Comparison of Body Composition Assessed by Air Displacement Plethysmography and Skin-fold Technique in Post Menopausal Women

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Abstract

Assessment of body composition is vital in maintaining good health and managing various health problems. The proportion of the components of the body varies with various stages of life. Menopause and associated hormonal changes leads to alterations in body composition. Therefore accurate assessment of body composition in post menopausal women will help in prevention and management of various non-communicable diseases. Many methods are available to assess body composition; however the choice of the methods depends on factors like accuracy, accessibility and cost. The comparison of different methods helps in understanding the relative accuracy of the methods. The present study was conducted with an objective to compare the body composition estimated by Air Displacement Plethysmography (ADP) and skin-fold measurement (SKF) in post menopausal women. Twenty one apparently healthy post menopausal women aged 45-60 years were included in the study. Body composition was assessed using ADP (BodPod, LMI, USA) and SKF (Holtain Calipers, UK) methods to obtain per cent body fat and fat free mass (FFM) and agreement between the methods was assessed using paired t-test and Bland-Altman plots. It was found that there was no significant difference between the body fat per cent ($p = 0.83$), fat mass ($p = 0.78$) and fat free mass ($p = 0.78$) estimated by ADP and SKF. The biases for body fat per cent, fat mass and fat free mass were -0.2 %, -0.1 kg and 0.1 kg respectively. It can be concluded that there is a reasonable agreement between the methods in postmenopausal women.

Keywords: *Post menopausal women, body composition, body fat, skin-fold, air displacement plethysmography, BodPod, method comparison*

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Relation of A Body Shape Index (ABSI) Versus other Anthropometric Traits to Adiposity and Cardiovascular Risks

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Abstract

The most prevalent and important clinical and public health problem worldwide is obesity. Central obesity which is characterized by excessive deposition of intra-abdominal fat is also found to be an important predictor of cardio metabolic risk. A Body Shape Index (ABSI) was developed as a predictor of mortality across age, sex, ethnicity and BMI categories in a population sample. The results indicated that ABSI had strong positive correlation with Waist Hip Ratio and strong negative correlation with BMI. Other indices like BMI, Waist Circumference and Waist Height Ratio had significant correlations with almost all other anthropometric tools when compared to ABSI. ABSI had weak correlations with cardiovascular risk factors when compared to other adiposity indices. A Body Shape Index, although included waist circumference and BMI in its formula, was not found to be a better predictor of adiposity and cardiovascular disease risk. Waist Circumference and Waist Height Ratio were better predictors of adiposity and cardiovascular disease risk when compared to ABSI.

Keywords: *ABSI, anthropometric indices, Body Adiposity Index (BAI) cardiovascular*

Development and Nutritional Evaluation of Egg Shell Powder and its Nanoparticles

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Abstract

Egg shell waste is available in huge quantities from food processing, egg breaking and hatching industries. It is estimated that worldwide about 250,000 tonnes of egg shell waste is produced annually. Development and characterization of egg shell powder would result in additional benefit of substantial and better physical, chemical and biological properties. Thus the aim of the study was to develop and nutritionally evaluate egg shell powder and its nano particles. The egg shell nanoparticles were prepared by the method of chemical precipitation using aqueous slurries of egg shell bio-waste and treatment with phosphoric acid and ultrsonication. The developed nanoparticles were characterized by UV spectra, SEM, zeta potential and FTIR. Results revealed that the developed nano particle size was 79.1nm and spherical in morphology. Zeta potential analysis revealed less stability of egg shell nano particle. FTIR analysis showed significant peak of egg shell particles at 1106cm^{-1} and two absorbable peaks at 1197cm^{-1} and 912cm^{-1}. Macro and micronutrient of egg shell powder and its nanoparticles were similar. Hence egg shell powder and its nanoparticles may be considered as a natural, novel and potential source of calcium supplementation. In depth studies are recommended to substantiate the results obtained in the study.

Keywords: *Egg shell, nano particles, characterization, calcium, FTIR, SEM*

Effect of Cell Phone Radiations on Morphological and Biochemical Parameters of Moth Bean (*Vigna aconitifolia*) and Wheat (*Triticum aestivum*) - GSM vs CDMA

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Abstract

Over the years, there is an enormous escalation in wireless equipments including mobile phones making our lives easy. We are constantly immersed in the sea of Electro Magnetic Radiations (EMR) which can affect our lives markedly; alongside there are various reports of possible adverse effects on living things. Cell phones have SAR (Specific Absorption Rating) with safety limit of 3-4W/kg that means a person should not use cell phones for more than 18-24 min/day. This information is not known to many, people use cell phones injudiciously. It has increased the risk of tissue level damage for all living organisms including plant and animal kingdom. This can be tested on germination of seeds like moth bean and wheat as cell phone EMR found to inhibit their root growth by inducing ROS generated oxidative stress. The aim of the study was to observe biochemical and morphological changes induced by cell phone EMR coming from GSM and CDMA on moth bean and wheat seedlings. Study groups of Vigna aconitifolia and Triticum aestivum was divided into group A and group B. Group A was treated with GSM (900 MHz band) and group B treated with CDMA cell phones for 3 days and a control group under similar conditions except that not receiving treatment. Oxidative stress marker, melondialdehyde (MDA) levels were estimated by Wolfgar et al method. Anti-oxidant vitamin C by DNPH method and anti-oxidant enzyme catalase activity were estimated by colorimetric method. Morphologic parameters like germination percentage, length, fresh weight and Relative Water Content (RWC) were also noted. The results showed that there was highly significant reduction in growth, fresh weight and RWC. MDA content and catalase activity were increased and vit.C levels were reduced in the stressed seedlings (GSM>CDMA) compared to unstressed seedlings. It was concluded that the radiations emitted by mobile phones can induce oxidative stress which may have many harmful effects on health.

Keywords: *Cell phone, electromagnetic radiation (EMR), Code Division Multiple Access (CDMA), Global System for Mobile (GSM)*

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Estimation of Coverage of Vitamin A Supplementation in Children Less than Three Years in Odisha

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Abstract

In India, Vitamin A Deficiency (VAD) has been recognized to be a majo controllable public health and nutritional problem. Milder forms such as affecting th conjunctiva, like bitot's spots are observed in 1 – 5% of pre-school children. Objectiv of this study was to estimate the coverage of vitamin A supplementation in children 9-36 months age group in the State of Odisha. It was a cross sectional study conducte in Odisha in May 2005 after vitamin A supplementation round with sample size 270 Out of the total, 88.2% children were in the age group of 12-36 months. More th half 52.2% of the mothers and nearly 1/3rd (33.2%) of the fathers were illiterate. T coverage of VAS for May, 2005 round in males was 75.2% and for females was 77.3 It was found that 85.3% of this age group had received measles vaccine and 82.8 were also simultaneously given vitamin A supplementation during measles immunizati The study revealed that measles vaccine coverage among the infants of 9 - 12 mont age was 85.3%. It was noted that children of all sections of the society irrespective their caste, area of living, occupation of parents, type of housing, household size a even the literary status of mothers had taken vitamin A supplement.

Keywords: *Vitamin A, children <3yrs, measles, vitamin A coverage*

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Children with Sub-Clinical Vitamin-A Deficiency are at Risk for Significant Nutritional Iron and Zinc Deficiencies

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Abstract

Nutrient interaction and vitamin A deficiency were studied using several biochemical markers of nutritional deficiency in 100 socio-economically deprived children living in the slums of Mumbai, India. The purpose of the study was to examine whether children with sub-clinical vitamin A deficiency are at risk for nutritional iron and zinc deficiencies. Children were originally identified to suffer from sub-clinical vitamin A deficiency as manifested by the presence of abnormal conjunctival impression cytology for early epithelial changes with/without associated (1) night blindness (XN), (2) conjunctival xerosis (XIA) or (3) bitot's spots (XIB). Twenty five per cent of these children had adequate serum vitamin A levels (>0.698μmol/L) thereby suggesting that vitamin A levels were insensitive for determining likelihood of clinical disease. In contrast Retinol Binding Protein (RBP) measurements more accurately profiled the clinical disease status. All children with sub-clinical vitamin A deficiency had significantly lower RBP values compared to control children. In addition, these children had significant iron-deficiency anemia (hemoglobin 99.5 g/dL) and low serum iron along with low serum zinc compared to control children. These results suggest that malnourished children with sub-clinical evidence of vitamin A deficiency, despite normal vitamin A levels were at risk of inadequate iron and zinc nutriture. Children with sub-clinical vitamin A deficiency should receive vitamin A therapy that includes iron and zinc supplementation. Furthermore, this points to a significant under-reported health problem that impacts intellectual development of many of the world's children.

Keywords: *Vitamin A, retinol-binding protein, iron, zinc, malnourished children*

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Association of Perceived Psychosocial Stress with Metabolic Syndrome among Young Adults in Urban Workforce

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Abstract

The objectives of the study were to ascertain Metabolic Syndrome (MetS) among young employees in the Business Process Outsourcing (BPO) industry and to determine its association with perceived psychosocial stress through a cross-sectional study. MetS was diagnosed using Adult Treatment Panel III (ATPIII 2001) and International Diabetes Federation (IDF 2005) criteria among 415 calling level BPO employees (274 males; 141 females) in National Capital Region, India. Perceived psychosocial stress was assessed using perceived stress scale focussing on four aspects – stress at work, stress at home, financial stress and major stressful life events in past one year along with additional questions on perceived state of depression. The results showed that MetS was present among 11.8% employees according to ATPIII criteria (14.6% males;6.4% females) and 18.3% according to IDF criteria (22.3% males;10.6% females); and was significantly higher in males compared to females (ATPIII:p=0.014; IDF:p=0.004). Psychosocial stress was perceived among higher proportion of female employees as compared to male employees; however, these differences were not significant. MetS among employees was significantly associated with self-perceived depression for past 12 months (ATPIII:p=0.010; IDF:p=0.029) and past 2 weeks (ATPIII:p=0.011; IDF:p=0.012). It was concluded that with nearly 1/5th of the young employees having MetS and self-perceived depression, it becomes imperative to make feasible changes in their lifestyle by introducing stress management techniques, which can prove helpful in preventing development of non-communicable diseases in the future.

Keywords: *Metabolic syndrome, young adults, psychosocial stress, depression, cardiovascular disease, non-communicable diseases*

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High Prevalence of Protein Energy Malnutrition (PEM) in Under Five Hospitalized Children: Data from a Tertiary Care Hospital of Northern India

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Abstract

According to WHO, 60% of all deaths, among children less than five years in developing countries, can be attributed to malnutrition. The objective of this study was to note the prevalence of PEM in under five hospitalized children and to correlate it with socio-demographic variables. This was a prospective cross-sectional study, wherein all term children aged (0.1-5 years) and with > 24 hours of hospitalization in the Pediatric wards were enrolled. Detailed clinical assessment of nutritional status followed by anthropometric measurements (height and weight) and z-score calculations were done as per standard methodology. In addition, socio-demographic profiles were also recorded. The results indicated that a total of 180/300 (60%) cases were noted to have malnutrition as per WHO classification. Of these, 69/180 (38.3%) had moderate malnutrition and 111/180 (61.7%) had severe malnutrition. Wasting was noted in 114/300 (38.0%) cases of which, 49/114 (43%) had moderate wasting, while 65/114 (57%) had severe wasting. Stunting was noted in 98/300 (32.6%), of which 38/98 (38.7%) had moderate stunting, while 60/98 (61.3%) had severe stunting. Except for low socioeconomic status, none of the socio-demographic factors had a significant correlation with presence of malnutrition. This study defines a high prevalence of malnutrition (60%) with acute and chronic malnutrition being 38 and 33% respectively in under five hospitalized children. Past studies report prevalence rates varying from 6.1 to 40.9% for acute and 8 to 18.9% for chronic malnutrition respectively. The present study highlights the need for early recognition and improvement of nutritional status of under five hospitalized children to assure optimal physical and mental development in this age group.

Keywords: *Malnutrition, stunting, wasting, under five, WHO*

Introduction

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Salt Consumption Behavior among Selected Subjects and Salt Content of Common Processed Snack Foods

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Abstract

Salt, an essential mineral, has been associated with hypertension and an optimum intake is suggested for good health. Processed foods, specially fried and baked snacks can be a major contributor of salt in diets. Hence, the present study was undertaken to investigate the salt consumption behavior among selected adults using a structured questionnaire and to determine the salt and fat contents of common processed snacks. The respondents were 500 adult men and women, who volunteered to be a part of survey. As a second phase of the study, selected commercial processed foods such as salt biscuits, packaged and non-packaged fried snacks were analyzed for salt and fat contents. Results indicated that majority of subjects had a high salt intake of >16.0g/day. They were aware of high salt products, though were unwilling to cut down salt in their diet. The salt and fat contents of both packages and non-packaged snack foods from commercial sources contained high salt and fat contents and they can potentially add up to a considerable salt content in the diet.

Keywords: *High salted foods, processed products, fat content, snack foods, salt intake*

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Effect of Black Gram Flour on Quality Attributes of Fish Snacks

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Abstract

Fish snacks were prepared using three different levels of black gram flour viz. 10, 20 and 30% replacing corresponding amount of rice flour in the preparation of fish snacks. The proximate composition, physico-chemical and sensory properties of snacks were analyzed. Amongst the different physico-chemical characteristics, a significant increase ($p<0.05$) in pH, emulsion stability, cooking yield and moisture content in the product was noticed. Crude protein, ether extract and ash also showed a significant increase ($p<0.05$) as the level of black gram flour increased. Carbohydrate content of the snacks recorded a linear significant ($p<0.05$) decrease as the level of black gram flour increased in the treated snacks. Colour and appearance score of the products was significantly ($p<0.05$) higher at 10% incorporation level although comparable to control. The flavour score of the fish snacks was significantly ($p<0.05$) higher at 10% incorporation level as compared to 20 and 30% levels although former was comparable to control. Crispiness of the products was least at 30% incorporation level and it also differed significantly as compared to control although the former was comparable with snacks prepared with 20% added black gram flour in the formulation. Texture scores at all levels of black gram flour incorporation were comparable to the control snacks. Overall acceptability was significantly ($p<0.05$) highest for the snacks prepared with the formulation containing 10% black gram flour as compared to other treated snacks containing higher levels of black gram flour.

Keywords: *Fish snacks, black gram flour, quality parameters, sensory attributes*

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Mango Seed Kernel Extracts

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Abstract

The processing of fruits results in high amounts of waste materials such as peels, seeds, stones and oilseed meals. These by-products represent an important source of sugars, minerals, organic acid, dietary fibre and phenolics which have a wide range of actions which includes anti tumoral, anti viral, anti bacterial, cardio-protective and anti mutagenic activities. Mango seed kernel is generated as waste during mango fruit processing. Present study was conducted with the objective to utilize it as by-product to extract starch, total polyphenols and dietary fiber which are used as ingredients in food processing. Mango seed kernel was procured and processed into flour. Nutrient composition of the mango kernel flour was studied. To extract starch, total polyphenol and dietary fiber, ground material used were whole mango kernel, mango kernel flour and kernel residue (left after starch extraction) respectively. Whole mango kernel, its processed flour (MKF) and extracts were studied for their yield, total polyphenol content and antioxidant activity. Results indicated that recovery of flour from mango kernels was 80.6 per cent, when analysed found to be good source of protein (7.53 g / 100g), fat (11.45 g / 100g) and energy (421 k cal / 100g). Recovery of dietary fiber was observed to be more (57.60 g / 100g). Whole mango kernel, MKF and TPP extract were high in total polyphenol content which was attributed to their strong antioxidant activity.

Keywords: *Mango seed kernel, nutrient composition, extracts antioxidant activity*