

A Study of the Diet and Lifestyle of Irish School-Aged Children

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CLINICAL POINTS

Irish children participating in this survey are not achieving the recommended guidelines for a healthy lifestyle and diet.

18% of Irish children achieve RDA intake of 5 a day fruit and vegetables.

46% consume 2 items or less of fruit and vegetables per day.

42% take less than the RDA of 3 a day of dairy products.

93% have confectionary goods (crisps, biscuits, sweets and fizzy drinks) daily.

34% take 3 or more items of confectionary goods daily.

Overall 61% report exercising 5 or more times a week, to a level that they get out of breath or sweat. A gender difference is apparent within this category with 70% of boys exercising 5 times a week and only 47% of girls achieving this amount.

Irish schoolchildren need to lead a healthier lifestyle to prevent future health implications.

Abstract

Motivation/Aim of Study

With rates of childhood obesity increasing worldwide, a study into whether Irish schoolchildren adhere to healthy practices for diet and lifestyle was conducted.

Methods

An extensive literature review was conducted and medical professionals were consulted regarding recommended guidelines for healthy living. Based on the recommended guidelines, a questionnaire was developed which included seven closed questions (four questions relating to diet, two relating to lifestyle and one relating to how these children rate their health). This was circulated to three randomly selected schools in Ireland (one each in Armagh, Dublin and Limerick). 227 children (aged 7-12) were included in the study. Statistical analysis was carried out on the returned surveys (n=227) and the results were compared to those reported in The Irish Health Behaviour in School-aged Children 2006 study.

Results

In the study's target population, it was found that the average child is not achieving the recommended daily allowance (RDA) of fruit and vegetable or dairy consumption and is exceeding the RDA for confectionary foods consumption. While the average boy achieved the RDA for exercise, the average girl did not.

Conclusion

Among the 227 school children surveyed, the majority did not adhere to a healthy diet and lifestyle. The results supported the findings of The Irish Health Behaviour in School-aged Children 2006 study. To avoid future health problems the diet and lifestyle of our nation's children must be improved.

Introduction

In recent years there has been great concern about the increasing rates of obesity among children and adolescents. Obesity is defined by the World Health Organization as a Body Mass Index (BMI) of over 30kg/m². The dramatic increase in body weight affecting all age groups has been declared a global epidemic by the World Health Organization with immense consequences for public health^{1,2}. 18% of schoolchildren in the 25 European Union (EU) Member States are overweight, with the number increasing by more than 400,000 new cases every year³. According to the Health Behaviour in School-aged Children study of 2001, 11% of Irish 15-year-olds are overweight or obese⁴.

There is an undeniable link between lifestyle, diet and weight⁴. This study examines the lifestyle and diet of Irish schoolchildren, and compares its findings to health standards outlined by international guidelines and the expectations of medical professional⁵. A literature review was undertaken to clarify the expected standards for children's diet and lifestyle. From the literature and from the advice of both a dietician and consultant paediatric endocrinologist, the following points were highlighted:

Diet: All hands point to the food pyramid as the best guide for what children should be eating⁵(see Fig. 1).

Physical activity: School-age youth should participate daily in 60 minutes or more of moderate to vigorous physical activity that is developmentally appropriate, enjoyable, and involves a variety of activities⁶.

Sedentary activities (television watching and computer usage): The Irish University Nutrition Alliance (IUNA) study found that both BMI and waist circumference increased proportionately with time spent viewing television⁷.

Poor nutrition and, in particular, calorie over-consumption, especially if combined with a lack of physical exercise and low levels of self-esteem, predispose children to obesity. Obesity predisposes children and adolescents to ill health both later in adult life and also more immediately in adolescence as indicated by the earlier appearance of type 2 diabetes⁸. On the basis of this research, a survey was conducted to establish whether Irish schoolchildren's current living and eating practices are healthy ones.

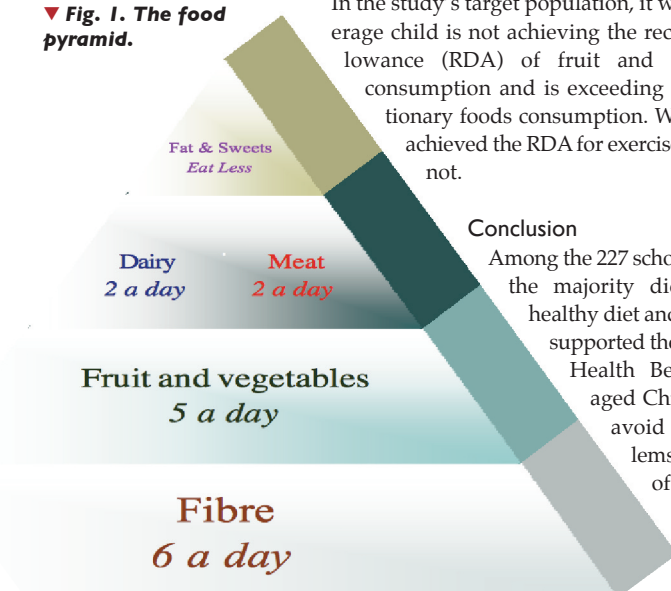
Methods

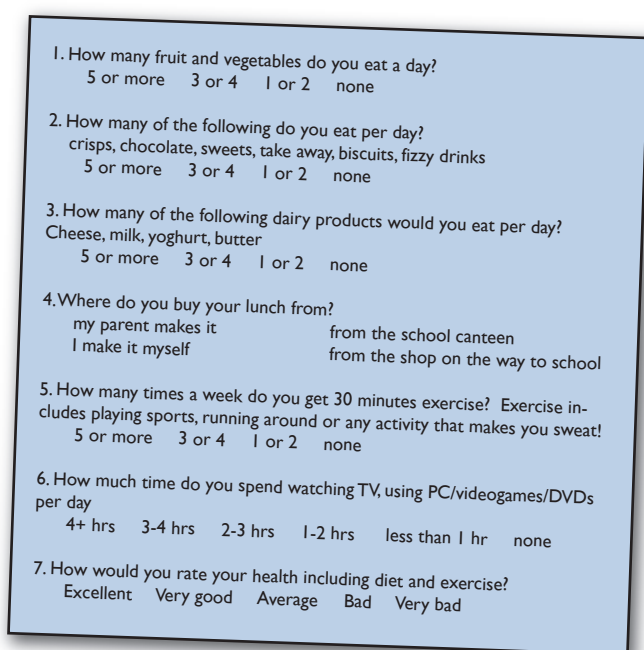
Recruitment of participants

227 children (112 boys and 115 girls) from three first level schools (one each in County Armagh, County Limerick and Dublin City) participated in this study. The schools and the participants from each school were randomly selected in order to minimise socioeconomic bias. Schools were approached by members of the research team, and all three schools were keen to be involved. The inclusion criteria required that the children were (a) aged 7-12 and (b) in full-time education. The surveys were carried out in the children's classrooms with a member of the research team and a teacher present to help answer any of the children's questions. →

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▼ Fig. 1. The food pyramid.





▲ Fig. 2. The survey.

▼ Table 1. Results.

RESULTS

DIET

18% of the children surveyed achieve the RDA intake of 5 servings of fruit and vegetables per day while 46% consume 2 items or less of fruit and vegetables per day (see Fig. 3a).

42% take less than the RDA of 3 servings per day of dairy products (see Fig. 3b).

93% consume confectionary goods every day with 34% taking three or more items of confectionary goods daily (see Fig. 3c).

SCHOOL LUNCH

68% of children had their lunch made at home by their parents while the remaining 32% either bought their own lunch in the school canteen/shop or made it themselves (see Fig. 3d).

EXERCISE

Overall 61% reported exercising 5 or more times a week, to a level that they get out of breath or sweat, as an indicator of vigorous exercise (see Fig. 3a). A gender difference is apparent within this category with 70% of boys exercising 5 times a week as compared to 47% of girls achieving this same level of frequency.

SEDENTARY ACTIVITIES

41% of children reported watching television or being on the computer for more than 2 hours daily while 100% reported spending some time watching television or using the computer daily (see Fig. 3b).

SELF-ASSESSMENT

When asked to rate their lifestyle, 45% of the participants felt they lived a very healthy or excellent lifestyle while 55% rated their lifestyle as average or below average (see Fig. 4).

Assessment of participants

Data regarding the participants' diet and lifestyle were collected via a questionnaire which was developed in accordance with guidelines suggested by the literature reviewed and nutritionists of The National Children's Hospital, Tallaght. Seven closed questions were included in the questionnaire. Three questions were based on diet and investigated whether consumption of fruit and vegetables, dairy and confectionary (crisps, biscuits, sweets and fizzy drinks) complied with RDA. Another question investigated the source the children used to get their lunch (homemade by parents, in the school or made by themselves). Two questions related to lifestyle and the frequency of exercise and sedentary activities in the lives of the participants. A final question relating to how these children rated their health based on these habits was also included (see Fig. 2).

Statistical analysis

The data were compiled and analysed using Microsoft Excel for Windows.

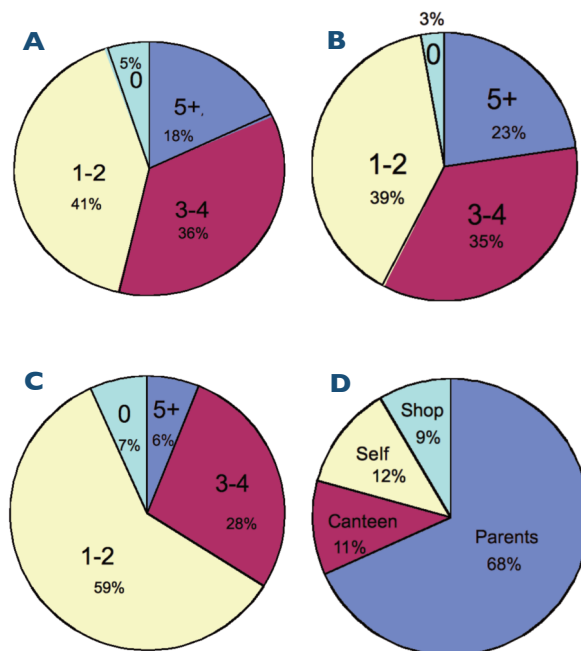
Results

See Table 1.

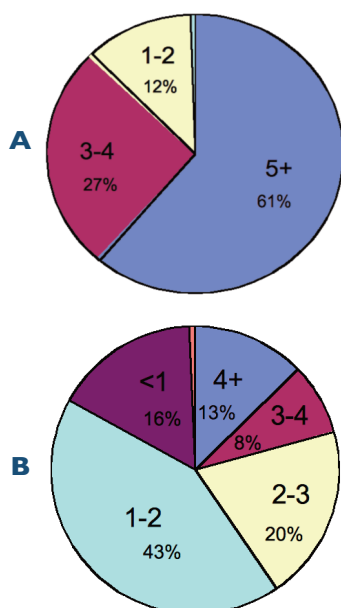
Discussion and conclusion

The diet and lifestyle of the participants were found to be well below the recommended standards for a healthy child. Particularly noteworthy was the low intake of fruit and vegetables alongside the high daily intake of confectionary foods.

Results show that almost 40% of children do not exercise to the level recommended. Although the recommended amount of exercise per day is 60 minutes of moderate to vigorous physical activity, which equates to →



▲ Fig. 3. Diet
% breakdown of number of portions of
(A) Fruit/vegetables
(B) Dairy
(C) Confectionary consumed per day by participants (n=227).
(D) % breakdown of source of lunch used by participants (n=227).



▲ **Fig. 4. Exercise**

(A) % breakdown of exercise frequency (number of 30-minute vigorous exercise periods per week) of participants (n=227).

(B) % breakdown of number of hours engaged in sedentary activities (watching television or using the computer) per day by participants (n=227).

approximately 2.4-3.4 MJ (500-700 kcal) of energy expenditure per day, the survey asked the children whether they exercised 30 minutes per day at an intensity that made them sweat⁶. An alternative measure of physical activity was chosen for two reasons. First, if the intensity of physical activity was vigorous, it would be possible to achieve in 30 minutes the equivalent energy expenditure of 60 minutes worth of moderate activity⁸. Second, it was felt that it would be easier for children to understand the concept of a short period of vigorous activity, measured by sweating, rather than a longer period of moderate activity. Boys were found to be more likely to regularly and consistently exercise (data not shown).

Research has shown that both BMI and waist circumference increase proportionately with television-viewing time⁸. With 41% of children spending two or more hours each day engaged in this sedentary activity, increasing rates of obesity are to be expected.

Given that 68% of children surveyed received packed lunches from home, the child's diet is a reflection of the quality and type of food available in the home. The cost of foodstuff may affect the diet of those children from lower socioeconomic backgrounds. Confectionary products typically cost less and are more readily available than healthy options, a reality that is largely determined by food and agricultural policies and trade practices⁹. The parental awareness of health issues and their relation to diet will also have an impact on the quality of food prepared at home. Higher parental education has been associated with heightened health consciousness in food choices¹⁰. Surprisingly, although the average child was falling below healthy standards, 45% still considered their lifestyle to be very good or excellent. This highlights the need for further education about health issues and a shift in the social norms with acceptance of unhealthy eating.

Possible sources of error include limited population size and accidental misreporting which is inherent in the retrospective data collection method used.

Unhealthy diets and physical inactivity are major contributors to becoming overweight or obese⁹. Obese young people are at greater risk of health problems such as poor glucose tolerance, hyperinsulinemia, type 2 diabetes, hypertension and asthma¹¹. Also, obesity and excessive weight in children and adolescents may interfere with normal psychosocial, emotional and physical development⁹. Furthermore, obesity in young people persists into adulthood to compromise long-term health through its association with morbidity and increased risk of premature mortality from coronary heart disease, arteriosclerosis and certain types of cancer¹¹.

These results are comparable to the "Health Behaviour of School-aged Children" survey⁴. This nationwide study was published by the Health Promotion Research Centre of the National University of Ireland Galway, Department of Health and Children, in conjunction with the World Health Organisation and surveyed 13,000 students aged 8-17 years old. The results of our survey are very similar to those found in this larger study in which they found Irish children to be falling below the recommended standards for both diet and exercise.

Possible solutions to improve diet and lifestyle in children would include school-based interventions such as educating children about healthy eating practices and teaching

them how to prepare healthy meals. Targeting one health aspect at a time allows children to focus their efforts on a single change, changing their lifestyle step by step. In addressing a child's perspective to food and health, branding fruit and vegetables as 'tasty' rather than 'healthy' makes health messages more successful¹².

Some efforts have been made towards this such as the Food Dudes Programme¹³. This programme aims to improve diet in school-aged children using the key elements of:

(1) **Peer-modelling:** Food Dudes are fictional peers who promote fruit and vegetables

(2) **Rewards and school support**

A study of this model demonstrated that it increased fruit consumption from 21% to 73% of RDA and vegetable consumption from 24% to 69%¹⁴. This programme is now being introduced nationwide in primary schools.

An interesting approach to future research in this area would be to conduct a cohort study into adulthood, correlating medical problems in adult life to diet and lifestyle in childhood. Comparing socioeconomic class with dietary and lifestyle practices would also be of interest. This study clearly shows Irish schoolchildren are not adhering to a healthy lifestyle and diet. To avoid an obesity crisis, changes must be made on a national scale.

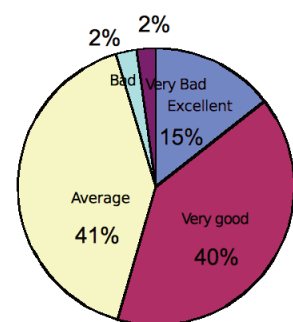
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References

1. World Health Organization. *Obesity: Preventing and managing the global epidemic*. WHO/NUT/98.1. Geneva: Report of a WHO consultation on obesity; 1998.
2. World Health Organization. *Global Strategy on Diet, Physical Activity and Health*. Geneva: WHO Strategy; 2004.
3. Lobstein T, Baur LA. Policies to prevent childhood obesity in the European Union. *Eur J Public Health*. 2005; 15(6):576-579.
4. Currie C, Roberts C, Morgan A, Smith R, Settertobulte W, Samdal O, editors. *Young people's health in context: Health Behaviour in School-aged Children (HBSC) study: international report from the 2001/2002 survey*. Health Policy for Children and Adolescents, No. 4. Copenhagen: WHO; 2004.
5. U.S. Department of Health and Human Services and U.S. Department of Agriculture. *Dietary Guidelines for Americans*. 6th ed. Washington, DC: U.S. Government Printing Office; 2005.
6. Strong WB, Malina RM, Blimkie CJK, Daniels SR, Dishman RK, Gutin B, et al. Evidence based physical activity for school-age youth. *J Pediatr*. 2005; 146(6):732-737.
7. McCarthy SN, Gibney MJ, Flynn A, Livingstone MBE. Overweight, obesity and physical activity levels in Irish adults: evidence from the North/South Ireland Food Consumption Survey. *Proceedings of the Nutrition Society*. 2002; 61:3-7.
8. Department of Health and Children. *Obesity - The Policy Challenges: The Report of the National Taskforce on Obesity*. Ireland: 2005.
9. Mathieson A, Koller T. Addressing the socioeconomic determinants of healthy eating habits and physical activity levels among adolescents. WHO/HBSC Forum: World Health Organization; 2006.
10. North K, Emmett P. Multivariate analysis of diet among three-year-old children and associations with socio-demographic characteristics. *Eur J Clin Nutr*. 2000; 54(1):73-80.
11. Reilly JJ. Descriptive epidemiology and health consequences of childhood obesity. *Best Pract Res Clin Endocrinol Metab*. 2005; 19(3):327-341.
12. Shepherd J, Harden A, Rees R, Brunton G, Garcia J, Oliver S, et al. *Young People and Healthy Eating: A systematic review of research on barriers and facilitators*. London: EPPi-Centre, Social Science Research Unit, Institute of Education, University of London; 2001.
13. Horne PJ, Hardman CA, Lowe CF, Tapper K, Le Noury J, Madden P, et al. Increasing parental provision and children's consumption of lunchbox fruit and vegetables in Ireland: the Food Dudes intervention. *Eur J Clin Nutr*. 2008; Epub ahead of print. doi:10.1038/ejcn.2008.34
14. BMJ Health Intelligence. *Food Dude Healthy Eating Programme [document on the Internet]*. 2007. Available from: <http://healthintelligence.bmj.com/>.



▲ **Fig. 5. Self-assessment**

% breakdown of self-rating of lifestyle and diet by participants (n=227).