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Symposium on 'Nutritional assessment and surveillance: implications for food policy 3. Nutritional surveillance: its contribution to food policy'

Nutrition surveillance in Ireland

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The present nutrition surveillance mechanism for the Republic of Ireland was re-established at the Department of Health Promotion, University College, Galway, in 1992. There is an advisory Board to oversee the running of the National Nutrition Surveillance Centre (NNSC), with external membership from the Health Promotion Unit and the Food Unit of the Department of Health, the sponsors of the NNSC. The centre is required by the sponsoring department to provide an independent source of information and advice. A major 5-year report (National Nutrition Surveillance Centre, 1993) and an annual report are produced (National Nutrition Surveillance Centre, 1994).

It is intended to divide the present paper into five parts. First, we will discuss the concepts and principles underlying surveillance and delineate how we have interpreted these in establishing a surveillance centre for this country. We will then deal with four separate categories of information used to make inferences about diet and health. These include: (a) indicators of health status, (b) information on food production, retail and supply, (c) information on actual food consumption, (d) social and personal influences on dietary behaviours.

CONCEPTS OF NUTRITION SURVEILLANCE

While there are many potential definitions for nutrition surveillance, the one produced by the joint World Health Organization/United Nations International Children's Emergency Fund Expert Committee seems most appropriate (World Health Organization, 1976). This states that a nutrition surveillance system analyses the occurrence in a population of dietary-mediated nutritional conditions, with the objective of describing the current situation, detecting trends, forecasting changes, highlighting priorities, and targeting corrective and preventive measures. There are, therefore, three basic functions for a nutrition surveillance system: (a) to provide relevant information in an accessible form at short notice to those who require it, (b) to monitor trends in health status related to food production, supply and consumption for the use of health service planners, (c) to provide a

source of information and research expertise, particularly in epidemiological or surveillance methodology, to those wishing to mount specific projects or surveys. Contingent factors for a good nutrition surveillance system are appropriate information sources across the various sectors associated with the food chain and also the methodological capacity to make accurate predictions based on these findings. Both of these provide difficulties, which we hope to address further.

The model for surveillance currently employed evolved from the Third World experience where short-term, often catastrophic, events directly influenced food supply and, hence, the health status of dependent populations. It is not difficult to appreciate how famine or drought in an extreme climatic environment might quickly de-stabilize a young, developing country population. In all areas of public health and not just in nutrition-related disease, these principles have come to be applied to the lifestyle factors associated with chronic non-infectious diseases. The rise of modern epidemiology in the post-war period has facilitated investigation of the role of diet in the aetiology of the major diseases of public health importance, cardiovascular diseases and cancers.

Critical to surveillance, however, is access to the right kind of information and the capacity to collate and standardize that information. It is primarily based on the use of routinely-collected or easily-generated data from several sectors who might not normally communicate or pool their resources.

The present meeting is concerned with the contribution of nutrition surveillance information to national food and nutrition policy. In 1994 the Irish Government published *Shaping a Healthier Future* (Department of Health, 1994), a policy document which sets out a strategic framework for health service delivery over the next 5 years. That document emphasized the need to measure services according to outcomes, defining these in a general way under the terms health gain and social gain. It also emphasized the burden of morbidity and mortality related to cardiovascular diseases and cancers and stressed that what might be preventable or avoidable should be addressed by appropriately-directed health policies. In so far as adverse lifestyles contribute to these conditions then health education and appropriate environmental support measures should be put in place. The critical need for information against which to measure the success or failure of health targets is implicit in this. Subsequently in July 1995 a further document was launched related specifically to the health promotion targets (Department of Health, 1995) and we are already aware that the Nutrition Advisory Group appointed by the Minister for Health in 1991 has produced a report on the intended Government Food and Nutrition Policy. The Food Safety Advisory Board has now been appointed by the Minister for Health and a Nutrition Sub-committee established.

HEALTH STATUS

There is an extensive range of diet-related diseases but the most important in quantitative terms are cardiovascular diseases, including CHD and stroke, which accounted for 48% of all deaths in 1993, and diet-related cancers such as those of breast, colon, rectum and stomach. Standardized death rates, which take account of the differing age distributions of populations, indicate that Ireland is in the top band for IHD with a rate of 299 per 100 000 population (National Nutrition Surveillance Centre, 1993). Although rates of cardiovascular disease are declining in all European Union (EU) countries, the decline in Ireland

Table 1. *Food consumption intakes (g per capita per d) from National Nutrition Surveys of 1948 and 1990 (National Nutrition Surveillance Centre, 1993)*

	1948	1990
Milk	569	426
Eggs	43	24
Cheese	3·3	6·1
Meat	125	153
Fish	14	15
Potatoes	549	225
Vegetables	125	59
Jams	18	9

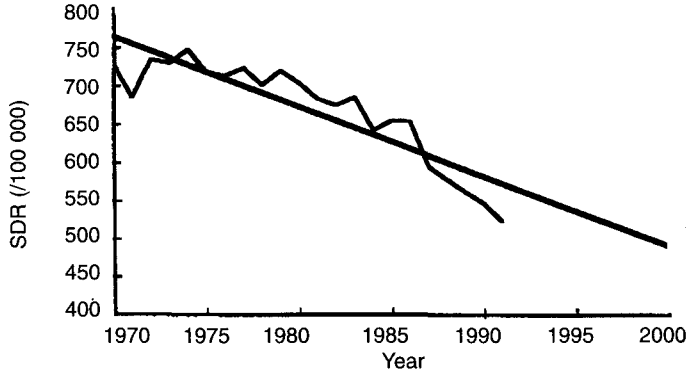

Fig. 1. Time series of mortality from diseases of the circulatory system in Irish men of all ages. Standardized death rates (SDR) per 100 000 are plotted.

has been less steep, appreciable falls only registered in the last 2 years (World Health Organization, 1993). Conversely, standardized death rates for breast cancer have been escalating steadily for the last 20 years, now reaching 39 per 100 000 population. Cancer of the colon is common in both women and men, and for women death rates are the highest in Europe at 12·9 per 100 000. Conversely cancer of the stomach has been declining steadily over the last 40 years; recorded as 38·8 per 100 000 in 1960, as compared with 16·2 per 100 000 in 1982.

Morbidity indicators, particularly incidence (that is new cases), are difficult to accurately acquire. One source of information is the Hospital In Patient Inquiry Scheme (HIPE). However, this records episodes of admission and not individual case records. There are likely to be many factors affecting such hospitalization trends, particularly patterns of admission and referral, but the trends do show increased admission rates, particularly for older people (National Nutrition Surveillance Centre, 1994). We would like to be able to predict how these morbidity and mortality trends may continue in the next 5–10 years and to what extent these trends are influenced by diet. The simplest method of prediction is to plot a regression model with time. On this basis we can assume that breast cancer will continue to rise in women and CHD to decline in men (see Figs. 1 and 2). However, we also have to take account of cohort effects; that is, whether the rates are peculiar to that generation of people for any number of possible reasons and so are not specifically related to

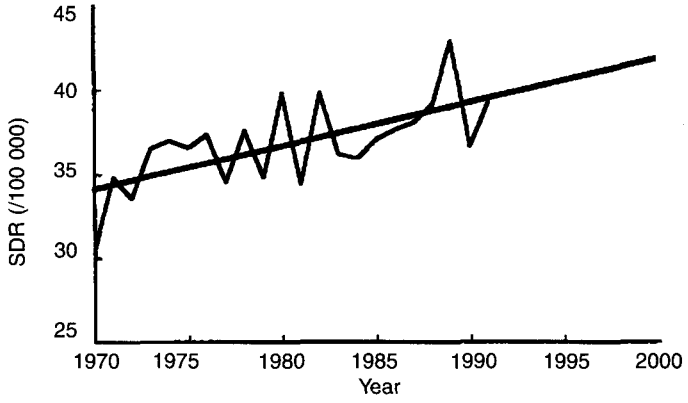

Fig. 2. Time series of mortality from breast cancer in Irish women of all ages. Standardized death rates (SDR) per 100 000 are plotted.

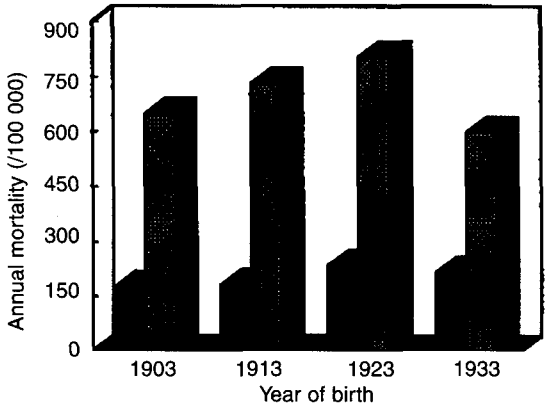

Fig. 3. A cohort display of mortality from diseases of the circulatory system in Irish males, 1948–88. Age-specific mortality rates per 100 000 males per year are plotted separately for each birth cohort. (■), Age 45 years; (■), age 55 years.

chronological age in itself. The variations by generation in just two major chronic diseases are seen in Figs. 3 and 4. Each individual is the product of a cumulative life experience that is unique. We need to take account of intra-individual dietary changes over a lifetime and also between-individual differences according to class or grouping that may vary, as, for instance, with socio-economic status. Finally, account must be taken of other lifestyle variables. A mathematical model that best expresses the inter-relationship of these factors must then be devised and applied to actuarial data. It is not surprising, therefore, how difficult it is to make predictions about diet-related disease.

In our first report (National Nutrition Surveillance Centre, 1993) we documented this problem in the case of CHD. We were able to dispute the common fallacies that our relative and absolute fat intakes have remained constant with time, by showing in fact profound changes in these factors over the course of the last century (National Nutrition Surveillance Centre, 1993). The rise in CHD in this century is consistent with changes in dietary prac-

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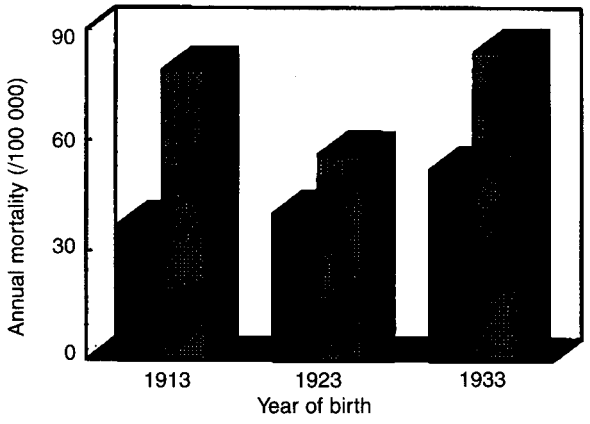

Fig. 4. A cohort display of mortality from breast cancer in Irish females, 1958–88. Age-specific mortality rates per 100 000 females per year are plotted separately for each birth cohort. (■), Age 45 years; (■), age 55 years.

tices which led to an increased fat intake (Table 1). On the other hand, we also highlighted the fact that the so-called 'traditional rural diet' should not be regarded as the only contributor to our current patterns of fat intake, since much fat is consumed through other sources (Fig. 5). Finally, it is clear that risk-factor status cannot be expected to correlate precisely with dietary fat intake since patterns of exercise, smoking status and other elements, also, have been changing in the same time period.

FOOD PRODUCTION, RETAIL AND SUPPLY

The Irish economy is relatively dependent on agriculture compared with other European countries. Although there has continued to be a decline in rural-based farmers, we still have 14% employed in agriculture, the highest in the EU (Department of the Taoiseach, 1989) and also a high proportion of our service industry associated with food processing. The food industry accounts for 21% of total manufacturing industry. Of all employed people, 16% work in the agri-sector and 4% in the food and drinks industry. Accordingly, these are important contributors to our economy. There has been apparent tension, also, between the health lobbyists and the agri-industry, highlighted in the media. However, this is not a simple matter, as illustrated previously. Other important industries include fishing, where the catch has increased considerably in the last 5 years. The total annual catch in 1989 was 188 000 tonnes, but by 1994 it was 250 000 tonnes, a 33% increase according to Bord lascaigh Mara (National Nutrition Surveillance Centre, 1993). We have also seen profound changes in retailing in the last 40 years, with the disappearance of the traditional grocer and the emergence of supermarket multiples. These changes have led to spontaneous changes in dietary patterns, some desired by health lobbyists and some not. We continue to be the lowest fruit and vegetable consumers in Europe (Nutriscan, 1993) but have been steadily increasing our consumption since 1960 (National Nutrition Surveillance Centre, 1993) and also our fish consumption has increased to 8·5 kg per person in 1994. The capacity to maintain and deliver fresh foods has, therefore, much improved over time, with many developments being seen in the food-processing industry. On the other hand, the sources of saturated fat have come 'hidden' in foods like confectionery rather than the traditional diet

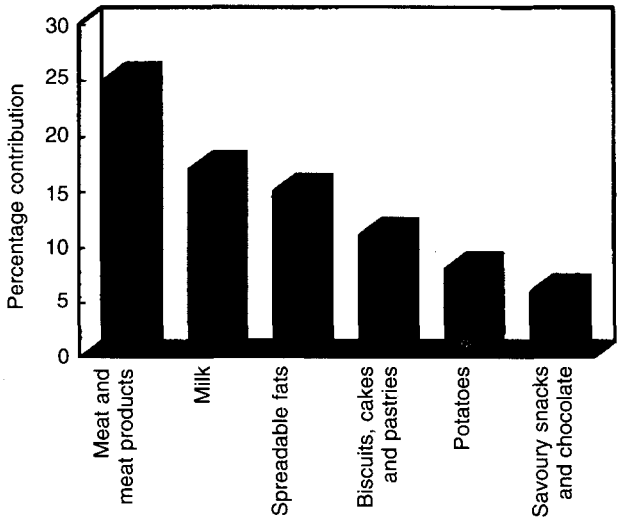

Fig. 5. Major sources of fat in the Irish diet based on the National Nutrition Survey, 1990 (Irish Nutrition and Dietetic Institute, 1990).

(Irish Nutrition and Dietetic Institute, 1990) and butter consumption has plummeted, although much butter is still produced due to the requirements of the EU Common Agricultural Policy. To meet market demand, the industry has responded with the rise in production of alternative spreads. These changes are the product of free-market forces and do not result from a concerted command-economy intervention on health grounds. Advocates of food policy changes on public health grounds should at least realize that changes are both possible and feasible if market-led and consumer-supported.

FOOD CONSUMPTION

The Food Pyramid concept is one of balance, advocating increased relative consumption of fibre, carbohydrates and starch, particularly fruit and vegetables, and a relative reduction in fat. What are we in fact consuming? There are two main sources of such information. First we can estimate item consumption as in the Household Budget Surveys or food data sheets. These give crude balance estimates but are useful for showing trends over time, or between population groups. Ireland is now participating in a trans-European study coordinated by Professor Trichopoulou of the National School of Public Health, Greece, which aims to harmonize these databases between countries and, thus, serve as a form of surveillance. Second, of course, are dietary and nutrient surveys. This is the heart of nutrition surveillance, since such information must be available in order to allow us to relate it to the other information being recorded. Our last representative national survey was published in 1990 of data collected in the previous year (Irish Nutrition and Dietetic Institute, 1990). It is, therefore, already 6 years old. While nationally representative, it was also an unweighted survey with minimal power in epidemiological terms to detect differences across subgroups. That survey provided much-needed nutritional information. It demonstrated a wide range in average fat consumption, but with high intakes for young men. It demonstrated higher fat intakes and less consumption of starch staples like potatoes in urban people as

Table 2. *Respondent frequency of consumption of selected food items in four dietary studies: Kilkenny Health Project (1992) at baseline (pre) and follow-up (post), the National Happy Heart Survey (Irish Heart Foundation, 1994) and Health Works, the West of Ireland Workplace Survey (Fleming* et al. *1995)*

Survey	Chicken: > twice per week (%)	Fried food: rarely or never (%)	All fish	White fish: rarely or never (%)	Oily fish
Kilkenny (pre)	11	7·9	31	24*	85*
Kilkenny (post)	28	42	22	25*	71*
Happy Heart	42	46	25	NA	NA
Health Works	44	13	NA	16	51

NA, not applicable.
* Food frequency sub-sample analysis.

compared with rural people. The report was particularly concerned about Fe intake in younger women. There is an urgent need now to repeat this survey, preferably in association with other lifestyle information, such that the interaction between these variables may be directly and satisfactorily accounted for. Only with this kind of information can we make the precise predictions of future health status discussed earlier.

We do have evidence from smaller-scale surveys of changes in dietary habit occurring with time. Regional surveys were conducted as part of the Kilkenny Health Project, a community intervention programme primarily intended to combat CHD, which included a dietary estimate at baseline in the mid 1980s and at follow-up (Kilkenny Health Project, 1992). Subsequently the Irish Heart Foundation sponsored a national lifestyle survey which included food consumption information (Irish Heart Foundation, 1994). Finally, as part of a 3-year health promotion intervention programme in the workplace we conducted a survey (Health Works) in University College, Galway, of 2500 people, including a range of workers and university students (Fleming *et al.* 1995). As an example, all four surveys recorded fish consumption (Table 2). In our Workplace Survey, we also differentiated between white and oily fish. Over 5 years there was a 10% increase in rates of consumption in the Kilkenny region so that 22% of that population now report that they rarely eat fish. This correlates well with a general population rate of 25% who said they rarely consume fish, as found in the Happy Heart Survey (Irish Heart Foundation, 1994). In the case of the workplace group about 51% reported that they rarely consumed oily fish. All such rates, of course, fall grossly below recommended intakes for prevention of CHD. Fried food consumption has also changed between Kilkenny data (Kilkenny Health Project, 1992) at baseline and at follow-up (Table 2). In the mid 1980s 7·9% reported that they rarely or never ate fried food. That percentage had risen to 42% at follow-up, a rise of about 34% and the Happy Heart Survey (Irish Heart Foundation, 1994) showed similar rates, at 46%. However, these findings are quite different in a specific environment like the workplace or in an institution where canteen fried food is highly accessible (Fleming *et al.* 1995). Here, the rate of consumers rarely eating fried food drops to 13%, reflecting the influence of the setting on eating habits. There were also social-class differences in reported dietary behaviours, so that, for instance, less poultry, fish, fruit and vegetables were consumed by those in lower socio-economic groups and students generally (Fleming *et al.* 1995). Our current nutrition database is inadequate, therefore, and what evidence we have

suggests trends are changing fairly rapidly with so-called beneficial effects occurring relatively more swiftly among the affluent.

SOCIAL AND PERSONAL INFLUENCES ON DIET

Finally what about the food preferences of the individual? Our contention thus far has been that many of the influences on diet are outside the control of the individual. These essentially market forces have been responsible for major changes in the last 50 years, of which we now have to take account in predicting health status into the next century. Dietary recommendations and guidelines are at best estimates of what we should be eating based on biomedical knowledge of already-documented health effects. We have already heard at the present meeting that recommendations may not be achievable without profound changes in the organization of the food chain, and we have documented some of these effects not instigated by health policy considerations at all. Health promotion is a process of enabling the individual to increase control over his or her health (World Health Organization, 1984). In making food choices, individuals may be more health conscious than previously, but there are also many other motivations at play that need to be accounted for in planning health-promotion campaigns about diet. There may be, for instance, practical barriers or constraints. Our Workplace Survey (Fleming *et al.* 1995) found women to be more knowledgeable than men, although both were equally interested in acquiring information. Food preferences of other family members was a constraint for all women except those who were young and single. Motivation and intention to change was less likely in the young and in those of lower socio-economic groups (Fleming *et al.* 1995). What one eats is an important statement of identity. For instance, non-meat eaters in both the Happy Heart Survey (Irish Heart Foundation, 1994) and the Workplace Survey (Fleming *et al.* 1995) now represent 4% of the population. The reasons for this are complex, but the profile that emerges in our survey (Fleming *et al.* 1995) is of a young woman undergoing third level education who is actually significantly more likely to smoke than not. This suggests selectivity in health-related behaviours, or motivation not related to health at all, and also fits in with the modern profile of the fashion-conscious young woman who is also more likely to smoke (O'Connor & Kelleher, 1995). Similar findings to our own were documented also by Kearney & Gibney (1994).

SUMMARY

In summary then we can say that diet in Ireland is changing continuously, that the patterns as documented in diet are consistent with the epidemiological patterns of the major chronic diseases, although predictions for the future will be complex because of both positive and negative changes in diet behaviours. The major influences on diet relate to changes in the food chain, which have been enormous in 100 years; at consumer level, health concerns appear to be one of many considerations in food choices. We need a more consistent, comprehensive database in order to make meaningful inferences about diet and health. Furthermore, to be really useful such databases should include both quantitative and qualitative information.

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