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Zsuzsanna NAGY
PhD, főiskolai docens,
Nyíregyházi Egyetem, Gazdálkodástudományi Intézet,
Nyíregyháza, Magyarország

A SYSTEMATIC REVIEW: PRINCIPLES AND STEPS

Анотація. *Протягом останніх десятиліть спостерігався сплеск поширення масової кількості інформації у літературних джерелах разом зі збільшенням кількості публікацій первинних досліджень. З одного боку, цей процес супроводжувався розширенням спектру різноманітних методичних підходів та оглядів. Метою цієї публікації є: огляд основних відмінностей між різними підходами до систематизації та оцінки інформації, дослідження методу систематичного огляду, що найчастіше використовується при оцінці інформації; виділення існуючих непослідовностей та варіативності при застосуванні систематичного огляду, неправильне застосування якого може призвести до неоднозначних результатів. Систематичний огляд проводився в різних і популярних галузях, таких як сестринська справа, спорт, медицина, охорона здоров'я, психологія, анестезіологія. Важливий аспект пошукового процесу в даного дослідження полягає в тому, щоб надати всебічне узагальненні стосовно того, як проводити та здійснювати систематичний огляд у інших сферах господарювання. Результати показують, що впровадження контрольного списку PRISMA та блок-схеми PICO є необхідним і корисним у досягненні високого ступеня транспарентності інформації. Друга частина публікації присвячена надважливій галузі, а саме сільському господарству. У випадку сільського господарства також можна знайти літературу систематичних оглядів, однак ці огляди зосереджені на невеликій частині економічних і соціальних питань, таких як розумне («смарт») сільське господарство, охорона здоров'я та безпека в сільськогосподарських роботах і ландшафті, і є лише кілька літературних джерел, які вивчають інші аспекти сільського господарства, такі як продуктивність і ефективність. Крім того, у наукових роботах недостатньо розкриваються екологічні питання в межах даного напрямку. Заключною метою є узагальнення та проведення систематичного огляду наукових джерел та літератури стосовно сільськогосподарського виробництва в умовах дії глобальних викликів.*

Ключові слова: *типи оглядів, систематичний огляд, PRISMA, PICO, сільське господарство.*

JEL Classification: O13, Q11

Absztrakt. *Az elmúlt évtizedekben megugrott az irodalmi forrásokban található információk tömeges elterjedése a primer kutatási publikációk számának növekedésével együtt. Ezt a folyamatot egyrészt a különféle módszertani megközelítések, áttekintések spektrumának bővülése kísérte. A kutatás célja, hogy: áttekintse az információk rendszerezésének és értékelésének különböző megközelítései közötti főbb különbségeket, tanulmányozza az információértékelés során leggyakrabban használt szisztematikus áttekintés módszerét; ki legyenek emelve a szisztematikus áttekintés alkalmazásában meglévő következetlenségek és változékonyságok, amelyek helytelen alkalmazása félreérthető eredményekhez vezethet. A szisztematikus áttekintés széles felhasználásra került olyan területeken, mint például az ápolás, a sport, az orvostudomány, az egészségügy, a pszichológia, az aneszteziológia. Ebben a tanulmányban a kutatási folyamat egyik fontos szempontja, hogy átfogó általánosítást adjon arról, hogyan kell szisztematikus áttekintést végezni és végrehajtani a menedzsment más területein. Az eredmények azt mutatják, hogy a PRISMA ellenőrzőrendszer és a PICO folyamatábra megvalósítása szükséges és hasznos az információk nagyfokú átláthatóságának eléréséhez. A cikk második része egy rendkívül fontos iparágról, nevezetesen a mezőgazdaságról szól. A mezőgazdaság esetében szisztematikus reflexió az irodalomban található, de ezek az áttekintések a*

gazdasági és társadalmi kérdések egy kis részhalmazára összpontosítanak, mint például a smart-mezőgazdaságra, az egészségre és biztonságra a mezőgazdasági munkálatokra és tájra, és csak néhány irodalmi forrás létezik, amelyek a mezőgazdaság egyéb szempontjait, például a termelékenységet és a hatékonyságot tanulmányozzák. Ráadásul a tudományos munkák nem tárják fel kellőképpen a környezeti kérdéseket ezen irányvonalon belül. A végső cél a mezőgazdasági termeléshez kapcsolódó tudományos források és szakirodalom általánosítása és szisztematikus áttekintése a globális kihívások összefüggésében.

Kulcsszavak: *áttekintések típusai, szisztematikus áttekintés, PRISMA, PICO, mezőgazdaság.*

Abstract. *There has been an explosion of literature information over the last decades along with a large increasing primary research publication. On the one hand, this process has been accompanied by an expansion in the range of different methodological approaches and reviews. The first aim of this publication is to give a short overview regarding the main differences among the reviews, then secondly the author focuses on the frequently used method, the so-called systematic review because there are significant inconsistences and variabilities how to properly conduct and report a systematic review and it can lead to misleading results. The systematic review has been performed in various and popular fields like nursing, sport, medicine, health care, psychologic, anaesthesiology. The third aim this publication is to provide a comprehensive summary regarding how to conduct and implement a systematic review. Results show that it is necessary and useful to implement a PRISMA checklist and a PICO flow chart. In this publication the second part connect to a hot topic namely agriculture. In the case of agriculture, the literature of systematic reviews can also be found however these reviews focus on a little part of economic and social matters as smart agriculture, health and safety in agriculture works and landscape and there are only a few literatures examining other aspect of agriculture like productivity and efficiency. Moreover, there is a gap in literature of systematic reviews examine the environmental aspect. The last objective, a longer-term aim, will be to report and conduct a systematic literature review regarding relevant topic in agriculture I connection with climate change, productivity and efficiency and will contribute the existing literature in this field.*

Keywords: *review types, systematic review, PRISMA, PICO, agriculture.*

Introduction. The value of literature reviews has increased in the last decades, and it has parallelly been accompanied by an expansion in the range of different methodological approaches and reviews [1]. The first step is to declare what type of review is right for the researchers. There are some appropriate papers [2; 3; 4], which provide a clear decision tree to find the answer. These papers describe six different review types:

1) literature (narrative) review,
2) rapid review,
3) scoping review,
4) umbrella review,
5) systematic review
6) meta-analysis.

Here, some short descriptions can be found regarding the review types.

The *traditional (narrative) literature* review characteristic is to describe and appraise overview and criticize previous works and focus on a basic of a topic. Limitations are as follows: the researchers' assumptions and agenda often unknown biases that occur in selecting and assessing the literature are also unknown and cannot be replicated and do not follow an established protocol [5].

In the case of *systematic review* (SR), the scope of the review is identified in advance, making a comprehensive search to find all the relevant studies, focus on a single well-formulated research question, using of explicit criteria to include/exclude studies, using explicit methods of extracting and synthesizing study findings (qualitative or quantitative way). The method must be reproducible, objective and transparent. [6] It collects all possible studies related to a given topic and design and reviews and analyses their results [7].

Meta-analyses are a quantitative and more rigorous method than the above mentioned two methods. This type of review is a valid, objective method of analysing and combining different results. Usually, it is mainly conducted on randomized controlled trials (RCTs), which have a high level of evidence.

Since 1996, various papers have presented guidelines for reporting meta-analyses of RCTs. The Quality of Reporting of Meta-analyses (QUORUM) statement have been registered. The QUORUM was evolved in 2009 and then the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was published, and it greatly helped to standardize and to improve the quality of systematic reviews and meta-analyses [7].

Purpose of the study. The purpose of the article is to investigate the theoretical and practical aspects of systematic reviews, in particular the content of the concept, types of reviews, principles, steps and tools, as well as the peculiarities of conducting systematic reviews in the field of agriculture in the European Union.

Literature review. In this part of the publication, I would like to give a short but comprehensive summary regarding the recent research and publications that are connecting how to conduct a systematic review, what the basic principles, steps and methods or tools that could help to the researcher to conduct her own systematic review in the near future.

According to [8] there are significant inconsistences and variabilities how to properly conduct and report a systematic review and it can lead to misleading results.

The basic steps for conducting a systematic review [9] is to plan and anticipate problems.

A clear study focuses from the beginning, a well-defined research question, outlining strict inclusion and exclusion criteria, and understanding the contribution of one's work to the existing literature. [9] mentioned that it is often helpful to write down the research question first, then to conduct a literature review to determine whether your question has already been answered, can be answered or it is irrelevant.

The PICO (Population, Intervention, Comparison, and Outcome) is a commonly used tool to help delineate a clearly well-defined question for systematic review. The purpose of this review is to not only collect all the relevant literatures, but to extract data presented.

To execute a well-designed study there are two requirements:

1. an organized team: including a statistician, an expert, and at least two individuals to oversee each section of the review process
2. a detailed study protocols.

Strict criteria are necessary to determine the appropriate articles for inclusion. Some of these criteria depend on the specific question. [9; 10] give an important advice to perform a comprehensive systematic review, using a single database alone is

insufficient, multiple information sources will need to be searched (Scopus, Web of Science, JSTOR, etc.)

A key aspect is the data collection. The most recent guidelines are the PRISMA statement.

The PRISMA statement, first published in 2009, was designed to help systematic reviewers transparently report why the review was done, what the authors did, and what they found. Over the past decades, in methodology and terminology have necessitated an update guideline [10].

The PRISMA 2020 statement provides an updated reporting guidance for systematic reviews that reflects to identify, select, appraise, and synthesise studies. The PRISMA 2020 statement consists of a 27-item checklist, an expanded checklist, the PRISMA 2020 abstract checklist, and revised flow diagrams for original and updated reviews.

Results and discussion.

1. The PRISMA flow chart

The conduct and success of a systematic review depends heavily on the scope and quality of included studies thus, the reviewers may need to modify the original review protocol. [11] article says that without a protocol it is difficult to judge between appropriate and inappropriate modifications.

The PRISMA Statement consists of a four-phase flow chart diagram that presented in Graph 1.

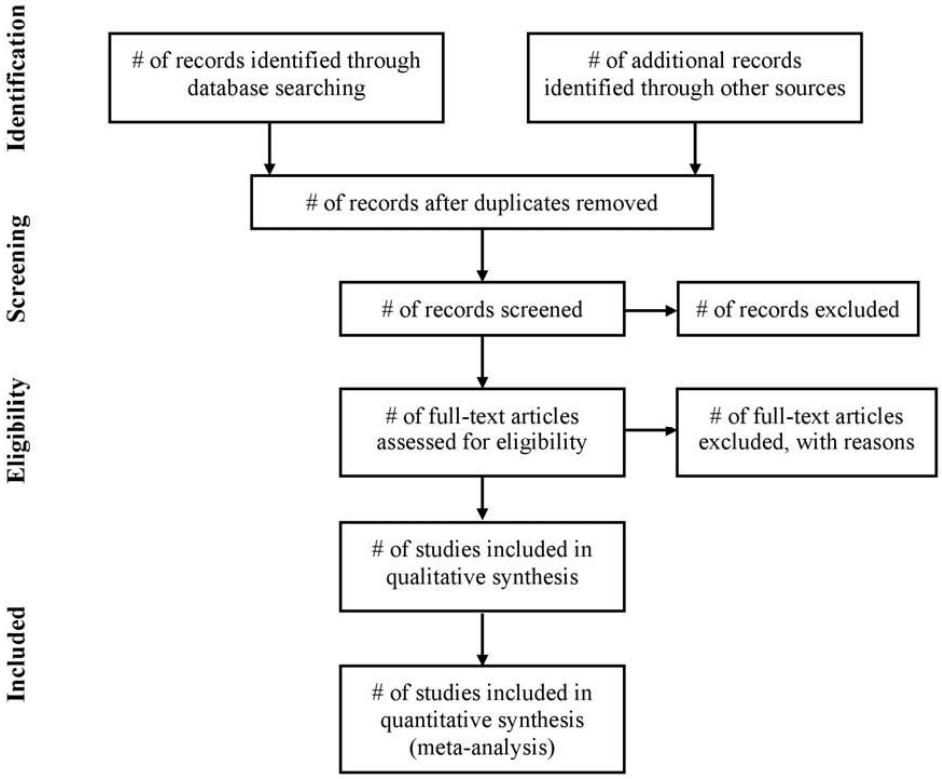

Figure 1. PRISMA flow chart diagram

Source: [11].

The aim of the PRISMA Statement is to help authors to improve the reporting of systematic reviews. The new PRISMA checklist differs in several respects from the QUOROM checklist for example the PRISMA checklist ‘‘decouples’’ several items. [11] emphasises that the number of included articles might be smaller or larger than the number of studies, because articles may be published in several articles.

Based on the following literatures [7; 12; 13; 9; 14], there are five or seven stages to conduct a systematic review, these stages are as follows and can be also found some short descriptions:

1. *Questioning*. Before beginning work the reviewer should specify a clear, unambiguous and a well-structured question.
2. *Planning.* The search should be extensive, and it is also important to use multiple resources as above mentioned. The study selection criteria should flow directly from the review question and be specified a priori. Reasons for inclusion and exclusion should be recorded as well.
3. *Searching/Screening.* A key step is the critical appraisal of the included studies. There are several threats like description bias, selection bias, measurement bias, analytic bias, and interpretation bias [9]. In the so-called first-pass review when the references have been recorded, collected and duplicates excluded (record this number) the reviewers read through each study title and exclude clearly irrelevant studies. A second-pass review is then conducted where the abstracts of included titles are analyzed further. Eventually, articles must undergo full-text review (third-pass review**).** [9] suggested once this is complete, the bibliographies of each article also need to be systematically reviewed for further relevant articles. Selected studies should be subjected to a more refined quality assessment by use of general critical appraisal guides and a quality checklist (for example the PRISMA checklist). These detailed quality assessments will be used for exploring heterogeneity.
4. *Data extraction/Synthesizing the evidence*. Data synthesis consists of tabulation of study characteristics, quality and effects as well as use statistical methods for exploring differences between studies.
5. *Drawing conclusions, writing and publishing.* The risk of publication bias and related biases should be explored.

There is a new strategic agenda between 2019-2023 for the EU and it has set out four priority areas [15]:

1. protecting citizens and freedoms,
2. developing a strong and vibrant economic base,
3. building a climate-neutral, green Europe
4. promoting European interests and values.

The new agricultural policy between 2023-2027 was adopted in 2021. This legislation put this field towards a greener, a fairer and more performance-based policy. It will ensure a sustainable future for farmers, provide more targeted support to smaller farms, and allow greater flexibility for member countries to adapt measures to local conditions [16].

In a greener CAP the EU supports agriculture to make a much stronger contribution to the Green Deal (Farm to fork program, Biodiversity strategy). Green ambition and green deal targets, eco-scheme, rural development, climate and biodiversity are among the key areas of the reform. It is a main question how the direct

payments will contribute to the climate- and environmental-friendly farming practices and approaches.

In a fairer CAP, it directly tries to support the redistribution of income support, convergence of payments, support the young farmers and improve the gender balance [17].

There are several literatures focusing on these central topics. One group examines the environmental aspects and performances of the CAP [18; 19; 20]. Other group examine the social side [19] and there are some of them examine the effectiveness and productivity of the agricultural production and factors affecting the farms production level. Some researchers examine the effect of some agro-environmental scheme and its influence on the farms' applied technology and performance [21; 22].

In the case of systematic review, some reviews focus smart agriculture and artificial intelligence, social skills, use of local knowledge in agriculture, environmental effect in agricultural trade.

Conclusions and prospects for further research. Our long-term goal is to fill the gap in systematic review to combine the environmental and economic topics in agriculture and to report and conduct a systematic review of efficiency, productivity and climate change.

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