SUCCESSFUL REGIONAL HARMONISATION IN FOOD AND NUTRITION DATA COLLECTION AND ANALYSIS FOR EVIDENCE BASED NUTRITION POLICY IN SERBIA AND WESTERN BALKANS

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Top Risk factor for Global Burden of Diseases*

The recommendation # 58 ICN 2 Framework for Action (FfA) urge countries to improve and harmonize the monitoring and evaluation of nutrition data.

Collection of the dietary intake data are essential for evidence-based policy making in the areas of leveraging the potential of nutrition-sensitive agriculture and food systems for healthy diets and in close link with Decade of Action in Nutrition.

WHO European Food and Nutrition Action Plan 2015–2020 – Objective 4-

• Support surveillance, monitoring, evaluation and research

Key messages from the FAO/WHO Regional Symposium on Sustainable Food Systems for Healthy Diets in Europe and Central Asia, Budapest, Hungary, 4-5 December 2017 http://www.fao.org/europe/events/detail-events/en/c/1034293/

• Governments should take action to ensure that adequate capacities of national statistical services are developed for the monitoring of SDG indicators and to strengthen data collection and analysis for evidence-based policy, including food consumption and nutrition data, surveillance of child growth and nutritional status of the population, food composition data of commonly available local foods, data on food contaminants.
Accurate dietary intake assessment at individual and population level, dietary surveys and nutrition surveillance systems requires harmonized methodology and validated nutritional tools.

Research infrastructure (RI) and Capacity Development (CD) are prerequisite for harmonized public health nutrition (PHN) research and nutrition epidemiology (NE).

In CEE/Balkan countries absence of RI and CD in PHN&NE were identified, particularly Food Composition Data Bases (FCDB), database management, dietary assessment tools and lack of standardized dietary intake data.

Institute for Medical Research (IMR), Serbia & CAPNUTRA through several EU projects (EuroFIR & EuroFIR–Nexus, EURRECA, CHANCE, EFSA projects) and FAOREU worked on development of food and health RI and CD in Europe and CEE/Balkan countries.

Specific focus was on the development of harmonized food composition database (FCDB) and dietary assessment tools and their multilateral linkages, following European standards and recommendations.

Dietary exposure assessment elements

Harmonized and standardized food consumption data collection from national dietary surveys at individual level are an essential element for the exposure assessment to the different nutritional and food safety hazards, which is an integral part of the risk assessment process carried out at EFSA (Regulation (EC) N° 178/2002) using EFSA Comprehensive European Food Consumption Database.

Precise description of the food

Food composition

Exposure assessment

Occurrence of hazardous agent in food

Food composition databases are required to support food and nutrient intake, and exposure assessment.
CAPACITY DEVELOPMENT IN FOOD CONSUMPTION RESEARCH INFRASTRUCTURE IN SERBIA AND BALKAN REGION

- 1st Online Serbian FCDB
  - Developed during EuroFIR project 2006-2010 implementing EU CEN standards
  - Food Composition Data Management (FCDM) web application developed according to EuroFIR Technical Annex for FCDB creation, LanguaL coding, EFSA FoodEx2, Recipes, Multilingual
  - Serbian FCDB 1046 foods and 130 traditional/common Serbian composite dishes

-Serbian FCDB in EFSA project
  - In 2012-IMR became a partner in EFSA project: “Updated food composition database for nutrient intake”

-Balkan Food platform developed during EuroFIR-Nexus project 2011-2013

Updated and adapted FCDM web application with EFSA codes (FoodEx2)


Gurinović, M., et al., Establishment and advances in the online Serbian food and recipe data base harmonized with EuroFIR™ standards. Food Chemistry., 2016

DIET ASSESS & PLAN (DAP)

Capacity Development in Nutrition Research in Balkans in last decade initiated creation of contemporary, harmonized Research Infrastructure (RI) compliant to European standards. One of the fundamentals of this RI is an innovative tool, Diet Assess & Plan:

A platform for standardized and harmonized food consumption collection, comprehensive dietary intake assessment and nutrition planning

DAP platform consists of the following:
DAP web software, Food Composition Data Base Management (FCDM) web application, Serbian FCDB, Balkan food platform with Regional FCDB & link to EuroFIR 30 FCDBs and nutrient recommendation datasets

DAP has been created according to EuroFIR guidelines (Becker et al., 2008) in Microsoft VisualFoxPro and relies on two types of database: MySQL database for FCDB and local Microsoft VisualFoxPro database engine.

DAP, as a web tool for dietary intake assessment, is based on electronic versions of standard food consumption questionnaires - 24-h dietary recalls (24HDR), Food Frequency Questionnaire (FFQ), Food Records (FR) and Food Propensity Questionnaire (FPQ),

Using entered data and external datasets: food composition database(s) and nutrient recommendation datasets DAP enables comprehensive calculation and extensive assessment of dietary intake on individual and/or population levels

DAP enables planning daily menu and/or long-term diet, design of foods/formulation, food labelling, and assessing nutrient intake adequacy according to selected nutrient recommendations

Furthermore, It supports food procurement and diet planning in the public sector settings


Integration of these coding systems in DAP structure enables food matching process on the level of foods and recipes, and subsequently on dietary questionnaires.
Currently running in: EFSA project-Support to National Dietary Surveys in Compliance with the EU Menu methodology (sixth support): “The adults’ survey”, including subjects from 10 to 74 years old, 2017-2021 (Serbia, Bosnia and Herzegovina and Montenegro) and “The children’s survey”, including subjects from three months up to 9 years old, 2017-2021 (Serbia and ‘Former Yugoslav Republic of Macedonia’ (FYROM).

Challenges identified in the CEEC/B region and lack of standardized dietary intake data needs further attention in order to improve health outcomes.

Considering identified gaps in nutritional tools, lack of surveys and comparable dietary intake data implementation of DAP as user-friendly system could harmonize nutritional surveys in Balkan countries.

DAP is already validated and applied in the region and represents important RI for nutrition epidemiology, public health nutrition research, nutrition education and CD in the Balkans region.
DIET ASSESS & PLAN (DAP) platform

- The DAP software has been recently evaluated in EFSA Ring Trial, which took place within the project that aimed to identify and evaluate available data collection protocols and tools for capturing food consumption information for risk assessment purposes in Europe.

- DAP’s concept and structure make it a reliable infrastructure to perform harmonized nutritional epidemiology studies on population level.

- Furthermore, DAP has option for personalized nutritional counselling with possibility for longitudinal monitoring and various prediction studies.

DIET ASSESS & PLAN (DAP) publications

Improving nutrition surveillance and public health research in Central and Eastern Europe/Balkan Countries using the Balkan Food Platform and dietary tools

Gurinović Mirjana a,b, Milešević Jelena a,b, Novaković Romana a,b, Kadvan Agnes a,b, Djekić-Ivanković Marija a,b, Satalić Zvonimir b,c, Korošec Mojca b,c, Spiroški Igor b,c, Ranić Marija a,b, Dupoux Eleonora d, Oshaug Arne d,e, Finglas Paul d,e, Gilibetti Maria d,e

Development, features and application of DIET ASSESS & PLAN (DAP) software in supporting public health nutrition research in Central Eastern European Countries (CEEC)

Mirjana Gurinović a,b,c, Jelena Milešević a,b,c, Agnes Kadvan d,e, Marina Nikolić a,b, Milica Zeković a,b, Marija Djekić-Ivanković a,b, Eleonora Dupoux b, Paul Finglas b, Maria Gilibetti a,b,c

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Nutrients

Validity of the Food Frequency Questionnaire Assessing the Folate Intake in Women of Reproductive Age Living in a Country without Food Fortification: Application of the Method of Triads

Milica Zeković a,b,c, Marija Djekić-Ivanković a,b,c, Marina Nikolić a,b, Mirjana Gurinović a,b, Dasa Krajnović a,b,c and Marija Gilibetti a,b,c

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Validity of an FFQ assessing the vitamin D intake of young Serbian women living in a region without food fortification: the method of triads

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**DIET ASSESS & PLAN IN NUTRITIONAL RESEARCH AND CAPACITY DEVELOPMENT IN CEE/BALKAN**

- Capacity Development Network in Nutrition in Central and Eastern Europe-CAPNUTRA
- **FolOmega:** „Intake, status and biological action of folate and PUFA: Improvement of Nutrition in Serbia“ (No. III 41030 ), National project of Ministry of Science Republic of Serbia (2011-2018)
- **Bilateral project with Slovenia: TRADIFA** “Fatty acids profile and trans fatty acids content in traditional food in food composition databases for healthier dietary choices of population” 2014-2015
- **BACCHUS- FP7:** “ Beneficial effects of dietary bioactive peptides and polyphenols on cardiovascular health in humans (BACCHUS )” 2012-2016
- **CHANCE- FP7:** ”Low Cost technologies and traditional ingredients for the production of Affordable, Nutritionally correct, Convenient foods enhancing health in population groups at risk of poverty” 2011-2014
- **EFSA projects:** Support to National Dietary Surveys in Compliance with the EU Menu methodology "The children's survey", including subjects from three months up to 9 years old, 2017-2021
  - Support to National Dietary Surveys in Compliance with the EU Menu methodology-"The adults' survey", including subjects from 10 to 74 years old. 2017-2021
  - ”Dietary monitoring tools for risk assessment “, 2014
  - “Updated food composition database for nutrient intake” 2012
- **Bilateral project with Croatia:** “Folate status in populations at risk: young adult women of reproductive age and elderly” 2011-2013
- **YUSAD national study:** (National study of precursors of atherosclerosis in schoolchildren and adult members), NUTQ - Version1 of DIETASSESS program
Support to National Dietary Surveys in Compliance with the EU Menu methodology (sixth support)
- A platform for successful regional cooperation

- Harmonized methodology developed in compliance with EU Menu guidance
- Unique platform for food consumption data collection
- Regional capacity development i.e. transfer of knowledge and technical expertise
- Continual and synchronized update of Regional FCDB
  - Standard terminology – FoodEX2
National dietary surveys at an individual level are already carried out in many European countries and provide valuable information for use in national policy decisions and are important in monitoring dietary habits, in nutrition surveillance and in conducting dietary exposure assessments.

However, data obtained at a national level cannot be merged for pan-European exposure assessments due to the variety of methodologies applied across different countries.

The availability of harmonised and detailed food consumption data at European level has been widely recognised as essential in order to improve the consistency and reliability of exposure assessments carried out by EFSA Panels on the European level.

Therefore, EFSA has created guidance on methodological principles to follow and protocols to be used for individual dietary surveys within a pan-European context, in order to obtain a more harmonised food consumption database.
2009

- EFSA published guidance on “General principles for the collection of national food consumption data in the view of a pan-European dietary survey”
- Pan-European food consumption survey “What’s on the Menu in Europe? (EU Menu)” was launched

Two feasibility pilot projects were delivered producing protocols for more harmonized food consumption data (PANCAKE and PILOT-PANEU projects), as well as two methodological pilot projects (“Food Consumption Data Collection Methodology for the EU Menu Survey” (EMP-PANEU) and Dietary Tools projects) to define and test corresponding high-quality computer-assisted data collection methods and processes.

2014

- In order to facilitate the collection of more harmonized food consumption data from all EU Member States by the year 2020 updated “Guidance on EU Menu methodology” was published

Support to National Dietary Surveys in Compliance with the EU Menu methodology
Main objective

• Provision of high-quality dietary intake data that can be used to perform exposure assessments of food-borne hazards and nutrient intake estimations in the remit of EFSA’s scientific committee and scientific panels

Preparatory stage

• Sampling strategy (stratification based on age, sex and geographical region)
• Recruitment plan
• Quality control plan
• Data management plan
• Training of the interviewers

Essential tools

Dietary software tool

Food Composition Database

Survey pack - Questionnaires
EFSA project - Support to National Dietary Surveys in Compliance with the EU Menu methodology (sixth support)-DAP implementation

“The adults’ survey”, including subjects from 10 to 74 years old, 2017-2021
(Serbia, Bosnia and Herzegovina and Montenegro)

“The children’s survey”, including subjects from three months up to 9 years old, 2017-2021
(Serbia and FYROM)
Informed consent form

General questionnaire

24h dietary recalls / Diet records

• Two non-consecutive days for each person *at least one week apart
• In the case of children aged 3 months to 9 years, the food diary method is used for data collection, accompanied by two face-to-face visits
• In the case of adolescents and adults aged 10 to 74 years, 24-hour recall is used for data collection – first interview is always performed face to face, while the second interview may be carried out via a telephone interview if a face-to-face encounter is not feasible
• To obtain best estimates on quantities consumed for different foods portion-size picture book is used

Age appropriate Food propensity questionnaire (FPQ)

• Short selected list of age-appropriate foods and dietary supplements
• Frequency data is planned to be used as a covariate to model the estimation of usual intake

The International Physical Activity Questionnaire (IPAQ) – short version
DAP platform represents important research infrastructure for nutrition epidemiology and public health nutrition research and consists of:

- DAP web application,
- Food Composition Data Base Management (FCDM) web application,
- Serbian food composition data base (FCDB)
- Balkan food platform with Regional FCDB
- Nutrient recommendation datasets

**DIET ASSESS & PLAN (DAP)**
advanced nutritional software-based tool for food consumption data collection, comprehensive dietary intake assessment and nutrition planning

**EFSA project - Support to National Dietary Surveys in Compliance with the EU Menu methodology (sixth support)-DAP implementation**

Food consumption data collection and processing
Databases incorporated in the DAP software tool are:
- facet descriptors,
- portion sizes,
- standard recipes
- yield factors

In order to retrieve food composition information on foods consumed and/or recipes entered, DAP communicates with Serbian/Regional FCDB, with food items coded using European Food Safety Authority (EFSA) FoodEx2 coding system.

Databases will be updated after the pilot study and during the main survey regularly so that new foods, recipes and other information reported by the study subjects can be added.

In order to assure high level of control and standardization and to facilitate updating, modifications to the country-specific files will be centralized and performed by experts in nutrition.

EFSA project - Support to National Dietary Surveys in Compliance with the EU Menu methodology (sixth support)-DAP implementation
Conclusion

- DAP is a relevant element of RI for strengthening surveillance, monitoring, evaluation and research in the PHN field.

- It is a successful example of standardized and harmonized tool for dietary assessment surveys and present successful regional harmonisation in food and nutrition data collection and analysis for evidence based nutrition policy in Serbia and Western Balkans.

- Its features make it concurrent tool for large nutrition epidemiology studies not only in CEEC but in wider geographical context and present one of New Technologies for Dietary Intake Assessment.
6th Meeting of the UNU/SCN Network for Capacity Development in Nutrition in Central and Eastern Europe (NCDNCEE), Belgrade, 25th-26th May, 2011
(32 participants from 15 CEE countries)

The agenda of the meeting is available at website: http://www.agrowebcee.net/ncdn/ and Photo gallery at website: http://www.agrowebcee.net/ncdn/photo-gallery/photo-gallery-2011/.

Video film is available at: You Tube: http://www.youtube.com/watch?v=OGAaVs3po-c.
Food Composition Data Base (FCDB) Development through NCDNCEE activities 2006-2011 and future activities: partnership with EuroFIR NoE & EuroFIR AISBL- Belgrade 26 May 2011

Workshop: Regional Food Composition Data Base: Web based Food Comp Data Management (FCDM) software application in BalkanFood Platform development
Memorandum of Understanding (MoU) was signed with 11 CEE and Balkan countries, forming Balkan food platform with Regional FCDB harmonized with EuroFIR using FCDM web tool for integration to EuroFIR Platform.

Cooperation in food composition in the Balkan Countries and with EuroFIR Food Data Platform

Croatia (2 institutions); Cyprus; FB&H ; Republic of Macedonia; Moldova ; Montenegro; Russia; Slovenia, Ukraine & EuroFIR AISBL, Serbia-IMR, CAPNUTRA
CAPNUTRA symposium, Capacity development in dietary intake survey - harmonisation with EU Menu methodology regional training for DIET ASSESS & PLAN (DAP) application and implementation in West Balkan countries (WBC) 11-12th September 2017 Belgrade, Serbia
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• EuroFIR NoE (FP6) - European Food Information Resource Network (www.eurofir.net)
• EURRECA (FP6) - Harmonising nutrient recommendations across Europe with special focus on vulnerable groups and consumer understanding, (www.eurreca.org)
• EuroFIR Nexus (FP7) - EuroFIR Food Platform: Further integration, refinement and exploitation for its long-term self-sustainability (www.eurofir.org)
• FAOREU - FAO Regional Office for Europe and Central Asia, Budapest, Hungary
• EFSA projects - “Updated food composition database for nutrient intake” & Dietary monitoring tools for risk assessment”, Support to National Dietary Surveys in Compliance with the EU Menu methodology "The children's survey", including subjects from three months up to 9 years old, 2017-2021, Support to National Dietary Surveys in Compliance with the EU Menu methodology - "The adults' survey", including subjects from 10 to 74 years old, 2017-2021
• CHANCE (FP7) - Low Cost technologies and traditional ingredients for the production of Affordable, Nutritionally correct, Convenient foods enhancing hEalth in population groups at risk of poverty (www.chancefood.eu)
• ODIN (FP7) - Food-based solutions for Optimal vitamin D Nutrition and health through the life cycle (www.odin-vitd.eu)
• FOLOMEGA - Biological mechanism, dietary intake and status of polyunsaturated fatty acids and folate: Nutrition improvement in Serbia, III41030 http://srbnutrition.info/english/folomega/
• CAPNUTRA - Capacity Development Network in Nutrition in Central and Eastern Europe - www.capnutra.org
Thank you for your attention!

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