

RESEARCH @

University Research Council – University of Peradeniya



Vol: II Issue: VII
URC e-Newsletter
July 2022

In this issue:

- Funding opportunities such as research grants, early career grants, awards, and fellowships
- PGIS contribution to Multidisciplinary research scheme
- Publication supporting fund
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- July Workshop- Procurement process for researchers
- Analysis- A Brief Overview of Systematic Reviews

European Grants

HORIZON-EIE-2022-CONNECT-02 – interconnected innovation ecosystems

Horizon Europe: Innovative Europe, under the European innovation ecosystem, invites applications for its HORIZON-EIE-2022-CONNECT-02 – interconnected innovation ecosystems call. This supports projects that set out a credible pathways to contributing to interconnected innovation ecosystems. Funding is available under the following topics:

- HORIZON-EIE-2022-CONNECT-02-01 - implementing co-funded action plans for interconnection of innovation ecosystems;

- HORIZON-EIE-2022-CONNECT-02-02 - stimulating innovation procurement.

Proposals must take the form of co-fund actions, which require one or more legal entities, provided that one is established in an EU member state or Horizon Europe associated country. Participants from selected LMICs are automatically eligible for funding.

Closing date 27 September 2022

Award amount max €2,000,000

Country of applicant institution Sri Lanka included

HORIZON-EIC-2022-TRANSITIONCHALLENGES-01 – EIC transition challenge driven call

The European Innovation Council, under Horizon Europe: Innovation Europe, invites proposals for its EIC transition – challenge driven call. This aims to leverage results of an ongoing or recently finished pathfinder, FET flagship or European Research Council proof of concept project in specific challenge areas and push forward groundbreaking innovations with a clear perspective towards market uptake for specific applications. The challenge areas are:

HORIZON-EIC-2022-TRANSITIONCHALLENGES-01-01 – green digital devices for the future;

HORIZON-EIC-2022-TRANSITIONCHALLENGES-01-02 – process and system integration of clean energy technologies;

HORIZON-EIC-2022-TRANSITIONCHALLENGES-01-03 – RNA-based therapies and diagnostics for complex or rare genetic diseases.

Activities should mature a technology beyond the experimental proof of principle in laboratory and develop the business case for the market uptake of the technology in an innovation for a specific application or set of applications that address the objectives of the challenge. The outcome should be a technology that is demonstrated to be effective, together with a business model and business plan for its development to market.

Proposals may be submitted by a single entity established in a member state or associated country if they are an SME or research performing organisation, or a small consortium of between two and five independent legal entities that may include universities, research organisations, SMEs or larger companies, user or customer organisations or potential end users.

Closing date 28 September 2022

Award amount max €2,500,000

Country of applicant institution Sri Lanka included

ORIZON-EIE-2022-SCALEUP-02 – elevating the scalability potential of European business

Horizon Europe: Innovative Europe, under the European innovation ecosystem, invites applications for its HORIZON-EIE-2022-SCALEUP-02 – interconnected innovation ecosystems call. This supports projects that set out a credible pathways to contributing to elevating the scalability potential of business. Funding is available under the following topic:

HORIZON-EIE-2022-SCALEUP-02-01 - expanding investments ecosystems.

Proposals must take the form of coordination and support actions, which require one or more legal entities established in an EU member state, Horizon Europe associated country or, in exceptional cases, another third country. Participants from selected LMICs are automatically eligible for funding.

Closing date 04 October 2022

Award amount max €1,000,000

Country of applicant institution Sri Lanka included

HORIZON-EIC-2022-PATHFINDERCHALLENGES-01 – EIC pathfinder challenge driven call

Horizon Europe: Innovative Europe, under the European Innovation Council, invites applications for its pathfinder – challenge driven call. This supports new, cutting-edge directions in science and technology to disrupt a field and a market or create new opportunities by realising innovative technological solutions to selected challenges. Challenges are:

- HORIZON-EIC-2022-PATHFINDERCHALLENGES-01-01 – carbon dioxide and nitrogen management and valorisation;
- HORIZON-EIC-2022-PATHFINDERCHALLENGES-01-02 – mid to long term and systems integrated energy storage;
- HORIZON-EIC-2022-PATHFINDERCHALLENGES-01-03 – cardiogenomics;
- HORIZON-EIC-2022-PATHFINDERCHALLENGES-01-04 – towards the Healthcare Continuum – technologies to support a radical shift from episodic to continuous healthcare;
- HORIZON-EIC-2022-PATHFINDERCHALLENGES-01-05 – DNA-based digital data storage;
- HORIZON-EIC-2022-PATHFINDERCHALLENGES-01-06 – alternative approaches to quantum information processing, communication and sensing.
- Proposals may be submitted by a coordinator on behalf of a consortium that includes at least two independent legal entities or by a single legal entity.

Closing date 19 October 2022

Award amount max € 4,000,000

Country of applicant institution Sri Lanka included

Jean Monnet activities call

The Education, Audiovisual and Culture Executive Agency, under its Erasmus+ programme, invites proposals for the Jean Monnet activities call. This promotes excellence in teaching and research in the field of EU studies worldwide and fosters the dialogue between the academic world and policy-makers, with the aim of enhancing governance of EU policies. Funding is available for the following activities:

- ERASMUS-JMO-2022-MODULE – Jean Monnet modules, with grants worth up to €30,000 each for a duration of three years;
- ERASMUS-JMO-2022-CHAIR Jean Monnet chairs, with grants worth up to €50,000 each for a duration of three years;

- ERASMUS-JMO-2022-COE Jean Monnet centres of excellence, with grants worth up to €100,000 each for a duration of three years;
- ERASMUS-JMO-2022-NETWORKS-HEI-EU Jean Monnet networks on internal EU issues, with grants worth up to €1 million each for a duration of three years;
- ERASMUS-JMO-2022-NETWORKS-HEI-NON-EU Jean Monnet networks on foreign policy issues, with grants worth up to €1.2m each for a duration of three years;
- ERASMUS-JMO-2022-OFET-LEARNING-EU Jean Monnet learning EU initiatives, with grants worth up to €30,000 each for a duration of three years;
- ERASMUS-JMO-2022-NETWORKS-SCHOOLS Jean Monnet networks in other fields of education and training, with grants worth up to €300,000 each for a duration of three years;
- ERASMUS-JMO-2022-OFET-TT Jean Monnet networks in other fields of education and training – teacher training, with grants worth up to €300,000 each for a duration of three years.

Applications in the field of higher education are open to HEIs worldwide. Applications for teacher trainings must be submitted by one HEI or one teacher training institute or agency based in an Erasmus+ programme country. Applications for networks must be submitted by one school or vocational educational training institute established in an Erasmus+ programme country on behalf of the partners in the proposed network.

Closing date 01 March 2023 (Forecast)

Award amount max €1,200,000

Country of applicant institution Sri Lanka included

ISF-2022-TF1-AG-CYBER – cybercrime and digital investigations

The Directorate-General for Migration and Home Affairs invites applications for the call ISF-2022-TF1-AG-CYBER – cybercrime and digital investigations. This supports projects on fighting cybercrime, including digital investigations. Projects must address the following priority areas:

- developing operational capacity and expertise of law enforcement and judicial authorities and supporting cross-border cooperation in the field of cybercrime;
- development of investigative and forensics tools to address the challenges posed by the use of encryption by criminals and its impact on criminal investigations and supporting law enforcement authorities' engagement in the area of internet governance;

- contributing to the implementation of EU law;
- fostering cross-border cooperation between law enforcement and judicial authorities and private entities.

Proposals may be submitted by a consortium consisting of two organisations from two different eligible countries. Eligible countries are EU member states, except of Denmark, and non-EU member states.

Closing date 15 September 2022

Award amount max €500,000 - 3,000,000

Country of applicant institution Sri Lanka included

Other Grants

John Z Duling grant programme

The TREE Fund invites letters of intent for the John Z Duling grant programme. This provides start-up or seed funding for innovative research and technology transfer projects that have the potential to benefit the everyday work of arborists. In addition, this initiative supports exploratory work in the early stages on untested, but potentially transformative, research ideas and approaches. Examples may include the application of new approaches to research questions or the application of new expertise involving novel disciplinary or interdisciplinary perspectives. In this round, the specific focus is on propagation, plant selection, development of new varieties, and planting or establishment.

Closing date 15 September 2022

Award amount max USD 25,000

Country of applicant institution Any

Website: https://treefund.org/researchgrants/duling?doing_wp_cron=1657483776.1413979530334472656250

Major documentation project grants

The Endangered Languages Documentation Programme invites applications for its major documentation project grants. These support projects in the field of endangered languages that exceed the funding limit of a small grant of £10,000. The programme aims to:

- support the documentation of as many endangered languages as possible;
- encourage fieldwork on endangered languages;
- create a repository of language resources for linguistic, social sciences, and the language communities.

Projects may be undertaken by teams or individuals. Researchers of any nationality and any career stage may apply and projects may be undertaken in any part of the world. Applicants must have qualifications in linguistics and experience in linguistic fieldwork.

Closing date 15 September 2022

Award amount: £10,000 - £300,000

Country of applicant institution Any

Website: <https://www.eldp.net/en/our%2bgrants/documentation%2bgrants/>

Nina Starr Braunwald research award

The Thoracic Surgery Foundation invites applications for the Nina Starr Braunwald research award. This supports the work of a female early-career cardiac surgeon who is seeking initial support and recognition for her research programme. Preference is given to either clinic or laboratory based investigations that are judged likely to generate data that will, in turn, facilitate subsequent funding support for the applicant. Any female cardiac surgeon who has completed a programme leading to certification by the American Board of Thoracic Surgery or its equivalent in a country outside of the US, or who will successfully complete such training by the grant start date, may apply. They must be within five years of their first faculty appointment.

Closing date 15 September 2022

Award amount max USD 170,000

Country of applicant institution Any

Website: <https://thoracicsurgeryfoundation.org/awards/braunwald-research-grant/>

Linked standard research innovation grants

The American Foundation for Suicide Prevention invites applications for its linked standard research innovation grants. These enable investigators at two or more sites to implement a common research project on suicide. Each site should be contributing unique expertise, as well as data collection. Projects may involve research on suicide from a variety of disciplines including psychiatry, medicine, psychology, genetics, epidemiology, neurobiology, sociology, nursing, health services administration and social work.

Applicants may be at any academic rank and should have undertaken prior research or research training in a field related to suicide.

Closing date 15 September 2022

Award amount max USD 450,000

Country of applicant institution Any

Website: <https://afsp.org/research-grant-information>

Novartis research grant

The Novartis Foundation Japan for the Promotion of Science invites applications for its research grant. This supports research in the field of biology, life sciences, related chemistry and information science. Research within the area of biology will be prioritised.

Candidates must be recommended by a president or dean of faculty of the designated universities or director of the designated research institutes, or by a member of the board of trustees or board of counsellors of the foundation. Candidates must have a doctorate or be scheduled to obtain one within the fiscal year concerned. The research must be carried out in Japan, but candidates of any nationality may apply. Previous grant receivers may apply if three years have passed and the objective of research is different from the previous.

Closing date 15 September 2022 (Forecast)

Award amount max JPY 1,000,000

Country of applicant institution Any

Website: <http://japanfoundation.novartis.org/en/programs/index03.html>

David Lehr research award

The American Society for Pharmacology and Experimental Therapeutics invites applications for the David Lehr research award. This aims to extend funding for preclinical or clinical research directed towards improving human health through pharmacologic or technological approaches. The awarded funds must be used to support research activities for which there is a gap in funding or for the purpose of acquiring preliminary data to support the submission of a new grant proposal.

Applicants must be at least 45 years of age by the nomination deadline and must be current members of the society. The applicant may only submit one application per award cycle. The applicant must be the principal investigator (PI) of the award proposal submitted. The current Council president and secretary/treasurer are ineligible during their active tenure.

Closing date 15 September 2022

Award amount max USD 100,000

Country of applicant institution Any

Website: <https://www.aspet.org/aspet/meetings-awards/aspet-awards/aspet-scientific-achievement-awards/the-david-lehr-award>

AstraZeneca lung cancer research award

The Thoracic Surgery Foundation together with AstraZeneca invite applications for its lung cancer research award. This supports cardiothoracic surgeons in conducting research related to lung cancer. Applicants proposed projects should aim to reduce the burden of lung disease through the advancement of clinical, transitional or basic scientific research. Applicants must be early-career cardiothoracic surgeons within seven years of their first faculty appointment at time of application deadline.

Closing date 15 September 2022

Award amount max USD 100,000

Country of applicant institution Any

Website: <https://thoracicsurgeryfoundation.org/awards/>

Fellowships

Endangered Languages Documentation Programme

The Endangered Languages Documentation Programme invites applications for its individual postdoctoral fellowships. These support early-career researchers undertaking research on endangered languages. The programme aims to:

- support the documentation of as many endangered languages as possible;
- encourage fieldwork on endangered languages;
- create a repository of language resources for linguistic, social sciences, and the language communities;
- make the documentary collections freely available.

Applicants must be postdoctoral researchers who have held a PhD for less than five years, have qualifications in linguistics and experience in linguistic fieldwork. They may be of any nationality, undertake the project in any part of the world, and propose projects that are undertaken by teams or individuals.

Closing date 15 September 2022

Award amount max €250,000

Country of applicant institution Any

Website: <https://www.eldp.net/application/>

Franz Werfel fellowship

The Austrian Exchange Service (OEAD) invites applications for the Franz Werfel fellowship. This enables young university teachers of German language and Austrian literature to spend time as a visiting researcher at university departments in Austria. University teachers from outside Austria, who focus on Austrian literature, may apply. Applicants must be young academics in the early years of their academic career who have not studied or researched for at least six months prior to taking up the grant.

Closing date 15 September 2022

Award amount max €22,300

Country of applicant institution Sri Lanka included

Website: <https://grants.at/en/>

Michael J Davidson structural heart fellowship award

The Thoracic Surgery Foundation invites applications for the Michael J Davidson structural heart fellowship award. This supports a young surgeon committed to the vision of innovative and collaborative cardiovascular care. The fellowship offers support for cardiothoracic surgeons and trainees who are seeking to enhance their skills in both transcatheter valve techniques and open valve surgery.

Cardiothoracic surgeons who are within their first seven years of completion of an Accreditation Council for Graduate Medical Education-accredited cardiothoracic surgery programme, or its equivalent outside the US, and who are certified or eligible for certification by the American Board of Thoracic Surgery or its equivalent outside the US, may apply. Cardiothoracic surgery residents in their last year of training at an ACGME-accredited program at the time of application are also eligible.

Closing date 15 September 2022

Award amount max USD 50,000

Country of applicant institution Any

Website: <https://thoracicsurgeryfoundation.org/davidson/>

Paul Mellon and Ailsa Mellon Bruce, and Leonard A Lauder

The Center for Advanced Study in the Visual Arts, on behalf of the National Gallery of Art, invites applications for its visiting senior fellowship programme. These support scholars who are researching history, theory, and criticism of the visual arts of any period or culture. The following fellowships are available:

- Five Paul Mellon and Ailsa Mellon Bruce fellowships for full-time research related to history, theory and criticism of the visual arts, including painting, sculpture, architecture, landscape architecture, urbanism, prints and drawings, film, photography, decorative arts, industrial design, and other arts, of any geographical area and of any period
- Two Leonard A Lauder fellowships for research in the history, theory and criticism of the visual arts of any period or culture, especially in underrepresented fields. Applicants must have held a PhD for five years or more or possess an equivalent record of professional accomplishment at the time of application.

Closing date 21 September 2022 (Forecast)

Award amount USD 7,000 - 12,500

Country of applicant institution Any

Website: <https://www.nga.gov/research/casva/fellowships/visiting-senior-fellowships.html>

Alain Bensoussan fellowships

The European Research Consortium for Informatics and Mathematics invites applications for the Alain Bensoussan fellowship programme. This enables early-career scientists to conduct research at leading European centres outside their own country. Research must align with the following topics: computer applications, computer systems organisation, computing methodologies, computing milieux, data, hardware, information systems, mathematics, mathematics of computing, software, theory of computation and other related disciplines.

Applicants must have obtained a PhD during the last eight years, or be in the last year of their thesis work, although the PhD degree must be completed before the start of the fellowship programme.

Closing date 30 September 2022

Award amount €24,840 - €46,800

Country of applicant institution Any

Website: <https://fellowship.ercim.eu/information>

Natural sciences and mathematics fellowships

Harvard University's Radcliffe Institute for Advanced Study invites applications. These support scholars who wish to be in residence at the Radcliffe Institute and pursue an independent project. Applicants must have received their doctorate in the area of the proposed project at least two years prior to their appointment as a fellow. They must have published at least five articles in refereed journals.

Closing date:

For humanities, social sciences, and creative arts is September 8, 2022

For science, engineering, and mathematics is September 29, 2022

Award amount max USD 83,000

Country of applicant institution Any

Website: <https://www.radcliffe.harvard.edu/radcliffe-fellowship/become-a-fellow>

Ministry of Education of the Republic of China (Taiwan), TW

The Ministry of Education of the Republic of China (Taiwan) invites applications for its short-term research awards. These support international scholars in undertaking short-term research into Taiwanese humanities disciplines, social science, culture, arts or related comparative research in Taiwan.

PhD students or postdoctoral research fellows may apply. Applicants may not hold a Republic of China passport.

Closing date 30 September 2022

Award amount max TWD 240,000

Country of applicant institution Any

Website: https://www.roc-taiwan.org/ca_en/post/10788.html

Offering two Research Assistant positions on PGIS budget for Multidisciplinary research

The Postgraduate Institute of Science, University of Peradeniya agreed to encourage Multidisciplinary Research Grantees from the Faculty of Science by offering two Research Assistant positions.

Following research grants were offered Research Assistant from this facility:

- Identification and quantification of chemical and microbial contaminations in the watershed of Mahaweli river to ensure a safe drinking water supply
- Radiation shielding for medical procedures: synthesis of cost-effective, lead-free material



Research Publication Facilitation Fund [RPFF] University of Peradeniya

The University Research Council [URC] is pleased to announce that it has initiated a scheme to provide financial assistance up to a maximum of USD 1000.00 per year for the researchers of University of Peradeniya to facilitate publishing their research findings in high-ranking peer reviewed journals.

Financial Assistance:

USD 500 per author up to a maximum of USD 1000 per paper per year.



Eligibility Criteria

- The applicant should be a permanent staff member of the University of Peradeniya and one of the authors of the journal article.
- The University of Peradeniya should have been identified as the sole affiliation or one of the affiliations. Journal articles which do not carry the University of Peradeniya as an affiliation are not eligible for funding.
- The journal should be indexed in one of the following Web of Science indexes:
 - Science Citation Index Expanded (SCIE)
 - Social Sciences Citation Index (SSCI)
 - Arts & Humanities Citation Index (AHCI)
- The impact factor of the journal should be 2 or higher
- The corresponding author of the journal article should have used the institutional e-mail address (pdn.ac.lk or any variant)
- None of the applicants should have used this facility within the current calendar year

The URC reserves the right to amend the eligibility criteria. The article processing charge will be reimbursed subject to the availability of funds.

Procedure

The applicant should fill in an application form and submit the same to the Director, URC through the Head of the Department and the Dean of the Faculty along with the original copy of the receipt for the payment of page charges and a copy of the journal article. The article should have been published either online or printed with a valid DOI in the journal within the year of concern.

The application can be downloaded from

https://www.pdn.ac.lk/centers/urc/doc/Application%20For%20RPFF_URC_2021.pdf

Important:

The author/s other than the corresponding author affiliated to the University of Peradeniya are encouraged to use the official e-mail address with pdn domain name provided by the University of Peradeniya.



more information

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- Grant Writing and Management workshop
<https://youtu.be/11atDs3I6m4>
- Workshop All about Publishing Technical Papers
<https://youtu.be/HNNnmaWjtAg>

Upcoming Workshops

Workshop on Procurement process for researchers



Learning Objectives:

To provide participants with

- An understanding of procurement procedures spelled out in the Government Procurement Guidelines
- The foundational knowledge to integrate the procurement procedures into procurements for research purposes
- The points of contact for different research procurements



Keynote Speaker:

Mr Saliya Dharmawardana

Additional Director General

Department of Public Enterprises

Ministry of Finance

Shall be discuss....

- Procurement Procedures
- Point of contacts
- Receipt and approval of the invoice for payment
- Special consideration for foreign purposes

Date: 22nd of July 2022

Time: 1.30 PM

In Hybride mode

Senate Room

Zoom

Register on or before 20th July 2022

For Register:

<https://forms.gle/IBNqipsZmmXbkZYc6>

Organized by University Research Council- University of Peradeniya

A Brief Overview of Systematic Reviews

Dr Gayan Bowatte

Senior Lecturer

Department of Basic Sciences

Faculty of Allied Health Sciences

As researchers, we develop research ideas, build hypotheses, and conduct research to answer research questions and test theories. We often undertake primary research, update, or validate existing knowledge. Before doing any research, we need to know ‘what is already known’, without that, we may fail to design a study on ‘what needs to be known’. Literature reviews play an essential role in academic research, from an undergraduate research project to high-end complex research to gather existing knowledge and examine the state of a particular field. A systematic review aims to produce a detailed summary of all existing primary research to establish the state of existing knowledge aiming at developing or updating policy and practice. In health sciences, systematic reviews have been considered one of the essential pillars of evidence-based medicine and practice. For example, in nursing, the correct intravenous catheter size selection is based on recognizing the benefits of using smaller-gauge catheters to improve patient comfort. The evidence for such a practice comes from systematic reviews. In many fields, policy establishment and guidelines are based on evidence from systematic reviews. For instance, World Health Organization updates air quality standards based on evaluating systematic reviews investigating the effects of air pollution on human health, after careful evaluation of the evidence, they introduce standards and guidelines to control air pollution.

Cochrane Handbook for Systematic Reviews of Interventions defines a systematic review as an attempt to collate all empirical evidence that fits pre-specified eligibility criteria in order to answer a specific research question. Systematic reviews stand out from traditional narrative reviews by adopting a replicable, scientific and transparent process. They use detailed techniques that aim to minimize bias through rigorous literature searches and to ensure that the results are reliable and meaningful to end-users. Systematic reviews are characterized by having: a clearly defined question with inclusion and exclusion criteria; a rigorous and systematic search of the literature; two phases of screening (blinded, at least two independent reviewers); data extraction and management; analysis and interpretation of results; risk of bias assessment of included studies; and synthesis of evidence.

Over the years, methods of systematic reviews have evolved and modified and are now well established in the health and medical sciences. Their applications are also found in various other subject areas for example in education, public policy, environmental sciences, ecology, engineering, and basic science research. A good systematic review has the following key characteristics.

Research Question

Like any other research, a systematic review begins with a good research question. However, there is an added challenge, the authors of a systematic review are not in a position to freely design and conduct a new study that would directly address their research question. Instead, they must rely on limited existing literature to answer their research questions.

Thus, authors must take care of this major constraint when they put their questions into words and be mindful of generating research questions that could be potentially answerable by a literature review.

In a systematic review, the research question typically follows a PICO format (patient or population, intervention, comparison, and outcome). This framework can help the authors clarify and refine their questions' scope. For example, if the population of interest is asthmatic patients, is it all asthmatic patients or only the patients aged less than 18 years? The PICO framework is helpful for research questions related to clinical practice. However, it may not be the best framework for the non-clinical type of research questions. There are many other frameworks like PEO, SPIDER, SPICE, and ECLIPS that can help to formulate a focused research question.

Development and registering a protocol

The development of a protocol is an essential part of the process; it is the planning document and roadmap for a successful systematic review. It allows to complete the review efficiently and accurately, ensures greater understanding among the collaborators involved in the process, and makes drafting the manuscript far easier. The protocol is a detailed document that outlines planned methods for searching, screening, data extraction, critical appraisal, and synthesis. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), a comprehensive checklist used to improve transparency in systematic reviews, recommends the protocol as an “essential element”.

Recently many journals required a registered protocol for systematic review in the manuscript submission process. Systematic review protocols can be registered in a systematic review protocol registry database such as the International Prospective Register of Systematic Reviews (PROSPERO) or Open Science Framework (OSF) are two common registries to register systematic review protocols.

Searching the literature

The accuracy and completeness of a systematic review rely on the ability to gather all the literature related to the research question of interest. Hence, a rigorous literature search is necessary. The searches should be well documented and reproducible. Report systems of systematic reviews recommend conducting searching in two or more literature search engines using keywords. The combination of keywords should capture all the literature on the selected topic and not result in too much irrelevant literature. Therefore, the selection of keywords has to be done with care, paying more attention to the range that the selected set of keywords could cover. The range of literature covered by different search engines, and the way the search is performed (e.g., use of keywords, Boolean operators, etc.) may vary, therefore knowledge about search engines is a must before the selection of search engines. Some examples of search engines that are heavily used in health sciences are Pubmed, Cochrane Library, Web of Science, MEDLINE, SCOPUS, CINAHL, EMBASE, Science Direct, etc.

Screening results

In a standard systematic review, two rounds of screening are performed. In the first round, titles/abstracts are reviewed. In this process bulk of unrelated literature is excluded. In the second round, the full text of the selected literature is screened. These two rounds of screening are done by two independent reviewers and a third reviewer is involved to resolve any disagreement.

Software tools for literature search can substantially reduce the workload involved in the process of a systematic review. Citation management software like EndNote, Mendeley, Zotero, RefWorks, etc is helpful in managing a large volume of literature. Recently developed technology particularly aiming at systematic reviews (Covidence, Rayyan, Abstrackr, Colandr, DRAGON, EPPI-Reviewer, etc) are able to perform the reviews effectively in a collaborative network.

Assessment of quality and bias

Conclusions made by the systematic reviews are based on data extracted from other studies. Even though some of the studies went through a peer review process in relevant published journals, some may have issues that can introduce bias to the conclusions made from the systematic review. Assessment of the quality of the studies contained in a systematic review is an essential component and this elevates the methodological rigor and transparency of reported results. Results of such poor-quality studies should be interpreted with caution or outright excluded.

The process of quality assessment involves appraising, judging, and documenting potential risks of bias. Structured quality assessment tools can be used to evaluate the quality of the studies contained. The quality assessment is done in a similar way as screening the literature, two independent reviewers participate in the process. The quality assessment tools are based on the types of studies and study designs which will be included in the systematic review.

For example, Cochrane Risk of Bias (ROB) or Critical Appraisal Skills Program (CASP) tools can be used for randomized control trials. Newcastle-Ottawa Scale (NOS) and ROBINS-I are commonly used in non-randomized studies. There are many tools developed for different study designs to proper reporting of risk of bias in a systematic review which enhances the transparency of the study.

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Extracting data

Data extraction of the selected full texts should be conducted by two independent reviewers to reduce bias and ensure data quality control. Before data extraction, a data extraction form should be developed to meet the needs of the systematic review. Previous published systematic reviews on a similar topic can be used as a guide to identify potential information to collect. Recent developments in technology like Covidence, have inbuilt data extraction forms that can be customized to fit into the needs of the systematic review. When extracting numerical data, criteria should be developed to determine which numerical data is to be collected and include in a meta-analysis, if a meta-analysis to be performed.

Synthesis and Analysis

A vital step of a systematic review is the analysis and synthesis of extracted data. Evidence synthesis includes summarizing and organizing the extracted information of the studies. The conclusions that are drawn from the systematic review rely on the evidence synthesis, both the methodology and results of the included studies. Depending on the research question, methodological aspects, and availability of qualitative and quantitative data, the evidence synthesis can be simply descriptive in nature or can include a more in-depth analysis. All systematic reviews include a qualitative synthesis of the extracted data, but also can include tabular or graphical explanations.

Quantitative synthesis of data is mainly done using meta-analysis which uses statistical techniques to combine and analyze the results of multiple studies. The feasibility of conducting a quantitative synthesis of data is determined by the availability of data.

Remarks

Evidence synthesis methodology is a rapidly developing field, over the years the popularity of systematic reviews resulted in the emergence of various evidence review processes.

This includes rapid reviews, mapping review/systematic map, mixed methods reviews, integrative reviews, scoping reviews, Systematic search and review, realist syntheses, umbrella reviews (systematic reviews of reviews), concept analyses, and other methods of reviews. Therefore, when conducting a literature review the selection of the best review is important.

Systematic reviews are clearly an essential component of scientific inquiry in a much broader sense than simply informing policy and practice. Rigorously designed systematic reviews are able to establish consistency and generalizability of research findings across settings and populations. Not only that, the process of conducting systematic reviews itself is proven to be a worthwhile attempt. Authors gain knowledge of the subject area of interest, identify research gaps, develop new research ideas, and gain critical skills in synthesizing existing literature.

Last Issue



Looking forward to your contributions
to the next edition

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