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FOOD SECURITY IN NEW EUROPEAN UNION MEMBER STATES – A SYSTEMATIC LITERATURE REVIEW APPROACH¹

Key words: food security, systematic review, PRISMA, food availability,
new member states

ABSTRACT. Although Europe is not associated with the problem of food security, in some countries it may occur at a household level. There is not much research on this problem, especially in New EU Member States. Therefore, the aim of the article was to conduct a systematic literature review on food security in New EU Member States and answer the question of what picture of food security emerges from reviewed articles and whether the issue of food security in New EU Member States has been sufficiently researched. Following the PRISMA (preferred reporting items for systematic reviews and meta-analyses) methodology, we have identified 58 scientific articles in the Web of Science database devoted to this problem. Results of the review suggest that food security in New EU Member States is mainly analysed at a national level and with the use of secondary data. At a household level, it has not been sufficiently studied and existing research is insufficient and inadequately disseminated.

INTRODUCTION

Food security is a situation in which all people have constant physical, social and economic access to enough safe and nutritious food, meeting their needs and food preferences, thus enabling them to lead an active and healthy life [FAO 2003]. Food security is broadly understood through its four dimensions: physical availability (food availability), economic availability (food access), quality of nutrition (food utility) and the long-term stability of these three dimensions. Food security can also be analysed at different levels. The physical availability of food refers most often to a global or national

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level, the economic availability of food is mostly measured at a level of households and the quality of nutrition refers to food security at an individual level.

The problem of food security is one of the issues frequently discussed in economic literature. The reasons for this lie in the fact that about one tenth of the world's population is undernourished and the number of people affected by hunger globally has been rising since 2014 [FAO 2021]. If this trend is not reversed, the Sustainable Development Goal 2.1 i.e., Zero Hunger Target will not be met. Africa has the highest percentage of malnourished people, but more than half of all malnourished people live in Asia. The smallest problem with food insecurity occurs in Northern America and Europe, but even there, if one also considers moderate food insecure people, this percentage is as high as 8%. FAO data indicate that this problem occurs, for example, in some New EU Member States (Bulgaria and Slovakia) and in the Balkans (Albania and North Macedonia). However, among extensive literature on food security, the occurrence of this problem in the New EU Member States is analysed relatively rarely. One should ask oneself whether this is just a marginal problem or perhaps whether it is insufficiently researched. Therefore, the aim of the article is to conduct a systematic literature review on food security in New EU Member States and answer the question of what picture of food security emerges from reviewed articles and whether the problem of food security in New EU Member States has been sufficiently researched.

The remainder of this paper is organized as follows. The next section presents the methodology applied for the systematic review. Then, bibliometric analysis and content analysis are presented. The final section presents the conclusions.

MATERIAL AND METHODS

In our study, the PRISMA (preferred reporting items for systematic reviews and meta-analyses) guidelines of conduction literature research was adopted. PRISMA is an evidence-based check list that was created to serve as a guideline for conducting systematic reviews and meta-analysis data. The PRISMA method embraces three stages: (1) identification, (2) screening, (3) inclusion². These three-stage process is constructed to help researchers find the most appropriate publications on the topic under study. The results of this technique enable quantitative and qualitative analysis. The PRISMA framework is extensively used to increase systematic review reporting clarity, transparency and completeness [Li et al. 2020].

At the identification step, the Thomson Reuters Web-of-Science (WoS) search engine was applied. For our data collection we used the following phrase: (“food *security”)

² It should be noted that we adapted the PRISMA 2020 flow diagram, that is an updated version of PRISMA 2009 [Page et al. 2021].

AND (“Bulgaria” or “Croatia” or “Cyprus” or “the Czech Republic” or “Czechia” or “Estonia” or “Hungary” or “Latvia” or “Lithuania” or “Malta” or “Poland” or “Romania” or “Slovakia” or “Slovenia” or “new member states” or “EU-10”). We searched in topics, i.e., titles, abstracts and keywords. We did not limit the search to a selected period (the oldest documents came from 1994) or to any journals or any specific category of journals. After the initial search we received 295 documents, however we only left records published in English, so 286 publications went on to the next step. During the screening step, through reading titles and abstracts, 216 records were excluded because of a lack of relevance. The main reason for removing these papers was that “food security” or “food insecurity” expressions appeared in titles or abstracts only as a current of future background or frame or scene for other problems and the content of publications were not devoted to food security or food insecurity issues. Then, 70 papers were carefully read for eligibility. As in some cases, the abstracts did not reflect the content of papers, or the empirical results was poor and did not meet our requirements. Finally, eleven papers were screened out. At the included step, we reached a sample of 58 publications that formed the base for further quantitative and qualitative analysis. A visual view of the literature selection process is presented in Figure 1.

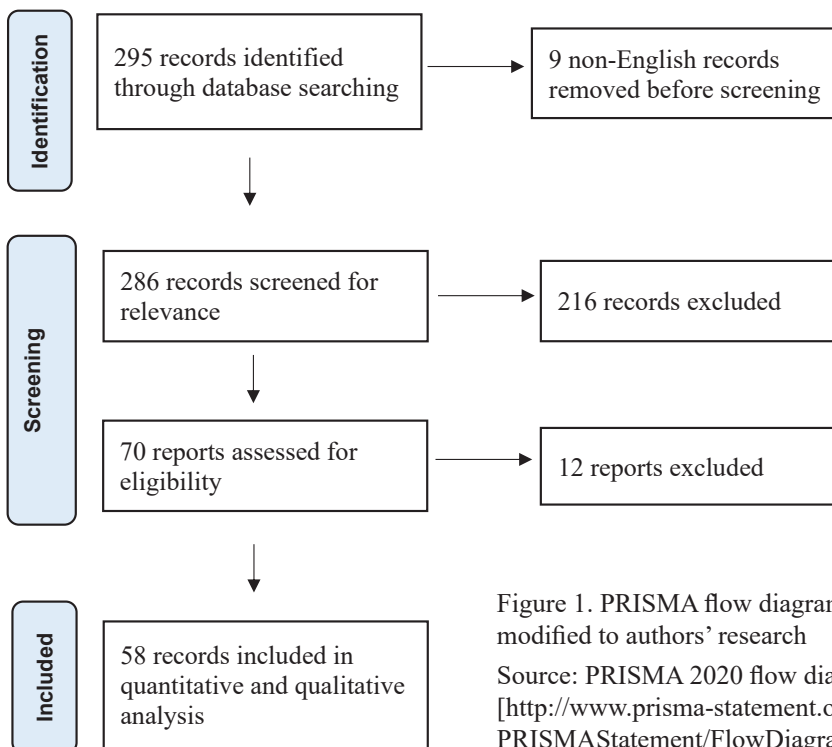


Figure 1. PRISMA flow diagram modified to authors' research
 Source: PRISMA 2020 flow diagram [http://www.prisma-statement.org/PRISMAStatement/FlowDiagramPage]

RESEARCH RESULTS

BIBLIOMETRIC STATISTICS

All 58 articles qualified for the final evaluation were published in the last 20 years, i.e., between 2002 and 2021, of which as many as 56 in the last 10 years. 34 articles were published in scientific journals and 24 in conference proceedings. The scientific journals included a total of 22 different journals. Most articles were published in the following journals: Scientific Papers-Series Management Economic Engineering in Agriculture and Rural Development (5 articles), Ekonomika Poljoprivreda-Economics of Agriculture (4 articles), Amfiteatru Economic (3 articles), Sustainability (3 articles) and Food Security (2 articles). Only 9 articles were published in journals from highly reputable publishing houses such as: Elsevier, Springer, Wiley, Sage and Emerald. Others have been published in journals from local universities or local publishers and 5 by MDPI.

Most analysed articles were cited in WoS less than 10 times. 20 of them were not quoted at all and 12 only once. The highest number of citations were found in articles by Stanley Uljaszek and Sławomir Koziel [2007] – 39 citations, Cecilia Alexandri et al. [2015] – 16 citations, and Yuriy Bilan et al. [2018] – 12 citations.

For 16 articles, the spatial scope was multi-country. The remaining ones related to food security in individual countries, including Romania (23 articles), Slovakia (7 articles), the Czech Republic (6 Articles) and Poland (4 articles). Most authors also came from New EU Member States. The exception was 6 articles by authors or co-authors from other countries, mainly Germany, the UK, the USA, Finland and Turkey [Uljaszek, Koziel 2007, Nie, Sousa-Poza 2018, Stickley et al. 2018, Grivins et al. 2018, Nardelli, West 2019, Sahin 2019].

CONTENT ANALYSIS

Only 6 of articles studied were reviews. The remaining part (52 articles) included the empirical approach, among which 8 studies was based on primary data and 44 on secondary data. Studies based on primary data analysed the problem of food security either on an individual level or a household level and mainly concerned socially vulnerable groups, i.e., children [Grivins et al. 2018, Tecau et al. 2020], the elderly [Nie, Sousa-Poza 2018], the rural household [Poczta-Wajda et al. 2020], low-income households [Chrysostomou, Andreou 2017] or minorities [Ciaian et al. 2018]. Articles based on secondary data analysed the problem of food security mainly at a national level from the point of view of food self-sufficiency [Pawlak 2013, Gołębiewska, Stefańczyk 2017, Prasilova, Prochazkova 2016, Sahin 2019]. A large part of these articles raised issues of food security in Romania, including the role of farmer resilience and sustainable agriculture [Istudor et al. 2014,

Andreea et al. 2021]. The problem of food self-sufficiency was also raised at a sectoral level. In this case, too, most articles were related to Romania.

We looked through our sample of publications considering four dimensions of the food security concept, e.g., availability, accessibility, utilisation and stability. Food availability refers to the supply side of food security and is determined by the level of food production, the balance of foreign food trade, food storage and processing options as well as food aid programs. Physical availability at a global, national or even local level does not, however, guarantee food access. This is because it is conditioned by the level of household income, food prices, the efficient functioning of markets, including the infrastructure ensuring the distribution of food, and social support. Another dimension of food security relates to food utility. Food security in this dimension is not only about eliminating the feeling of hunger, but also about eating food that meets the body's energy and nutritional needs as well as minerals, including the need for iron and vitamins. Comprehensive food security is a situation in which the three dimensions mentioned above are stable.

Within selected publications, food security availability and food supply were analysed by presenting the food security situation using synthetic indicators like the Global Food Security Index [Năftanăilă et al. 2019] or FAO food security indicators [Brankov, Lovre 2017]. Some researchers were looking for macroeconomic determinants of the food security level in Slovenia and Croatia [Kovljenić, Raletić-Jotanović 2021], environmental factors that determined agribusiness and further food production in the Czech Republic [Bilan et al. 2018]. The role of agricultural output [Istudor et al. 2014, Sandu et al. 2015], production volatility [Grodea 2016], agricultural assets [Andreea et al. 2021], challenges connected with climate changes and the need to invest in agriculture [Olaru, Bănac 2018] were also emphasized.

In our sample some papers referred to food access from micro perspectives, both from the consumer and producer side. Different groups of consumers were analysed. Some studies concentrated on the food security problem among children [Stickley et al. 2018, Tecau et al. 2020], selected households [Pomerleau et al. 2002], low-income households [Chrysostomou, Andreou 2017], households with social benefits [Dudek, Myszkowska-Ryciak 2020], ethnic groups [Ciaian et al. 2018], households in rural areas [Alexandri et al. 2015] or aged 50+ [Nie, Sousa-Poza 2018]. At the same time, the problem of access to food among food producers, e.g., small farmers [Alexandri et al. 2015, Poczta-Wajda et al. 2020] was investigated. Long lasting consequences of hunger experienced in childhood was analysed in Estonia [Stickley et al. 2018]. The study confirmed that being food insecure in childhood is associated with mental health and well-being and more than doubled the odds for thoughts of death or suicide.

Researchers not only evaluated the level of food insecurity of analysed groups, but also indicated the socio-economic determinants of being more vulnerable to food insecurity problems. Generally, in the analysed papers, the importance of such aspects as the income

situation, gender, age, education, household composition, economic activity or marital status was underlined. For example, in Poland, because of social benefits, households with more children were less stressed when dealing with the food insecurity risk [Dudek, Myszkowska-Rygiak 2020, Poczta-Wajda et al. 2020]. Food security dependence on home-grown or raised foods was observed in Latvia, Estonia, Lithuania [Pomerleau et al. 2002] and Poland [Poczta-Wajda et al. 2020].

The relationship between socio-economic and demographic characteristics and food utilization was also searched. The impact of age, being employed, better educated and having more money for diet diversity was analysed among those aged 50+ in the Czech Republic, Estonia and Slovenia [Nie, Sousa-Poza 2018] and ethnic groups in Romania [Ciaian et al. 2018]. The study among low-income Cypriot households revealed that the cost of the healthy food basket is higher than the guaranteed minimum income, so poor households are not able to afford healthy food [Chrysostomou, Andreou 2017]. Nutritional security (diet diversity) considering ethnic groups was analysed in Romania [Ciaian et al. 2018]. The researchers analysed how the diet of Roma was different from the diet of the non-Roma population in Romania. They confirmed that one third of the diet gap was explained by observed socio-economic characteristic, but the remaining two-thirds was explained by non-observed factors like discrimination in the labour market and specific informal institutions. Studies considering school children in rural areas in Romania revealed that the food insecurity of children cannot only be explained by the income problem. The culture of ethnic groups of families and parents' attitudes towards children's nutrition are also crucial [Tecu et al. 2020], which seems important as diet influences school performance.

In our papers, there are no publications devoted to food system stability directly. But the area of research is partly incorporated in the food policy system and can be evaluated from this point of view. Considering food stability, the positive role of food aid organisation in Romania was investigated [Ionita 2019], as such organisations contribute to the construction of a stable and equitable food (re)distribution system. Some advice on how to calculate a guaranteed minimum budget to ensure a healthy food basket for low-income families flow from studying Cypriots [Chrysostomou, Andreou 2017]. The problem of ensuring food security among school children was also addressed. Regulations of school meals and their implementation in Latvia were investigated [Grivins et al. 2018]. The researchers stated that the success of the food system requires a more unified system (not scattered intervention) and the adjustment of national and international regulations to local conditions and development priorities. The need to create and implement long-term programs that provide hot meals for children in rural schools in Romania is essential to combat food insecurity among children [Tecu et al. 2020]. To reduce the impact of the crisis in the livestock production sector on a consumption level and structure, the model solutions for Romania [Antohei et al. 2019] and the Czech Republic [Foltýn et al. 2018] were developed.

CONCLUSIONS

1. In the international journal database Web of Science, we only managed to identify 58 articles strictly devoted to the food security problem in New EU Member States. These are relatively new articles, but are most often published in conference materials or in local journals.
2. A review of the contents of these articles suggests that the problem of food insecurity in New EU Member States, however, does exist, especially in socially vulnerable groups. Unfortunately, there is too little primary research to draw any general conclusion. If such studies exist, they are not available to the English-speaking international reader.
3. A research gap emerges from the review. Regular and comprehensive primary surveys at a household level are needed, especially for selected social groups (ethnic groups, children, the elder, migrants and urban versus rural households). To the best of our knowledge, there is also no research on the effectiveness of support systems nor on non-economic factors of food insecurity.

BIBLIOGRAPHY

- Alexandri Cecilia, Lucian Luca, Cristian Kevorchian. 2015. Subsistence economy and food security—the case of rural households from Romania. *Procedia Economics and Finance* 22: 672-680. DOI: 10.1016/S2212-5671(15)00282-8.
- Andreea Ion Raluca, Cristian George-Popescu, Marinela Ilie, Daniela Popa. 2021. Agricultural assets' influence on building farmers' resilience in Romania. food security approaches. *Economics of Agriculture* 68 (1): 101-111.
- Antohei Valentin Marian, Monika Laura Zlati, Roxana Sârbu, Silvus Stanciu, Florina Oana Virlănuță, Sorin Anagnoste. 2019. Approaches regarding the management of food policies in the context of the African Swine Fever Crisis based on a food sustainability statistical model. *Amfiteatrul Economic* 21 (51): 329-346. DOI: 10.24818/EA/2019/51/329.
- Bilan Yuriy, Serhiy Lyeonov, Natalia Stoyanets, Alina Vysochyna. 2018. The impact of environmental determinants of sustainable agriculture on country food security. *International Journal of Environmental Technology and Management* 21 (5-6): 289-305.
- Brankov Tatjana, Ivan Lovre. 2017. Food security in the former Yugoslav Republics. *Ekonomika Poljoprivreda/Economics of Agriculture* 64 (2): 701-721.
- Chrysostomou Stavri, Sofia Andreou. 2017. Do low-income Cypriots experience food stress? The cost of a healthy food basket relative to guaranteed minimum income in Nicosia, Cyprus. *Nutrition & Dietetics* 74 (2): 167-174. DOI: 10.1111/1747-0080.12322.
- Ciaian Pavel, Andrej Cupák, Ján Pokrivčák, Marian Rizov. 2018. Food consumption and diet quality choices of Roma in Romania: A counterfactual analysis. *Food Security* 10 (2): 437-456. DOI: 10.1007/s12571-018-0781-8.

- Dudek Hanna, Joanna Myszkowska-Ryciak. 2020. The prevalence and socio-demographic correlates of food insecurity in Poland. *International Journal of Environmental Research and Public Health* 17 (17): 6221. DOI: 10.3390/ijerph17176221.
- FAO. 2003. *Trade reform and food security. Conceptualizing the linkages*. Rome: FAO.
- FAO. 2021. *In Brief to The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets*. Rome: FAO.
- Foltýn Ivan, Marie Šimpachová Pechrová, Ida Zedníčková. 2018. *Food security in crisis situations: focus on beef, pork and poultry meat*. [In] Proceedings of the 27th International Scientific Conference Agrarian Perspectives XXVII “Food Safety-Food Security”, 19-20 September 2018. Prague, Czech Republic.
- Gołębiewska Barbara, Joanna Stefańczyk. 2017. *Determinants of self-sufficiency and food security in Poland*. [In] 26th International Scientific Conference on Agrarian Perspectives “Competitiveness of European Agriculture and Food Sectors”, 13-15 September 2017, Prague, Czech Republic. Czech University of Life Sciences Prague, Faculty of Economics and Management.
- Grivins Mikelis, Talis Tisenkopfs, Ville Tikka, Tiina Silvasti. 2018. Manoeuvring between regulations to achieve locally accepted results: Analysis of school meals in Latvia and Finland. *Food Security* 10 (6): 1389-1400. DOI: 10.1007/s12571-018-0856-6.
- Grodea Mariana. 2016. Milk and beef production volatility in Romania – domestic supply stability factor. *Scientific Papers-Series Management Economic Engineering in Agriculture and Rural Development* 16 (1): 193-196.
- Ionita Ioana Daniela. 2019. Doing good with food: Food aid volunteers’ understanding of food access issues. *Journal of Organizational Ethnography* 8 (1): 57-67. DOI: 10.1108/JOE-01-2018-0004.
- Istudor Nicolae Raluca Andreea Ion, Maria Sponte, Irina Elena Petrescu. 2014. Food security in Romania – a modern approach for developing sustainable agriculture. *Sustainability* 6 (12): 8796-8807. DOI: 10.3390/su6128796.
- Kovljenić Mina, Saša Raletić-Jotanović. 2021. Food security issues in the former Yugoslav countries. *Outlook on Agriculture* 50 (1): 46-54.
- Li Ting, Fang Hua, Shigi Dan, Yuxin Zhong, Colin Levey, Yaling Song. 2020. Reporting quality of systematic review abstracts in operative dentistry: An assessment using the PRISMA for abstracts guidelines. *Journal of Dentistry* 102: 1-8.
- Năftanăilă Cristina, Odi Mihaela Zărnescu, Laurentina Avram, Viorica Braga, Robert Dragomir, Elena Gurgu. 2019. Determining Romania’s Position in Europe According to the Optimized Global Food Security Index in 2018. *Amfiteatru Economic* 21 (51): 294-312. DOI: 10.24818/EA/2019/51/294.
- Nardelli Lauren, Daniel Jr. West. 2019. Innovations of food security in Central, Eastern and Western Europe. *Clinical Social Work and Health Intervention* 10 (1): 35-38. DOI: 10.22359/cswhi_10_1_05.
- Nie Peng, Alfonso Sousa-Poza. 2018. Food insecurity among Europeans aged 50+. *Journal of Population Ageing* 11 (2): 133-151. DOI:10.1007/s12062-017-9177-3.

- Olaru Georgiana Bianca, Cristian-Silviu Bănaciu. 2018. *Impact of climate change in the food security of Romania*. [In] Proceedings of the BASIQ International Conference on New Trends in Sustainable Business and Consumption, 11-13 June 2018, Heidelberg, Germany.
- Page Matthew, Joanne McKenzie, Patrick Bossuyt, Isabelle Boutron, Tammy Hoffmann, Cynthia Mulrow et al. 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 372: n71. DOI:10.1136/bmj.n71.
- Pawlak Karolina. 2013. *Agricultural productivity, trade and food self-sufficiency: Evidence from Poland. The EE And The US*. [In] Proceedings of the 27th International Scientific Conference Agrarian Perspectives XXVII “Food Safety-Food Security”, 19-20 September 2018, Prague, Czech Republic.
- Poczta-Wajda Agnieszka, Agnieszka Sapa, Sebastian Stepień, Michał Borychowski. 2020. Food insecurity among small-scale farmers in Poland. *Agriculture* 10 (7): 295. DOI: 10.3390/agriculture10070295.
- Pomerleau Joceline, Martin McKee, Aileen Robertson, Sirje Vaask, Iveta Pudule, Daiga Grinberga, Algis Abaravicius, Roma Bartkeviciute. 2002. Food security in the Baltic Republics. *Public Health Nutrition* 5 (3): 397-404. DOI: 10.1079/PHN2001265.
- Prasilova Marie, Radka Prochazkova. 2016. *Structural changes of Czech Agriculture and the impact of these on inner foodstuffs self-sufficiency of Czech Republic*. [In] Proceedings of 28th International Business-Information-Management-Association Conference, 9-10 November 2016, Seville, Spain.
- Sahin Levent. 2019. Food Trade Dependency Index for EU28 countries in the context of food security. *Ekonomista* 6: 760-768.
- Sandu Mariana, Staliana Sandu, Marcel Theodor Paraschivescul. 2015. Evaluation of Romanian livestock sector from the perspective of availability of food products. *Scientific Papers-Series Management Economic Engineering in Agriculture and Rural Development* 15 (2): 321-326.
- Stickley Andrew, Ai Koyanagi, Yosuke Inoue, Mall Leinsalu. 2018. Childhood hunger and thoughts of death or suicide in older adults. *The American Journal of Geriatric Psychiatry* 26 (10): 1070-1078. DOI: 10.1016/j.jagp.2018.06.005.
- Tecau Alin Simona, Cristina Dimitriu, Nicolae Marinescu, Bianca Tescasiu, Gheorghe Epu-ran. 2020. A qualitative research on the food security of school children in the rural area. *Sustainability* 12 (21) 9024. DOI: 10.3390/su12219024.
- Ulijaszek Stanley, Sławomir Koziel. 2007. Nutrition transition and dietary energy availability in Eastern Europe after the collapse of communism. *Economics & Human Biology* 5 (3): 439-469. DOI: 10.1007/s10640-006-0009-9.

KWESTIA BEZPIECZEŃSTWA ŻYWNOŚCIOWEGO W NOWYCH
KRAJACH CZŁONKOWSKICH UNII EUROPEJSKIEJ
– SYSTEMATYCZNY PRZEGLĄD LITERATURY

Słowa kluczowe: bezpieczeństwo żywnościowe, systematyczny przegląd literatury,
PRISMA, dostępność żywności, nowe kraje członkowskie

ABSTRAKT

Europa nie kojarzy się z problemem bezpieczeństwa żywnościowego, jednak w niektórych krajach może on wystąpić na poziomie gospodarstw domowych. Jest niewiele badań na ten temat, zwłaszcza w nowych krajach członkowskich UE. Dlatego celem artykułu jest przeprowadzenie systematycznego przeglądu literatury dotyczącego bezpieczeństwa żywnościowego w nowych krajach członkowskich UE oraz odpowiedź na pytanie, jaki obraz bezpieczeństwa żywnościowego wyłania się z recenzowanych artykułów oraz czy problematyka bezpieczeństwa żywnościowego w nowych krajach członkowskich UE została wystarczająco zbadana. Zgodnie z metodologią PRISMA zidentyfikowano w bazie Web of Science 58 artykułów naukowych poświęconych temu problemowi. Wyniki przeglądu sugerują, że bezpieczeństwo żywnościowe w nowych krajach członkowskich UE jest analizowane głównie na poziomie krajowym i z wykorzystaniem danych wtórnych. Na poziomie gospodarstw domowych problem ten nie został wystarczająco zbadany, a istniejące badania są niewystarczające i niedostatecznie rozpowszechnione.

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