Relationship of Body Fat Percentage with Hydration Status in Adolescents

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EXTENDED ABSTRACT

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SUMMARY

Adolescents often experience dehydration due to physical activities that require energy and body fluids, and relative lack of fluid consumption. Dehydration is influenced by several factors, one of which is body fat percentage. Total body fluids ± 55-60% of body weight; this proportion is also related to the amount of body fat, gender, and age. The water content in muscle cells is higher than in fat cells. Therefore, the total body fluid in obese people is lower than that in people who are not obese.

Keywords: Adolescent, Hydration, Percent body fat

INTRODUCTION

Adolescents are vulnerable to a decrease in water content (1). Adolescents often experience dehydration due to physical activities that can drain energy and body fluids, causing a relative lack of fluid consumption (2). If there is an imbalance of fluids in the body, dehydration will occur (3). Dehydration has many adverse effects on health. Dehydration can lead to fatigue so that the body becomes weak and the individual loses focus. Dehydration can be caused by several factors, including knowledge, body fat percentage and drinking habits. Total body fluids ± 55-60% of body weight, the percentage is also related to the amount of body fat, gender, and age. The water content in muscle cells is higher than in fat cells. The total body fluid in obese people is lower than that in people who are not obese. In obese people, the ratio of water content to fat is 50%: 50% while in lean people, the ratio is 67%: 7%. In normal people, it is 60%: 16% (4).

MATERIALS AND METHODS

This cross sectional study involved involving 62 adolescents from a junior high school. The instruments used in this study are Bioelectrical Impedance Analysis (BIA) to measure the percent body fat, the FFQ form to determine the respondents' drinking habits and hydration status using the urine specific gravity method based on the urinometer method.

RESULTS AND DISCUSSION

Rank Spearman test results obtained p-value = 0.879 (p-value> 0.05). Statistically, there is no significant relationship between body fat percentage and hydration status. The weak relationship is indicated by the value of r = 0.020 (Fig 1). This is because hydration status can be influenced by other factors such as body temperature and water output.

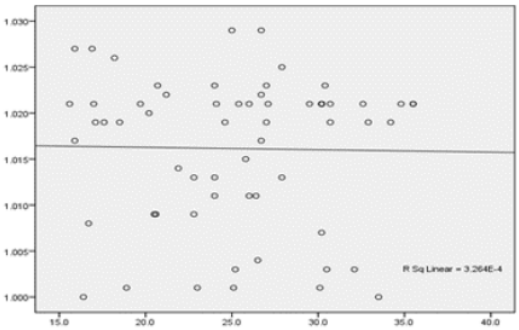

Fig 1: Correlation of body fat percentage and hydration status

In this study, the body fat percentage of 50% of adolescents was included in the fat category. This was due to the lack of physical activities carried out by the adolescents. Lack of physical activities can increase the risk of overweight and obesity, so that the percentage of body fat will increase. In obese people, the body experiences excess fat accumulation compared to non-obese people, because in obese people, the water content in fat cells is lower than the water content in muscle cells so that dehydration is more likely to occur in people whose fat percentage increases (5).

CONCLUSION

Based on the percentage of body fat, 50% of adolescents were included in the fat category and 77.4% of adolescents were dehydrated with an average of 1.0 g/dl + 0.00. Statistically, there is no significant relationship between body fat percentage and hydration status and the strength of the relationship is weak. This may be due to other factors that influence hydration status such as body temperature and water expenditure.

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