ABSTRACTS

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EVALUATION OF TWO NUTRITIONAL ASSESSMENT INSTRUMENTS IN TERMS OF THEIR ABILITY TO PREDICT POSTOPERATIVE OUTCOME IN GENERAL SURGICAL PATIENTS

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Introduction. Preoperative nutritional status can be used to predict clinical outcome in surgical patients. Various nutritional assessment tools have been evaluated in terms of their predictive abilities. The objectives of the study were to evaluate the Subjective Global Assessment (SGA) and Nutrition Risk Score (NRS) in terms of their ability to predict postoperative morbidity and mortality in general surgical patients at Groote Schuur Hospital (GSH). The extent to which baseline serum albumin levels predicted patient outcome was also determined.
Methods. A prospective cohort study was conducted amongst 100 elective general surgical patients. Preoperative nutritional status was assessed upon admission using the SGA and NRS. Serum albumin was also recorded. Patient outcome was measured in terms of length of hospital stay (LOS), incidence of postoperative complications and mortality (30-day post-surgery). Patients were followed prospectively for 30 days after surgery. Multivariate analysis was used to analyse the relationship between preoperative nutritional status, albumin and outcome variables. The predictive properties of the two instruments were statistically analysed.
Results. According to the SGA and NRS respectively, a large proportion (> 40%) of our patients were either depleted on admission to hospital or likely to become nutritionally depleted. In addition, more than 40% of malnourished and high-risk patients did not receive nutritional support. Preoperative nutritional status was an independent predictor of LOS ($p < 0.05$). Severely malnourished patients, on average, stayed in hospital for 16 days longer than well-nourished patients (95% CI: 6.1; 26.3). Preoperative nutritional status was found to be a significant independent predictor of postoperative complications (OR=17; 95% CI: 1.4; 211.0) after controlling for age, gender, type of surgery, presence of cancer, nutritional support and immunosuppressive drugs. Multivariate analysis demonstrated that serum albumin levels were not independent predictors of LOS and postoperative complications. Both instruments had good overall accuracy. The SGA, however, was a more sensitive predictor of complications than the NRS (81% vs. 72%).
Conclusion. Although the SGA has superior predictive power, the NRS has several advantages over the SGA in that it is easy to use, requires no nutritional expertise and is more suitable for large-scale application. Implementation of the NRS in the surgical wards at GSH may allow for prompt identification and cost-effective treatment of patients at high risk for nutritional depletion.

NUTRITION CONTINUITY - HOSPITAL to HOME
An English District General Hospital's Experience

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An increasingly large number of patients are being sent home on artificial nutrition. This can be attributed to the large number of elderly, malnourished and chronically ill patients that we are admitting to our hospitals.
The British Artificial Nutrition Survey (BANS) monitors all patients being sent home on artificial feeding. The numbers are increasing in both enteral and parenteral nutrition categories, with a great increase in gastrostomy feeds in the community.
We, at the Dudley Group of Hospitals manage the acute hospital nutrition of in -patients and then refer on to the community dietitians and homecare companies. The patients are commenced on a feeding regime in hospital via an appropriate route (naso-gastric or gastrostomy), discharged to the community with dietetic cover and continuity of feeding is guaranteed by home deliveries of all feeds and equipment from the home care company, in conjunction with the GP, who will continue to prescribe the feeds. The community dietitians will monitor these patients at home and liase with the hospital when circumstances require.
Home Parenteral Nutrition (HPN) is commenced in the hospital setting and the patient is trained in sterile technique and management of the line and procedures of intravenous feeding. Prior to discharge, the patient's care is contracted to a home care company, who will regularly deliver all equipment required, including the making and delivery of the parenteral nutrition solution. These companies also have trained nurses to perform the procedures according to the hospital's protocol, in the event of the patient being unable to manage. The home care nurses are also able to train the patient in his own home, in the event of the hospital not having a nutrition nurse, or facilities to train the patient to manage on his own.
Our HPN patients are monitored by the nutrition nurse and the gastro-enterology consultant on a regular basis; bloods, weight, grip strength, general health, fluid balance and line care are monitored. Most commonly, short bowel syndrome is the cause for patients being on HPN, so fluid balance and electrolyte status are very important; as are line infections, which can be life-threatening. The other serious line complication is blockage by fibrin or fat clogging, both of which can be quite easily dealt with by using the endo-luminal brush. We aim to nourish our patients sufficiently to enable them to have a good, normal life, including overseas holidays.

Nutritional Status of Institutionalised Frail Elderly

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It is generally accepted that institutionalisation may be associated with malnutrition and therefore a need exists to focus on the institutionalised frail elderly and their nutritional needs. The Mini Nutritional Assessment (MNA)(r) is primarily used to quickly assess the nutritional status of the elderly and to identify those at risk of malnutrition before actual changes in weight occur.
This study aimed to assess the validity of the MNA(r) as a "standard" in order to identify simpler methods for the assessment of the nutritional status of the frail elderly. The study was conducted in 5 randomly chosen institutions in the Western Cape. Each institution was visited 3 times. The first 10-15 consenting, frail individuals, who were served breakfast on the first visit at each specific institution were included in the study. The selected individuals were used again on day 2 and day 3 of the study. Each individual was weighed and knee-height, Mid Arm Circumference (MAC) and Calf Circumference (CC) were obtained to aid in the completion of the MNA(r). Knee-height was used to calculate the estimated height. The Body Mass Index (BMI) was calculated from the weight and the estimated height. Daily dietary intake was documented by means of a three day weighed food record and relevant medical diagnoses were noted. A questionnaire was also completed on each frail care unit and the general practices therein. A final study population of 43 elderly (32 women and 11 men) between the ages of 65 and 96 was obtained. Classification of malnutrition on the basis of BMI as obtained in the present study using knee-height correlated poorly with the prevalence of malnutrition as defined by the MNA(r). The BMI classified 34% of the population as severely malnourished, whereas the MNA(r) classified 95% of the frail elderly as malnourished. Further, the BMI classified 46% of the subjects as having a normal BMI, while the MNA(r) classified only 5% as being well nourished. The MNA(r) classification was therefore inadequate in classifying the

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present severity of malnutrition. It may have a use in the early detection of malnutrition, whereas the BMI identifies present cases of malnutrition more accurately. The MAC and CC were identified as effective, simple methods for early identification of malnutrition (p (0,00000). The MNA(r) under-estimated actual energy intake by 16% as compared to the dietary intake obtained by the weighed food records. The most common diagnoses amongst this age group include hypertension, stroke, diabetes and coronary heart disease. In conclusion, it would appear that the MNA(r) may not be suitable for the assessment of the nutritional status of the frail elderly. The high prevalence of malnutrition documented in this study warrants further studies in this field with a view to identifying the main causes of malnutrition in this specific population of the elderly.

To determine the effect of metoclopramide on gastric emptying in severe head injuries: A randomised, prospective, controlled clinical trial.

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Intolerance to enteral feeding in patients with severe head injury (SHI) has been widely documented to occur for up to 3 weeks post injury. Studies conducted considering gastric emptying in the critically ill patient provide conflicting evidence for the efficacy of various pharmacological agents. The aim of this study was to determine the effect if any of 8 hourly doses of 10mg intravenous metoclopramide, administered over a 48-hour period on gastric emptying in SHI.
This was a prospective, randomised and controlled trial conducted in the intensive care unit. Twenty-two patients were enrolled into the study, (21 males and 1 female) with a GCS of between 3-8. Two patients were excluded. Patients were randomised to either receive 2ml of intravenous (IV) metoclopramide (drug) or 2ml of 5% saline (placebo) at an 8 hourly frequency following the completion of baseline paracetamol absorption assay. Serial arterial blood samples were taken at time = 0, 15, 30, 45, 60, 90 and 120 minutes with a second paracetamol absorption test conducted 48 hours later in both groups. Area under the curve (AUC) of paracetamol absorption for 120 minutes was used as an index of gastric emptying. The difference in AUC 120 between the test and baseline was taken as a measure of the degree of acceleration/ delay in gastric emptying.
Within subject comparison (baseline test) were made using Wilcoxon Signed Rank Test (p= 0.65) and between subject comparisons on different scores were made using the Mann Whitney-U test (placebo p= 0.4 and metoclopramide p= 0.12). Our results indicate that in SHI sequential doses of metoclopramide did not appear to improve gastric motility. However, the power of the study may have been influenced by the severity of the injuries incurred. Other pro-kinetic agents may prove to be more effective over time compared to metoclopramide.

DIETARY PRACTICES OF SOUTH AFRICAN DIETITIANS REGARDING THE NUTRITIONAL MANAGEMENT OF RENAL PATIENTS

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INTRODUCTION: Optimal nutritional management of renal patients is important to prevent the development of malnutrition and other, often life-threatening or disabling complications of renal disease. This study was done to obtain data on the practices of dietitians regarding the treatment of renal patients in South Africa, as compared to international standards.
MATERIAL AND METHODS: A questionnaire was developed to determine the dietary practices of South African dietitians in the nutritional management of renal patients. A total of 600 pre-tested questionnaires were mailed to a randomly selected sample of dietitians registered with the Health Professions Council of South Africa. A 26% response rate was obtained.
RESULTS: Of the returned questionnaires, only 28% of dietitians indicated that they do council renal patients. Of these, 51% was employed by State hospitals and 47% worked in the private sector. Prescriptions for macro and micro nutrients were compared to the K/DOQI recommendations and the recommendations of the American Kidney Foundation's Renal Nutrition Council for pre-dialysis, hemodialysis (HD) and continuous ambulatory peritoneal dialysis (CAPD) patients. The percentage of dietitians whose prescriptions deviated from the recommendations include the following: 1) energy below the recommendations in 40% or more (HD and pre-dialysis); 2) protein below the recommendations in 40% (CAPD); 3) phosphate too high in 60% (pre-dialysis); 4) potassium unnecessarily restricted by more than 50% (CAPD); 5) sodium allowance higher than the recommendations in about 50% (CAPD); 6) water unnecessarily restricted by about 50% (CAPD); and 7) vitamin A or multivitamins prescribed by up to 20% of dietitians.
CONCLUSION: There is a definite degree of variation and uncertainty within the prescriptions used, which may indicate a need for standardisation of dietary practices. Ongoing education and provision of the latest data will enable South African dietitians to treat renal patients with competency and confidence.

NUTRITIONAL INTAKE AND FOOD CONSUMPTION PATTERNS OF FEMALES AGED 13-25 YEARS IN THE VAAL TRIANGLE (South Africa)

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Objectives: This study formed part of a clinical intervention trial under controlled conditions to examine the effects of vitamin A during sugar fortification. The main purpose of this study was to determine the impact of vitamin A fortified sugar on the nutritional status and intake of the 13-25 year old female in the Vaal Triangle (n=93). The food consumption patterns and nutritional intake of the sample population was observed.
Methodology: A validated QFFQ and a food diary were used for data collection and statistically analyzed using the Dietary Manager Program(. Dietitians conducted interviews with the help of food models to estimate portion size.
Results: The top 22 items most often consumed were recorded and their daily intakes analyzed. The energy, macronutrients and micronutrients intake were also recorded. The sugar and vitamin A consumption patterns were observed and recorded.
Conclusions: The diets of the subjects consisted mainly of plant foods and animal sources were scarce except for milk, polony and chicken. In terms of fruit and vegetables mainly bananas and apples, both low in vitamin A and iron, were most frequently consumed.
Implications: Vitamin A and iron deficiencies are widespread among females of reproductive age and children. It is partly induced by diets containing low levels of iron and vitamin A especially fruit and vegetables. The most effective technological approaches to combat iron and vitamin A deficiencies include food fortification and dietary strategies.

A retrospective analysis of the use of Total Parenteral Nutrition in the Tygerberg Academic Hospital: 1988 - 1996

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INTRODUCTION
The prevalence of protein energy malnutrition remains high among hospitalised patients. Against the background of ever diminishing health resources, any intervention needs to be appropriate and cost-

effective. The purpose of this retrospective study, therefore, was to evaluate the management of patients referred to the Nutrition Support Team (NST) of the Tygerberg Academic Hospital.

MATERIALS AND METHODS

The NST's files of all patients referred for Nutrition Support (NS) for the period of 1988 - 1996 were reviewed. Data was obtained on the demographics of the referred patients, the appropriateness of the referral in terms of the requested treatment, the time elapsed prior to referral for NS, the indications for and duration of NS and the TPN associated complications encountered. The data collected was analysed using the Microsoft Excel 97 program.

RESULTS

The total number of patients referred for NS in the form of TPN was 524 of which 130 and 394 respectively were medical (25%) and surgical (75%) patients. The mean age of the group was 44.2 (1 SD, 16.5), with a range of 13 - 81 years (187 females and 337 males). Of these referred patients, only 378 (72%) actually did have an indication to receive TPN. The remainder of the patients (28%) was successfully managed on Total Enteral Nutrition. Data on the time elapsed prior to referral for NS was available in 167 of the referred patients. Twenty-five percent of these patients were Nil Per Os for 1 - 5 days, 41% for 6 - 10 days, 29% for 11 - 20 days and 5% for >21 days. The mean duration of TPN for the group was 12.3 [respectively 11.0 (10.5) and 13.0 (11.7) days for female and males patients]. The duration of TPN varied according to the underlying condition and ranged from 1 - 82 days with 57, 25 and 18% of patients receiving TPN for 1 - 10, 11 - 20 or >21 days respectively. Catheter sepsis was confirmed (organism identified from catheter tip and blood culture) in <1% (2 of the 378) of patients and was suspected [temperature spike with rigors and a negative catheter tip and blood culture] in 17.5% of the patients. Electrolyte abnormalities (single abnormal value at the point of referral and/or while on NS therapy) were recorded in 43% of the patients that received TPN, hypo- (32%) being more common than hyper- (11%) states.

CONCLUSIONS

TPN can be a safe and life saving route of nutrition support and can be administered relatively free of serious complications. The high percentage of electrolyte disturbances is a reflection of the underlying condition of the referred patients.

THE EFFECT OF DIETARY VITAMIN A FORTIFICATION ON IRON STATUS OF FEMALES AGED 13-25 YEARS OLD IN THE VAAL TRIANGLE, SOUTH AFRICA (SA)

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Background: The role of vitamin A in iron metabolism has received increased attention during recent years. Studies have shown that vitamin A has a protective effect during iron supplementation and an increased mobilisation of iron. Aims: The major objective of this project was to examine the effect of vitamin A fortified sugar intake on iron status in a random sample of young females aged 13 to 25 years in a clinical intervention trial under controlled conditions. This was the first project in SA to use vitamin A fortified sugar. Methods: Validated questionnaires were used to determine demographic profiles, food consumption patterns and compliance with fortified sugar. Anthropometric and double baseline measurements were done on 83 subjects. The sample population was randomly divided into an experimental (n=43) group consuming fortified sugar (80 IU vitamin A/gram sugar) and a control group (n=40) consuming non-fortified sugar. Between and within group comparisons at baseline and after 12 weeks are reported here. Results: Of the subjects in the random sample 9,65 % were vitamin A deficient (serum retinol (1,05 (mol/l) and 39,65 % were iron deficient. No significant differences in baseline levels of serum ferritin, haemoglobin or transferrin between the experimental and placebo groups were observed. Serum iron levels of the experimental group were significantly lower at baseline than the placebo group (11.8 versus 14.4 micro mol/L). Serum iron levels increased with 1 micro mol/L in the experimental group after 4 weeks of vitamin A fortified sugar consumption, an increase that was maintained after 8 weeks. Levels of the placebo group decreased after 4 weeks and returned to baseline levels after 8 weeks. No significant changes in serum ferritin, transferrin or blood haemoglobin were found. Conclusion: The clinical changes observed support the evidence that vitamin A fortification has an effect on iron status.

The effect of breast milk fortification on the short term growth of preterm infants in Kangaroo Mother Care

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Introduction: Breast milk contains insufficient amounts of calcium and phosphorus to provide in the increased nutrient requirements of the preterm infant. By adding FM85 breast milk fortifier, the energy and mineral content of breast milk are increased, whilst the volume of breast milk stays the same and the benefits of breastfeeding are maintained.
Material and methods: Thirteen preterm infants who met the entry criteria were studied at Tygerberg and Karl Bremer Hospital. They were randomly assigned to receive either breast milk (control group) or breast milk fortified with FM85 (fortified group). The infants were followed up for fourteen days during which hours spent in Kangaroo Mother Care (KMC), daily weight gain and gain in body length and head circumference at entry and exit of the study were documented. The intake of breast milk, FM85 and formula milk and/or intravenous fluids were also documented daily. Blood samples were collected and analysed to determine the serum concentrations of calcium, phosphorus and alkaline phosphatase. Kolmogorov-Smirnov test, Wilcoxon paired test and descriptive statistics were used to analyse data.
Results: Thirteen infants (mean birth weight < 1 500 g; mean gestation of 31,1±2,99 weeks) were entered into the study; with complete data only available for eleven infants. The mean weight, body length and head circumference gained in the fortified group during the follow up period were 47 g; 0,95 cm and 0,16 cm greater compared to the control group. In the test group 85 % of total enteral intake was breast milk compared to the 78,5 % in the control group. The average amount of hours spent in KMC for each group was approximately eight hours per day. Both groups showed a decrease in serum calcium levels and an increase in serum phosphorus levels. The only significant change in the study was observed with serum alkaline phosphatase levels. Infants that were fed fortified breast milk showed a decrease in serum alkaline phosphatase levels compared to the control group which showed an increase (p = 0,03).
Conclusion: The fortification of breast milk with FM85 effectively decreases serum alkaline phosphatase levels in preterm infants and also leads to improved short term growth. Further studies with a larger study population as well as a longer follow up period are recommended to determine the effect of fortification on the long term growth and development of rickets in preterm infants.

DOES THE INPUT OF A HOSPITAL/COMMUNITY LIAISON NURSE IMPROVE THE QUALITY OF CARE FOR HOME PARENTERAL NUTRITION PATIENTS?

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Hope Hospital has for many years been responsible for the largest cohort of Intestinal Failure/Home Parenteral Nutrition patients in the United Kingdom. The relationship between the ward staff/patients/home care companies has always been considered to be satisfactory. However, it was felt that the patients would benefit from having a liaison nurse. An innovative intervention by

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Clinovia was to address this situation and employ the first Hospital based/Community HPN Liaison Nurse in the U.K., aiming to develop the continuing collaborative care of the patients who are looked after by Hope Hospital/Clinovia in the North West region. An average of 51 (48-53) patients initially.

The role was developed to improve communication between those concerned and to address any areas of concern within the continuing care of these patients in order to facilitate a higher standard of care. The dual role meant that during the hours spent working on the ward a rapport would be built up between nurse and patient enabling an improved transition between hospital/homecare environments.

This was just the beginning of the care package for these patients. They now had one specific person who could address any HPN problems from a personal/hospital/care company perspective. The following areas have been considered: 1) Continuing support for patients and carers, 2) Development of District Nurse support teams with continued support and update, 3) Promotion of HPN awareness package for GPs and district nursing teams

Patient telephone calls to the ward requesting help or advice have been audited and a 48% reduction during the first 6 months was shown compared to the 6 month prior to commencement in post.

Benefits to the company have been improved communication, overall time saving and reduction of costs. In addition a standard top up delivery system has been implemented. Telephone calls between the company and the patients are now more relationship building than problems solving.

A questionnaire was sent to 53 patients on the provision and development of the liaison nurse's role. A 66% return rate revealed that 24 patients (68%) were on HPN prior to April 1998 and 11 patients (32%) since commencement of the post. Prior to April 1998 24 (100%) had benefited, 11 (100%) had been visited by the nurse on discharge, 8 (83%) felt they had benefited from the liaison nurse attending the HPN clinic and 30 (86%) felt more confident at home with the liaison nurse in post.

In summary the Liaison Nurse has significantly improved clinical care as well as hospital/patient relationships.

BREASTFEEDING POLICIES AND PRACTICES IN HEALTHCARE FACILITIES IN THE CAPE METROPOLE AND SURROUNDING AREAS

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Introduction: The foundation of the WHO/UNICEF Baby-Friendly Hospital Initiative (BFHI) is the "Ten Steps to Successful Breastfeeding". It summarise the maternity practices that are necessary to support breastfeeding. Research indicates that breastfeeding in the R.S.A is lower than in the rest of Africa and studies have revealed that the Western Cape province has the highest percentage of children who have never been breastfed. The aim of the study was to determine the level of implementation of the "Ten Steps to Successful Breastfeeding" and establish how close the maternity facilities are to becoming Baby Friendly.

Methodology: A descriptive study was conducted, in which all consenting healthcare facilities were evaluated. Questionnaires, based on the "Hospital Self-Appraisal Tool for the WHO/UNICEF Baby-Friendly Hospital Initiative", were completed by randomly selected medical personnel and mothers, who met the inclusion criteria. A checklist was also completed at each facility by the researchers.

Results: Step 1: 77% of the healthcare facilities claimed to have a written breastfeeding policy regarding the BFHI, whilst only 31% could actually produce a written copy of the policy to the researchers. Step 2: 58% of the facilities stated that specialised breastfeeding training was given to the appropriate personnel according to BFHI criteria. Step 3: Mothers at 64% of the facilities stated that they had been informed about the benefits of breastfeeding by healthcare staff at the facility. Step 4: Initiation of breastfeeding, according to the BFHI criteria, occurred at 80% of the facilities. Step 5: At 81% of facilities, mothers were shown how to breastfeed. Step 6: Exclusive breastfeeding is practised at 58% of facilities according to medical personnel, and at 80% of the facilities, according to mothers. Step 7: At 81% of facilities rooming-in is practised. Step 8: Breastfeeding on demand is encouraged at 85% of facilities. Step 9: Dummies were given to babies at 28% of facilities and bottle-feeds at 12% of the facilities. A significant difference ($p<0.05$) between public and private hospitals was noted, with dummies being used in 60% of private hospitals and only 7% of public hospitals. Step 10: Referral of mothers to breastfeeding support groups occurs at 54% of facilities according to medical personnel. At 42% of the facilities the formation of mother-to-mother support groups was encouraged. 100% of private hospitals referred mothers to support groups. This only occurred at 25% of public hospitals. This difference is statistically significant ($p<0.05$). No other significant differences were found when comparing public and private facilities. Implementation of the "Ten Steps" had a total mean score of 64% (standard deviation=12,6%).

Conclusion: Problematic areas are: establishment of a policy; specialised staff training; maternal breastfeeding education; exclusive breastfeeding and post-natal support of breastfeeding. These areas contribute to problems with maintenance of breastfeeding and this correlates with findings from previous studies in S.A., which show good breastfeeding initiation rates, but poor maintenance of breastfeeding.

Complementary Feeding Practices: A Programme Planning Model for the Planning of Appropriate and Effective Nutrition Education Strategies

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Introduction: Early mixed feeding is partially responsible for the high mortality rate in infants in developing countries. Furthermore, growth faltering is observed in children as young as two to three months old due to inappropriate complementary feeding practices. In South Africa, growth faltering observed during the weaning period contributes to stunting in the long run, which may not always be associated with catch - up growth with improved feeding. It has been observed that training and education of target groups are associated with an improvement of complementary feeding practices, emphasising the importance of well planned nutrition education initiatives. It is suggested that a Programme Planning Model (PPM) will ensure effective planning of such initiatives.

Materials and Methods: The development of the proposed PPM was based on an extensive literature search. Firstly, the following core concepts regarding complementary feeding were investigated: the appropriate age for the introduction of complementary foods, factors associated with poor complementary feeding practices, the potential outcome of poor complementary feeding practices, complementary feeding practices and documented interventions in this regard in South Africa, and programme characteristics associated with improved feeding practices. Secondly, existing theories/models/frameworks concerning the planning of nutrition education programmes and the facilitation of behavioural change were investigated. Consequently the PPM was developed in collaboration with experts in the field.

Results: The literature review revealed that there is a strong need for more structured nutrition education programme planning procedures, which could be addressed by the proposed PPM. The total model will be discussed in detail.

Conclusion: There is a definite need for well-planned nutrition education strategies to promote appropriate complementary feeding practices in South Africa. The developed PPM could make an important contribution in this regard as it could ensure that actual needs/problems are addressed and that message content and presentation is culturally specific and tailored to the needs of the target group.