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Body mass index and predicted percent body fat of Yogyakarta and Flores Pygmy populations

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ABSTRACT Body mass index and percent body fat are two parameters used to assess human body composition, which has several advantages for clinical practice, sport, growth, and normal population as well. There are many populations distributed in the wide Indonesian area that have various geographical characteristics. As evidence, plateau environments are inhabited by many populations whose physical and physiological traits are very. This study was aimed to investigate body mass index (BMI) and predicted percent body fat (%BF) between Yogyakarta populations and Flores pygmy population in East Nusa Tenggara Province residing on a similar plateau environment. The present study was done on 105 people (51 males and 54 females) of Samigaluh Kulon Progo (Yogyakarta), 87 people (40 males and 47 females) of Gurnung Kidul (Yogyakarta) and 75 pygmy people of Manggarai, Flores (East Nusa Tenggara). Height and weight were measured in all participants of this study. BMI was calculated from height and weight measurements and %BF was predicted based on BMI value using formula of Garicic et al. (1998). Then, t-Student test, linear regression, and chi-square test were performed to analyze the data. The results indicated that Samigaluh and Gurnung Kidul populations in Yogyakarta have considerably greater average of height and weight compare to Flores Pygmy population. However, differences in BMI and %BF were only significant between Flores Pygmy and Yogyakarta males population. Despite majority of both populations being under normal category, nutritional category based on BMI showed significant difference between Flores Pygmy and Yogyakarta population. In addition, more overweight individuals were also observed in Flores Pygmy. In conclusion, Yogyakarta population was considerably taller and heavier than Flores Pygmy population, however, in terms of %BF and BMI, they were nearly the same lean and body constitution. It is suggested that lower BMI and %BF represented by small body constitution and leanness in populations living on plateau in Yogyakarta and Flores are likely due to significant adaptation to their environment.

Numerous methods are available to assess human body composition, which is one of important indicator of nutritional status and health state (Kupper et al., 1998; Heyward, 2004; Idena et al., 1998; Tanphaichitr et al., 1995; Fürst & Leveling, 1995). Concerning to measurement of body composition in population, anthropometric method is one of the preferable method, which has several advantages (Davies, 2005; Lasker, 2005; Sephardi, 2005; Heyward, 2004; Abernethy, 1996). Commonly used field-applicable method, which is also suitable in clinical practice, is body mass index (BMI). There are several reasons of using BMI as a practical anthropometric parameter to assess nutritional status especially in adults (Tanphaichitr et al., 1995). Firstly, BMI can simply be calculated from height and weight of any adult. Secondly, it has the least possibility of dependency on height. Thirdly, it relates to total body fatness, especially on BMI value more than 20 (Tanphaichitr et al., 1995). Fourthly, it correlates with mortality and some diseases (Allison et al., 2002). Lastly, BMI can be applied as a guideline to therapy in patients with underweight as well as overweight.

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