

Original Article

Lack of awareness of public health promotion messages among a group of adult New Zealanders who meet national guidelines for food intake and physical activity

J Hilary Green PhD and Fiona E Boyle P Dip CommNutr

Milk and Health Research Centre, Institute of Food, Nutrition and Human Health, Massey University, Palmerston North, New Zealand

The aim of this study was to assess the awareness of national health promotion messages in a group of self-selected New Zealanders. This study involved 104 self-selected New Zealanders (41 men and 63 women) over the age of 40. Awareness of national health promotion messages was assessed using a mailed out questionnaire, and 69 of these were returned. Basic anthropometric measurements were made (height, weight, hip and waist circumference) and habitual physical activity was defined using a questionnaire. Food intake was estimated by 24-h dietary recall. Overall, this group of people met the New Zealand national guidelines for exercise, physical activity and food intake. There was good awareness of the public health organisations in New Zealand, but only half the people that we sampled had a general idea about the content of the health messages of these organisations. This group of New Zealand adults had a healthy lifestyle that was not associated with a high awareness of public health messages, suggesting that other sources of health information are used.

Key words: exercise, guidelines, health promotion, New Zealand, nutrition.

Introduction

Exercise and diet play an important role in the therapeutic and prophylactic aspects of many serious medical conditions, including cardiovascular disease, osteoporosis and obesity. These issues have previously been the focus of leading articles in the New Zealand Medical Journal.^{1,2} As exercise and diet are modifiable lifestyle factors, the public health promotion messages provide a potentially important contribution to people's health.

In New Zealand, the Sport Fitness and Leisure Act (1987) established the Hillary Commission to help promote and develop sport, fitness and leisure among New Zealanders. In April 1999 the Hillary Commission launched a programme called 'Push Play' to promote 30 min of moderate intensity exercise per day. The campaign is supported by the Heart Foundation of NZ, Local Government NZ, the Health Funding Authority, Agencies for Nutrition Action, YMCA, many local gyms and community groups.

The New Zealand Ministry of Health's Food and Nutrition Guidelines for Adults is based on the report of the Nutrition Taskforce in 1991.³ The recommendations for adults are currently being reviewed and a new document is to be published. The Ministry of Health's Food and Nutrition Guidelines are promoted by a number of other organisations within New Zealand such as the Heart Foundation and the Nutrition Foundation. The nutrition recommendations of the New Zealand Cancer Society are based on the New Zealand Food and Nutrition Guidelines. The Agencies for Nutrition Action New Zealand (ANA) has developed an intersectoral healthy eating and activity plan of action called Nutrition Action New Zealand (NANZ).

The exercise and diet habits of New Zealanders are most recently documented in the 1996/7 New Zealand Health Survey and in the 1997 National Nutrition Survey.^{4,5} The results of these large national surveys are complemented by smaller studies of the exercise and diet habits of middle-aged and older adults that have largely been carried out in or around Auckland and Dunedin.^{6–11} The results of such studies are indicative of the extent to which people's lifestyle reflect the public health messages in New Zealand.

The present study provides an insight to the awareness of national health promotion agencies and their health promotion messages of a highly selected group of New Zealanders over 40 years.

Methods

This study reports the baseline data collected from three dietary intervention studies in people over the age of 40 years conducted at the Milk and Health Research Centre during 1998 and 1999. Ninety people were recruited into these studies through advertisements in the Massey University Newsletter or through local newspapers and radio advertisements. An additional 14 people who did not take part in an intervention study were recruited from Massey University.

Correspondence address: J Hilary Green, Milk and Health Research Centre, Institute of Food, Nutrition and Human Health, Massey University, Private Bag 11222, Palmerston North, New Zealand.

Tel: 06 3506105; Fax: 06 3505446

Email: J.H.Green@massey.ac.nz

Accepted 6 November 2000

Therefore, a total of 104 people (41 men and 63 women) were included in the present study. The individuals were drawn from Palmerston North, Levin, Foxton and Feilding, as well as rural communities within an approximate 50 km radius of Palmerston North. Three people were Maori, but all the other participants were of European origin. The Massey University Human Ethics Committee approved the study.

Bodyweight was measured using a beam balance (Detecto, Cardinal Scale Manufacturing, MO, USA) to the nearest 0.2 kg, standing height was measured using a stadiometer (Institute of Fundamental Sciences, Engineering Services, Massey University, Palmerston North, New Zealand) to the nearest 0.1 cm. Central obesity was assessed by calculating the waist-to-hip ratio from measurements of waist and hip circumference using a non-stretch tape measure, with measurements recorded to the nearest 0.1 cm.

Dietary intake was assessed by 24-h recall. The macro- and micronutrient intakes were derived using the New Zealand Food Composition Table, which were accessed using nutrient analysis software (FOODworks v2; Xyris Software, Highgate Hill, Australia). Underreporting was identified by comparing the reported energy intake with basal metabolic rate calculated by Schofield's equation using measurements of height, weight and age.¹²

Habitual physical activity was assessed in 81 of the 104 people, 44 men and 37 women, using a physical activity questionnaire.¹³ This questionnaire asks subjects about the type, frequency and intensity of exercise that they do.

We assessed the participants' knowledge and awareness of public health messages in New Zealand using a questionnaire, which was mailed out to all the people after they had attended the laboratory. Sixty-nine questionnaires were returned. The questions are shown in Appendix I.

Data are presented as mean \pm standard error of the mean (SEM).

Results

Physical characteristics and food intake

The physical characteristics and food intake of the participants are shown in Tables 1 and 2. They are compared with data from the 1997 New Zealand National Nutrition Survey.

Habitual physical activity

The volunteers spent 1.2 ± 0.2 h/weekday engaged in vigorous activity (for example, digging in the garden, strenuous sports or brisk walking) compared with 1.5 ± 0.2 h/weekend day (*NS*; *t*-test). They spent 4.0 ± 0.3 h/weekday doing moderate intensity activity (for example, housework, golf or bicycling on level ground) and 4.3 ± 0.3 h/weekend day (*NS*). They spent more time involved in light activity (for example, office work, driving a car, standing) on weekdays than they did on weekend days, 5.1 ± 0.3 h/weekday versus 3.9 ± 0.3 h/weekend day ($P < 0.01$). However, they spent a similar amount of time sitting (for example, reading or watching TV) on weekday and weekend days, 5.7 ± 0.3 h/weekday compared with 5.3 ± 0.3 h/weekend day (*NS*). They slept or reclined for less hours/day on typical weekdays, 7.7 ± 0.2 h/weekday compared with 8.4 ± 0.2 h/weekend day ($P < 0.01$).

Most of the subjects thought that they were not doing enough exercise to keep healthy. One-third (33%) of the men

and one-half (54%) of the women thought they should do more exercise. A high percentage of people, 64% of the men and 43% of the women, did not know whether they were doing enough exercise to keep healthy.

Awareness of health promotion messages

Of the eight public health organisations listed, the ones that were best known were the Hillary Commission, Ministry of Health, The Heart Foundation and the Cancer Society. Overall, 96% of the group had heard of these organisations, and 91% of the group had also heard of the YMCA. However, only 42% had heard of the Dietetics Association, 30% had heard of the Nutrition Foundation and 4% had heard of the Agencies for Nutrition Action.

Most people were aware that The Heart Foundation and Cancer Society have health messages, 84% and 66% of the group, respectively. However, only about half the group was aware that the Hillary Commission and the Ministry of Health have health messages, 55% and 49% of the group, respectively. Approximately one-third of the group (36%) were aware that the YMCA has a health message, but there was much less awareness that health messages are promoted by the Dietetics Association (13%), Nutrition Foundation (11%) and Agencies for Nutrition Action (1%).

Overall, the group had very low awareness of what the majority of the organisations' messages were. The Hillary Commission's health message was the most well known, with 17% of the group correctly stating that the Hillary Commission recommends 30 min of moderate exercise per day, on all or most days of the week. However, there was better awareness of the general idea about their messages, rather than the specific message. Around half of the participants have a general idea about the health messages promoted by the Heart Foundation (68% of the group), Cancer Society (59%), the Hillary Commission (49%) and the Ministry of Health (41%). Less than one-quarter of the group had the general idea of the health messages promoted by the YMCA, Dietetics Association, Nutrition Foundation, and Agencies for Nutrition Action.

About half the group were aware of the Pick the Tick (43%), 5 + a day (64%) and about one-third of the group were aware of the Food and Nutrition Guidelines (32%) and the 'Push Play' programme (32%). However, only one-fifth of the group were aware of the Green Prescription or the Fit Food Challenge.

Discussion

These data were collected from people who were self-selected subjects for studies that included an assessment of habitual physical activity and food intake. Therefore, these individuals were not randomly selected and were not recruited to be representative of New Zealanders over 40 years. Indeed, 84 of the people in this study also completed a self-reported assessment of health (data not shown) using the Medical Outcomes Study Short Form 36 (SF36), in which they scored higher than the national norms produced from the New Zealand Health Survey.^{4,14} Therefore, this group of people seems to have been in better general health and this may be associated with better awareness of health issues, than would be typical for their peers. Indeed, the baseline body composition data suggest that, compared with

Table 1. Physical characteristics of participants compared with those in the 1997 New Zealand National Nutrition Survey

| Characteristic | Present study | | 1997 National Nutrition Survey, NZ European and others | |
|----------------------|---------------|-------------|--|-------------|
| | Men | Women | Men | Women |
| Number | 41 | 63 | 572 | 647 |
| Age (years) | 55 ± 1.5 | 54 ± 1 | | |
| Age range | 42–78 | 40–74 | 45–64 | 45–64 |
| BMI | 26.1 ± 0.45 | 25.4 ± 0.57 | 27.6 ± 0.23 | 27.9 ± 0.27 |
| Obese (%) | 5 | 9 | 23 | 27 |
| Waist-to-hip ratio | 0.89 ± 0.01 | 0.77 ± 0.01 | 0.94 | 0.80 |
| W/H ratio excess (%) | 49 | 24 | 74 | 48 |

BMI, body mass index; obese = BMI > 30 kg/m²; W/H ratio, waist-to-hip ratio excess (W/H ratio > 0.9 for men and > 0.8 for women).

Table 2. Daily nutrient intakes of participants compared with those in the 1997 New Zealand National Nutrition Survey

| Nutrient | Present study | | 1997 National Nutrition Survey, NZ European and others | |
|-------------------------|---------------|-------------|--|----------|
| | Men | Women | Men | Women |
| Number | 41 | 63 | 572 | 647 |
| EI/BMR | 1.43 ± 0.06 | 1.46 ± 0.05 | ND | ND |
| Carbohydrate (% energy) | 46 ± 1.2 | 50 ± 1.2 | 43 ± 0.5 | 47 ± 0.4 |
| Protein (% energy) | 19 ± 0.8 | 18 ± 0.7 | 16 ± 0.3 | 17 ± 0.2 |
| Fat, total (% energy) | 33 ± 0.7 | 31 ± 1.2 | 35 ± 0.5 | 35 ± 0.4 |

EI/BMR, energy intake/basal metabolic rate; ND, no data.

the national average, there is a lower incidence of overweight and obesity in this group of people.

Virtually all of the participants that completed the habitual activity questionnaire were meeting the Hillary Commission recommendation of 30 min or more of moderate level activity on all or most days of the week. This compares favourably with the results of the 1996/7 New Zealand Health Survey in which only 61% of a nationally representative sample of people was able to meet these guidelines.⁴ Similar results to those of the 1996/7 New Zealand Health Survey have been reported in smaller studies.^{7,15} In a study of the prevalence of physical inactivity in people over 60 years, it was found that approximately half the participants did not participate in any leisure time physical activity (bowls, walking, exercise class) and 16% did not do any physical activity.⁷ The Auckland Heart and Health Study, which involved men and women aged 65–84 years, showed that half the group engaged in regular moderate leisure time physical activity.¹⁵

Overall, the New Zealanders in the present study met or exceeded the NZ and Australian guidelines for nutrient intakes, despite the high level of underreporting. Therefore, they appear to have a balanced healthy diet. However, there are a number of limitations in using a single 24-h dietary recall to assess habitual food intake, including differences between weekday and weekend food intake, and estimating portion size. There was a high incidence of underreporting food intake in this group. Using a cut-off for energy intake of 1.4 × basal metabolic rate (BMR), we estimate that 46% of men and 46% of women were underreporting energy intake.¹⁶ We did not adjust our data to correct for underreporting so that they could be compared with the results of the 1997 National Nutrition Survey.⁵ The incidence of underreporting is not stated in the 1997 National Nutrition Survey. However, using the mean values for energy intake,

body-weight and height for Europeans in the 45–64 years age group and assuming a mean age of 54.5, then there must have been a high level of underreporting. Using these mean data from the 1997 National Nutrition Survey, the ratio of Energy Intake: BMR is 1.4 for the men and 1.2 for the women.⁵

Overall, the participants were aware of public health organisations, but they had a low awareness of their health messages. There were several comments in the questionnaire from subjects stating that they felt that they did not need to adhere to messages from any organisation, because they already knew what they should be doing to achieve a healthy lifestyle. However, we did not ascertain from where they got this knowledge. In a survey of healthy lifestyle issues for New Zealanders over 60 years of age, it was found that most people thought that doctors were the most important sources of health information, followed by relatives, friends, books and magazines.¹⁷ The group of adult New Zealanders in the present study had a healthy lifestyle that was not associated with a high awareness of public health messages, suggesting that other sources of health information are more readily available to them.

Acknowledgements. We are grateful to Mrs Jillian Richards and Mr Richard Bunning for help with the human testing. This work was funded by NEW ZEALAND MILK.

References

1. Arroll B, Swinburn B. Moving the nation: current approaches to physical activity. *NZ Med J* 1994; 107: 370–371.
2. Parnell WR, Mann J. Food for New Zealanders. *NZ Med J* 1991; 104: 308–309.
3. Food for Health: report of the nutrition task force. Wellington: Department of Health, 1991.
4. Sarfati D, Scott K, Haslett S, Johnston G, Hodges I. Taking the pulse: the 1996/97 New Zealand health survey. Wellington: Ministry of Health, 1999.

5. Arroll B, Beaglehole R, Jackson R, Scragg R. The Auckland diet: results from a seven day food diary. *NZ Med J* 1991; 104: 1–3.

6. Russell DG, Parnell WR, Wilson NC, Faed J, Ferguson E, Herbison P, Horwath C, Nye T, Reid P, Walker R, Wilson B, Tukuitonga C. *NZ Food: NZ People. Key results of the 1997 National Nutrition Survey.* Wellington: Ministry of Health, 1999.

7. Galgali G, Norton R, Campbell AJ. Physical inactivity in New Zealanders aged 60 years and older. *NZ Med J* 1998; 111: 115–117.

8. Paulin JM, McNab IM, Simpson FO, Gillies ME, Spears GFS. What do middle-aged New Zealanders eat? A dietary survey in 50–54 year olds in south Canterbury and north Otago. *NZ Med J* 1988; 101: 159–162.

9. Scragg RS, Jackson R, Beaglehole R, Lay-Yee R. The diet of Auckland men and women aged 25–64 years. *NZ Med J* 1991; 104: 219–222.

10. Harman SK, Parnell WR. The nutritional health of New Zealand vegetarian and non-vegetarian Seventh-day Adventists: selected vitamin, mineral and lipid levels. *NZ Med J* 1998; 111: 91–94.

11. Metcalf PA, Scragg RKR, Tukuitonga CF, Dryson EW. Dietary intakes of middle-aged European, Maori and Pacific Islands people living in New Zealand. *NZ Med J* 1998; 111: 310–313.

12. Schofield WN. Predicting basal metabolic rate, new standards and review of previous work. *Hum Nutr Clin Nutr* 1985; 39: 5–41.

13. Paffenbarger RS Jr, Blair SN, Lee I-M, Hyde RT. Measurement of physical activity to assess health effects in free-living populations. *Med Sci Sports Exerc* 1993; 25: 60–70.

14. Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36) 1. Conceptual Framework Item Selection. *Med Care* 1992; 30: 473–481.

15. Bullen C, Simmons G, Trye P, Lay-Yee R, Bonita R, Jackson R. Cardiovascular disease risk factors in 65–84 year old men and women: results from the Auckland University Heart and Health Study 1993–4. *NZ Med J* 1998; 111: 4–7.

16. Goldberg GR, Black AE, Jebb SA, Cole TJ, Murgatroyd PR, Coward WA, Prentice AM. Critical evaluation of energy intake data using fundamental principles of energy physiology: 1. Derivation of cut-off limits to identify under-recording. *Eur J Clin Nutr* 1991; 45: 569–581.

17. Richmond DE, McCracken HE, Broad J. Older adults and healthy lifestyle issues: results of a community study. *NZ Med J* 1996; 109: 122–125.

Appendix I

Lifestyle Survey

Have you heard of any of the following organisations?

Please place a circle around your answer

- The Hillary Commission;
- The National Heart Foundation;
- The YMCA;
- The Cancer Society;
- The Ministry of Health;
- The NZ Dietetics Association;
- The NZ Nutrition Foundation;
- Agencies for Nutrition Action

Are you aware of any of the following programs/messages that these organisations promote to the public in relation to physical activity and nutrition?

- Pick the Tick;
- Push Play;
- 5 + a day;
- Food and Nutrition guidelines;
- The Green Prescription;
- Fit Food Challenge

Are you aware of any of the health messages that these organisations are promoting in regard to nutrition and physical activity?

For example, what does the Hillary Commission recommend about the amount of exercise we should be doing per day? What does the National Heart Foundation say about what we should be eating each day?

Place a circle around each organisation if you are aware of any health message that these organisations promote and write down their message if you know or have an idea what it is.

The Hillary Commission

The National Heart Foundation

The YMCA

The Cancer Society

The Ministry of Health

The NZ Dietetics Association

The NZ Nutrition Foundation