

# The development of a smart food container for balanced diet intake

Noreha Abdul Malik, Teddy Surya Gunawan, Siti Noorjannah Ibrahim

International Islamic University Malaysia

## ABSTRACT

**Introduction:** A balanced diet will ensure the body gets the nutrients needed and help it to build a well immune system that prevents diseases and infections. On the contrary, an unbalanced diet can cause the body susceptible to many diseases such as high blood pressure, diabetes and allergies. Besides, someone will easily become obese if the food intake is not balanced, for example excess carbohydrate intake at every meal. Therefore, this project presents a development of a smart food container for balance diet intake that helps to calculate the total calories for each nutrient contained in the meal. **Methods:** The smart food container consists of a food container with three compartments, three load cells, an Arduino microcontroller, a liquid crystal display (LCD) and a keypad. Each compartment is for different food with different nutrients content namely carbohydrate, protein and vegetables/fruits. A load cell is placed under each compartment to measure the weight of the food in gram. The weight measured is sent to the microcontroller to calculate the total calories. Each nutrient is given a specific coefficient to be multiplied with the weight to calculate the calories. The total calories will be displayed on the LCD together with the recommended calorie intake. The recommended calorie intake is based on the gender, age and the type of meal. The user can reduce or add the food to get the best total calories needed for each of meal time. **Results and Discussion:** The total calories and the recommended calorie intake for each nutrient are displayed on the LCD of the smart food container. The total calories calculated can be used as an estimation of calorie intake and is not the real values of calorie intake. This is because when the food is cooked with different recipes, it will have different calories.

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# The reliability and validity of the Malay version of the Perceptions of Stigmatization by Others for Seeking Help (PSOSH-M) among adolescents

Roslaili Khairudin, Nik Daliana Nik Farid, Maslinor Ismail

Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

## ABSTRACT

**Introduction:** The Perceptions of Stigmatizations by Other for Seeking Help (PSOSH) is widely used scale in measuring social stigma, and mostly are conducted in English. The aim of this study was to provide an evidence of the reliability and validity of a Malay version of PSOSH (PSOSH-M) among our adolescents. **Methods:** A total of 353 students aged 18-19 years old from five Community Colleges participated in the study. The Malay version of PSOSH underwent forward and backward translation, face validity, content validity and pre-test process prior to reliability and construct validity. The reliability was determined by test-retest reliability (n=55) over one week interval. Meanwhile, the construct validity was evaluated using confirmatory factor analysis (CFA) (n=298). The data were analysed using Statistical Packages for the Social Sciences (SPSS) version 23 and Analysis of a Moment Structures (AMOS) version 23. **Results:** The instrument demonstrated good internal consistency (Cronbach's alpha=0.84) and test-retest reliability interclass correlation coefficient (ICC) ranged 0.56 (.25, 0.74) to 0.72 (0.51, 0.84) (p<0.01). The confirmatory factor analysis verified the unidimensional factor structure in the original study. The items demonstrated acceptable factor loadings and best fit (Chi-Squared/degree of freedom=1.070; Tucker-Lewis index (TLI) =0.998; comparative fit index (CFI) =0.999; adjusted goodness of fit (AGFI) =0.979; and root mean square error of approximation (RMSEA) =0.015). Composite reliability and average variance was 0.45 and 0.80 respectively. **Discussion:** The Malay version of PSOSH demonstrated valid psychometric properties with good internal consistency in measuring stigma by others for seeking help among our adolescents.