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Public Health aspects of nutritional science in Estonia: Status, research activities, and perspectives

Ernährungswissenschaftliche Aspekte des Gesundheitswesens in Estland: Status, Forschungsaktivitäten und Perspektiven

Summary At the beginning of the 1990s Estonia was characterized by remarkable social and economic changes that also affected nutrition. An important step in the development of a Food and Nutrition policy was the adoption of a new 'Food Law' in February 1995. The publication of dietary recommendations followed recently.

Scientific activities in Estonia are promoted by the 1993

established 'Estonian Society of Nutrition Researchers' (ESNS). The 'Ministry of Social Affairs' is of great importance for coordination of research into nutrition and it is making a great effort to connect Estonian nutrition research activities to European and international programs.

An important field of scientific interest is concentrated on the nutrition of children and elderly people. With support of the 'Ministry of Social Affairs' a national health program for children and teenagers was established in which a school lunch project is integrated. Such a project has the aim to improve the quality of school lunches and to enable school teachers to conduct nutritional education. Within this national health program 1 900 schoolchildren were interviewed. This examination will also help to detect inequalities of the nutritional situation between social groups and to identify specific aims for a nutritional program in the different counties of Estonia. Health promoting units at schools will play an important role in realizing these aims.

The nutritional supply and status of older persons will become an increasing problem. A survey of food supply with 429 subjects in social care facilities for older people was used to develop a new menu-planning system which meets

the nutritional recommendations.

Nutritional epidemiology is concentrated at the 'Department of Epidemiology and Biostatistics' of the 'Institute of Experimental and Clinical Medicine' in Tallinn. This department is also running the cancer registry of Estonia which has international reputation.

Nutritional research of Estonia should aim to continue with the development of a new Food and Nutrition Policy. Important areas of activities will be concentrated on the training of young scientists, development of a food and nutrient data base, regular national nutrition and health surveys, and etiological-epidemiological studies on the basis of the Estonian Cancer Registry.

The main targets of the 'Estonian Society of Nutrition Researchers' are directed to improve the scientific basis for research into nutrition and health.

Zusammenfassung Estland ist zu Beginn der 90er Jahre durch bemerkenswerte soziale und ökonomische Veränderungen geprägt, die sich auch auf die Ernährung auswirkten. Die Lebensmittel- und Ernährungspolitik in Estland machte im Februar 1995 durch die Annahme eines neuen Lebensmittelgesetzes einen wichtigen Schritt vorwärts. Ebenso wurden jüngst Empfehlungen für die Nährstoffzufuhr publiziert.

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Wissenschaftliche Aktivitäten im Ernährungsbereich werden durch die 1993 gegründete 'Estnische Gesellschaft für Ernährungswissenschaftler' (ESNS) gefördert. Ebenso hat das 'Ministerium für Soziale Angelegenheiten' eine wichtige Rolle bei der Koordinierung der Ernährungsforschung inne und unternimmt Anstrengungen, um die estnische Ernährungsforschung an europäische und internationale Programme heranzuführen.

Ein wichtiger Bereich des wissenschaftlichen Interesses ist der Ernährung von Kindern und älteren Menschen gewidmet. Mit Unterstützung des 'Ministerium für Soziale Angelegenheiten' wurde ein nationales Gesundheitsprogramm für Kinder und Jugendliche etabliert, in das ein Schulesenprojekt integriert ist. Ein solches Projekt hat die Aufgabe, die Qualität des Schulesens zu verbessern und die Lehrer in die Lage zu versetzen, Ernährungserziehung in den Schulen durchzuführen. Im Rahmen dieses nationalen Gesundheitsprogramms wurden 1 900 Schulkinder

befragt. Diese Untersuchung soll helfen, Ungleichheiten in der Ernährungslage von sozialen Gruppen zu erkennen und die spezifischen Ziele eines Ernährungsprogramms in den verschiedenen Bezirken Estlands zu identifizieren. Eine wichtige Rolle werden dabei die an Schulen eingerichteten Gesundheitsförderungseinheiten spielen.

Die Lebensmittelversorgung älterer Menschen und deren Ernährungsstatus stellen zukünftig ein wichtiges Problem dar. Eine Untersuchung der Lebensmittelversorgung von 429 Personen in Sozial-einrichtungen für ältere Personen wurde genutzt, um zu einem neuen Planungssystem zu gelangen, das die Ernährungsrichtlinien einhält.

Die Ernährungsepidemiologie konzentriert sich auf die Abteilung Epidemiologie und Biostatistik des 'Instituts für Experimentelle und Klinische Medizin' in Tallinn. Diese Abteilung verwaltet auch das Krebsregister Estlands, das internationale Reputation besitzt.

Die Ernährungsforschung in Estland sollte darauf ausgerichtet sein, die Ernährungspolitik weiter zu entwickeln. Wesentliche Felder der Aktivität beziehen sich auf Ausbildung junger Wissenschaftler, eine Datenbasis für Lebensmittel und Nährwerte, regelmäßige nationale Ernährungserhebungen und ätiologische epidemiologische Studien auf der Basis des estnischen Krebsregisters.

Es wird die Aufgabe der 'Estnischen Gesellschaft für Ernährungsforscher' sein, die Basis für die wissenschaftliche Untersuchung von Ernährung und Gesundheit zu verbessern.

Key words Food and nutrition policy – Estonia – nutritional situation – public health – nutritional science

Schlüsselwörter

Ernährungspolitik – Estland – Ernährungssituation – Gesundheitswissenschaften – Ernährungswissenschaft

Introduction

Health data indicate that the Baltic countries such as Estonia (Fig. 1) have the features of both industrialized and developing countries. The rates of cardiovascular diseases (Table 1) and cancer are steadily increasing while the rates of infectious including food borne diseases, and infant mortality remain relatively high. In Estonia, infant mortality fluctuated in 1990–1994 between 12–15 cases per 1 000 births, which is twice as high as in the Nordic countries.

The early 1990s in the countries of the previous east block in central and east Europe have been characterized by remarkable social and economic changes. This changes did not only affect the economy but also dietary habits (11). During these years dramatic changes have taken place in relation to the food supply, including:

- foodstuffs have become relatively expensive,
- the assortment, particularly that of imported food items, has grown explosively, and
- the 'Laws on Consumer Protection and Food' have been adopted and the 'Consumer Protection and Food Departments' have been established.



Fig. 1 Estonia is the northernmost of the three Baltic countries (Estonia, Latvia, and Lithuania) and is bordered by the Gulf of Finland in the north, Russia in the east, and Latvia to the south.

Table 1 Mortality rates of cardiovascular diseases in Estonia during past years (age group 35–64, per 100 000 inhabitants)

Year	1991	1992	1993
Men	604.2	636.5	706.9
Women	186.4	207.2	213.8

Source (3)

Given these changes, is there a role of Public Health Policy in the field of nutrition? We describe which actual steps were undertaken in Estonia in the area of nutrition research during recent years to address public health problems. In particular, describing the current status may serve as an example for the increasing awareness of the need of a concise and consistent nutrition policy not only in the Eastern Europe but also in the West European countries (5).

Food and Nutrition Policy

An important step in the development of Food and Nutrition Policy in Estonia was the adoption of the new Food Law in February 1995. This food law consists of documents defining the requirements covering the entire food chain, which includes raw material, food processing, and distribution, and of emphasizing food safety and consumer protection. Soon after the adoption of the Food Law, Estonian Nutrition Recommendations were published (2). Other areas of federal activities are following the lines given in the "White Paper" of the EU for Eastern European countries and the Baltic states. This "White Paper" describes the recommended steps and activities in the above mentioned countries for the harmonization process and adoption of laws to be associated with EU directives. Regulation of food labeling in Estonia is already harmonized and gives also guidelines for nutri-

tional facts appearing on food labels. Such nutrition information, however, is still not compulsory for every food item sold because of the time lag between adoption of the guidelines and implementation.

Health related nutrition research activities are concentrated on various institutions. An overview over important institutes or other authorities are given in Table 2. These institutions collaborate in the framework of the ESNS (Estonian Society of Nutrition Researchers). ESNS was founded in 1993 to coordinate research activities in the field of nutrition and health under special conditions of a transitional society. In October 1995, ESNS was elected as a member of the Federation of European Nutrition Societies.

The Ministry of Social Affairs plays an important role in nutrition research coordination because it is making serious attempts to involve Estonian nutrition research groups into different European and global nutrition programs of the Estonian population. Two national surveys will provide the data for describing the nutritional situation. At first, a National Health Behavior Survey of about 4 700 subjects will evaluate the nutritional status of in relation to their health in Estonia. This National Health Behavior Survey is using a food frequency method and has about 2 000 adult respondents all over Estonia. This survey was started in 1992 and is repeated every second year. The first results were published in March 1998. Secondly, a National Food Consumption Survey in the 3 Baltic Countries has been started in 1997. The EU

Table 2 Estonian authorities and institutions involved into nutritional research activities

Name	Address	Contact person	Phone/Fa	E-mail
Ministry of Social Affairs	Gonsiori 29, EE0010, Tallinn	Ms. Sirje Vaask, Principal Specialist on Nutrition	+372 6 269739	sirje@fsl.sm.ee
Estonian Society of Nutrition Researchers	Kalevi 4, EE Tartu	Dr. Mai Maser, President of ESNS	+372 7 441239	step@kodu.ee
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Institute of Clinical and Experimental Medicine	Hiiu 42, EE0016, Tallinn	Prof. Mati Rahu, Head of the Department of Epidemiology and Biostatistics	+372 2 514394/ +372 6 706814 (fax)	rahum@ekmi.online.ee
University of Tartu, Children's Hospital	Lunini 6 EE2400 Tartu	Dr. Heli Grünberg	+372 7 433648	
Institute of Cardiology	Lembitu 12, EE0001, Tallinn	Dr. Merileid Saava, Head of the Nutrition Research Department	+372 2 583879	

government, through WHO, has generously offered to support the Baltic states in this initiative in order to collect information on eating patterns, food security, and attitudes towards food.

Nutritional status of children

Nutritional research activities of scientific institutes in the mid 1990s emphasized the two most vulnerable groups: children and elderly people. Few years ago medical doctors, nurses, biochemists, and food technologists became involved in the promotion of breast feeding in the framework of International Baby Food Action Network (IBFAN). The statistical data about milk substitutes and its use in Estonia have been collected and forwarded to the IBFAN center for analysis. A particular Baby Food Regulation in Estonia was underway in 1997.

Also several years ago a long-term study of health and nutrition of pregnant women and newborn children was organized by the Department of Anthropology, Tartu University (PI Prof. H. Kaarma). UNICEF, Estonian Section, has had a coordinating role in the development of programs aimed at improving the nutritional status of mothers and children.

Both the University of Tartu and the Tallinn Technical University have started projects to evaluate the nutritional status of children in nurseries and small children at home. The latter institution cooperates with researchers from the Tufts University, USA. There is a model worked out for further menu planning in nurseries to guarantee required nutrient intake for children on the basis of collected data from Rapla County (9).

In October, 1991, the Conference "Nutrition and Health" was held in Tallinn, in which a report on comparative school children's diet was given. This report covered schools in Tallinn (Estonia), Orenburg and Moscow (Russia). Besides very low energy consumption by schoolboys in Tallinn (1 790 kcal), the carbohydrate intake by the school children was below the recommended level, fatty acids intake was unbalanced, and intake of saturated fatty acids was above the recommended level (10).

Unfortunately, there were no regularly conducted nutrition surveys of school children in Estonia. From autumn 1993 until spring 1995 a research group from the University of Tartu carried out a cross-sectional study of school children focusing on dietary habits and food consumption accompanied with anthropological measurements. This nutrition survey covered the southern part of Estonia, mainly rural regions (4). It was found that per example a warm school lunch service was regularly attended by only 50 % of school children.

Due to the activity and support of the Ministry of Social Affairs a School Lunch Program was founded in March, 1995. In 1996, a National Health Program for Children and Teenagers was started with the School

Lunch Project as a part of it. It is aimed at enhancing the quality of meals served in schools and to prepare specific methodical material (a textbook with 250 colored overheads) for teachers to facilitate the nutrition and health education in the schools. In particular, the features of the School Lunch Project within the National Health Program for Children and Teenagers are expected to be as follows:

- provision of school lunches which provide 25–35 % of the RDA on a daily basis and takes food preferences of children into account,
- families with more children are receiving lunches free or at reduced prices,
- implementation of new types of food preparation and healthy food such as whole grain products, fresh salads, juice, yoghurt, etc.,
- training of the personnel in healthy cooking, and provision of better cooking and serving facilities,
- school purchases should concentrate on local food producers.

In the framework of above mentioned National Health Program more than 1 900 school children from the 7th and 12th grade (about 10 % of the whole contingent in Estonian schools) have been interviewed. The information may provide better information on specific differences in nutrition between children by different social and economic levels. This is supposed to further help explaining inequalities and identify the target areas for nutrition education in different counties in Estonia. The upcoming topics are the continuous health promotion through informal and formal curricula and new teaching methodologies for health education. Health promoting units will play a particular role in the community, as it was declared in Halkidiki, at the First European Conference of the Health Promoting Schools in May, 1997 (1). There are now about 13 health promoting schools in Estonia providing not only school children but also their families, neighbors, and friends with objective research based knowledge on various aspects of nutrition and health interactions.

During the last two years over 50 schools have been evaluated with the aim to introduce new 40-days menus (8). These menus are considered to provide 35 % of the daily energy intake. This intervention reduced the daily fluctuation in nutrient intake and resulted in much more well-balanced average energy and nutrient intake (Table 3). The new values are now in accordance with the actual recommendations for school lunches.

Nutritional status of the elderly

The nutritional status of the elderly is becoming more and more important due to an increasing size of this population and improved longevity. In recent years, for the elderly in Estonia, there was an urgent need to analyze and reorganize the daily nutrition in the social care

Table 3 Food consumption before and after implementation of new 40 day school lunch menus

	Old menus	New menus	Recommendations
Food energy	758.5 kcal	780.5 kcal	
Proteins	28.8 g (13.8 %)	25.9 g (13.5 %)	10–15 %
Fat	28.7 g (34.4 %)	27.0 g (31.5 %)	30–32 %
Carbohydrates	96.8 g (51.9 %)	105.8 g (55.1 %)	52–60 %
Dietary fiber	9.8 g	11.2 g	

Source (8)

facilities for the elderly people in Estonia. The purpose of a first study was to evaluate nutrient intake of the elderly using daily menus provided by the facilities (5 weeks) and the collection of data about additional food eaten in addition to the institutional catering system. 429 persons from 3 institutions with different financial situations were investigated (13). Nutritional data were analyzed by the modified computerized Micro Nutrica program (6, 7) which comprises 800 meals and 700 foods. The food composition table supplies information on 66 nutrients. Depending on the results the daily menus were modified to ensure the nutrients given according by the Estonian Nutrition Recommendations (2).

To solve the problem of inadequate nutrient supply to elder institutionalized persons, it was recommended to implement the new menu planning system throughout Estonia. The new menu planning will take into account that subjects do not eat all the food served either because of food preference or lack of appetite, various illnesses or multiple drug use. In order to succeed with the new menu planning the food habits and preferences of the elderly have to be respected. In addition, Mini Nutritional Assessment (MNA) questionnaires should be used to evaluate the nutritional status of elderly living in communities (13).

Nutritional epidemiological research

Nutritional epidemiological research in Estonia is performed at the Department of Epidemiology and Biostatistics, Institute of Experimental and Clinical Medicine. This Department has a wide range of research programs mainly based on the Estonian Cancer Registry, which has achieved international recognition. The Estonian Cancer Registry was founded on January 16, 1978. It has core documentation and satisfactory incidence data since 1968. The Registry covers all of Estonia, and every case is followed until death by routinely collected information. Recently, a statistical compendium was published (12).

Future

Nutritional research perspectives are aimed to provide a basis for the continuing development of a Food and

Nutrition Policy in Estonia in the near future and can be formulated as follows:

- training of young scientists in the field of nutrition and public health (nowadays the only possibility used for getting high qualification is in cooperation with University of Kuopio, Finland),
- preparation of the Estonian Food and Nutrition Database which enables comparative nutritional investigations (data from the 1970s and 1980s are also available in a digital form),
- regular national nutrition and health surveys,
- epidemiological etiological studies on the basis of the Estonian Cancer Registry in cooperation with food scientists from Tallinn Technical University administrated by the Department of Epidemiology and Biostatistics (the first input was done by the Institute of Experimental and Clinical Medicine in terms of enforcing computerized nutritional research by using the Finnish Micro Nutrica Database).

The main targets of the Estonian Society of Nutrition Researchers (ESNS) could be divided into five categories of activities: a) evaluation of nutritional status and health, b) measurement of food and nutrient consumption, c) determination of food supply and distribution, d) assessment of dietary knowledge and attitudes by means of nutritional education, and e) development of a food composition and nutrient databases. The role of the ESNS is also to facilitate representation and publication of research data made in different institutions and to provide the government with objective data of the health situation and nutritional status in Estonia. Annual meetings together with the Finnish Society of Nutrition are getting traditional. "Food and Nutrition" issued by the Department of Food Processing, Tallinn Technical University will become an annual report on research activities in Nutritional Science in Estonia.

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