USING THE EI/BMR_{est} RATIO TO EXAMINE AND ADJUST POPULATION ENERGY INTAKES

D. MACKERRAS[1], M. THORNE[2], B. FRANKE[3]

A common goal of dietary surveys is to determine both the average and the distribution of intakes of a population. The practicalities of real life limit the amount of information that can be collected in a large population. Memory loss may lead to overall under-reporting of intakes. Including a small number of days from each individual will overestimate the population variance. The investigator needs to evaluate both the observed mean and the observed variance of the results in the absence of a true 'gold standard'.

Goldberg et al. (1991) have proposed that the external validity of dietary surveys can be examined by calculating the EI/BMR ratio - the ratio of the energy intake to the basal metabolic rate. The mean ratio can be compared to the expected value for the population activity level. Adjusting the variance is more problematic because excluding only those individuals with unrealistically low values is illogical if those with unrealistically high values are not excluded as well. However there is no easy way of distinguishing individuals with high intakes due to chance sampling versus high usual activity levels. We propose that, in the situation where the population distribution of energy intakes is desired and the mean intake appears to be correct, the observed EI/BMR distribution can be adjusted by defining the 1st percentile.

A dietary survey of Rongelapese living on Mejatto island was conducted as part of a larger investigation estimating potential exposure to ionising radiation in relation to the criterion value, 100 mrem/year. Thus a food intake distribution based on a 1-year average was required. Volunteers from the community were trained to do 24-hour recalls. Information was collected from 319 islanders, including 53 adult men, and a second recall was collected from 48 adult women. Heights and weights were measured and BMR estimated using the Schofield equations. The EI/BMR distributions were approximately log-normal. The average ratio was 1.4 in women and 1.6 in men which is consistent with a sedentary lifestyle. However the range could not reflect true usual energy intakes, even when only the 2-day average intakes for the adult women were considered (range: 0.72 to 2.3). We decided to set the 1st percentile at 1.0 and so the adjusted 99th percentile was 2.4 in the men and 1.9 in the women which is consistent with a small proportion of the population engaging in heavy-very heavy activity.

Further work is needed to determine whether this approach has more general uses - when it would be preferred to correction using the within/between variance ratio and whether it be can be used to correct the intakes of nutrients as well as energy.

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[1] Dept of Public Health, University of Sydney, NSW 2006; [2] Electrowatt Engineering Services (UK) Ltd, Horsham, UK; [3] Institute for Energy and Environmental Research, Takoma Park, USA and Heidelberg, Germany.

HIGH SUGAR INTAKE IN A GROUP OF WOMEN ON METHADONE MAINTENANCE

D. ZADOR* and P.M. LYONS WALL

Nutritional assessment comprising dietary and anthropometric measurements, was conducted in a group of opioid-dependent women attending a methadone maintenance program in South Western Sydney. Of the 114 female clients enrolled in the clinic, 98 were available to participate. Data was collected over five months during routine medical interviews at the clinic. Mean age of the sample was 29.8 (range 18 - 46) years and mean and body mass index was 22.7 (range 16.2 - 43.4) kg/m^2. Mean methadone dose was 57 (range 10 - 100) mg and the mean number of months on the program was 29.2 (range 2 - 66) months. The majority of the sample (96%) had left school before gaining the Higher School Certificate, more than half (56%) lived in public housing, and 90% obtained Social Security benefits as their official means of support. Dietary data was obtained by two 24 hour recall interviews over weekdays and weekends (14% Sundays, 24% Mondays, 25% Tuesdays, 20% Wednesdays, 17% Thursdays), using a standardised interview format and display of familiar household measures to help visualise and quantify portion sizes. Nutrient intake was analysed using the NUTTAB data base of Australian foods (1992). Of the 98 women who commenced the study, 12 were excluded from the statistical analysis for the following reasons: transfer to another program (n=5), sickness (n=l), repeated failure to keep appointment (n=3), or refusal (n=3). The Table shows intake of energy and macronutrients in the remaining methadone group (n=86) compared to women of similar age in the National Dietary Survey (English et al. 1987).

	MACRONUTRIENT INTAKE[a]		PERCENTAGE OF ENERGY	
	Methadone group	NDS[b]	Methadone group	NDS[b]
Energy (MJ)	6.48 ± 0.23	8.04 ± 0.15	-	-
Protein	53 ± 2	80 ± 2	14%	17%
Fat	60 ± 3	83 ± 2	35%	37%
Carbohydrate	191 ± 7	209 ± 4	48%	42%
sugars	122 ± 5	101 ± 3	30%	20%
starch	69 ± 4	109 ± 2	18%	23%
Dietary fibre	11 ± 1	19 ± 1	-	-
Alcohol	8 ± 3	9 ± 1	3%	3%

[a]mean ± SEM (g); [b] data from National Dietary Survey for Australian women aged 25 - 34 years

The diet of women on methadone maintenance was characterised by low energy intake with a higher percentage derived from sugars, and a low intake of dietary fibre. Sugars were mainly consumed as white table sugar added to beverages or sprinkled over food items, cordial drinks and carbonated soft drinks; cakes, biscuits and ice-creams were also important sources; intake of sugar from fruits was low. This eating pattern may contribute to the high prevalance of dental caries and chronic constipation observed in the group. The results also support anecdotal evidence of a craving for sweetness described by addicts. Despite the low energy intake, body mass indices of the group was no different to the normal population. It is possible that two days intake was insufficient to measure accustomed diet accurately in this group of women. Alternatively the low intake may be a consequence of their largely sedentary lifestyle, or the drug treatment itself may have reduced energy requirements.

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Human Nutrition Unit, Biochemistry Department, University of Sydney NSW 2006
*Drug and Alcohol Unit, Liverpool Hospital, Liverpool NSW 2170