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COMMUNICATION III

Energy Expenditure of a Group of Students at Universiti Pertanian Malaysia

Key words: Energy expenditure; students; Universiti Pertanian Malaysia.

ABSTRAK

Penggunaan tenaga oleh 43 orang penuntut di Universiti Pertanian Malaysia dimonitor selama tujuh hari. Purata penggunaan tenaga harian bagi penuntut lelaki adalah lebih tinggi daripada penuntut wanita (2804 kcal lwn 2725 kcal). Selain daripada tidur, kegiatan utama yang dilakukan oleh penuntut-penuntut ialah mentelaah (menulis dan membaca) dan berjalan.

ABSTRACT

The energy expenditure of 42 students of Universiti Pertanian Malaysia was monitored for seven days. The average daily energy expenditure of male students was higher than that of the females (2804 kcal vs 2725 kcal). Other than sleeping, the other major activities the students involved in were studying (writing and reading) and walking.

INTRODUCTION

There has not been much attention given to work on energy expenditure of Malaysians (Tee, 1980). Understandably, the recommended daily allowances for use in Malaysia were formulated without considering the energy expenditure (Chong, 1969; Teoh, 1975). It is the attempt of this communication to present some data on the energy expenditure of a group of students at Universiti Pertanian Malaysia with the hope that this will stimulate interest on this long overlooked aspect of nutrition.

MATERIALS AND METHODS

Forty-three Malay students residing at different residential colleges of Universiti Pertanian Malaysia were selected for this study. They were required to record all of their activities within a 24-hour period for seven continuous days. The energy expenditure was calculated by multiplying the total time spent with the respective cost of energy expenditure of the activity (Durnin and Passmore, 1967). Related activities were grouped after calculating the individual energy expenditure for a more simplified presentation. For this purpose, the energy expended for toilet activity also included those spent on activities such as dressing and shaving. Domestic activity covered those like dusting and sweeping. Activities such as watching television and playing cards were classified under light recreational activity. Heavy recreational activity included games such as squash and football.

RESULTS AND DISCUSSION

The average daily energy expenditure of the group is given in Table 1. The average value obtained on the male subjects (2804 kcal per day) is higher than that of the females (2725 kcal per day). Durnin and Passmore (1967) working on University students in Scotland found the male students expended 2930 kcal per day whilst the female students used up 2290 kcal for their daily activities. Banerjee *et al.* (1961) on the other hand gave a value of 1450 kcal per day for college women in Calcutta.

TABLE 1
Average daily expenditure of the group studied and their biological data

	Male	Female
n	28	15
Age (year)	24.0 ± 3.8	23.9 ± 1.1
Height (cm)	162.30 ± 4.60	153.30 ± 4.55
Weight (kg)	55.30 ± 7.35	45.30 ± 5.50
Energy Expenditure (kcal per day)	2804 ± 374	2725 ± 113

TABLE 2
Average daily energy expenditure of two selected students

Activity	Cost of Energy Expenditure kcal per min	Total time spent min	
		Male[a]	Female[b]
Sleeping	1.13	460 (31.9)[c]	457 (31.7)
Lying at ease	1.37	95 (6.6)	75 (5.2)
Walking	2.60	175 (12.2)	102 (7.1)
Standing	1.75	130 (9.0)	70 (4.9)
Writing (and reading)	1.90	262 (18.2)	452 (31.4)
Eating	1.20	76 (5.3)	50 (3.5)
Toilet activity	2.30 – 3.00	93 (6.5)	77 (5.3)
Domestic activity	1.00 – 5.00	—	62 (4.3)
Light recreational activity	1.15 – 2.50	106 (7.4)	95 (6.6)
Heavy recreational activity	3.50 – 10.10	43 (2.9)	—
Total Energy Expenditure kcal	—	2858	2705

[a]23.6 years old, 169.40 cm tall, weighing 57.65 kg.

[b]22.6 years old, 150.00 cm tall, weighing 46.10 kg.

[c]Number in parenthesis indicates time spent as a percentage of total.

The energy expenditure of the group is higher than the stated daily per capita available energy (2266 kcal) for Malaysia (Ministry of Finance, 1981). Abdul Karim (1984) working on students from Universiti Pertanian Malaysia found that on an average, the male students took 2932 kcal per day whilst the female students consumed 2402 kcal daily. On comparision with this study, consistency between energy intake and energy expenditure is only observed on male students. The discrepancy in the energy balance observed is possibly due to the differences in sampling and the physical state of the subjects studied.

Table 2 shows the energy expenditure of two students with the breakdown of their average daily activity. These students were selected on

the basis of their average energy expenditure values being closest to the group's means. Besides sleeping, the students spent most of their time on their study (writing and reading) and walking. Differences existed in the amount of time spent, on each activity, by the two sexes. The male student spent a considerable time being mobile while the female on the other hand spent a lot of her time on writing and reading.

CONCLUSION

The study is based heavily on the cost of energy expenditure obtained from a Caucasian population. These people have a different body build and lead a different way of life compared to most Malaysians. Values obtained from such a population may only be used until such times when they can be replaced by the cost of energy expenditure obtained from experimental works on Asians, particularly Malaysians. The need for such experimental works is critically important for the accuracy of study on energy expenditure in this country. It is hoped that not only is greater interest generated but more funds are channelled to this aspect of nutrition in the future.

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