



## The Chinese University of Hong Kong Non-confidential Abstract of Technology Disclosure

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**Title:** Measuring tape for waist circumference

**CUHK Ref. No.:** 06/MED/230

**Inventor(s):** Professor Rita Yn Tz Sung, Department of Paediatrics

**Patent Status:** US Patent Pending

**Non-confidential abstract:**

The prevalence of obesity has increased rapidly in the past two decades in both industrialized and developing countries. For the evaluation and management of obesity, a simple and clear definition of obesity is indispensable. So far, the most widely used definition of obesity is based on Body Mass Index (BMI) [weight/height<sup>2</sup> 9kg/m<sup>2</sup>]. If an adult's BMI is  $\geq 25$ , he/she will be classified as overweight, while a BMI  $\geq 30$  is classified as obese. For children, no simple magic figures can be used. This is because a child's BMI changes substantially with age, rising steeply in infancy, falling during the preschool years and rising again during childhood and adolescence. Hence, a child's BMI needs to be assessed using age-related reference curves or tables.

Obesity is associated with clustering of cardiovascular (CV) risk factors – insulin resistance, dyslipidaemia and hypertension - empirically recognized as the “Metabolic Syndrome”. Metabolic syndrome occurs in obese children and tends to track into adult life. It appears to be related specifically to intra-abdominal fat (visceral adipose tissue) of which waist circumference (WC) provides a good and clinically useful measure; growing evidence has shown that both BMI and WC correlate well with CV factors and some reports have shown that WC has stronger correlation with CV risk than BMI in both children and adults.

We have been conducting research in childhood obesity over the past 10 years and have established reference standards for WC and BMI in Hong Kong Chinese children. We have also confirmed that high WC and BMI levels are associated with clusters of CV risk factors and worked out the cut-off values of WC and BMI for predicting high risk patients. Through our work, we observed the inconvenience for health practitioners to use the cut-off values for WC and BMI in their practice as additional tables or curves are needed to be referred to. We therefore propose to design a measuring tape for waist circumference with clear marks on the cut-off values for each different age (6-18 years). In addition, cut-off values for BMI can be printed on the tape for cross reference. This user friendly tape can also be used by schools or even within the family home for better understanding of the child's fatness. This will save the trouble of painstaking BMI calculations and the use of extra reference tables.

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