3%), meat, poultry, fish (82.9%), and non-vitamin A vegetables (61.2%), while nuts and seeds (11.5%), pulses (11.9%), eggs (17.5%), and dark green leafy vegetables (23.4%) were consumed least. Mean dietary diversity score was 4.21(± 1.38), with 60.8% not meeting the minimum diversity requirement.

**Conclusion:** Contrary to expectations, no correlation was found between anaemia prevalence and dietary diversity among pregnant women. Potential reasons for this dissociative relationship were explored, including national food fortification programs, micronutrient supplementation, and socioeconomic factors. The findings emphasize the multifaceted nature of anaemia in pregnancy, advocating for tailored interventions addressing nutritional deficiencies and socioeconomic determinants. Further research is needed to comprehensively understand and manage anaemia in pregnant women, not only in Roodepoort but across South Africa.

# Validation of the National USI Coverage Assessment Method in Ethiopia: The Cluster Compositing Method

**Mr Nahom Tefera**[1], Mr. Alemayehu Hussein[1], Mr. Teshome Assefa1, Mr. Meseret Woldeyohannes[1], Dr. Masresha Tessema[1]
[1]Ethiopian Public Health Institute, Addis Ababa, Ethiopia

**Biography:**
Nahom Tefera is a young Ethiopian Chemist and nutritionist expert. He is managing the validation work of Universal Salt Iodization (USI) assessment methods at EPHI. His journey began with a Bachelor's degree in Applied Chemistry from Debrebirhan University in 2012, followed by a Master's in Food Science and Nutrition from Addis Ababa University in 2019. In 2015, he joined the EPHI as an assistant researcher. In addition to his involvement in various research projects at EPHI in the position of Associate Researcher, Nahom played a crucial role as one of the coordinators in the national food and nutrition strategies survey.

**Background:** Conducting household level Universal Salt Iodization (USI) surveys is costly, especially with declining financing to support national surveys. Innovative solutions for low-cost survey methods are highly needed to inform future surveys and programmatic surveillance for sustaining the USI.

**Objectives:** To assess the validity of the Cluster Compositing Method as an alternative approach for measuring USI coverage in Ethiopia using single samples at the household level.

**Methods:** The study employed a national and sub-national representative cross-sectional study design. A total of 6148 households' salt samples were collected from 576 clusters. Samples from the same cluster were mixed with equal proportion to make a cluster-level composite sample. Iodine analysis from both single and composite samples was conducted using the titration method. The variations of iodine in coarse and fine samples were analyzed by conducting five replicate measurements on each of the 4 coarse and 4 fine samples from each region. Descriptive, correlation, frequency distribution, and polynomial graph analyses were conducted using STATA.

**Results:** Households in urban settings, higher education, and higher wealth had higher iodine levels. Significant geographical variation in iodine levels and salt iodization was observed across sub-national level. Addis Ababa showed the highest mean iodine content (38 mg/kg), while the Somali had the lowest (11 mg/kg). Composite samples effectively represented the average iodine content compared to single-sample estimates. A strong positive correlation (r=0.83) was observed between the iodine contents estimated with composite samples and the averages per cluster based on single samples. The prevalence estimates of salt iodine obtained from the composite method (23%) are comparable to the household method (26%). Furthermore, fine salt has a higher iodine content and a lower variation than coarse samples.

**Conclusions:** Our findings demonstrate that the cluster compositing method provides a reliable and cost-effective alternative to the household-level method for conducting USI assessment.

# ▶ "Nutrition education for all: Empowering students through a campus club"

**Ms Riashnie Thaver**[1], **Prof Ashika Naicker**[1,2], Ms Claire Naidoo, Ms Lea Castro
[1]Durban University of Technology, Durban, South Africa, [2]Nutrition Society of South Africa, Johannesburg, South Africa

**Biography:**
Ms. Riashnie Thaver: an Advanced Diploma student supervised by Prof. Ashika Naicker, senior lecturer at the Department of Food and Nutrition in Durban University of Technology. After achieving her Diploma in Consumer Sciences: Food and Nutrition, Ms. Thaver sought to further her studies in the field of community nutrition and recipe development. Under the guidance of Prof Naicker, a pioneer of food and nutrition research at DUT, Ms. Thaver collaborated with UNICEF South Africa to create a campus club at her university, focused on promoting holistic student health and measuring the impact of nutrition education on youth behaviour.

Ashika Naicker is an Associate Professor in the Department of Food and Nutrition at the Durban University of Technology. Her research focus area involves the food environment for better health outcomes.

**Introduction:** With non-communicable disease rates increasing rapidly worldwide, it is imperative to foster a deeper understanding of the relationship between dietary habits, lifestyle choices, and the environment. In response, a collaborative effort between the Durban University of Technology (DUT) students and UNICEF South Africa has led to the creation of a volunteer club that seeks to address the ever-growing double burden of malnutrition. This club aims to create a network of youth advocates passionate about restoring a healthy university food and physical environment.

**Method:** In conjunction with the UNICEF "My Body, My Health, My Wealth campaign", the volunteers created a "Campus Club" and hosted the first event since the club's inception on World Obesity Day 2024. The activities included an incentivized step challenge, encouraging students to choose the stairs instead of the elevator and an online campaign enabling participation in the expanding community. This Pecha Kucha will delve into the specific strategies that were implemented for the event and will provide an overview of the impact of baseline target reaches for the campus club. This aligns with the club's objectives to raise awareness, encourage discussion about nutrition and food security-related issues and align with the global theme "Let's talk about obesity and …?"

**Results:** The UNICEF DUT Campus Club has quickly grown to 160 members. Activities on World Obesity Day resulted in five video submissions for the competition, an additional 90 followers on social media and 45 participants in the online campaign conducted on Woo Clap. Subsequent events in the year will be reported, and the reach of these events will be compared to the baseline.

**Conclusion:** The student-led "My Body, My Health, My Wealth" campus club has the potential to use hybrid methods to advance advocacy efforts and secure a healthier university environment.

# Formative research to co-create and determine the acceptability of intervention content designed to improve breastfeeding self-efficacy and outcomes in Soweto, South Africa

**Ms Helene Theunissen**[1], Professor Shane A Norris[1,2], Ms Fiona Bennin[1], Ms Sarah Cantrell[1], Professor Cindy-Lee Dennis[3,4], Dr Alessandra Prioreschi[1]
[1]Developmental Pathways for Health Research Unit (DPHRU), University Of The Witwatersrand, Johannesburg, South Africa, [2]University of Southampton, Southampton, United Kingdom, [3]Lawrence Bloomberg Faculty of Nursing, University of Toronto, Toronto, Canada, [4]Lunenfeld-Tannenbaum Research Institute, Sinai Health, Toronto, Canada

**Biography:**
Helene is a PhD student with the Developmental Pathways for Health Research Unit (DPHRU) at the University of the Witwatersrand in Johannesburg. She has worked as a Registered Dietitian in both the private as well as the public sector in Namibia. In recent years, she acquired research experience primarily in maternal and child health in the context of HIV in South Africa, through the University of Cape Town. Her research interests include public health nutrition, breastfeeding, and the significance of the "First 1000 days", with a particular focus on non-communicable diseases and obesity, as well as interventions addressing these.

**Design:** This mixed methods study was conducted in April 2022 in Soweto, a low-resource township in Johannesburg, South Africa through two rounds of Focus Group Discussions (FGDs) and the completion of an acceptability questionnaire.

**Participants:** Twenty mothers of infants aged 0-3 months participated in the first round of FGD, out of whom 15 attended a second round of FGDs.

**Objective:** The objective of this study was to explore maternal perceptions and barriers related to breastfeeding, breastfeeding self-efficacy, perceived support and -information. Results were used to guide the development and acceptability of intervention materials to increase breastfeeding duration and exclusivity through improved breastfeeding self-efficacy.

**Data analysis:** Data were analyzed using thematic analysis and basic descriptive statistics.

**Results:** The main barriers related to breastfeeding include concerns about returning to work or school and the impact on social life. Breastfeeding self-efficacy related barriers included HIV anxiety, lactation issues, comments from strangers, having to expose oneself publicly, and receiving conflicting advice. Barriers to breastfeeding duration and exclusivity included low perceptions of support and limited access to information. Developed intervention material was well-received, with 86.7% of participants finding it engaging and 80% stating it was easy to understand. Participants indicated that their preference would be to engage with video content (53.3%) or to receive short, encouraging, and educational messages (40.0%).

**Conclusion:** The study successfully identified barriers to breastfeeding and developed acceptable intervention materials, which aim to enhance breastfeeding self-efficacy to improve breastfeeding duration and exclusivity rates. It has the potential to be further developed for interventions implemented in low-resource South African settings.

# Dietary intake of infants in the complementary feeding phase by maternal HIV status in Gauteng Province, South Africa

**Ms Phumudzo Tshiambara**[1], Dr Marinel Hoffman[1], Dr Heather Legodi[1], Dr Yusentha Balakrishna[2], Prof Ute Feucht[1]
[1]University of Pretoria , Pretoria, South Africa, [2]Biostatistics Research Unit, South African Medical Research Council, Durban, South Africa, Durban, South Africa

**Biography:**
Phumudzo, is a registered nutritionist, new generation of academics program lecturer and a Doctoral student at the University of Pretoria. She has presented at national and international conferences and authored papers in international journals. Her interest lies in community nutrition, research focusing on maternal and child health with a special focus on infant feeding (complementary feeding, nutrient intakes, food frequently consumed), breastmilk composition and growth. Her PhD compares the Growth, feeding practices, and haemoglobin levels in 6- to 12-month-old infants exposed and unexposed to maternal HIV status in a peri-urban area in Gauteng Province, South Africa.

**Background:** Factors affecting the growth of HIV-exposed-uninfected (HEU) children are multifactorial, with limited information available on the dietary intake of these infants from six months. This study aimed to compare the dietary intake of HEU and HIV-unexposed-uninfected (HUU) infants aged 6 and 12 months in an urban setting.

**Methods:** This repeated cross-sectional study used structured questionnaires to collect socio-demographic, dietary intake, complementary feeding, food groups, and dietary diversity data on HEU and HUU infants aged 6 and 12 months participating in the Siyakhula Study.

**Results:** This study compared 86 HEU and 95 HUU infants at six months, with 58% male infants. Breastfeeding rates were lower in HEU than in HUU infants at 6 (49% vs. 64%; p=0.005) and 12 months (24% vs. 46%; p=0.002), but HEU infants had higher flesh foods consumption at 12 months (24% vs. 11%; p=0.046). Eggs, vitamin-A-rich fruits/vegetables, and other fruits and vegetables consumption were low and similar in both groups at 12 months (p>0.05). Only 11% and 6% of HEU and HUU infants achieved minimal dietary diversity scores at age 12 months. The HEU infants had higher dietary protein and vitamin B12 than HUU infants at age 12 months (p=0.014; p=0.010 respectively), while no significant differences were noted in dietary fat intake (p=0.140). In 12-month-old non-breastfed infants, the intakes of iron (p=0.026), zinc (p=0.038), vitamin B12 (p=0.004), and thiamine (p=0.022) were significantly lower in HUU than in HEU infants.

**Conclusion:** HEU infants have lower breastfeeding rates but better food consumption and nutrient intake than HUU infants. Very low dietary diversity was evident in both groups. Nutrition education and counseling during the complementary feeding phase are crucial for appropriate feeding practices and optimal growth in urban HIV settings.

# Household food insecurity, dietary diversity and anthropometric status in women of reproductive age residing in informal settlements in South Africa

Information | Education Abstract

Dr Claire Martin[1], **Dr Phumudzo Tshiambara**[1], Mrs Marion Beeforth[1], Dr Christa Ellis[1]
[1]University of Pretoria, Pretoria, South Africa

**Biography:**
Phumudzo, is a registered nutritionist, new generation of academic's program lecturer and a Doctoral student at the University of Pretoria. She has presented at national and international conferences and authored papers in international journals. Her interest lies in community nutrition, research focusing on maternal and child health with a special focus on infant feeding (complementary feeding, nutrient intakes, food frequently consumed), breastmilk composition and growth. Her PhD compares the growth, feeding practices and haemoglobin levels in 6–12-month-old infants exposed and unexposed to maternal HIV status in a peri-urban area in Gauteng Province, South Africa.

**Introduction:** Household food insecurity is a major public health concern, especially in informal settlements. Within these households, women of reproductive age (WRA) are particularly vulnerable to malnutrition.

**Objectives:** To determine household food insecurity, dietary diversity and anthropometric status of WRA (18 -49 years) residing in an informal settlement. To compare differences between moderately food insecure (MFI) and severely food insecure (SFI) women.

**Methods:** A descriptive cross-sectional study was conducted on a convenient sample of WRA (n = 103) in an informal settlement in Pretoria, South Africa. Household Food Insecurity and dietary diversity were assessed using the Household Food Insecurity Access Scale (HFIAS) and the Minimum dietary diversity for women (MDD-W) respectively. Mid-upper-arm-circumference (MUAC), height and weight were taken.

**Results:** Mean age of participants was (mean age: 30.4±8.0 years). The mean HFIAS was 14.0±5.8, with the majority of women being moderately (17,5%) or severely food insecure (75,7%). Dietary diversity was low but similar in MFI and SFI women (20.0% vs. 17.9%; p=0.833). Significant differences were found in the pulse food groups only, of MFI and SFI women (17.8% vs. 14.1%; p=0.002). HFIAS scores negatively correlated with the nuts and seeds food groups (r=-0.5; p=0.048) in MFI women but with nuts and seeds, and dark green leafy vegetables (p<0.05) in SFI. Mean body mass index of MFI and SFI was 29.8±6.8 vs. 27.8±5.4; p=0.342. The mean MUAC was 33.9±5.0 and 32.1±4.9 in the MFI and SFI respectively. The HFIAS score positively correlated with MUAC (cm) of MFI women (r=0.5; p=0.010).

**Conclusion:** Majority of WRA in this informal settlement were SFI with a low dietary diversity. Education should be used as a strategy in addressing food security, and preventing overweight and obesity.

# ► Sales of indigenous foods in the markets: A Thulamela Study

**Ms Sedzani Tshidzumba**[1], Prof Lindelani Mushaphi[1]
[1]University of Venda, Thohoyandou, South Africa

**Biography:**
Sedzani Elsie Tshidzumba is a lecturer in the Department of Nutrition at the University of Venda.

**Background:** Indigenous foods are directly derived from nature and can be affordable with the increased food prices and population growth in South Africa. Over the years, people have transitioned from traditional foods to a Western diet rich in fats, oil, and sugar. Moreover, indigenous foods can alleviate malnutrition, which persists in South Africa.

**Aim:** The study aimed to explore the sales of indigenous foods in the markets around Thulamela Municipality.

**Methods:** A descriptive exploratory study design and the research was qualitative. Convenience sampling was used to select study participants, and data was collected using a structured interviewer guide. Thematic analysis was used to analyze data.

**Results:** The study delved into sales of indigenous foods in Thulamela Municipality, and 29 respondents were interviewed. Information was collected and analyzed, and eight (8) themes were derived from the participants' narratives, namely: types of indigenous food, sources of indigenous foods for sales, seasonal availability, preservation and shelf life of indigenous, sales of indigenous foods, health benefits, challenges faced by indigenous food vendors and contributions of sales of indigenous foods to the livelihood of the vendor.

**Conclusion:** The study on the sales of indigenous foods in the Thulamela municipality underscores indigenous foods' abundant diversity in the Vhembe district. The research findings reveal various indigenous foods street vendors sell, including fruits, leafy vegetables, tubers, and edible insects cultivated by small-scale farmers in rural communities. The findings further indicate that indigenous foods are crucial in local diets. The study recommends both the government and the private sector improve awareness, support, and investment to unlock the full potential of indigenous foods in contributing to sustainable development and improved food security.

# Household food insecurity in South Africa from 1999 to 2021: A metrics perspective

**Prof Louise van den Berg**[1], Prof Corinna Waslh[1]
[1]University of the Free State, Bloemfontein, South Africa

**Biography:**
Prof Louise van den Berg is an NRF rated researcher in the Department of Nutrition and Dietetics at the University of the Free State, SA. In addition to a B.Sc. in Dietetics, she holds an Honour's degree in Haematology and a PhD in Immunology. Her research interests are in food security, food environments, diets and micronutrient deficiencies, inflammation and non-communicable diseases. In addition, her research extends to methodology of assessing nutritional status (particularly anthropometry), determining dietary requirements and delivering nutrition interventions specifically in resource-poor South African and sub-Saharan contexts.

**Introduction:** Food security is a fundamental component of the food system that impacts nutrition and health outcomes. Therefore, tracking household food security in the country is vital to preventing and addressing malnutrition. This requires comparable metrics. This study aimed to review and synthesise studies on household food security in South Africa to investigate the metrics used in reporting household food security in South Africa since the first national survey on nutritional status was conducted in 1999.

**Methods:** A systematic methodological review was performed. Electronic databases, including EBSCOHost, Scopus, and Web of Science, were searched for studies and reports on household food security in South Africa, which reported household food security published between 1999 and 2021. Searching, selecting and reporting were performed according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement.

**Results:** Forty-eight articles reporting on six national surveys (one repeated annually since 2002) and 40 sub-national studies meeting the inclusion criteria were selected. Surveys that used similar metrics showed that the percentage of South African households that have experienced food insecurity and hunger has decreased over the review period yet remains concerning. However, the multitude of metrics used to assess the different components and levels of food security limits the comparability of the results to evaluate the scope and scale of the problem. Moreover, various methodological issues related to the implementation and interpretation of household food security metrics were identified.

**Conclusions:** This systematic analysis revealed a need for standardised metrics for assessing household food security. There is growing support in the literature for developing multi-variable approaches for food security research in sub-Saharan Africa. Future research should focus on finding the most appropriate combination of complementary metrics to deliver comparable data while holistically capturing food security and providing insight into the causes and consequences.

# ► Chronotype-specific timing of dietary intake is associated with adiposity

**Dr Carlien van der Merwe**[1,2], Dr Marilize Richter[2], Dr Mirjam Münch[3,4], Prof Rozanne Kruger[2,5]
[1]Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, [2]School of Sport, Exercise and Nutrition, Massey University, Auckland, New Zealand, [3]Research Centre for Hauora and Health, Massey University, Wellington, New Zealand, [4]Centre for Chronobiology, Psychiatric Hospital of the University of Basel, Research Cluster Molecular Cognitive Neuroscience, University of Basel, Basel, Switzerland, [5]School of Health Sciences and Social Work, Griffith Health, Griffith University, Gold Coast campus, Queensland, Australia

**Biography:**
Carlien van der Merwe is a registered dietitian with work experience both in the public and private health care sector. She has completed her undergraduate degree at the University of the Free State and her M.Sc. in dietetics at the North-West University. She holds a PhD in nutritional sciences, completed at Massey University in New Zealand. Her research fields include chrono-nutrition and dietary intake data analysis. Carlien is currently a postdoctoral research fellow at the Centre of Excellence for Nutrition, North-West University.

**Introduction:** Eating at clock times that are not aligned with internal body clocks may contribute to weight gain. This study investigated if meal timing and -composition is chronotype-specific and associated with body adiposity.

**Methods:** Healthy women (18-45 years) of Pacific (n =130) and New Zealand European (n=157) ethnicities were included. Body fat percentage (BF%), visceral-, android- and gynoid fat percentage ratio (AG-ratio) were assessed using dual-energy x-ray absorptiometry, and dietary intake using five-day estimated food records. Chronotype (morning- (MT), intermediate- (IT) and evening types (ET)) were determined using the Munich Chronotype Questionnaire.

**Results:** Energy intakes were higher in ET (8745 kJ) vs MT-IT (merged) (8532 kJ, P=0.03). ET vs MT-IT had higher BF% (36 vs 34%), visceral fat % (34.8 vs 31.4%), and AG-ratio (0.98 vs 0.87, P<0.05). MT-IT had higher intakes of energy, protein, carbohydrate, and fat before 10:00, while ET had a higher energy, protein, carbohydrate, and fat intakes after 20:00 (P<0.05). Multiple linear regression models were applied within normal (<35%) and high (≥35%) BF%, and normal (<0.8) and high (≥0.8) AG-ratio groups to predict intake differences between chronotypes. ET in high BF% and AG-ratio groups had lower energy (β=-413 and β=-327), protein (β=-4.45 and β=-3.14) and carbohydrate (β=-10.7 and β=-9.38) intakes by 10:00 (P<0.05), but higher energy (β=603 and β=684), carbohydrate (β=12.9 and β=16.3) and fat (β=7.25 and β=7.50) intakes after 20:00 (P<0.05). After 20:00, normal BF%, ET also had higher intakes of these nutrients (except fat), and normal AG-ratio ET also had higher carbohydrates (β =14.2) (P<0.05).

**Conclusions:** ET shift their nutrient intake towards nighttime (fasting phase), versus MT-IT having higher morning intakes (feeding phase). Higher evening intakes was associated with ET chronotype in both normal and high BF% and AG-ratio groups, therefore potentially making ET more prone to especially central obesity.

**Conclusions:** ET shift their nutrient intake towards nighttime (fasting phase), versus MT-IT having higher morning intakes (feeding phase). Higher evening intakes were associated with ET chronotype in both normal and high BF% and AG-ratio groups, therefore potentially making ET more prone to especially central obesity.

# Evolution of a dietetic association's policy on industry sponsorship

Information | Education Abstract

**Ms Maria Van Der Merwe**, Prof Janetta Harbron, Dr Estelle Venter, Ms Janke Draper, Ms Jessica Byrne
[1]Association for Dietetics in South Africa (ADSA), White River, South Africa, [2]University of the Witwatersrand, Johannesburg, South Africa, [3]University of Aberdeen, Aberdeen, Scotland, UK

**Biography:**
Registered as dietitian and nutritionist in South Africa, Maria completed a B.Dietetics degree (UP) in 1996 and M.Nutrition (cum laude) in 2012 (SU). At the end of 2018, following more than two decades' work in the public health sector up to the level of provincial manager of the Integrated Nutrition Programme, she pursued an independent career as public health and nutrition consultant with a special interest in health policy and systems.
Maria is president of the Association for Dietetics in South Africa (ADSA) and actively contributes to the development and implementation of public health nutrition initiatives locally and abroad.

**Background:** Corporate and industry sponsorship of or involvement in professional associations and conferences, and the potential conflict of interest this brings, is an ongoing ethical debate in the health and scientific communities. World Health Assembly Resolution 69.6 (2016) calls for the end of sponsorship of scientific meetings of health professionals by companies that sell foods for infants and young children.

**Aim:** This presentation aims to discuss conflict of interest and other ethical challenges around corporate sponsorship of professional associations and scientific conferences, and the progressive sponsorship policy taken by a dietetics association in a middle-income country.

**Summary:** The Association for Dietetics in South Africa (ADSA) embarked on a journey to overhaul their sponsorship policy over the last eight years, being cognisant of the sensitivities on the African continent regarding malnutrition, poor infant feeding practices, the abundance of ultra-processed foods and conflicts of interest. This journey culminated in the progressive sponsorship policy adopted for the International Congress of Dietetics 2021 (ICD 2021), whereby congress organisers avoided sponsorship from all sugar-sweetened beverage, fast-food and to a good extent ultra-processed food companies, and becoming the first ICD to 'rise to the challenge' to not accept funding from all manufacturers of commercial milk formula. This decision was informed by national and international guidelines and regulations.

**Discussion:** Learnings from the stance taken for ICD 2021 will be addressed, as well as the implications for further discussions regarding sponsorship and private sector involvement in ADSA. Further potential application of the learning as relevant to the African region and global context for other professional associations will be reflected, with a primary focus on ensuring that members of associations are supported with factual, evidence-based best practice recommendations, free from potential commercial influence and conflict of interest; balanced against ensuring the sustainability and credibility of the association.

# Urban food environments and women's diet quality: a cross-sectional study in Johannesburg

**Dr Bianca Van Der Westhuizen**[1], Miss Kovania Naidoo[1], Dr Elize Symington[1]
[1]UNISA, Johannesburg, South Africa

**Biography:**
Bianca van der Westhuizen is a senior lecturer in Nutrition at the Department of Life and consumer sciences, Unisa. She completed her Ph.D. in Nutrition at the Centre of Excellence for Nutrition (CEN), North West University. She is currently conducting research in public health nutrition focusing on the obesogenic environment of South Africa as well as National salt reduction strategies. Other research interest includes knowledge translation and how to bridge the gap between research and decision makers in terms of public health nutrition related problems. Her goal is to make her research useful.

**Introduction:** Food environments play a significant role in diet quality. The health of women of reproductive age (WRA) is important for the future generation's health. This study sought to investigate the association between the formal food environment and diet quality of WRA within Johannesburg.

**Methods:** In this cross-sectional study, WRA attending the Discoverers Community Health Centre in Roodepoort were recruited. Socio-demographic, anthropometric, diet and food environment data were collected. For diet quality, the Rapid Eating Assessment for Participants – Shortened Version (REAP-S) survey was used and the Dietary Diversity Score (DDS) plus the Minimum Dietary Diversity for Women (MDD-W) categories were calculated from 24-hour recall data. The food environment was measured in two ways, i.e. modified retail food environment index (mRFEI) and the distance from participant residential addresses to food retailers (grocery stores and fast-food outlets).

**Results:** The participants consisted of 427 WRA. No association were found between diet quality and their food environment. The majority were overweight or obese (73 %) and the environment considered obesogenic as shown by a low mRFEI score (31 %). The women had poor dietary diversity (DDS = 4.1±1.4) with 64 % not meeting the MDD-W. The REAP-S survey results showed that the participants had a moderate diet quality (REAP-S score = 27.1±3.3), with non-pregnant women having a lower REAP-S score (26.5±3.6) than pregnant women (27.3±3.2).

**Conclusion:** The study found that participants live in an obesogenic food environment and showed poor diet quality. Most did not reach the MDD-W and were overweight or obese indicating that the food environment may have an impact on food choices, diet quality and thereby overall health. It is vital that the influence of the food environment be fully understood and measures by taken to improve the health and well-being of WRA and the population as a whole.

# Nutritional management of a patient with Cornelia de Lange syndrome (CdLS): A case report

Information | Education Abstract

**Mrs Cecile van Niekerk**[1], Dr Christa Ellis[1], Dr Claire Martin[1]
[1]University of Pretoria, Pretoria, South Africa

**Biography:**
Cecile van Niekerk, is a clinical dietitian with a special interest in paediatric nutrition. She is the founder of PaeNut dietitians. She completed her master's degree in nutrition (UP), with the focus on the prevention of childhood obesity. She has 15 years dietetic experience. She is currently involved in hospital work (NICU and paediatric patients) at Pretoria East hospital as well as peadiatric gastroenterology patients at midstream Medi-Clinic and a part time lecturer for dietetic students at the University of Pretoria. She also runs a picky eating clinic with a multi-disciplinary team called feeding success.

**Introduction:** Cornelia de Lange syndrome (NIPBL variant) is a rare genetic disorder, characterized by intellectual and congenital abnormalities, affecting a variety of organs and ultimately resulting in growth and developmental delays.
Objectives: To report on the challenges experienced in the nutritional management of a CdLS patient with gastrointestinal complications.

**Methods:** Case report of a 7-year old boy presenting with CdLS. The patient had a percutaneous endoscopic gastrostomy (PEG) placed at the age of 2 due to malnutrition, feeding difficulties and gastro-oesophageal reflux disease. At 5 years he presented with a midgut volvulus, necessitating surgical removal of necrotic bowel resulting in short bowel syndrome (intact colon and 90cm of small bowel remaining). Over the 3-month hospitalization period the patient was weaned from total parenteral nutrition to a home oral diet and PEG feeds in combination with supplemental parenteral nutrition. All meals were fed orally and finished via the PEG.

**Result:** Combined feeding (oral, enteral and parenteral) management resulted in a 1.5kg (9.9-11.4kg) weight gain over the 3-month hospitalized period. Mid upper arm circumference increased from 11cm to 13.2cm. Despite increases in food intake, sip and PEG feeds, a parenteral nutrition dependency index of 68% indicated a continued reliance on supplemental parenteral nutrition.

**Conclusion:** This unique case illustrates the simultaneous feeding via three administration routes while transitioning from hospital to home-based care.

# Systematic review on the role of microgreens in the diet to combat micronutrient deficiencies and hidden hunger

Information | Education Abstract

**Dr Annette Van Onselen**[1]
[1]UNISA (University of South Africa), Johannesburg, South Africa

**Biography:**
Dr van Onselen is currently a Senior Lecturer in the Department of Life and Consumer Sciences, College of Agriculture and Environmental Sciences at the University of South Africa (UNISA). She is also appointed as an Honorary Lecturer at the University of KwaZulu-Natal. She has published in national and international journals including Plos and Nutrients. Dr van Onselen graduated 10 master's and 4 PhD students in the last 10 years and have been involved in the interprofessional Education Programme for the final year students of the different Schools at SMU. In 2020, she also facilitated Afri-Vipe with Stockton University.

**Introduction:** Microgreens are tender, immature vegetable greens produced from the seeds of vegetables, herbs, and grains, including wild species with gentle textures and distinctive flavours. Composed of a central stem, cotyledon leaf/leaves, and a pair of young true leaves, microgreens are generally harvested between 10 and 14 days from seeding. Microgreen cultivation is of great interest from the standpoint of promoting human health.

**Objectives:** To determine the role of microgreens in the diet and to combat micronutrient deficiencies and hidden hunger.

**Methods:** Various databases which include PubMed, Google Scholar, Science Direct, PLoS, MEDLINE, and Embase have been used to identify the most relevant studies such as observational studies reviews, clinical trials, randomized controlled trials, and guidelines published between 2000 and March 2024. The combination of search terms used were microgreens, hidden hunger, micronutrient deficiencies, and health benefits.

**Results:** Microgreens are shown to contain significantly higher contents of mineral elements and phytochemical constituents (alkaloids, various terpenoids, and polyphenols) than their mature leaf counterparts. Based on studies conducted on both the sprouts and mature leaf counterparts of various microgreens such as Brassicaceae, these bioactive phytochemicals are reported to be of pharmaceutical importance, attributable to antioxidant, anti-inflammatory, and anti-cancer properties.

**Conclusion:** The “functional food” potential of microgreens, determined by the capacity to improve/regulate a specific metabolic process/mechanism towards either preventing or controlling disease, was only recently reported for the first time. Microgreens are a distinct group of vegetables that are identified as a source to overcome the problem of malnutrition which includes micronutrient deficiencies.

# The effect of a combination of short-chain fatty acids on metabolic control in healthy men

**Dr Annette Van Onselen**[1], Dr Martie De Wet[2]
[1]UNISA (University of South Africa), Johannesburg, South Africa, [2]Private practice, Fairland, Johannesburg, South Africa

**Biography:**
Dr van Onselen is currently a Senior Lecturer in the Department of Life and Consumer Sciences, College of Agriculture and Environmental Sciences at the University of South Africa (UNISA). She is also appointed as an Honorary Lecturer at the University of KwaZulu-Natal. Dr van Onselen graduated with 10 Masters and 4 PhD students. She has published in national and international journals including Plos and Nutrients. In the past five years, she has also been involved in the interprofessional Education Programme for the final year students of the different Schools at SMU. In 2020, she also facilitated Afri-Vipe with Stockton University.

The effect of a combination of short-chain fatty acids on metabolic control in healthy men
Annette van Onselen^1 Martie de Wet^2
1. University of South Africa (UNISA), School of Agriculture and Environmental Sciences, Department of Life and Consumer Sciences, Pretoria
2. Private practice, Fairland, Johannesburg

**Introduction:** Dietary fibre revealed benefits for health maintenance and disease prevention and as a component of medical nutrition therapy. A high-fibre diet may favourably influence metabolic control in humans. It is believed that short-chain fatty acids (SCFAs) may be partially responsible for some of the beneficial effects of dietary fibre on metabolism.

**Objectives:** To determine the role of a combination of SCFAs on metabolic control in men.

**Methods:** A randomised, placebo-controlled double-blinded clinical trial study was conducted. Voluntary subjects were recruited using a stringent inclusion criterion. All subjects received a placebo for a period of one following the collection of baseline blood samples and other information. A second baseline blood sample was collected from each individual at the end of this period to ensure an accurate reflection of the variable and a stable baseline. The individuals were divided into three groups following the supplementation or placebo for 4 weeks following the second baseline blood collection.

**Results:** The HDL-C levels increased slightly in the acetate and propionate groups. The LDL-C significantly decreased in the acetate, propionate and butyrate group. The decrease in systolic blood pressure was statistically significant after the intervention of acetate, propionate and butyrate.

**Conclusion:** The study could not conclude that a combination of SCFAs benefits glycometablic control in healthy subjects. However, SCFAs have a beneficial effect on HDL-C and LDL levels.
Declaration of interests: None

# Developing recommendations to improve the existing short salt intake questionnaire for the African-PREDICT study

**Prof Tertia Van Zyl**[1], Ms Cassandra Halliday[1]
[1]North-West University, Potchefstroom, South Africa

**Biography:**
Tertia van Zyl is an associate professor at the North-West University's Centre of Excellence for Nutrition. Her research focus is on dietary assessment methodology and dietary intake and its relationship with cardiovascular disease. She is responsible for training fourth year dietetic students and post graduate students in dietary assessment. Another responsibility is the training of third- and fourth-year dietetic students in food service management at the Nutrition Department at the NWU.

**Background:** Reducing dietary salt intake is one of the most cost-efficient ways of reducing blood pressure. The aim of the study was to determine the accuracy of the currently used salt frequency intake questionnaire and make recommendations to improve the questionnaire for the African-PREDICT study.

**Methods:** This was a cross-sectional study based on baseline data, collected from 2013 to 2017, for the African-PREDICT study, in the North West province, Potchefstroom area. Data included 24-hour urinary sodium excretion-, multiple 24-hour dietary recall- and salt frequency intake questionnaire data of 1053 participants. Data was used to quantify dietary sodium intake, to determine the agreement (Bland-Altman plots) between 24-hour urinary sodium excretion- and questionnaire data. The 24-hour dietary recall data was used to identify a list of commonly consumed salt containing foods and serving sizes to make recommendations for improvement of the existing questionnaire. Ethical approval was received from the North-West University's Health Research Ethics Committee.

**Results**: Results showed mean sodium intake of 1345.3 mg/day from the questionnaire and 3140.5 mg/day from the 24-hour urinary sodium data. Bland-Altman plots showed a poor agreement between the two methods. Participants consumed 36 of the 42 food groups in the current questionnaire. Five food groups consumed by >5% of participants were not included in the current questionnaire. Serving sizes consumed by the participants also differed from that of the study participants used to develop the current questionnaire. Eighteen food groups were consumed in larger serving sizes by participants, while eleven food groups were consumed in smaller serving sizes.

**Conclusion:** The questionnaire does not accurately estimate dietary salt intake for the study. Updating the list of food groups, the use of study specific serving sizes and the use of recent food sodium content data is recommended to make the questionnaire specific and sensitive to the African-PREDICT study.

# The relationship between dietary intake and adiposity in South African female adolescents: A review

**Dr Nokuthula Vilakazi**[1], Ms Sithabile Mathunjwa, Dr Heather Legodi, Professor Pedro Terrence Pisa
[1]Durban University of Technology, Durban, South Africa

**Biography:**
Dr. Nokuthula Vilakazi is a researcher and a senior lecture in the Department of Consumer Sciences Food and Nutrition, Faculty of Applied Sciences, Durban University of Technology, in South Africa. Her research work explores the potential of underutilized foods and the use of non-conventional technologies in improving food and nutrition security in Africa.

**Introduction:** The rise in the prevalence of childhood obesity and overweight over the past 40 years, has not gone unnoticed, especially in developing countries.

**Objectives:** A systematic review was conducted to investigate the relationship between diet and obesity to determine the extent of the epidemic among female adolescents in South Africa.

**Methods:** Several database search engines (Google Scholar, Science Direct, Cochrane Library, PubMed, and Web of Science) were used to identify primary research studies investigating the associations between diet and various adiposity indices as outcomes. Of the 56 studies identified, 7 met the inclusion criteria. Tabulation was used to report the data, study by study. The ages of the participants in the identified studies ranged from 11 to 21 years.

**Results:** The consumption of nutrients from animal sources exhibited a positive correlation with higher BMI-for-age Z scores ($p = 0.02$). Eating the main meal with family some days ($p \leq 0.02$), irregular breakfast consumption ($p \leq 0.05$), and a high intake of energy from fat, were all associated with increased risk of overweight and obesity. Factors such as socio-economic class, where one lives, and physical activity levels were linked to diet and adiposity in female adolescents.

**Conclusion:** With more studies increasingly showing the etiological role of diet on adiposity, cardiovascular disease risk and death, policy interventions and effective strategies geared to address the growing non-communicable disease burden in South Africa are urgently required. To address these concerns, population-level interventions targeting the school food environment such as increasing the availability and accessibility of healthy foods and water and reducing unhealthy food, sugar-sweetened beverages, and snacks for school learners.

# Urban consumer's knowledge and utilisation of indigenous foods in the City of Durban, South Africa

**Dr Nokuthula Vilakazi**[1], Dr Peter Ho, Prof Ibok Oduro
[1]Durban University of Technology, Drban, South Africa

**Biography:**
Dr. Nokuthula Vilakazi is a researcher and a senior lecture in the Department of Consumer Sciences Food and Nutrition, Faculty of Applied Sciences, Durban University of Technology, in South Africa. Her research work explores the potential of underutilized foods and the use of non-conventional technologies in improving food and nutrition security in Africa.

**Introduction:** South Africa's urban food environment is a unique reflection of the country's historic past, which saw the strategic placement of Africans on the outskirts of urban areas with limited access and availability to their indigenous foods.

**Objectives:** The study sought insight into urban consumers' knowledge and utilisation of indigenous foods in the City of Durban, South Africa.

**Methods:** Focus group (FG) discussions were used to gather the insights of male and female consumers older than 18 years residing in and around the City of Durban, South Africa. Participants we selected based on their responsibility for making decisions about what to eat. Participants were conveniently selected. The discussion followed a structured interview guide facilitated by a trained moderator in both English and isiZulu. The discussions lasted a maximum of one hour with 4 to 8 participants per FG. A total of 26 individuals participated in the FG discussions.

**Results:** Five FG discussions were conducted one with females, one with males under 35 years, one with females over 35 years and two with males over 35 years were conducted. The participants identified green leafy vegetables as a popular indigenous food, with steamed bread, maize (on the cob); samp, amadumbe, imbumba (cowpeas) known and used by most of the participants across the five focus groups. Mixed dishes include "Isijingi", "isikhuluphathi", "isigwaqane","isigwamba". Most of the participants mentioned modern ingredients to prepare the traditional indigenous dishes.

**Conclusion:** Easy access to modern ingredients in both urban and rural has played a role in influencing the modification the traditional methods to a modern adaptation of indigenous food ingredients. Buying from traders of indigenous foods, having links with people in rural areas, and visiting rural areas on average twice a year drove the consumption of indigenous foods by urban consumers.

# Dairy in the diet of South Africans: A criterion-based evaluation

Information | Education Abstract

**Prof Friede Wenhold**[1], Prof Mieke Faber[2], Prof Renee Blaauw[3], Prof Corinna Walsh[4]
[1]Department Human Nutrition / University of Pretoria, Pretoria, South Africa, [2]Centre of Excellence for Nutrition, North-West University, Potchefstroom, South Africa, [3]Division of Human Nutrition, Stellenbosch University, Tygerberg, South Africa, [4]Department of Nutrition and Dietetics, University of the Free State, Mangaung, South Africa

**Biography:**
Friede Wenhold is an associate professor in the Department of Human Nutrition, University of Pretoria. Her professional field of expertise is nutrition assessment, with special emphasis on dietary and anthropometric evaluation, and the scientific validation of such assessment methods in different life stages. She has supervised numerous postgraduate students, published locally and internationally, led and collaborated in multi-institutional and -disciplinary research studies, consulted to the public and the private sector, presented to peers and the public, and reviewed scientific and other publications. She is a NRF (SA) rated researcher and a member of various technical advisory committees

**Introduction:** The role of food groups, e.g., the dairy group, in human nutrition depends on the criteria and perspective used. Using a current, local (South African [SA]) public health nutrition perspective we outlined criteria and applied some of these in evaluating aspects of dairy in nutritional health.

**Methods:** A situation analysis and literature review were conducted to characterise the current SA nutrition landscape in relation to dairy intake, to identify criteria clusters for evaluating dairy as food group, and to review the scientific evidence linking aspects of dairy to health.

**Results:** SA has a double burden of nutrition-related conditions, i.e., undernutrition (protein-energy and micronutrient deficiencies) and overnutrition (overweight/obesity and non-communicable diseases [NCDs]) across the lifespan and often coexisting. Criteria whereby the role of a food group can be evaluated, cluster around social, economic, environmental, and health matters. With health as criterion, dairy contains the gap nutrients (high biological value protein, minerals and vitamins) pertinent to SA. Beneficial effects in weight management, metabolic syndrome and other NCDs are well-documented. The association between components of dairy and NCDs in the current SA public health nutrition scenario includes a focus on (i) the intrinsic dairy sugar, lactose, and (ii) saturated fatty acids. Lactose in the dairy matrix acts different to added sugars. Dairy consumption up to 200g per day - irrespective of the fat content - is not associated with harmful effects in the context of cardiovascular disease.

**Conclusion:** Using health as criterion, dairy is indispensable in a double duty diet of quality that addresses the double burden of malnutrition of SA. The inter-relatedness of health and non-health criteria, and the unique matrix effects of dairy products within a diet characterised by adequacy, balance and diversity remain core to a holistic and coherent approach to nutritional wellbeing of South Africans.

# Insights into South African food labeling regulations: Present realities, prospects and considerations

Information | Education Abstract

**Dr Mariaan Wicks**[1]
[1]North-west University, Potchefstroom, South Africa

**Biography:**
Mariaan Wicks is a registered dietitian and serves as the subject head and senior lecturer in Dietetics at North-West University, South Africa. She has a special interest in nutrition-focused interventions to combat and prevent obesity and non-communicable diseases, with a specific focus on nutrient profiling and food labeling. She earned her PhD in Dietetics in 2017, focusing on the use of nutrient profiling to regulate the marketing of foods to children in South Africa.

The food and nutrition landscape in South Africa has undergone significant changes, with a significant nutrition transition characterized by undernutrition, obesity, and nutrition-related non-communicable diseases. In response to this, the South African Department of Health published a new draft food labeling and marketing regulation (R3337 of April 2023) aimed at creating a healthier food environment.

**Aim:** To evaluate the potential effect of the draft regulation (R3337) on prepackaged foods sold in South African supermarkets from 2020-2023.

**Methods:** Prepackaged food and non-alcoholic beverages available in four South African supermarkets were identified using a predefined criterion. The nutrient profiling models described in the draft regulations (R3337) were employed to classify the healthiness of the included foods. Descriptive statistics were used to describe the number of foods classified as less healthy, thus having a front-of-package label, not being permitted to make a claim, or not being permitted to market to children.

**Results:** In total 480 foods were included in the study, with the majority (71%) classified as less healthy. More than 80% of the foods in the categories of confectionery, snack foods, sauces and spreads, and non-alcoholic beverages were classified as less healthy. The food group with the lowest proportion of less healthy foods was vegetables and fruits (38% classified as less healthy). Concerning the current South African Food Based Dietary Guidelines, 42% of the recommended foods were classified as less healthy most of these foods being from the dairy and edible oils groups.

**Conclusion**: Mandatory, government-led food labeling and marketing restrictions that support consumers in making healthier food choices and motivate improved packaging and reformulation of prepackaged foods have the potential to create a healthier food environment in South Africa. Consideration of other government-led initiatives and policies and consumer perceptions are required to enhance the potential effect of the draft regulation (R3337).

# Using Content Analysis to teach & conduct research in an undergraduate Dietetics program: Does it meet the entry-level research competencies for the profession?

Information | Education Abstract

**Ms Jill Wilkenson**[1]
[1]University of the Western Cape, Cape Town, South Africa

**Biography:**
Jill Wilkenson has been a member of faculty at UWC's Department of Dietetics and Nutrition since 2007 where she has gained a wealth of experience in clinic and class-based teaching. She is responsible for coordination and delivery of modules in Community Nutrition, Research Methods and Clinical Skills Practice. She completed a Masters in Public Health in 2012 and is currently a PhD candidate in Health Sciences Education.

**Introduction:** Introducing research methods and undertaking research projects within the constraints of content-laden, multifaceted health science undergraduate curricula is fraught with challenge. The abstract nature of research theory can in itself be alienating and foreign resulting in low levels of student engagement in the learning process. This, along with the limited time to complete the research cycle – from proposal development to research report compilation and dissemination- has been the impetus for the teaching and learning team in an undergraduate Dietetics program to consider different ways to deliver their research curriculum. One such innovation is the introduction of Content Analysis - a widely used research method that involves systematically analysing the content of textual, visual, or audio materials to identify patterns, themes, and relationships within data.

**Materials & Methods:** In 2022, five undergraduate group research projects were completed using Content Analysis. This case report describes the learning outcomes demonstrated through these student research reports along with author reflections on teaching and learning in this module.

**Objective:** To compare the learning outcomes achieved through the use of Content Analysis to the criteria for entry-level research competencies for Dietitians in South Africa

**Conclusion:** Content analysis offers an alternative to research approaches traditionally taught and applied in undergraduate Dietetics curricula. It is a rigorous approach which exposes students to each step of the research cycle. Additionally, it circumvents time constraints as projects typically follow an expedited institutional review board process and access to data is fast-tracked.

# A plant-based dietary approach to the management of type 2 diabetes mellitus in South Africa

**Dr Nanine Wyma**[1,2], Dr Christi Niesing[2], Prof Andrew Robinson[1,2], Prof Petra Bester[2]
[1]PAN South Africa, Pinelands, South Africa, [2]African Unit of Transdisciplinary Health Research, Potchefstroom, South Africa

**Biography:**
Dr Nanine Wyma, MBChB, MHSc, is the co-founder of Physicians Association for Nutrition (PAN) South Africa which raises awareness of plant-forward dietary patterns for chronic disease, climate change, and pandemic risk.

**Objective:** The aim of this study was to explore how participants and physicians experienced a plant-based dietary approach to type 2 diabetes mellitus (T2DM) in South Africa.

**Design:** A multiple-case study was undertaken.

**Setting:** The pilot 'Diabetes Reversal Challenge' was initiated and led by UBUNTU Wellness Institute. Participants with T2DM consume a whole-food plant-based diet for 21 days and are assigned to private physicians for clinical monitoring of health outcomes.

**Subjects:** South African adults with T2DM (n = 10) and physicians (n = 4) participated in the challenge between April 2021 and May 2022.

**Outcome measures:** Participants' health outcomes and contextual factors influencing how participants and physicians experienced the plant-based dietary approach in South Africa were the measures used.

**Results:** The plant-based dietary approach resulted in positive health outcomes for South African adults with T2DM, such as improved glycaemic control, weight loss, reduced need for medication and psychological benefits. Multiple layers of contextual factors influenced the plant-based dietary approach to T2DM in South Africa, mapped into a socio-ecological framework that includes (1) individual, (2) interpersonal, (3) organisational, (4) community and (5) healthcare system factors.

**Conclusions:** These results encourage healthcare systems to explore plant-based dietary approaches as an option in the management of T2DM in South Africa.

# Equitable access to healthy food choices: A pathway to diet- related NCD prevention in South Africa

Information | Education Abstract

**Ms Metron Ziga**[1]
[1]University of the Western Cape, Cape Town, South Africa, [2]University of the Western Cape, Cape Town, South Africa

**Biography:**
Metron Ziga is a doctoral student at the Institute for Social Development at the University of the Western Cape.

There is an increase in the prevalence of Non-communicable diseases (NCDs) in South Africa. The persistence of food insecurity and the increase of diet related NCDs indicate inequities in the country's food system taking into cognisance that unhealthy diets are the key driver of NCDs. Food system inequities restrict the ability of some people to access healthy food making them susceptible to NCDs. Transforming how food is produced, processed, marketed and consumed can be utilised in the fight against NCDs. This paper highlights the evidence of food system inequities in South Africa, their root causes as well as the opportunities and challenges of transitioning to a more equitable food system. There is a need for multi-scale interventions involving a range of players in the food system to tackle inequities. Regulatory and policy frameworks addressing food system inequities should transcend food itself and address inequalities in income, access to resources, gender and power relations.

# Food availability and coping strategies during COVID-19 lockdowns on in the Tygerberg Region of the Western Cape, South Africa

**Dr Mthokozisi Zuma**[1], Ms Mthokozisi Zuma[2], Prof Xikombiso Mbhenyane[2]
[1]Agricultural Research Council, Richmond, South Africa, [2]Stellenbosch University, Cape Town, South Africa

**Biography:**
Mthokozisi Zuma (PhD, Crop Sciences) is a research fellow under the Research Chair in Food Environments, Nutrition and Health of the Human Nutrition Department at Stellenbosch University and a manager of advisory services in the Smallholder Agricultural Development Unit at Agricultural Research Council, South Africa. His research focuses on food security, agronomy, public health, human nutrition, and consumer sciences. As an emerging researcher he has contributed to various interdisciplinary research at different levels (community, national and international). Dr Zuma research is aimed at alleviating triple burden of malnutrition and achieving sustainable food systems.

**Background:** A pandemic caused by the novel Covid-19 virus affected people all over the world, whereby governments implemented various measures such as lockdowns and social distancing to slow down the spread of the virus. Many companies had to cease operations for extended periods, resulting in reduced or no income to individuals.

**Aim:** To determine the food accessibility, food availability and dietary diversity of households during Covid-19 lockdowns in the Tygerberg region.

**Methods:** A cross-sectional study design using a researcher- administered questionnaire. Food accessibility and availability were determined using the Household Food Insecurity Access Scale and Household Food Security Survey Module and the 24-hour recall was used to determine dietary diversity.

**Results:** The sample consisted of 432 participants/households. Sixty-two percent indicated that their incomes had been reduced during the lockdowns. Furthermore, 47.3% reported low dietary diversity (>7 food groups), and 46.4% medium dietary diversity (8-11 food groups). It was determined that about 80% of the study population had been food insecure during the preceding 30 days, and about 72% had been food insecure during the prior year.

**Conclusion:** Majority of households' income was affected by lockdowns. Most of the participants were found to be food insecure and had low or medium dietary diversity. Food choices were affected due to reduced incomes and high prices at smaller shops. Many participants received Covid-19 social relief in the form of food parcels, grants, and help from family and friends. Although incomes have increased during the last year, food insecurity persists in the Tygerberg region.