

Malaysian Journal of Nutrition
Vol. 18 No. 2, 2012

Contents

Guest Editorial	iii
Development of a Local Malnutrition Risk Screening Tool-Hospital (MRST-H) for Hospitalised Elderly Patients <i>Sakinah H, Suzana S, Noor Aini MY, Philip Poi JH & Shahrul Bahyah K</i>	137
Development of Demi-span Equations for Predicting Height among Malaysian Elderly <i>Ngoh HJ, Sakinah H & Harsa Amylia MS</i>	149
Bone Health Status and Lipid Profile among Post-menopausal Malay Women in Cheras, Kuala Lumpur <i>Hasnah H, Amin I & Suzana S</i>	161
Nutritional Status and Health-Related Quality of Life of Breast Cancer Patients on Chemotherapy <i>Lua PL, Salihah NZ & Mazlan N</i>	173
Nutrition Knowledge, Attitude and Practice of Teachers in Rehabilitation Centres in Northern Malaysia <i>Chen ST, Soo KL, Azriani AR, Van Rostenberghe H & Sakinah H</i>	185
Childhood Obesity, Self-Esteem and Health-Related Quality of Life among Urban Primary Schools Children in Kuching, Sarawak, Malaysia <i>Lee PY, Cheah WL, Chang CT & Siti Raudzah G</i>	207
Meal Patterns of Malaysian Adults: Findings from the Malaysian Adults Nutrition Survey (MANS) <i>Wan Abdul Manan WM, Nur Firdaus I, Safiah MY, Siti Haslinda MD, Poh BK, Norimah AK, Azmi MY, Tahir A, Mirnalini K, Zalilah MS, Fatimah S, Siti Norazlin MN & Fasihah W</i>	221
Nutritional Status, Dietary Intake Patterns and Nutrition Knowledge of Children Aged 5-6 Years Attending Kindergartens in the Klang Valley, Malaysia <i>Poh BK, Kathryn Tham BL, Wong SN, Winnie Chee SS & Tee ES</i>	231
Food Restrictions during Pregnancy among Indigenous Temiar Women in Peninsular Malaysia <i>Sharifah Zahhura SA, Nilan P & Germov J</i>	243
Relationship between Nutritional Status, Physical Activity and Quality of Life among Gastrointestinal Cancer Survivors <i>Zalina AZ, Lee VC & Kandiah M</i>	255

In vitro Antioxidant Activities of Extract and Oil from Roselle (*Hibiscus sabdariffa* L.) Seed against Sunflower Oil Autoxidation 265
Nyam KL, Teh YN, Tan CP & Kamariah L

Growth Performance and Nutrient Composition of Juvenile Nile Tilapia (*Oreochromis niloticus*) Fed *Spirulina* Flakes, Rice Bran and Mustard Oil Cake 275
Sultana N, Noor P, Abdullah ATM, Hasan MR, Ahmed KM & Naser MN

Upcoming Conferences

Manuscript Submission Guidelines

© Nutrition Society of Malaysia 2012

Printed by

Aslita Sdn Bhd
20, Jalan 4/10B
Spring Crest Industrial Park
68100 Kuala Lumpur

GUEST EDITORIAL

Recumbent Height Measurement among Older Adults

Stature or height is an important anthropometric parameter required for assessment of nutritional and clinical status such as computation of body mass index and determination of creatinine height index, and also in calculation of nutrient needs. However, the accuracy of standing height among older adults is questionable, as aging would result in physiological changes including reduction in height due to the thinning of the vertebrae disc. It is also impossible to determine an accurate standing height measurement in older adults with spinal curvature or kyphosis, tremors and have difficulty in standing. Thus, since early 1980s efforts have been carried out to explore the possibility of using long bone measurements (arm length and knee height) as an alternative to standing height. These recumbent height measurements are less affected by the aging process as compared to standing height.

Determination of the most suitable long bone measurements as an alternative to height depends on the subject or patient's condition. Arm span is the length from the tip of the middle finger of one hand to the other, while the person is standing with both arms outstretched laterally; thus this measurement could not be accurately measured if an individual is affected by lung disease and osteoporosis. This measurement also requires the presence of two additional people. Further, it is impossible to be taken of bedridden or wheelchair bound subjects. Thus, a single arm or half arm span, which is the length of the tip of the middle finger to the sterna notch, is more preferable than the arm span and recommended by the World Health Organization (WHO). However, caution should be taken if an elderly individual has a condition that does not allow maximum stretching of the arm and fingers during the breath out position. Demispan, which is the length between the sterna notch to the web of the middle finger could be used among subjects with disability of the fingers. Knee height has also been increasingly used as a recumbent measurement to predict stature, and is also recognised by the World Health Organization. It is the distance between the sole of the foot and the apex of the knee with each joint flexed at a 90° angle as measured using a sliding caliper. Knee height could be measured either in a sitting or lying position among bedridden subjects. However, there is a need for a suitable equipment, ie. a sliding caliper, and mobilisation to bend the knee. Thus, some effort has been made to evaluate the validity and reliability of a few devices for recumbent height measurement including knee height caliper and anthropometer or supine height ruler. Recently, an anthropometer or a supine ruler measurement has been reported to be the best measurement for bed ridden subjects.

All these recumbent height measurements should be validated against a standing height measurement among younger adults or elderly individuals without kyphotic or other conditions that cause inaccuracy of the measurement. Regression analysis is usually performed to develop a simple predictive equation to predict stature according to gender, with the long bone measurement and age as predictor variables. Cross-validation involving other groups from which the equations have been developed is essential to be conducted in order to demonstrate the accuracy of the models. It should be noted that there would be ethnic differences in body composition and stature, thus several equations have also been developed according to ethnicity. In Malaysia, predictive equations to estimate height from arm span, demi span and knee height have been developed for the major ethnic groups. However, these equations do not include age as a predictor variable and there is a need to develop a nationally representative predictive equation.

Predictive equations to estimate stature among elderly individuals are not only used for a population based study but also invaluable for application in a clinical setting among non- ambulatory or bedridden subjects. The principles and methods of measurement and development have also been applied among mobility-impaired or handicapped persons. However, a few studies have demonstrated that the reliability of recumbent height measurements such as half arm span and knee height are less than standing height. In conclusion, standing height is the preferred anthropometric measurement in older adults who are able to stand straight for an accurate measurement to be taken. However, conditions such as kyphosis, tremors and others could affect the validity of a standing height measurement. There is a need to develop a nationally representative prediction equation for estimation of stature from recumbent measurements in order to reduce the inherent problem of sample specificity and enhance accuracy and confidence in the estimation.

REFERENCES

- Chumlea WC, Go SS, Wholihan K, Cockram D, Kuchmarski RJ & Johnson CL (1988). Stature prediction equations for elderly non-Hispanic white, non-Hispanic black and Mexican-American persons developed from NHANES III data. *J Am Diet Assoc* 98: 137-142.
- Chumlea WC, Roche AF & Steinbaugh ML (1985). Estimation of stature from knee height for persons 60 to 90 years of age. *J AM Geriatr Soc* 33: 116-120.
- Gomez-Cabello A, Vicente-Rodrigue, Albers U, Mata E, Rodriguez-Marroyo JA, Olivares PR, Gusi N, Villa G, Aznar S, Gonzalez-Gross M, Casajus JA & Ara I (2012). Harmonization process and reliability assessment of anthropometric measurements in the elderly EXERNET multi-centre study. *Plos One* 7(7) e41752: 1-4.
- Luft VC, Beghetto MG, Castro SMJ & de Mello ED (2008). Validation of a new method developed to measure the height of adult patients in bed. *Nutr Clin Pract* 23: 424-428.
- Mitchell CO and Lipschitz DA (1982.) Arm length measurement as an alternative to height in nutritional assessment of the elderly. *J Parenter Enteral Nutr* 6: 226.
- Shahar S & Pooy NS (2003). Predictive equations for estimation of stature in Malaysian elderly people. *Asia Pac J Clin Nutr* 12(1): 80-84.
- World Health Organization (1995). Physical Status: The Use and Interpretation of Anthropometry. Report of a WHO Expert Committee. World Health Organization Technical Report Series No. 854. Geneva, Switzerland.
- World Health Organization (1999). Management of Severe Malnutrition: a Manual for Physicians and Other Senior Health Workers. World Health Organization, Geneva, Switzerland.

Suzana Shahar

Dietetic Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda A. Aziz, 50300 Kuala Lumpur